User Guide for Quorum

Version 3.3

ROSS

Thank You for Choosing Ross

You've made a great choice. We expect you will be very happy with your purchase of Ross Technology.

Our mission is to:

1. Provide a Superior Customer Experience
   - offer the best product quality and support
2. Make Cool Practical Technology
   - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at *solutions@rossvideo.com*.

David Ross
CEO, Ross Video
dross@rossvideo.com

Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

Caprica · User Guide

- Ross Part Number: **4500DR-001-3.3**
- Release Date: July 3, 2025. Printed in Canada.
- Software Issue: **3.3**

The information contained in this Guide is subject to change without notice or obligation.

Copyright

Patents

Patent numbers US 7,034,886; US 7,508,455; US 7,602,446; US 7,802,802 B2; US 7,834,886; US 7,914,332; US 8,307,284; US 8,407,374 B2; US 8,499,019 B2; US 8,519,949 B2; US 8,743,292 B2; GB 2,419,119 B; GB 2,447,380 B; and other patents pending.

Notice

The material in this manual is furnished for informational use only. It is subject to change without notice and should not be construed as commitment by Ross Video Limited. Ross Video Limited assumes no responsibility or liability for errors or inaccuracies that may appear in this manual.

Important Regulatory and Safety Notices to Service Personnel

Before using this product and any associated equipment, read all the Important Safety Instructions listed below so as to avoid personal injury and to prevent product damage.

The Quorum system makes use of a number of individual component products to make up a complete turnkey system. The Important Safety Instructions section of this manual is intended to compliment individual OEM product manuals and the User must refer to, and heed, any safety instruction outline in these supplementary product manuals. Separate manuals are included for the following component products:

- Server PC(s)
- LCD Flat Screen Display(s) & Power Supply

This system may also require specific equipment, and /or installation procedures be carried out to satisfy certain other regulatory compliance requirements. Notices have been included in this publication to call attention to these specific requirements.

Symbol Meanings

Protective Earth — *This symbol identifies a Protective Earth (PE) terminal, which is provided for connection of the supply system's protective earth (green or green/yellow) conductor.*

This symbol on the equipment refers you to important operating and maintenance (servicing) instructions within the Product Manual Documentation. Failure to heed this information may present a major risk of damage or injury to persons or equipment.

Warning — *The symbol with the word "**Warning**" within the equipment manual indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.*

Caution — *The symbol with the word "**Caution**" within the equipment manual indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.*

Warning Hazardous Voltages — *This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product enclosure that may be of sufficient magnitude to constitute a risk of shock to persons.*

ESD Susceptibility — *This symbol is used to alert the user that an electrical or electronic device or assembly is susceptible to damage from an ESD event.*

Important Safety Instructions

- Read these instructions.
- Keep these instructions.
- Heed all warning.
- Follow all instructions.

Warning The safe operation of this product requires that a protective earth connection be provided. A grounding conductor in the equipment's supply cord provides this protective earth. To reduce the risk of electrical shock to the operator and service personnel, this ground conductor must be connected to an earthed ground.

Use only power cords specified for this product and certified for the country of use. Refer to the Product Power Cord Requirement Section that follows.

Do not defeat safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong. The third prong is prong is provided for your safety. If the provided plug does not fit in to your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinching particularly at plugs, convenience receptacles, and point where they exit from the apparatus.

Warning Indoor Use: “WARNING – TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE”

Do not use this apparatus near water.

Do not block any ventilation openings. Install in accordance with manufacturer’s instructions.

Do not install near heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

Only use attachments/accessories specified by the manufacturer.

Unplug this apparatus during lightning storms or when unused for long periods of time.

Clean only with a dry cloth.

Warning Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug damage, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Caution To reduce the risk of fire, replacement fuses must be the same type and rating.

Warning This product contains safety critical parts, which if incorrectly replaced may present a risk of fire or electrical shock. Components contained within the product’s power supplies and power supply area, are not intended to be customer serviced and should be returned to the factory for repair

Product Power Cord Requirements

Warning **North American Line Voltages 100 - 120 Volt**

This product is supplied with certified 10A/125V SVT type supply cords.

Conductors are color coded white (neutral), black (line) and green or green/yellow (ground).

Operation of this equipment at line voltages exceeding 130V requires that alternative supply cords with appropriate voltage and current ratings be used.

Warning **International Line Voltages 200 - 240 Volt**

This product has been designed for use with certified IEC 320- C13 10A/250V - H03 VV-F3G 1.00mm2 type line cord.

International product orders are supplied with a certified 10A/250V line cords, utilizing a molded 3-pin IEC 320-C13 type connector at one end and stripped conductors on the other. One line cord is provided. Conductors are CEE color coded; blue (neutral), brown (line), and green/yellow (ground).

Installation by a qualified Electrician, of an appropriately approved A/C wall plug certified for the country of use, is required.

Alternatively, other IEC 320 C-13 type power cords may be used, provided that they meet the necessary safety certification requirements for the country in which they are to be used. Refer to the correctly specified line cord above.

EMC Notices

US FCC Part 15

This equipment has been tested and found to comply with the limits for a class A Digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a Commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice Changes or modifications to this equipment not expressly approved by Ross Video Ltd. could void the user's authority to operate this equipment.

CANADA

This Class "A" digital apparatus complies with Canadian **ICES-003**.

Cet appareil numerique de la classe "A" est conforme a la norme **NMB-003** du Canada.

EUROPE

This equipment is in compliance with the essential requirements and other relevant provisions of **CE Directive 93/68/EEC**.

INTERNATIONAL

This equipment has been tested to **CISPR 22:1997** along with amendments **A1:2000** and **A2:2002** and found to comply with the limits for a Class A Digital device.

Notice This is a Class A product. In domestic environments, this product may cause radio interference, in which case the user may have to take adequate measures.

Warranty and Repair Policy

The Quorum Live and Quorum News systems are backed by a comprehensive one-year warranty on all components.

Notice — *Changes or modifications to this equipment not expressly approved by Ross Video Limited could void the user's authority to operate this equipment.*

If an item becomes defective within the warranty period Ross will repair or replace the defective item, as determined solely by Ross.

Warranty repairs will be conducted at Ross, with all shipping FOB Ross dock. If repairs are conducted at the customer site, reasonable out-of-pocket charges will apply. At the discretion of Ross, and on a temporary loan basis, plug in circuit boards or other replacement parts may be supplied free of charge while defective items undergo repair. Return packing, shipping, and special handling costs are the responsibility of the customer.

This warranty is void if products are subjected to misuse, neglect, accident, improper installation or application, or unauthorized modification.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profit). Implied warranties, including that of merchantability and fitness for a particular purpose, are expressly limited to the duration of this warranty.

This warranty is TRANSFERABLE to subsequent owners, subject to Ross' notification of change of ownership.

Extended Warranty

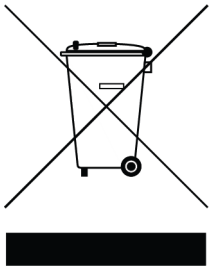
For customers that require a longer warranty period, Ross offers an extended warranty plan to extend the standard warranty period by one year increments. For more information about an extended warranty for your Quorum system, contact your regional sales manager.

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.



If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performances of our products.

Use of Hazardous Substances in Electrical and Electronic Products (China RoHS)

Ross Video Limited has reviewed all components and processes for compliance to:

“Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products” also known as China RoHS.

The “Environmentally Friendly Use Period” (EFUP) and Hazardous Substance Tables have been established for all products. We are currently updating all of our Product Manuals.

The Hazardous substances tables are available on our website at:

http://www.rossvideo.com/about-ross/company-profile/green-practices/china-rohs.html

电器电子产品中有害物质的使用

Ross Video Limited 按照以下的标准对所有组件和流程进行了审查：

“电器电子产品有害物质限制使用管理办法”也被称为中国RoHS。

所有产品都具有“环保使用期限”（EFUP）和有害物质表。目前，我们正在更新我们所有的产品手册。

有害物质表在我们的网站：

http://www.rossvideo.com/about-ross/company-profile/green-practices/china-rohs.html

Company Address

Ross Video Limited	**Ross Video Incorporated**
8 John Street Iroquois, Ontario Canada, K0E 1K0	P.O. Box 880 Ogdensburg, New York USA 13669-0880

General Business Office:	(+1) 613 ● 652 ● 4886
Fax:	(+1) 613 ● 652 ● 4425
Technical Support:	(+1) 613 ● 652 ● 4886
After Hours Emergency:	(+1) 613 ● 349 ● 0006
E-mail (Technical Support):	techsupport@rossvideo.com
E-mail (General Information):	solutions@rossvideo.com
Website:	http://www.rossvideo.com

Contents

Appendix A. Software Licenses 20

Introduction

Thank you, and congratulations on choosing the Caprica Server to control your third-party devices. A Caprica Server acts as a timing engine and device control hub, which is inserted between Quorum and the production switcher. Quorum talks to Caprica, which in turn talks to video servers, graphics, cameras, audio, and other broadcast devices – including the production switcher of course. Caprica accomplishes this using an application that essentially runs Acuity software, giving it access to all 200+ device drivers that exist today.

About This Guide

This guide covers the installation and configuration of your Caprica Server. The following chapters are included:

1. "**Introduction**" provides a summary of important terms, conventions, and features.
2. "**Installation Notes**" provides general instructions about the Caprica system.
3. "**Software Installation**" provides procedures for installing Caprica Server software after a system re-image, or to upgrade to a newer software version.
4. "**Cockpit HTTPS Connection**" provides procedures to configure Cockpit to manage your Caprica Server through a secure HTTPS connection.
5. "**Carbonite Ultra Setup for Quorum**" provides procedures for connecting a Ross Video Carbonite Ultra switcher to Quorum.
6. "**Carbonite Ultra 60 Setup for Quorum**" provides procedures for connecting a Ross Video Carbonite Ultra 60 switcher to Quorum.
7. "**Ultrix Carbonite Setup for Quorum**" provides procedures for connecting a Ross Video Carbonite Ultra switcher to Quorum.
8. "**Carbonite Black Setup for Quorum**" provides procedures for connecting a Ross Video Carbonite Black switcher to Quorum.
9. "**Carbonite Setup for Quorum**" provides procedures for connecting a Ross Video Carbonite switcher to Quorum.
10. "**Graphite CPC Setup for Quorum**" provides procedures for connecting a Ross Video Graphite CPC All-In-One Production System to Quorum.
11. "**Graphite Setup for Quorum**" provides procedures for connecting a Ross Video Graphite All-In-One Production System to Quorum.
12. "**Ultrix Acuity Setup for Quorum**" provides procedures for connecting a Ross Ultrix Acuity switcher to Quorum.
13. "**Acuity Setup for Quorum**" provides procedures for connecting a Ross Acuity switcher to Quorum.
14. "**Camera Configuration**" provides procedures for configuring Caprica devices for the cameras in your venue.
15. "**Graphics System Configuration**" provides procedures for configuring a Caprica device for the graphics system used in your Quorum system.
16. "**Caprica Server Configuration**" provides procedures to configure devices, switcher inputs, and audio channel names for a switcher connected to the Caprica Server in a Quorum system.

If, at any time, you have a question pertaining to the installation or operation of your Caprica Server, please contact us at the numbers listed in the section "**Contacting Technical Support**" on page 1–2. Our technical staff are always available for consultation, training or service.

Documentation Conventions

Special text formats are used in this guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

Interface Elements

Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example:

In the **RundownControl** section, click **Install License**.

User Entered Text

Courier text is used to identify text that a user must enter. For example:

1. In the **Open** box, enter the following application name:

   ```
   services.msc
   ```

Referenced Guides

Italic text is used to identify the titles of referenced guides, manuals, or documents. For example:

- using **RapidRestore** to archive and backup Quorum rundowns and settings, refer to the chapter "**RapidRestore™**" on page 16–1 in the ***Quorum User Guide***.

Menu Sequences

Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads "**File** > **Exit**," you would click the **File** menu and then click **Exit**.

Important Instructions

Star icons are used to identify important instructions or features. For example:

✶ After installing Caprica Server software, licenses must be obtained from Ross Video Technical Support before using the Caprica Server.

Getting Help

The Quorum Online Help system can be accessed from any of the components of Quorum. Online Help opens in a Microsoft Internet Explorer® window.

The Quorum Online Help system displays, by default, the **Contents** pane. To access the **Search** or **Glossary** panes, click the **Search** or **Glossary** button on the top toolbar in the Online Help system.

Contacting Technical Support

Technical Support is staffed by a team of experienced specialists ready to assist you with any question or technical issue.

Ross Video has technical support specialists strategically located around the globe to ensure a prompt response to technical inquiries. Our primary technical support center is located in Ottawa, Ontario, Canada. In addition, we have offices in The United Kingdom (London), Australia (Sydney), and Singapore with satellite locations in New York City, The Netherlands, and China. As we expand our presence globally, we are constantly evaluating other key locations to have a local technical support specialist in order to better service our customers.

North America

Our North America center located in Ottawa, Ontario, Canada and is open Monday to Friday 8:30 a.m. to 6:00 p.m. EST, with 24/7/365 on-call service after hours.

Our telephone number is: +1-613-686-1557

Toll free within North America: +1 833-859-0499

EMEA

Our EMEA center is open Monday to Friday 8:30 a.m. to 5:00 p.m. GMT. After hours support is provided by our North America location.

Our telephone number is: +44 (0)1189502446

International toll free: +800 3540 3545

If the local support specialist is not available, your call will be transferred automatically to our North America center.

Australia

Our Sydney, Australia office is located in Alexandria, NSW.

Our local support telephone number is: 1300 007 677

If the local support specialist is not available, your call will be transferred automatically to our North America center.

Online

E-mail: techsupport@rossvideo.com

Website: open a support request using the link https://support.rossvideo.com/ to open a support request.

Installation Notes

This chapter provides information about the general requirements of a Caprica system and instructions on how to log in to your Caprica Server. The following topics are discussed in this chapter:

- Unpacking
- Software Compatibility
- Computer System Requirements
- Typical Power Consumption
- Ports
- Processes
- New Caprica Server First Log In
- Caprica Server Log In

Unpacking

Unpack your Caprica system from the shipping container(s) you received and check the contents against the packing list to ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video for assistance.

Software Compatibility

To ensure the proper function of a Caprica system, the version of software installed on devices must be compatible with the installed Caprica Server software.

Caprica Server 3.3 software is compatible with the following versions of associated software:

Table 2.1 Caprica Server 3.3 Compatibility

Quorum	v10.0 or greater
DashBoard	v9.0 or greater
Cockpit	v1.3.0-0011

Computer System Requirements

To ensure the proper function of a Caprica system, verify that the Caprica client computer (customer supplied) meets the requirements described in the following sections:

Hardware

Ross Video recommends the following computer hardware configuration to run Caprica client software:

Table 2.2 Caprica Client Computer Hardware Specifications

Model	Dell Precision T5810
CPU	Intel Xeon Processor E5-1607 v3
RAM	8GB (2x4GB) 2133MHz DDR4 RDIMM ECC
Storage	2 x 500GB 3.5inch Serial ATA (7,200 rpm) configured as RAID 1
LAN	100 MB/s
Display	1680x1050 for 16:9 displays or 1280x1024 for 4:3 displays
Display Adapter	128MB Video RAM

- Client PCs must be set up on the same subnet as the Caprica Server.

✶ USB/KVM extenders can interfere with Caprica system operation and are not supported for use with Caprica client computers. Place Caprica client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Operating System

Ross Video recommends the following minimum operating system to run Caprica client software:

- Microsoft® Windows® 10 or 11 64 bit with the latest patches. **Windows 11 is recommended**.

✶ Ensure that the operating system is updated with all necessary security patches and service packs before installing Quorum software on a computer.

Web Browser

Quorum can be accessed using one of the following web browsers:

- Microsoft Edge version 100 or greater
- Google Chrome™ browser version 100 or greater
- Mozilla Firefox® version 100 or greater
- Apple Safari® version 16 or greater

Typical Power Consumption

The information provided in the following table lists the typical power consumption for each component in a Caprica system:

Table 2.3 Caprica Power Consumption

Caprica Component	Power Consumption
Server	700W
Client Computer	500W
Monitors (2)	100W
Total	1300W

Ports

The information provided in the following sections list the ports used by a Quorum system:

- Caprica
- Quorum

Caprica

The information provided in the following table lists the ports used by Caprica:

Table 2.4 Caprica Ports

Application	Port	Purpose	Set By	Connection
Caprica	22	SSH	Internal	Caprica Servers
	973	rsync	Internal	Caprica Servers
	5253	Dashboard OGP Interface	Internal	DashBoard Clients and Caprica Servers
	5404	Cluster / Corrosync	Internal	Caprica Servers
	5405	Cluster / Corrosync	Internal	Caprica Servers
	5406	Cluster / Corrosync	Internal	Caprica Servers
	5901	VNC	Internal	Caprica Servers
	8080	Vintage Caprica web page	Internal	Caprica Servers and external users
	9090	Caprica web page	Internal	Caprica Servers and external users
	12345	Caprica port	User	Quorum Server to Caprica Server
Devices	Any	Port defined during configuration	User	Caprica Servers and devices

Quorum

The information provided in the following table lists the ports used by Quorum:

Table 2.5 Quorum Ports

Application	Port	Purpose	Set By	Connection
Quorum	80	Quorum Jetty server (unsecured)	Internal	Quorum client to the Quorum Server
	443	SSL for Jetty server	Internal	Quorum client to the Quorum Server
Postgres	5432	Postgres database	Internal	Quorum Server and client to computer running Postgres database
Ross Product Manager	3030	Licensing	Internal	Quorum Server to Ross Product Manager
	8443	SSL for Licensing	Internal	Quorum Server to Ross Product Manager
DataLinq	2222	XPression DataLinq	Internal	XPression to Quorum Server
Bosch	443	Bosch microphone system	Internal	Microphone system to Quorum Server
Shure	3142	Shure microphone system	Internal	Microphone system to Quorum Server
BiAmp	2300	BiAmp microphone system	Internal	Microphone system to Quorum Server

Processes

The information provided in the following table lists the Quorum processes that run on Client and Server computers in a Quorum system:

Table 2.6 Quorum System Processes

Process	Quorum Server	Client
Quorum Server service	Yes	No
Quorum Jetty service	Yes	Optional
PostgreSQL database	Yes	No
Web Browser	Optional *	Yes

* Development environment

New Caprica Server First Log In

The first time you log in to your new Caprica Server you must set the password for the default caprica account. The caprica account is a super user that can edit all settings and control all processes on a Caprica Server.

✶ DHCP and DNS must be available on you corporate network to set caprica user password on the first log in.

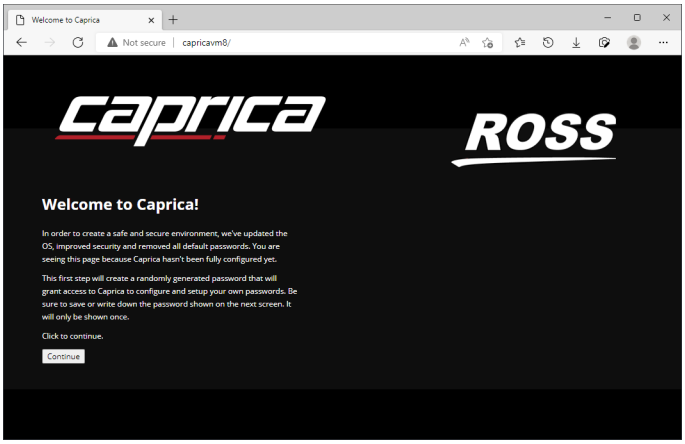
To set the caprica user password on the first log in

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a web browser to open the Caprica web page URL:

   `http://capricavm8`

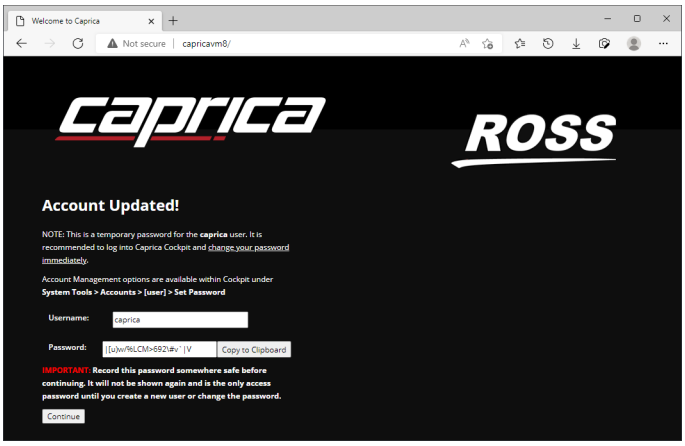
   If the web browser identifies your connection with the Caprica web page as not secure, add an exception for the Caprica web page.

   The **Welcome to Caprica!** web page opens.



3. Click **Continue**.

   The **Account Updated!** web page opens.



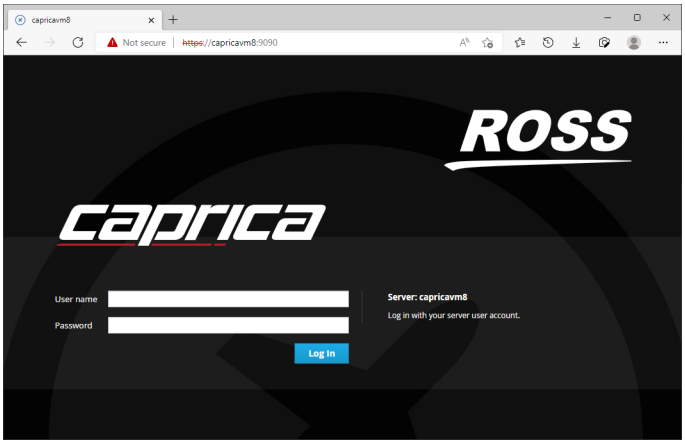
4. Click **Copy to Clipboard**.

   Caprica copies the password displayed in the **Password** box to the clipboard so that you can use the password to log in to Caprica on the next web page.

✶ As a backup, record the displayed password before continuing. The password for the caprica user will not be shown again and is the only access password until you change the it for the caprica user or create a new user.

5. Click **Continue**.

   The **Caprica Login** web page opens.



6. In the **User name** box, enter `caprica`.
7. In the **Password** box, paste the password from the clipboard.
8. Click **Log In**.

   Caprica Cockpit opens.

Change the Caprica User Password

After your first log in to the Caprica server you can change the caprica user password to one that satisfies the password policy of your organization.

To change the caprica user password

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a web browser to open **Caprica Cockpit**. The format of the URL is as follows, where `<Caprica Server>` is the hostname or IP address of your **Caprica Server** computer:

   `https://<Caprica Server>:9090`

   If the web browser identifies your connection with Caprica Cockpit as not secure, add an exception for Caprica Cockpit.

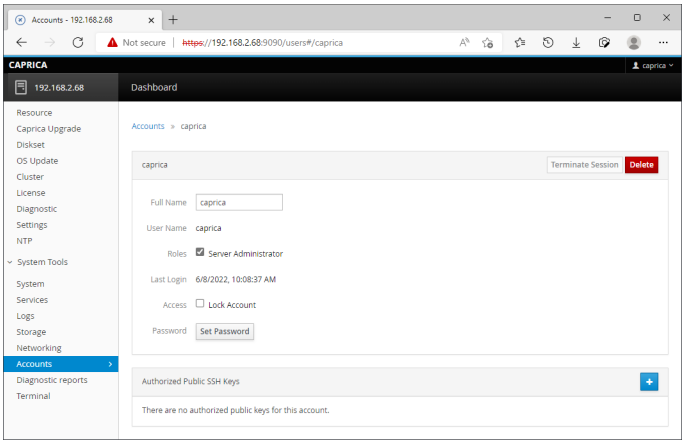
✶ If Caprica Cockpit does not open, your Caprica Server computer is not running the Amazon Linux 2 operating system. Contact Ross Video Technical Support to upgrade the operating system of your Caprica Server computer.

3. Use the following credentials to log in to **Caprica Cockpit**.
   - **User**: `caprica`
   - **Password**: `<your_password>`

   Caprica Cockpit opens.

4. Use the **User (caprica)** menu to select **Account Settings**.

   The **Accounts** web page opens for the **caprica** user.



5. Click **Set Password**.

   The **Set Password** dialog opens.

6. In the **Old Password** box, enter the current password for the **caprica** user.
7. In the **New Password** box, enter a new password for the **caprica** user that satisfies the password policy of your organization.
8. In the **Old Password** box, enter the same password as you entered in the **New Password** box.
9. Click **Set**.

   Cockpit updates the caprica user with the new password the you set.

Caprica Server Log In

How you log in to your Caprica Server depends on whether your Caprica Server is running on a computer or in the Hyper-V virtualization layer of the Quorum Server computer.

Caprica Server Computer

When your Caprica Server runs on a computer, you can use the following credentials to directly log in to the Caprica Server Computer.

- **User**: `caprica`
- **Password**: `<your_password>`

Hyper-V

When your Caprica Server runs in the Hyper-V virtualization layer, you must use a VNC viewer application to log in to the Caprica Server.

To log in to a Caprica Server running in Hyper-V

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a VNC viewer application to connect to your Caprica server on port 5901. The connection address format is as follows, where `<Caprica Server>` is the hostname or IP address of your **Caprica Server** computer and 5901 is the connection port:

   `<Caprica Server>:5901`
3. Use the following credentials to log in to the Caprica Server.
   - **User**: `caprica`
   - **Password**: `<your_password>`

   The **VNC view** window opens displaying the desktop of your Caprica Server.

Software Installation

This chapter provides instructions for installing Caprica Server software on a Caprica Server computer, either after a system re-image or to upgrade to a newer version of Caprica.

The following topics are discussed in this chapter:

- Before You Install Software
- Setting the Caprica Hyper-V Automatic Start and Stop Options
- Updating the Caprica Server Operating System
- Updating Caprica Cockpit Software
- Updating Caprica Server Software
- Caprica Server Software License
- Maintaining the Caprica Server
- Accessing the Caprica Server
- Setting the Severity Level for System Logs

Before You Install Software

Before installing software on a Caprica Server system, perform the following tasks:

- Have a qualified Ross Video technician perform any required maintenance or repairs on your Caprica system.
- Backup all Caprica Server settings.
- Update the operating system on the Caprica Server computer to the operating system version required by the Caprica Server software.

Contact a Ross Video sales representative for information about Caprica Server Commissioning, Training, and Update services.

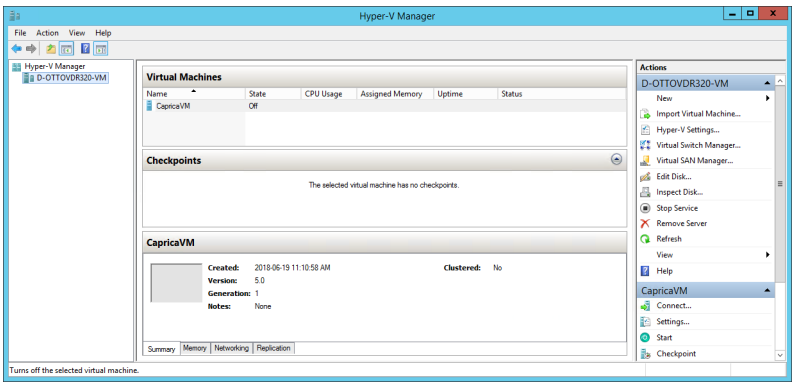
Setting the Caprica Hyper-V Automatic Start and Stop Options

When you use Caprica in your Quorum system to control your switcher and devices, you must configure Hyper-V to automatically start and stop with the Quorum Server computer. Quorum Systems with Acuity switchers do not require Caprica.

To set the Caprica Hyper-V automatic start and stop options

1. Use the following credentials to log in to the Quorum Server computer that hosts your Caprica Server in Hyper-V:
   - **User**: `quorum`
   - **Password**: `<your_password>`
2. Use the **Start** menu to select **Hyper-V Manager**.

   The **Hyper-V Manager** window opens.



   When the Caprica VM is running, complete the following steps to turn it off:

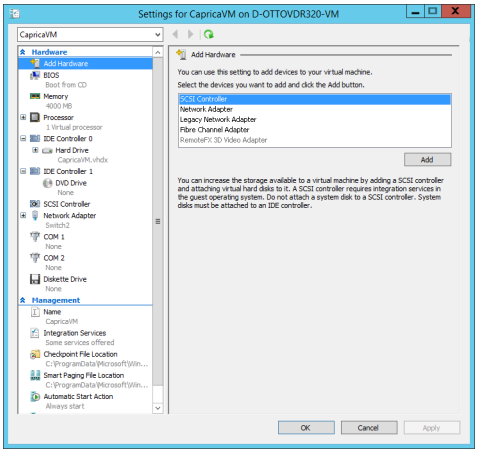
   a. In the **Caprica VM** section of the **Actions** panel, click **Turn Off**.

      An **Alert** opens.

   b. Click **Turn Off** to turn the Caprica VM off.

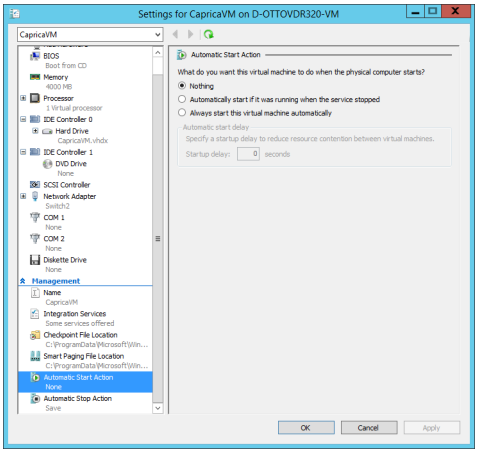
3. In the **Caprica VM** section of the **Actions** panel, select **Settings**.

   The **Settings** dialog box opens.



4. In the **Management** section of the tree view, click **Automatic Start Action**.

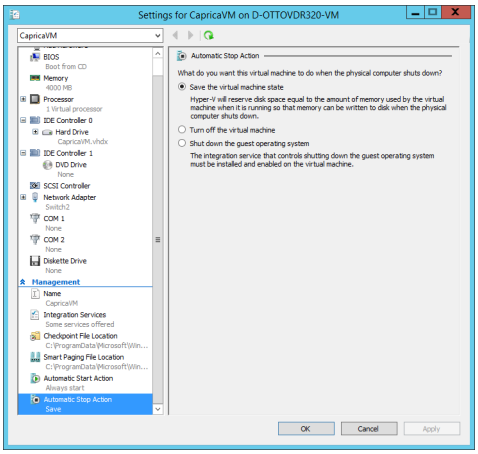
   The **Automatic Start Action** panel opens.



5. Select the **Always start this virtual machine automatically** option to automatically start the Caprica VM with the Quorum Server computer.

6. In the **Management** section of the tree view, click **Automatic Stop Action**.

   The **Automatic Stop Action** panel opens.



7. Select the **Shutdown the guest operation system** option to automatically shutdown the Caprica VM with the Quorum Server computer.
8. Click **OK** to save the selected Hyper-V automatic start and stop options and close the **Settings** dialog box.
9. To start the Caprica VM after setting the automatic start and stop options, click **Start** in the **Caprica VM** section of the **Actions** panel.

Updating the Caprica Server Operating System

On Caprica Servers running the Amazon Linux 2 operating system and Caprica Cockpit v2.0.1 software, you can use Caprica Cockpit to update the Caprica Server operating system. You can only upgrade the operating system of your Caprica Server to the next specific operating system version to guarantee that all required dependencies are properly installed on your Caprica Server.

- Caprica Server v8.x software and greater requires the Amazon Linux 2 operating system. To install the Amazon Linux 2 operating system on your Caprica Server, contact Ross Video Technical Support.
- You cannot use Caprica Cockpit to rollback the operating system version installed on a Caprica Server or to repair the currently installed operating system on a Caprica Server. Before you upgrade the operating system on your Caprica Server you should create a snapshot of the current state of your Caprica8VM virtual machine.

Caprica Virtual Machine Snapshot

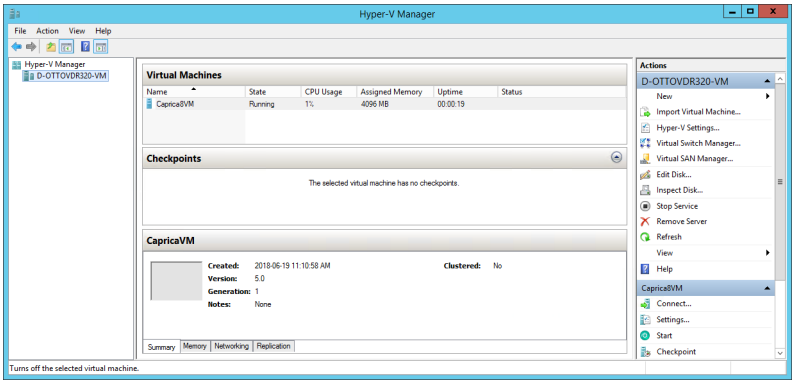
You can use Hyper-V Manager to create a snapshot of the current state of your Caprica8VM virtual machine. The Hyper-V Manager can import the Caprica8VM virtual machine snapshot to restore the passwords, settings, and configuration of the Caprica8VM virtual machine at the time the snapshot was taken.

- While creating a snapshot of the Caprica8VM virtual machine the Caprica Server will not be available to your Quorum system. Only create Capica8VM virtual machine snapshots during off hours.

To create a snapshot of your Caprica8VM virtual machine

1. Log in to the Quorum **Server computer** that hosts your Caprica Server in Hyper-V as the **quorum** user.
2. Use the **Start** menu to select **Hyper-V Manager**.

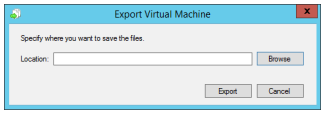
   The **Hyper-V Manager** window opens.



3. In the **Virtual Machines** section select **Caprica8VM**.
4. In the **CapricaVM** section of the **Actions** panel, click **Save**.

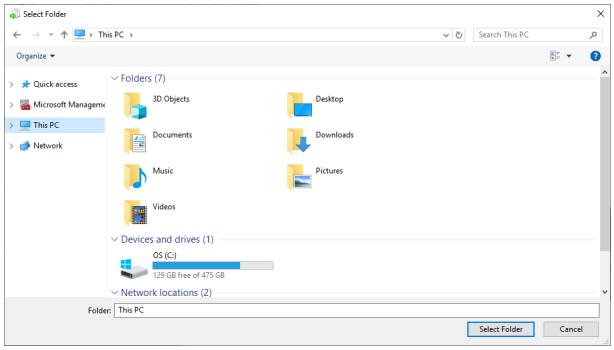
5. In the **CapricaVM** section of the **Actions** panel, click **Export**.

   The **Export Virtual Machine** dialog box opens.



6. Click **Browse**.

   The **Select Folder** dialog box opens.



7. Navigate to the folder in which to save the exported Caprica8VM virtual machine.
8. Click **Select Folder**.

   The **Select Folder** dialog box closes, and the **Folder** box in the **Export Virtual Machine** dialog box displays the full path to the selected folder.
9. In the **Export Virtual Machine** dialog box, click **Export**.

   The **Export Virtual Machine** dialog box closes, and the Hyper-V Manager exports the Caprica8VM virtual machine to the selected folder.
10. Save the folder that contains the export of the **Caprica8VM** virtual machine in a safe offline location along with your other backup files.
11. Record the user names and passwords used in the **Caprica8VM** virtual machine backup and save them in a safe offline location along with your other backup files.

Update the Caprica Server Operating System

After creating a snapshot of the current state of your Caprica8VM virtual machine, you are ready to use Caprica Cockpit to update your Caprica Server operating system.

★ The Caprica Server operating system updates procedure presented in this section is only valid for updating Caprica Servers running the Amazon Linux 2 operating system and Caprica Cockpit v2.0.1 software.

To update your Caprica Server operating system

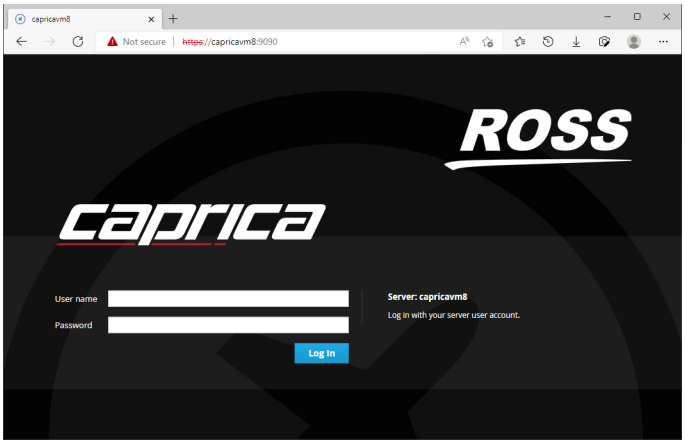
1. Contact Ross Video Technical Support to obtain the most recent Caprica Server operating system upgrade package file.
2. Log in to a computer connected to the same network as the Caprica Server computer.
3. Use a web browser to open **Caprica Cockpit**. The format of the URL is as follows, where `<Caprica Server>` is the hostname or IP address of your **Caprica Server** computer:

   `https://<Caprica Server>:9090`

   If the web browser identifies your connection with Caprica Cockpit as not secure, add an exception for Caprica Cockpit.

✶ If Caprica Cockpit does not open, your Caprica Server computer is not running the Amazon Linux 2 operating system. Contact Ross Video Technical Support to upgrade the operating system of your Caprica Server computer.

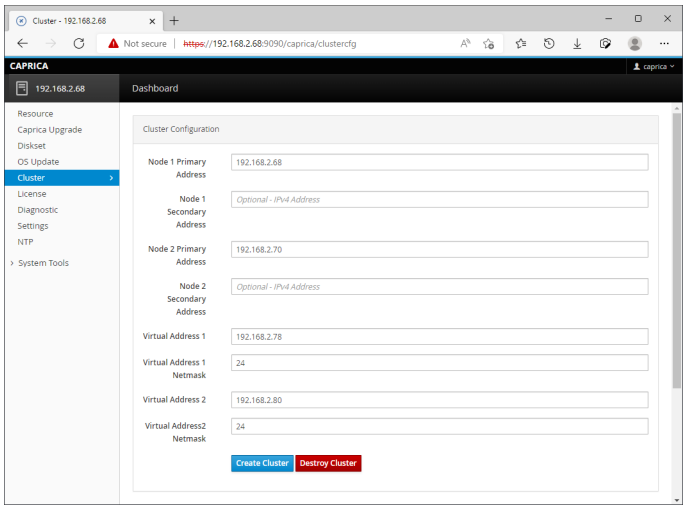
The **Caprica Login** web page opens.



4. Use the following credentials to log in to **Caprica Cockpit**:
   - **User**: `caprica`
   - **Password**: `<your_password>`
5. Click **Log In**.

   Caprica Cockpit opens.
6. If your Caprica Server is set up as a cluster, complete the following steps to destroy the cluster before you update the Caprica Server Operating system:
   a. In the tree view, click **Cluster**.

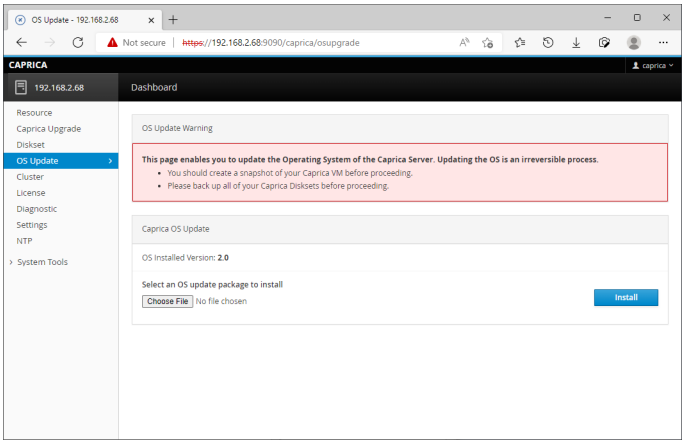
      The **Cluster Configuration** web page opens.



   b. Click **Destroy Cluster**.

7. In the tree view, click **OS Update**.

   The **OS Update** web page opens.



8. In the **Select an OS update package to install** section, click **Choose File**.

   The **Open** dialog box opens.

9. Use the **Open** dialog box to locate and select the **Caprica-OS.X.X.to.Y.Y.pkg** Caprica Server operating system upgrade package file you obtained from Ross Video Technical Support.

   Where **X.X** is current operating system version installed on your Caprica Server and **Y.Y** is the new operating system version to install on your Caprica Server.

10. Click **Open**.

    The **Open** dialog box closes and the **Select an OS update package to install** section displays the name of the selected PKG file.

11. Click **Install**.

    The **Caprica OS Update Confirmation** alert opens.

12. Click **Yes**. Click **No** to cancel the operating system update for your Caprica Server.

    The Caprica OS Upgrade web page installs new operating system on the Caprica Server. After the operating system install completes, Caprica Cockpit disconnects while the Caprica Server reboots using the newly installed operating system.

13. In **Caprica Cockpit**, click **Reconnect**.

    The **Caprica Login** web page opens.

14. Use your Caprica credentials to log in to **Caprica Cockpit**.

15. In the tree view, click **OS Update**.

    The **OS Update** web page opens. The **Installed Version** field displays the version of the current operating system installed on the Caprica Server.

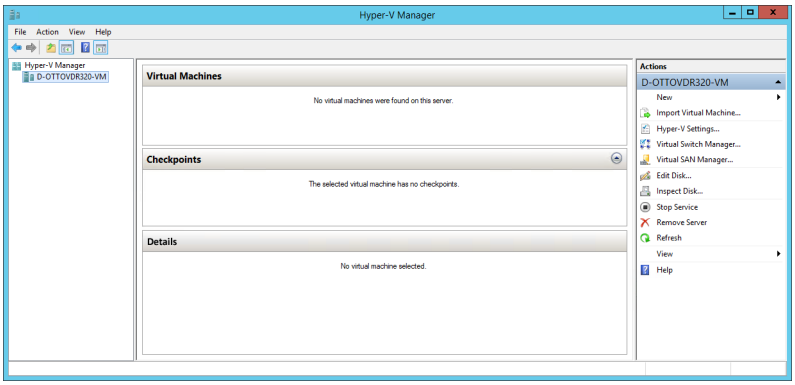
Caprica Virtual Machine Restore

If you encounter problems with a Caprica Server operating system update, you can use Hyper-V Manager to import a Caprica8VM virtual machine snapshot to restore the saved state of your Caprica Server. The new virtual machine created by importing the Caprica8VM virtual machine snapshot retains the passwords, settings, and configuration of the Caprica8VM virtual machine at the time it was exported.

To import a Caprica8VM virtual machine snapshot

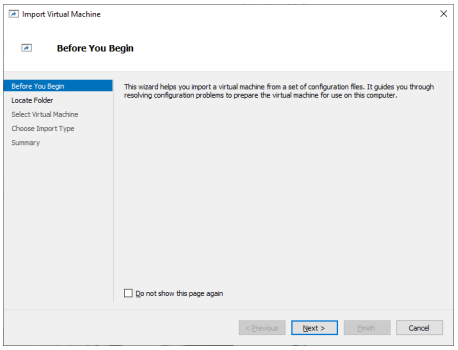
1. Log in to the Quorum **Server computer** that hosts your Caprica Server in Hyper-V as the **quorum** user.
2. Use the **Start** menu to select **Hyper-V Manager**.

   The **Hyper-V Manager** window opens.



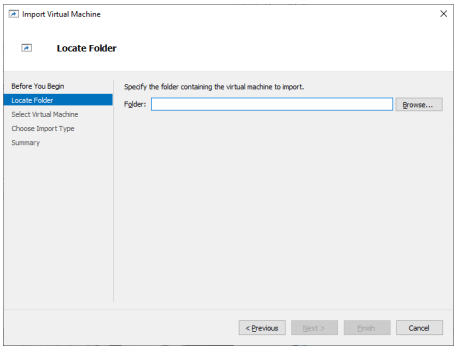
3. In the **Host** section of the **Actions** panel, click **Import Virtual Machine**.

   The **Import Virtual Host Machine** wizard opens.



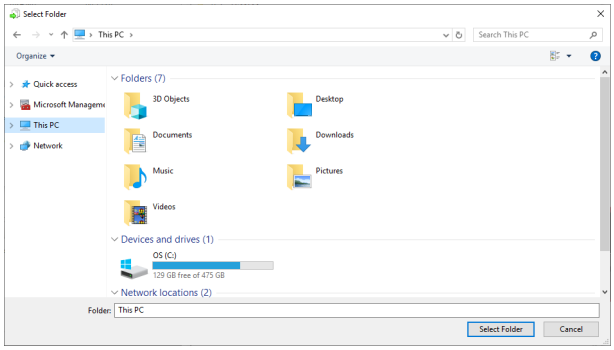
4. Click **Next**.

   The **Locate Folder** screen opens.



5. Click **Browse**.

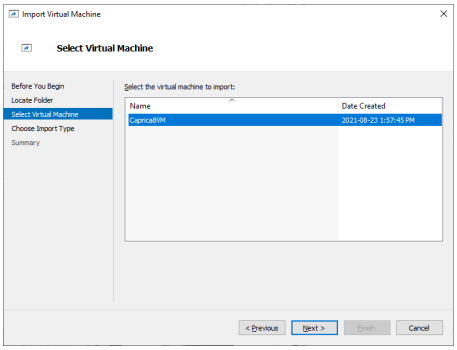
   The **Select Folder** dialog box opens.



6. Navigate to the folder that contains the **Caprica8VM** virtual machine snapshot folder.
7. Select **Caprica8VM** virtual machine snapshot folder.
8. Click **Select Folder**.

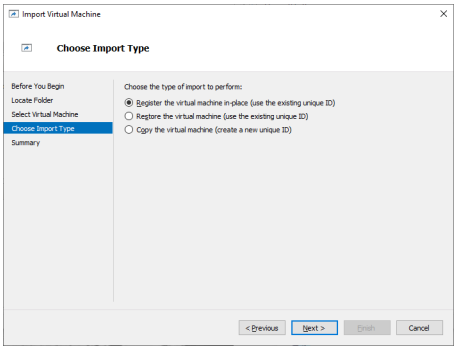
   The **Select Folder** dialog box closes, and the **Folder** box in the **Locate Folder** screen displays the full path to the selected folder.
9. Click **Next**.

   The **Select Virtual Machine** screen opens.



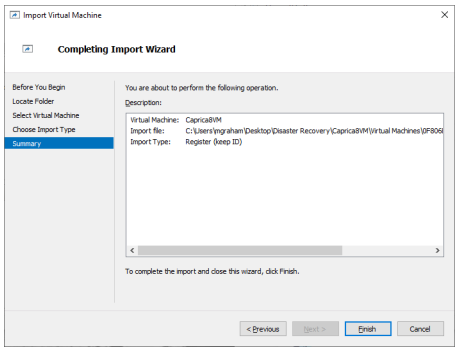
10. In the **Select the virtual machine to import** list, select **Caprica8VM**.
11. Click **Next**.

    The **Choose Import Type** screen opens.



12. Select the **Register the virtual machine in-place** option.
13. Click **Next**.

    The **Completing Import Wizard** screen opens.



14. Click **Finish**.

    The **Import Virtual Host Machine** wizard closes, and Hyper-V Manager imports the Caprica8VM virtual machine.
15. In the **Caprica8VM** section of the **Actions** panel, select **Start**.

Updating Caprica Cockpit Software

Caprica Cockpit software enables you to use a web user interface manage your Caprica Server. To access Caprica Cockpit, use a web browser to open the URL `https://<Caprica Server>:9090` where `<Caprica Server>` is the hostname or IP address of your Caprica Server computer.

To update Caprica Cockpit software

1. Contact Ross Video Technical Support to obtain the most recent Caprica Cockpit software installer.

   If you received the Caprica Cockpit software installer on the Windows side of your server you must transfer the installer to the Linux side of the server where your Caprica Server runs. Ross Video recommends using an SFTP application to transfer the installer between the Windows and Linux environments of your server. Contact Ross Video Technical Support if you require help transferring the installer.
2. Use the following credentials to log on to the Caprica Server computer:
   - **User**: `caprica`
   - **Password**: `<your_password>`
3. Verify that the Caprica Server computer is running the Amazon Linux 2 operating system.

   If your Caprica Server computer is not running the Amazon Linux 2 operating system, contact Ross Video Technical Support to upgrade the operating system.
4. On the Caprica Server computer, navigate to the folder where you saved the Caprica Cockpit software installer from Ross Video Technical Support.
5. Open a **Terminal** window.
6. At the prompt in the **Terminal** window, enter the following command to install the new version of Caprica Cockpit on the Caprica Server:

   ```
   sudo yum install caprica-cockpit-X.X.X-####.x86_64.rpm
   ```

   Where `X.X.X` is the minor version letter and `####` is build number for the Caprica Cockpit software.

Updating Caprica Server Software

Before updating Caprica Server software to latest version of Caprica Server software, have a qualified Ross Video technician perform any required maintenance or repairs on the Caprica Server.

- The Caprica Server software upgrade procedure presented in this section is only valid for upgrading from Caprica v3.0. Upgrading Caprica Server software v1.x or v2.x to v3.x should be performed by Ross Video personnel.

To update Caprica Server software to version 3.3

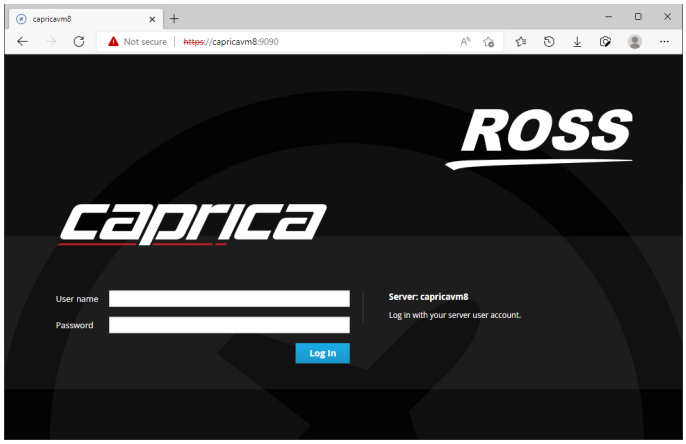
1. Contact Ross Video Technical Support to obtain the most recent Caprica Server software installer.
2. Log in to a computer connected to the same network as the Caprica Server computer.
3. Use a web browser to open **Caprica Cockpit**. The format of the URL is as follows, where `<Caprica Server>` is the hostname or IP address of your **Caprica Server** computer:

   `https://<Caprica Server>:9090`

   If the web browser identifies your connection with Caprica Cockpit as not secure, add an exception for Caprica Cockpit.

- If Caprica Cockpit does not open, your Caprica Server computer is not running the Amazon Linux 2 operating system. Contact Ross Video Technical Support to upgrade the operating system of your Caprica Server computer.

   The **Caprica Login** web page opens.



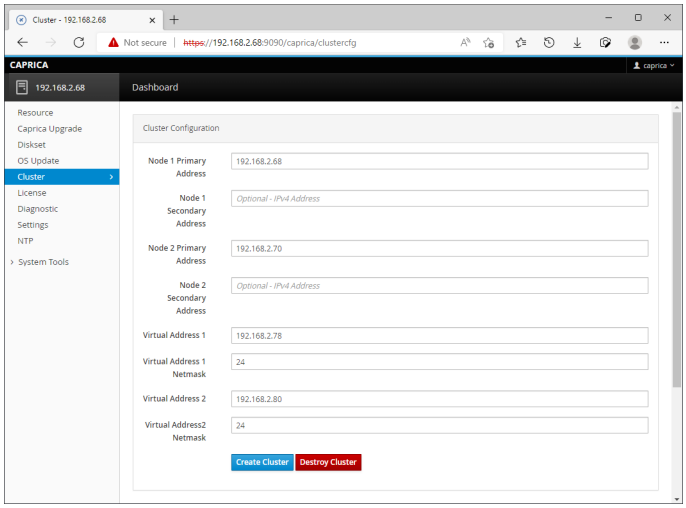
4. Use the following credentials to log in to **Caprica Cockpit**:
   - **User**: `caprica`
   - **Password**: `<your_password>`
5. Click **Log In**.

   Caprica Cockpit opens.

6. If your Caprica Server is set up as a cluster, complete the following steps to destroy the cluster before you update the Caprica Server Operating system:

   a. In the tree view, click **Cluster**.

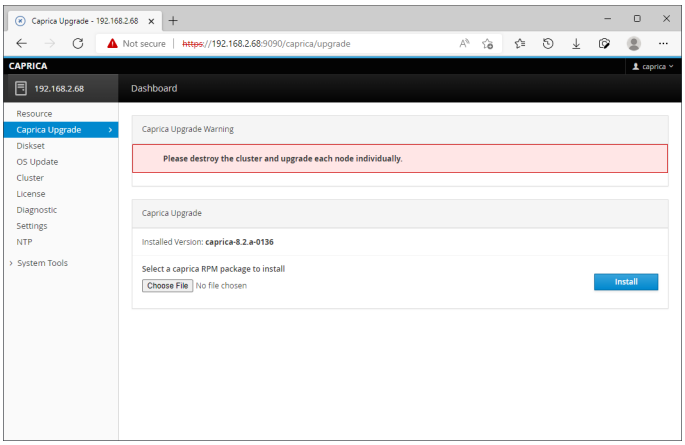
      The **Cluster Configuration** web page opens.



   b. Click **Destroy Cluster**.

7. In the tree view, click **Caprica Upgrade**.

   The **Caprica Upgrade** web page opens.



8. In the **Select a Caprica RPM package to install** section, click **Browse**.

   The **File Upload** dialog box opens.

9. Use the **File Upload** dialog box to locate and select the **caprica-3.3.X-###.x86.rpm** file you downloaded from Ross Video Technical Support.

   Where **X** is the minor version letter and ### is build number for the Caprica Server software.

10. Click **Open**.

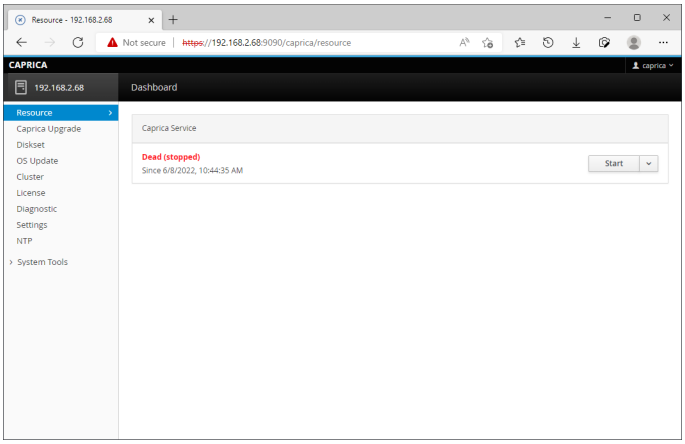
    The **File Upload** dialog box closes and the **Select a Caprica RPM package to install** section displays the name of the selected RPM file.

11. Click **Install**.

    The **Caprica Upgrade** web page installs new version of Caprica Server software.

12. In the tree view, click **Resource**.

    The **Resource** web page opens.



13. In the **Caprica Service** section, use the list to the right of the **Active** Caprica Service to select **Restart**.

    The Caprica Server starts running the new version of Caprica Server software.

Caprica Server Software License

Ross Video uses a product key and feature license keys to control user access to Caprica. The Ross Licensing Service verifies your Quorum product key and enables access to Caprica.

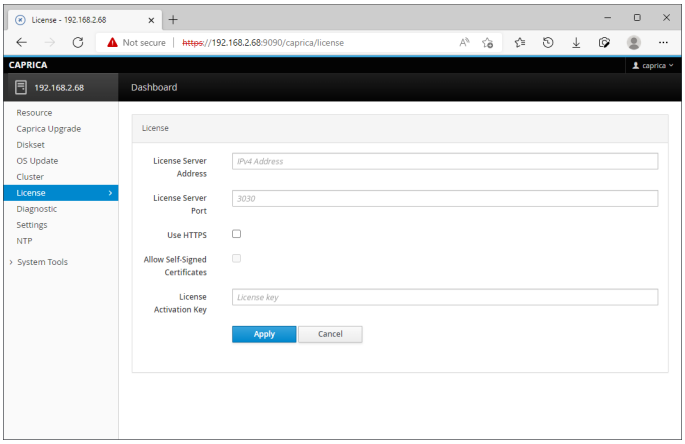
✶ Before you can license Caprica, your must activate your Quorum product key on the Ross Licensing Service in your Quorum system. Refer to the Quorum ***Installation and Configuration Guide*** for information on activating Quorum product keys.

You can obtain a Quorum product key from Ross Video Technical Support.

To license a Caprica Server

1. In the **Caprica Cockpit** tree view, click **License**.

   The **License** web page opens.



2. In the **License** section, enter the IP address or hostname of your **Horizon Server** or **Ross Platform Manager Server** computer in the **License Server Address** box.

✶ When you use a secure HTTPS connection to a **Horizon Server** or **Ross Platform Manager Server** for licensing, you must enter the IP address or hostname from your security certificate in the **License Server Address** box.

3. In the **License Server Port** box, enter the network port number of Ross Licensing Service.

   Horizon Servers use port `3030` as the default network port for unsecure HTTP connections. **Ross Platform Manager Servers** use port `443` for secure HTTPS connections.

4. When you use a secure HTTPS connection to a **Horizon Server** or **Ross Platform Manager Server** for licensing, complete the following steps:

   a. Select the **Use HTTPS** check box.

      The **Allow Self-Signed Certificates** check box activates.

   b. When using a self-signed untrusted certificate for your connection, select the **Allow Self-Signed Certificates** check box.

5. In the **License Activation Key** box, enter the Quorum product key obtained from Ross Video Technical Support.

6. Click **Apply**.

7. Restart the Caprica service.

   For the steps to restart the Caprica service, refer to the procedure "**To control the Caprica Service**" on page 3–15.

8. For each Caprica Server in your Quorum system, repeat step **1** to step **7**.

Maintaining the Caprica Server

You can use Caprica Cockpit to control and view information about the Caprica Server.

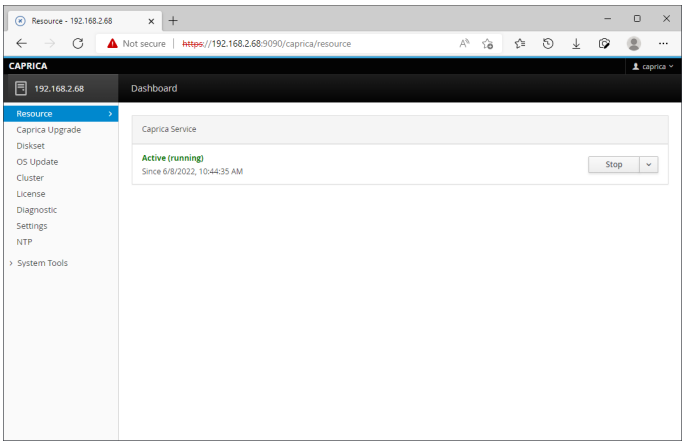
Current Status

You can use Caprica Cockpit to view the current status of a Caprica Service.

To view the status of the Caprica Service

1. In the **Caprica Cockpit** tree view, click **Resource**.

   The **Resource** web page opens.



2. Use the **Caprica Service** section of the Resource web page to view the current status of the Caprica Service.

Control

You can use Caprica Cockpit to control the Caprica Service running on the Caprica Server.

To control the Caprica Service

1. In the **Caprica Cockpit** tree view, click **Resource**.

   The **Resource** web page opens.

2. In the **Caprica Service** section, use the list to the right of the **Active Caprica Service** to control the Caprica Service as follows:

   - **Start** — start the Caprica Service
   - **Stop** — stop the Caprica Service
   - **Restart** — stop and then start the Caprica Service

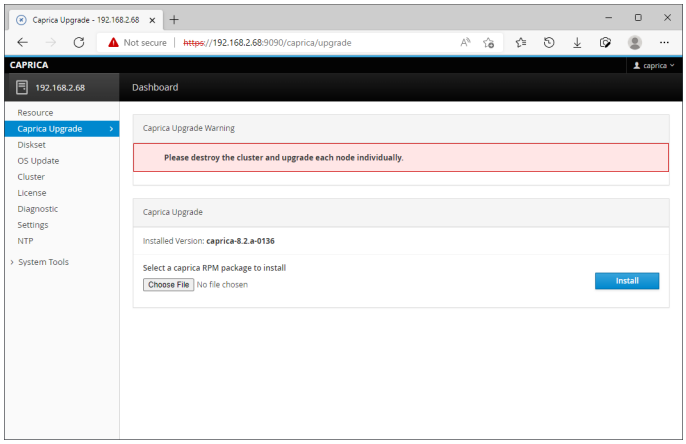
Caprica Server Software Version

You can use Caprica Cockpit to view the version of Caprica Server software installed on a Caprica Server computer.

To view the Caprica Server software version

1. In the **Caprica Cockpit** tree view, click **Caprica Upgrade**.

   The **Caprica Upgrade** web page opens.



2. In the **Caprica Upgrade** section, use the **Installed Version** field to view the version of Caprica Server software installed on a Caprica Server computer.

Accessing the Caprica Server

To access and configure a Caprica Server, you need to use the DashBoard™ Control System application on a computer that has connectivity to the Caprica Server. You can download the DashBoard application installer from the Ross Video website.

When installing DashBoard for the sole purpose of configuring a Caprica Server, complete the following recommended component selections on the **Choose Components** screen of the DashBoard application installer:

- Select the **DashBoard Framework** box.

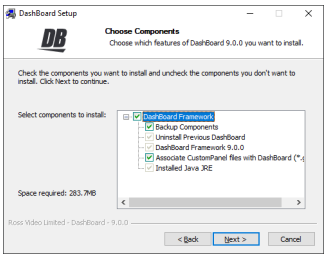


Figure 3.1 DashBoard Application Installer

For More Information on...

- DashBoard application installation or uninstall, refer to the ***DashBoard Control System User Manual*** and the ***DashBoard Online Help*** system.
- DashBoard plug-in updates, refer to the ***DashBoard Control System User Manual*** and the ***DashBoard Online Help*** system.
- where to download the Dashboard application installer, refer to the **Terminal Equipment | openGear | Control & Monitoring | DashBoard** section of the Ross Video website.

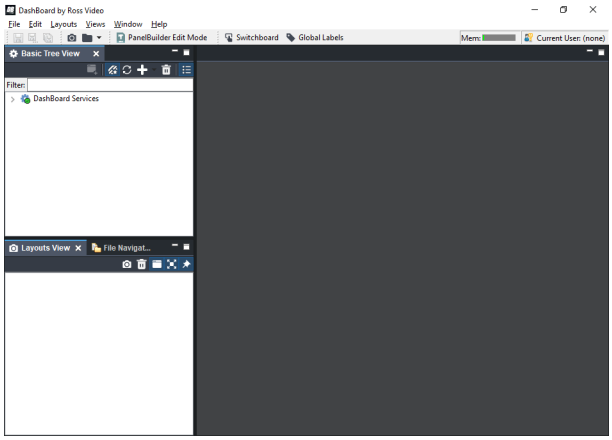
Connecting DashBoard to the Caprica Server

Before you configure a Caprica Server, you must configure the DashBoard application on a Client computer to connect to your Caprica Server.

To connect DashBoard to the Caprica Server

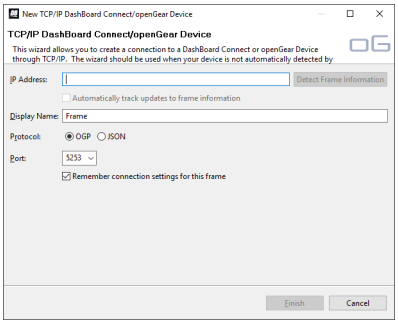
1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

   DashBoard opens.



3. Use the **File** menu to select **New** > **TCP/IP openGear Frame**.

   The **New TCP openGear Frame Connection** dialog box opens.



4. In the **IP Address** box, enter the IP address or hostname of the Caprica Server or Caprica Server Cluster.

   Your Network Administrator can provide you with the IP address or hostname of your Caprica Server or Caprica Server Cluster.

5. In the **Display Name** box, enter a name to describe the Caprica Server.

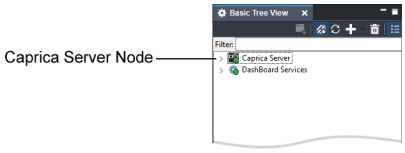
   The DashBoard **Tree View** displays the entered Display Name beside the node associated with the Caprica Server.

6. Use the **Port** list to select **5253** as the port number that the Caprica Server uses to communicate with Dashboard.

7. Select the **Remember connection settings for this frame** check box.

8. Click **Finish**.

   The DashBoard **Tree View** displays a node for the new Caprica Server.

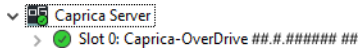


9. Hover the mouse over the **Caprica Server** node to view the following information about the server:

   - IP address of the server
   - Client to server connection status

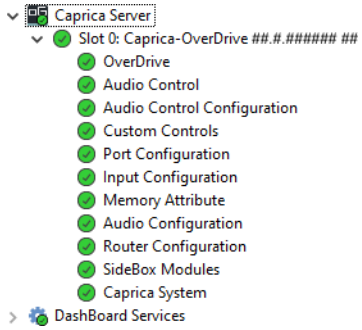
10. In the **DashBoard Tree View**, expand the **Caprica Server** node.

    The **Caprica Server** node displays the available Caprica Servers.



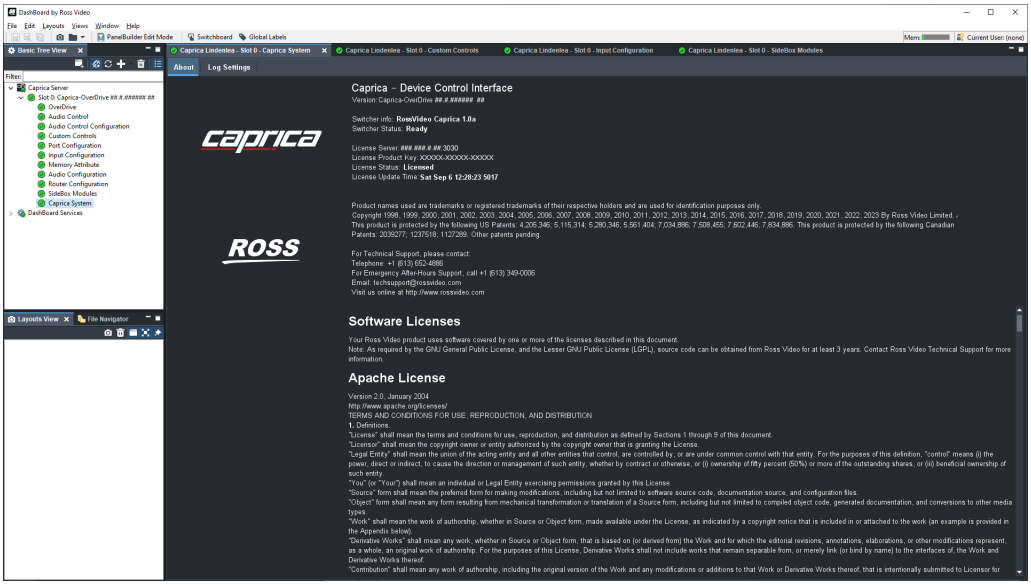
11. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

    The **Slot 0: Caprica** node displays the available Caprica Server clients.



12. Double-click the **Caprica System** node.

    The **About** tab opens in the **Device View** and displays Caprica version, switcher, switcher status, and Caprica license information.



Connection Status

The LED in the lower right corner of a Caprica Server node indicates the current connection status between DashBoard and the Caprica Server. The LED reports the following connection states:

Table 3.1 Caprica Server Connection Status

LED	Status
	A connection exists between DashBoard the Caprica Server.
	DashBoard is trying to establish a connection with the Caprica Server, but there may be a connectivity problem.
	There is no connection between DashBoard the Caprica Server. Check with your IT Department to verify that the Caprica Server is running.

Setting the Severity Level for System Logs

Through the Log Settings tab of the Caprica System node you can configure the severity level for the various logs in which Caprica saves captured communication events and errors. You can set the severity level for each log listed in the Log Setting tab.

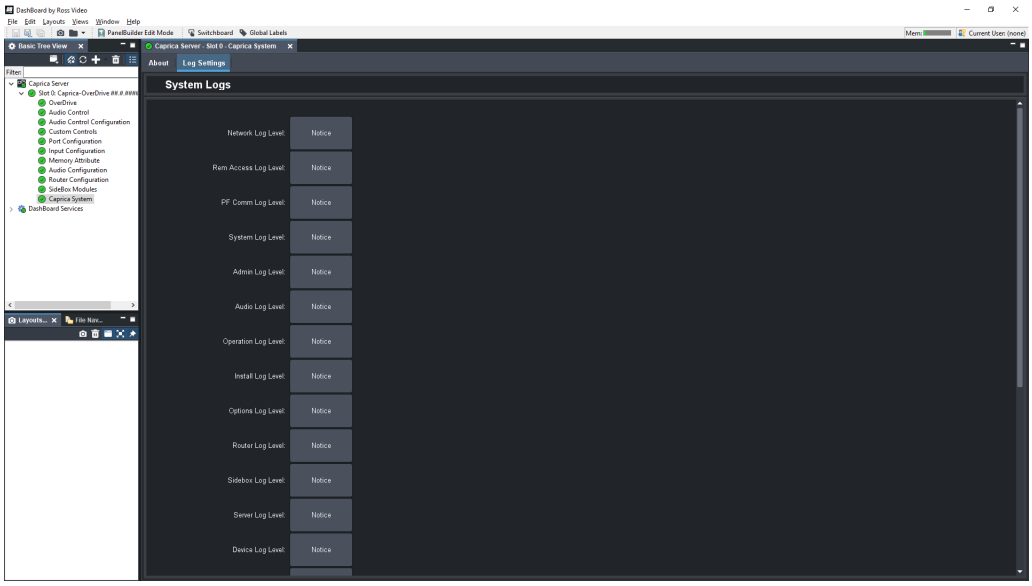
To configure the severity level of a log

1. In the **DashBoard Tree View**, expand the **Caprica Server** node.
2. Double-click the **Caprica System** node.

   The **About** tab opens in the **Device View**.

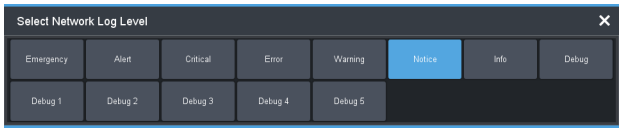
3. Click the **Log Settings** tab.

   The **Log Settings** tab opens.



4. Click the button to the **right** of the **log file** for which to set a severity level.

   The **Select Log Level** dialog box opens for the selected log file.



5. Click the **severity level** to set for the selected log file. The available severity levels are as follows:

   - **Emergency** — system is unusable.
   - **Alert** — action must be taken immediately.
   - **Critical** — critical conditions.
   - **Error** — error conditions.
   - **Warning** — warning conditions.
   - **Notice** — normal but significant conditions. This is the default severity level.
   - **Info** — informational messages.
   - **Debug** — debug messages.
   - **Debug 1 to 5** — debug-level messages 1 to 5.

   The **Select Log Level** dialog box closes and the button to the left of the log file displays the selected severity level.

6. Use **Caprica Cockpit** to view the system log files as follows:

   a. Use a web browser to open **Caprica Cockpit**. The format of the URL is as follows, where `<Caprica Server>` is the hostname or IP address of your **Caprica Server** computer:

      `https://<Caprica Server>:9090`

      If the web browser identifies your connection with Caprica Cockpit as not secure, add an exception for Caprica Cockpit.

b. Use the following credentials to log in to **Caprica Cockpit**:

- **User**: `caprica`
- **Password**: `<your_password>`

c. Click **Log In**.

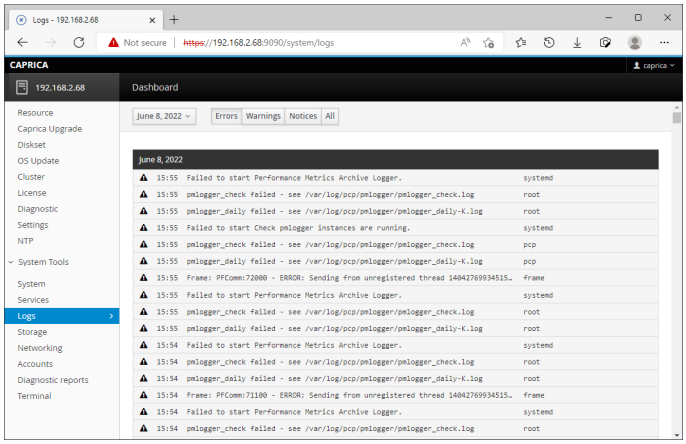
Caprica Cockpit opens.

d. In the tree view, click **System Tools**.

The **System Tools** node expands.

e. In the **System Tools** node, click **Logs**.

The **Logs** web page opens.



f. Use the **Date** menu to change the date of the displayed logs.

g. Click **Errors**, **Warnings**, **Notices**, or **All** to change the severity of the displayed logs.

Cockpit HTTPS Connection

Cockpit enables you to use a web user interface to manage your Caprica Server through a secure HTTPS connection. Cockpit provides a self-signed certificate to enable web browser HTTPS access. Most modern web browsers flag the provided self-signed certificate as unsecured. To guarantee an HTTPS connection between your web browser and Cockpit, Ross Video recommends using a signed certificate.

The steps to set up a signed certificate depend on your web browser platform, your IT policies, and your Certificate Authority (CA). Ross Video recommends using an external CA to simplify certificate creation, deployment, and maintenance. You can also create your own internal CA and sign your own server certificate.

✶ Since each IT department and external CA has unique requirements that cannot be covered in this document, you should gather requirements from your IT department and CA before you proceed with the procedures in this chapter.

Independent of using an internal or external CA, you must create a Certificate Signing Request (CSR) and a private key for each Caprica server in your system. The CA uses the CSR to create a signed certificate. You must copy the signed certificate and private key to the Caprica Server for the Cockpit to use.

✶ Due to the various customer security environments, this chapter provides the basic steps to configure a secure HTTPS connection for Cockpit.

The following topics are discussed in this chapter:

- Creating an Internal Certificate Authority
- Registering Your Certificate Authority with Your Web Browser
- Creating a Certificate Signing Request
- Signing a Server Certificate
- Preparing and Loading a Signed Certificate
- Disabling HTTPS Secure Connections

Creating an Internal Certificate Authority

✶ When you already have a CA on another server, your IT department provides you a CA, or your company uses an external CA, skip this section and continue with the section "**Registering Your Certificate Authority with Your Web Browser**" on page 4–3.

To create an internal Certificate Authority

1. Log in to your **Caprica Server**.
2. Create a folder to store certification files; for example: `ca_files`.
3. Change into your certification files folder.
4. Use a text editor to create a file named `ca.cfg`.
5. Enter the text below it the open `ca.cfg` file. Do not copy and paste the text below into the `ca.cfg` file as this may cause formatting errors in the file.

```
HOME            = .
RANDFILE        = $ENV::HOME/.rnd

[ ca ]
default_ca      = CA_default

[ CA_default ]
default_days     = 1000
default_crl_days = 365
default_md       = sha256
preserve         = no
x509_extensions  = ca_extensions
email_in_dn      = no
copy_extensions  = copy
certificate      = ./cacert.pem
private_key      = ./cakey.pem
new_certs_dir    = .
database         = ./index.txt
serial           = ./serial.txt

[ req ]
prompt  = no
default_keyfile    = cakey.pem
distinguished_name = ca_distinguished_name
x509_extensions    = ca_extensions
string_mask        = utf8only

[ ca_distinguished_name ]
countryName         = <country_name>
stateOrProvinceName = <state_province_name>
localityName        = <city_name>
organizationName    = <company_name>
commonName          = <common_name>
emailAddress        = <email_address>

[ ca_extensions ]
subjectKeyIdentifier   = hash
authorityKeyIdentifier = keyid:always, issuer
basicConstraints       = critical, CA:true
keyUsage               = keyCertSign, cRLSign

[ signing_policy ]
countryName            = optional
stateOrProvinceName    = optional
localityName           = optional
```

```
organizationName       = optional
organizationalUnitName = optional
commonName             = supplied
emailAddress           = optional

[ signing_req ]
subjectKeyIdentifier   = hash
authorityKeyIdentifier = keyid,issuer
basicConstraints       = CA:FALSE
keyUsage               = digitalSignature, keyEncipherment
```

6. In the **[ca_distinguished_name]** section of the `ca.cfg` file, replace the text **<country_name>** with a two-character abbreviation for the country in which your Caprica Server resides.
7. Replace the text **<state_province_name>** with the name of the state or province in which your Caprica Server resides.
8. Replace the text **<city_name>** with the name of the city in which your Caprica Server resides.
9. Replace the text **<company_name>** with the name of the company that owns your Caprica Server.
10. Replace the text **<common_name>** with the host name of your Caprica Server.
11. Replace the text **<email_address>** with the email address for the Caprica Server administrator.
12. Save and close the `ca.cfg` file.
13. In the folder that contains your `ca.cfg` file, run the following command to generate a CA certificate and a corresponding key:

    ```
    openssl req -x509 -config ca.cfg -newkey rsa:4096 -sha256 -out cacert.pem -outform PEM
    ```

14. At the **Enter PEM pass phrase:** prompt, enter a pass phrase for the CA certificate.

✶ Ross Video does not recommend creating a CA without a pass phrase.

The **openssl** command generates a CA certificate named **cacert.pem** and a corresponding key named **cakey.pem**.

Registering Your Certificate Authority with Your Web Browser

After you register a CA with a web browser, the web browser will trust any certificate signed by the CA. When using an internal CA, copy the generated `cacert.pem` file to each client computer that you use to access your Caprica Server.

✶ When your CA is already registered with your web browser, skip this section and continue with the section "**Creating a Certificate Signing Request**" on page 4–4.

The procedure to register a CA with a web browser depends on the following parameters in your work environment:

- Operating system of your computer.
- Web browser software
- Version of web browser software

Please refer to your web browser documentation for information on how to register your CA with your web browser.

Creating a Certificate Signing Request

Before you can generate a signed certificate, you must create Certificate Signing Request (CSR). A CSR contains information specific to the server. The CA also uses the CSR to generate a signed certificate.

- Each CA has different requirements for a CSR. Ross Video recommends checking CSR requirements with your CA provider before proceeding with the procedure in this section

To create a Certificate Signing Request for a Certificate Authority

1. Use a text editor to create a file named `csr.cfg`.
2. Enter the text below it the open `csr.cfg` file. Do not copy and paste the text below into the `csr.cfg` file as this may cause formatting errors in the file.

```
[req]
prompt             = no
default_bits       = 4096
default_md         = sha256
default_keyfile    = serverkey.pem
distinguished_name = dn
req_extensions     = v3_req

[dn]
countryName          = <country_name>
stateOrProvinceName = <state_province_name>
localityName         = <city_name>
organizationName     = <company_name>
commonName           = <common_name>
emailAddress         = <email_address>

[v3_req]
keyUsage = keyEncipherment, dataEncipherment
extendedKeyUsage = serverAuth
subjectAltName = @alt_names

[alt_names]
IP.1 = <IP_Address_NIC_1>   # NIC 1 IP address
IP.2 = <IP_Address_Cluster> # Cluster virtual IP address (OPTIONAL)
IP.3 = <IP_Address_NIC_2>   # NIC 2 IP address (OPTIONAL)
```

3. In the **[dn]** section of the `csr.cfg` file, replace the text **<country_name>** with a two-character abbreviation for the country in which your Caprica Server resides.
4. Replace the text **<state_province_name>** with the name of the state or province in which your Caprica Server resides.
5. Replace the text **<city_name>** with the name of the city in which your Caprica Server resides.
6. Replace the text **<company_name>** with the name of the company that owns your Caprica Server.
7. Replace the text **<common_name>** with the host name of your Caprica Server.
8. Replace the text **<email_address>** with the email address for the Caprica Server administrator.
9. In the **[alt_names]** section, replace the text **<IP_Address_NIC_1>** with the IP address of your Caprica Server NIC 1.
10. Replace the text **<IP_Address_Cluster>** with virtual IP address of your Caprica Server cluster.

- If your Caprica system is not configured as a cluster, delete the **IP.2** alternate name from the `csr.cfg` file.

11. Replace the text **<IP_Address_NIC_2>** with the IP address of your Caprica Server NIC 2.

- If your Caprica system is not configured to use NIC 2, delete the **IP.3** alternate name from the `csr.cfg` file.

12. If you deleted an alternative name from the **[alt_names]** section, rename the alternate name so that they are sequential starting with **IP.1**.
13. Save and close the `csr.cfg` file.
14. In the folder that contains your `csr.cfg` file, run the following command to generate a CSR file:

    ```
    openssl req -config csr.cfg -newkey rsa:4096 -sha256 -nodes -out servercert.csr
    -outform PEM
    ```

    The **openssl** command generates a CSR file named **server.csr** and a corresponding key named **serverkey.pem**.

Signing a Server Certificate

IT Department or External CA

If you use a CA managed by your IT department or an external CA, you must send your CSR file to your IT department or external CA so they can generate a signed certificate for you. Remember to get your IT department or an external CA to return the signed certificate generated from your CSR file to you.

- Cockpit expects signed certificates to be PEM encoded x509 certificates.

In the following sections, the signed certificate is refereed to as the **servercert.pem** file.

Internal CA

If you use your own internal CA, you can generate your own signed certificate.

To generate a signed certificate

1. Before signing your first certificate, complete the following steps to create a CA database:
   a. In the folder that contains your `csr.cfg` file, run the following command to create an empty file named `index.txt`:

      ```
      touch index.txt
      ```

      The **openssl** command updates the `index.txt` file every time you sign a certificate.
   b. Run the following command to create a file named `serial.txt` containing a value of `01`.

      ```
      echo '01' > serial.txt
      ```

      The `serial.txt` file contains the next available serial number in hex, which the **openssl** command updates every time you sign a certificate.

   With the CA database created, you are ready to sign certificates.
2. In the folder that contains your server.csr, index.txt, and serial.txt files, run the following command to sign your certificate:

   ```
   openssl ca -config ca.cfg -policy signing_policy -extensions signing_req -out
   servercert.pem -infiles server.csr
   ```
3. At the **Enter pass phrase for /cakey.pem:** prompt, enter the pass phrase you set for your CA certificate in step **14** of the procedure "**To create an internal Certificate Authority**" on page 4–2.
4. At the **Sign the certificate? [y/n]:** prompt, enter `y`.

   The **openssl** command creates a signed certificate file named **servercert.pem**.

Preparing and Loading a Signed Certificate

Your signed certificate `servercert.pem` file and the private key `servercert.pem` file are concatenated to make a `.cert` file. Cockpit loads `.cert` files from the `/etc/cockpit/ws-certs.d` folder on a Caprica Server. When Cockpit loads a certificate, it loads the last file alphabetically with the `.cert` extension.

To prepare and load a signed certificate

1. In your certification files folder, run the following command to create a file named **100-server.cert** and write the contents of your **servercert.pem** to the new file:

   ```
   cat servercert.pem > 100-server.cert
   ```

2. Run the following command to append the content of your **serverkey.pem** file to your **100-server.cert** file:

   ```
   cat serverkey.pem >> 100-server.cert
   ```

3. Run the following command to move your **100-server.cert** file to the **/etc/cockpit/ws-certs.d** folder:

   ```
   sudo mv 100-server.cert /etc/cockpit/ws-certs.d/100-server.cert
   ```

4. Run the following command to restart Cockpit and load your signed certificate:

   ```
   sudo systemctl restart cockpit
   ```

Disabling HTTPS Secure Connections

It is possible to disable HTTPS secure connections for your Caprica system. You should only disable HTTPS secure connections on a segregated network that is not accessible from the internet.

✶ Ross Video does not recommend disabling HTTPS secure connections for your Caprica system.

To disable HTTPS secure connections for your Caprica system

1. Log in to your **Caprica Server**.
2. Change into the `/etc/cockpit/` folder.
3. Use a text editor to create a file named `cockpit.conf`.
4. Enter the following text in the open `cockpit.conf` file:

   ```
   [WebService]
   AllowUnencrypted = true
   ```

5. Save and close the `cockpit.conf` file.
6. Run the following command to restart Cockpit:

   ```
   sudo systemctl restart cockpit
   ```

Carbonite Ultra Setup for Quorum

This chapter provides instructions for connecting a Quorum system with a Ross Video Carbonite Ultra switcher through a Caprica Server.

The following topics are discussed in this chapter:

- Quorum System Setup
- Quorum System Connections
- Configuring a Switcher Device for a Carbonite Ultra Switcher
- Connecting Quorum to Your Caprica Server
- Configuring Your Caprica Server

Quorum System Setup

To setup a Quorum system with a Carbonite Ultra switcher, complete the following:

- Connect the Quorum system components together.
  Refer to the section "**Quorum System Connections**" on page 5–2.
- On the Caprica Server, create a Switcher device for your Carbonite Ultra switcher.
  Refer to the section "**Configuring a Switcher Device for a Carbonite Ultra Switcher**" on page 5–3.
- Configure the Quorum Server to connect to the Caprica Server.
  Refer to the section "**Connecting Quorum to Your Caprica Server**" on page 5–7.

Quorum System Connections

In a Quorum system, a Carbonite Ultra switcher connects to the Quorum Server through a Caprica Server. The following diagram (**Figure 5.1**) illustrates the cabling layout of the Carbonite Ultra switcher connection to a Quorum system.

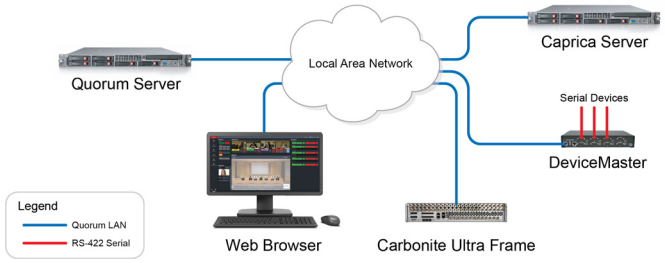


Figure 5.1 Quorum System Connection to a Carbonite Ultra Switcher

The following Quorum system components connect through the internal network of your company:

- Quorum Server
- Caprica Server
- DeviceMaster for serial device connections
- Carbonite Ultra Frame and Panel

Cabling to connect to Quorum system components an internal network is not provided with Quorum systems.

To connect a Carbonite Ultra switcher to a Quorum system

1. Verify that the **Quorum Server** is connected to your internal network through Ethernet port **1** on the back of the server.
2. Verify that the **Caprica Server** is connected to your internal network.
3. Use an **Ethernet** cable to connect the DeviceMaster **UP** port to your internal network.
4. Use an **Ethernet** cable to connect the Carbonite Ultra Frame to your internal network.
5. Use an **Ethernet** cable to connect the Carbonite Ultra Panel to your internal network.

Quorum Server Peripheral Connections

The Quorum system comes with a USB Keyboard that can be connected to a USB port on the Quorum computer.

✶ USB/KVM extenders can interfere with Quorum system operation and are not supported for use with Quorum client computers. Place Quorum client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Touch-screen monitors may be purchased as an option to provide a dual-monitor display. Contact your Ross Video representative for more information on this option.

✶ For DELL Quorum computers, connect the primary monitor to plug number 1 on the Y break-out cable attached to the back of the computer to ensure that the primary monitor is used for the POST and the operating system.

For More Information on...

- cabling a Quorum Server, refer to the ***Cabling Your Quorum Server Quick Start Guide***.
- cabling a Caprica Server, refer to the ***Cabling Your Caprica Server Quick Start Guide***.
- cabling a Carbonite Ultra switcher, refer to the switcher setup documentation supplied with your switcher.

Configuring a Switcher Device for a Carbonite Ultra Switcher

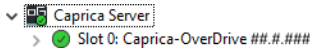
The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite Ultra switcher in a Quorum system.

To configure the SWITCHER1 device for a Carbonite Ultra switcher

1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

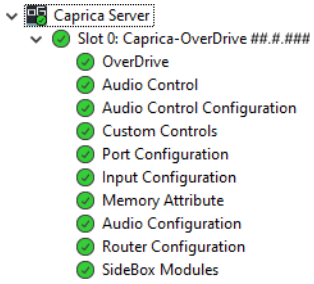
   DashBoard opens.
3. In the **DashBoard Tree View**, expand the **Caprica Server** node.

   The **Caprica Server** node displays the available Caprica Servers.



4. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

   The **Slot 0: Caprica** node displays the available Caprica Server clients.



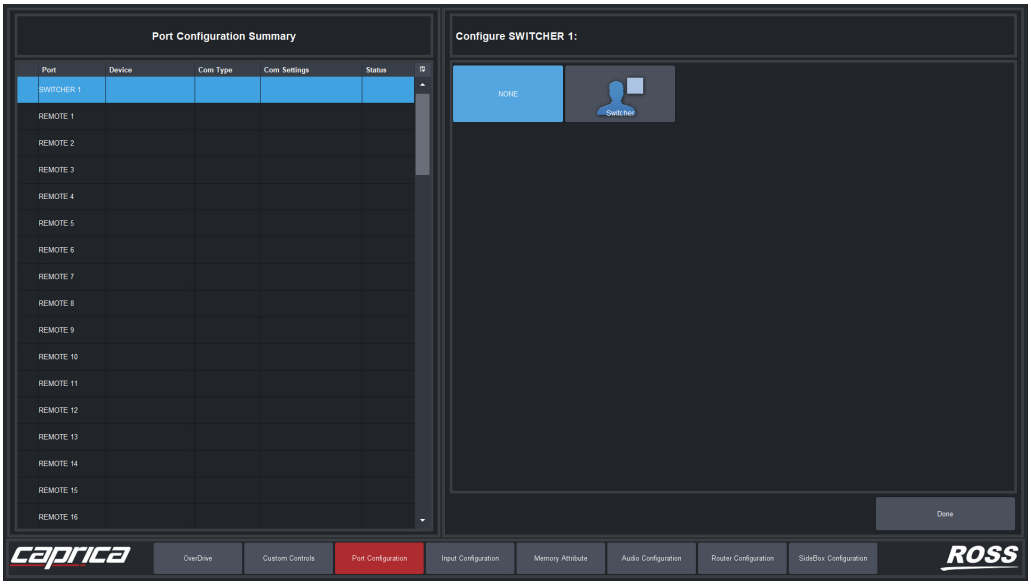
5. Double-click the **Port Configuration** node.

   The **Port Configuration** client opens in the **Device View**.
6. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.

7. In the **Port Configuration Summary** table, double-click **SWITCHER1** in the **Port** column.

   The **Configure SWITCHER1** panel opens.



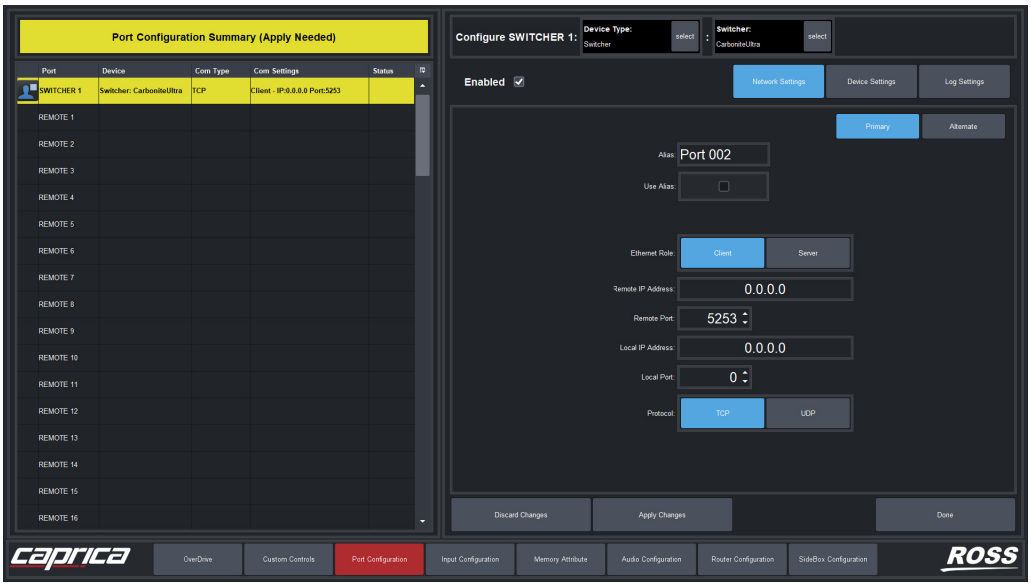
   The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite Ultra switcher in a Quorum system.

8. In the **Configure SWITCHER1** panel, click **Switcher**.

   The **Configure SWITCHER1** panel lists the available switchers.

9. Click **CarboniteUltra**.

   The **Configure SWITCHER1** panel displays the **Network Settings** for a Carbonite Ultra switcher.



10. To enable Caprica to control the device you are configuring, confirm that the **Enable** check box is selected for the device. When you clear the **Enable** check box for a device, Caprica ignores and does not control the device.

11. To set a custom name for the remote port, complete the following steps:

    a. In the **Alias** box, enter a custom name for the remote port.

    b. Select the **Use Alias** check box.

    The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

    To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

12. For the **Ethernet Role** setting, click **Client**.

13. In the **Remote IP Address** box, enter the IP address of your Carbonite Ultra switcher.

14. Use the **Remote Port** box to enter or select `5253`.

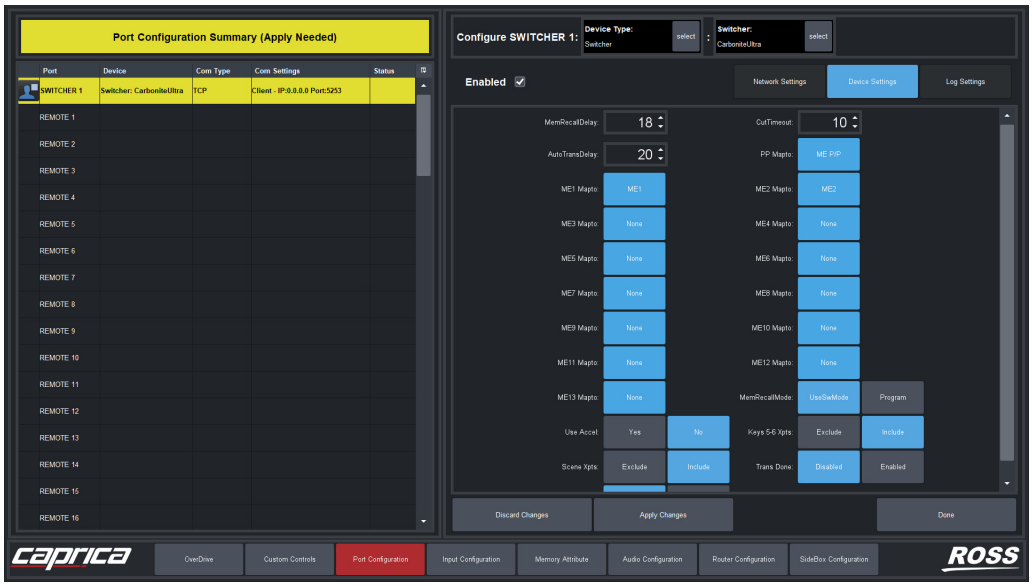
15. In the **Local IP Address** box, enter `0.0.0.0`.

16. Use the **Local Port** box to enter or select `0`.

17. For the **Protocol** setting, click **TCP**.

18. Click **Device Settings**.

    The **Configure SWITCHER1** panel displays the **Device Settings** for a Carbonite Ultra switcher.



19. Use the **MemRecallDelay** box to enter or select the number of fields to wait after a memory recall until everything is “settled”, the memory recall is officially over, and OverDrive can continue.

20. Use the **CutTimeout** box to enter or select the number of frames to wait after a Cut transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

21. Use the **AutoTransDelay** box to enter or select the number of frames to wait after an AutoTrans transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

22. Click **PP Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to the Program bus in Caprica.

    When using a MiniME as Program/Preset, Ross Video recommends that you use the highest numbered MiniME to avoid re-entry conflicts and errors. Using a lower numbered MiniME as Program/Preset may hinder Quorum taking multi-layered shots on air.

23. Click **ME1 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME1 in Caprica.
24. Click **ME2 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME2 in Caprica.
25. Click **ME3 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME3 in Caprica.
26. Click **ME4 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME4 in Caprica.
27. Click **ME5 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME5 in Caprica.
28. Click **ME6 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME6 in Caprica.
29. Click **ME7 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME7 in Caprica.
30. Click **ME8 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME8 in Caprica.
31. Click **ME9 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME9 in Caprica.
32. Click **ME10 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME10 in Caprica.
33. Click **ME11 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME1 in Caprica.
34. Click **ME12 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME12 in Caprica.
35. Click **ME13 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra switcher to map to ME13 in Caprica.
36. Use the **MemRecallMode** buttons to set memory recall method to use. The available settings are as follows:
    - **UseSwMode** — use the memory recall mode set on the switcher to execute memory recalls.
    - **Program** — use the Program memory recall mode to execute memory recalls.
37. Use the **Use Accel** buttons to control the use of an experimental feature to improve communication performance between your Carbonite Ultra switcher and Caprica Server. The available settings are as follows:
    - **Yes** — use this experiment feature.
    - **No** — do not use this experiment feature.
38. Use the **Keys 5-6 Xpts** buttons to prevent virtual inputs from shifting after updating a Carbonite Ultra switcher to version 7.0 or greater. The available settings are as follows:
    - **Exclude** — use this setting to maintain virtual input positions after upgrading a Carbonite Ultra switcher to version 7.0 or greater. Using this setting maintains virtual input positions for Custom Controls created on Carbonite Ultra versions before version 7.0.
    - **Include** — use this setting to shift virtual inputs after updating a Carbonite Ultra switcher to version 7.0 or greater. Custom Controls that use virtual inputs and were created on Carbonite Ultra versions before version 7.0 may not work properly with this setting.

39. Use the **Scene Xpts** buttons to prevent virtual inputs from shifting after updating a Carbonite Ultra switcher to version 7.0 or greater. The available settings are as follows:

    - **Exclude** — use this setting to maintain virtual input positions after upgrading a Carbonite Ultra switcher to version 7.0 or greater. Using this setting maintains virtual input positions for Custom Controls created for Carbonite Ultra versions before version 7.0.
    - **Include** — use this setting to shift virtual inputs after updating a Carbonite Ultra switcher to version 7.0 or greater. Custom Controls that use virtual inputs and were created for Carbonite Ultra versions before version 7.0 may not work properly with this setting.

40. Use the **Trans Done** buttons to set the switcher response to transitions. The available settings are as follows:

    - **Disabled** — select this option when your switcher does not support this functionality.
    - **Enabled** — for switchers that support this functionality, select this option speed up the switcher response to transitions. This option makes OverDrive operation more reliable.

41. Use the **MemRecallDone** buttons to set the switcher response to memory recalls. The available settings are as follows:

    - **Disabled** — select this option when your switcher does not support this functionality.
    - **Enabled** — for switchers that support this functionality, select this option speed up the switcher response to memory recalls. This option makes OverDrive operation more reliable.

42. Click **Apply Changes** to save the switcher settings.

43. Click **Done** to close the **Configure SWITCHER1** panel.

Connecting Quorum to Your Caprica Server

In Quorum, you use the Server Configuration web page to configure the Quorum Server to communicate with the Quorum system switcher through the Caprica Server. To configure a Quorum Server to connect to a Caprica Server, refer to the section "**Configuring Caprica Communication Settings**" of the ***Quorum Installation and Configuration Guide***.

Configuring Your Caprica Server

After configuring a Caprica device for your switcher, configure the following on your Caprica Server:

- Devices connected to your Quorum system
- Inputs to your Quorum system
- Audio channel names displayed in Quorum
- Switcher Custom Controls available in Quorum

To complete the configuration of your Caprica Server, refer to the chapter "**Caprica Server Configuration**" on page 19–1.

Carbonite Ultra 60 Setup for Quorum

This chapter provides instructions for connecting a Quorum system with a Ross Video Carbonite Ultra 60 switcher through a Caprica Server.

The following topics are discussed in this chapter:

- Quorum System Setup
- Quorum System Connections
- Configuring a Switcher Device for a Carbonite Ultra 60 Switcher
- Connecting Quorum to Your Caprica Server
- Configuring Your Caprica Server

Quorum System Setup

To setup a Quorum system with a Carbonite Ultra 60 switcher, complete the following:

- Connect the Quorum system components together.
  Refer to the section "**Quorum System Connections**" on page 6–2.
- On the Caprica Server, create a Switcher device for your Carbonite Ultra 60 switcher.
  Refer to the section "**Configuring a Switcher Device for a Carbonite Ultra 60 Switcher**" on page 6–3.
- Configure the Quorum Server to connect to the Caprica Server.
  Refer to the section "**Connecting Quorum to Your Caprica Server**" on page 6–7.

Quorum System Connections

In a Quorum system, a Carbonite Ultra 60 switcher connects to the Quorum Server through a Caprica Server. The following diagram (**Figure 6.1**) illustrates the cabling layout of the Carbonite Ultra 60 switcher connection to a Quorum system.

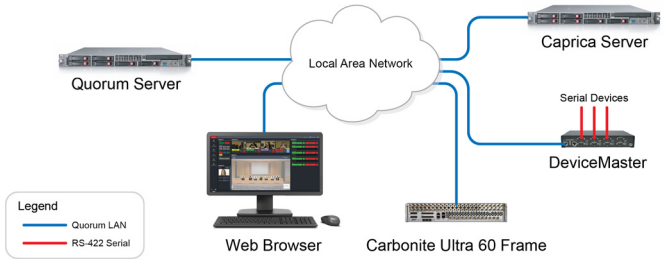


Figure 6.1 Quorum System Connection to a Carbonite Ultra 60 Switcher

The following Quorum system components connect through the internal network of your company:

- Quorum Server
- Caprica Server
- DeviceMaster for serial device connections
- Carbonite Ultra 60 Frame and Panel

Cabling to connect to Quorum system components an internal network is not provided with Quorum systems.

To connect a Carbonite Ultra 60 switcher to a Quorum system

1. Verify that the **Quorum Server** is connected to your internal network through Ethernet port **1** on the back of the server.
2. Verify that the **Caprica Server** is connected to your internal network.
3. Use an **Ethernet** cable to connect the DeviceMaster **UP** port to your internal network.
4. Use an **Ethernet** cable to connect the Carbonite Ultra 60 Frame to your internal network.
5. Use an **Ethernet** cable to connect the Carbonite Ultra 60 Panel to your internal network.

Quorum Server Peripheral Connections

The Quorum system comes with a USB Keyboard that can be connected to a USB port on the Quorum computer.

✶ USB/KVM extenders can interfere with Quorum system operation and are not supported for use with Quorum client computers. Place Quorum client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Touch-screen monitors may be purchased as an option to provide a dual-monitor display. Contact your Ross Video representative for more information on this option.

✶ For DELL Quorum computers, connect the primary monitor to plug number 1 on the Y break-out cable attached to the back of the computer to ensure that the primary monitor is used for the POST and the operating system.

For More Information on...

- cabling a Quorum Server, refer to the ***Cabling Your Quorum Server Quick Start Guide***.
- cabling a Caprica Server, refer to the ***Cabling Your Caprica Server Quick Start Guide***.
- cabling a Carbonite Ultra 60 switcher, refer to the switcher setup documentation supplied with your switcher.

Configuring a Switcher Device for a Carbonite Ultra 60 Switcher

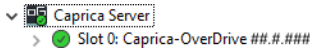
The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite Ultra 60 switcher in a Quorum system.

To configure the SWITCHER1 device for a Carbonite Ultra 60 switcher

1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

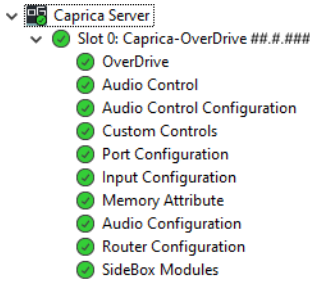
   DashBoard opens.
3. In the **DashBoard Tree View**, expand the **Caprica Server** node.

   The **Caprica Server** node displays the available Caprica Servers.



4. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

   The **Slot 0: Caprica** node displays the available Caprica Server clients.



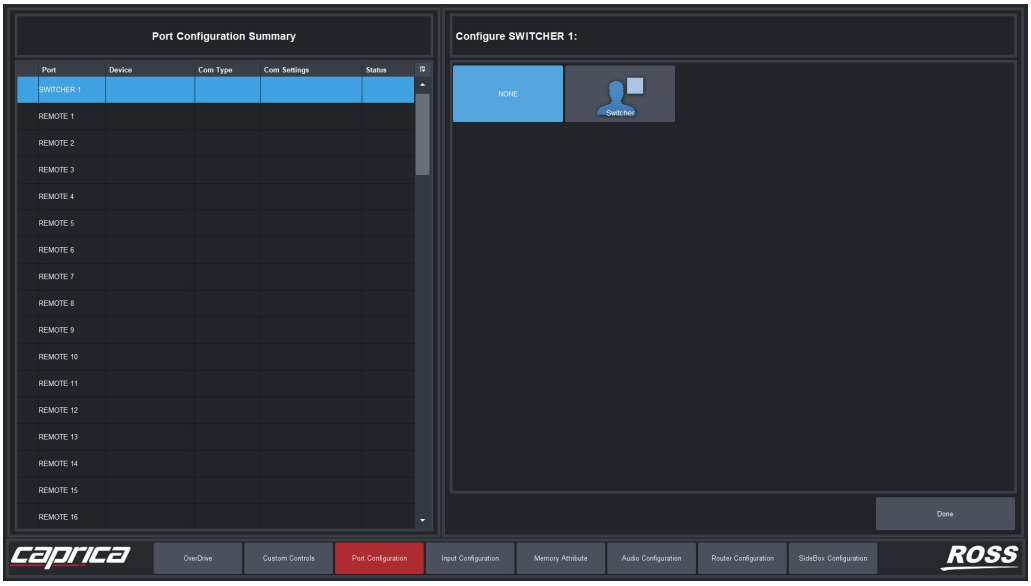
5. Double-click the **Port Configuration** node.

   The **Port Configuration** client opens in the **Device View**.
6. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.

7. In the **Port Configuration Summary** table, double-click **SWITCHER1** in the **Port** column.

   The **Configure SWITCHER1** panel opens.



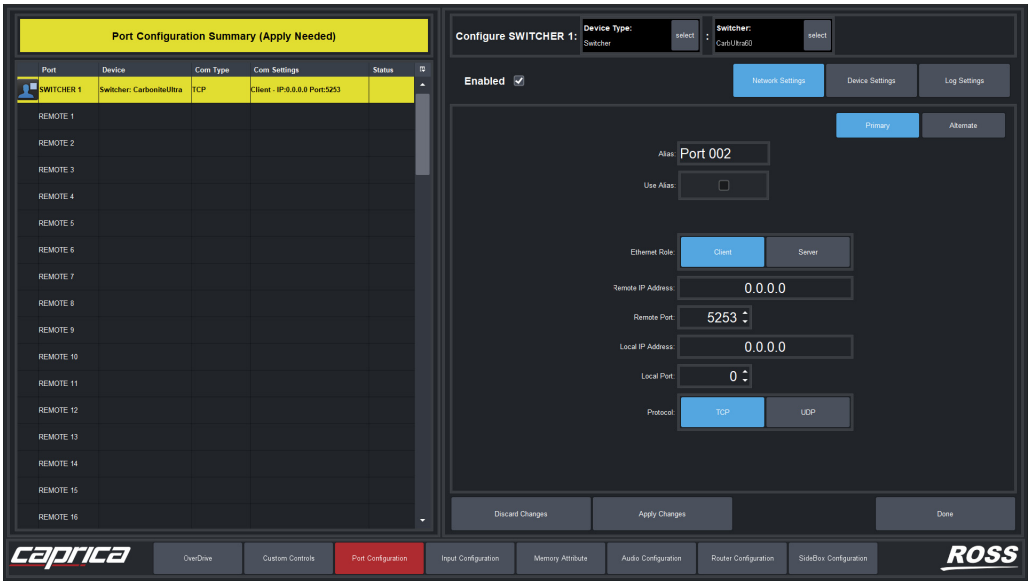
   The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite Ultra 60 switcher in a Quorum system.

8. In the **Configure SWITCHER1** panel, click **Switcher**.

   The **Configure SWITCHER1** panel lists the available switchers.

9. Click **CarbUltra60**.

   The **Configure SWITCHER1** panel displays the **Network Settings** for a Carbonite Ultra 60 switcher.



10. To enable Caprica to control the device you are configuring, confirm that the **Enable** check box is selected for the device. When you clear the **Enable** check box for a device, Caprica ignores and does not control the device.

11. To set a custom name for the remote port, complete the following steps:

    a. In the **Alias** box, enter a custom name for the remote port.

    b. Select the **Use Alias** check box.

    The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

    To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

12. For the **Ethernet Role** setting, click **Client**.

13. In the **Remote IP Address** box, enter the IP address of your Carbonite Ultra 60 switcher.

14. Use the **Remote Port** box to enter or select `5253`.

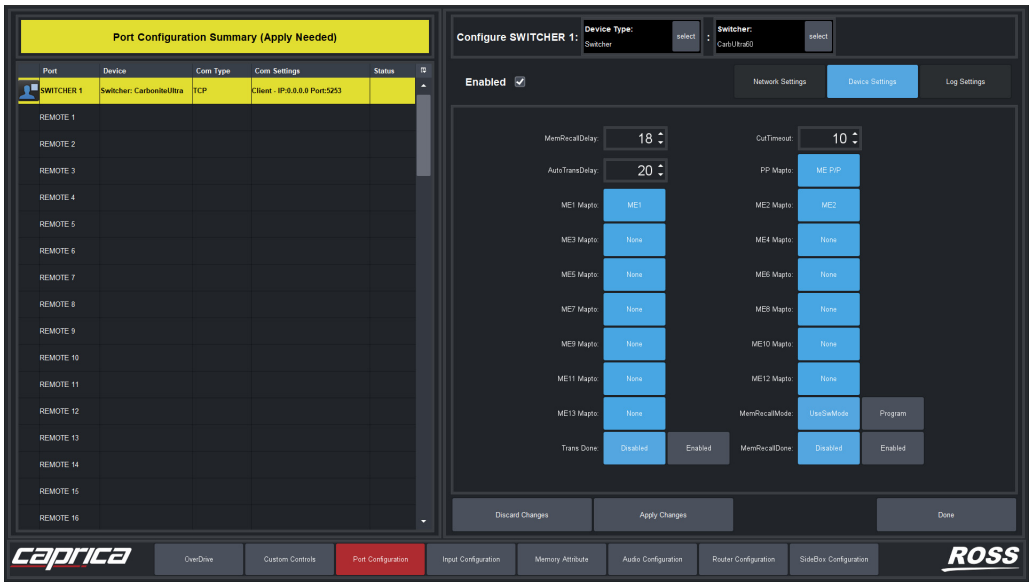
15. In the **Local IP Address** box, enter `0.0.0.0`.

16. Use the **Local Port** box to enter or select `0`.

17. For the **Protocol** setting, click **TCP**.

18. Click **Device Settings**.

    The **Configure SWITCHER1** panel displays the **Device Settings** for a Carbonite Ultra 60 switcher.



19. Use the **MemRecallDelay** box to enter or select the number of fields to wait after a memory recall until everything is “settled”, the memory recall is officially over, and Overdrive can continue.

20. Use the **CutTimeout** box to enter or select the number of frames to wait after a Cut transition until everything is “settled”, the transition is officially over, and Overdrive can continue.

21. Use the **AutoTransDelay** box to enter or select the number of frames to wait after an AutoTrans transition until everything is “settled”, the transition is officially over, and Overdrive can continue.

22. Click **PP Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to the Program bus in Caprica.

    When using a MiniME as Program/Preset, Ross Video recommends that you use the highest numbered MiniME to avoid re-entry conflicts and errors. Using a lower numbered MiniME as Program/Preset may hinder Quorum taking multi-layered shots on air.

23. Click **ME1 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME1 in Caprica.
24. Click **ME2 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME2 in Caprica.
25. Click **ME3 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME3 in Caprica.
26. Click **ME4 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME4 in Caprica.
27. Click **ME5 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME5 in Caprica.
28. Click **ME6 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME6 in Caprica.
29. Click **ME7 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME7 in Caprica.
30. Click **ME8 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME8 in Caprica.
31. Click **ME9 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME9 in Caprica.
32. Click **ME10 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME10 in Caprica.
33. Click **ME11 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME1 in Caprica.
34. Click **ME12 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME12 in Caprica.
35. Click **ME13 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra 60 switcher to map to ME13 in Caprica.
36. Use the **MemRecallMode** buttons to set memory recall method to use. The available settings are as follows:
    - **UseSwMode** — use the memory recall mode set on the switcher to execute memory recalls.
    - **Program** — use the Program memory recall mode to execute memory recalls.
37. Use the **Use Accel** buttons to control the use of an experimental feature to improve communication performance between your Carbonite Ultra 60 switcher and Caprica Server. The available settings are as follows:
    - **Yes** — use this experiment feature.
    - **No** — do not use this experiment feature.
38. Use the **Keys 5-6 Xpts** buttons to prevent virtual inputs from shifting after updating a Carbonite Ultra 60 switcher to version 7.0 or greater. The available settings are as follows:
    - **Exclude** — use this setting to maintain virtual input positions after upgrading a Carbonite Ultra 60 switcher to version 7.0 or greater. Using this setting maintains virtual input positions for Custom Controls created on Carbonite Ultra 60 versions before version 7.0.
    - **Include** — use this setting to shift virtual inputs after updating a Carbonite Ultra 60 switcher to version 7.0 or greater. Custom Controls that use virtual inputs and were created on Carbonite Ultra 60 versions before version 7.0 may not work properly with this setting.

39. Use the **Scene Xpts** buttons to prevent virtual inputs from shifting after updating a Carbonite Ultra 60 switcher to version 7.0 or greater. The available settings are as follows:
    - **Exclude** — use this setting to maintain virtual input positions after upgrading a Carbonite Ultra 60 switcher to version 7.0 or greater. Using this setting maintains virtual input positions for Custom Controls created for Carbonite Ultra 60 versions before version 7.0.
    - **Include** — use this setting to shift virtual inputs after updating a Carbonite Ultra 60 switcher to version 7.0 or greater. Custom Controls that use virtual inputs and were created for Carbonite Ultra 60 versions before version 7.0 may not work properly with this setting.
40. Use the **Trans Done** buttons to set the switcher response to transitions. The available settings are as follows:
    - **Disabled** — select this option when your switcher does not support this functionality.
    - **Enabled** — for switchers that support this functionality, select this option speed up the switcher response to transitions. This option makes OverDrive operation more reliable.
41. Use the **MemRecallDone** buttons to set the switcher response to memory recalls. The available settings are as follows:
    - **Disabled** — select this option when your switcher does not support this functionality.
    - **Enabled** — for switchers that support this functionality, select this option speed up the switcher response to memory recalls. This option makes OverDrive operation more reliable.
42. Click **Apply Changes** to save the switcher settings.
43. Click **Done** to close the **Configure SWITCHER1** panel.

Connecting Quorum to Your Caprica Server

In Quorum, you use the Server Configuration web page to configure the Quorum Server to communicate with the Quorum system switcher through the Caprica Server. To configure a Quorum Server to connect to a Caprica Server, refer to the section "**Configuring Caprica Communication Settings**" of the ***Quorum Installation and Configuration Guide***.

Configuring Your Caprica Server

After configuring a Caprica device for your switcher, configure the following on your Caprica Server:

- Devices connected to your Quorum system
- Inputs to your Quorum system
- Audio channel names displayed in Quorum
- Switcher custom controls available in Quorum

To complete the configuration of your Caprica Server, refer to the chapter "**Caprica Server Configuration**" on page 19–1.

Carbonite Ultra Solo Setup for Quorum

This chapter provides instructions for connecting a Quorum system with a Ross Video Carbonite Ultra Solo switcher through a Caprica Server.

The following topics are discussed in this chapter:

- Quorum System Setup
- Quorum System Connections
- Configuring a Switcher Device for a Carbonite Ultra Solo Switcher
- Connecting Quorum to Your Caprica Server
- Configuring Your Caprica Server

Quorum System Setup

To setup a Quorum system with a Carbonite Ultra Solo switcher, complete the following:

- Connect the Quorum system components together.
  Refer to the section "**Quorum System Connections**" on page 7–2.
- On the Caprica Server, create a Switcher device for your Carbonite Ultra Solo switcher.
  Refer to the section "**Configuring a Switcher Device for a Carbonite Ultra Solo Switcher**" on page 7–3.
- Configure the Quorum Server to connect to the Caprica Server.
  Refer to the section "**Connecting Quorum to Your Caprica Server**" on page 7–6.

Quorum System Connections

In a Quorum system, a Carbonite Ultra Solo switcher connects to the Quorum Server through a Caprica Server. The following diagram (**Figure 7.1**) illustrates the cabling layout of the Carbonite Ultra Solo switcher connection to a Quorum system.

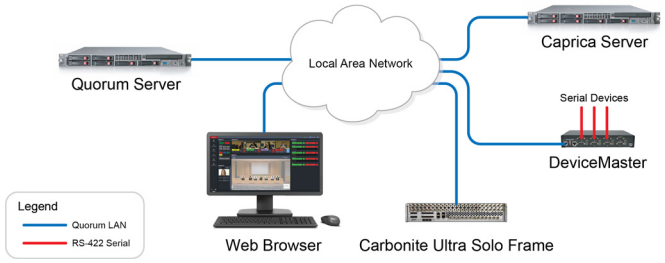


Figure 7.1 Quorum System Connection to a Carbonite Ultra Solo Switcher

The following Quorum system components connect through the internal network of your company:

- Quorum Server
- Caprica Server
- DeviceMaster for serial device connections
- Carbonite Ultra Solo Frame and Panel

Cabling to connect to Quorum system components an internal network is not provided with Quorum systems.

To connect a Carbonite Ultra Solo switcher to a Quorum system

1. Verify that the **Quorum Server** is connected to your internal network through Ethernet port **1** on the back of the server.
2. Verify that the **Caprica Server** is connected to your internal network.
3. Use an **Ethernet** cable to connect the DeviceMaster **UP** port to your internal network.
4. Use an **Ethernet** cable to connect the Carbonite Ultra Solo Frame to your internal network.
5. Use an **Ethernet** cable to connect the Carbonite Ultra Solo Panel to your internal network.

Quorum Server Peripheral Connections

The Quorum system comes with a USB Keyboard that can be connected to a USB port on the Quorum computer.

✶ USB/KVM extenders can interfere with Quorum system operation and are not supported for use with Quorum client computers. Place Quorum client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Touch-screen monitors may be purchased as an option to provide a dual-monitor display. Contact your Ross Video representative for more information on this option.

✶ For DELL Quorum computers, connect the primary monitor to plug number 1 on the Y break-out cable attached to the back of the computer to ensure that the primary monitor is used for the POST and the operating system.

For More Information on...

- cabling a Quorum Server, refer to the ***Cabling Your Quorum Server Quick Start Guide***.
- cabling a Caprica Server, refer to the ***Cabling Your Caprica Server Quick Start Guide***.
- cabling a Carbonite Ultra Solo switcher, refer to the switcher setup documentation supplied with your switcher.

Configuring a Switcher Device for a Carbonite Ultra Solo Switcher

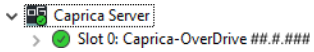
The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite Ultra Solo switcher in a Quorum system.

To configure the SWITCHER1 device for a Carbonite Ultra Solo switcher

1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

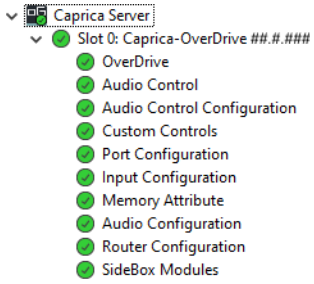
   DashBoard opens.
3. In the **DashBoard Tree View**, expand the **Caprica Server** node.

   The **Caprica Server** node displays the available Caprica Servers.



4. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

   The **Slot 0: Caprica** node displays the available Caprica Server clients.



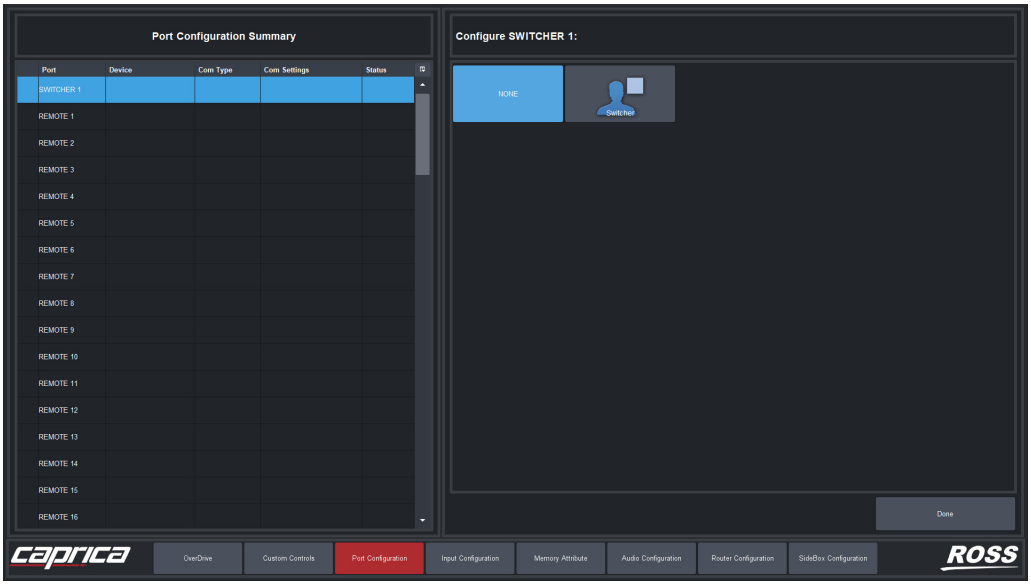
5. Double-click the **Port Configuration** node.

   The **Port Configuration** client opens in the **Device View**.
6. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.

7. In the **Port Configuration Summary** table, double-click **SWITCHER1** in the **Port** column.

   The **Configure SWITCHER1** panel opens.



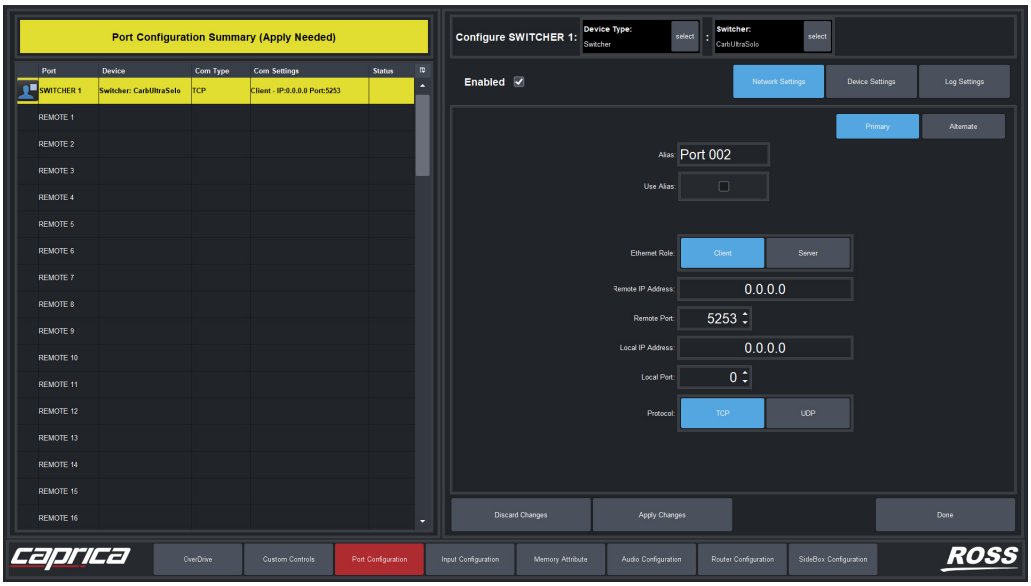
   The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite Ultra Solo switcher in a Quorum system.

8. In the **Configure SWITCHER1** panel, click **Switcher**.

   The **Configure SWITCHER1** panel lists the available switchers.

9. Click **CarbBlackSolo**.

   The **Configure SWITCHER1** panel displays the **Network Settings** for a Carbonite Ultra Solo switcher.



10. To enable Caprica to control the device you are configuring, confirm that the **Enable** check box is selected for the device. When you clear the **Enable** check box for a device, Caprica ignores and does not control the device.

11. To set a custom name for the remote port, complete the following steps:

    a. In the **Alias** box, enter a custom name for the remote port.

    b. Select the **Use Alias** check box.

    The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

    To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

12. For the **Ethernet Role** setting, click **Client**.

13. In the **Remote IP Address** box, enter the IP address of your Carbonite Ultra Solo switcher.

14. Use the **Remote Port** box to enter or select `5253`.

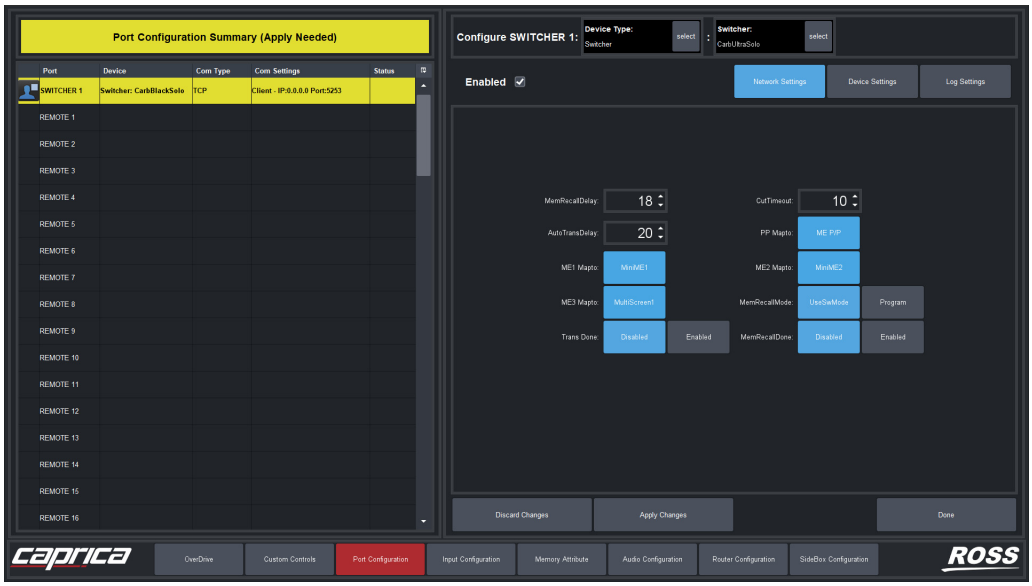
15. In the **Local IP Address** box, enter `0.0.0.0`.

16. Use the **Local Port** box to enter or select `0`.

17. For the **Protocol** setting, click **TCP**.

18. Click **Device Settings**.

    The **Configure SWITCHER1** panel displays the **Device Settings** for a Carbonite Ultra Solo switcher.



19. Use the **MemRecallDelay** box to enter or select the number of fields to wait after a memory recall until everything is “settled”, the memory recall is officially over, and OverDrive can continue.

20. Use the **CutTimeout** box to enter or select the number of frames to wait after a Cut transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

21. Use the **AutoTransDelay** box to enter or select the number of frames to wait after an AutoTrans transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

22. Click **PP Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra Solo switcher to map to the Program bus in Caprica.

    When using a MiniME as Program/Preset, Ross Video recommends that you use the highest numbered MiniME to avoid re-entry conflicts and errors. Using a lower numbered MiniME as Program/Preset may hinder Quorum taking multi-layered shots on air.

23. Click **ME1 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra Solo switcher to map to ME1 in Caprica.
24. Click **ME2 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra Solo switcher to map to ME2 in Caprica.
25. Click **ME3 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Ultra Solo switcher to map to ME3 in Caprica.
26. Use the **MemRecallMode** buttons to set memory recall method to use. The available settings are as follows:
    - **UseSwMode** — use the memory recall mode set on the switcher to execute memory recalls.
    - **Program** — use the Program memory recall mode to execute memory recalls.
27. Use the **Trans Done** buttons to set the switcher response to transitions. The available settings are as follows:
    - **Disabled** — select this option when your switcher does not support this functionality.
    - **Enabled** — for switchers that support this functionality, select this option speed up the switcher response to transitions. This option makes OverDrive operation more reliable.
28. Use the **MemRecallDone** buttons to set the switcher response to memory recalls. The available settings are as follows:
    - **Disabled** — select this option when your switcher does not support this functionality.
    - **Enabled** — for switchers that support this functionality, select this option speed up the switcher response to memory recalls. This option makes OverDrive operation more reliable.
29. Click **Apply Changes** to save the switcher settings.
30. Click **Done** to close the **Configure SWITCHER1** panel.

Connecting Quorum to Your Caprica Server

In Quorum, you use the Server Configuration web page to configure the Quorum Server to communicate with the Quorum system switcher through the Caprica Server. To configure a Quorum Server to connect to a Caprica Server, refer to the section "**Configuring Caprica Communication Settings**" of the ***Quorum Installation and Configuration Guide***.

Configuring Your Caprica Server

After configuring a Caprica device for your switcher, configure the following on your Caprica Server:

- Devices connected to your Quorum system
- Inputs to your Quorum system
- Audio channel names displayed in Quorum
- Switcher Custom Controls available in Quorum

To complete the configuration of your Caprica Server, refer to the chapter "**Caprica Server Configuration**" on page 19–1.

Carbonite Code Setup for Quorum

This chapter provides instructions for connecting an Quorum system with a Ross Video Carbonite Code switcher through a Caprica Server.

The following topics are discussed in this chapter:

- LimitationsQuorum System Setup
- Quorum System Connections
- Configuring a Switcher Device for a Carbonite Code Switcher
- Connecting Quorum to Your Caprica Server
- Configuring Your Caprica Server

Limitations

The following limitations apply to an Quorum system configured with a Carbonite Code switcher connected to the Quorum system through a Caprica Server:

- The Fade To Black transition in Overdrive does not function. You can use the RossTalk FTB command or a GPI to make a Carbonite Code switcher fade to and from black.
- You can not fully control your production system through the Carbonite Code panel or DashBoard UI.
- When using a MiniME as Program/Preset, Ross Video recommends that you use the highest numbered MiniME to avoid re-entry conflicts and errors. Using a lower numbered MiniME as Program/Preset may hinder Quorum taking multi-layered shots on air.

Quorum System Setup

To setup an Quorum system with a Carbonite Code switcher, complete the following:

- Connect the Quorum system components together.
  Refer to the section "**Quorum System Connections**" on page 8–2.
- On the Caprica Server, create a Switcher device for your Carbonite Code switcher.
  Refer to the section "**Configuring a Switcher Device for a Carbonite Code Switcher**" on page 8–3.
- Configure the Quorum Server to connect to the Caprica Server.
  Refer to the section "**Connecting Quorum to Your Caprica Server**" on page 8–7.

Quorum System Connections

In an Quorum system, a Carbonite Code switcher connects to the Quorum Server through a Caprica Server. The following diagram (**Figure 8.1**) illustrates the cabling layout of the Carbonite Code switcher connection to an Quorum system.

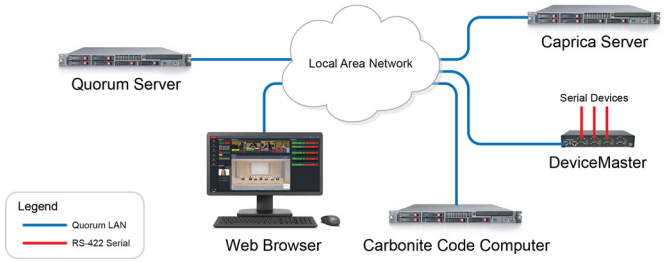


Figure 8.1 Quorum System Connection to a Carbonite Code Switcher

The following Quorum system components connect through the internal network of your company:

- Quorum Server
- Caprica Server
- DeviceMaster for serial device connections
- Carbonite Code Frame and Panel

Cabling to connect to Quorum system components an internal network is not provided with Quorum systems.

To connect a Carbonite Code switcher to an Quorum system

1. Verify that the **Quorum Server** is connected to your internal network through Ethernet port **1** on the back of the server.
2. Verify that the **Caprica Server** is connected to your internal network.
3. Use an **Ethernet** cable to connect the DeviceMaster **UP** port to your internal network.
4. Use an **Ethernet** cable to connect the Carbonite Code computer to your internal network.
5. Use an **Ethernet** cable to connect the Carbonite Code SoftPanel to your internal network.

Quorum Server Peripheral Connections

The Quorum system comes with a USB Keyboard that can be connected to a USB port on the Quorum computer.

- USB/KVM extenders can interfere with Quorum system operation and are not supported for use with Quorum client computers. Place Quorum client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Touch-screen monitors may be purchased as an option to provide a dual-monitor display. Contact your Ross Video representative for more information on this option.

- For DELL Quorum computers, connect the primary monitor to plug number 1 on the Y break-out cable attached to the back of the computer to ensure that the primary monitor is used for the POST and the operating system.

For More Information on...

- cabling an Quorum Server, refer to the ***Cabling Your Quorum Server Quick Start Guide***.
- cabling a Caprica Server, refer to the ***Cabling Your Caprica Server Quick Start Guide***.
- cabling a Carbonite Code switcher, refer to the switcher setup documentation supplied with your switcher.

Configuring a Switcher Device for a Carbonite Code Switcher

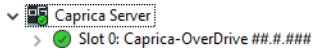
The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite Code switcher in an Quorum system.

To configure the SWITCHER1 device for a Carbonite Code switcher

1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

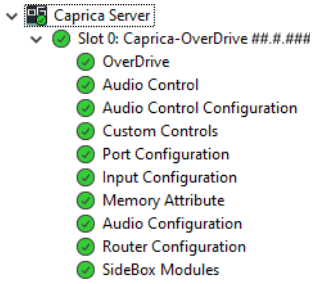
   DashBoard opens.
3. In the **DashBoard Tree View**, expand the **Caprica Server** node.

   The **Caprica Server** node displays the available Caprica Servers.



4. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

   The **Slot 0: Caprica** node displays the available Caprica Server clients.



5. Double-click the **Port Configuration** node.

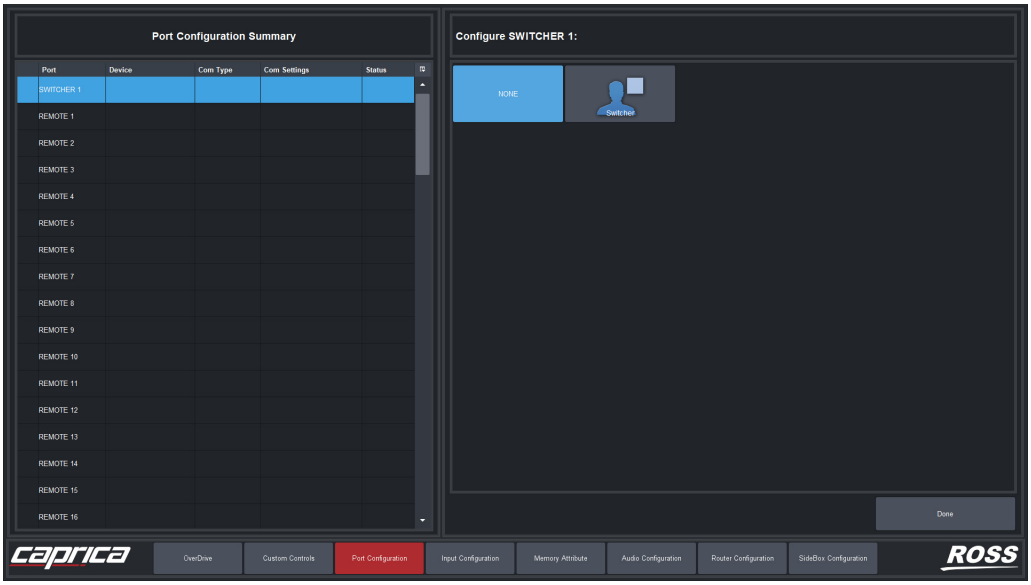
   The **Port Configuration** client opens in the **Device View**.

6. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.

7. In the **Port Configuration Summary** table, double-click **SWITCHER1** in the **Port** column.

   The **Configure SWITCHER1** panel opens.



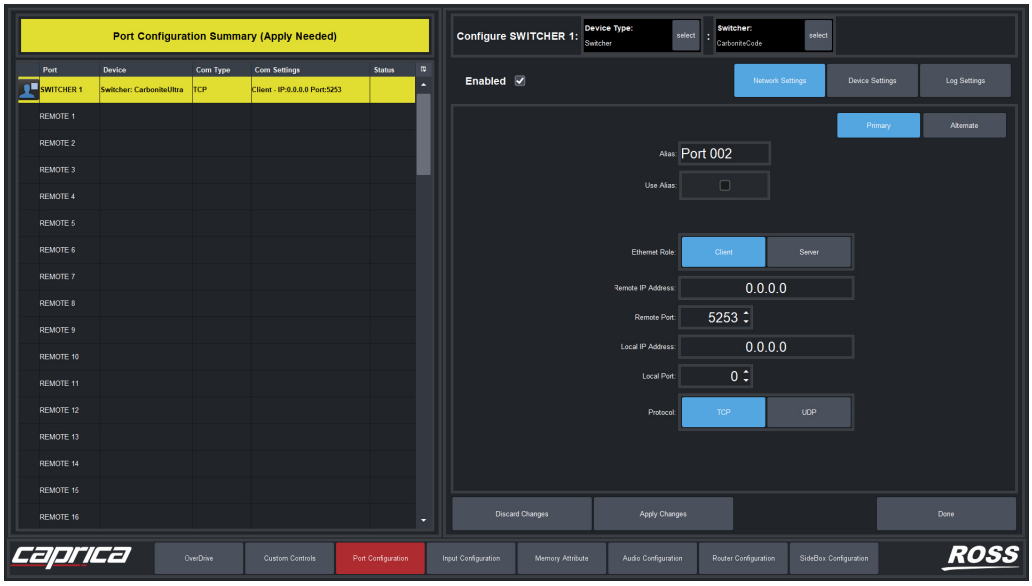
   The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite Code switcher in an Quorum system.

8. In the **Configure SWITCHER1** panel, click **Switcher**.

   The **Configure SWITCHER1** panel lists the available switchers.

9. Click **CarboniteCode**.

   The **Configure SWITCHER1** panel displays the **Network Settings** for a Carbonite Code switcher.



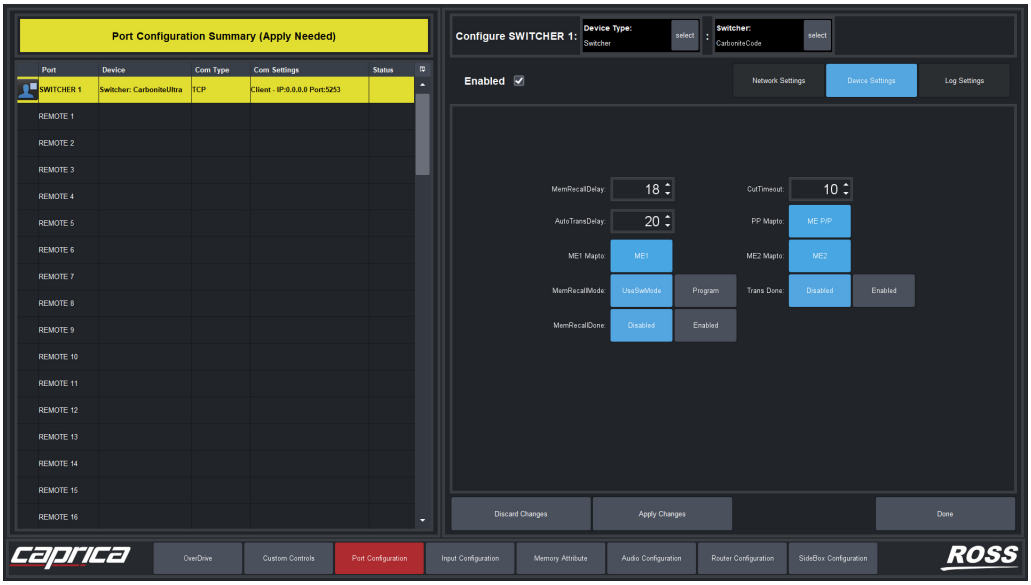
10. To enable Caprica to control the device you are configuring, confirm that the **Enable** check box is selected for the device. When you clear the **Enable** check box for a device, Caprica ignores and does not control the device.
11. To set a custom name for the remote port, complete the following steps:
    a. In the **Alias** box, enter a custom name for the remote port.
    b. Select the **Use Alias** check box.

       The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

       To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.
12. For the **Ethernet Role** setting, click **Client**.
13. In the **Remote IP Address** box, enter the IP address of your Carbonite Code switcher.
14. Use the **Remote Port** box to enter or select `5253`.
15. In the **Local IP Address** box, enter `0.0.0.0`.
16. Use the **Local Port** box to enter or select `0`.
17. For the **Protocol** setting, click **TCP**.

18. Click **Device Settings**.

    The **Configure SWITCHER1** panel displays the **Device Settings** for a Carbonite Code switcher.



19. Use the **MemRecallDelay** box to enter or select the number of fields to wait after a memory recall until everything is “settled”, the memory recall is officially over, and OverDrive can continue.

20. Use the **CutTimeout** box to enter or select the number of frames to wait after a Cut transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

21. Use the **AutoTransDelay** box to enter or select the number of frames to wait after an AutoTrans transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

22. Click **PP Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Code switcher to map to the Program bus in Caprica.

    When using a MiniME as Program/Preset, Ross Video recommends that you use the highest numbered MiniME to avoid re-entry conflicts and errors. Using a lower numbered MiniME as Program/Preset may hinder Quorum taking multi-layered shots on air.

23. Click **ME1 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Code switcher to map to ME1 in Caprica.

24. Click **ME2 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Code switcher to map to ME2 in Caprica.

25. Use the **MemRecallMode** buttons to set memory recall method to use. The available settings are as follows:

    - **UseSwMode** — use the memory recall mode set on the switcher to execute memory recalls.
    - **Program** — use the Program memory recall mode to execute memory recalls.

26. Use the **Trans Done** buttons to set the switcher response to transitions. The available settings are as follows:

    - **Disabled** — select this option when your switcher does not support this functionality.
    - **Enabled** — for switchers that support this functionality, select this option speed up the switcher response to transitions. This option makes OverDrive operation more reliable.

27. Use the **MemRecallDone** buttons to set the switcher response to memory recalls. The available settings are as follows:

    - **Disabled** — select this option when your switcher does not support this functionality.
    - **Enabled** — for switchers that support this functionality, select this option speed up the switcher response to memory recalls. This option makes OverDrive operation more reliable.

28. Click **Apply Changes** to save the switcher settings.

29. Click **Done** to close the **Configure SWITCHER1** panel.

Connecting Quorum to Your Caprica Server

In Quorum, you use the Server Configuration web page to configure the Quorum Server to communicate with the Quorum system switcher through the Caprica Server. To configure an Quorum Server to connect to a Caprica Server, refer to the section "**Configuring Caprica Communication Settings**" of the ***Quorum Installation and Configuration Guide***.

Configuring Your Caprica Server

After configuring a Caprica device for your switcher, configure the following on your Caprica Server:

- Devices connected to your Quorum system
- Inputs to your Quorum system
- Audio channel names displayed in Quorum
- Switcher Custom Controls available in Quorum

To complete the configuration of your Caprica Server, refer to the chapter "**Caprica Server Configuration**" on page 19–1.

Ultrix Carbonite Setup for Quorum

This chapter provides instructions for connecting a Quorum system with a Ross Video Ultrix Carbonite switcher through a Caprica Server.

The following topics are discussed in this chapter:

- Quorum System Setup
- Quorum System Connections
- Configuring a Switcher Device for a Ultrix Carbonite Switcher
- Connecting Quorum to Your Caprica Server
- Configuring Your Caprica Server

Quorum System Setup

To setup a Quorum system with a Ultrix Carbonite switcher, complete the following:

- Connect the Quorum system components together.
  Refer to the section "**Quorum System Connections**" on page 9–2.
- On the Caprica Server, create a Switcher device for your Ultrix Carbonite switcher.
  Refer to the section "**Configuring a Switcher Device for a Ultrix Carbonite Switcher**" on page 9–3.
- Configure the Quorum Server to connect to the Caprica Server.
  Refer to the section "**Connecting Quorum to Your Caprica Server**" on page 9–8.

Quorum System Connections

In a Quorum system, a Ultrix Carbonite switcher connects to the Quorum Server through a Caprica Server. The following diagram (**Figure 9.1**) illustrates the cabling layout of the Ultrix Carbonite switcher connection to a Quorum system.

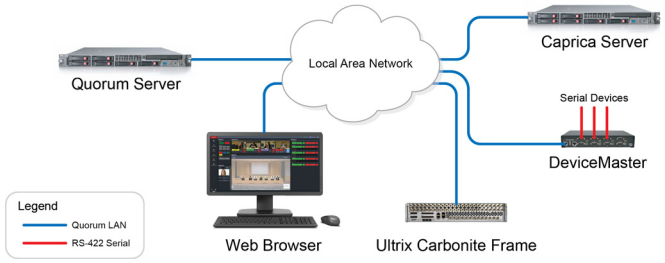


Figure 9.1 Quorum System Connection to a Ultrix Carbonite Switcher

The following Quorum system components connect through the internal network of your company:

- Quorum Server
- Caprica Server
- DeviceMaster for serial device connections
- Ultrix Carbonite Frame and Panel

Cabling to connect to Quorum system components an internal network is not provided with Quorum systems.

To connect a Ultrix Carbonite switcher to a Quorum system

1. Verify that the **Quorum Server** is connected to your internal network through Ethernet port **1** on the back of the server.
2. Verify that the **Caprica Server** is connected to your internal network.
3. Use an **Ethernet** cable to connect the DeviceMaster **UP** port to your internal network.
4. Use an **Ethernet** cable to connect the Ultrix Carbonite Frame to your internal network.
5. Use an **Ethernet** cable to connect the Ultrix Carbonite Panel to your internal network.

Quorum Server Peripheral Connections

The Quorum system comes with a USB Keyboard that can be connected to a USB port on the Quorum computer.

✶ USB/KVM extenders can interfere with Quorum system operation and are not supported for use with Quorum client computers. Place Quorum client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Touch-screen monitors may be purchased as an option to provide a dual-monitor display. Contact your Ross Video representative for more information on this option.

✶ For DELL Quorum computers, connect the primary monitor to plug number 1 on the Y break-out cable attached to the back of the computer to ensure that the primary monitor is used for the POST and the operating system.

For More Information on...

- cabling a Quorum Server, refer to the ***Cabling Your Quorum Server Quick Start Guide***.
- cabling a Caprica Server, refer to the ***Cabling Your Caprica Server Quick Start Guide***.
- cabling a Ultrix Carbonite switcher, refer to the switcher setup documentation supplied with your switcher.

Configuring a Switcher Device for a Ultrix Carbonite Switcher

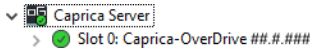
The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Ultrix Carbonite switcher in a Quorum system.

To configure the SWITCHER1 device for a Ultrix Carbonite switcher

1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

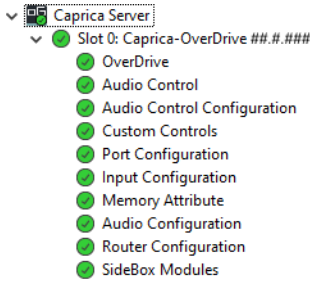
   DashBoard opens.
3. In the **DashBoard Tree View**, expand the **Caprica Server** node.

   The **Caprica Server** node displays the available Caprica Servers.



4. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

   The **Slot 0: Caprica** node displays the available Caprica Server clients.



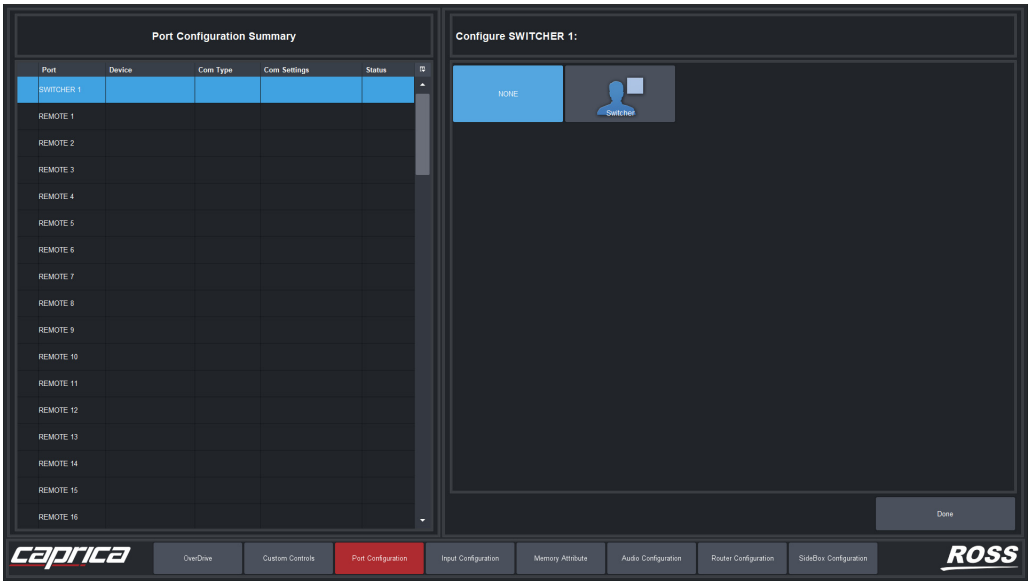
5. Double-click the **Port Configuration** node.

   The **Port Configuration** client opens in the **Device View**.
6. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.

7. In the **Port Configuration Summary** table, double-click **SWITCHER1** in the **Port** column.

   The **Configure SWITCHER1** panel opens.



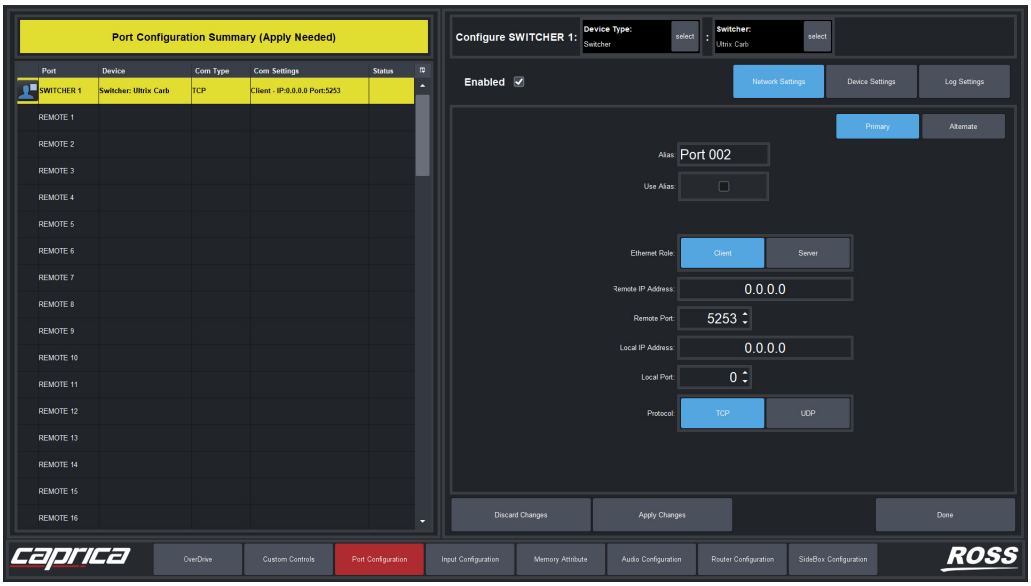
   The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Ultrix Carbonite switcher in a Quorum system.

8. In the **Configure SWITCHER1** panel, click **Switcher**.

   The **Configure SWITCHER1** panel lists the available switchers.

9. Click **CarboniteUltra**.

   The **Configure SWITCHER1** panel displays the **Network Settings** for a Ultrix Carbonite switcher.



10. To enable Caprica to control the device you are configuring, confirm that the **Enable** check box is selected for the device. When you clear the **Enable** check box for a device, Caprica ignores and does not control the device.

11. To set a custom name for the remote port, complete the following steps:

    a. In the **Alias** box, enter a custom name for the remote port.

    b. Select the **Use Alias** check box.

    The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

    To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

12. For the **Ethernet Role** setting, click **Client**.

13. In the **Remote IP Address** box, enter the IP address of your Ultrix Carbonite switcher.

14. Use the **Remote Port** box to enter or select `5253`.

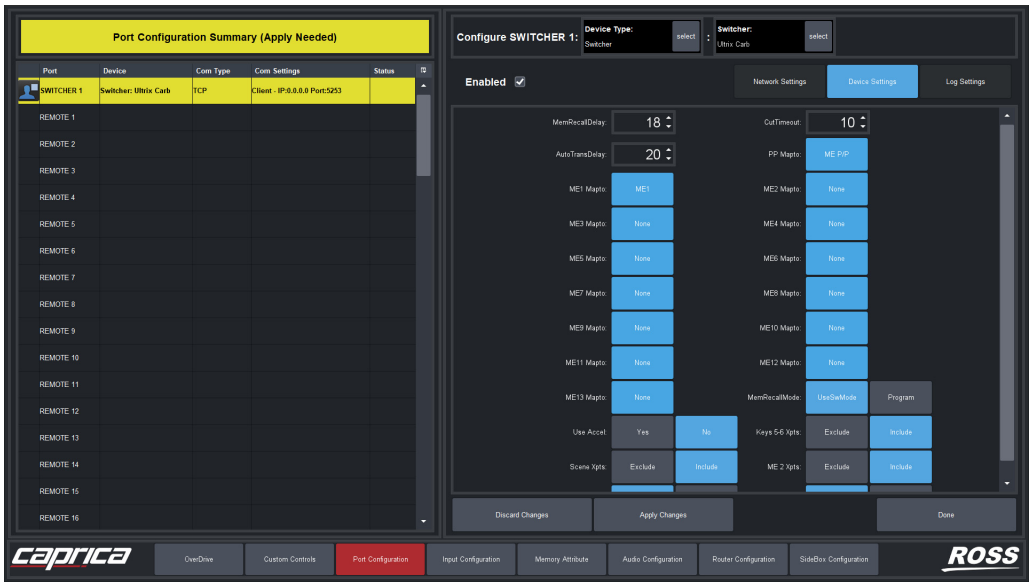
15. In the **Local IP Address** box, enter `0.0.0.0`.

16. Use the **Local Port** box to enter or select `0`.

17. For the **Protocol** setting, click **TCP**.

18. Click **Device Settings**.

    The **Configure SWITCHER1** panel displays the **Device Settings** for a Ultrix Carbonite switcher.



19. Use the **MemRecallDelay** box to enter or select the number of fields to wait after a memory recall until everything is “settled”, the memory recall is officially over, and OverDrive can continue.

20. Use the **CutTimeout** box to enter or select the number of frames to wait after a Cut transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

21. Use the **AutoTransDelay** box to enter or select the number of frames to wait after an AutoTrans transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

22. Click **PP Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to the Program bus in Caprica.

    When using a MiniME as Program/Preset, Ross Video recommends that you use the highest numbered MiniME to avoid re-entry conflicts and errors. Using a lower numbered MiniME as Program/Preset may hinder Quorum taking multi-layered shots on air.

    The ME mode set on the switcher limits the available options as follows:

    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.

23. Click **ME1 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME1 in Caprica. The ME mode set on the switcher limits the available options as follows:

    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.

24. Click **ME2 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME2 in Caprica. The ME mode set on the switcher limits the available options as follows:

    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.

25. Click **ME3 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME3 in Caprica. The ME mode set on the switcher limits the available options as follows:

    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.

26. Click **ME4 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME4 in Caprica. The ME mode set on the switcher limits the available options as follows:

    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.

27. Click **ME5 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME5 in Caprica. The ME mode set on the switcher limits the available options as follows:

    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.

28. Click **ME6 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME6 in Caprica. The ME mode set on the switcher limits the available options as follows:

    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.

29. Click **ME7 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME7 in Caprica. The ME mode set on the switcher limits the available options as follows:

    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.

30. Click **ME8 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME8 in Caprica. The ME mode set on the switcher limits the available options as follows:

    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.

31. Click **ME9 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME9 in Caprica. The ME mode set on the switcher limits the available options as follows:

    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.

32. Click **ME10 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME10 in Caprica. The ME mode set on the switcher limits the available options as follows:
    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.
33. Click **ME11 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME11 in Caprica. The ME mode set on the switcher limits the available options as follows:
    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.
34. Click **ME12 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME12 in Caprica. The ME mode set on the switcher limits the available options as follows:
    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.
35. Click **ME13 Mapto** to select the ME, Canvas, or Scene on your Ultrix Carbonite switcher to map to ME13 in Caprica. The ME mode set on the switcher limits the available options as follows:
    - **HD 2 ME 4 MM** — ME2 is not available in this mode.
    - **HD 3 ME** — mini MEs are not available in this mode.
36. Use the **MemRecallMode** buttons to set memory recall method to use. The available settings are as follows:
    - **UseSwMode** — use the memory recall mode set on the switcher to execute memory recalls.
    - **Program** — use the Program memory recall mode to execute memory recalls.
37. Use the **Use Accel** buttons to control the use of an experimental feature to improve communication performance between your Ultrix Carbonite switcher and Caprica Server. The available settings are as follows:
    - **Yes** — use this experiment feature.
    - **No** — do not use this experiment feature.
38. Use the **Keys 5-6 Xpts** buttons to prevent virtual inputs from shifting after updating a Ultrix Carbonite switcher to version 7.0 or greater. The available settings are as follows:
    - **Exclude** — use this setting to maintain virtual input positions after upgrading a Ultrix Carbonite switcher to version 7.0 or greater. Using this setting maintains virtual input positions for Custom Controls created on Ultrix Carbonite versions before version 7.0.
    - **Include** — use this setting to shift virtual inputs after updating a Ultrix Carbonite switcher to version 7.0 or greater. Custom Controls that use virtual inputs and were created on Ultrix Carbonite versions before version 7.0 may not work properly with this setting.
39. Use the **Scene Xpts** buttons to prevent virtual inputs from shifting after updating a Ultrix Carbonite switcher to version 7.0 or greater. The available settings are as follows:
    - **Exclude** — use this setting to maintain virtual input positions after upgrading a Ultrix Carbonite switcher to version 7.0 or greater. Using this setting maintains virtual input positions for Custom Controls created for Ultrix Carbonite versions before version 7.0.
    - **Include** — use this setting to shift virtual inputs after updating a Ultrix Carbonite switcher to version 7.0 or greater. Custom Controls that use virtual inputs and were created for Ultrix Carbonite versions before version 7.0 may not work properly with this setting.

40. Use the **ME 2 Xpts** buttons to prevent virtual inputs from shifting after switching an Ultrix Carbonite switcher to **HD 3 ME** mode on. The available settings are as follows:
    - **Exclude** — use this setting to maintain virtual input positions after switching to HD 3 ME mode. Using this setting maintains virtual input positions for Custom Controls created for your Ultrix Carbonite switcher when it was in HD 2 ME 4 MM mode.
    - **Include** — use this setting to shift virtual inputs after switching to HD 3 ME mode. Custom Controls that use virtual inputs and were created for your Ultrix Carbonite switcher when it was in HD 2 ME 4 MM mode may not work properly with this setting.
41. Use the **Trans Done** buttons to set the switcher response to transitions. The available settings are as follows:
    - **Disabled** — select this option when your switcher does not support this functionality.
    - **Enabled** — for switchers that support this functionality, select this option speed up the switcher response to transitions. This option makes OverDrive operation more reliable.
42. Use the **MemRecallDone** buttons to set the switcher response to memory recalls. The available settings are as follows:
    - **Disabled** — select this option when your switcher does not support this functionality.
    - **Enabled** — for switchers that support this functionality, select this option speed up the switcher response to memory recalls. This option makes OverDrive operation more reliable.
43. Click **Apply Changes** to save the switcher settings.
44. Click **Done** to close the **Configure SWITCHER1** panel.

Connecting Quorum to Your Caprica Server

In Quorum, you use the Server Configuration web page to configure the Quorum Server to communicate with the Quorum system switcher through the Caprica Server. To configure a Quorum Server to connect to a Caprica Server, refer to the section "**Configuring Caprica Communication Settings**" of the ***Quorum Installation and Configuration Guide***.

Configuring Your Caprica Server

After configuring a Caprica device for your switcher, configure the following on your Caprica Server:

- Devices connected to your Quorum system
- Inputs to your Quorum system
- Audio channel names displayed in Quorum
- Switcher Custom Controls available in Quorum

To complete the configuration of your Caprica Server, refer to the chapter "**Caprica Server Configuration**" on page 19–1.

Carbonite Black Setup for Quorum

This chapter provides instructions for connecting a Quorum system with a Ross Video Carbonite Black switcher through a Caprica Server.

The following topics are discussed in this chapter:

- Quorum System Setup
- Quorum System Connections
- Configuring a Switcher Device for a Carbonite Black Switcher
- Connecting Quorum to Your Caprica Server
- Configuring Your Caprica Server

Quorum System Setup

To setup a Quorum system with a Carbonite Black switcher, complete the following:

- Connect the Quorum system components together.
  Refer to the section "**Quorum System Connections**" on page 10–2.
- On the Caprica Server, create a Switcher device for your Carbonite Black switcher.
  Refer to the section "**Configuring a Switcher Device for a Carbonite Black Switcher**" on page 10–3.
- Configure the Quorum Server to connect to the Caprica Server.
  Refer to the section "**Connecting Quorum to Your Caprica Server**" on page 10–6.

Quorum System Connections

In a Quorum system, a Carbonite Black switcher connects to the Quorum Server through a Caprica Server. The following diagram (**Figure 10.1**) illustrates the cabling layout of the Carbonite Black switcher connection to a Quorum system.

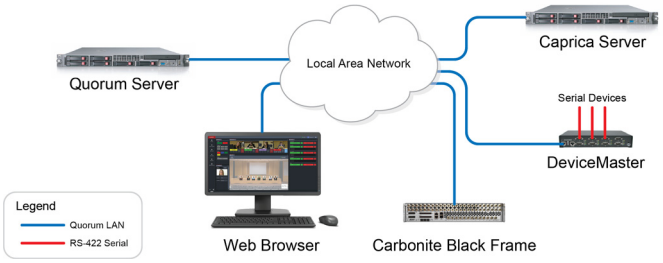


Figure 10.1 Quorum System Connection to a Carbonite Black Switcher

The following Quorum system components connect through the internal network of your company:

- Quorum Server
- Caprica Server
- DeviceMaster for serial device connections
- Carbonite Black Frame and Panel

Cabling to connect to Quorum system components an internal network is not provided with Quorum systems.

To connect a Carbonite Black switcher to a Quorum system

1. Verify that the **Quorum Server** is connected to your internal network through Ethernet port **1** on the back of the server.
2. Verify that the **Caprica Server** is connected to your internal network.
3. Use an **Ethernet** cable to connect the DeviceMaster **UP** port to your internal network.
4. Use an **Ethernet** cable to connect the Carbonite Black Frame to your internal network.
5. Use an **Ethernet** cable to connect the Carbonite Black Panel to your internal network.

Quorum Server Peripheral Connections

The Quorum system comes with a USB Keyboard that can be connected to a USB port on the Quorum computer.

✶ USB/KVM extenders can interfere with Quorum system operation and are not supported for use with Quorum client computers. Place Quorum client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Touch-screen monitors may be purchased as an option to provide a dual-monitor display. Contact your Ross Video representative for more information on this option.

✶ For DELL Quorum computers, connect the primary monitor to plug number 1 on the Y break-out cable attached to the back of the computer to ensure that the primary monitor is used for the POST and the operating system.

For More Information on...

- cabling a Quorum Server, refer to the ***Cabling Your Quorum Server Quick Start Guide***.
- cabling a Caprica Server, refer to the ***Cabling Your Caprica Server Quick Start Guide***.
- cabling a Carbonite Black switcher, refer to the switcher setup documentation supplied with your switcher.

Configuring a Switcher Device for a Carbonite Black Switcher

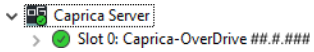
The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite Black switcher in a Quorum system.

To configure the SWITCHER1 device for a Carbonite Black switcher

1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

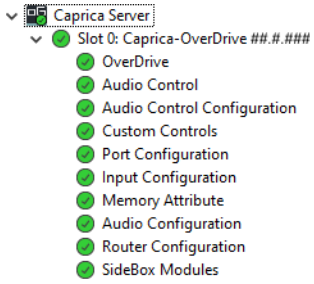
   DashBoard opens.
3. In the **DashBoard Tree View**, expand the **Caprica Server** node.

   The **Caprica Server** node displays the available Caprica Servers.



4. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

   The **Slot 0: Caprica** node displays the available Caprica Server clients.



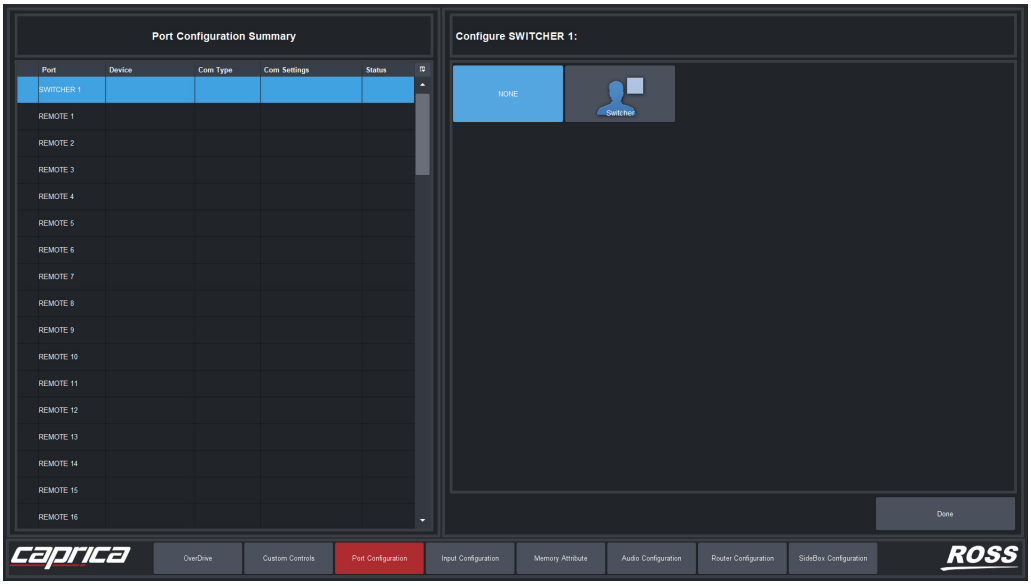
5. Double-click the **Port Configuration** node.

   The **Port Configuration** client opens in the **Device View**.
6. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.

7. In the **Port Configuration Summary** table, double-click **SWITCHER1** in the **Port** column.

   The **Configure SWITCHER1** panel opens.



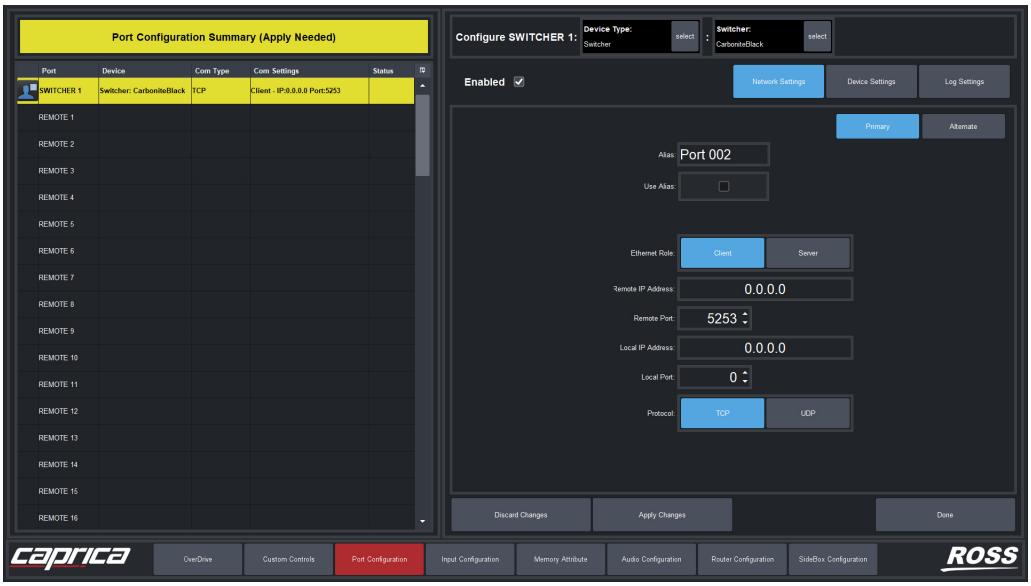
   The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite Black switcher in a Quorum system.

8. In the **Configure SWITCHER1** panel, click **Switcher**.

   The **Configure SWITCHER1** panel lists the available switchers.

9. Click **CarboniteBlack**.

   The **Configure SWITCHER1** panel displays the **Network Settings** for a Carbonite Black switcher.



10. To enable Caprica to control the device you are configuring, confirm that the **Enable** check box is selected for the device. When you clear the **Enable** check box for a device, Caprica ignores and does not control the device.

11. To set a custom name for the remote port, complete the following steps:

    a. In the **Alias** box, enter a custom name for the remote port.

    b. Select the **Use Alias** check box.

       The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

       To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

12. For the **Ethernet Role** setting, click **Client**.

13. In the **Remote IP Address** box, enter the IP address of your Carbonite Black switcher.

14. Use the **Remote Port** box to enter or select `5253`.

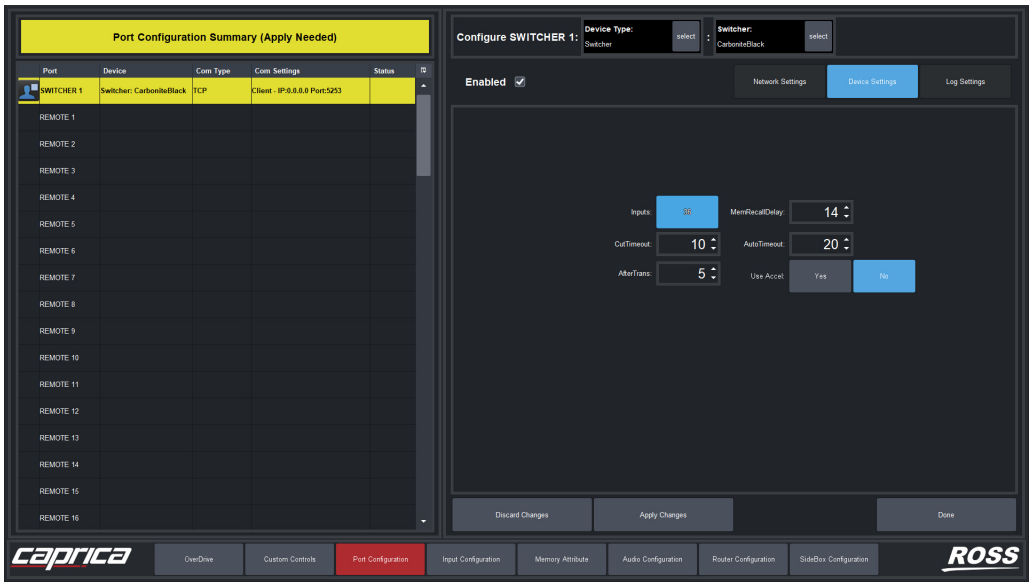
15. In the **Local IP Address** box, enter `0.0.0.0`.

16. Use the **Local Port** box to enter or select `0`.

17. For the **Protocol** setting, click **TCP**.

18. Click **Device Settings**.

    The **Configure SWITCHER1** panel displays the **Device Settings** for a Carbonite Black switcher.



19. Click **Inputs** to set the number of inputs on your Carbonite Black frame.

20. Use the **MemRecallDelay** setting to enter or select the number of fields to wait for memory recalls to complete.

21. Use the **CutTimeout** box to enter or select the number of frames to wait after a Cut transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

22. Use the **AutoTimeout** box to enter or select the number of frames to wait after an AutoTrans transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

23. Use the **AfterTrans** box to enter or select the number of frames to wait after Caprica confirms that a transition is complete.

24. Use the **Use Accel** buttons to control the use of an experimental feature to improve communication performance between your Carbonite Black switcher and Caprica Server. The available settings are as follows:
    - **Yes** — use this experiment feature.
    - **No** — do not use this experiment feature.
25. Click **Apply Changes** to save the switcher settings.
26. Click **Done** to close the **Configure SWITCHER1** panel.

Connecting Quorum to Your Caprica Server

In Quorum, you use the Server Configuration web page to configure the Quorum Server to communicate with the Quorum system switcher through the Caprica Server. To configure a Quorum Server to connect to a Caprica Server, refer to the section "**Configuring Caprica Communication Settings**" of the ***Quorum Installation and Configuration Guide***.

Configuring Your Caprica Server

After configuring a Caprica device for your switcher, configure the following on your Caprica Server:

- Devices connected to your Quorum system
- Inputs to your Quorum system
- Audio channel names displayed in Quorum
- Switcher Custom Controls available in Quorum

To complete the configuration of your Caprica Server, refer to the chapter "**Caprica Server Configuration**" on page 19–1.

Carbonite Black Solo Setup for Quorum

This chapter provides instructions for connecting a Quorum system with a Ross Video Carbonite Black Solo switcher through a Caprica Server.

The following topics are discussed in this chapter:

- Quorum System Setup
- Quorum System Connections
- Configuring a Switcher Device for a Carbonite Black Solo Switcher
- Connecting Quorum to Your Caprica Server
- Configuring Your Caprica Server

Quorum System Setup

To setup a Quorum system with a Carbonite Black Solo switcher, complete the following:

- Connect the Quorum system components together.
  Refer to the section "**Quorum System Connections**" on page 11–2.
- On the Caprica Server, create a Switcher device for your Carbonite Black Solo switcher.
  Refer to the section "**Configuring a Switcher Device for a Carbonite Black Solo Switcher**" on page 11–3.
- Configure the Quorum Server to connect to the Caprica Server.
  Refer to the section "**Connecting Quorum to Your Caprica Server**" on page 11–6.

Quorum System Connections

In a Quorum system, a Carbonite Black Solo switcher connects to the Quorum Server through a Caprica Server. The following diagram (**Figure 11.1**) illustrates the cabling layout of the Carbonite Black Solo switcher connection to a Quorum system.

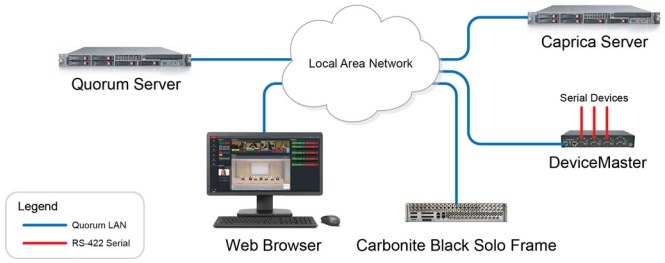


Figure 11.1 Quorum System Connection to a Carbonite Black Solo Switcher

The following Quorum system components connect through the internal network of your company:

- Quorum Server
- Caprica Server
- DeviceMaster for serial device connections
- Carbonite Black Solo Frame and Panel

Cabling to connect to Quorum system components an internal network is not provided with Quorum systems.

To connect a Carbonite Black Solo switcher to a Quorum system

1. Verify that the **Quorum Server** is connected to your internal network through Ethernet port **1** on the back of the server.
2. Verify that the **Caprica Server** is connected to your internal network.
3. Use an **Ethernet** cable to connect the DeviceMaster **UP** port to your internal network.
4. Use an **Ethernet** cable to connect the Carbonite Black Solo Frame to your internal network.
5. Use an **Ethernet** cable to connect the Carbonite Black Solo Panel to your internal network.

Quorum Server Peripheral Connections

The Quorum system comes with a USB Keyboard that can be connected to a USB port on the Quorum computer.

✶ USB/KVM extenders can interfere with Quorum system operation and are not supported for use with Quorum client computers. Place Quorum client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Touch-screen monitors may be purchased as an option to provide a dual-monitor display. Contact your Ross Video representative for more information on this option.

✶ For DELL Quorum computers, connect the primary monitor to plug number 1 on the Y break-out cable attached to the back of the computer to ensure that the primary monitor is used for the POST and the operating system.

For More Information on...

- cabling a Quorum Server, refer to the ***Cabling Your Quorum Server Quick Start Guide***.
- cabling a Caprica Server, refer to the ***Cabling Your Caprica Server Quick Start Guide***.
- cabling a Carbonite Black Solo switcher, refer to the switcher setup documentation supplied with your switcher.

Configuring a Switcher Device for a Carbonite Black Solo Switcher

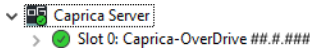
The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite Black Solo switcher in a Quorum system.

To configure the SWITCHER1 device for a Carbonite Black Solo switcher

1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

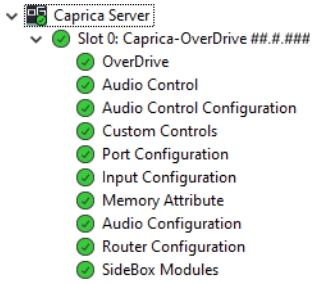
   DashBoard opens.
3. In the **DashBoard Tree View**, expand the **Caprica Server** node.

   The **Caprica Server** node displays the available Caprica Servers.



4. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

   The **Slot 0: Caprica** node displays the available Caprica Server clients.



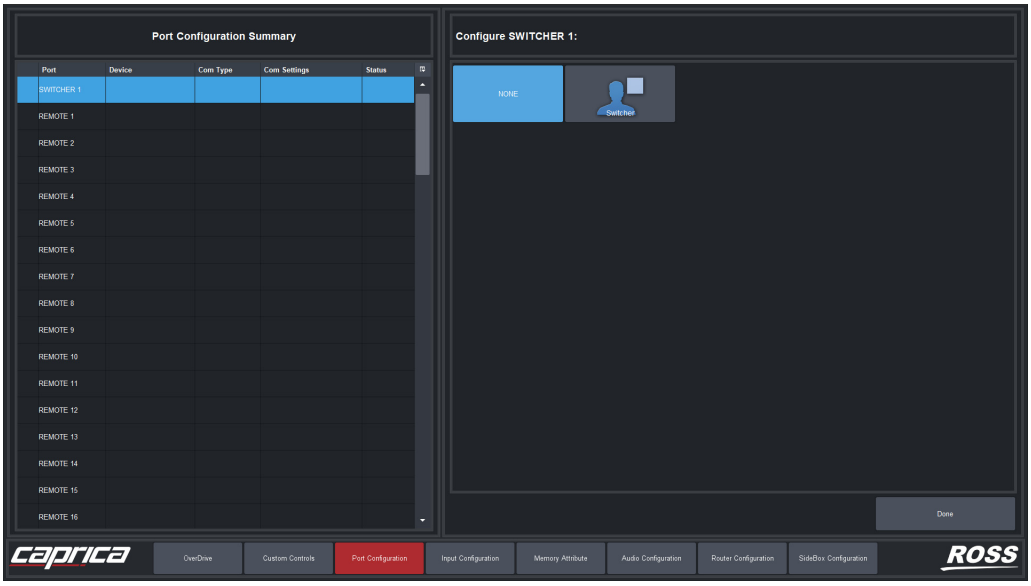
5. Double-click the **Port Configuration** node.

   The **Port Configuration** client opens in the **Device View**.
6. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.

7. In the **Port Configuration Summary** table, double-click **SWITCHER1** in the **Port** column.

   The **Configure SWITCHER1** panel opens.



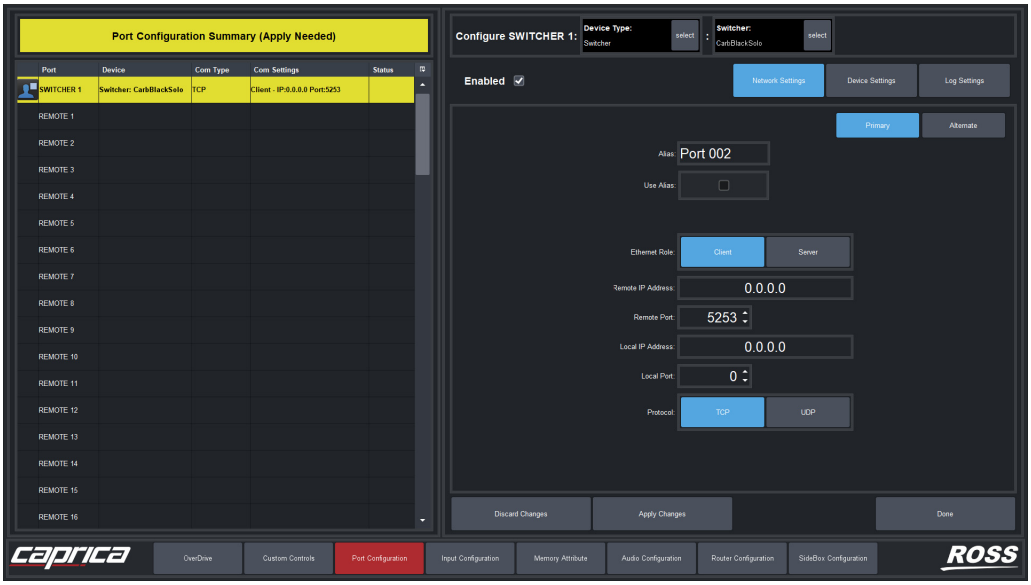
   The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite Black Solo switcher in a Quorum system.

8. In the **Configure SWITCHER1** panel, click **Switcher**.

   The **Configure SWITCHER1** panel lists the available switchers.

9. Click **CarbBlackSolo**.

   The **Configure SWITCHER1** panel displays the **Network Settings** for a Carbonite Black Solo switcher.



10. To enable Caprica to control the device you are configuring, confirm that the **Enable** check box is selected for the device. When you clear the **Enable** check box for a device, Caprica ignores and does not control the device.

11. To set a custom name for the remote port, complete the following steps:

    a. In the **Alias** box, enter a custom name for the remote port.

    b. Select the **Use Alias** check box.

    The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

    To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

12. For the **Ethernet Role** setting, click **Client**.

13. In the **Remote IP Address** box, enter the IP address of your Carbonite Black Solo switcher.

14. Use the **Remote Port** box to enter or select `5253`.

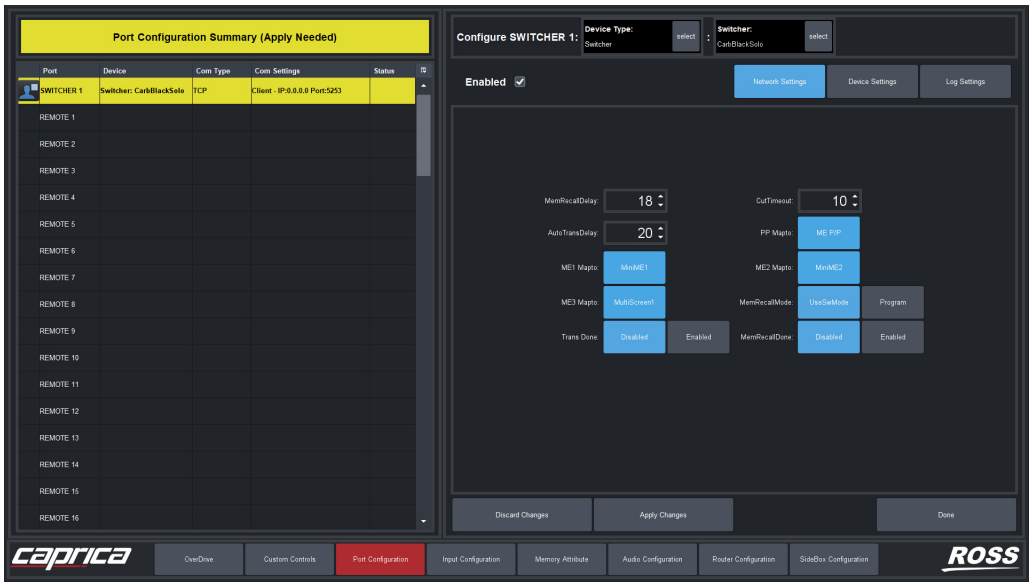
15. In the **Local IP Address** box, enter `0.0.0.0`.

16. Use the **Local Port** box to enter or select `0`.

17. For the **Protocol** setting, click **TCP**.

18. Click **Device Settings**.

    The **Configure SWITCHER1** panel displays the **Device Settings** for a Carbonite Black Solo switcher.



19. Use the **MemRecallDelay** box to enter or select the number of fields to wait after a memory recall until everything is “settled”, the memory recall is officially over, and OverDrive can continue.

20. Use the **CutTimeout** box to enter or select the number of frames to wait after a Cut transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

21. Use the **AutoTransDelay** box to enter or select the number of frames to wait after an AutoTrans transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

22. Click **PP Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Black Solo switcher to map to the Program bus in Caprica.

    When using a MiniME as Program/Preset, Ross Video recommends that you use the highest numbered MiniME to avoid re-entry conflicts and errors. Using a lower numbered MiniME as Program/Preset may hinder Quorum taking multi-layered shots on air.

23. Click **ME1 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Black Solo switcher to map to ME1 in Caprica.
24. Click **ME2 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Black Solo switcher to map to ME2 in Caprica.
25. Click **ME3 Mapto** to select the ME, MiniME, Canvas, or Scene on your Carbonite Black Solo switcher to map to ME3 in Caprica.
26. Use the **MemRecallMode** buttons to set memory recall method to use. The available settings are as follows:
    - **UseSwMode** — use the memory recall mode set on the switcher to execute memory recalls.
    - **Program** — use the Program memory recall mode to execute memory recalls.
27. Use the **Trans Done** buttons to set the switcher response to transitions. The available settings are as follows:
    - **Disabled** — select this option when your switcher does not support this functionality.
    - **Enabled** — for switchers that support this functionality, select this option speed up the switcher response to transitions. This option makes OverDrive operation more reliable.
28. Use the **MemRecallDone** buttons to set the switcher response to memory recalls. The available settings are as follows:
    - **Disabled** — select this option when your switcher does not support this functionality.
    - **Enabled** — for switchers that support this functionality, select this option speed up the switcher response to memory recalls. This option makes OverDrive operation more reliable.
29. Click **Apply Changes** to save the switcher settings.
30. Click **Done** to close the **Configure SWITCHER1** panel.

Connecting Quorum to Your Caprica Server

In Quorum, you use the Server Configuration web page to configure the Quorum Server to communicate with the Quorum system switcher through the Caprica Server. To configure a Quorum Server to connect to a Caprica Server, refer to the section "**Configuring Caprica Communication Settings**" of the ***Quorum Installation and Configuration Guide***.

Configuring Your Caprica Server

After configuring a Caprica device for your switcher, configure the following on your Caprica Server:

- Devices connected to your Quorum system
- Inputs to your Quorum system
- Audio channel names displayed in Quorum
- Switcher Custom Controls available in Quorum

To complete the configuration of your Caprica Server, refer to the chapter "**Caprica Server Configuration**" on page 19–1.

Carbonite Setup for Quorum

This chapter provides instructions for connecting a Quorum system with a Ross Video Carbonite switcher through a Caprica Server.

The following topics are discussed in this chapter:

- Quorum System Setup
- Quorum System Connections
- Configuring a Switcher Device for a Carbonite Switcher
- Connecting Quorum to Your Caprica Server
- Configuring Your Caprica Server

Quorum System Setup

To setup a Quorum system with a Carbonite switcher, complete the following:

- Connect the Quorum system components together.
  Refer to the section "**Quorum System Connections**" on page 12–2.
- On the Caprica Server, create a Switcher device for your Carbonite switcher.
  Refer to the section "**Configuring a Switcher Device for a Carbonite Switcher**" on page 12–3.
- Configure the Quorum Server to connect to the Caprica Server.
  Refer to the section "**Connecting Quorum to Your Caprica Server**" on page 12–6.

Quorum System Connections

In a Quorum system, a Carbonite switcher connects to the Quorum Server through a Caprica Server. The following diagram (**Figure 12.1**) illustrates the cabling layout of the Carbonite switcher connection to a Quorum system.

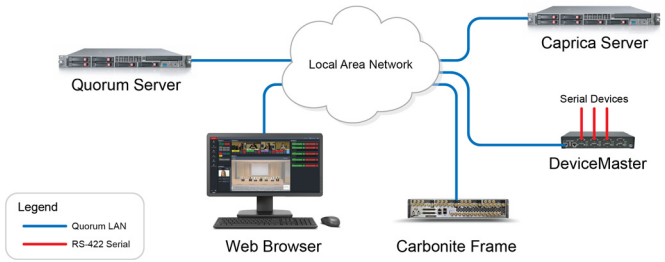


Figure 12.1 Quorum System Connection to a Carbonite Switcher

The following Quorum system components connect through the internal network of your company:

- Quorum Server
- Caprica Server
- DeviceMaster for serial device connections
- Carbonite Frame and Panel

Cabling to connect to Quorum system components an internal network is not provided with Quorum systems.

To connect a Carbonite switcher to a Quorum system

1. Verify that the **Quorum Server** is connected to your internal network through Ethernet port **1** on the back of the server.
2. Verify that the **Caprica Server** is connected to your internal network.
3. Use an **Ethernet** cable to connect the DeviceMaster **UP** port to your internal network.
4. Use an **Ethernet** cable to connect the Carbonite Frame to your internal network.
5. Use an **Ethernet** cable to connect the Carbonite Panel to your internal network.

Quorum Server Peripheral Connections

The Quorum system comes with a USB Keyboard that can be connected to a USB port on the Quorum computer.

✶ USB/KVM extenders can interfere with Quorum system operation and are not supported for use with Quorum client computers. Place Quorum client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Touch-screen monitors may be purchased as an option to provide a dual-monitor display. Contact your Ross Video representative for more information on this option.

✶ For DELL Quorum computers, connect the primary monitor to plug number 1 on the Y break-out cable attached to the back of the computer to ensure that the primary monitor is used for the POST and the operating system.

For More Information on...

- cabling a Quorum Server, refer to the ***Cabling Your Quorum Server Quick Start Guide***.
- cabling a Caprica Server, refer to the ***Cabling Your Caprica Server Quick Start Guide***.
- cabling a Carbonite switcher, refer to the switcher setup documentation supplied with your switcher.

Configuring a Switcher Device for a Carbonite Switcher

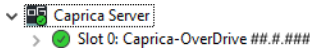
The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite switcher in a Quorum system.

To configure the SWITCHER1 device for a Carbonite switcher

1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

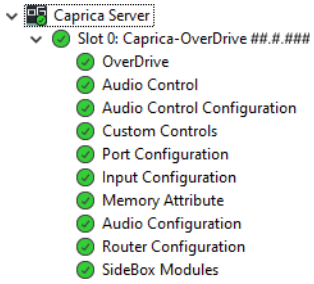
   DashBoard opens.
3. In the **DashBoard Tree View**, expand the **Caprica Server** node.

   The **Caprica Server** node displays the available Caprica Servers.



4. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

   The **Slot 0: Caprica** node displays the available Caprica Server clients.



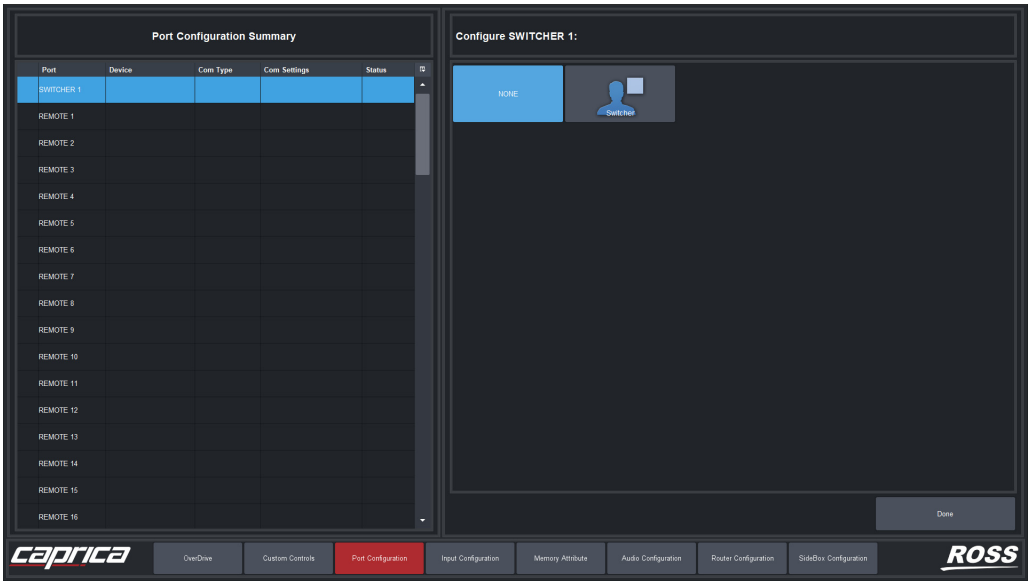
5. Double-click the **Port Configuration** node.

   The **Port Configuration** client opens in the **Device View**.
6. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.

7. In the **Port Configuration Summary** table, double-click **SWITCHER1** in the **Port** column.

   The **Configure SWITCHER1** panel opens.



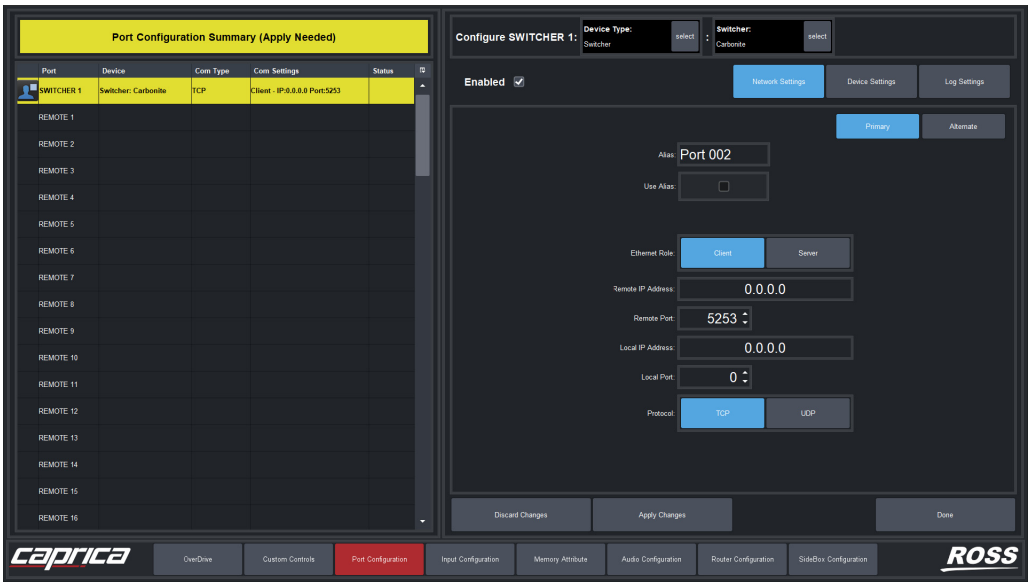
   The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Carbonite switcher in a Quorum system.

8. In the **Configure SWITCHER1** panel, click **Switcher**.

   The **Configure SWITCHER1** panel lists the available switchers.

9. Click **Carbonite**.

   The **Configure SWITCHER1** panel displays the **Network Settings** for a Carbonite switcher.



10. To enable Caprica to control the device you are configuring, confirm that the **Enable** check box is selected for the device. When you clear the **Enable** check box for a device, Caprica ignores and does not control the device.

11. To set a custom name for the remote port, complete the following steps:

    a. In the **Alias** box, enter a custom name for the remote port.

    b. Select the **Use Alias** check box.

       The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

       To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

12. For the **Ethernet Role** setting, click **Client**.

13. In the **Remote IP Address** box, enter the IP address of your Carbonite switcher.

14. Use the **Remote Port** box to enter or select `5253`.

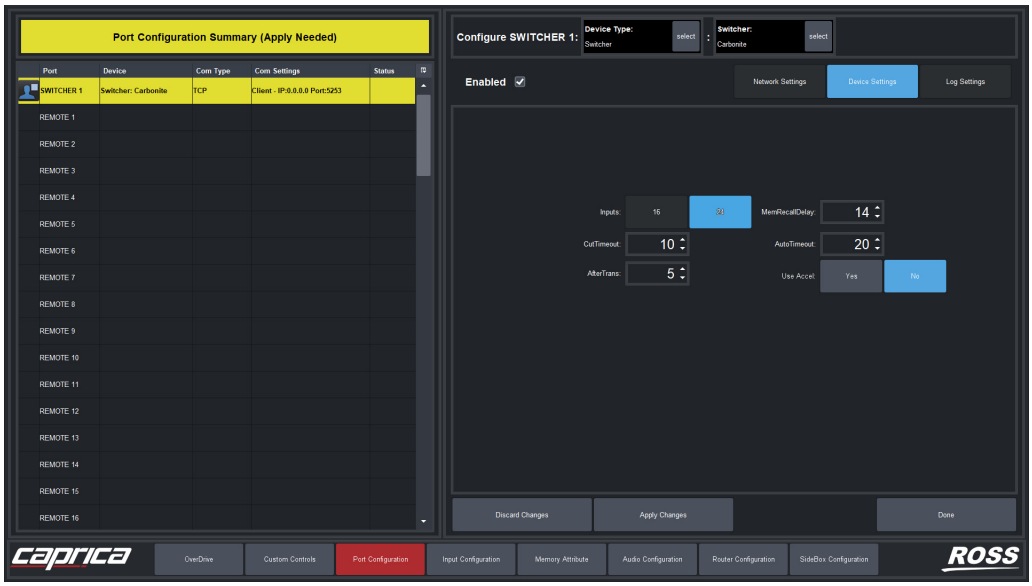
15. In the **Local IP Address** box, enter `0.0.0.0`.

16. Use the **Local Port** box to enter or select `0`.

17. For the **Protocol** setting, click **TCP**.

18. Click **Device Settings**.

    The **Configure SWITCHER1** panel displays the **Device Settings** for a Carbonite switcher.



19. Use the **Inputs** buttons to set the number of inputs on your Carbonite frame.

20. Use the **MemRecallDelay** setting to enter or select the number of fields to wait for memory recalls to complete.

21. Use the **CutTimeout** box to enter or select the number of frames to wait after a Cut transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

22. Use the **AutoTimeout** box to enter or select the number of frames to wait after an AutoTrans transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

23. Use the **AfterTrans** box to enter or select the number of frames to wait after Caprica confirms that a transition is complete.

24. Use the **Use Accel** buttons to control the use of an experimental feature to improve communication performance between your Carbonite switcher and Caprica Server. The available settings are as follows:
    - **Yes** — use this experiment feature.
    - **No** — do not use this experiment feature.
25. Click **Apply Changes** to save the switcher settings.
26. Click **Done** to close the **Configure SWITCHER1** panel.

Connecting Quorum to Your Caprica Server

In Quorum, you use the Server Configuration web page to configure the Quorum Server to communicate with the Quorum system switcher through the Caprica Server. To configure a Quorum Server to connect to a Caprica Server, refer to the section "**Configuring Caprica Communication Settings**" of the ***Quorum Installation and Configuration Guide***.

Configuring Your Caprica Server

After configuring a Caprica device for your switcher, configure the following on your Caprica Server:

- Devices connected to your Quorum system
- Inputs to your Quorum system
- Audio channel names displayed in Quorum
- Switcher Custom Controls available in Quorum

To complete the configuration of your Caprica Server, refer to the chapter "**Caprica Server Configuration**" on page 19–1.

Graphite CPC Setup for Quorum

This chapter provides instructions for connecting a Quorum system with a Ross Video Graphite CPC All-In-One Production System through a Caprica Server.

The following topics are discussed in this chapter:

- Quorum System Setup
- Quorum System Connections
- Configuring a Switcher Device for a Ross Video Graphite CPC All-In-One Production System
- Connecting Quorum to Your Caprica Server
- Configuring Your Caprica Server

Quorum System Setup

To setup a Quorum system with a Ross Video Graphite CPC All-In-One Production System, complete the following:

- Connect the Quorum system components together.
  Refer to the section "**Quorum System Connections**" on page 13–2.
- On the Caprica Server, create a Switcher device for your Ross Video Graphite CPC All-In-One Production System. Refer to the section "**Configuring a Switcher Device for a Ross Video Graphite CPC All-In-One Production System**" on page 13–3.
- Configure the Quorum Server to connect to the Caprica Server.
  Refer to the section "**Connecting Quorum to Your Caprica Server**" on page 13–6.

Quorum System Connections

In a Quorum system, a Ross Video Graphite CPC All-In-One Production System connects to the Quorum Server through a Caprica Server. The following diagram (**Figure 13.1**) illustrates the cabling layout of the Ross Video Graphite CPC All-In-One Production System connection to a Quorum system.

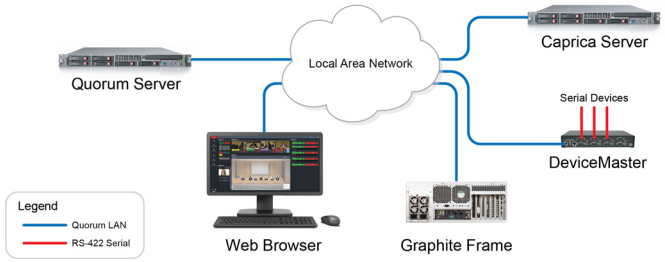


Figure 13.1 Quorum System Connection to a Ross Video Graphite CPC All-In-One Production System

The following Quorum system components connect through the internal network of your company:

- Quorum Server
- Caprica Server
- DeviceMaster for serial device connections
- Graphite CPC Frame and Panel

Cabling to connect to Quorum system components an internal network is not provided with Quorum systems.

To connect a Ross Video Graphite CPC All-In-One Production System to a Quorum system

1. Verify that the **Quorum Server** is connected to your internal network through Ethernet port **1** on the back of the server.
2. Verify that the **Caprica Server** is connected to your internal network.
3. Use an **Ethernet** cable to connect the DeviceMaster **UP** port to your internal network.
4. Use an **Ethernet** cable to connect the Graphite CPC Frame to your internal network.
5. Use an **Ethernet** cable to connect the Graphite CPC Panel to your internal network.

Quorum Server Peripheral Connections

The Quorum system comes with a USB Keyboard that can be connected to a USB port on the Quorum computer.

✶ USB/KVM extenders can interfere with Quorum system operation and are not supported for use with Quorum client computers. Place Quorum client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Touch-screen monitors may be purchased as an option to provide a dual-monitor display. Contact your Ross Video representative for more information on this option.

✶ For DELL Quorum computers, connect the primary monitor to plug number 1 on the Y break-out cable attached to the back of the computer to ensure that the primary monitor is used for the POST and the operating system.

For More Information on...

- cabling a Quorum Server, refer to the ***Cabling Your Quorum Server Quick Start Guide***.
- cabling a Caprica Server, refer to the ***Cabling Your Caprica Server Quick Start Guide***.
- cabling a Ross Video Graphite CPC All-In-One Production System, refer to the switcher setup documentation supplied with your switcher.

Configuring a Switcher Device for a Ross Video Graphite CPC All-In-One Production System

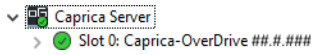
The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Ross Video Graphite CPC All-In-One Production System in a Quorum system.

To configure the SWITCHER1 device for a Ross Video Graphite CPC All-In-One Production System

1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

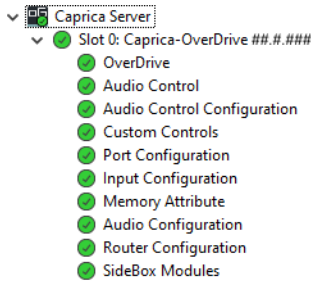
   DashBoard opens.
3. In the **DashBoard Tree View**, expand the **Caprica Server** node.

   The **Caprica Server** node displays the available Caprica Servers.



4. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

   The **Slot 0: Caprica** node displays the available Caprica Server clients.



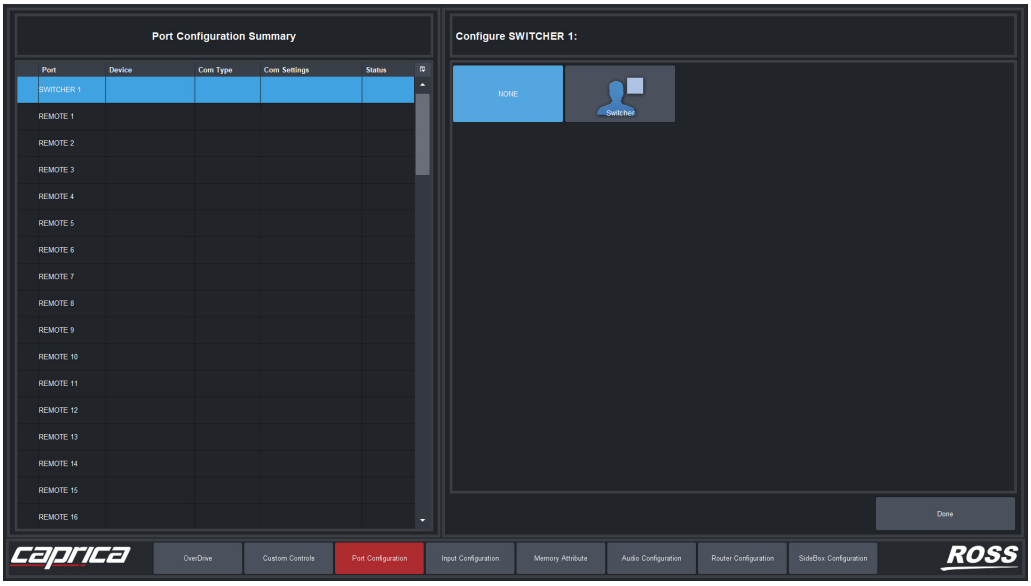
5. Double-click the **Port Configuration** node.

   The **Port Configuration** client opens in the **Device View**.
6. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.

7. In the **Port Configuration Summary** table, double-click **SWITCHER1** in the **Port** column.

   The **Configure SWITCHER1** panel opens.



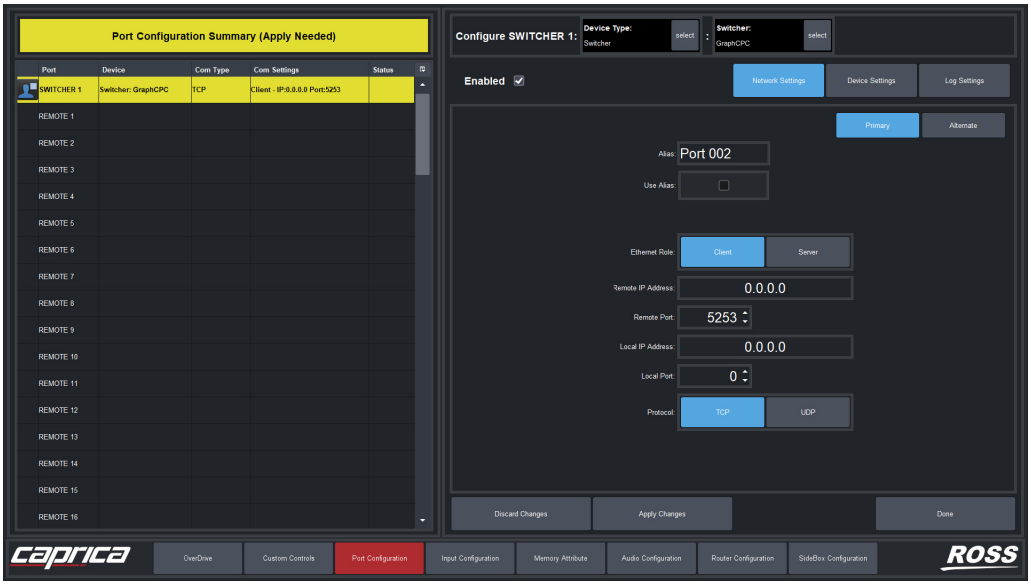
   The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Ross Video Graphite CPC All-In-One Production System in a Quorum system.

8. In the **Configure SWITCHER1** panel, click **Switcher**.

   The **Configure SWITCHER1** panel lists the available switchers.

9. Click **GraphCPC**.

   The **Configure SWITCHER1** panel displays the **Network Settings** for a Ross Video Graphite CPC All-In-One Production System.



10. To enable Caprica to control the device you are configuring, confirm that the **Enable** check box is selected for the device. When you clear the **Enable** check box for a device, Caprica ignores and does not control the device.

11. To set a custom name for the remote port, complete the following steps:

    a. In the **Alias** box, enter a custom name for the remote port.

    b. Select the **Use Alias** check box.

    The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

    To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

12. For the **Ethernet Role** setting, click **Client**.

13. In the **Remote IP Address** box, enter the IP address of your Ross Video Graphite CPC All-In-One Production System.

14. Use the **Remote Port** box to enter or select `5253`.

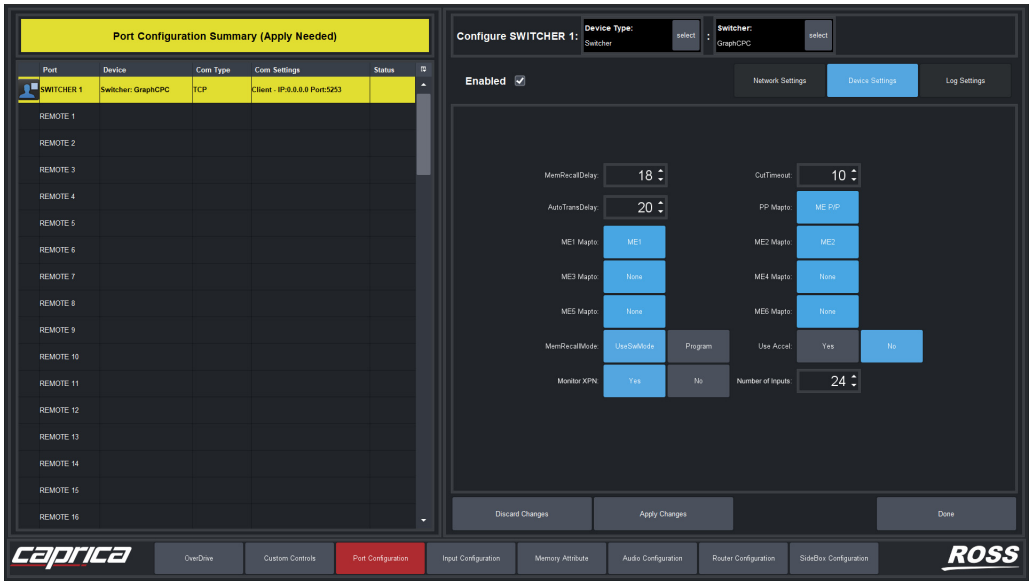
15. In the **Local IP Address** box, enter `0.0.0.0`.

16. Use the **Local Port** box to enter or select `0`.

17. For the **Protocol** setting, click **TCP**.

18. Click **Device Settings**.

    The **Configure SWITCHER1** panel displays the **Device Settings** for a Graphite CPC switcher.



19. Use the **MemRecallDelay** box to enter or select the number of fields to wait after a memory recall until everything is “settled”, the memory recall is officially over, and OverDrive can continue.

20. Use the **CutTimeout** box to enter or select the number of frames to wait after a Cut transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

21. Use the **AutoTransDelay** box to enter or select the number of frames to wait after an AutoTrans transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

22. Click **PP Mapto** to select the ME on your Graphite CPC switcher to map to the Program bus in Caprica.

    When using a MiniME as Program/Preset, Ross Video recommends that you use the highest numbered MiniME to avoid re-entry conflicts and errors. Using a lower numbered MiniME as Program/Preset may hinder Quorum taking multi-layered shots on air.

23. Click **ME1 Mapto** to select the ME on your Graphite CPC switcher to map to ME1 in Caprica.
24. Click **ME2 Mapto** to select the ME on your Graphite CPC switcher to map to ME2 in Caprica.
25. Click **ME3 Mapto** to select the ME on your Graphite CPC switcher to map to ME3 in Caprica.
26. Click **ME4 Mapto** to select the ME on your Graphite CPC switcher to map to ME4 in Caprica.
27. Click **ME5 Mapto** to select the ME on your Graphite CPC switcher to map to ME5 in Caprica.
28. Click **ME6 Mapto** to select the ME on your Graphite CPC switcher to map to ME6 in Caprica.
29. Use the **MemRecallMode** buttons to set memory recall method to use. The available settings are as follows:
    - **UseSwMode** — use the memory recall mode set on the switcher to execute memory recalls.
    - **Program** — use the Program memory recall mode to execute memory recalls.
30. Use the **Use Accel** buttons to control the use of an experimental feature to improve communication performance between your Graphite CPC switcher and Caprica Server. The available settings are as follows:
    - **Yes** — use this experiment feature.
    - **No** — do not use this experiment feature.
31. Use the **Monitor XPN** buttons to set the connection between the Graphite CPC switcher and XPression for live production. The available settings are as follows:
    - **Yes** — treat the Graphite CPC switcher as not connected to XPression, just like the Caprica Server not being able to connect to the Graphite CPC switcher. Most users should select this setting.
    - **No** — let the Caprica Server try control the Graphite CPC switcher, even if it is not connected to XPression.
32. Use the **Number of Inputs** box to enter or select the number of inputs on your Graphite CPC frame.
33. Click **Apply Changes** to save the switcher settings.
34. Click **Done** to close the **Configure SWITCHER1** panel.

Connecting Quorum to Your Caprica Server

In Quorum, you use the Server Configuration web page to configure the Quorum Server to communicate with the Quorum system switcher through the Caprica Server. To configure a Quorum Server to connect to a Caprica Server, refer to the section "**Configuring Caprica Communication Settings**" of the ***Quorum Installation and Configuration Guide***.

Configuring Your Caprica Server

After configuring a Caprica device for your switcher, configure the following on your Caprica Server:

- Devices connected to your Quorum system
- Inputs to your Quorum system
- Audio channel names displayed in Quorum
- Switcher Custom Controls available in Quorum

To complete the configuration of your Caprica Server, refer to the chapter "**Caprica Server Configuration**" on page 19–1.

Graphite Setup for Quorum

This chapter provides instructions for connecting a Quorum system with a Ross Video Graphite All-In-One Production System through a Caprica Server.

The following topics are discussed in this chapter:

- Quorum System Setup
- Quorum System Connections
- Configuring a Switcher Device for a Ross Video Graphite All-In-One Production System
- Connecting Quorum to Your Caprica Server
- Configuring Your Caprica Server

Quorum System Setup

To setup a Quorum system with a Ross Video Graphite All-In-One Production System, complete the following:

- Connect the Quorum system components together.
  Refer to the section "**Quorum System Connections**" on page 14–2.
- On the Caprica Server, create a Switcher device for your Ross Video Graphite All-In-One Production System.
  Refer to the section "**Configuring a Switcher Device for a Ross Video Graphite All-In-One Production System**" on page 14–3.
- Configure the Quorum Server to connect to the Caprica Server.
  Refer to the section "**Connecting Quorum to Your Caprica Server**" on page 14–6.

Quorum System Connections

In a Quorum system, a Ross Video Graphite All-In-One Production System connects to the Quorum Server through a Caprica Server. The following diagram (**Figure 14.1**) illustrates the cabling layout of the Ross Video Graphite All-In-One Production System connection to a Quorum system.

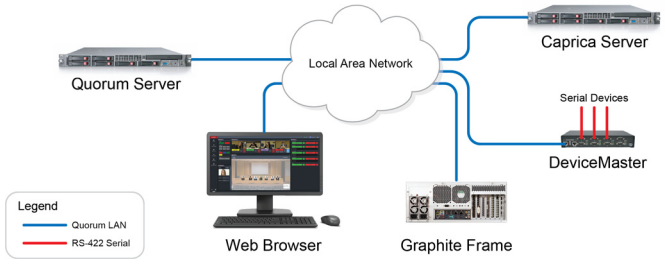


Figure 14.1 Quorum System Connection to a Ross Video Graphite All-In-One Production System

The following Quorum system components connect through the internal network of your company:

- Quorum Server
- Caprica Server
- DeviceMaster for serial device connections
- Graphite Frame and Panel

Cabling to connect to Quorum system components an internal network is not provided with Quorum systems.

To connect a Ross Video Graphite All-In-One Production System to a Quorum system

1. Verify that the **Quorum Server** is connected to your internal network through Ethernet port **1** on the back of the server.
2. Verify that the **Caprica Server** is connected to your internal network.
3. Use an **Ethernet** cable to connect the DeviceMaster **UP** port to your internal network.
4. Use an **Ethernet** cable to connect the Graphite Frame to your internal network.
5. Use an **Ethernet** cable to connect the Graphite Panel to your internal network.

Quorum Server Peripheral Connections

The Quorum system comes with a USB Keyboard that can be connected to a USB port on the Quorum computer.

✶ USB/KVM extenders can interfere with Quorum system operation and are not supported for use with Quorum client computers. Place Quorum client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Touch-screen monitors may be purchased as an option to provide a dual-monitor display. Contact your Ross Video representative for more information on this option.

✶ For DELL Quorum computers, connect the primary monitor to plug number 1 on the Y break-out cable attached to the back of the computer to ensure that the primary monitor is used for the POST and the operating system.

For More Information on...

- cabling a Quorum Server, refer to the ***Cabling Your Quorum Server Quick Start Guide***.
- cabling a Caprica Server, refer to the ***Cabling Your Caprica Server Quick Start Guide***.
- cabling a Ross Video Graphite All-In-One Production System, refer to the switcher setup documentation supplied with your switcher.

Configuring a Switcher Device for a Ross Video Graphite All-In-One Production System

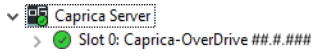
The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Ross Video Graphite All-In-One Production System in a Quorum system.

To configure the SWITCHER1 device for a Ross Video Graphite All-In-One Production System

1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

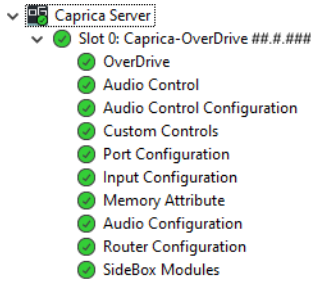
   DashBoard opens.
3. In the **DashBoard Tree View**, expand the **Caprica Server** node.

   The **Caprica Server** node displays the available Caprica Servers.



4. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

   The **Slot 0: Caprica** node displays the available Caprica Server clients.



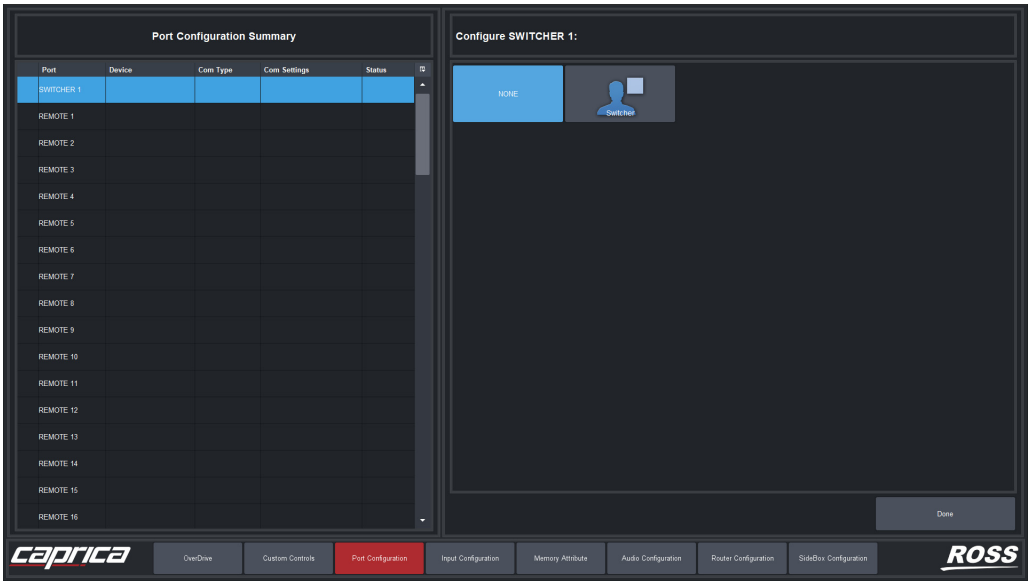
5. Double-click the **Port Configuration** node.

   The **Port Configuration** client opens in the **Device View**.
6. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.

7. In the **Port Configuration Summary** table, double-click **SWITCHER1** in the **Port** column.

   The **Configure SWITCHER1** panel opens.



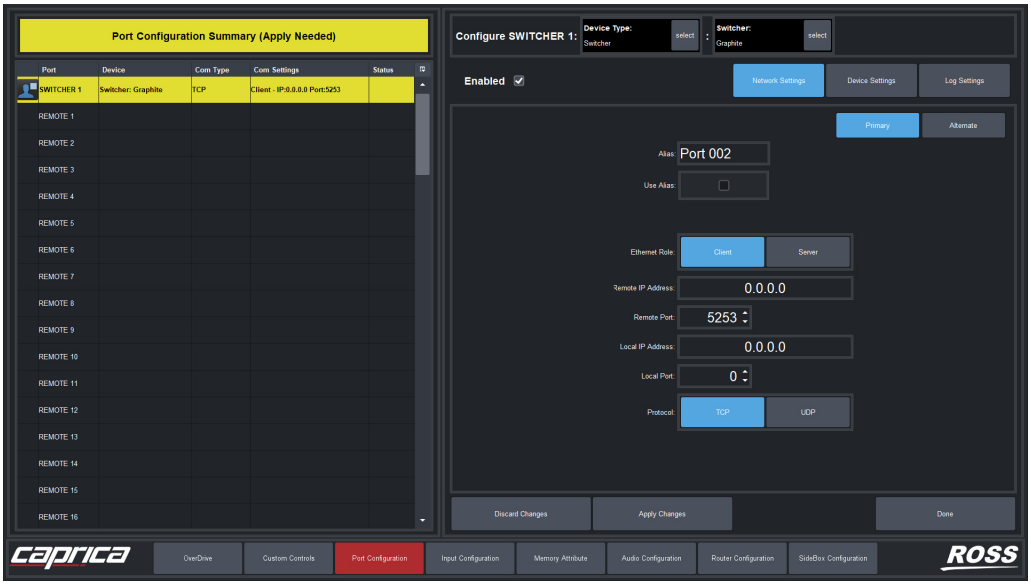
   The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with a Ross Video Graphite All-In-One Production System in a Quorum system.

8. In the **Configure SWITCHER1** panel, click **Switcher**.

   The **Configure SWITCHER1** panel lists the available switchers.

9. Click **Graphite**.

   The **Configure SWITCHER1** panel displays the **Network Settings** for a Ross Video Graphite All-In-One Production System.



10. To enable Caprica to control the device you are configuring, confirm that the **Enable** check box is selected for the device. When you clear the **Enable** check box for a device, Caprica ignores and does not control the device.

11. To set a custom name for the remote port, complete the following steps:

    a. In the **Alias** box, enter a custom name for the remote port.

    b. Select the **Use Alias** check box.

    The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

    To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

12. For the **Ethernet Role** setting, click **Client**.

13. In the **Remote IP Address** box, enter the IP address of your Ross Video Graphite All-In-One Production System.

14. Use the **Remote Port** box to enter or select `5253`.

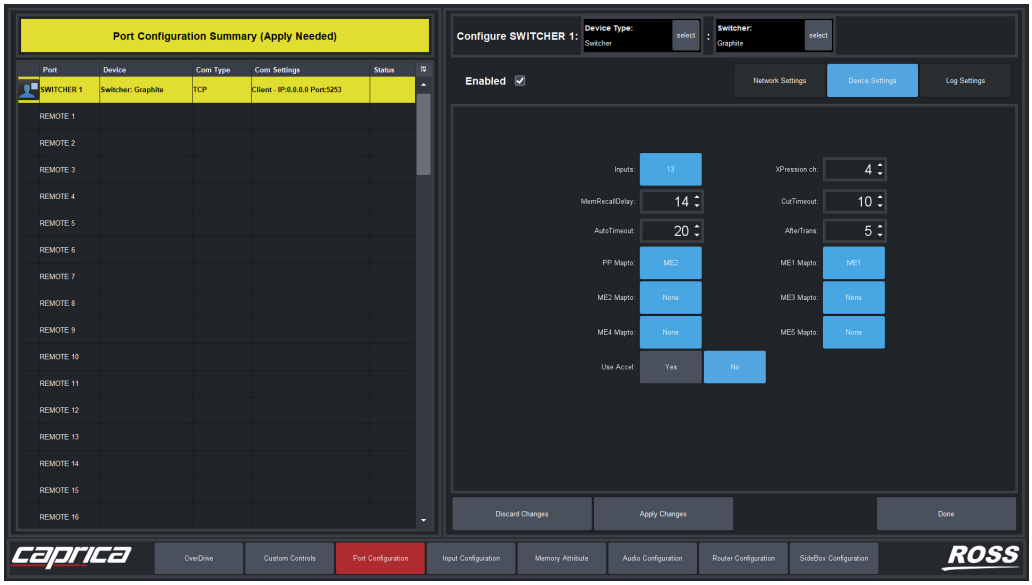
15. In the **Local IP Address** box, enter `0.0.0.0`.

16. Use the **Local Port** box to enter or select `0`.

17. For the **Protocol** setting, click **TCP**.

18. Click **Device Settings**.

    The **Configure SWITCHER1** panel displays the **Device Settings** for a Graphite switcher.



19. Click **Inputs** to set the number of inputs on your Graphite frame.

20. Use the **XPression ch** setting to enter or select the number of internal XPression video/alpha input pairs on your Carbonite frame.

21. Use the **MemRecallDelay** setting to enter or select the number of fields to wait for memory recalls to complete.

22. Use the **CutTimeout** box to enter or select the number of frames to wait after a Cut transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

23. Use the **AutoTimeout** box to enter or select the number of frames to wait after an AutoTrans transition until everything is “settled”, the transition is officially over, and OverDrive can continue.

24. Use the **AfterTrans** box to enter or select the number of frames to wait after Caprica confirms that a transition is complete.

25. Click **PP Mapto** to select the ME on your Graphite switcher to map to the Program bus in Caprica.

    When using a MiniME as Program/Preset, Ross Video recommends that you use the highest numbered MiniME to avoid re-entry conflicts and errors. Using a lower numbered MiniME as Program/Preset may hinder Quorum taking multi-layered shots on air.

26. Click **ME1 Mapto** to select the ME on your Graphite switcher to map to ME1 in Caprica.

27. Click **ME2 Mapto** to select the ME on your Graphite switcher to map to ME2 in Caprica.

28. Click **ME3 Mapto** to select the ME on your Graphite switcher to map to ME3 in Caprica.

29. Click **ME4 Mapto** to select the ME on your Graphite switcher to map to ME4 in Caprica.

30. Click **ME5 Mapto** to select the ME on your Graphite switcher to map to ME5 in Caprica.

31. Use the **Use Accel** buttons to control the use of an experimental feature to improve communication performance between your Graphite switcher and Caprica Server. The available settings are as follows:

    - **Yes** — use this experiment feature.
    - **No** — do not use this experiment feature.

32. Click **Apply Changes** to save the switcher settings.

33. Click **Done** to close the **Configure SWITCHER1** panel.

Connecting Quorum to Your Caprica Server

In Quorum, you use the Server Configuration web page to configure the Quorum Server to communicate with the Quorum system switcher through the Caprica Server. To configure a Quorum Server to connect to a Caprica Server, refer to the section "**Configuring Caprica Communication Settings**" of the ***Quorum Installation and Configuration Guide***.

Configuring Your Caprica Server

After configuring a Caprica device for your switcher, configure the following on your Caprica Server:

- Devices connected to your Quorum system
- Inputs to your Quorum system
- Audio channel names displayed in Quorum
- Switcher Custom Controls available in Quorum

To complete the configuration of your Caprica Server, refer to the chapter "**Caprica Server Configuration**" on page 19–1.

Ultrix Acuity Setup for Quorum

This chapter provides instructions for connecting a Quorum system with a Ross Video Ultrix Acuity switcher through a Caprica Server.

The following topics are discussed in this chapter:

- Quorum System Setup
- Quorum System Connections
- Switcher Communications Setup
- Configuring an Ultrix Acuity Switcher Device
- Connecting Quorum to Your Caprica Server
- Configuring Your Caprica Server

Quorum System Setup

To setup a Quorum system with an Ultrix Acuity switcher, complete the following:

- Connect the Quorum system components together.
  Refer to the section "**Quorum System Connections**" on page 15–2.
- Configure you Ultrix Acuity frame to connect to the Quorum Server.
  Refer to the section "**Switcher Communications Setup**" on page 15–3.
- On the Caprica Server, create a Switcher Device for your Ultrix Acuity switcher.
  Refer to the section "**Configuring an Ultrix Acuity Switcher Device**" on page 15–5.
- Configure the Quorum Server to connect to the Caprica Server.
  Refer to the section "**Connecting Quorum to Your Caprica Server**" on page 15–8.

Quorum System Connections

In a Quorum system, an Ultrix Acuity switcher connects to the Quorum Server through a Caprica Server. The following diagram (**Figure 15.1**) illustrates the cabling layout of the Ultrix Acuity switcher connection to a Quorum system.

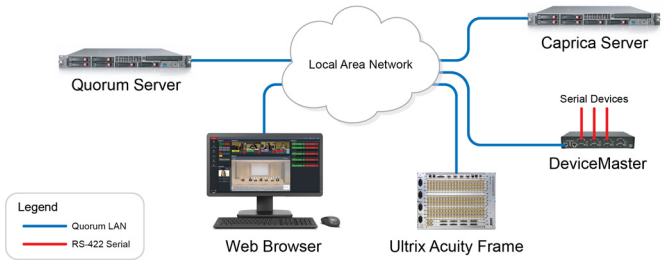


Figure 15.1 Quorum System Connection to an Ultrix Acuity Switcher

✶ In an Ultrix Acuity MultiPanel configuration, Quorum is only able to interface with the Master Panel. Quorum cannot interface with the Satellite panels in an Ultrix Acuity MultiPanel configuration.

The following Quorum system components connect through the internal network of your company:

- Quorum Server
- Caprica Server
- Ultrix Acuity frame and panel

Cabling to connect to Quorum system components an internal network is not provided with Quorum systems.

To connect an Ultrix Acuity switcher to a Quorum system

1. Verify that the **Quorum Server** is connected to your internal network through Ethernet port **1** on the back of the server.
2. Verify that the **Caprica Server** is connected to your internal network.
3. Use an **Ethernet** cable to connect the DeviceMaster **UP** port to your internal network.
4. Use an **Ethernet** cable to connect the Ultrix Acuity Frame to your internal network.
5. Use an **Ethernet** cable to connect the Ultrix Acuity Panel to your internal network.

Quorum Server Peripheral Connections

The Quorum system comes with a USB Keyboard that can be connected to a USB port on the Quorum computer.

- USB/KVM extenders can interfere with Quorum system operation and are not supported for use with Quorum client computers. Place Quorum client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Touch-screen monitors may be purchased as an option to provide a dual-monitor display. Contact your Ross Video representative for more information on this option.

- For DELL Quorum computers, connect the primary monitor to plug number 1 on the Y break-out cable attached to the back of the computer to ensure that the primary monitor is used for the POST and the operating system.

For More Information on...

- cabling a Quorum Server, refer to the ***Cabling Your Quorum Server Quick Start Guide***.
- cabling a Caprica Server, refer to the ***Cabling Your Caprica Server Quick Start Guide***.
- cabling an Ultrix Acuity switcher, refer to the switcher setup documentation supplied with your switcher.

Switcher Communications Setup

On your Ultrix Acuity switcher you must assign a Peripheral port and start communications to enable Quorum to control your Ultrix Acuity switcher.

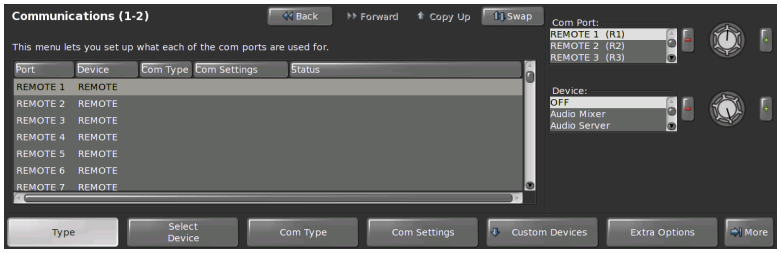
Peripheral Port

Quorum communicates with your Ultrix Acuity switcher over a Peripheral port.

To configure a Peripheral port to communicate with Quorum

1. Navigate to the **Communications Menu (1-2)** by pressing **Home** > **Setup** > **Installation** > **Com Setup**.
2. Configure the Peripheral port for Quorum communication as follows:
   a. Press **Type**.

      The **Type** page opens.

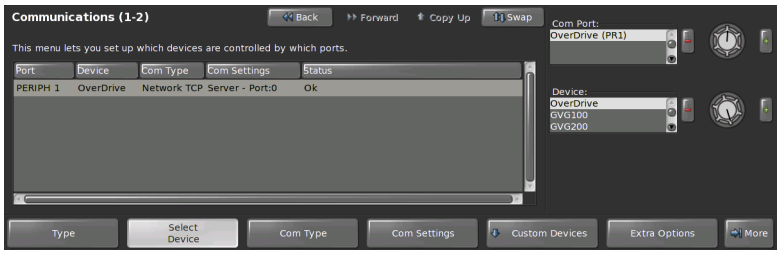


   b. Use the **Com Port** knob to select the first available Frame net port.
   c. Use the **Device** knob to select **Editor**.

3. Assign the Quorum device to the selected Frame net port as follows:

   a. Press **Select Device**.

      The **Select Device** page opens.



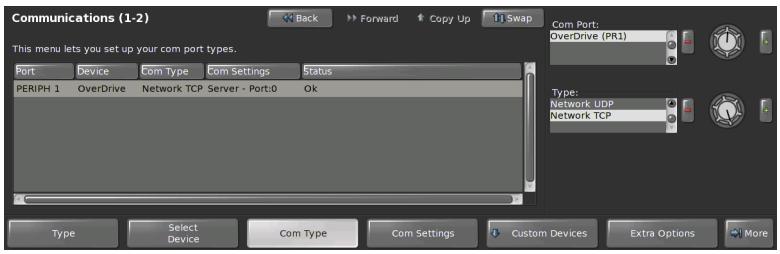
   b. Use the **Com Port** knob to select your Frame net port.

   c. Use the **Device** knob to select Quorum.

4. Select the type of communication that is used to communicate with Quorum as follows:

   a. Press **Com Type**.

      The **Com Type** page opens.



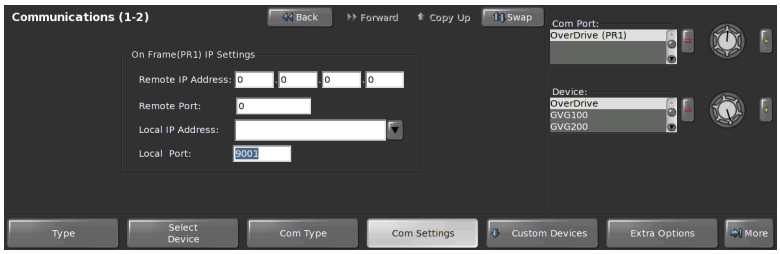
   b. Use the **Com Port** knob to select your Frame net port.

   c. Use the **Type** knob to select **Network TCP**.

5. Set the communication settings for the Peripheral port as follows:

   a. Press **Com Settings**.

      The **Com Settings** page opens.



   b. Use the **Com Port** knob to select your Frame net port.

   c. Use the **Client/Server** knob to select **Server**.

   d. In the **Local Port** box, enter `9001`.

6. Press **Home**.

   The **Installation Change Confirmation Screen** opens.

7. Press **Confirm** to save your Peripheral port configuration.

Start Communications

After configuring Peripheral port 1 and an External Link port 2, you must turn the Editor on to enable Quorum to control your Ultrix Acuity switcher.

To enable Quorum to control your Ultrix Acuity switcher

1. Navigate to the **Remote Enables** menu by pressing **Home** > **More** > **Remote Enables**.
2. Toggle the **Editor** button to **ON**.

Configuring an Ultrix Acuity Switcher Device

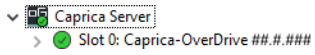
The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with an Ultrix Acuity switcher in a Quorum system.

To configure the SWITCHER1 device for an Ultrix Acuity switcher

1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

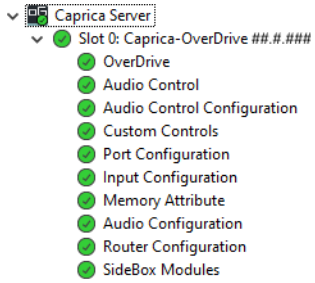
   DashBoard opens.
3. In the **DashBoard Tree View**, expand the **Caprica Server** node.

   The **Caprica Server** node displays the available Caprica Servers.



4. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

   The **Slot 0: Caprica** node displays the available Caprica Server clients.



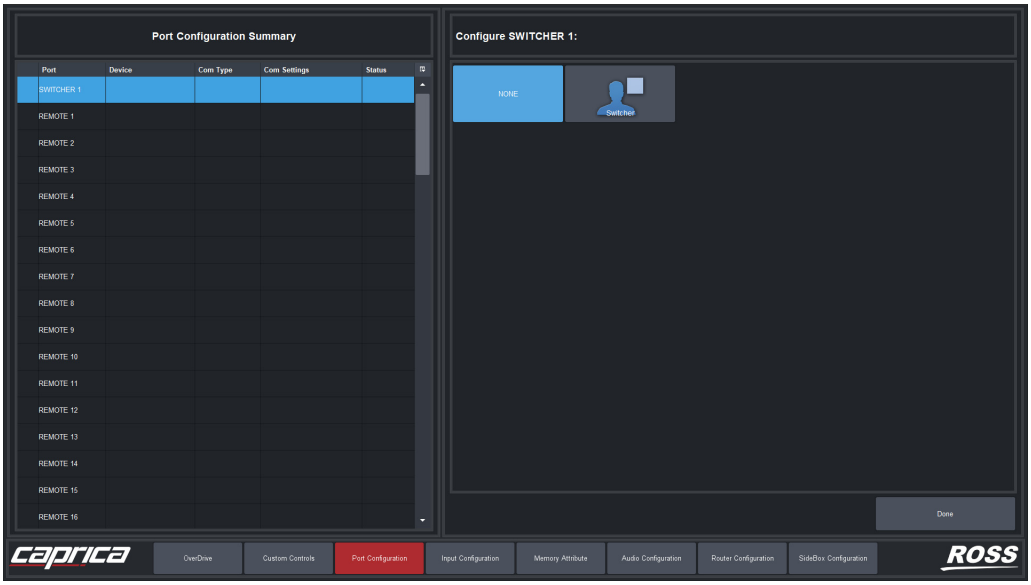
5. Double-click the **Port Configuration** node.

   The **Port Configuration** client opens in the **Device View**.
6. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.

7. In the **Port Configuration Summary** table, double-click **SWITCHER1** in the **Port** column.

   The **Configure SWITCHER1** panel opens.

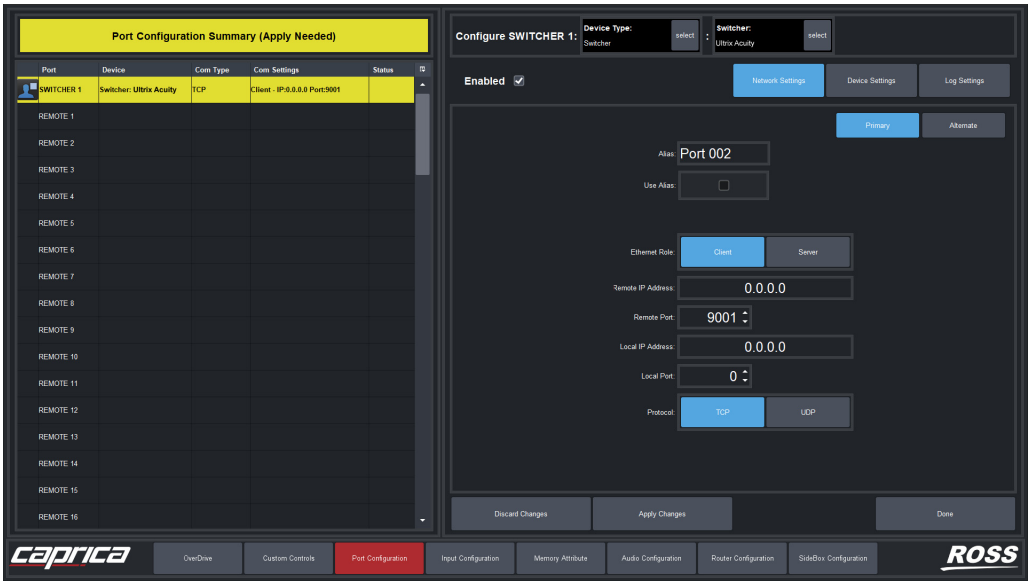


8. In the **Configure SWITCHER1** panel, click **Switcher**.

   The **Configure SWITCHER1** panel lists the available switchers.

9. Click **Ultrix Acuity**.

   The **Configure SWITCHER1** panel displays the **Network Settings** for an Ultrix Acuity switcher.



10. To enable Caprica to control the device you are configuring, confirm that the **Enable** check box is selected for the device. When you clear the **Enable** check box for a device, Caprica ignores and does not control the device.

11. To set a custom name for the remote port, complete the following steps:

    a. In the **Alias** box, enter a custom name for the remote port.

    b. Select the **Use Alias** check box.

    The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

    To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** box retain the custom name set for the remote port.

12. For the **Ethernet Role** setting, click **Client**.

13. In the **Remote IP Address** box, enter the IP address of your Ultrix Acuity switcher.

14. Use the **Remote Port** box to enter or select `9001`.

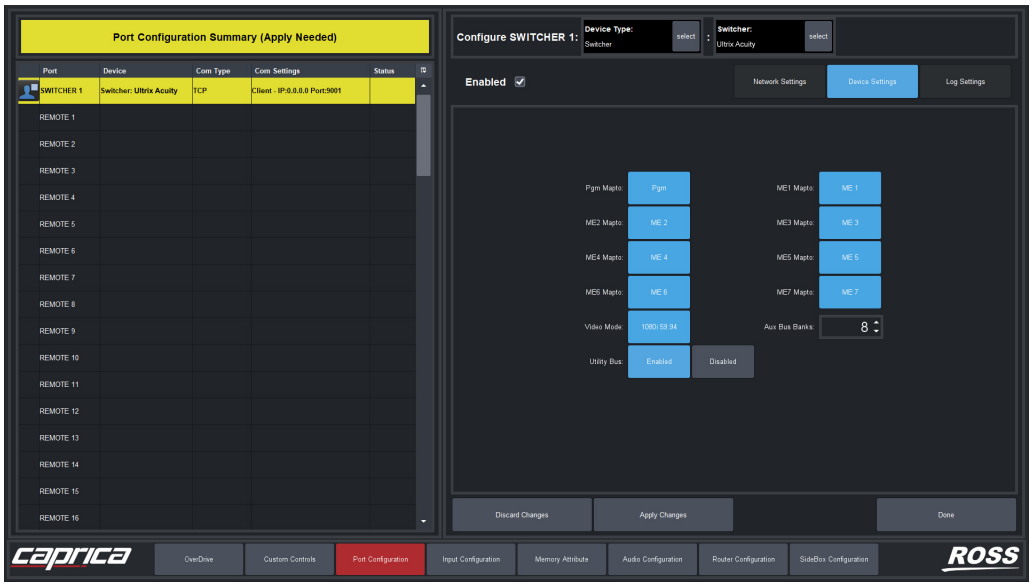
15. In the **Local IP Address** box, enter `0.0.0.0`.

16. Use the **Local Port** box to enter or select `0`.

17. For the **Protocol** setting, click **TCP**.

18. Click **Device Settings**.

    The **Configure SWITCHER1** panel displays the **Device Settings** for an Ultrix Acuity switcher.



19. Click **PP Mapto** to select the ME on your Ultrix Acuity switcher to map to the Program bus in Caprica.

20. Click **ME1 Mapto** to select the ME on your Ultrix Acuity switcher to map to ME1 in Caprica.

21. Click **ME2 Mapto** to select the ME on your Ultrix Acuity switcher to map to ME2 in Caprica.

22. Click **ME3 Mapto** to select the ME on your Ultrix Acuity switcher to map to ME3 in Caprica.

23. Click **ME4 Mapto** to select the ME on your Ultrix Acuity switcher to map to ME4 in Caprica.

24. Click **ME5 Mapto** to select the ME on your Ultrix Acuity switcher to map to ME5 in Caprica.

25. Click **ME6 Mapto** to select the ME on your Ultrix Acuity switcher to map to ME6 in Caprica.

26. Click **ME7 Mapto** to select the ME on your Ultrix Acuity switcher to map to ME7 in Caprica.

27. Click the **Video Mode** setting button to select the video format set on your Ultrix Acuity switcher.

28. Use the **Utility Bus** buttons to control the use of the Acuity switcher Utility Bus.The available settings are as follows:
    - **Enable** (new install default) — enable access to the Acuity switcher Utility Bus.
        - **Custom Controls** — access Custom Controls in the Utility Bus, including setting bus sources and copying bus functions. Custom Control Utility Bus functions also work using RossTalk commands.
        - **Memory Recalls** — switcher memories that include Utility Buses. Caprica Custom Controls can also recall these memories. When OverDrive templates recall these memories the Utility Buses will recall their saved bus sources.
    - **Disable** (upgrade default) — disable access to the Acuity switcher Utility Bus.
29. Use the **Aux Bus Banks** box to enter or select the number of aux bus banks on your Ultrix Acuity switcher.
30. Click **Apply Changes** to save the switcher settings.
31. Click **Done** to close the **Configure SWITCHER1** panel.
32. To view the connection status between your switcher and Caprica, click the **About Caprica** node of your **Caprica Server** in the **DashBoard Tree View**.

Connecting Quorum to Your Caprica Server

In Quorum, you use the Server Configuration web page to configure the Quorum Server to communicate with the Quorum system switcher through the Caprica Server. To configure a Quorum Server to connect to a Caprica Server, refer to the section "**Configuring Caprica Communication Settings**" of the ***Quorum Installation and Configuration Guide***.

Configuring Your Caprica Server

After configuring a Caprica device for your switcher, configure the following on your Caprica Server:

- Devices connected to your Quorum system
- Inputs to your Quorum system
- Audio channel names displayed in Quorum
- Switcher Custom Controls available in Quorum

To complete the configuration of your Caprica Server, refer to the chapter "**Caprica Server Configuration**" on page 19–1.

Acuity Setup for Quorum

This chapter provides instructions for connecting a Quorum system with a Ross Video Acuity switcher through a Caprica Server.

The following topics are discussed in this chapter:

- Quorum System Setup
- Quorum System Connections
- Switcher Communications Setup
- Configuring an Acuity Switcher Device
- Connecting Quorum to Your Caprica Server
- Configuring Your Caprica Server

Quorum System Setup

To setup a Quorum system with an Acuity switcher, complete the following:

- Connect the Quorum system components together.
  Refer to the section "**Quorum System Connections**" on page 16–2.
- Configure you Acuity frame to connect to the Quorum Server.
  Refer to the section "**Switcher Communications Setup**" on page 16–3.
- On the Caprica Server, create a Switcher Device for your Acuity switcher.
  Refer to the section "**Configuring an Acuity Switcher Device**" on page 16–5.
- Configure the Quorum Server to connect to the Caprica Server.
  Refer to the section "**Connecting Quorum to Your Caprica Server**" on page 16–8.

Quorum System Connections

In a Quorum system, an Acuity switcher connects to the Quorum Server through a Caprica Server. The following diagram (**Figure 16.1**) illustrates the cabling layout of the Acuity switcher connection to a Quorum system.

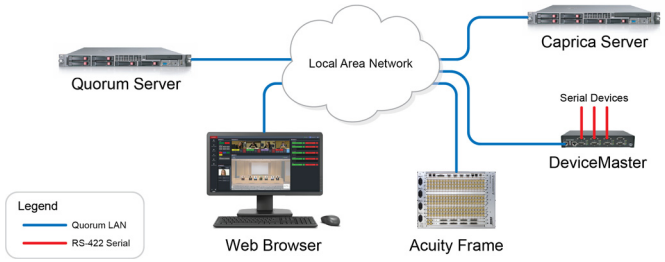


Figure 16.1 Quorum System Connection to an Acuity Switcher

✶ In an Acuity MultiPanel configuration, Quorum is only able to interface with the Master Panel. Quorum cannot interface with the Satellite panels in an Acuity MultiPanel configuration.

The following Quorum system components connect through the internal network of your company:

- Quorum Server
- Caprica Server
- Acuity frame and panel

Cabling to connect to Quorum system components an internal network is not provided with Quorum systems.

To connect an Acuity switcher to a Quorum system

1. Verify that the **Quorum Server** is connected to your internal network through Ethernet port **1** on the back of the server.
2. Verify that the **Caprica Server** is connected to your internal network.
3. Use an **Ethernet** cable to connect the DeviceMaster **UP** port to your internal network.
4. Use an **Ethernet** cable to connect the Acuity Frame to your internal network.
5. Use an **Ethernet** cable to connect the Acuity Panel to your internal network.

Quorum Server Peripheral Connections

The Quorum system comes with a USB Keyboard that can be connected to a USB port on the Quorum computer.

- USB/KVM extenders can interfere with Quorum system operation and are not supported for use with Quorum client computers. Place Quorum client computers within the standard keyboard, video, and mouse cable lengths from the operator.

Touch-screen monitors may be purchased as an option to provide a dual-monitor display. Contact your Ross Video representative for more information on this option.

- For DELL Quorum computers, connect the primary monitor to plug number 1 on the Y break-out cable attached to the back of the computer to ensure that the primary monitor is used for the POST and the operating system.

For More Information on...

- cabling a Quorum Server, refer to the ***Cabling Your Quorum Server Quick Start Guide***.
- cabling a Caprica Server, refer to the ***Cabling Your Caprica Server Quick Start Guide***.
- cabling an Acuity switcher, refer to the switcher setup documentation supplied with your switcher.

Switcher Communications Setup

On your Acuity switcher you must assign a Peripheral port and start communications to enable Quorum to control your Acuity switcher.

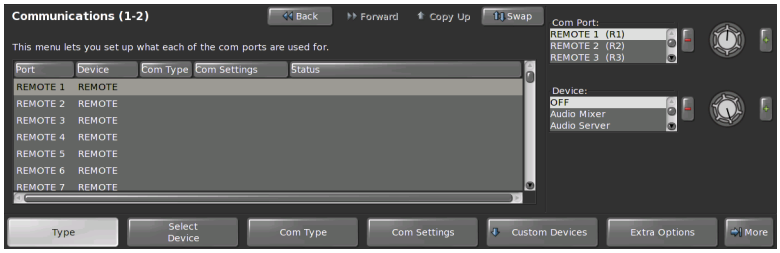
Peripheral Port

Quorum communicates with your Acuity switcher over a Peripheral port.

To configure a Peripheral port to communicate with Quorum

1. Navigate to the **Communications Menu (1-2)** by pressing **Home** > **Setup** > **Installation** > **Com Setup**.
2. Configure the Peripheral port 1 port for Quorum communication as follows:
   a. Press **Type**.

      The **Type** page opens.

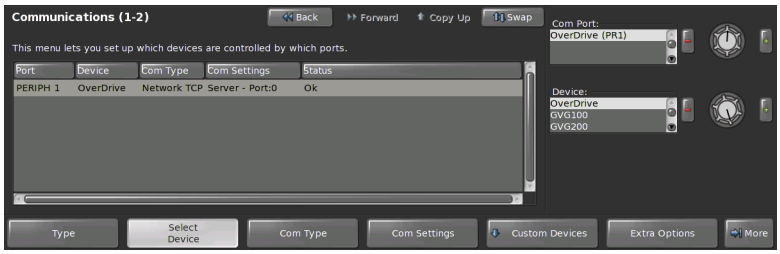


   b. Use the **Com Port** knob to select **PERIPH 1 (PR1)**.
   c. Use the **Device** knob to select **Editor**.

3. Assign the Quorum device to Peripheral port 1 as follows:

   a. Press **Select Device**.

      The **Select Device** page opens.



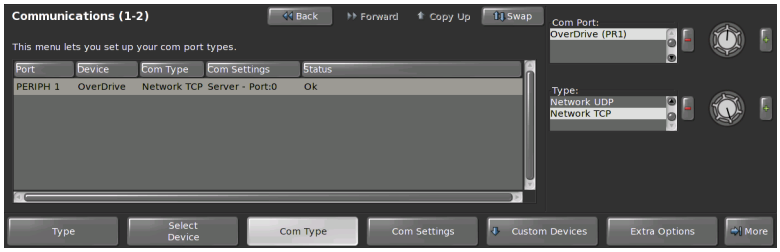
   b. Use the **Com Port** knob to select **PERIPH 1 (PR1)**.

   c. Use the **Device** knob to select **Quorum**.

4. Select the type of communication that is used to communicate with Quorum as follows:

   a. Press **Com Type**.

      The **Com Type** page opens.



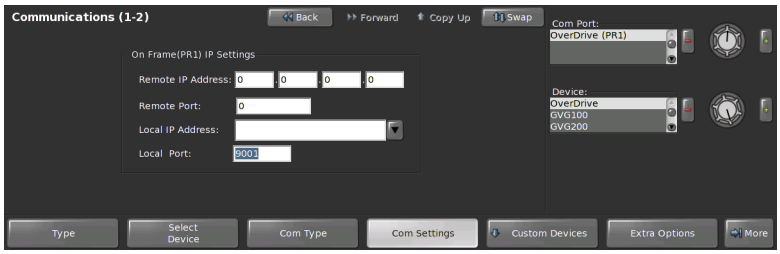
   b. Use the **Com Port** knob to select **PERIPH 1 (PR1)**.

   c. Use the **Type** knob to select **Network TCP**.

5. Set the communication settings Peripheral port 1 as follows:

   a. Press **Com Settings**.

      The **Com Settings** page opens.



   b. Use the **Com Port** knob to select **PERIPH 1 (PR1)**.

   c. Use the **Client/Server** knob to select **Server**.

   d. In the **Local Port** box, enter `9001`.

6. Press **Home**.

   The **Installation Change Confirmation Screen** opens.

7. Press **Confirm** to save your Peripheral port 1 configuration.

Start Communications

After configuring Peripheral port 1, you must turn the Editor on to enable Quorum to control your Acuity switcher.

To enable Quorum to control your Acuity switcher

1. Navigate to the **Remote Enables** menu by pressing **Home** > **More** > **Remote Enables**.
2. Toggle the **Editor** button to **ON**.

Configuring an Acuity Switcher Device

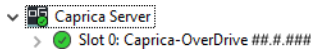
The SWITCHER1 device on the Caprica Server enables the Quorum Server to communicate with an Acuity switcher in a Quorum system.

To configure the SWITCHER1 device for an Acuity switcher

1. On the Client computer, verify that the following conditions are true:
   - The Client computer uses the current version of **DashBoard** software.
   - The Client computer can access a running Caprica Server on the network.
2. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.

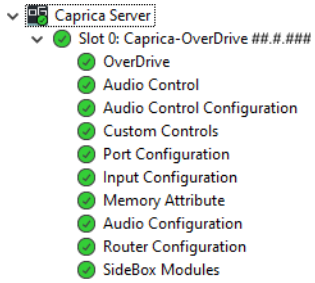
   DashBoard opens.
3. In the **DashBoard Tree View**, expand the **Caprica Server** node.

   The **Caprica Server** node displays the available Caprica Servers.



4. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.

   The **Slot 0: Caprica** node displays the available Caprica Server clients.



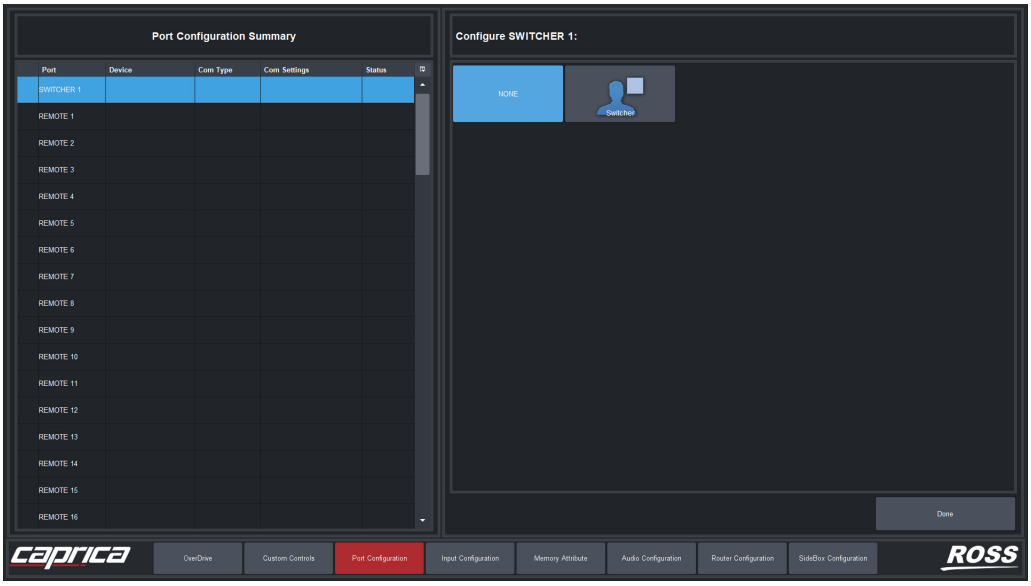
5. Double-click the **Port Configuration** node.

   The **Port Configuration** client opens in the **Device View**.
6. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.

7. In the **Port Configuration Summary** table, double-click **SWITCHER1** in the **Port** column.

   The **Configure SWITCHER1** panel opens.

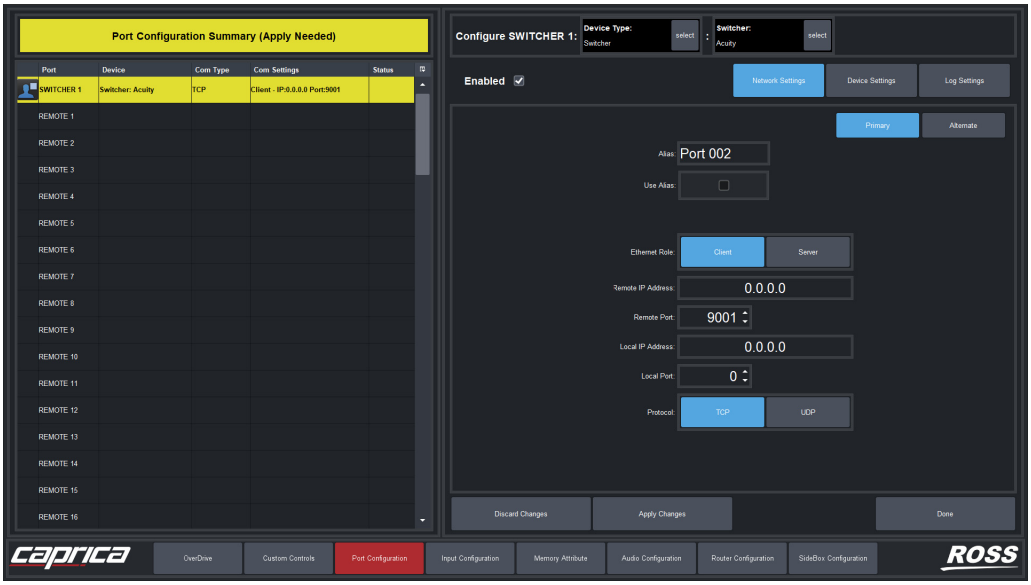


8. In the **Configure SWITCHER1** panel, click **Switcher**.

   The **Configure SWITCHER1** panel lists the available switchers.

9. Click **Acuity**.

   The **Configure SWITCHER1** panel displays the **Network Settings** for an Acuity switcher.



10. To enable Caprica to control the device you are configuring, confirm that the **Enable** check box is selected for the device. When you clear the **Enable** check box for a device, Caprica ignores and does not control the device.

11. To set a custom name for the remote port, complete the following steps:

    a. In the **Alias** box, enter a custom name for the remote port.

    b. Select the **Use Alias** check box.

    The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

    To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

12. For the **Ethernet Role** setting, click **Client**.

13. In the **Remote IP Address** box, enter the IP address of your Acuity switcher.

14. Use the **Remote Port** box to enter or select `9001`.

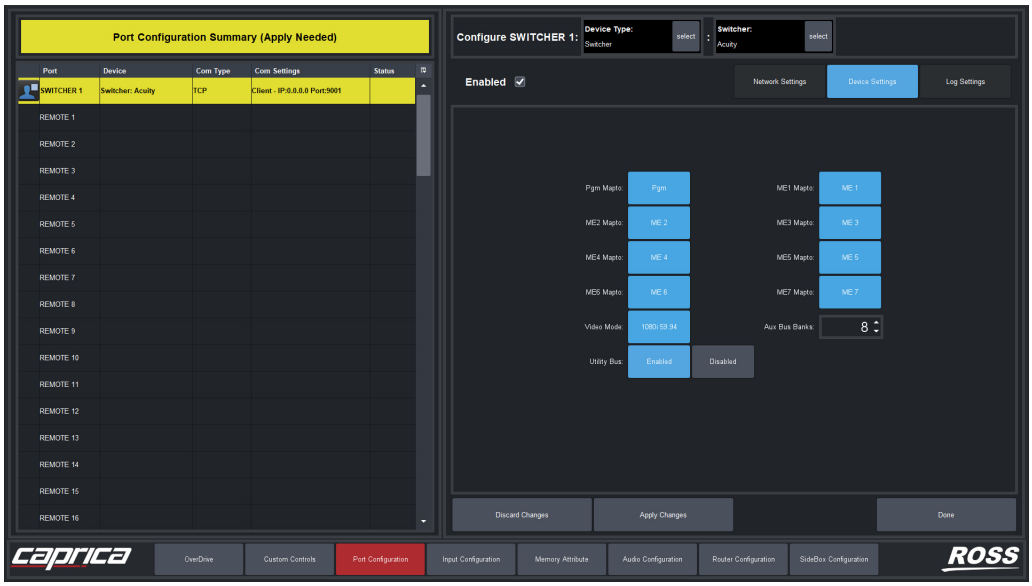
15. In the **Local IP Address** box, enter `0.0.0.0`.

16. Use the **Local Port** box to enter or select `0`.

17. For the **Protocol** setting, click **TCP**.

18. Click **Device Settings**.

    The **Configure SWITCHER1** panel displays the **Device Settings** for an Acuity switcher.



19. Click **PP Mapto** to select the ME on your Acuity switcher to map to the Program bus in Caprica.

20. Click **ME1 Mapto** to select the ME on your Acuity switcher to map to ME1 in Caprica.

21. Click **ME2 Mapto** to select the ME on your Acuity switcher to map to ME2 in Caprica.

22. Click **ME3 Mapto** to select the ME on your Acuity switcher to map to ME3 in Caprica.

23. Click **ME4 Mapto** to select the ME on your Acuity switcher to map to ME4 in Caprica.

24. Click **ME5 Mapto** to select the ME on your Acuity switcher to map to ME5 in Caprica.

25. Click **ME6 Mapto** to select the ME on your Acuity switcher to map to ME6 in Caprica.

26. Click **ME7 Mapto** to select the ME on your Acuity switcher to map to ME7 in Caprica.

27. Click the **Video Mode** setting button to select the video format set on your Acuity switcher.

28. Use the **Utility Bus** buttons to control the use of the Acuity switcher Utility Bus.The available settings are as follows:
    - **Enable** (new install default) — enable access to the Acuity switcher Utility Bus.
        - **Custom Controls** — access Custom Controls in the Utility Bus, including setting bus sources and copying bus functions. Custom Control Utility Bus functions also work using RossTalk commands.
        - **Memory Recalls** — switcher memories that include Utility Buses. Caprica Custom Controls can also recall these memories. When OverDrive templates recall these memories the Utility Buses will recall their saved bus sources.
    - **Disable** (upgrade default) — disable access to the Acuity switcher Utility Bus.
29. Use the **Aux Bus Banks** box to enter or select the number of aux bus banks on your Acuity switcher.
30. Click **Apply Changes** to save the switcher settings.
31. Click **Done** to close the **Configure SWITCHER1** panel.
32. To view the connection status between your switcher and Caprica, click the **About Caprica** node of your **Caprica Server** in the **DashBoard Tree View**.

Connecting Quorum to Your Caprica Server

In Quorum, you use the Server Configuration web page to configure the Quorum Server to communicate with the Quorum system switcher through the Caprica Server. To configure a Quorum Server to connect to a Caprica Server, refer to the section "**Configuring Caprica Communication Settings**" of the ***Quorum Installation and Configuration Guide***.

Configuring Your Caprica Server

After configuring a Caprica device for your switcher, configure the following on your Caprica Server:

- Devices connected to your Quorum system
- Inputs to your Quorum system
- Audio channel names displayed in Quorum
- Switcher Custom Controls available in Quorum

To complete the configuration of your Caprica Server, refer to the chapter "**Caprica Server Configuration**" on page 19–1.

Camera Configuration

Quorum uses Caprica to control the cameras in a meeting venue. In Caprica, you must configure a Caprica device for each camera in your venue and assign it to a switcher input.

The following topics are discussed in this chapter:

- Configuring a Caprica Device for Your Cameras
- Connecting Cameras Devices to Switcher Inputs

Configuring a Caprica Device for Your Cameras

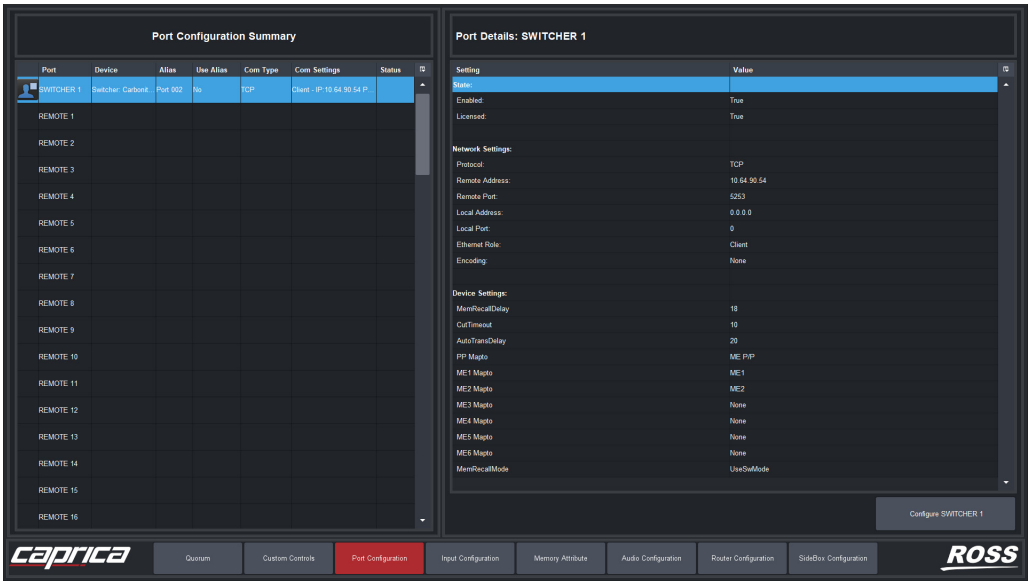
On the Caprica Server, you need to configure a Caprica device for each camera in your venue. Using the Port Configuration client on the Caprica Server, you can configure Caprica devices for your cameras.

To configure a Caprica device for a camera

1. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.
2. In the **DashBoard Tree View**, expand the **Caprica Server** node.
3. In the **Caprica Server** node, expand the **Slot 0: Caprica-Quorum** node.
4. Double-click the **Port Configuration** node.

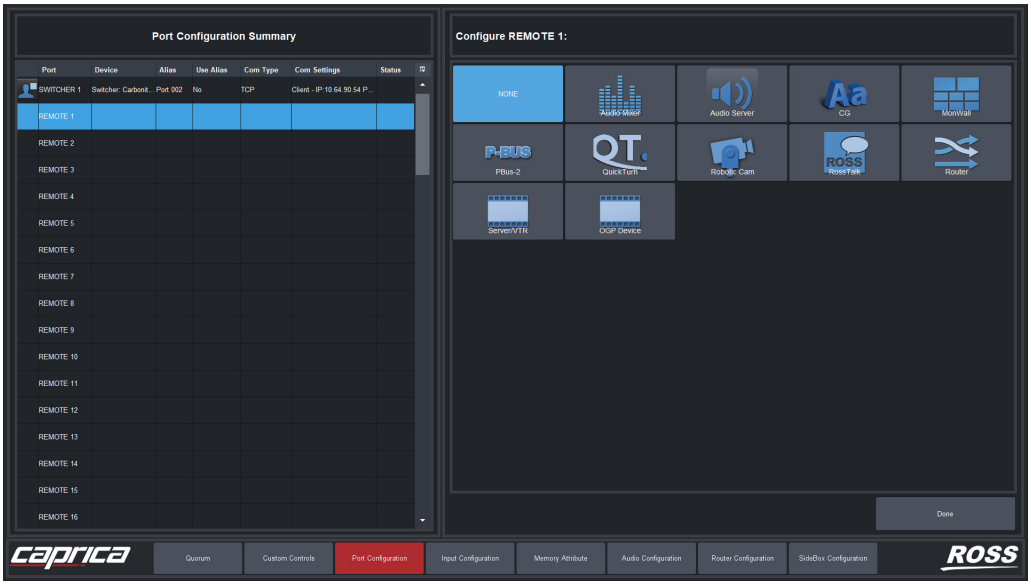
   The **Port Configuration** client opens in the **Device View**.
5. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.



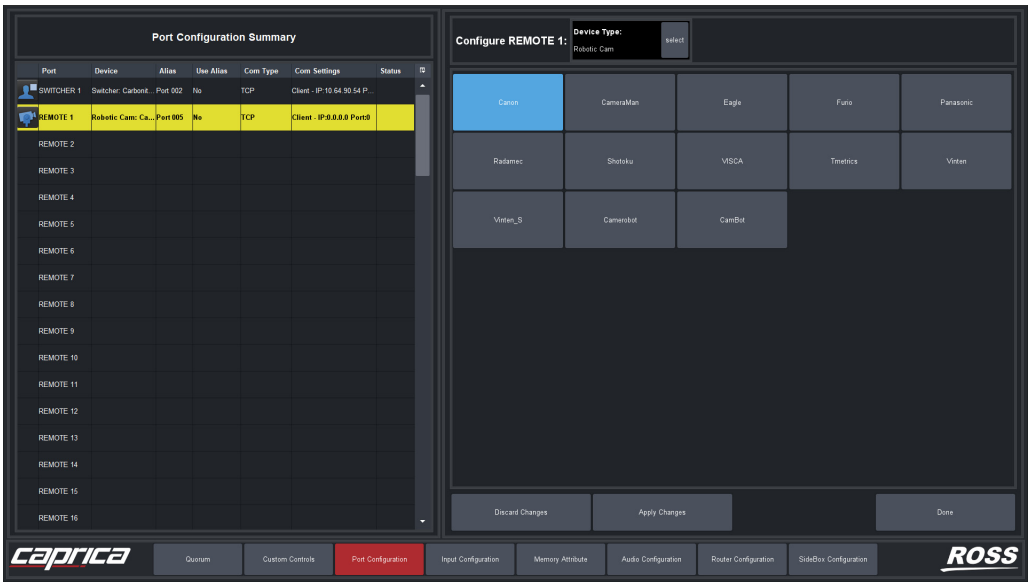
6. In the **Port** column of the **Port Configuration Summary** table, double-click the port to configure for the device (**REMOTE 1 to REMOTE72**).

The **Configure REMOTE #** panel for the selected port opens.



7. In the **Configure REMOTE #** panel, click **Robotic Cam**.

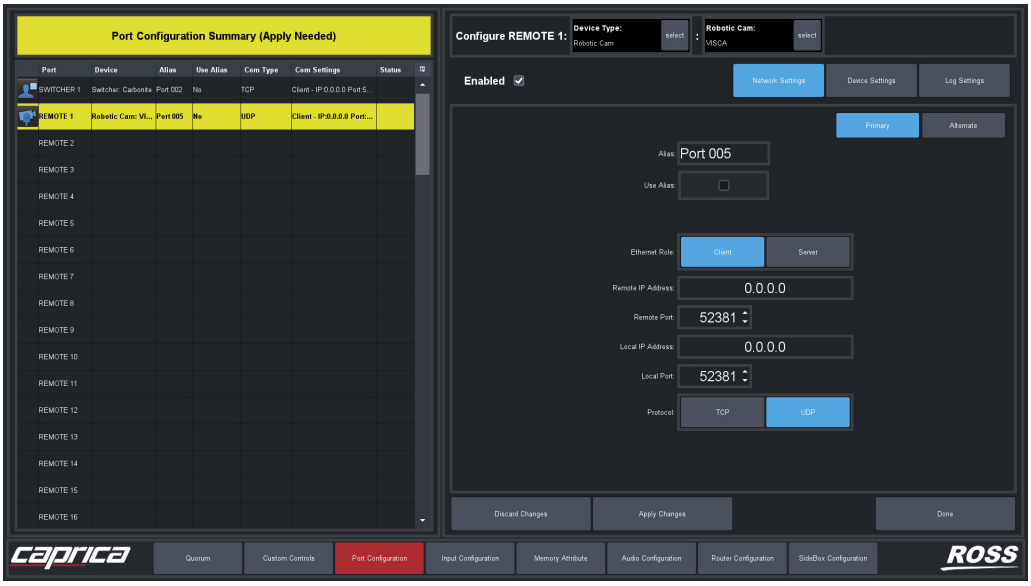
   The **Configure REMOTE #** panel lists the available cameras.



   If you selected the wrong device type, click **select** in the **Device Type** area to return to the list of available device types.

8. Click the device to configure for your brand of camera. To configure a Ross Video PTZ camera, click **VISCA**.

   The **Configure REMOTE #** panel displays the **Network Settings** for the selected camera device.



   If you selected the wrong device, click **select** in the **Device Name** area to return to the list of available devices.

9. In the **Configure REMOTE #** panel, select the **Enable** check box to enable Caprica to control the device you are configuring. Clear the **Enable** check box for a device when you do not want Caprica to control the device.

10. In the **Alias** box, enter a custom name for camera device on the remote port.

    For example: **PTZ1**.

11. Select the **Use Alias** check box.

    The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

    To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

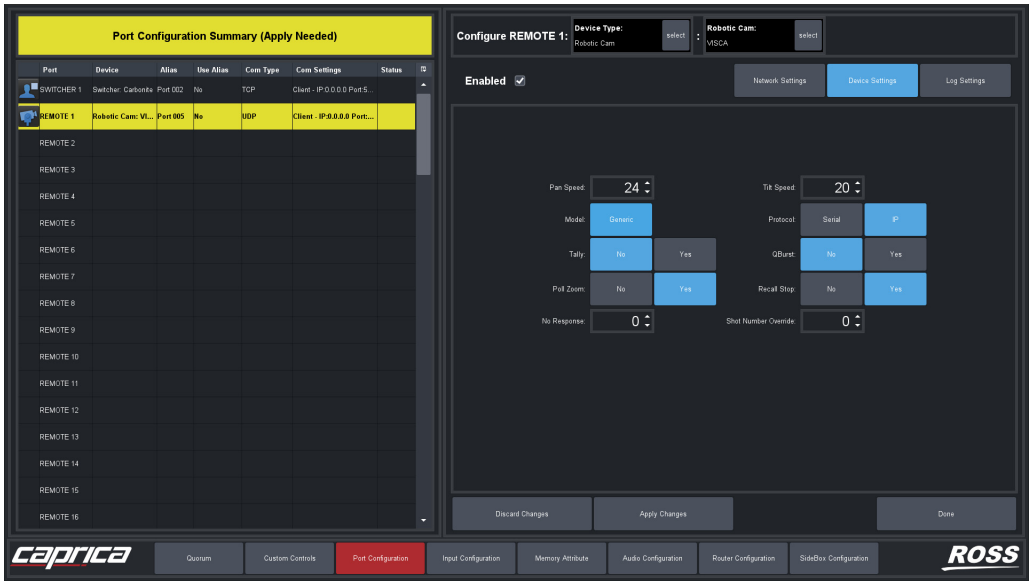
12. Use the settings in the ***Ross Video External Device Setup Sheet*** for the selected camera device to configure the settings in the **Network Settings** section for the device.

    Use the following settings to configure the **Network Settings** for a Ross Video PTZ camera:

    - **Ethernet Role** — Client
    - **Remote IP Address** — IP address of your PTZ camera
    - **Remote Port** — Port number that your PTZ uses to communicate with other devices
    - **Local IP Address** — 0.0.0.0
    - **Local Port** — 0
    - **Protocol** — TCP

13. Click **Device Settings**.

    The **Configure REMOTE #** panel displays the **Device Settings** for the selected camera device.

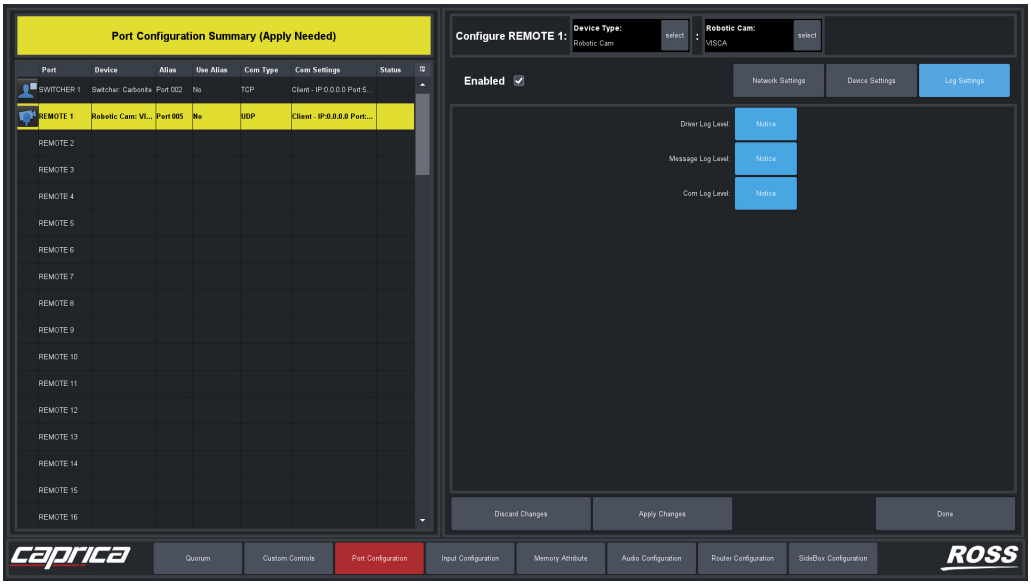


14. Use the following settings to configure the **Device Settings** for a Ross Video PTZ camera:

    - **Pan Speed** — enter or select the speed at which to pan the camera, **1** to **24**.
    - **Model** — click **Ross PTZ**.
    - **Tally** — click **Yes** to enable camera tally. Click **No** to disable camera tally.
    - **Poll Zoom** — click **Yes** to enable poll zoom. Click **No** to disable poll zoom.
    - **No Response** — enter or select the interval for no response, **0** to **20**.
    - **Tilt Speed** — enter or select the speed at which to tilt the camera, **1** to **20**.
    - **Protocol** — click **IP**.
    - **QBurst** — click **Yes** to enable QBurst. Click **No** to disable QBurst.
    - **Recall Stop** — click **Yes**. to connect recalls. Click **No** to not connect recalls.
    - **Shot Number Override** — enter or select the number of shots that OverDrive can recall from the camera, **1** to **255**. Enter **0** to use the camera default as the number of shots that OverDrive can recall.

15. To select the logging level of a device, click **Log Settings**.

    The **Configure REMOTE #** panel displays the **Log Settings** for the camera device.



16. Click the **Log Level** buttons to set the logging level for the camera device.
17. Click **Apply Changes** to save the network, device, and log settings for the camera device.
18. Click **Done** to close the **Configure REMOTE #** panel.
19. Repeat step **6** to step **17** for each camera you want to connect to your Quorum Server.

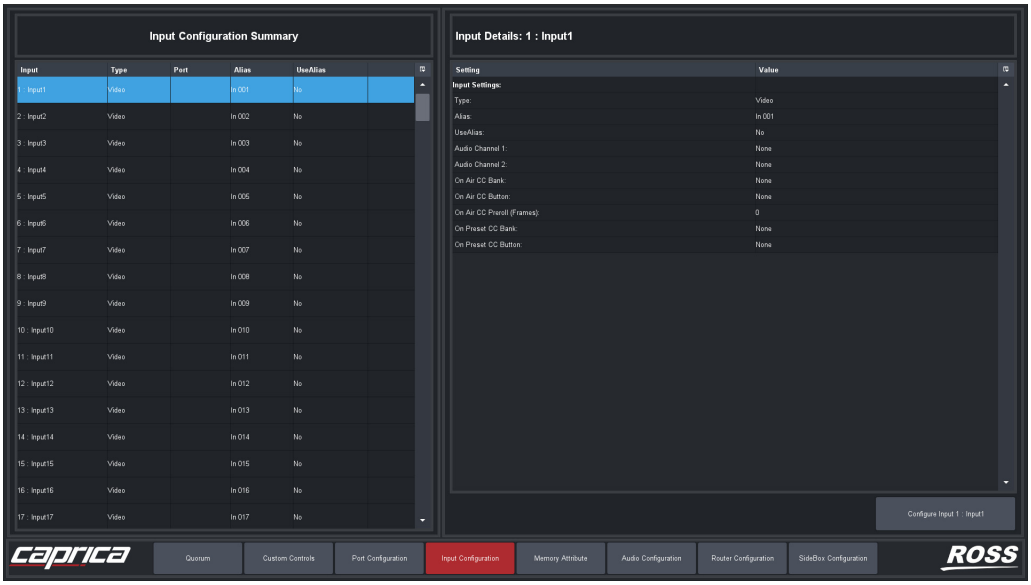
Connecting Cameras Devices to Switcher Inputs

After configuring Caprica devices for you cameras, you need to connect the camera devices to switcher inputs.

To configure a switcher input for a camera device

1. At the bottom of the **Device View**, click **Input Configuration**.

    The **Input Configuration** client opens.

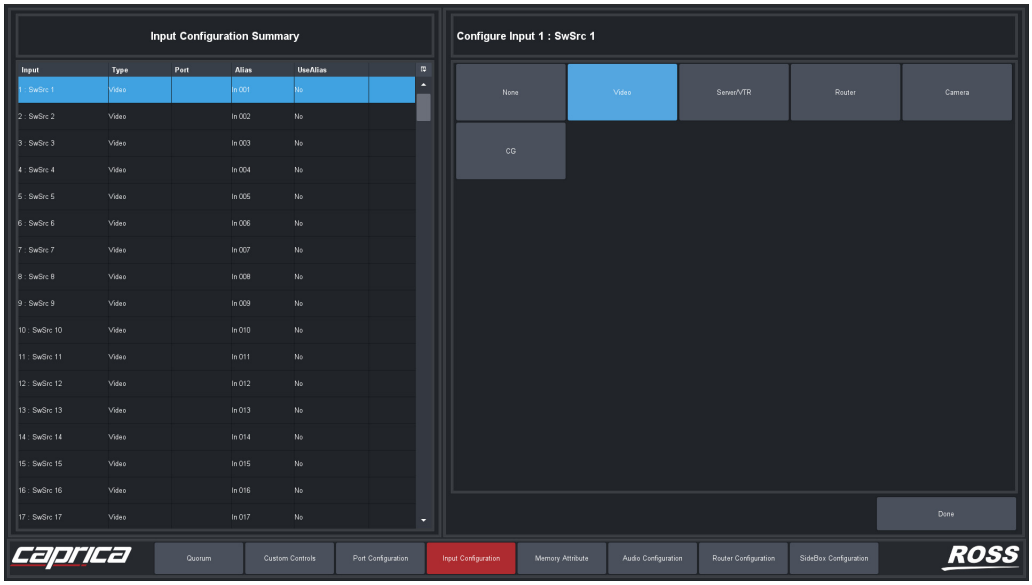


2. In the **Input** column of the **Input Configuration Summary** table, double-click the switcher input to connect with a camera.

   The **Configure Input #** panel displays the **Input Settings** the current **Input Type** associated with the selected switcher input.

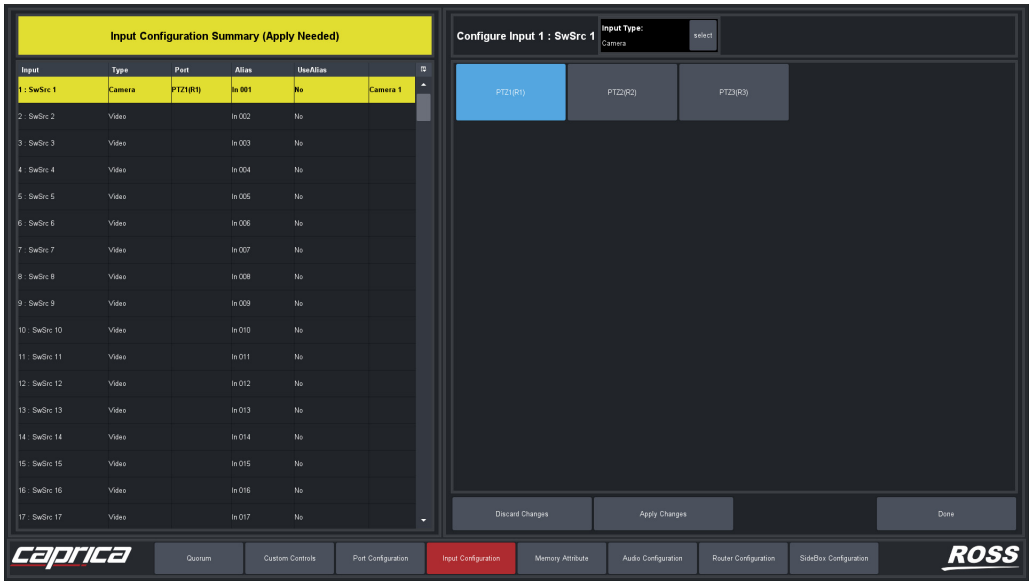
3. At the top of the **Configure Input #** panel, click **select** in the **Input Type** area.

   The **Configure Input #** panel lists the available input types.



4. Click **Camera**.

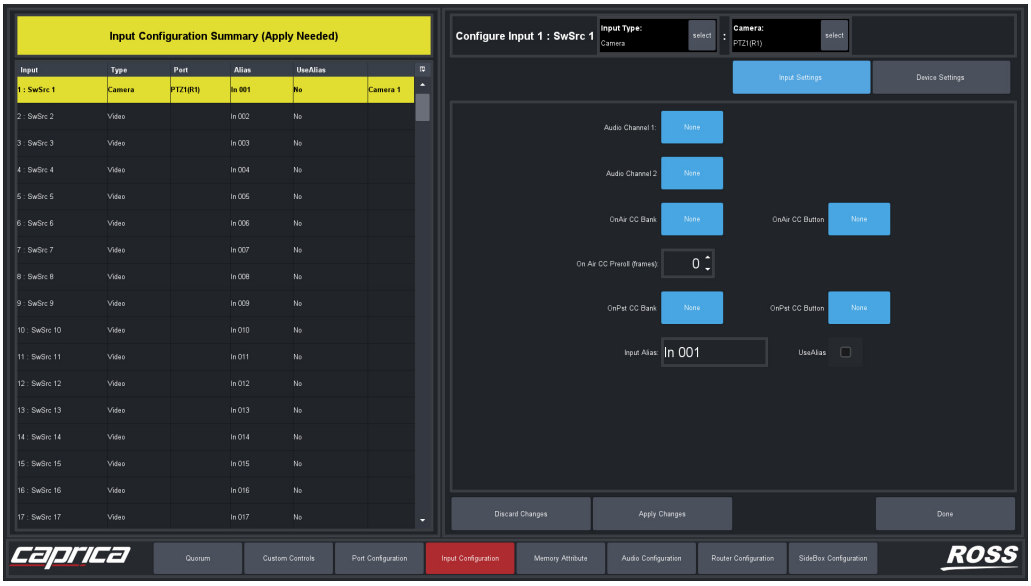
   The **Configure Input #** panel lists the camera devices that you can connect with the sellected switcher input.



   If you selected the wrong input type, click **select** in the **Input Type** area to return to the list of available input types.

5. Click the **Camera Device** to connect to the selected switcher input.

   The **Configure Input #** panel displays the **Input Settings** for the selected switcher input.



   If you selected the wrong device, click **select** in the **Device Name** area to return to the list of available devices.

6. Use the following settings to configure the **Device Settings** for the combination of switcher input and camera device:

   - **Audio Channel 1** — click this button to select the audio channel for the audio channel 1 of the selected switcher input.
   - **Audio Channel 2** — click this button to select the audio channel for the audio channel 2 of the selected switcher input.
   - **On Air CC Bank** — click this button to select the custom control bank that contains the custom control button assigned to the custom control to run when the input goes on air.
   - **On Air CC Button** — click this button to select the custom control button assigned to the custom control to run when the input goes on air.

     To not run a custom control when the input goes on air, select **None** for either the **On Air CC Bank** or the **On Air CC** setting.
   - **On Air CC Preroll (frame)** — in this box, enter or select the number of frames to delay taking the input on air after firing the selected On Air custom control.
   - **On Pst CC Bank** — click this button to select the custom control bank that contains the custom control button assigned to the custom control to run when Quorum prepares the input.
   - **On Pst CC Button** — click this button to select the custom control button assigned to the custom control to run when Quorum prepares the input.

     To not run a custom control when Quorum prepares the input, select **None** for either the **On Pst CC Bank** or the **On Pst CC Button**.

7. To set a custom name for a switcher input, complete the following steps:

   a. In the **Input Alias** box, enter a custom name for the selected switcher input.

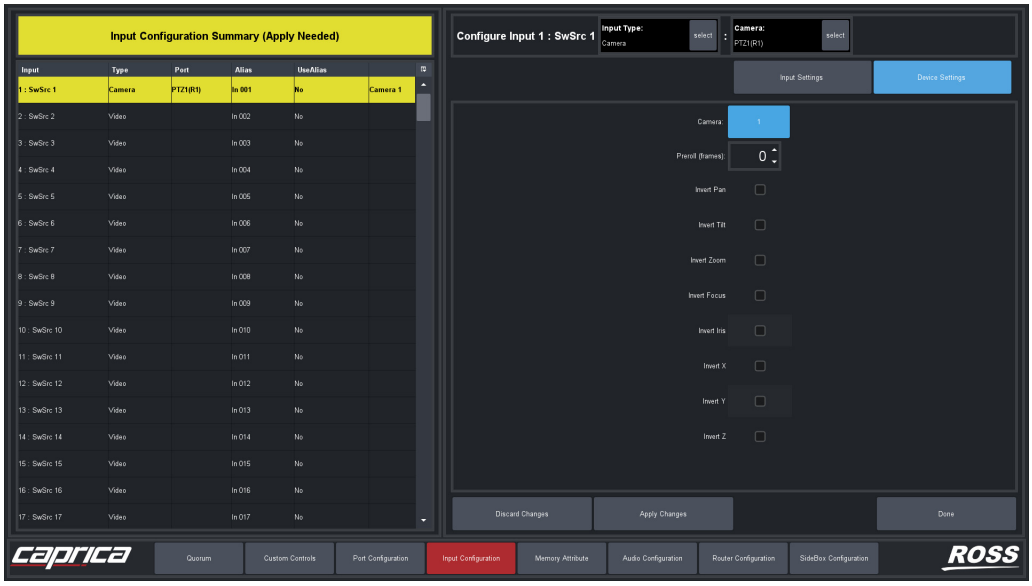
   b. Select the **UseAlias** check box.

The **Alias** column in the **Input Configuration Summary** table displays the custom name set for the switcher input. The **UseAlias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the switcher input.

To use the default switcher input name, clear the **UseAlias** check box. The **UseAlias** column displays **No** to indicate that Caprica and Quorum use the default switcher input name. The **Alias** column and the **Input Alias** box retain the custom name set for the switcher input.

8. Click **Device Settings**.

   The **Configure Input #** panel displays the **Device Settings** for the selected switcher input.



9. Use the following settings to configure the **Device Settings** for the combination of switcher input and camera device:

   - **Camera** — click this button to select the input number to which the camera is connected.
   - **Preroll (frames)** — in this box, enter or select the number of frames to delay transitioning to the camera.
   - **Invert Pan** — select this check box to invert the pan direction that the camera pans when using the positioner.
   - **Invert Tilt** — select this check box to invert the direction that the camera tilts when using the positioner.
   - **Invert Zoom** — select this check box to invert the zoom direction when using the positioner.
   - **Invert Focus** — select this check box to invert the focus direction when using the positioner.
   - **Invert Iris** — select this check box to invert the iris direction when using the positioner.
   - **Invert X** — select this check box to invert the direction that the camera moves in the X-axis when using the positioner.
   - **Invert Y** — select this check box to invert the direction that the camera moves in the Y-axis when using the positioner.
   - **Invert Z** — select this check box to invert the direction that the camera moves in the Z-axis when using the positioner.

10. Click **Apply Changes** to save the network and device settings for the selected switcher input.

11. Click **Done** to close the **Configure Input #** panel.

12. Repeat step **2** to step **10** for each device you want to connect to your Quorum system.

After you configure the ports and inputs on your Caprica Server, you can physically connect your devices to your Quorum system.

Graphics System Configuration

Quorum uses Caprica to control the cameras in a meeting venue. In Caprica, you must configure a Caprica device for the graphics system used in your Quorum system.

The following topic is discussed in this chapter:

- Configuring a Caprica Device for Your Graphics System

Configuring a Caprica Device for Your Graphics System

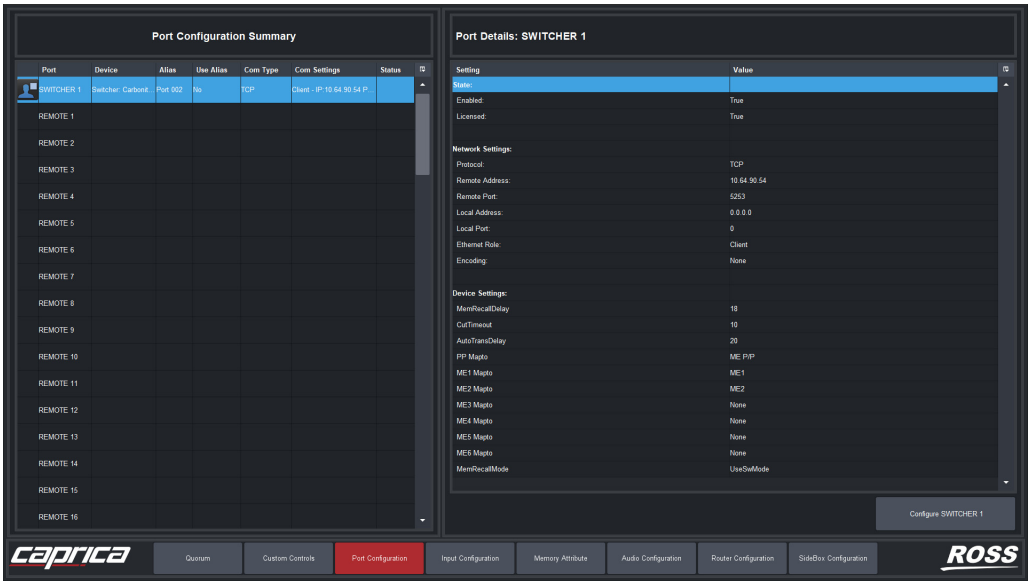
On the Caprica Server, you need to configure a Caprica device for the graphics system in your Quorum system. Using the Port Configuration client on the Caprica Server, you can configure a Caprica device for your graphics system.

To configure a Caprica device for a graphics system

1. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.
2. In the **DashBoard Tree View**, expand the **Caprica Server** node.
3. In the **Caprica Server** node, expand the **Slot 0: Caprica-Quorum** node.
4. Double-click the **Port Configuration** node.

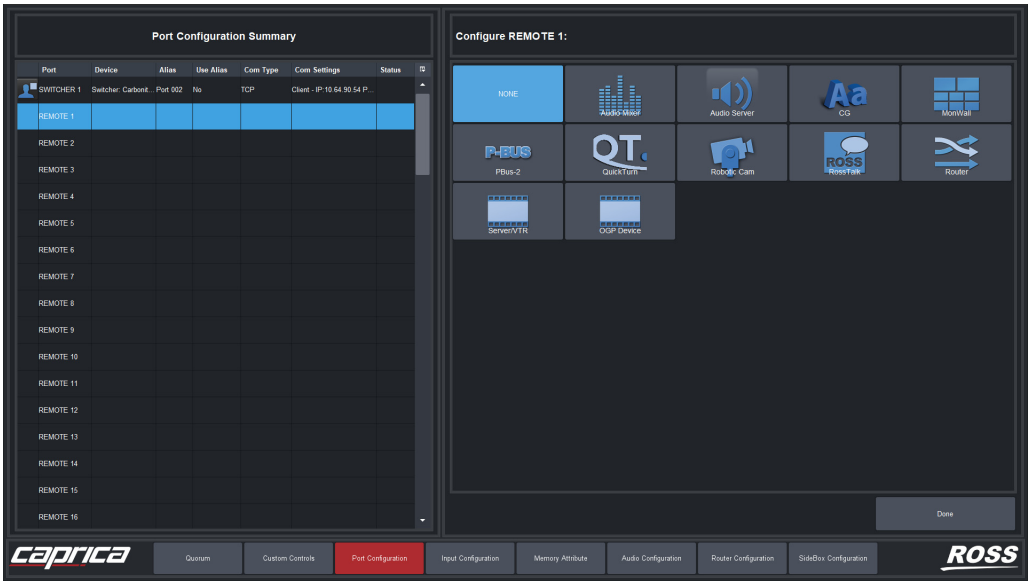
   The **Port Configuration** client opens in the **Device View**.
5. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.



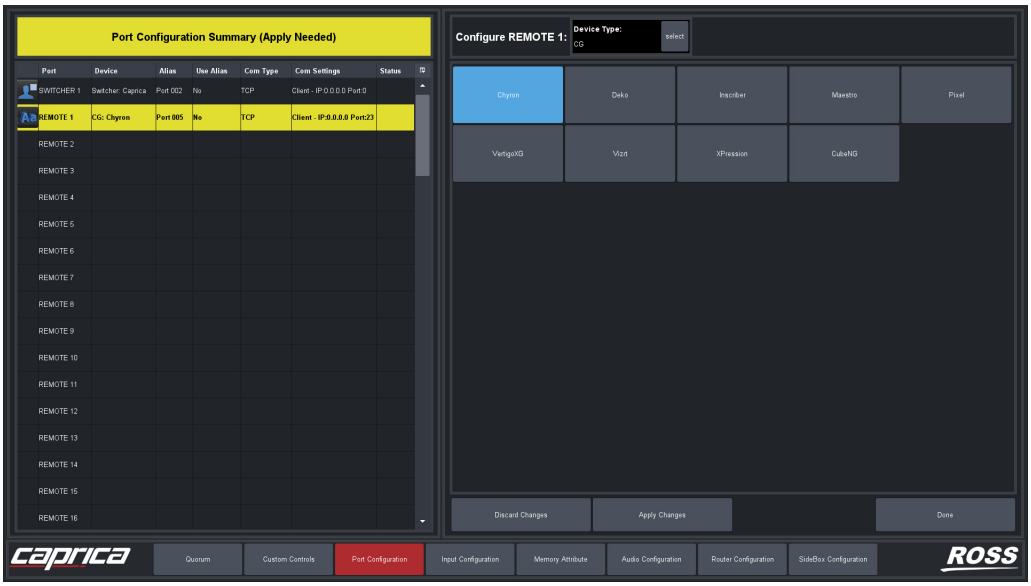
6. In the **Port** column of the **Port Configuration Summary** table, double-click the port to configure for the device (**REMOTE 1 to REMOTE72**).

The **Configure REMOTE #** panel for the selected port opens.



7. In the **Configure REMOTE #** panel, click **CG**.

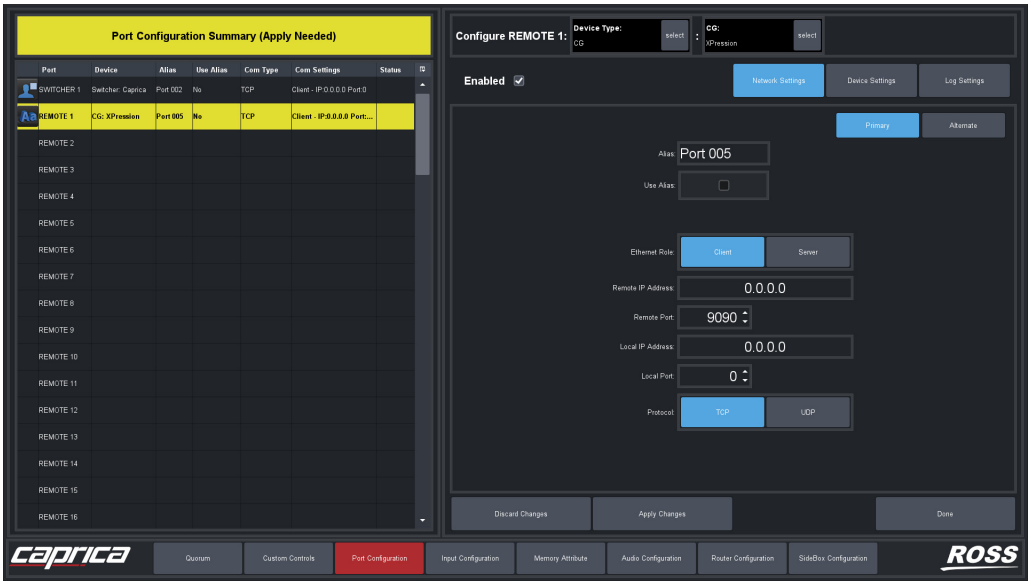
   The **Configure REMOTE #** panel lists the available graphics systems.



If you selected the wrong device type, click **select** in the **Device Type** area to return to the list of available device types.

8. Click the device to configure for your brand of graphics system. To configure a Ross XPression graphics system, click **XPression**.

   The **Configure REMOTE #** panel displays the **Network Settings** for the selected camera device.



   If you selected the wrong device, click **select** in the **Device Name** area to return to the list of available devices.

9. In the **Configure REMOTE #** panel, select the **Enable** check box to enable Caprica to control the device you are configuring. Clear the **Enable** check box for a device when you do not want Caprica to control the device.

10. In the **Alias** box, enter a custom name for the graphics system on the remote port.

    For example: **XPression**.

11. Select the **Use Alias** check box.

    The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

    To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

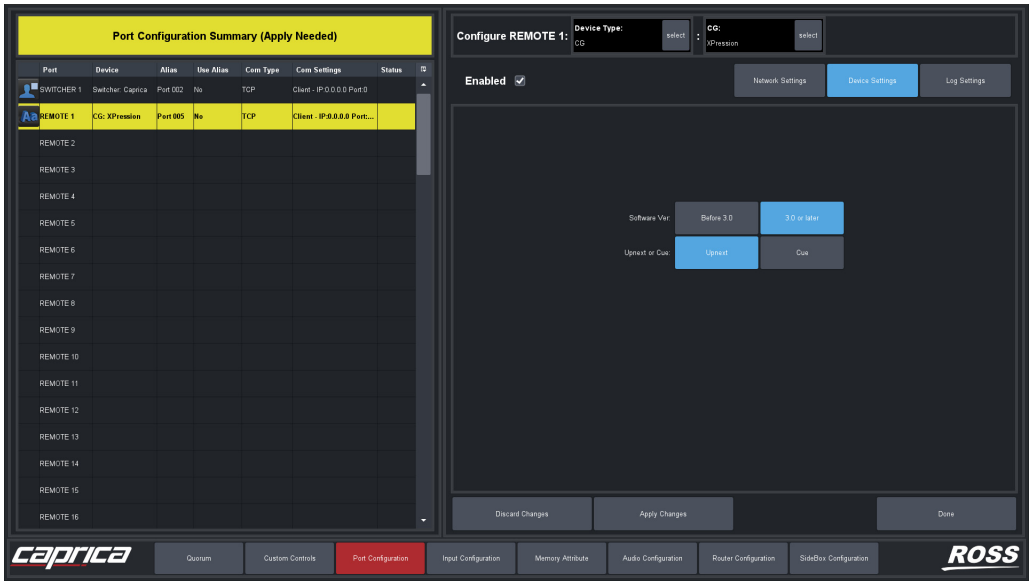
12. Use the settings in the ***Ross Video External Device Setup Sheet*** for the selected camera device to configure the settings in the **Network Settings** section for the device.

    Use the following settings to configure the **Network Settings** for a Ross Video XPression graphics system:

    - **Ethernet Role** — Client
    - **Remote IP Address** — IP address of your XPression graphics system
    - **Remote Port** — 9090
    - **Local IP Address** — 0.0.0.0
    - **Local Port** — 0
    - **Protocol** — TCP

13. Click **Device Settings**.

    The **Configure REMOTE #** panel displays the **Device Settings** for the selected graphics system device.

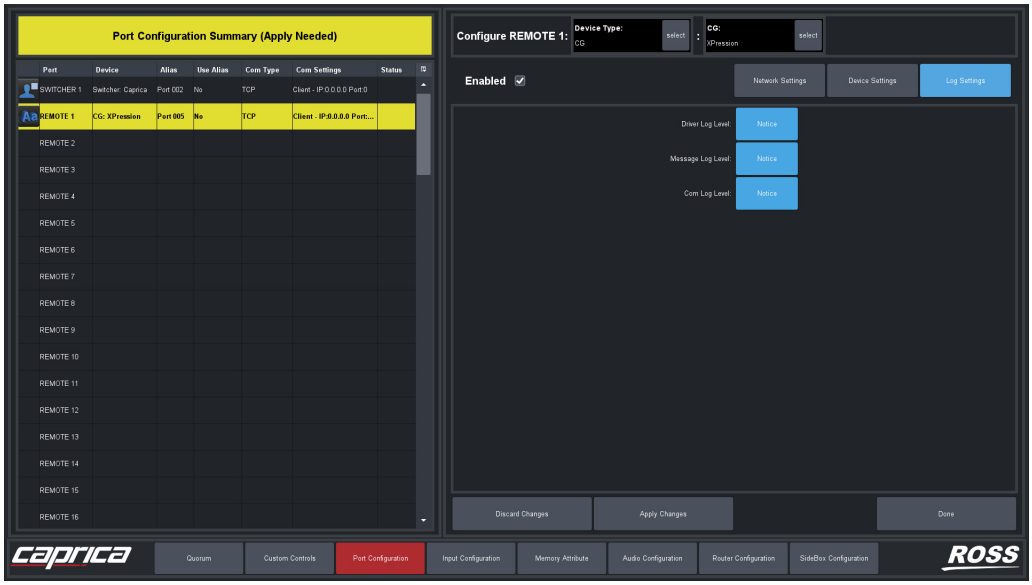


14. Use the following settings to configure the **Device Settings** for a Ross Video XPression graphics system:

    - **Software Ver** — click the software version installed on your XPression. The available options are as follows:
      - › **Before 3.0**
      - › **3.0 or later**
    - **Upnext or Cue** — click the method with which to handle take item takeids. The available options are as follows:
      - › **Upnext** — set the preview to the take item *takeid* in the sequencer without moving the focus bar.
      - › **Cue** — prepare th e take item *takeid* to go to air next in framebuffer number buffer on layer number layer. The take item is not taken to air but is prepared to be taken to air without any frame delay.

15. To select the logging level of a device, click **Log Settings**.

    The **Configure REMOTE #** panel displays the **Log Settings** for the graphics system device.



16. Click the **Log Level** buttons to set the logging level for the camera device.
17. Click **Apply Changes** to save the network, device, and log settings for the camera device.
18. Click **Done** to close the **Configure REMOTE #** panel.

Caprica Server Configuration

After configuring the Caprica Server to connect a switcher to your Quorum Server, you also need to configure devices, switcher inputs, audio channel names, router sources (inputs), and router destinations (outputs). You may also want to create Custom Controls for the switcher in your Quorum system. This chapter provides instructions for completing the configuration of a Caprica Server in a Quorum system and creating Custom Controls for the switcher in a Quorum system.

The following topics are discussed in this chapter:

- Configuring Devices to Connect to a Quorum System
- Configuring Switcher Inputs
- Assigning Names and Custom Controls to Memories
- Configuring Audio
- Controlling Router Sources and Destinations for Quorum
- Creating Custom Control Macros
- Saving Caprica Server Configuration
- Recalling Configurations from a Diskset
- Creating Caprica Server Diagnostic Reports
- Controlling User Session Timeout

Configuring Devices to Connect to a Quorum System

On the Caprica Server, you need to configure each device that you will connect to your Quorum system to enable Quorum to control the devices. Using the Port Configuration client on the Caprica Server, you can configure the following types of devices to work with Quorum:

- Audio Mixers
- Audio Servers
- Character Generators
- Monitor Walls
- PBus-2 Devices
- Robotic Cameras
- RossTalk Devices
- Routers
- Video Servers / VTRs
- Flex Cameras
- Flex Servers
- OGP Devices

For each device that you can use with Quorum, Ross Video publishes an ***External Device Setup Sheet*** that contains the settings that enable Quorum to control the device.

For More Information on...

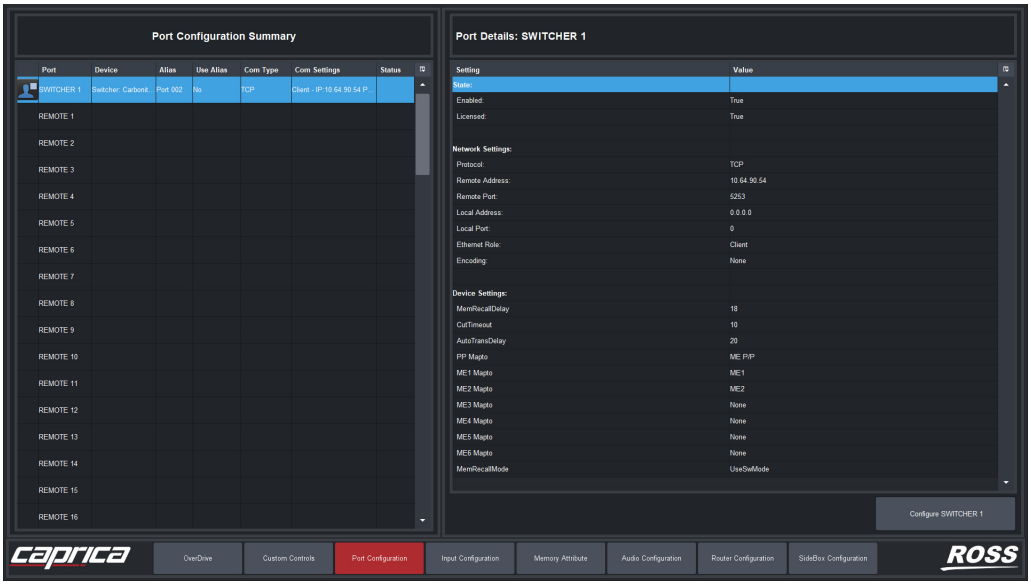
- using devices in Quorum, refer to the section "**External Device Templates**" in the ***Quorum User Guide***.

To configure a device for Quorum

1. Use one of the following methods to launch **DashBoard**:
   - Double-click the **DashBoard** icon on the desktop.
   - Use the **Start** menu to select **All Programs** > **DashBoard** > **DashBoard**.
2. In the **DashBoard Tree View**, expand the **Caprica Server** node.
3. In the **Caprica Server** node, expand the **Slot 0: Caprica** node.
4. Double-click the **Port Configuration** node.

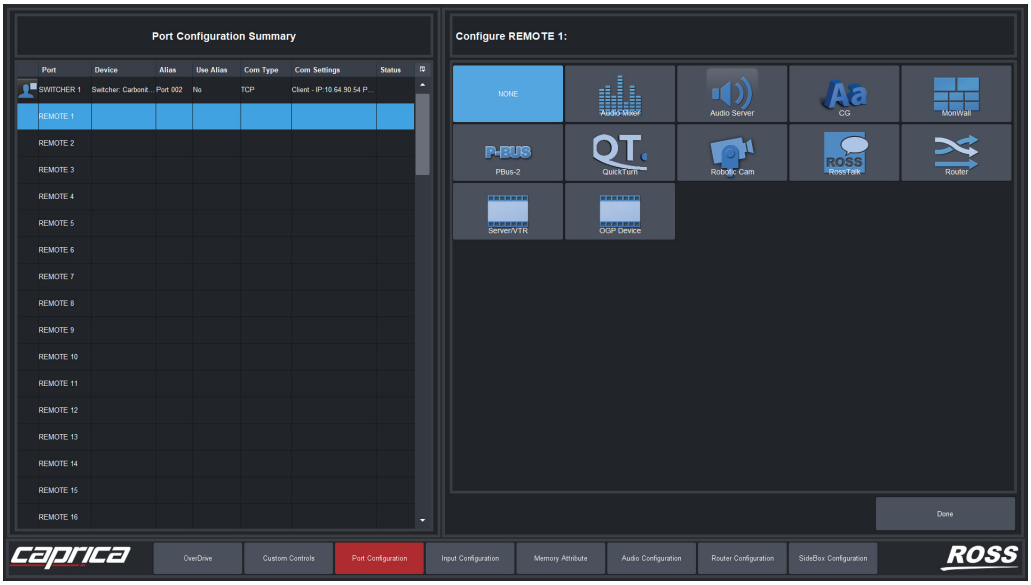
   The **Port Configuration** client opens in the **Device View**.
5. Use the **Window** menu to select **Full Screen**.

   The **Port Configuration** client expands to full screen view.



6. In the **Port** column of the **Port Configuration Summary** table, double-click the port to configure for the device (**REMOTE 1 to REMOTE72**).

   The **Configure REMOTE #** panel for the selected port opens.



✶ Use the **PERIPH 1** to **PERIPH 12** ports to configure the following peripheral devices:

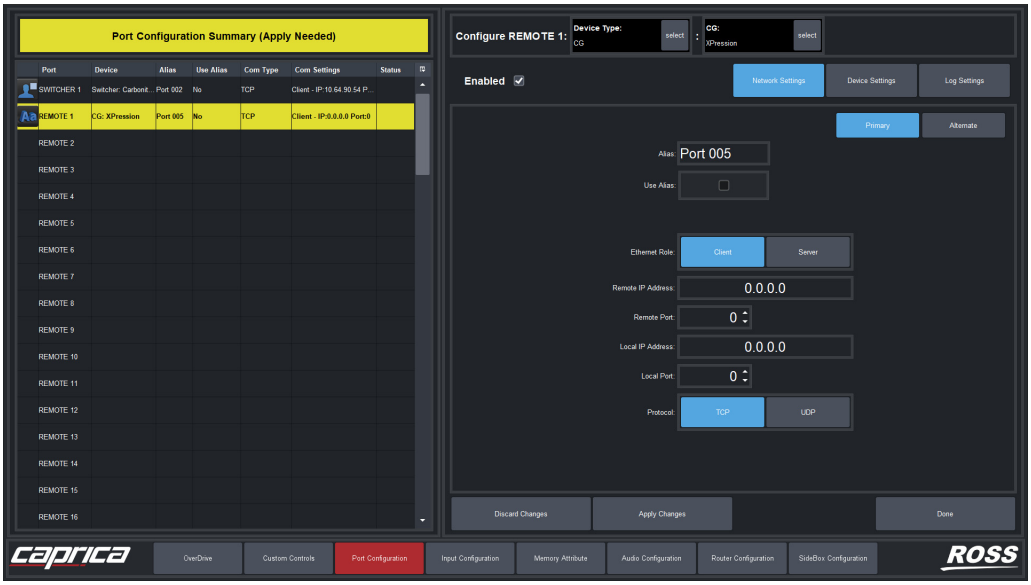
- **Audio Mixer**: Wheatstone
- **Robotic Camera**: CamBot (legacy) or Vinten
- **Video Server/VTR**: VirtVTR

7. In the **Configure REMOTE #** panel, click the type of device to configure.

   The **Configure REMOTE #** panel lists the available devices for the selected device type. If you selected the wrong device type, click **select** in the **Device Type** area to return to the list of available device types.

8. Click the device to configure.

   The **Configure REMOTE #** panel displays the **Network Settings** for the selected device.



   If you selected the wrong device, click **select** in the **Device Name** area to return to the list of available devices.

9. In the **Configure REMOTE #** panel, select the **Enable** check box to enable Caprica to control the device you are configuring. Clear the **Enable** check box for a device when you do not want Caprica to control the device.

10. To set a custom name for a remote port, complete the following steps:

    a. In the **Alias** box, enter a custom name for the remote port.

    b. Select the **Use Alias** check box.

       The **Alias** column in the **Port Configuration Summary** table displays the custom name set for the remote port. The **Use Alias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the remote port.

       To use the default remote port name, clear the **Use Alias** check box. The **Use Alias** column displays **No** to indicate that Caprica and Quorum use the default remote port name. The **Alias** column and the **Alias** box retain the custom name set for the remote port.

11. Configure the settings in the **Network Settings** section for the selected device using the settings in the ***Caprica Device Setup Sheet*** for the device.

    You can use the following URL to view the ***Caprica Device Setup Sheets*** for supported devices:

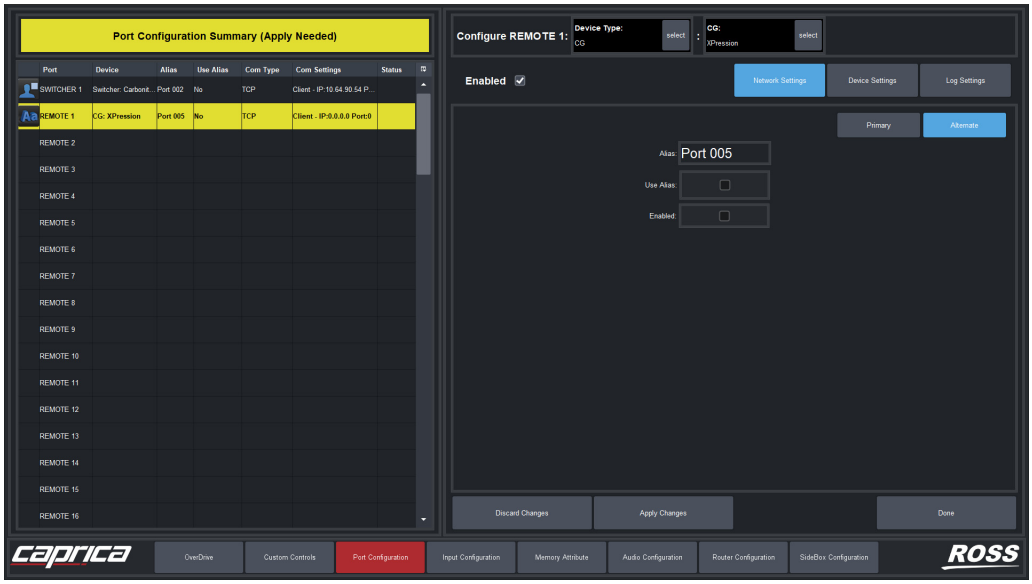
    - https://help.rossvideo.com/caprica/help/devices/index.html

✶ Changing a setting value automatically applies the new value to the device, but does not save the new value. You should not operate Caprica with unsaved changes. You must click **Apply Changes** to save the your setting changes.

12. For devices that you want to switch between network locations, define an alternate location as follows:

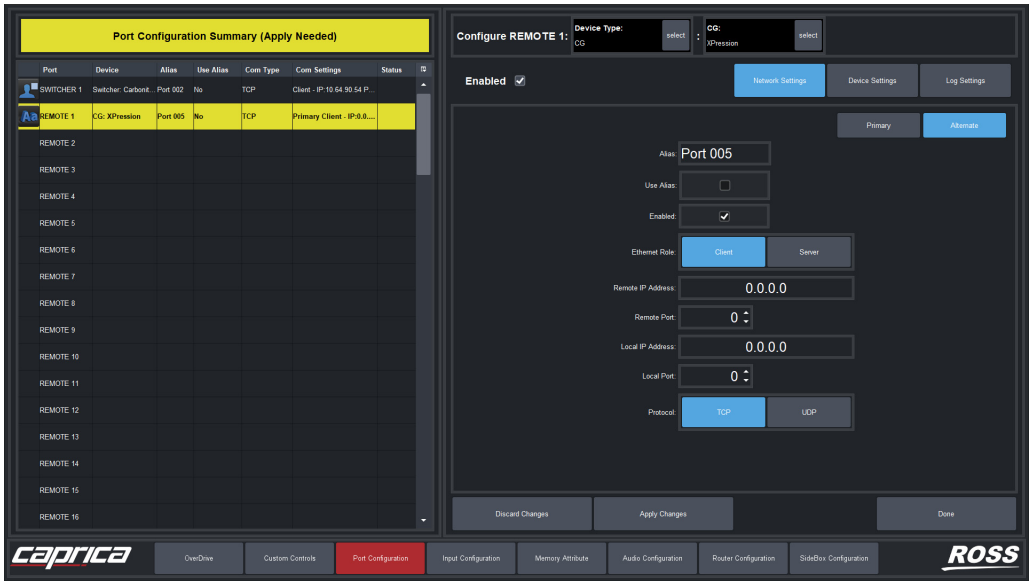
    a. Click **Alternate** to set a second set of network settings for the selected device.

       The **Configure REMOTE #** panel displays the **Alternate Network Settings** for the selected device.



b. Select the **Enabled** check box to configure a second set of network settings for the selected device. Clearing the **Enable** check box also deletes the previously set Alternative networks settings.

The **Configure REMOTE #** panel displays the **Alternate Network Settings** for the selected device.

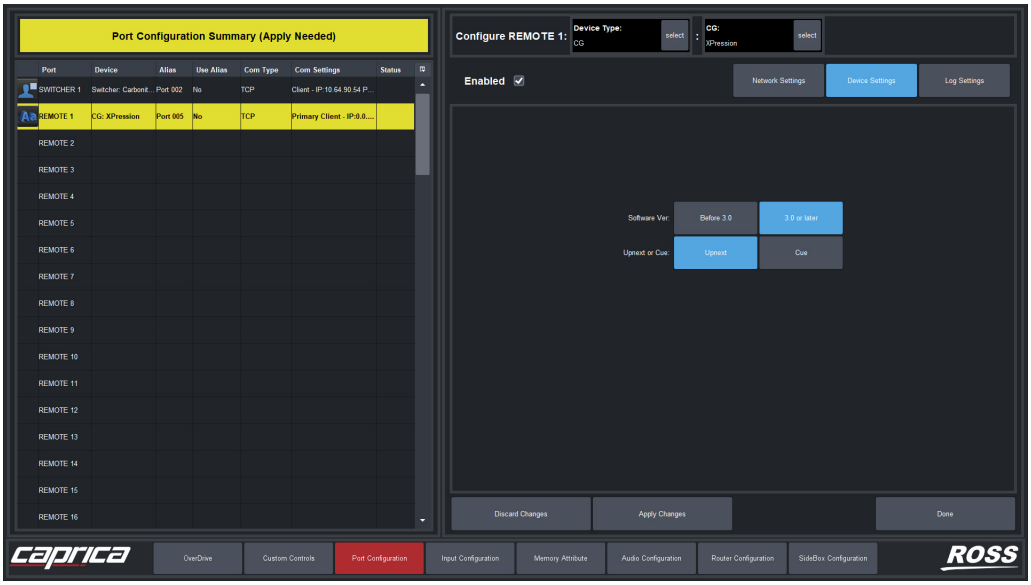


c. Use the displayed **Alternate** network settings to configure the second set of network settings for the selected device.

To switch between Primary and Alternate networks settings, create a Custom Control that runs the **Select Device** or **Swap Device** Custom Control command. Refer to the section "**Special**" on page B-8 for more information about the **Select Device** and **Swap Device** Custom Control commands.

13. Click **Device Settings**.

The **Configure REMOTE #** panel displays the **Device Settings** for the selected device.



14. Configure the settings in the **Device Settings** section for the selected device using the settings in the ***Caprica Device Setup Sheet*** for the device.

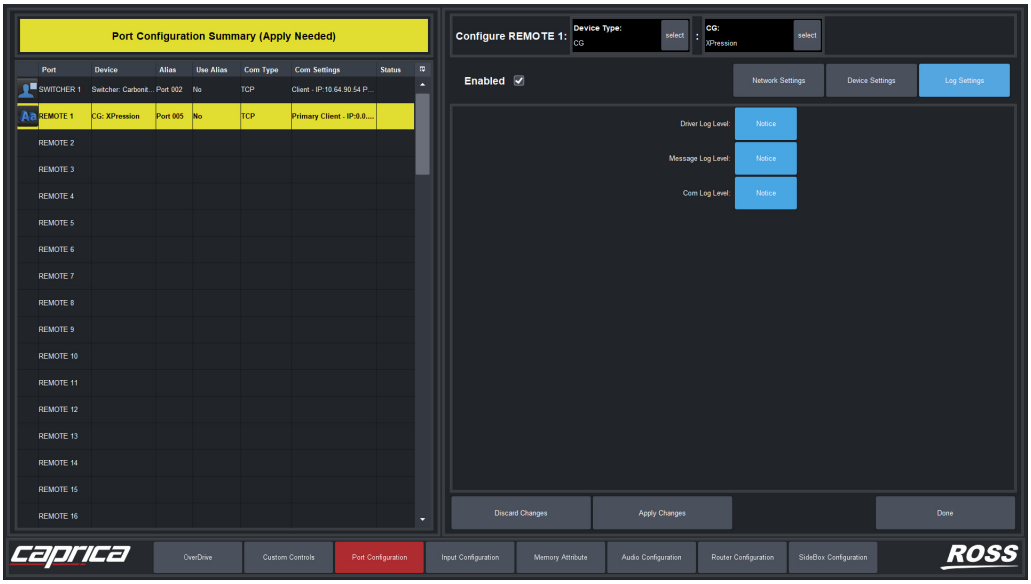
You can use the following URL to view the ***Caprica Device Setup Sheets*** for supported devices:

- https://help.rossvideo.com/caprica/help/devices/index.html

✶ Changing a setting value automatically applies the new value to the device, but does not save the new value. You should not operate Caprica with unsaved changes. You must click **Apply Changes** to save the your setting changes.

15. To select the logging level of a device, click **Log Settings**.

The **Configure REMOTE #** panel displays the **Log Settings** for the selected device.



16. Click the **Log Level** buttons to set the logging lever for the device.

17. Click **Apply Changes** to save the network and device settings for the selected device.

18. You should not

19. Click **Done** to close the **Configure REMOTE #** panel.

20. Repeat step **6** to step **17** for each device you want to connect to your Quorum Server.

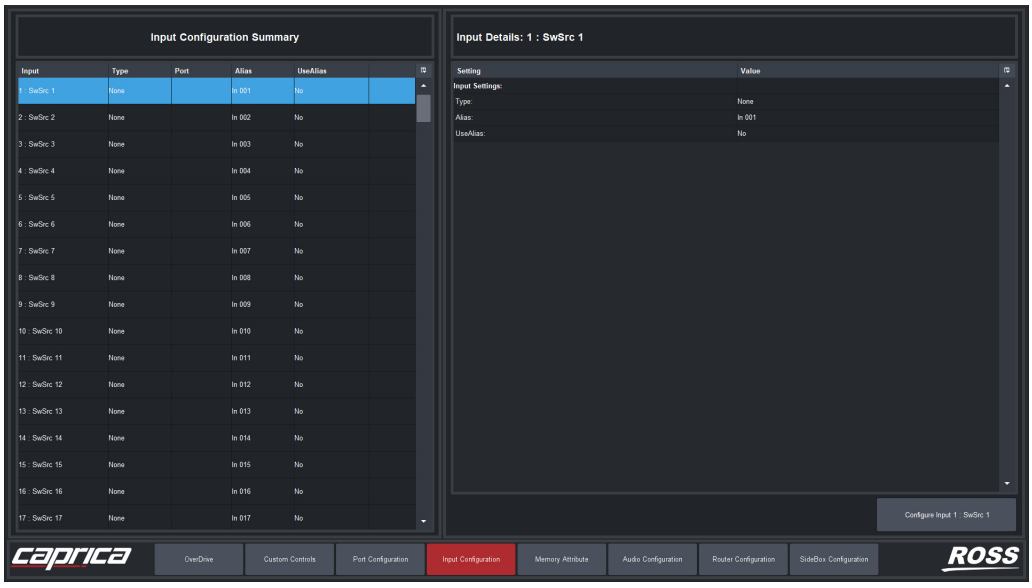
Configuring Switcher Inputs

After you configure the devices to connect to your Quorum system, you need to configure switcher inputs for the devices.

To configure a switcher input for a device

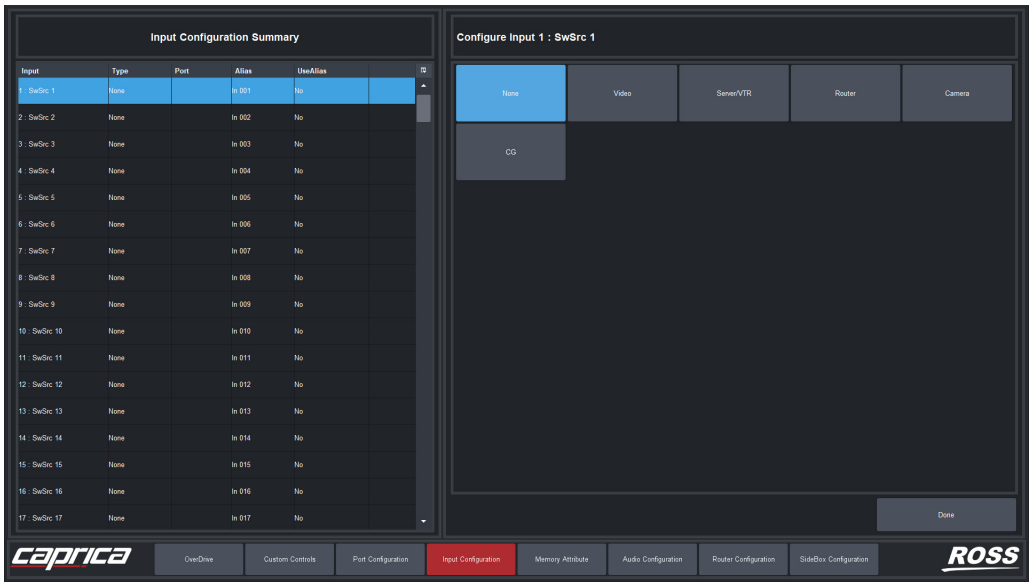
1. At the bottom of the **Device View**, click **Input Configuration**.

   The **Input Configuration** client opens.



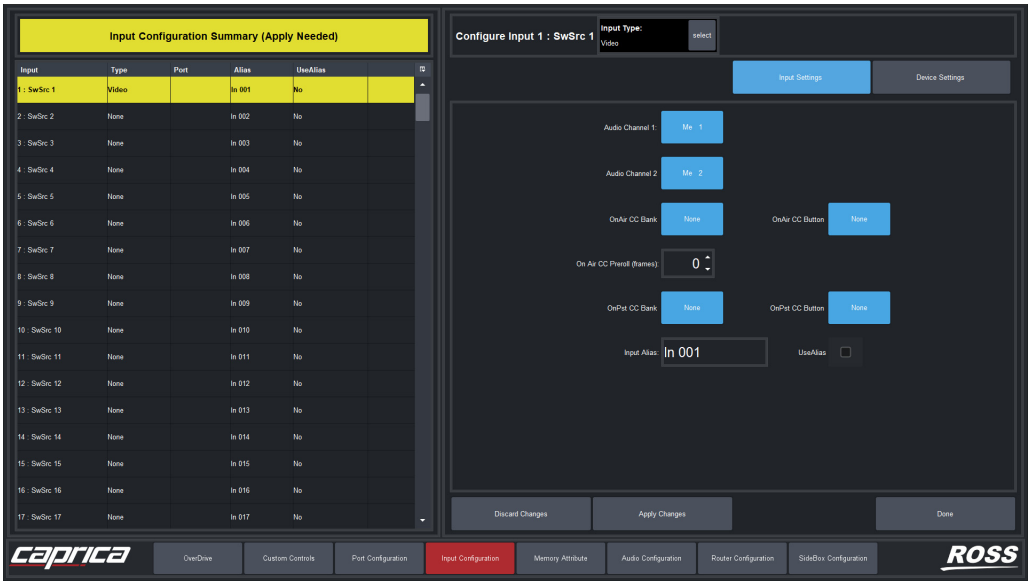
2. In the **Input** column of the **Input Configuration Summary** table, double-click the switcher input to configure for a device.

   The **Configure Input #** panel lists the available input types.

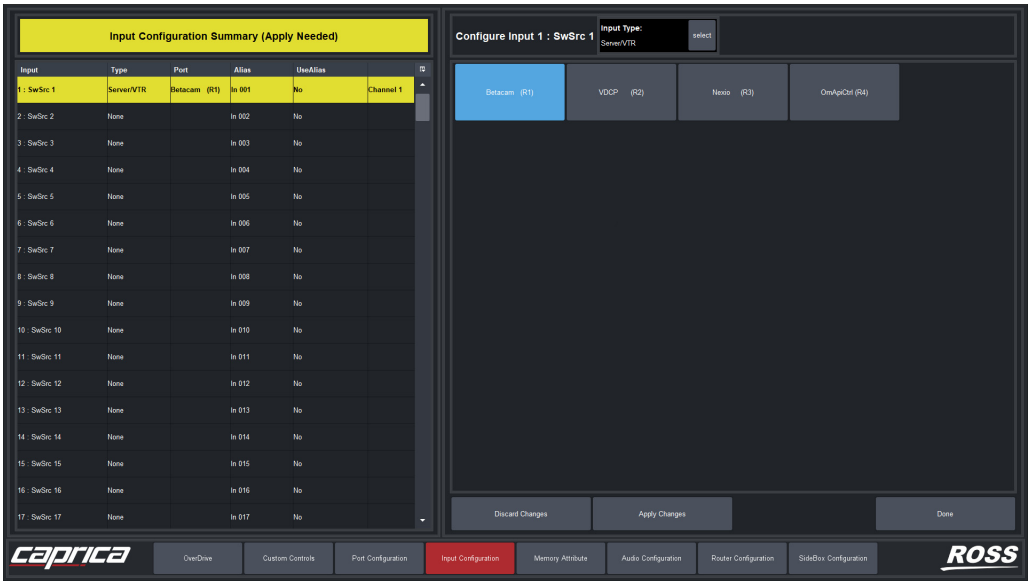


3. Click the **Input Type** to connect to the selected switcher input.

   When you select the **Video** input type, the **Configure Input #** panel displays the **Input Settings** for the selected switcher input. Skip to step **5**. If you selected the wrong input type, click **select** in the **Input Type** area to return to the list of available input types.

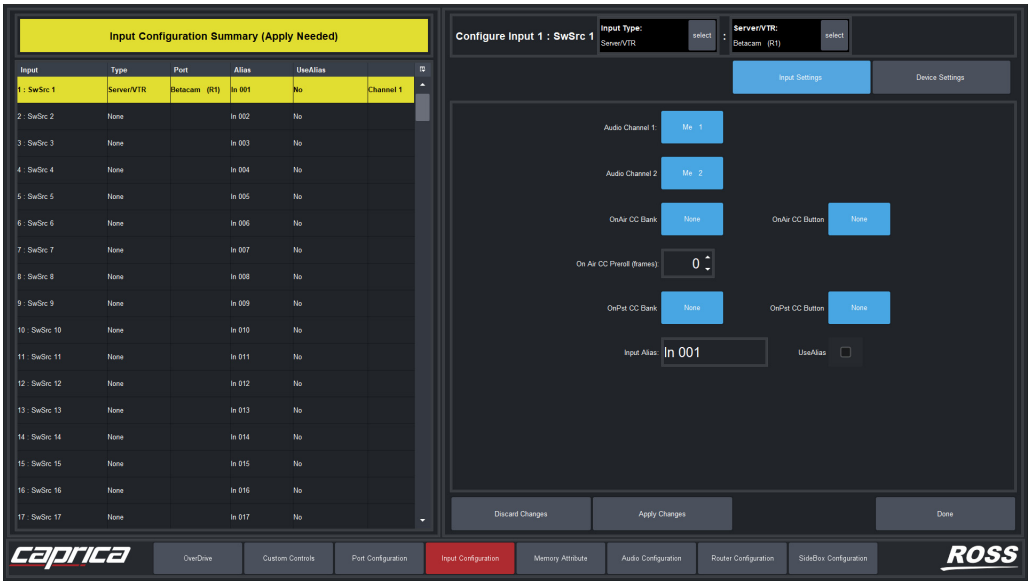


   When you select the **Server/VTR**, **Router**, **Camera**, or **CG** input type, the **Configure Input #** panel lists the available devices for the selected input type. If you selected the wrong input type, click **select** in the **Input Type** area to return to the list of available input types.



4. Click the **Device** to connect to the selected switcher input.

   The **Configure Input #** panel displays the **Input Settings** for the selected switcher input. If you selected the wrong device, click **select** in the **Device Name** area to return to the list of available devices.



5. Click **Audio Channel 1** to select the audio channel for the audio channel 1 of the selected switcher input.
6. Click **Audio Channel 2** to select the audio channel for the audio channel 2 of the selected switcher input.
7. Select the Custom Control to run when the input goes on air as follows:
   a. Click **On Air CC Bank** to select the Custom Control bank that contains the Custom Control button assigned to the Custom Control to run when the input goes on air.
   b. Click **On Air CC Button** to select the Custom Control button assigned to the Custom Control to run when the input goes on air.

   To not run a Custom Control when the input goes on air, select **None** for either the **On Air CC Bank** or the **On Air CC** setting.
8. Use the **On Air CC Preroll (frame)** box to enter or select the number of frames to delay taking the input on air after firing the selected On Air Custom Control.
9. Select the Custom Control to run when Quorum prepares the input as follows.
   a. Click **On Pst CC Bank** to select the Custom Control bank that contains the Custom Control button assigned to the Custom Control to run when Quorum prepares the input.
   b. Click **On Pst CC Button** to select the Custom Control button assigned to the Custom Control to run when Quorum prepares the input.

   To not run a Custom Control when Quorum prepares the input, select **None** for either the **On Pst CC Bank** or the **On Pst CC Button**.

10. To set a custom name for a switcher input, complete the following steps:

    a. In the **Input Alias** box, enter a custom name for the selected switcher input.

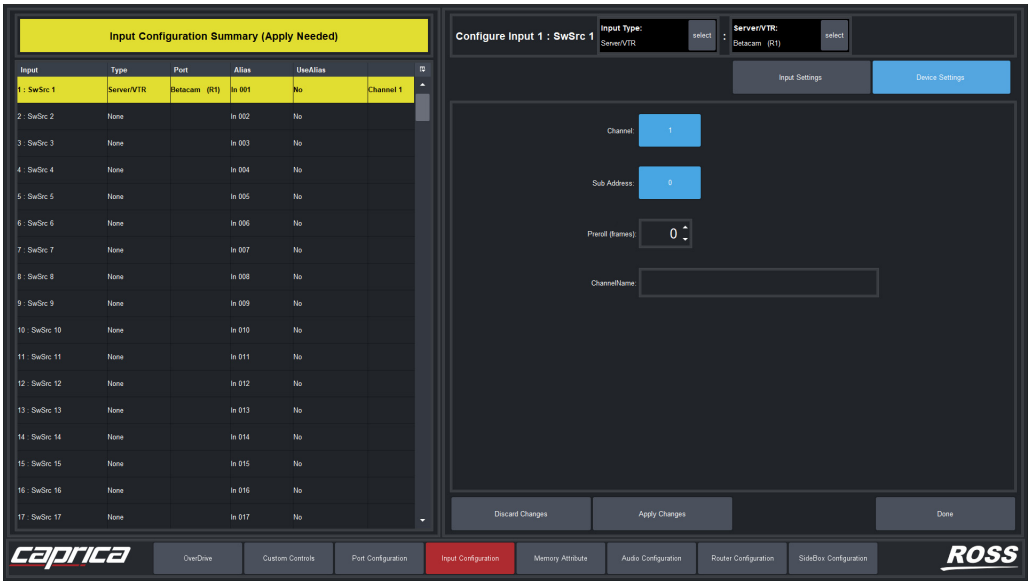
    b. Select the **UseAlias** check box.

    The **Alias** column in the **Input Configuration Summary** table displays the custom name set for the switcher input. The **UseAlias** column displays **Yes** to indicate that Caprica and Quorum use the custom name set for the switcher input.

    To use the default switcher input name, clear the **UseAlias** check box. The **UseAlias** column displays **No** to indicate that Caprica and Quorum use the default switcher input name. The **Alias** column and the **Input Alias** box retain the custom name set for the switcher input.

11. Click **Device Settings**.

    The **Configure Input #** panel displays the **Device Settings** for the selected switcher input.



12. Use the steps for the selected **Device** to configure the **Device Settings** as required for the combination of switcher input and device.

    Server/VTR

    a. Click **Channel** to select the channel for the video server.

    b. Click **Sub Address** to select the VDCP sub address for the video server.

    c. Use the **Preroll (frames)** box to enter or select the number of frames to delay transitioning to the video server.

    d. In the **ChannelName** box, enter the channel name to use on the Omneon Server. This setting is only used be Omneon API devices.

    Router

    a. Click **Destination** to select the router destination to map to the selected input.

    b. Click **Level** to select the level for the selected destination.

Camera

a. Click **Camera** to select the input number to which the camera is connected.

b. Use the **Preroll (frames)** box to enter or select the number of frames to delay transitioning to the camera.

c. Select the **Invert Pan** check box to invert the pan direction that the camera pans when using the positioner.

d. Select the **Invert Tilt** check box to invert the direction that the camera tilts when using the positioner.

e. Select the **Invert Zoom** check box to invert the zoom direction when using the positioner.

f. Select the **Invert Focus** check box to invert the focus direction when using the positioner.

g. Select the Invert Iris check box to invert the iris direction when using the positioner.

h. Select the **Invert X** check box to invert the direction that the camera moves in the X-axis when using the positioner.

i. Select the **Invert Y** check box to invert the direction that the camera moves in the Y-axis when using the positioner.

j. Select the **Invert Z** check box to invert the direction that the camera moves in the Z-axis when using the positioner.

CG

a. Click **Channel** to select the channel for the character generator.

13. Click **Apply Changes** to save the network and device settings for the selected switcher input.
14. Click **Done** to close the **Configure Input #** panel.
15. Repeat step **2** to step **13** for each device you want to connect to your Quorum system.
16. After you configure the ports and inputs on your Caprica Server, you can physically connect your devices to your Quorum system.

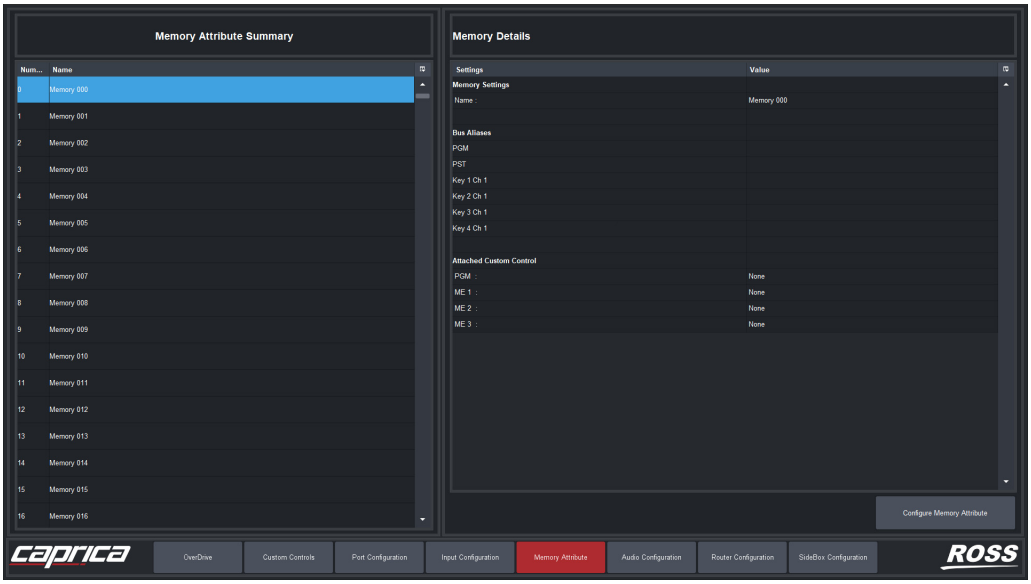
Assigning Names and Custom Controls to Memories

The Memory Attribute client enables you to name switcher memories, name the buses of a switcher memory, and assign a Custom Control to each ME of a switcher memory. The Custom Control assigned to a memory ME automatically runs when you recall the memory for the ME.

To configure switcher memory attributes

1. At the bottom of the **Device View**, click **Memory Attribute**.

   The **Memory Attribute** client opens.

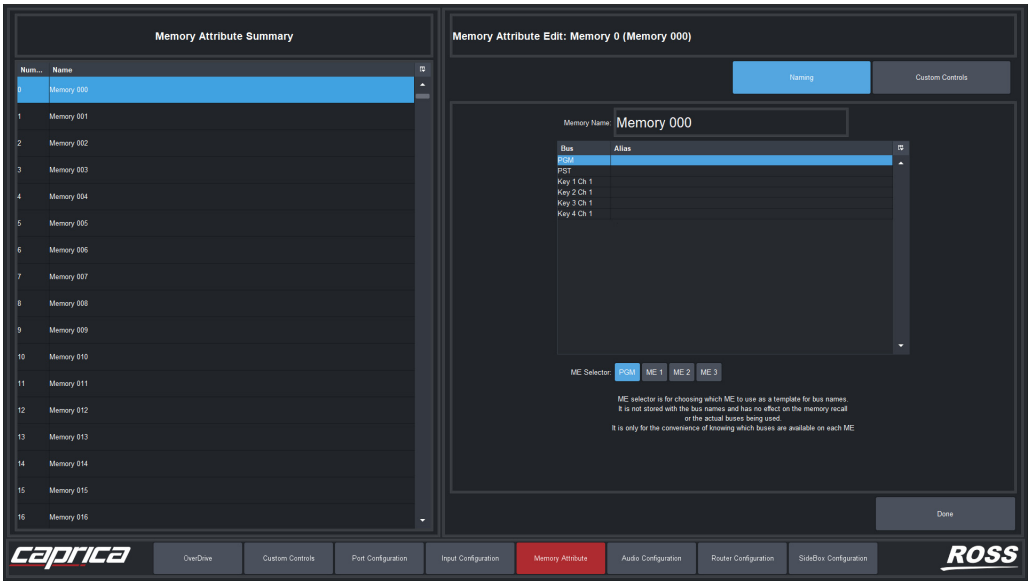


2. In the **Number** column of the **Memory Attribute Summary** table, double-click the memory number to name and assign Custom Controls.

   The **Memory Edit** panel opens for the selected memory.

3. Click **Naming**.

   The **Memory Edit** panel displays the **Naming** settings for the selected memory.



4. In the **Memory Name** box, enter a name for the selected memory.
5. Click an **ME** in the **ME Selector** setting to display the available buses for the selected ME in the **Bus** table.

6. To name a bus, complete the following steps:

   a. Click in the **Alias** column cell to the right of the **Bus** to name.

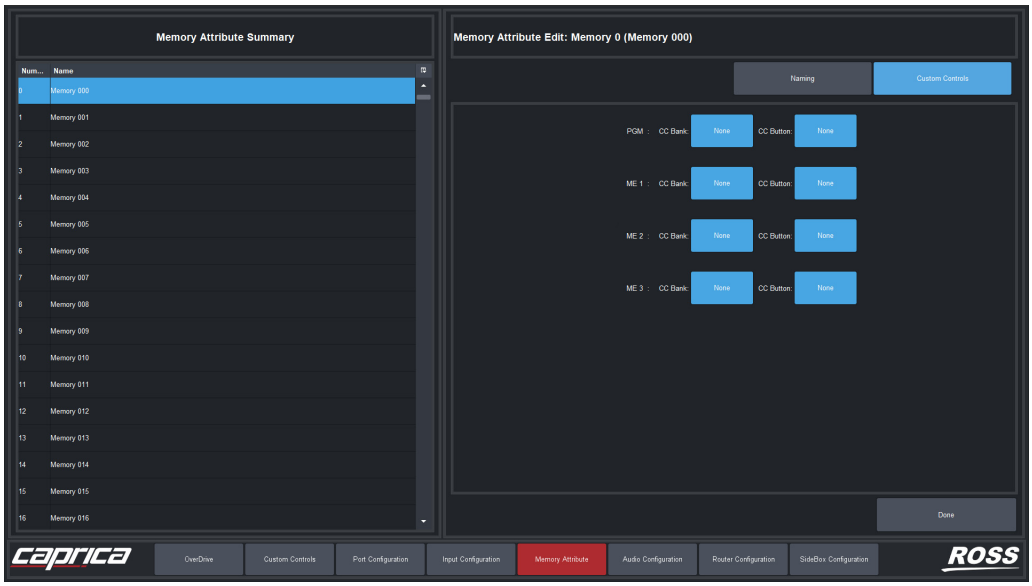
   b. In the **Alias** cell, enter a name for the bus (up to 14 characters).

      The name set for a bus is same for all MEs of a memory. Bus names can differ between memories.

   c. Repeat step **a** and step **b** for each bus that you want to name.

7. Click **Custom Controls**.

   The **Memory Edit** panel displays the **Custom Controls** settings for the selected memory.



8. For each ME, select the Custom Control to run on memory recall as follows:

   a. To the right of an **ME** name, click **CC Bank** to select the Custom Control bank that contains the Custom Control button assigned to the Custom Control to run on memory recall for the ME.

   b. Click **CC Button** to select the Custom Control button assigned to the Custom Control to run on memory recall for the ME.

   c. Repeat step **a** and step **b** for each ME that you want to assign a Custom Control.

9. Click **Apply Changes** to save the memory configuration.

10. Repeat step **2** to step **9** for each memory that you want to assign a Custom Control.

11. Click **Done** to close the **Memory Edit** panel.

Configuring Audio

The Audio Configuration client contains two tabs that enable you to configure audio channel names and settings.

Customizing Audio Channels for Quorum

The Channel Names tab of the Audio Configuration client enables you to customize the following settings for the audio channels associated with the remote or peripheral devices you configured for Quorum:

- Channel name
- Initial audio level
- Availability of the channel in Quorum

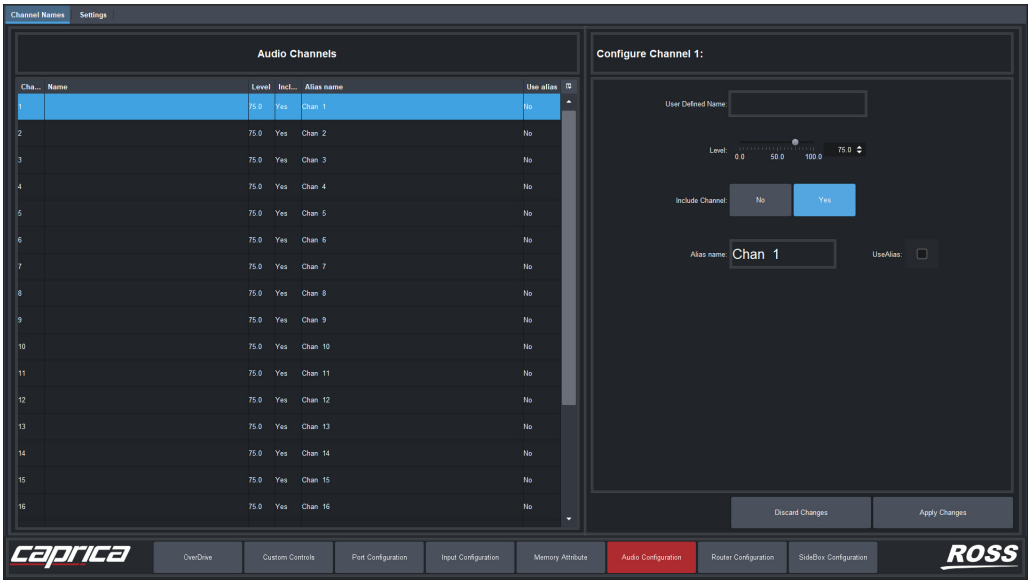
To customize an audio channel for Quorum

1. At the bottom of the **Device View**, click **Audio Configuration**.

   The **Audio Configuration** client opens in the **Device View**.

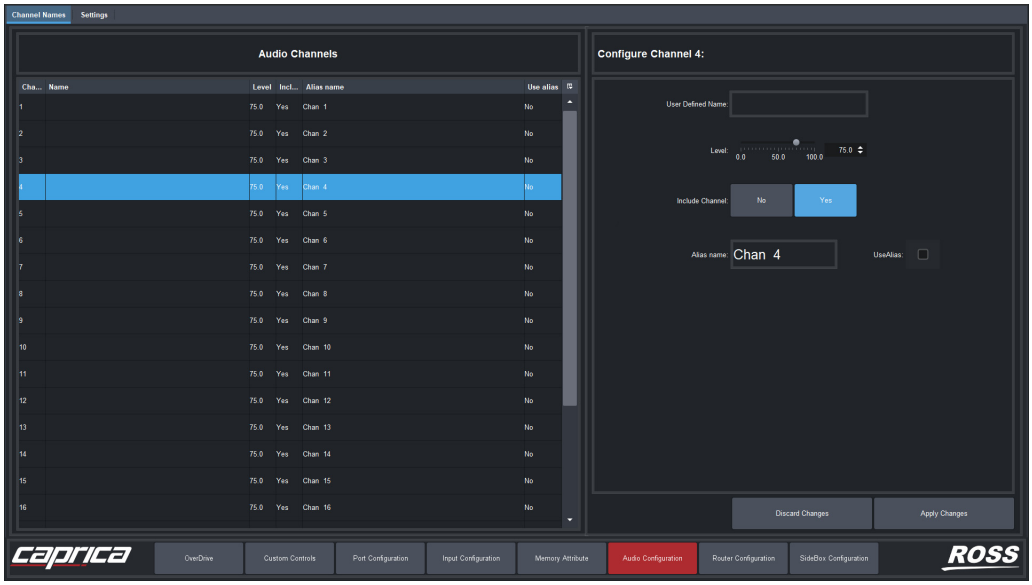
2. Click the **Channel Names** tab.

   The **Channel Names** tab opens.



3. In the **Channel** column of the **Audio Channels** table, double-click the audio channel to customize.

The **Configure Channel #** panel for the selected audio channels opens.



4. In the **User Defined Name** box, enter a name for the selected audio channel.

   Quorum displays audio channel names in the **Rundown Control**, **Direct Control**, and **Template Editor** clients.

5. Use one of the following methods to set the initial audio level for the selected audio channel:

   - Click and drag the **Level** slider to set the initial audio level for the audio channel.

     As you drag the slider, the **Level** box displays the set initial audio level for the channel.

   - Use the **Level** box to enter or select the initial audio level for the audio channel.

     The **Level** slider moves to show the set initial audio level.

6. For the **Include Channel** setting, click **Yes** to include the audio channel in Quorum or **No** to exclude the channel from Quorum.

7. Click **Apply Changes** to save your customized audio channel settings.

8. Repeat step **3** to step **7** for each audio channel you wish to customize for Quorum.

Configuring Audio Settings

In the Settings tab of the Audio Configuration client, you can control audio transitions and set a fader dead zone.

Audio Transition

You can choose to transition audio with the Program ME or stop audio when the Program or other MEs transition.

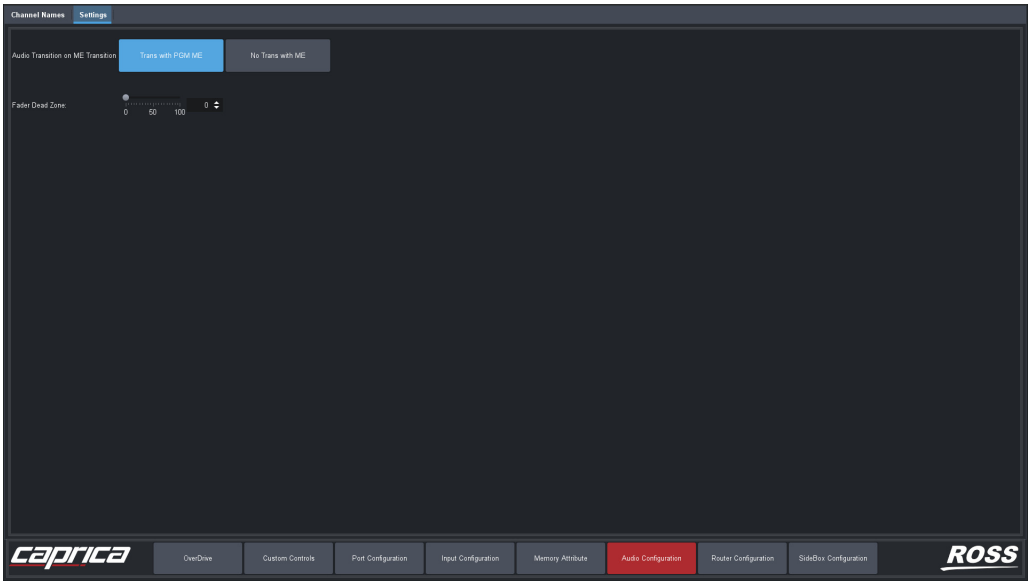
To control audio transition on ME transition

1. At the bottom of the **Device View**, click **Audio Configuration**.

   The **Audio Configuration** client opens in the **Device View**.

2. Click the **Settings** tab.

The **Settings** tab opens.



3. Use the **Audio Transition on ME Transition** setting buttons to select one of the following options to set how to transition audio with ME transitions:

   - **Trans with PGM ME** — transition audio with the Program ME.
   - **No Trans with ME** — stop audio transitions when the Program ME or any other ME transitions.

Fader Dead Zone

You can configure a dead zone in Caprica to ignore audio mixer fader output from zero percent to a set percentage of the fader range. The dead zone percentage affects all audio channels in Caprica and is reflected in Custom Controls using audio percentages and passed through to OverDrive DirectControl.

✶ The **SideSlide** module is not affected by the **Fader Dead Zone** setting.

The full range of Caprica audio faders map to the active range set for the audio mixer faders, the set dead zone percentage to one hundred percent ((**Figure 19.1**)). Only once an audio mixer fader surpasses the set dead zone percentage does the associated Caprica audio fader begin to move.

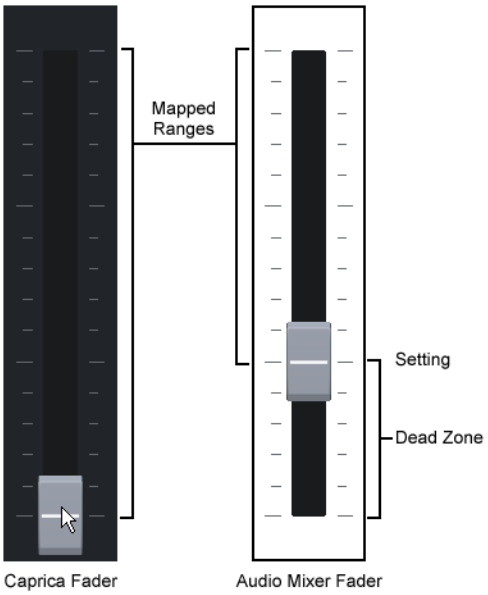


Figure 19.1 Dead Zone Fader Ranges

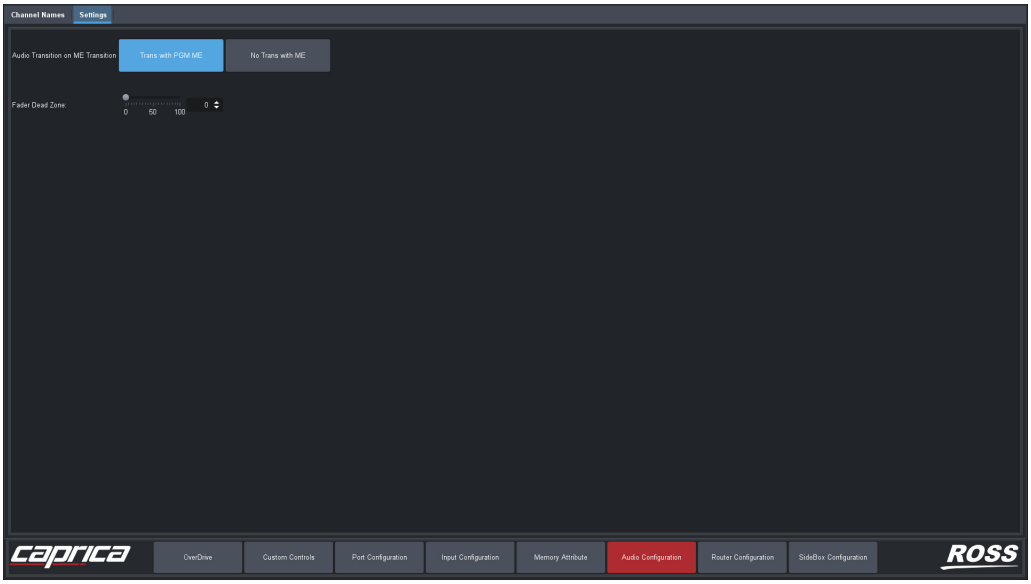
To configure a Dead Zone for audio mixer faders

1. At the bottom of the **Device View**, click **Audio Configuration**.

   The **Audio Configuration** client opens in the **Device View**.

2. Click the **Settings** tab.

   The **Settings** tab opens.



3. Drag the **Fader Dead Zone** slider to set the size of the fader dead zone for all audio mixer faders. You can also use the box to the right of the slider to enter or select fader dead zone size.

   Caprica automatically saves the set **Fader Dead Zone** value.

Controlling Router Sources and Destinations for Quorum

For each router device configured in Caprica for a Quorum system, you can select the accessible router sources (inputs) and router destinations (outputs) for Quorum. When working with large routers composed of multiple routing matrices, the list of available sources and destinations grow to tens of thousands of items.

For More Information on...

- configuring devices in Caprica for Quorum, refer to the section "**Configuring Devices to Connect to a Quorum System**" on page 19–2.

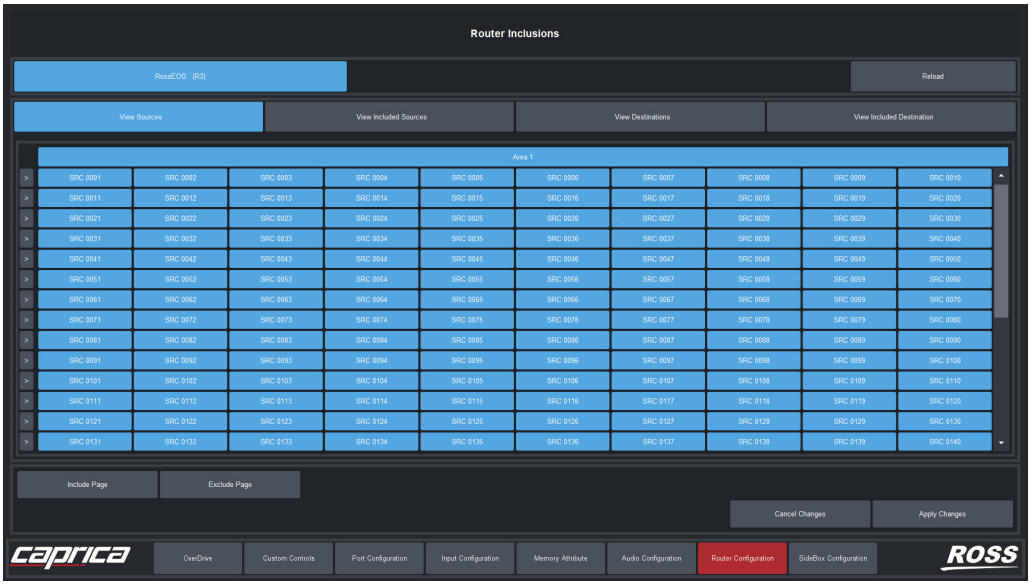
Sources

Creating a list of included sources helps simplify list navigation and item selection in Quorum.

To create a list of router included sources

1. Use the **Port Configuration** client to configure a router device for your Quorum system.
2. At the bottom of the **Device View**, click **Router Configuration**.

The **Router Configuration** client opens.



3. At the top of the **Router Configuration** client, click the **Router** (for example: RossEOS (R1)) for which to create a list of included sources.
4. Click **View Sources**.

   The **Router Configuration** client displays a list that contains a button for each available source on the selected router. You may need to click the following buttons to view all the available router sources.

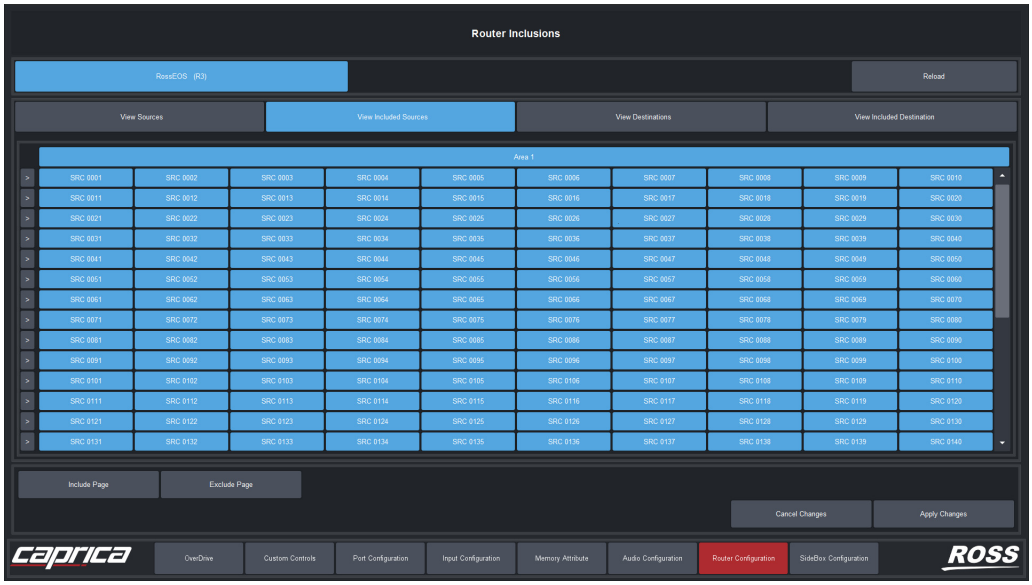
   - **Area** — if the router contains multiple areas, click the **Area 1** to **Area N** button to view the sources in the selected area.
   - **Page** — if the selected router contains more than 256 sources, click the **Page 2** to **Page N** buttons to view the next page of 256 sources.
5. In the source list, click each source that you want to make accessible to OverDrive. To select multiple sources at once, do the following:

   - **Row** — to select all the sources in a row, click the > **Arrow** button to the left of the row that contains the sources to select.
   - **Page** — to select all the sources on a page, click **Include Page**.
6. To deselect a source, click a selected source. To deselect multiple sources at once, do the following:

   - **Row** — to deselect a row of selected sources, click the > **Arrow** button to the left of the row that contains the sources to deselect. When a row contains an unselected source, all the sources change to selected. Click the > **Arrow** button once again to deselect all the sources in the row.
   - **Page** — to deselect all the sources on a page, click **Exclude Page**.
7. Click **Apply Changes** to save the selected sources to the router included sources list.

8. To view only the sources in the router included sources list, click **View Included Sources**.

   The **Router Configuration** client displays the sources in the router included sources list.



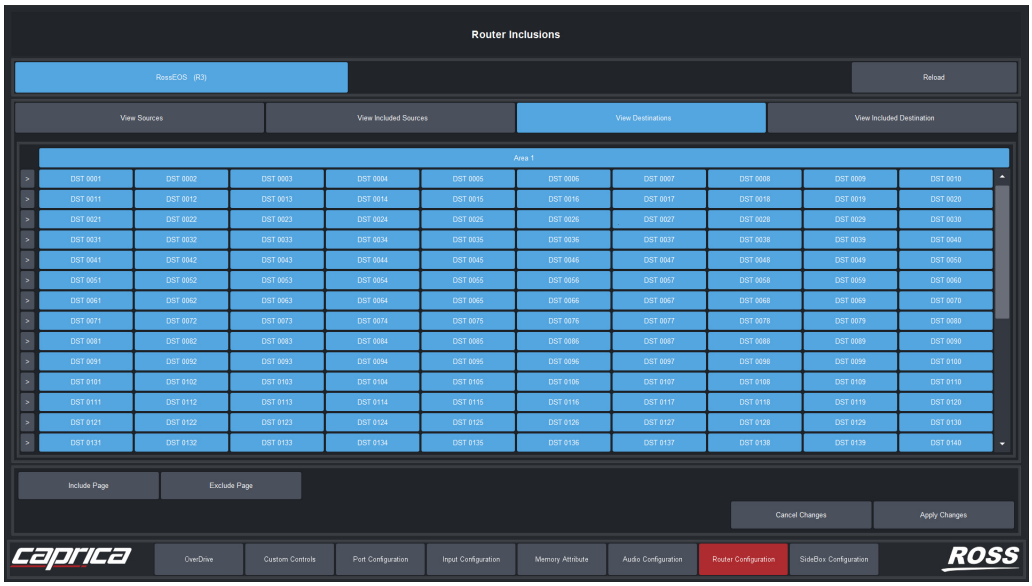
Destinations

Creating a list of included destinations helps simplify list navigation and item selection in Quorum.

To create a list of router included destinations

1. At the top of the **Router Configuration** client, click the **Router** (for example: RossEOS (R1)) for which to create a list of included destinations.
2. Click **View Destinations**.

   The **Router Configuration** client displays a list that contains a button for each available destination on the selected router.



You may need to click the following buttons to view all the available router destinations.

- **Area** — if the router contains multiple areas, click the **Area 1** to **Area N** button to view the destinations in the selected area.
- **Page** — if the selected router contains more than 256 destinations, click the **Page 2** to **Page N** buttons to view the next page of 256 destinations.

3. In the destination list, click each destination that you want to make accessible to OverDrive. To select multiple destinations at once, do the following:

   - **Row** — to select all the destinations in a row, click the > **Arrow** button to the left of the row that contains the destinations to select.
   - **Page** — to select all the destinations on a page, click **Include Page**.

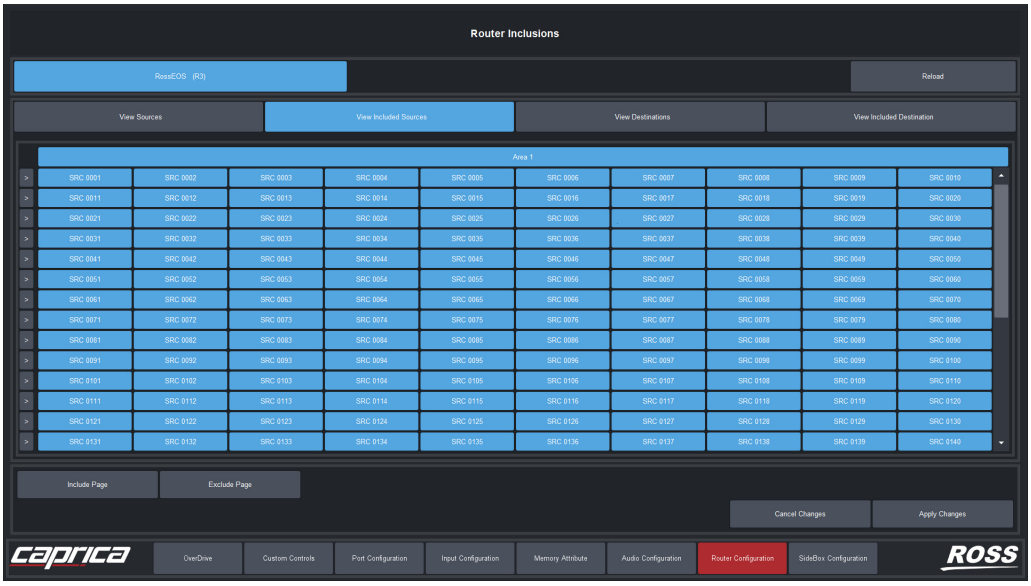
4. To deselect a destination, click a selected destination. To deselect multiple destinations at once, do the following:

   - **Row** — to deselect a row of selected destinations, click the > **Arrow** button to the left of the row that contains the destinations to deselect. When a row contains an unselected destination, all the destinations change to selected. Click the > **Arrow** button once again to deselect all the destinations in the row.
   - **Page** — to deselect all the destinations on a page, click **Exclude Page**.

5. Click **Apply Changes** to save the selected destinations to the router included destinations list.

6. To view only the destinations in the router included destinations list, click **View Included Destinations**.

   The **Router Configuration** client displays the destinations in the router included destinations list.



Creating Custom Control Macros

The Custom Control function of the switcher enables you to program sequences of keystrokes (called “macros”) and other special switcher functions — and store them in dedicated buttons and banks in the Custom Control group. Once programmed, you can playback a macro by pressing the associated button in the Custom Control group. A Custom Control macro can be as simple as triggering an output GPI pulse, or as complex as recalling a specific memory register, performing a switcher transition, and flying a group of keys — all with one-button simplicity. You can use the Caprica Custom Controls client to create Custom Control macros for your Quorum switcher.

✶ Do not use the Caprica Custom Controls client to create or edit Custom Controls while playing out a rundown. Creating or editing Custom Controls during rundown play out may cause the rundown to stop playing.

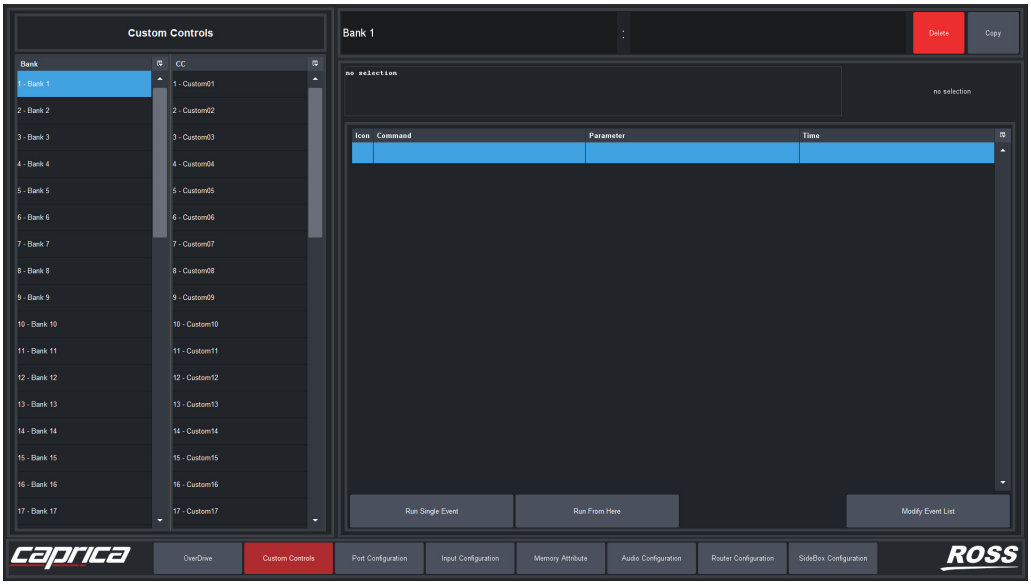
For More Information on...

- using Custom Control macros in Quorum, refer to the section “**Custom Controls in *Quorum***” in the ***Quorum User Guide***.

To create a Custom Control macro

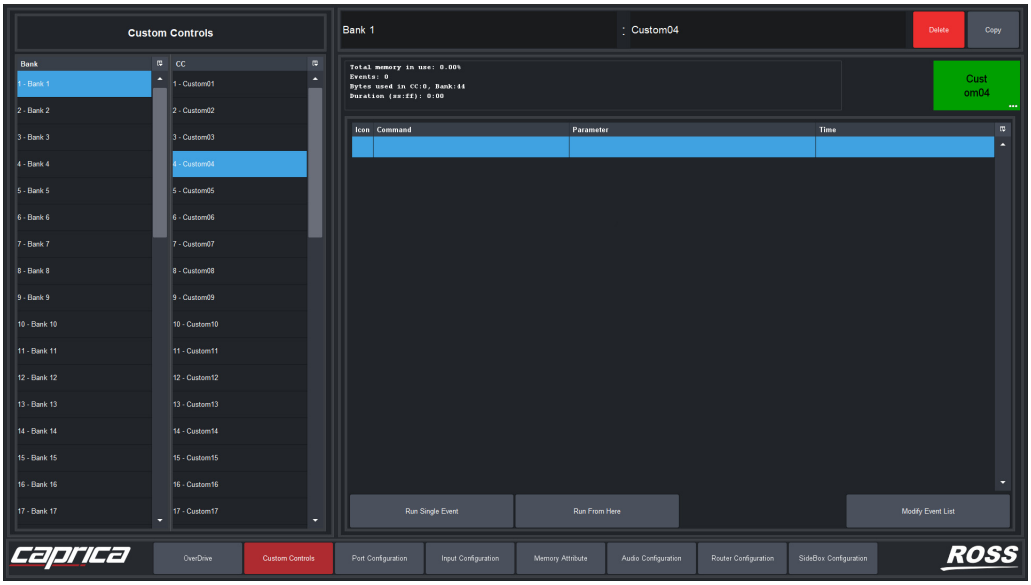
1. At the bottom of the **Device View**, click **Custom Controls**.

   The **Custom Controls** client opens.



2. In the **Bank** column of the **Custom Controls** table, click the bank name that contains the Custom Control that you want to program with a new Custom Control macro.
3. In the **CC Name** column, click the name of the Custom Control to program.

The **Bank** and **CC Name** boxes display the selected bank and Custom Control names.

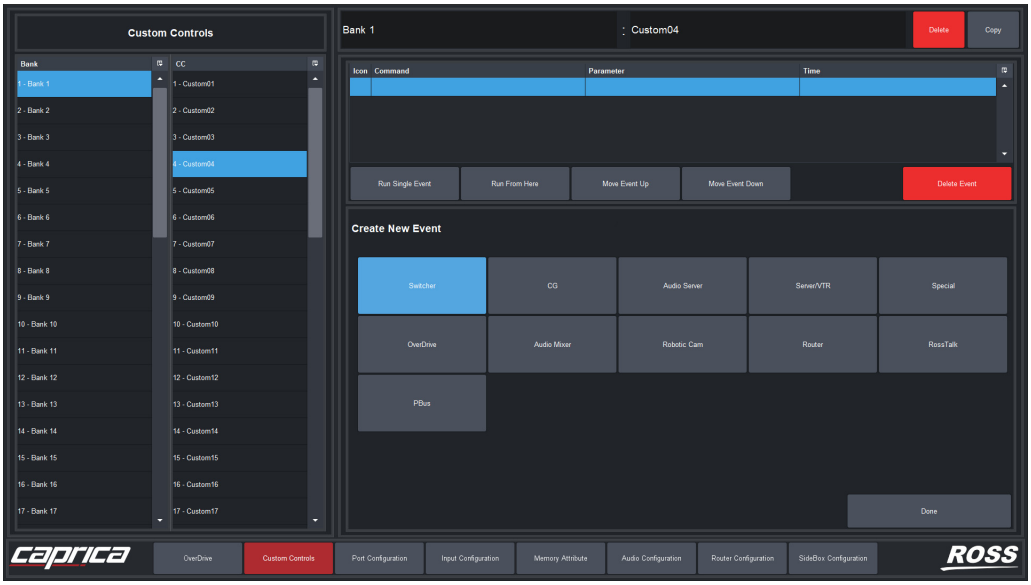


The fields above the Custom Control **Event** list display the following information:

- **Total memory in use** — this field displays the percentage of the Caprica Custom Control memory that is used by all of the Custom Controls on your Caprica Server.
- **Events** — this field displays the number of events in the selected Custom Control.
- **Bytes used in** — this field displays the amount of Caprica Custom Control memory in bytes used by the selected Custom Control (**CC**) and bank (**Bank**).
- **Duration** — this field displays the duration of the selected Custom Control in seconds (**ss**) and frames (**ff**).

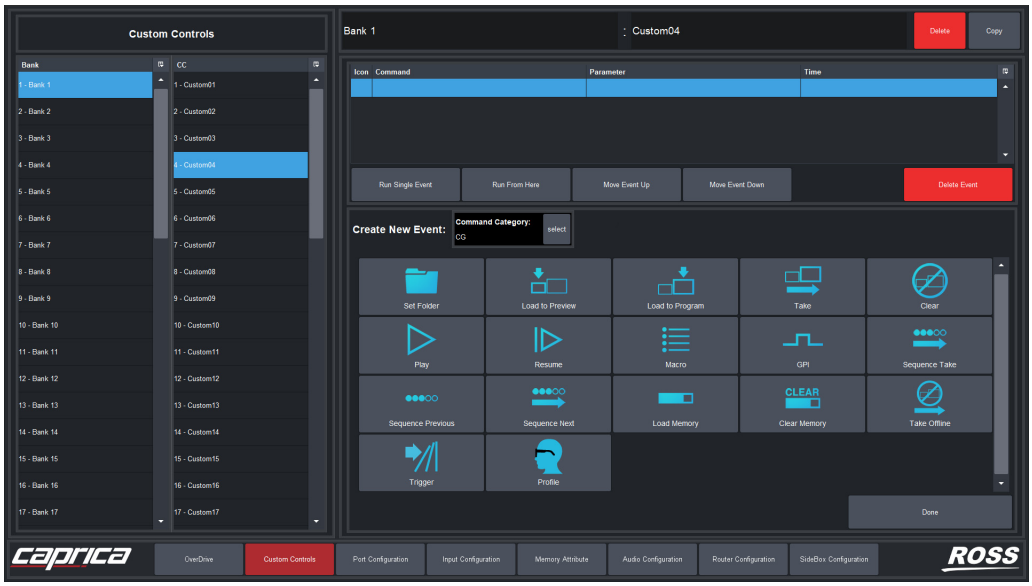
4. Click in the **Bank** box to edit the bank name or the **CC Name** box to edit the Custom Control name.
5. Click **Modify Event List** at the bottom of the **Custom Controls** client.

   The **Create New Event** panel opens listing the available types of Custom Controls that you can use to build a Custom Control macro.



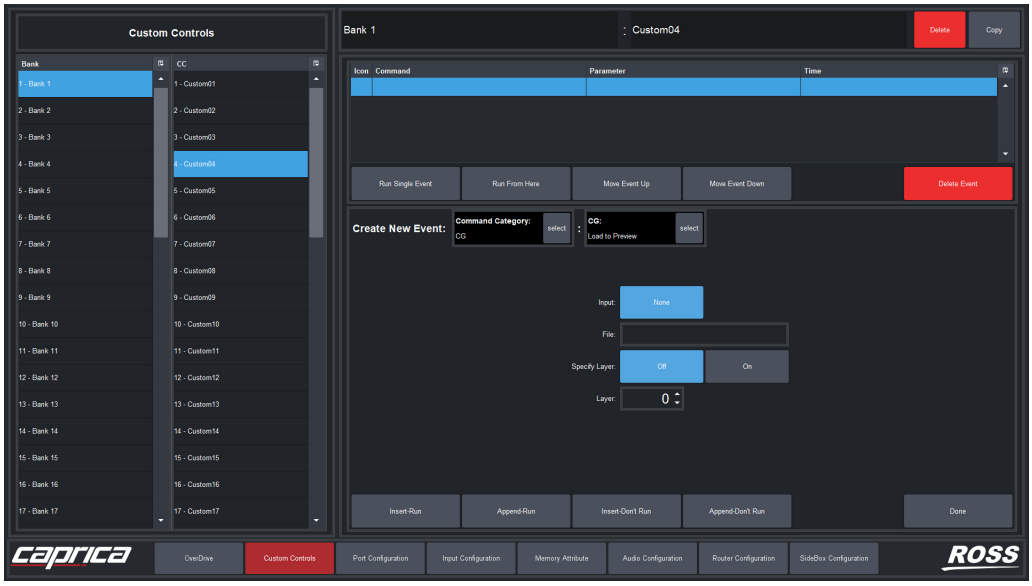
6. In the **Create New Event** panel, click the type of Custom Control that you want to use to create a new event in your Custom Control macro.

   The **Create New Event** panel lists the available Custom Controls that you can use to create an event in your Custom Control macro. If you selected the wrong Custom Control type, click **select** in the **Command Category** area to return to the list of available Custom Control types.



7. Click the **Custom Control** to add to your macro as an event.

   The **Create New Event** panel displays the setting for the selected Custom Control. If you selected the wrong Custom Control, click **select** in the **Custom Control Name** area to return to the list of available Custom Controls.

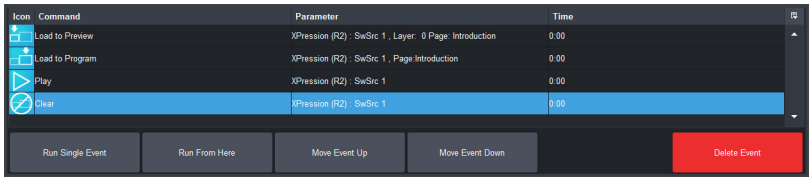


8. Configure the **Custom Control Settings** as required for the new event in your Custom Control macro.

9. Depending on the location to add a configured Custom Control as an event in your Custom Control macro, Click one of the following:

   - **Insert-Run** — add a configured Custom Control above the currently selected event in the **Event List** and run the Custom Control on the switcher connected to the Quorum system. When an event is not selected in the **Event List**, new events are added as the first event in the **Event List**.
   - **Append-Run** — add a configured Custom Control below the currently selected event in the **Event List** and run the Custom Control on the switcher connected to the Quorum system. When an event is not selected in the **Event List**, new events are added as the last event in the **Event List**.
   - **Insert-Don't Run** — add a configured Custom Control above the currently selected event in the **Event List**, but do not run the Custom Control on the switcher connected to the Quorum system. When an event is not selected in the **Event List**, new events are added as the first event in the **Event List**.
   - **Append-Don't Run** — add a configured Custom Control below the currently selected event in the **Event List**, but do not run the Custom Control on the switcher connected to the Quorum system. When an event is not selected in the **Event List**, new events are added as the first event in the **Event List**.

   The **Custom Controls** client adds the configured Custom Control to the **Event List** and highlights the new event. The **Event List** displays Custom Control macro events in the order of execution.



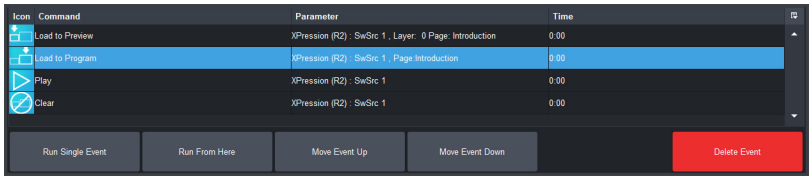
10. Click **select** in the **Command Category** area to start configuring the next event in your Custom Control macro.
11. Repeat step **5** to step **10** to add additional events to your Custom Control macro.
12. After you add the last event to your Custom Control macro, click **Done** to complete the macro.

Moving Events in a Custom Control Macro

If you inserted an event at the wrong location in your Custom Control macro, you can move the offending event to the correct location in your Custom Control macro.

To move an event in a Custom Control macro

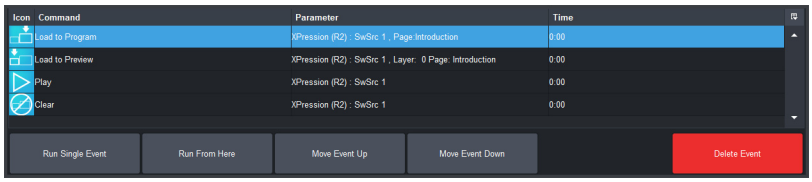
1. In the **Event List** table, select the event to move.



2. Use the following button to move the selected event in the Event List table:

   - **Move Event Up** — move the selected event up one row in the **Event List** table.
   - **Move Event Down** — move the selected event down one row in the **Event List** table.

   The **Custom Controls** client deletes the selected event from the **Event List** table and the Custom Control macro.

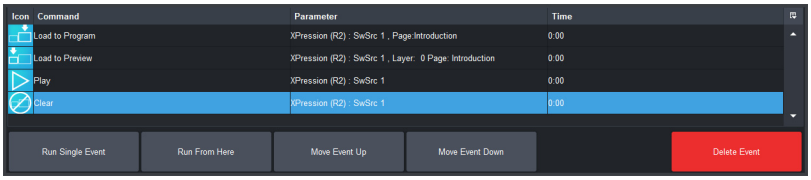


Deleting Events from a Custom Control Macro

If you added a incorrect event to your Custom Control macro, you can delete the offending event from your Custom Control macro.

To delete an event from a Custom Control macro

1. In the **Event List** table, select the event to delete.

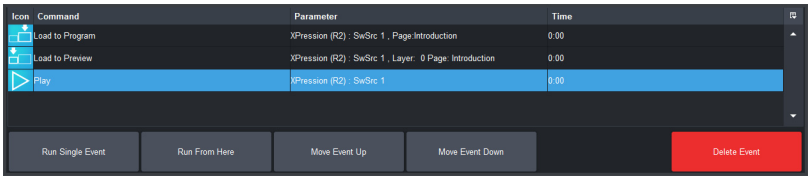


2. Click **Delete Event**.

   The **Confirm Delete** alert opens.

3. Click **Delete Event**. Click **Cancel** if you do not want to delete the selected event. You cannot recover deleted events.

   The **Custom Controls** client deletes the selected event from the **Event List** table and the Custom Control macro.



Testing Custom Control Macros

While creating a Custom Control macro or after completing a macro you can use the following procedures to test the macro:

To test individual events in a Custom Control macro

1. In the **Event List** table, click the event to test.
2. Click **Run Single Event** at the bottom of the **Event List** table.
3. On the switcher in your Quorum system, verify the results of the event.

To test from a selected event to the last event in a Custom Control macro

1. In the **Event List** table, click the event from which you want to start testing the Custom Control macro. Click the first event in the **Event List** to test the entire Custom Control macro.
2. Click **Run From Here** at the bottom of the **Event List** table.
3. On the switcher in your Quorum system, verify the results of the events.

Making Copies of a Custom Control Macro

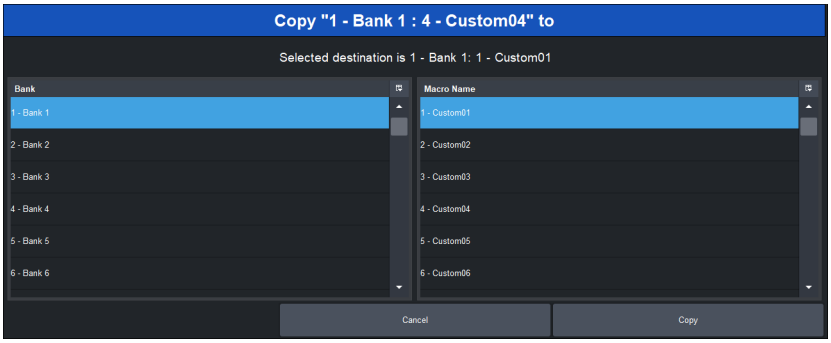
Starting with a copy of a Custom Control macro that does most of what you want is a quick method of build a Custom Control macro.

To create a copy of a Custom Control macro

1. In the **Bank** column of the **Custom Controls** table, click the Custom Control bank that contains the Custom Control macro to copy.
2. In the **CC Name** column of the **Custom Controls** table, click the name of the Custom Control macro to copy.

   The **Custom Controls** client displays the selected bank and Custom Control name in the **Bank** and **CC Name** boxes at the top of the client.
3. Click **Copy** to the right of the **Bank** and **CC Name** boxes.

   The **Copy** dialog box opens.



4. In the **Bank** column of the **Copy** dialog box, click the Custom Control bank in which you want to save a copy of the selected Custom Control macro.
5. In the **Macro Name** column of the **Copy** dialog box, click the Custom Control name in which to save a copy of the selected Custom Control macro.
6. Click **Copy**.

   The Custom Controls client copies the selected Custom Control macro to the selected **Bank** and **Macro Name**.
7. To access the copied Custom Control macro, use the **Bank** and **CC Name** columns in the **Custom Controls** table.

Deleting Custom Control Macros

When you no longer require a Custom Control macro, you can delete the Custom Control macro. Deleting a Custom Control macro deletes all the events in the Custom Control macro, preparing it for a new Custom Control macro.

To delete a Custom Control macro

1. In the **Bank** column of the **Custom Controls** table, click the Custom Control bank that contains the Custom Control macro to delete.
2. In the **CC Name** column of the **Custom Controls** table, click the name of the Custom Control macro to delete.

   The **Custom Controls** client displays the selected bank and Custom Control name in the **Bank** and **CC Name** boxes at the top of the client.
3. Click **Delete** to the right of the **Bank** and **CC Name** boxes.

   The **Confirm Delete** alert opens.
4. Click **Delete**. Click **Cancel** if you do not want to delete the selected Custom Control macro. You cannot recover deleted Custom Control macros.

   The **Custom Controls** client deletes all the events in the selected Custom Control macro.

Saving Caprica Server Configuration

After you finish configuring your Caprica Server it is a good idea to save the Caprica Server configuration to a diskset. You can use a diskset as a Caprica Server backup or to copy Caprica Server configurations to another Caprica Server. A diskset may contain one or more of the following Caprica Server configuration components:

- **Installation**
  - › Devices to connect to a Quorum system
  - › Switcher inputs
  - › Audio channels
  - › Router sources and destinations
- **Custom Control** - Custom Control macro definitions
- **Shotbox** — SideShot module configuration
- **Memory** — Memory Attribute configuration

When you create a diskset on a Caprica Server in a Redundant Caprica Server System the diskset is automatically copied to the other Caprica Server the Redundant Caprica Server System.

Save Caprica Server Configuration to a New Diskset

At any time, you can save the current configuration of your Caprica Server to a new diskset. You can also save existing diskset on your Caprica Server to a diskset with a new name. When you save Caprica Server configurations to a new diskset, you can choose to save all or individual components in the diskset.

All Current Configuration Components

When you choose to save all components of the current Caprica Server configuration, Caprica compresses the Installation, Custom Control, Shotbox, and Memory configuration components into a single diskset file.

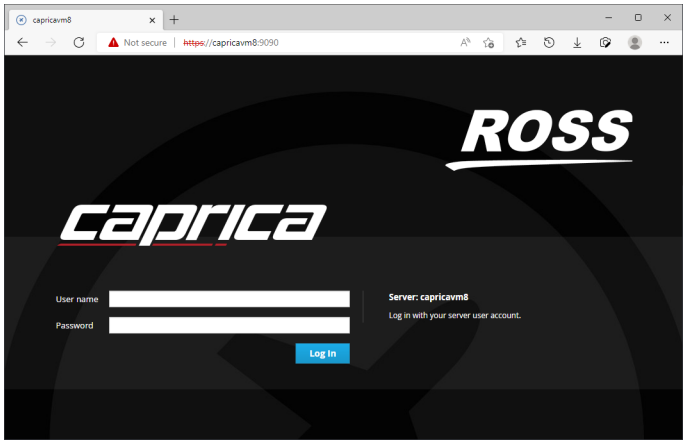
To save all components of the current Caprica Server configuration to a diskset

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a web browser to open **Caprica Cockpit**. The format of the URL is as follows, where `<Caprica Server>` is the hostname or IP address of your **Caprica Server** computer:

   `https://<Caprica Server>:9090`

   If the web browser identifies your connection with Caprica Cockpit as not secure, add an exception for Caprica Cockpit.

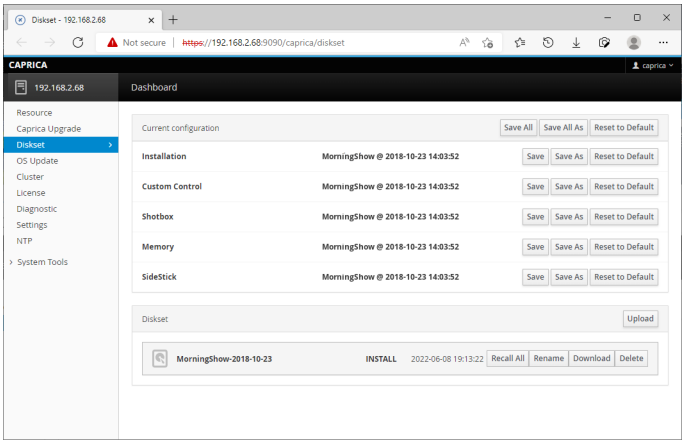
   The **Caprica Login** web page opens.



3. Use the following credentials to log in to **Caprica Cockpit**:
   - **User**: `caprica`
   - **Password**: `<your_password>`
4. Click **Log In**.

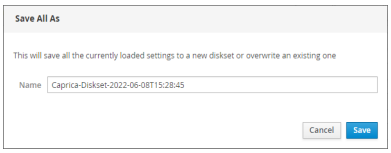
   Caprica Cockpit opens.
5. In the tree view, click **Diskset**.

   The **Diskset** web page opens. For each configuration component of the Caprica Server, the **Current configuration** section displays the name of the current diskset that contains the component and the time that component was recalled to configure the Caprica Server.



6. In the title bar of the **Current Configuration** section, click **Save All As**.

   The **Save All As** dialog box opens.

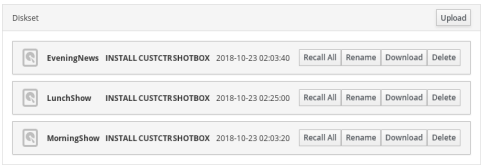


7. In the **Name** box, enter a name for your new diskset or use the suggested diskset name.

✶ If you enter the name of an existing diskset, Caprica will overwrite the configuration components contained in the existing diskset with the components from the current configuration.

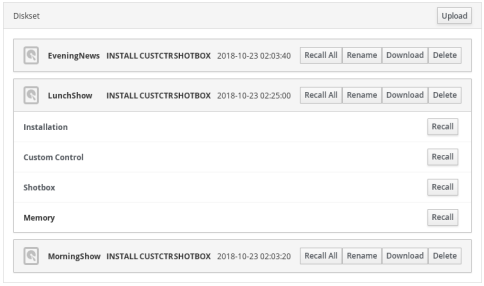
8. Click **Save**.

   Caprica creates a new diskset by compressing the current configuration components into a single file (.tgz) with the name set in the **Save All As** dialog box. Caprica saves disksets files in the `/caprica/archive` directory on the Caprica Server computer. The **Diskset** section lists all the diskset files contained in the `/caprica/archive` directory, even diskset files copied into the directory from other sources.



9. To view the configuration components contained in the new diskset, click the name of the new diskset in the **Diskset** section.

   The selected diskset expands to display the configuration components contained in the diskset.



Individual Current Configuration Components

You can choose to individually save the Installation, Custom Control, Shotbox, or Memory configuration from the current Caprica Server configuration to a diskset. You can add additional configuration components to an existing diskset.

To save an individual component of the current Caprica Server configuration in a diskset

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a web browser to open **Caprica Cockpit**.
3. Log in to **Caprica Cockpit** as the **caprica** user.
4. In the tree view, click **Diskset**.

   The **Diskset** web page opens. For each configuration component of the Caprica Server, the **Current configuration** section displays the name of the current diskset that contains the component and the time that component was recalled to configure the Caprica Server.
5. In the **Current Configuration** section, click **Save As** to the right of the configuration component to save.

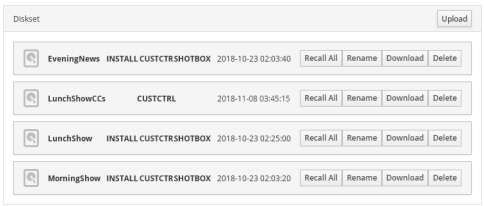
   The **Save Component As** dialog box opens.

6. In the **Name** box, enter a name for your new diskset or use the suggested diskset name.

✶ If you enter the name of an existing diskset, Caprica will overwrite the configuration component in the diskset that matches the component you selected to save. When the diskset does not contain the configuration component you selected to save, Caprica will add the component to the diskset.

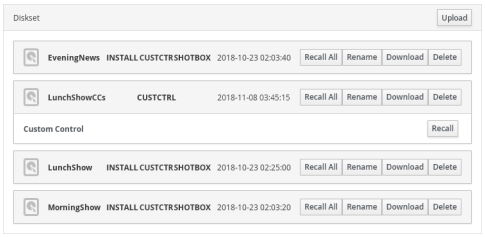
7. Click **Save**.

   Caprica creates a new diskset by saving the selected current configuration component in a file (.tgz) with the name set in the **Save Component As** dialog box. Caprica saves disksets files in the `/caprica/archive` directory on the Caprica Server computer. The **Diskset** section lists all the diskset files contained in the `/caprica/archive` directory, even diskset files copied into the directory from other sources.



8. To view the configuration component contained in the new diskset, click the name of the new diskset in the **Diskset** section.

   The selected diskset expands to display the configuration component contained in the diskset.



Save Changes Made to a Caprica Server Configuration

After you make changes to the current configuration of your Caprica Server, you can save the configuration component changes back to the original disksets from which you recalled the components.

All Current Configuration Components

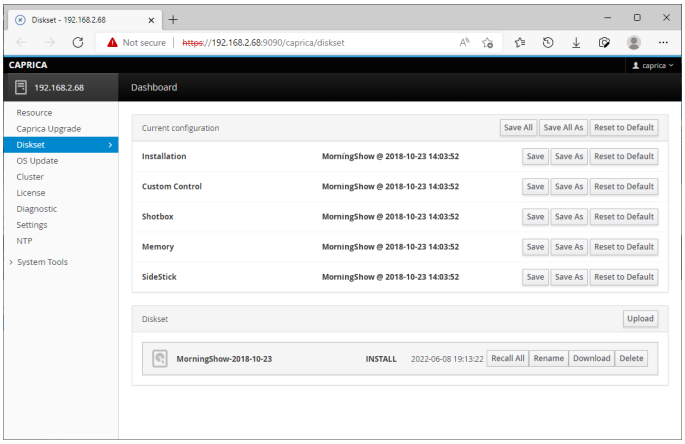
When you choose to save all configuration component changes for the current Caprica Server configuration, Caprica will overwrite the components in the originating disksets with the components in the Current Configuration section of the Diskset web page. The Current Configuration section displays the name of the originating diskset to the right of each configuration component.

✶ Saving the current Caprica Server configuration overwrites the configuration components in the originating disksets with the current Caprica Server configuration.

To save all Caprica Server configuration component changes to the originating disksets

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a web browser to open **Caprica Cockpit**.
3. Log in to **Caprica Cockpit** as the **caprica** user.
4. In the tree view, click **Diskset**.

   The **Diskset** web page opens. For each configuration component of the Caprica Server, the **Current configuration** section displays the name of the current diskset that contains the component and the time that component was recalled to configure the Caprica Server.



5. In the title bar of the **Current Configuration** section, click **Save All**.

   The **Save All** alert opens.

6. Click **Save**.

   Caprica overwrites the configuration components in the originating disksets with the current Caprica Server configuration. Click **Cancel** to cancel saving the current Caprica Server configuration back to the originating disksets.

Individual Current Configuration Components

You can choose to individually save the Installation, Custom Control, Shotbox, or Memory configuration from the current Caprica Server configuration back to the originating diskset.

- Saving an individual configuration component overwrites the configuration component in the originating disksets with the current Caprica Server configuration.

To save an individual Caprica Server configuration component changes to the originating diskset

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a web browser to open **Caprica Cockpit**.
3. Log in to **Caprica Cockpit** as the **caprica** user.
4. In the tree view, click **Diskset**.

   The **Diskset** web page opens. For each configuration component of the Caprica Server, the **Current configuration** section displays the name of the current diskset that contains the component and the time that component was recalled to configure the Caprica Server.

5. In the **Current Configuration** section, click **Save** to the right of the configuration component to save.

   The **Save Installation** alert opens.

6. Click **Save**.

   Caprica overwrites the configuration component in the originating diskset with the current Caprica Server configuration. Click **Cancel** to cancel saving the current Caprica Server configuration back to the originating diskset.

Renaming a Diskset to Another Caprica Server

You can rename any of the disksets stored on your Caprica Server.

To rename a diskset on a Caprica Server

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a web browser to open **Caprica Cockpit**.
3. Log in to **Caprica Cockpit** as the **caprica** user.
4. In the tree view, click **Diskset**.

   The **Diskset** web page opens. For each configuration component of the Caprica Server, the **Current configuration** section displays the name of the current diskset that contains the component and the time that component was recalled to configure the Caprica Server.

5. In the **Diskset** section, click **Rename** to right of the diskset to rename.

   The **Rename Diskset** dialog box opens.

6. In the **Name** box, enter a new name for the selected diskset.

✶ If you enter the name of an existing diskset, Caprica will overwrite the existing diskset with the configuration components contained in the renamed diskset. Click **Cancel** to cancel renaming the selected diskset.

7. Click **Save** or **Overwrite**.

   The **Rename Diskset** dialog box closes and the **Diskset** section of the **Diskset** web page displays the renamed diskset.

Deleting a Diskset

When you no longer require a diskset you can delete the diskset from the Caprica Server to save disk space.

To delete a diskset from a Caprica Server

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a web browser to open **Caprica Cockpit**.
3. Log in to **Caprica Cockpit** as the **caprica** user.
4. In the tree view, click **Diskset**.

   The **Diskset** web page opens. For each configuration component of the Caprica Server, the **Current configuration** section displays the name of the current diskset that contains the component and the time that component was recalled to configure the Caprica Server.

5. In the **Diskset** section, click **Delete** to the right of the diskset to delete from the Caprica Server.

   An **Alert** opens.

6. Click **Delete**.

   The Caprica Server deletes the selected diskset. Click **Cancel** to cancel deleting the selected diskset.

Recalling Configurations from a Diskset

You can recall all or selected Caprica Server configuration components from a diskset to change the configuration of your Caprica Server. The Diskset section of the Diskset web page lists the available disksets on your Caprica Server.

✶ Recalling Caprica Server configuration components from a diskset overwrites the current Caprica Server configuration with the configuration components contained in the selected diskset and then restarts the Caprica Server.

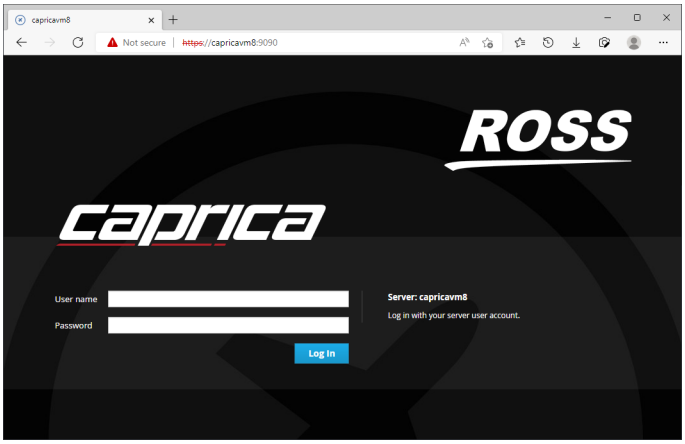
To recall Caprica Server configuration components from a diskset

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a web browser to open **Caprica Cockpit**. The format of the URL is as follows, where `<Caprica Server>` is the hostname or IP address of your **Caprica Server** computer:

   `https://<Caprica Server>:9090`

   If the web browser identifies your connection with Caprica Cockpit as not secure, add an exception for Caprica Cockpit.

The **Caprica Login** web page opens.



3. Use the following credentials to log in to **Caprica Cockpit**:
   - **User**: `caprica`
   - **Password**: `<your_password>`
4. Click **Log In**.

   Caprica Cockpit opens.
5. In the tree view, click **Diskset**.

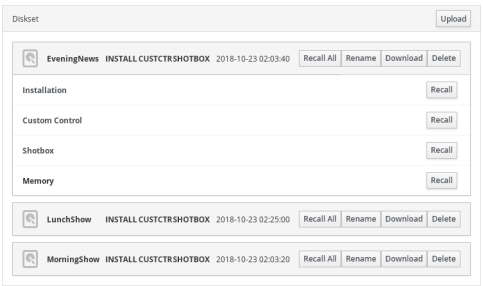
   The **Diskset** web page opens. The **Diskset** section lists the disksets on your Caprica server from which you can recall configuration components. To the right of each diskset name, Caprica displays the components contained in the diskset along with the time and date that the diskset was created.
6. To recall all the Caprica Server configuration components contained in a diskset, complete the following steps:
   a. In the **Diskset** section, click **Recall All** to right of the diskset to recall to the Caprica Server.

      An **Alert** opens.

   b. Click **Recall**.

      Caprica overwrites the current Caprica Server configuration with the configuration components contained in the selected diskset and automatically restarts the Caprica Server to start using the new configuration. Click **Cancel** to cancel recalling the configuration components from the selected diskset.
7. To recall an individual Caprica Server configuration component from a diskset, complete the following steps:
   a. In the **Diskset** section, click the name of the diskset from which to recall a Caprica Server configuration component.

      The selected diskset expands to display the available Caprica Server configuration components contained in the diskset.



b. In the expanded **Diskset**, click **Recall** to right of the Caprica Server configuration component to recall to the Caprica Server.

An **Alert** opens.

c. Click **Recall**.

Caprica overwrites the current Caprica Server configuration with the selected configuration component from the diskset and automatically restarts the Caprica Server to start using the new configuration. Click **Cancel** to cancel recalling the selected configuration component from the diskset.

Copying a Diskset to Another Caprica Server

You can use a diskset that you download from a Caprica Server to quickly configure another Caprica Server.

To copy a diskset from one Caprica Server to another Caprica Server

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a web browser to open **Caprica Cockpit**.
3. Log in to **Caprica Cockpit** as the **caprica** user.
4. In the tree view, click **Diskset**.

   The **Diskset** web page opens. For each configuration component of the Caprica Server, the **Current configuration** section displays the name of the current diskset that contains the component and the time that component was recalled to configure the Caprica Server.
5. In the **Diskset** section, click **Download** to right of the diskset to copy to another Caprica Server.
6. Save the selected diskset to a file to your computer.
7. Use a web browser to open **Caprica Cockpit** on the **other** Caprica Server to which to copy the diskset.
8. Log in to **Caprica Cockpit** as the **caprica** user.
9. In the tree view, click **Diskset**.

   The **Diskset** web page opens.
10. In the title bar of the **Diskset** section, click **Upload**.

    The **Upload Diskset** dialog box opens.

11. In the **Upload Diskset** dialog box, click **Browse**.

    The **File Upload** dialog box opens.
12. Use the **File Upload** dialog box to locate and select the **diskset file** (.tgz) to upload to the current Caprica Server.
13. Click **Open**.

    The **File Upload** dialog box closes, and the **File Upload** dialog box displays the name of the selected diskset file.

✶ When the diskset that you select has the same name as an existing diskset on the Caprica Server, Caprica will overwrite the existing diskset with the selected diskset. Click **Cancel** to cancel uploading the selected diskset.

14. Click **Upload** or **Overwrite**.

    The **Upload Diskset** dialog box closes and the **Diskset** section of the **Diskset** web page displays the name of the uploaded diskset.

15. Recall all or selected Caprica Server configuration components from the uploaded diskset to the Caprica Server.

Creating Caprica Server Diagnostic Reports

Diagnostic reports are used by Ross Video Technical Support to trouble shoot Caprica Server problems and are small enough to be sent to Ross Video for analysis. A diagnostic report is a .tgz file that contains the following information:

- Log files
- Installation files
- License files
- Cluster configuration
- Caprica software version
- Operating system version
- Support files

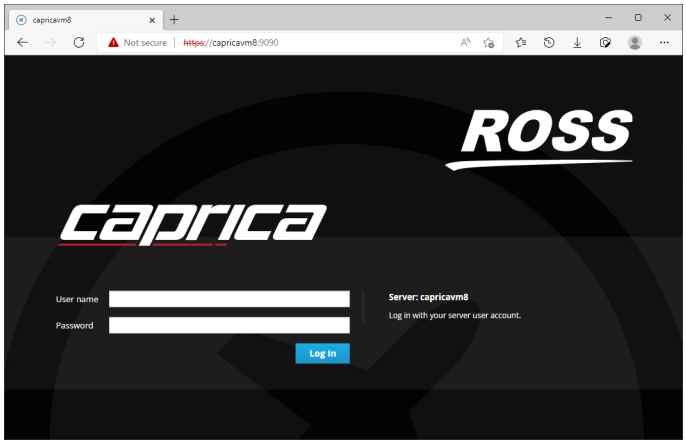
To save a diagnostic report

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a web browser to open **Caprica Cockpit**. The format of the URL is as follows, where `<Caprica Server>` is the hostname or IP address of your **Caprica Server** computer:

   `https://<Caprica Server>:9090`

   If the web browser identifies your connection with Caprica Cockpit as not secure, add an exception for Caprica Cockpit.

   The **Caprica Login** web page opens.

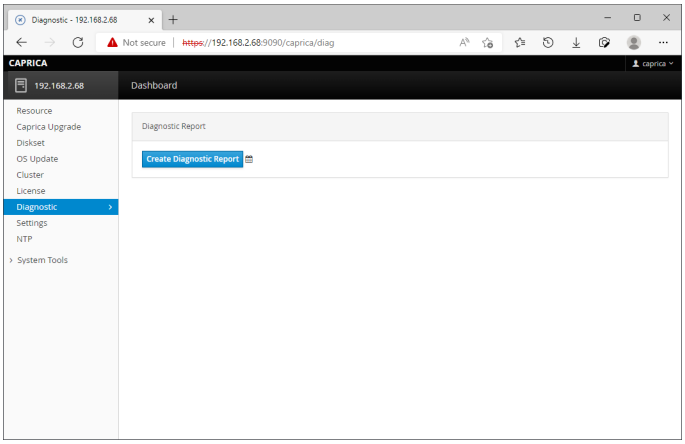


3. Use the following credentials to log in to **Caprica Cockpit**:
   - **User**: `caprica`
   - **Password**: `<your_password>`
4. Click **Log In**.

   Caprica Cockpit opens.

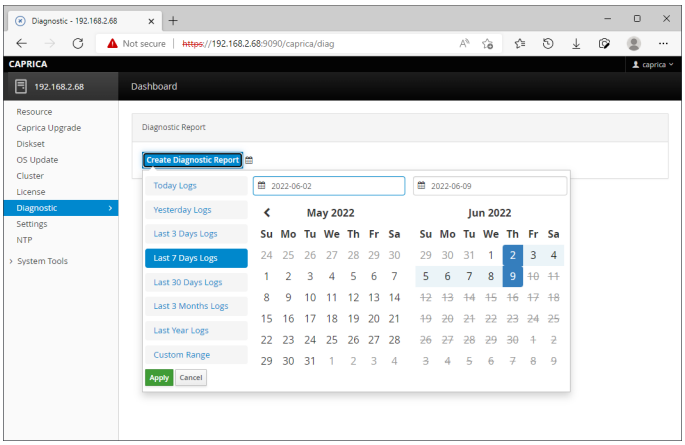
5. In the tree view, click **Diagnostic**.

   The **Diagnostic Report** web page opens.



6. In the **Diagnostic Report** section, click **Create Diagnostic Report**.

   The **Calendar** tool opens.



7. Click a **Preset Date Range** button to create a diagnostic report for a set date range or click the **Custom Range** button to define your own date range.

   To define a custom date range for your diagnostic report:

   a. Click the **Custom Range** button.

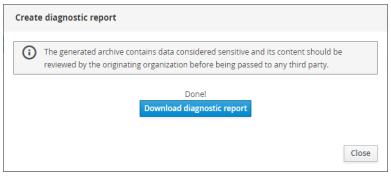
   b. In the **Date** selector, click the start date for the diagnostic report.

   The **Date** selector displays two months. To view other months, click the **Arrows** on either side of the month names.

   c. In the **Date** selector, click the end date for the diagnostic report.

   d. Click **Apply**.

   After you select a pre-set date range or define a custom date range, Caprica generates a diagnostic report for the selected date range. The **Create diagnostic report** dialog box opens.



8. Click **Download diagnostic report**.
9. Follow your web browser prompts to save the diagnostic report .tgz file.
10. In the **Create diagnostic report** dialog box, click **Close**.

Controlling User Session Timeout

For user security, you can configure Caprica Cockpit to automatically log a user session out after a set number of minutes of inactivity.

Automatic User Session Log Out

By default, Caprica Cockpit will automatically log a user session out after 15 minutes of inactivity. Caprica Cockpit will not automatically log out a user session before alerting the user.

To continue a user session after reaching the set timeout limit:

1. When there is only one minute remaining before Caprica Cockpit automatically logs out a user session, Caprica Cockpit displays the **Session is about to expire** alert to the user.

2. Click **Continue Session** to continue the Caprica Cockpit session.

   Caprica Cockpit automatically logs the user session out if the user does not click **Continue Session** before the timer in the **Session is about to expire** alert reaches 0 seconds.

Setting the User Session Timeout

You can set a user session timeout limit of 1 to 60 minutes of inactivity. You can also choose to turn off automatic user session timeout.

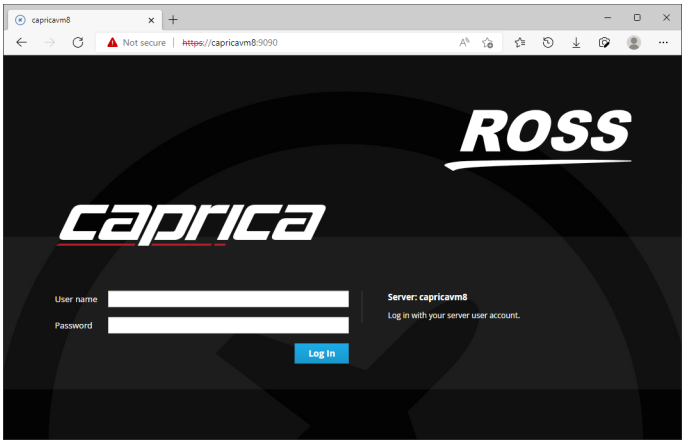
To set the user session timeout limit:

1. Log in to a computer connected to the same network as the Caprica Server computer.
2. Use a web browser to open **Caprica Cockpit**. The format of the URL is as follows, where `<Caprica Server>` is the hostname or IP address of your **Caprica Server** computer:

   `https://<Caprica Server>:9090`

   If the web browser identifies your connection with Caprica Cockpit as not secure, add an exception for Caprica Cockpit.

The **Caprica Login** web page opens.

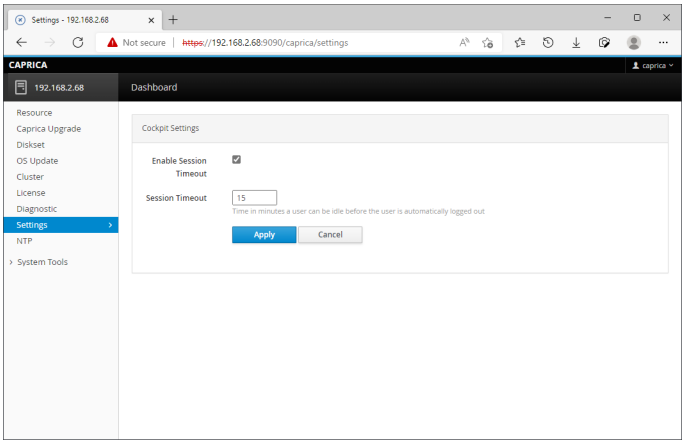


3. Use the following credentials to log in to **Caprica Cockpit**:
   - **User**: `caprica`
   - **Password**: `<your_password>`
4. Click **Log In**.

   Caprica Cockpit opens.

   - In the tree view, click **Settings**.

   The **Settings** web page opens.



5. Select the **Enable Session Timeout** check box to automatically log out user session that have been inactive for the set number of minutes.

   To turn of automatic user session timeout, clear the **Enable Session Timeout** check box.
6. In the **Session Timeout** box, enter or select the number of minutes that a user session can be inactive before Caprica Cockpit automatically logs out the user session. **Session Timeout** can range from 1 to 60 minutes.

   When there is only one minute remaining of the set **Session Timeout**, Caprica Cockpit displays the **Session is about to expire** alert to enable users the continue their session before being logged out.
7. Click **Apply**.

   Caprica Cockpit saves the session timeout settings. Click **Cancel** to cancel saving the session timeout settings.

Appendix A. Software Licenses

Your Ross Video product uses software covered by one or more of the licenses described in this document.

✶ As required by the GNU General Public License, and the Lesser GNU Public License (LGPL), source code can be obtained from Ross Video for at least 3 years. Contact Ross Video Technical Support for more information.

The following licenses are contained in this appendix:

- End User Software License Agreement
- GNU GENERAL PUBLIC LICENSE
- GNU GENERAL PUBLIC LICENSE WITH THE CLASSPATH EXCEPTION
- GNU LESSER GENERAL PUBLIC LICENSE
- BSD License
- Apache License
- Eclipse Public License - v 1.0
- Expat License
- IMLIB2
- Jiffy
- Fedora 14 - License Agreement
- PSF LICENSE AGREEMENT FOR PYTHON 2.7.3
- Jetty
- Apache ActiveMQ

End User Software License Agreement

This End User Software License Agreement is a legal agreement between you (the "**Licensee**") and Ross Video Limited ("**Ross Video**") specifying the terms and conditions of your installation and use of the Software and all Documentation (as those terms are defined herein).

IMPORTANT:

BY DOWNLOADING, ACCESSING, INSTALLING OR USING THE SOFTWARE AND/OR DOCUMENTATION LICENSEE AGREES TO THE TERMS OF THIS AGREEMENT AND THE LICENSE GRANTED HEREUNDER SHALL BE EFFECTIVE AS OF AND FROM SUCH DATE. IF YOU DO NOT WISH TO ACCEPT THE TERMS AND CONDITIONS OF THIS AGREEMENT, DO NOT DOWNLOAD, ACCESS, INSTALL, REFER TO OR OTHERWISE USE THE SOFTWARE AND/OR DOCUMENTATION.

1. **INTERPRETATION.** In this Agreement, (a) words signifying the singular number include the plural and vice versa, and words signifying gender include all genders; (b) every use of the words "herein", "hereof", "hereto" "hereunder" and similar words shall be construed to refer to this Agreement in its entirety and not to any particular provision hereof; (c) reference to any agreement or other document herein will be construed as referring to such agreement or other document as from time to time amended, modified or supplemented (subject to any restrictions on such amendment, modification or supplement set forth therein); (d) every use of the words "including" or "includes" is to be construed as meaning "including, without limitation" or "includes, without limitation", respectively; and (e) references to an Article or a Section are to be construed as references to an Article or Section of or to this Agreement unless otherwise specified.

2. **DEFINITIONS.** In this Agreement, in addition to the terms defined elsewhere in this Agreement, the following terms have the meanings set out below:

   "Affiliate" means, with respect to any Person, any other Person who directly or indirectly controls, is controlled by, or is under direct or indirect common control with, such Person. A Person shall be deemed to control a Person if such Person possesses, directly or indirectly, the power to direct or cause the direction of the management and policies of such Person, whether through the ownership of voting securities, by contract or otherwise; and the term "controlled" and "controlling" shall have a similar meaning.

   "Agreement" means this End User Software License Agreement including the recitals hereto, as the same may be amended from time to time in accordance with the provisions hereof.

   "Backup System" means the secondary piece of Designated Equipment upon which the Software is installed and mirrored for the sole purpose of replacing a Primary System in the event such Primary System is not available or functioning properly for any reason.

   "Change of Control" means (a) the direct or indirect sale, transfer or exchange by the shareholders of a Party of more than fifty percent (50%) of the voting securities of such Party, (b) a merger or amalgamation or reorganization or other transaction to which a Party is party after which the shareholders of such Party immediately prior to such transaction hold less than fifty percent (50%) of the voting securities of the surviving entity, (c) the sale, exchange, or transfer of all or substantially all of the assets of a Party.

   "Confidential Information" means all data and information relating to the business and management of either Party, including the Software, trade secrets and other technology to which access is obtained or granted hereunder by the other Party, and any materials provided by Ross Video to Licensee; provided, however, that Confidential Information shall not include any data or information which:

   a. is or becomes publicly available through no fault of the other Party;

   b. is already in the rightful possession of the other Party prior to its receipt from the other Party;

   c. is already known to the receiving Party at the time of its disclosure to the receiving Party by the disclosing Party and is not the subject of an obligation of confidence of any kind;

   d. is independently developed by the other Party;

   e. is rightfully obtained by the other Party from a third party; or

   f. is disclosed with the written consent of the Party whose information it is.

“Designated Equipment” shall mean (a) the hardware products sold by Ross Video to Licensee on which the Software is installed and licensed for use, as the same may be replaced from time to time by Ross Video; or (b) in the case of Software sold on a stand-alone basis, the equipment of Licensee on which the Software is to be installed and meets the minimum specifications set out in the Documentation.

“Documentation” shall mean manuals, instruction guides, user documentation and other related materials of any kind pertaining to the Software (whether in electronic, hard-copy or other media format) that are furnished to Licensee by or on behalf of Ross Video in relation to the Software.

“Governmental Authority” means (a) and federal, provincial, state, local, municipal, regional, territorial, aboriginal, or other government, governmental or public department, branch, ministry, or court, domestic or foreign, including any district, agency, commission, board, arbitration panel or authority and any subdivision of any of them exercising or entitled to exercise any administrative, executive, judicial, ministerial, prerogative, legislative, regulatory, or taxing authority or power of any nature; and (b) any quasi-governmental or private body exercising any regulatory, expropriation or taxing authority under or for the account of any of them, and any subdivision of any of them.

“Improvements” means all inventions, works, discoveries, improvements and innovations of or in connection with the Software, including error corrections, bug fixes, patches and other updates in Object Code form to the extent made available to Licensee in accordance with Ross Video’s release schedule.

“License Fee” means the fee(s) payable in respect of the Software in accordance with the relevant invoice(s) or other purchase documents delivered in connection with this Agreement.

“License Period” means the period of time that Licensee will have the rights granted under this Agreement, as may be specified in a Quote.

“Maintenance Fee” means the yearly maintenance fee(s) payable by Licensee to Ross Video, as determined by Ross Video, for the support, maintenance and update of the Software after the expiry of the Maintenance Period as set forth in this Agreement.

“Maintenance Period” means, in connection with the Software, the maintenance period of one (1) year from the date of shipment unless otherwise specified in the table below:

Product Category	Software Maintenance Period
Switchers	For the life of the Designated Equipment
Routers (excluding Ultrix)	For the life of the Designated Equipment
Master Control System Software (Dashboard)	For the life of the Designated Equipment
Gear	For the life of the Designated Equipment
Neilsen Encoders	For the life of the Designated Equipment
Sports Analysis	For the License Period

“Modifications” means any enhancements, changes, corrections, translations, adaptations, revisions, developments, upgrades or updates thereto; and “**Modify**” shall mean the creation of any of the foregoing.

“Object Code” means the machine readable executable form of a computer software program.

“Parties” means both Ross Video and Licensee and “Party” means either one of them as the context requires.

“Person” will be broadly interpreted and includes (a) a natural person, whether acting in his or her own capacity, or in his or her capacity as executor, administrator, estate trustee, trustee or personal or legal representative; (b) a corporation or a company of any kind, a partnership of any kind, a sole proprietorship, a trust, a joint venture, as association, an unincorporated association, an unincorporated syndicate, an unincorporated organization or any other association, organization or entity of any kind; and (c) a Governmental Authority.

“Primary System” means the Designated Equipment upon which the Software is installed and executed to deliver it’s intended functionality.

"Quote" means the document provided by Ross Video to Licensee detailing the Ross Video products contemplated for purchase, the corresponding fees and any License Period that may apply to the Software.

"Software" shall mean the version of the Object Code sold and delivered to Licensee by Ross Video concurrently with delivery of this Agreement and any subsequent error corrections, updates, Modifications or Improvements provided to Licensee by Ross Video pursuant to this Agreement, but specifically excluding any features or plug-ins that may be purchased by you directly from third parties as upgrades or enhancements to the Software.

"Source Code" means the human readable form of a computer software program, all tools and documentation necessary for a reasonably computer programmer to understand, maintain and Modify the Software.

"Third Party Software" means those portions of the Software, if any, which are owned or controlled by third parties and licensed to Ross Video pursuant to certain license agreements or arrangements with such third parties, including the NewTek NDI™ software (http://NDI.NewTek.com/)

"Use" means to execute, run, display, store, copy, make, use, sell, merge, network, Modify, translate, host, outsource, or integrate with Licensee's products or other third party software;

3. **LICENSE.** Subject to the terms and conditions of this Agreement, upon payment of the applicable License Fee by Licensee, Ross Video hereby grants to Licensee a non-transferable and non-exclusive right to Use the Software and Documentation solely for the internal use of Licensee (the "**License**"), during the License Period. In the event that a License Period is not identified on the Quote, such License Period shall be deemed to be perpetual, subject to Section 7 D of this Agreement. The Software shall only be used in connection with or installed on the Designated Equipment and, where applicable, shall only be used on the Primary System, provided such Primary System is operating properly. If the Primary System is not operating properly for any reason, the Software may be used on the designated Backup System for that Primary System until such time that the Primary System begins operating properly. The Software and Documentation are provided to Licensee for the exclusive use by Licensee's organization for its ordinary business purposes and shall not be used by any third party for any purposes. Licensee may make copies of the Software as required for internal backup and archival purposes. To the extent permitted hereunder, Licensee may distribute copies of the Software and/or Documentation to members of its organization, provided (a) this Agreement is included with each copy, (b) any member of its organization who uses the Software and/or Documentation accepts and agrees to be bound by the terms of this Agreement and by any other license agreements or other agreement incorporated by reference into this Agreement, and (c) Licensee has paid any applicable additional License Fees in respect of copying and redistributing of the Software. To the extent Licensee is permitted to make copies of the Software under this Agreement, Licensee agrees to reproduce and include on any copy made or portion merged into another work, all Ross Video proprietary notices, including any notices with respect to copyrights, trademarks and this License. With the exception of copying the Software for backup or archival purposes, Licensee agrees to keep a record of the number and location of all such copies and will make such record available at Ross Video's request. The Software may include mechanisms to limit or inhibit copying.

4. **LICENSE RESTRICTIONS.** Except as otherwise provided in section 2 above, Licensee shall not: (1) copy any Software or Documentation, or part thereof, which is provided to Licensee by Ross Video pursuant to this Agreement, in Object Code form, Source Code form or other human or machine readable form, including written or printed documents, without the prior written consent of Ross Video; (2) in any way market, distribute, export, translate, transmit, merge, Modify, transfer, adapt, loan, rent, lease, assign, share, sub-license, sell, make available for download on any website or make available to another Person, the Software and/or Documentation, in whole or in part, provided that Licensee shall not be prohibited from renting or leasing the Software if Ross Video has consented, in writing, to Licensee engaging in such activities in respect of the Software; (3) reverse engineer, decompile or disassemble the Software or electronically transfer it into another computer language; or (4) otherwise Use the Software or Documentation in a manner that is inconsistent with the License granted hereunder or that will result in a breach of this Agreement. Licensee agrees to take all reasonable precautions to prevent third parties from using the Software and/or Documentation in any way that would constitute a breach of this Agreement, including such precautions Licensee would ordinarily take to protect its own proprietary software, hardware or information.

5. **DELIVERY.** Ross Video shall deliver to Licensee one (1) master copy of the Software in compiled binary (executable) form suitable for reproduction in electronic files only and Ross Video shall deliver to Licensee a minimum of one copy of the Documentation.

6. **IMPROVEMENTS.** Licensee may from time to time request Ross Video to incorporate certain Improvements into the Software. Ross Video may, in its sole discretion, undertake to incorporate and provide such Improvements to Licensee with or without payment of a fee to be negotiated at the time of such request. All Improvements, whether recommended and developed by Ross Video or Licensee, shall be considered the sole property of Ross Video and shall be used by Licensee pursuant to the terms of the License granted under this Agreement.

7. **LIMITED REPRESENTATIONS AND WARRANTIES.**

(A) Software Warranties

Ross Video represents and warrants that:

a. During the Maintenance Period the Software is warranted to be free from material defects under normal use;

b. Ross Video has the authority to enter into this Agreement, is the owner or licensee of the Software and Documentation and has the right to grant all of the license rights herein;

c. Except as expressly stated herein, no disabling mechanism or protection feature designed to prevent the Software's Use, including any computer virus, worm, lock, drop dead device, Trojan-horse routine, trap door, time bomb or any other codes or instructions that may be used to access, Modify, delete, damage or disable the Software or any other hardware or computer system, will be used or activated by Ross Video in respect of Software that is delivered to Licensee under a valid License; and

d. The Software, if properly installed and used with Designated Equipment, will perform substantially as described in Ross Video's then current Documentation for such Software for the Maintenance Period.

(B) Warranty Exclusions and Inclusions

Notwithstanding the above, all of Ross Video's obligations with respect to the warranties set out in 7(A) above shall be contingent on Licensee's use of the Software in accordance with the terms and conditions of this Agreement and Ross Video's instructions as provided in the Documentation. Ross Video shall have no warranty obligations where any Software failure occurs as a result of misuse, neglect, accident, abuse, misapplication, improper installation, unauthorized modification, extreme power surge or extreme electromagnetic field or other Act of God. Ross Video shall pass through to Licensee the benefit of all warranties from third party manufacturers and suppliers.

(C) Remedy

If the Software becomes defective, and a valid claim is received by Ross Video during the Maintenance Period, Ross Video will, at its sole option and sole discretion, either (1) repair the defective Software at no charge, or (2) exchange the defective Software for a comparable product at no charge. The remedies set forth in this Section shall be the exclusive remedies available to Licensee in connection with a breach of the limited warranties set out above.

(D) Maintenance Charges

Technical support for the Software by telephone and email contact with Ross Video is provided by Ross Video to Licensee at no extra charge for the life of the product. During the Maintenance Period, Ross Video shall supply downloadable Software Modifications upon request of Licensee, when available, at no extra charge to Licensee. Notwithstanding the foregoing, Ross Video shall be under no legal obligation to create or release Software Modifications at any time or in accordance with a fixed schedule. Upon expiry of the Maintenance Period, where applicable, Licensee may purchase Software maintenance, including downloadable Software upgrades in one (1) year increments at the then applicable extended Maintenance Fee rates offered by Ross Video, in which case the warranties granted by this Agreement shall survive and remain in full force and effect during each such one (1) year term.

8. **OWNERSHIP.** The Parties acknowledge and agree that, as between the Parties, Ross Video shall be the owner of all intellectual property rights in the Software, Documentation and all related Modifications and Improvements, written materials, logos, trademarks, trade names, copyright, patents, trade secret and moral rights, registered or unregistered. No proprietary interest or title in or to the intellectual property in the Software, Documentation or any Improvements or Modifications is transferred to Licensee by this Agreement. Ross Video reserves all rights not expressly licensed to Licensee under section 3.

9. **THIRD PARTY SOFTWARE.** Licensee acknowledges that the Third Party Software is not owned by Ross Video. Notwithstanding any other provision of this Agreement, Ross Video, to the extent permitted by applicable law, offers no warranties (whether express, implied, statutory or by course of communication or dealing with Licensee, or otherwise) with respect to the Third Party Software. Ross Video may pass through to Licensee, if and to the extent permitted by applicable law, any warranties expressly provided by such third parties to Ross Video for such Third Party Software.

10. **INTELLECTUAL PROPERTY INDEMNITY.** Ross Video agrees to defend, indemnify and hold harmless Licensee from final damages awarded by a court of competent jurisdiction (hereinafter referred to as the "**Losses**"), which Licensee, or any of its officers or directors, may incur, suffer or become liable for as a result of, or in connection with, any third party claim asserted against Licensee to the extent such claim is based on a contention that the Software, Documentation or any portion thereof, infringes any valid, registered, enforceable patents, copyrights, trade secrets, trademarks or other intellectual property rights of any third party, provided that (a) the allegedly infringing Software or Documentation has been used within the scope of and in accordance with the terms of this Agreement, and (b) Licensee notifies Ross Video in writing of such claim within ten (10) days of a responsible officer of Licensee becoming aware of such claim. If the Software, Documentation or any portion thereof is held to constitute an infringement of a third party's intellectual property rights, and use thereof is enjoined, Ross Video shall, at its election and expense, either (i) procure the right to use the infringing element of the Software or Documentation; or (ii) replace or modify the element of the Software or Documentation so that the infringing portion is no longer infringing and still performs the same function without any material loss of functionality. Ross Video shall make every reasonable effort to correct the situation with minimal effect upon the operations of Licensee.

    Notwithstanding the above, Ross Video reserves the right to terminate this Agreement and the License granted hereunder on immediate notice to Licensee, and without liability to Licensee, in the event that the Software or Documentation constitutes or may, in Ross Video's determination, constitute, an infringement of the rights of a third party that Ross Video, in its sole discretion, does not consider to be affordably remediable.

    Either party may terminate this Agreement immediately should any Software become, or in either party's opinion be likely to become, the subject of a claim of infringement of any intellectual property right and, in such event, there shall be no claim by either Licensee or Ross Video against the other arising out of such termination, provided that the foregoing shall not apply to a claim for infringement by Ross Video against Licensee in the event that Licensee is alleged to have infringed Ross Video's intellectual property rights, in which case Licensee shall remain liable for all outstanding License Fees and other amounts owing to Ross Video.

    Notwithstanding the foregoing, Ross Video shall have no liability for any claim of infringement based on use of other than a current, unaltered release of the Software and/or Documentation available from Ross Video if such infringement would have been avoided by the use of a current, unaltered release of the Software and/or Documentation provided that such current, unaltered release performs substantially in conformance with the specifications set out in the Documentation and was provided, at no additional cost by Ross Video, to those subscribing for maintenance services for the Software or Documentation.

11. **CONFIDENTIALITY.** Each Party shall maintain in confidence all Confidential Information of the other Party, shall use such Confidential Information only for the purpose of exercising its rights and fulfilling its obligations under this Agreement, and shall not disclose any Confidential Information of the disclosing Party to any third party except as expressly permitted hereunder or make any unauthorized use thereof. Each Party shall disclose the Confidential Information only to those of its employees, consultants, advisors, and/or subcontractors who have a need to know the Confidential Information. Each Party shall, prior to disclosing the Confidential Information to such employees, consultants, advisors and/or subcontractors, obtain their agreement to receive and use the Confidential Information on a confidential basis on the same terms and conditions contained in this Agreement. The receiving Party shall treat the Confidential Information of the disclosing Party with the same degree of care against disclosure and/or unauthorized use as it affords to its own information of a similar nature, or a reasonable degree of care, whichever is greater. The receiving Party further agrees not to remove or destroy any proprietary or confidential legends or markings placed upon any documents or other materials of the disclosing Party. The obligations of confidence set forth in this Agreement shall extend to any Affiliates that have received Confidential Information of the disclosing Party and shall also cover Confidential Information disclosed by any Affiliate. The receiving Party shall be responsible for any actions or omissions of its Affiliates as if such actions or omissions were its own.

Either party may disclose certain Confidential Information if it is expressly required to do so pursuant to legal, judicial, or administrative proceedings, or otherwise required by law, provided that (i) such Party provides the other Party with reasonable written notice prior to such disclosure; (ii) such Party seeks confidential treatment for such Confidential Information; (iii) the extent of such disclosure is only to the extent expressly required by law or under the applicable court order; and (iv) such Party complies with any applicable protective or equivalent order.

Each of Ross Video and Licensee (the "**Indemnifying Party**", as applicable) agree to indemnify the other (the "**Indemnified Party**", as applicable) for all Losses incurred by the Indemnified Party as a result of a failure of the Indemnifying Party to comply with its obligations under this Section 11 provided that the Indemnified Party has given prompt notice of any such claim and, to the extent that a claim may lie against a third party for the unauthorized disclosure of such Confidential Information, the right to control and direct the investigation, preparation, action and settlement of each such claim and, further, provided that the Indemnified Party reasonably co-operates with the Indemnifying Party in connection with the foregoing and provides the Indemnifying Party with all information in the Indemnified Party's possession related to such claim and such further assistance as reasonably requested by the Indemnifying Party.

The Parties acknowledge and agree that any breach of the confidentiality provisions of this Agreement by one Party may cause significant and irreparable injury to the other Party that is not compensable monetarily, as well as damages that may be difficult to ascertain, and agrees that, in addition to such other remedies that may be available at law or in equity, the other Party shall be entitled to seek injunctive relief (including temporary restraining orders, interim injunctions and permanent injunctions) in a court of competent jurisdiction in the event of the breach or threatened breach by such party of any of the confidentiality provisions of this Agreement. The relief contemplated in this Section shall be available to each Party without the necessity of having to prove actual damages and without the necessity of having to post any bond or other security. Each Party further agrees to notify the other Party in the event that it learns of or has reason to believe that any Person has breached the confidentiality provisions of this Agreement.

12. **LIMITATION OF LIABILITY.** The limitation of liability provisions of this Agreement reflect an informed voluntary allocation of the risks (known and unknown) that may exist in connection with the licensing of the Software or Documentation hereunder by Ross Video, and that voluntary risk allocation represents a material part of the Agreement reached between Ross Video and Licensee. Should Ross Video be in breach of any obligation, Licensee agrees that Licensee's remedies will be limited to those set forth in this Agreement. No action, regardless of form, arising out of this Agreement may be brought by Licensee more than twelve (12) months after the facts giving rise to the cause of action have occurred, regardless of whether those facts by that time are known to, or reasonably ought to have been discovered by, Licensee.

    a. EXCEPT AS EXPRESSLY PROVIDED IN THIS AGREEMENT, THE SOFTWARE AND DOCUMENTATION ARE PROVIDED "AS IS" AND ROSS VIDEO (I) MAKES NO OTHER REPRESENTATIONS, AND PROVIDES NO WARRANTIES OR CONDITIONS OF ANY KIND, EXPRESS OR IMPLIED, STATUTORY, BY USAGE OF TRADE CUSTOM OF DEALING, OR OTHERWISE, AND (II) SPECIFICALLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING ANY IMPLIED WARRANTY OF UNINTERRUPTED OR ERROR FREE OPERATION, MERCHANTABILITY, QUALITY OR FITNESS FOR A PARTICULAR PURPOSE. ROSS VIDEO DOES NOT REPRESENT OR WARRANT THAT THE SOFTWARE WILL MEET ANY OR ALL OF LICENSEE'S PARTICULAR REQUIREMENTS, THAT THE USE AND OPERATION OF THE SOFTWARE WILL OPERATE ERROR-FREE OR UNINTERRUPTED, THAT ALL PROGRAMMING ERRORS IN THE SOFTWARE CAN BE FOUND IN ORDER TO BE CORRECTED, OR THAT THE SOFTWARE WILL BE COMPATIBLE WITH OTHER PROGRAMS, SYSTEMS, AND HARDWARE.

    a. IN NO EVENT SHALL ROSS VIDEO, ITS AFFILIATES AND LICENSORS, AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES AND AGENTS, BE LIABLE FOR ANY CLAIM FOR INDIRECT, CONSEQUENTIAL, SPECIAL, INCIDENTAL, PUNITIVE, EXEMPLARY, AGGRAVATED DAMAGES; LOST PROFITS, OR LOST REVENUE ARISING FROM OR IN CONNECTION WITH THIS AGREEMENT, REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, OR IN TORT, EVEN IF THE PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

    a. IN ANY EVENT THE AGGREGATE LIABILITY OF ROSS VIDEO, ITS AFFILIATES AND LICENSORS, AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES AND AGENTS,

FOR ANY CLAIM FOR DIRECT DAMAGES WITH RESPECT TO THE SUBJECT MATTER OF THIS AGREEMENT SHALL NOT EXCEED THE AMOUNT OF THE PURCHASE PRICE PAID TO ROSS VIDEO UNDER THIS AGREEMENT.

13. TERM AND TERMINATION.

a. Unless terminated earlier in accordance with the terms of this Agreement, the term of this Agreement shall commence upon Licensee's first download, access, installation, or other use of the Software or Documentation and continues until, in the case of Software sold with Designated Equipment provided by Ross Video, the earliest of (a) the end of the License Period, or (b) if the Designated Equipment is assigned or transferred in accordance with this Agreement, the date on which the Designated Equipment is no longer owned by Licensee;

a. Either Party shall have the right to terminate this Agreement on notice to the other Party if:

a. the other Party fails to pay any fees or other amounts when due hereunder or under any other agreement between the Parties (or any Affiliates of the Parties, as applicable) in connection with the Software and/or Designated Equipment and such breach is not cured within thirty (30) days after written notice of such failure to pay is given to the defaulting Party by the non-defaulting Party;

a. the other Party shall file a voluntary petition in bankruptcy or insolvency or shall petition for reorganization under any bankruptcy law, consent to an involuntary petition in bankruptcy, or if a receiving order is given against it under the *Bankruptcy and Insolvency Act* (Canada) or the comparable law of any other jurisdiction (and such is not dismissed within ten (10) days);

a. there shall be entered an order, judgment or decree by a court of competent jurisdiction, upon the application of a creditor, approving a petition seeking reorganization or appointing a receiver, trustee or liquidator of all or a substantial part of the other Party's assets and such order, judgment or decree continues in effect for a period of thirty (30) consecutive days; or

a. the other Party shall fail to perform any of the other material obligations set forth in this Agreement and such default, in the case of a default which is remediable, continues for a period of thirty (30) days after written notice of such failure has been given by the non-defaulting Party or, in the case of a non-remediable default, immediately upon notice.

a. Notwithstanding any to the contrary contained in this Agreement:

a. Ross Video may forthwith terminate this Agreement if Licensee is in breach of any of sections 3, 4 or 11 of this Agreement. For greater certainty, In such instances Ross Video shall provide written notice of such termination as soon as practicable but written notice shall not be a necessary prerequisite to such termination; and

a. in the event of a Change of Control of Licensee, Ross Video shall have the rights to terminate this Agreement and the License granted hereunder upon thirty (30) days' prior written notice to Licensee. For greater certainty, Ross Video's right to terminate in the event of a Change of Control of Licensee shall continue for a period of six (6) months from the date Licensee delivers notice of such Change of Control to Ross Video.

a. Ross Video may terminate the License immediately on the date on which it provides notice to Licensee, if its agreements for Third Party Software are terminated.

a. Upon the termination or expiry of this Agreement:

a. Licensee shall immediately cease and desist all use of the Software and Documentation;

a. Licensee shall immediately deliver to Ross Video any of Ross Video's Confidential Information provided hereunder (including the Software and Documentation) then in its possession or control, if any, and shall deliver a certificate of an officer of Licensee certifying the completeness of same;

a. Licensee shall refrain from further use of such Confidential Information; and

a. Licensee shall forthwith pay all amounts owing to Ross Video or any of its Affiliates hereunder.

14. SURVIVAL. The provisions of sections 1, 2, 4, 6, 8, 9, 11, 12, 13, 14, 17 and 19 herein shall survive the expiry or termination of this Agreement.

15. **FORCE MAJEURE.** Dates and times by which Ross Video is required to render performance under this Agreement shall be automatically postponed to the extent and for the period that Ross Video is prevented from meeting them by reason of events of force majeure or any cause beyond its reasonable control provided Ross Video notifies Licensee of the commencement and nature of such cause and uses its reasonable efforts to render performance in a timely manner.

16. **ASSIGNMENT.** Ross Video may assign this Agreement, or any of its rights or obligations hereunder, in whole or in part, upon notice to Licensee. Licensee shall not assign this Agreement, or any of its rights or obligations hereunder, in whole or in part, without the prior written consent of Ross Video, which consent may not be unreasonably withheld. This Agreement enures to the benefit of and is binding upon each of the Parties and their respective successors and permitted assigns.

17. **GOVERNING LAW.** This Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario and federal laws of Canada applicable therein and shall be treated, in all respects, as an Ontario contract. Each Party irrevocably and unconditionally submits and attorns to the exclusive jurisdiction of the courts of the Province of Ontario to determine all issues, whether at law or in equity, arising from this Agreement.

18. **LANGUAGE.** The Parties have expressly required that this Agreement and all documents relating thereto be drawn-up in English. Les parties ont expressément exigé que cette convention ainsi que tous les documents qui s'y rattachent soient rédigés en anglais.

19. **GOVERNMENT CONTRACTS.** If the Software and/or Documentation to be furnished to Licensee hereunder are to be used in the performance of a government contract or subcontract, the Software and/or Documentation shall be provided on a "restricted rights" basis only and Licensee shall place a legend, in addition to applicable copyright notices, in the form provided under the applicable governmental regulations. For greater certainty, Ross Video shall not be subject to any flowdown provisions required by any customers of Licensee that are a Governmental Authority unless Ross Video expressly agrees to be bound by such flowdown provisions in writing.

20. **EXPORT AND IMPORT LAWS.** Licensee acknowledges and agrees that the Software (including any technical data and related technology) may be subject to the export control laws, rules, regulations, restrictions and national security controls of the United States and other applicable countries (the "**Export Controls**") and agrees not export, re-export, import or allow the export, re-export or import of such export-controlled Software (including any technical data and related technology) or any copy, portion or direct product of the foregoing in violation of the Export Controls. Licensee hereby represents that it is not an entity or person to whom provision of the Software (including any technical data and related technology) is restricted or prohibited by the Export Controls. Licensee agrees that it has the sole responsibility to obtain any authorization to export, re-export, or import the Software (including any technical data and related technology), as may be required. Licensee will defend, indemnify and hold Ross Video harmless from any and all claims, losses, liabilities, damages, fines, penalties, costs and expenses (including attorney's fees) arising from or relating to any breach by Licensee of its obligations under this Section.

21. **AMENDMENT AND WAIVER.** No amendment, discharge, modification, restatement, supplement, termination or waiver of this Agreement or any Section of this Agreement is binding unless it is in writing and executed by the Party to be bound. No waiver of, failure to exercise or delay in exercising, any Section of this Agreement constitutes a waiver of any other Section (whether or not similar) nor does any waiver constitute a continuing waiver unless otherwise expressly provided.

22. **SEVERABILITY.** Each Section of this Agreement is distinct and severable. If any Section of this Agreement, in whole or in part, is or becomes illegal, invalid, void, voidable or unenforceable in any jurisdiction by any court of competent jurisdiction, the illegality, invalidity or unenforceability of that Section, in whole or in part, will not affect (a) the legality, validity or enforceability of the remaining Sections of this Agreement, in whole or in part; or (b) the legality, validity or enforceability of that Section, in whole or in part, in any other jurisdiction.

23. **ENTIRE AGREEMENT.** This Agreement, and any other documents referred to herein, constitutes the entire agreement between the Parties relating to the subject matter of this Agreement and supersedes all prior written or oral agreements, representations and other communications between the Parties.

Quorum Software License Grant

TERMS AND CONDITIONS

The sale to you and installation of the QUORUM SOFTWARE (the Software) by Ross Video Limited (Ross) is conditional on your acceptance of the following terms and conditions of the grant of license to use the Software, which you accept by acceptance of the agreement to purchase, installation and use of the Software. If you do not wish to accept these terms and conditions of the license grant, do not use the Software and contact Ross immediately.

This license grant ("grant") is effective from the date of Software installation (the "Effective Date") by Ross as agreed upon by you, the purchaser of the Software ("Licensee").

1. DEFINITIONS.

1.1 ”Change of Control” means, with respect to any corporation, the sale, transfer, pledge, assignment or other conveyance of in excess of fifty percent (50%) of the voting equity of the corporation.

1.2 "Designated Equipment" shall mean the hardware products identified on Exhibit "A" with which the Software is licensed for use.

1.3 "Documentation" shall mean all manuals, user documentation, and other related materials pertaining to the Software that are furnished to Licensee by or on behalf of Ross in connection with the Software.

1.4 “Hardware” refers to the Designated Equipment.

1.5 “Improvements” means all inventions, works, discoveries, improvements and innovations of or in connection with the Software including without limitation error corrections, bug fixes, patches and other updates made by or on behalf of Ross;

1.6 "License Fee" shall mean the fee payable in accordance with the provisions of this grant of the license to the Licensee of the Software and the Documentation.

1.7 “Software Maintenance Fee” shall mean the yearly fee to support, maintain and update software as set forth in this grant.

1.8 "Software" shall mean the computer programs in machine-readable object code form listed in Exhibit "A" attached hereto and any subsequent error corrections or updates supplied to Licensee by Ross pursuant to this grant as well as any Improvements. The definition of the Software set forth in Exhibit "A" may be amended from time to time by Ross in its sole discretion on written notice to the Licensee.

1.9 “Territory” means worldwide.

2. GRANT OF RIGHTS.

Subject to the provisions of this grant, Ross hereby grants to Licensee the non-exclusive perpetual right, license and privilege to use the Software and the Documentation in the Territory solely on the number of primary systems of Designated Equipment identified on Exhibit A. The Software shall be used only on such primary systems if they are operating properly. If any primary system is down, the Software may be used on a backup system for that primary system.

2.2 Sub-Licensing. Licensee shall not grant sub-licenses of the Software.

3. DELIVERY.

3.1 Software. Ross shall deliver to Licensee a master copy of the Software licensed hereunder in object code form, suitable for reproduction, in electronic files only.

3.2 Documentation. Ross shall deliver copies of Documentation.

4. MODIFICATIONS.

4.1 Error Corrections and Updates. Ross will provide Licensee with any Improvements, in the form of error corrections, bug fixes, patches or other updates, in object code form to the extent available in accordance with Ross's release schedule for a period of one (1) year from the date of shipment.

4.2 Other Modifications. Licensee may, from time to time, request that Ross incorporate certain Improvements such as features, enhancements or modifications into the Software. Ross may, in its sole discretion, undertake to incorporate such changes and distribute the Software so modified to all or any of Ross's licensees.

4.3 Title to Modifications. All such Improvements, whether recommended and developed by Ross or Licensee, shall be the sole property of Ross and Licensee hereby disclaims any proprietary interest of any kind in any Improvement.

5. COPIES.

5.1 Printed Matter. Except as specifically set forth herein, no Software or Documentation which is provided by Ross pursuant to this grant in human readable form, such as written or printed documents, shall be copied in whole or in part by Licensee without Ross's prior written agreement. Additional copies of printed materials may be obtained from Ross at the charges then in effect.

5.2 Machine-Readable Matter. Except as specifically set forth herein, any Software provided in machine-readable form may not be copied by Licensee in whole or in part, except for Licensee's backup or archive purposes. Licensee agrees to maintain appropriate records of the number and location of all copies of the Software and make such records available upon Ross's request. Licensee further agrees to reproduce all copyright and other proprietary notices on all copies of the Software in the same form and manner that such copyright and other proprietary notices are originally included on the Software.

6. LICENSE FEES AND PAYMENT.

6.1 License Fee. In consideration of the license rights granted in Article 2 above, Licensee shall pay the License Fees or other consideration for the Software and Documentation as set forth on Exhibit "A" attached hereto. All amounts payable hereunder by Licensee shall be payable no later than thirty (30) days following receipt of invoice without deductions for taxes, assessments, fees, or charges of any kind. Cheques shall be made payable to Ross and shall be forwarded to the Office at Ross as follows:

Ross Video Ltd.
8 John Street
Iroquois, ON
K0E 1K0

6.2 Software/Hardware Maintenance Fee. In consideration of the license rights granted in Article 2 above, Licensee shall pay, on a yearly basis, the Software/Hardware Maintenance Fee or other consideration for the maintenance, support and update of the software as set forth on Exhibit “B”. The Software/Hardware Maintenance Fee is due on a yearly basis starting on the date that is 15 months after shipment by Ross of the product described on Exhibit "A" attached hereto and thereafter on each 12 month anniversary of such date. All amounts payable hereunder by Licensee shall be payable no later than thirty (30) days following receipt of invoice without deductions for taxes, assessments, fees, or charges of any kind. Cheques shall be made payable to Ross and shall be forwarded to the Office at Ross as follows:

Ross Video Ltd.
8 John Street
Iroquois, ON
K0E 1K0

Provided that the Licensee has paid in full the Software/Hardware Maintenance Fees for 3 consecutive years, Licensee shall receive a Quorum Server Hardware upgrade as per Exhibit “B” after payment of the 3rd consecutive Maintenance Payment. The Quorum Server Hardware may change from time to time and the model and type used is designated by Ross. If Licensee is in default of payment of a Software/Hardware Maintenance Fee, such must be paid in full for any default years before a hardware or software upgrade will be provided. Such upgrade will be available to the Licensee at the end of each three (3) year period, following the end of the first (1st) year of the term of this License, provided that the Licensee continues to own and operate the Designated Equipment in connection with which this License is granted and provided, as stated above, that the Licensee has paid its Software/Hardware Maintenance Fee in each of the 3 preceding years.

6.3 Taxes and Other Charges. Licensee shall be responsible for paying all (i) sales, use, excise, value-added, or other tax or governmental charges imposed on the licensing or use of the Software or Documentation hereunder, (ii) freight, insurance and installation charges, and (iii) import or export duties or like charges.

7. PROTECTION OF SOFTWARE.

7.1 Proprietary Notices. Licensee agrees to respect and not to remove, obliterate, or cancel from view any copyright, trademark, confidentiality or other proprietary notice, mark, or legend appearing on any of the Software or output generated by the Software, and to reproduce and include same on each copy of the Software.

7.2 No Reverse Engineering. Licensee agrees not to modify, reverse engineer, disassemble, or decompile the Software, or any portion thereof.

7.3 Ownership. All copies of the Software, and all copies of the Documentation, in any form provided by Ross or made by Licensee, are the sole property of Ross and/or its suppliers. Licensee shall not have any right, title, or interest to any such Software, Documentation or copies thereof except as provided in this grant, and further shall secure and protect all Software and Documentation consistent with maintenance of Ross's proprietary rights therein.

8. CONFIDENTIALITY.

8.1 Acknowledgement. The Software and Documentation constitute and contain valuable proprietary products and trade secrets of Ross, embodying substantial creative efforts and confidential information, ideas, and expressions. Accordingly, Licensee agrees to treat (and take precautions to ensure that its employees treat) the Software and Documentation as confidential in accordance with the confidentiality requirements and conditions set forth below.

8.2 Maintenance of Confidential Information. Each party agrees to keep confidential all confidential information disclosed to it by the other party in accordance herewith, and to protect the confidentiality thereof in the same manner it protects the confidentiality of similar information and data of its own (at all times exercising at least a reasonable degree of care in the protection of confidential information); provided, however, that neither party shall have any such obligation with respect to use or disclosure to others not parties to this Agreement of such confidential information as can be established to: (a) have been known publicly; (b) have been known generally in the industry before communication by the disclosing party to the recipient; (c) have become known publicly, without fault on the part of the recipient, subsequent to disclosure by the disclosing party; (d) have been known otherwise by the recipient before communication by the disclosing party; or (e) have been received by the recipient without any obligation of confidentiality from a source (other than the disclosing party) lawfully having possession of such information.

8.3 Injunctive Relief. Licensee acknowledges that the unauthorized use, transfer or disclosure of the Software and Documentation or copies thereof will (i) substantially diminish the value to Ross of the trade secrets and other proprietary interests that are the subject of this grant; (ii) render Ross's remedy at law for such unauthorized use, disclosure or transfer inadequate; and (iii) cause irreparable injury in a short period of time. If Licensee breaches any of its obligations with respect to the use or confidentiality of the Software or Documentation, Ross shall be entitled to equitable relief to protect its interests therein, including, but not limited to, preliminary and permanent injunctive relief.

8.4 Survival. Licensee's obligations under this Article 8 will survive the termination of this grant of license for whatever reason.

9. WARRANTIES; SUPERIOR RIGHTS.

9.1 Ownership. Ross represents its belief that it is the owner of the entire right, title, and interest in and to Software and the Documentation, and that it has the sole right to grant licenses thereunder, and that it has not knowingly granted licenses thereunder to any other entity that would restrict rights granted hereunder except as stated herein.

9.3 Limited Warranty. Ross represents and warrants to Licensee that the Software, when properly installed by Licensee and used with the Designated Equipment, will perform substantially as described in Ross's then current Documentation for such Software for a period of one (1) year from the date of shipment.

9.4 Limitations. Notwithstanding the warranty provisions set forth in Section 9.3 above, all of Ross's obligations with respect to such warranties shall be contingent on Licensee's use of the Software in accordance with this grant and in accordance with Ross's instructions as provided by Ross in the Documentation, as such instructions may be amended, supplemented, or modified by Ross from time to time. Ross shall have no warranty obligations with respect to any failures of the Software which are the result of accident, abuse, misapplication, extreme power surge or extreme electromagnetic field.

9.5 Licensee's Sole Remedy. Ross's entire liability and Licensee's exclusive remedy shall be, at Ross's option, either (a) return of the price paid and termination of this grant; or (b) repair or replacement of the Software upon its return

to Ross; provided Ross receives written notice from Licensee during the warranty period of a breach of warranty. Any replacement Software will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer.

9.6 Disclaimer of Warranties. ROSS DOES NOT REPRESENT OR WARRANT THAT ANY ERRORS IN THE SOFTWARE AND DOCUMENTATION WILL BE CORRECTED. IN THE EVENT OF UNAUTHORIZED ALTERATION BY THE LICENSEE OF THE SOFTWARE, THE WARRANTIES STATED IN THIS GRANT ARE NULL AND VOID. THE WARRANTIES STATED IN SECTION 9.3 ABOVE ARE THE SOLE AND THE EXCLUSIVE WARRANTIES OFFERED BY ROSS. THERE ARE NO OTHER WARRANTIES RESPECTING THE SOFTWARE AND DOCUMENTATION OR SERVICES PROVIDED HEREUNDER, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY, EXPRESS OR IMPLIED BY LAW, OF DESIGN, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE, EVEN IF ROSS HAS BEEN INFORMED OF SUCH PURPOSE. NO AGENT OF ROSS IS AUTHORIZED TO ALTER OR EXCEED THE WARRANTY OBLIGATIONS OF ROSS AS SET FORTH HEREIN.

9.7 Limitation of Liability. LICENSEE ACKNOWLEDGES AND AGREES THAT THE CONSIDERATION WHICH ROSS IS CHARGING HEREUNDER DOES NOT INCLUDE ANY CONSIDERATION FOR ASSUMPTION BY ROSS OF THE RISK OF LICENSEE'S CONSEQUENTIAL OR INCIDENTAL DAMAGES WHICH MAY ARISE IN CONNECTION WITH LICENSEE'S USE OF THE SOFTWARE AND DOCUMENTATION. ACCORDINGLY, LICENSEE AGREES THAT ROSS SHALL NOT BE RESPONSIBLE TO LICENSEE FOR ANY LOSS-OF-PROFIT, INDIRECT, INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE LICENSING OR USE OF THE SOFTWARE OR DOCUMENTATION. Any provision herein to the contrary notwithstanding, the maximum liability of Ross to any person, firm or corporation whatsoever arising out of or in the connection with any license, use or other employment of any Software or Documentation delivered to Licensee hereunder, whether such liability arises from any claim based on breach or repudiation of contract, warranty, tort or otherwise, shall in no case exceed the actual price paid to Ross by Licensee for the Software and Documentation whose license, use, or other employment gives rise to the liability. The essential purpose of this provision is to limit the potential liability of Ross arising out of this grant. The parties acknowledge that the limitations set forth in this Article 9 are integral to the amount of consideration levied in connection with the license of the Software and Documentation and any services rendered hereunder and that, were Ross to assume any further liability other than as set forth herein, such consideration would of necessity be set substantially higher.

10. INDEMNIFICATION

10.1 Ross shall indemnify, hold harmless and defend Licensee against any action brought against Licensee to the extent that such action is based on a claim that the unmodified Software, when used in accordance with this grant, infringes a United States copyright and Ross shall pay all costs, settlements and damages finally awarded; provided, that Licensee promptly notifies Ross in writing of any claim, gives Ross sole control of the defense and settlement thereof and provides all reasonable assistance in connection therewith. If any Software is finally adjudged to so infringe, or in Ross's opinion is likely to become the subject of such a claim, Ross shall, at its option, either: (i) procure for Licensee the right to continue using the Software (ii) modify or replace the Software to make it non infringing, or (iii) terminate this grant immediately and refund the fee paid, less reasonable depreciation, upon return of the Software. Ross shall have no liability regarding any claim arising out of: (w) use of other than a current, unaltered release of the Software unless the infringing portion is also in the then current, unaltered release, (x) use of the Software in combination with non-Ross software, data or equipment if the infringement was caused by such use or combination, (y) any modification or derivation of the Software not specifically authorized in writing by Ross or (z) use of third party software. THE FOREGOING STATES THE ENTIRE LIABILITY OF ROSS AND THE EXCLUSIVE REMEDY FOR LICENSEE RELATING TO INFRINGEMENT OR CLAIMS OF INFRINGEMENT OF ANY COPYRIGHT OR OTHER PROPRIETARY RIGHT BY THE SOFTWARE.

10.2 Except for the foregoing infringement claims, Licensee shall indemnify and hold harmless Ross, its directors, officers, agents and employees from and against any claims, demands, or causes of action whatsoever, including without limitation those arising on account of Licensee's modification or enhancement of the Software or otherwise caused by, or arising out of, or resulting from, the exercise or practice of the license granted hereunder by Licensee, its sub-licensees, if any, its subsidiaries or their officers, employees, agents or representatives.

11. DEFAULT AND TERMINATION.

11.1 Events of Default. This grant may be terminated by the non-defaulting party if any of the following events of default occur: (1) if a party materially fails to perform or comply with this grant or any provision hereof; (2) if either party fails to strictly comply with the provisions of Section 9 (Confidentiality) or makes an assignment in violation of Section 13 (Non-assignability); (3) if a party becomes insolvent or admits in writing its inability to pay its debts as they mature, or makes an assignment for the benefit of creditors; (4) if a petition under any foreign, state, United States bankruptcy act, Canadian bankruptcy act, receivership statute, or the like, as they now exist, or as they may be amended, is filed by a party; or (5) if such a petition is filed by any third party, or an application for a receiver is made by anyone and such petition or application is not resolved favorably within ninety (90) days.

11.2 Effective Date of Termination. Termination due to a material breach of Articles 2 (Grant of Rights), 5 (Copies), 7 (Protection of Software), or 8 (Confidentiality) shall be effective immediately on receipt of notice by the defaulting party. In all other cases, termination shall be effective thirty (30) days after notice of termination to the defaulting party if the defaults have not been cured within such thirty (30) day period.

11.3 In the event of a Change of Control of the Licensee, the Licensee shall provide notice of same to Ross and Ross shall have the right to terminate this grant on thirty (30) days' notice to the Licensee. Such right shall survive for six (6) months following the date of receipt by Ross of such notice.

11.4 Obligations on Termination. Within ten (10) days after termination of this grant, Licensee shall cease and desist all use of the Software and Documentation and shall return to Ross all full or partial copies of the Software and Documentation in Licensee's possession or under its control.

12. NOTICES. All notices, authorizations, and requests in connection with this grant shall be deemed given (i) five days after being deposited in the U.S. mail or Canadian mail, postage prepaid, certified or registered, return receipt requested; or (ii) one day after being sent by overnight courier, charges prepaid, with a confirming fax; and addressed as first set forth above or to such other address as the party to receive the notice or request so designates by written notice to the other.

13. NONASSIGNABILITY. Licensee shall not assign this grant or its rights hereunder without the prior written consent of Ross.

14. GOVERNING LAW; JURISDICTION AND VENUE. The validity, interpretation, construction and performance of this grant shall be governed by the laws of the Province of Ontario, shall have exclusive jurisdiction and venue over any dispute arising out of this grant, and Licensee hereby consents to the jurisdiction of such courts.

15. GOVERNMENT CONTRACTS. If the Software or Documentation to be furnished hereunder are to be used in the performance of a government contract or subcontract, the software shall be provided on a "restricted rights" basis only and Licensee shall place a legend, in addition to applicable copyright notices, in the form provided under the governmental regulations. Ross shall not be subject to any flowdown provisions required by the governmental customer unless agreed to by Ross in writing.

16. SEVERABILITY. If any provision of this grant shall be held by a court of competent jurisdiction to be illegal, invalid or unenforceable, the remaining provisions shall remain in full force and effect.

17. MISCELLANEOUS. This grant and its exhibits, together with the invoice to the Licensee for the Software, contain the entire terms of the grant of license of the Software by Ross to the Licensee. This grant may not be supplemented, modified, amended, released or discharged except by an instrument in writing signed by a duly authorized representative of Ross. All captions and headings in this grant are for purposes of convenience only and shall not affect the construction or interpretation of any of its provisions. Any waiver by either party of any default or breach hereunder shall not constitute a waiver of any provision of this grant or of any subsequent default or breach of the same or a different kind. All references to dollars, including the symbol "$", are to Canadian dollars for Canadian Licensees and United States dollars for all other country Licensees.

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc. 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

1. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The “Program”, below, refers to any such program or work, and a “work based on the Program” means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term “modification”.) Each licensee is addressed as “you”.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a. You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b. You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c. If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a. Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b. Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c. Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if

you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and “any later version”, you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND

PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

GNU GENERAL PUBLIC LICENSE WITH THE CLASSPATH EXCEPTION

The GNU General Public License (GPL)

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc. 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

1. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to

any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a. You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b. You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c. If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a. Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b. Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c. Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

"CLASSPATH" EXCEPTION TO THE GPL

Certain source files distributed by Oracle America and/or its affiliates are subject to the following clarification and special exception to the GPL, but only where Oracle has expressly included in the particular source file's header the words "Oracle designates this particular file as subject to the "Classpath" exception as provided by Oracle in the LICENSE file that accompanied this code."

Linking this library statically or dynamically with other modules is making a combined work based on this library. Thus, the terms and conditions of the GNU General Public License cover the whole combination.

As a special exception, the copyright holders of this library give you permission to link this library with independent modules to produce an executable, regardless of the license terms of these independent modules, and to copy and distribute the resulting executable under terms of your choice, provided that you also meet, for each linked independent module, the terms and conditions of the license of that module. An independent module is a module which is not derived from or based on this library. If you modify this library, you may extend this exception to your version of the library, but you are not obligated to do so. If you do not wish to do so, delete this exception statement from your version.

ADDITIONAL INFORMATION ABOUT LICENSING

Certain files distributed by Oracle America, Inc. and/or its affiliates are subject to the following clarification and special exception to the GPLv2, based on the GNU Project exception for its Classpath libraries, known as the GNU Classpath Exception.

Note that Oracle includes multiple, independent programs in this software package. Some of those programs are provided under licenses deemed incompatible with the GPLv2 by the Free Software Foundation and others. For

example, the package includes programs licensed under the Apache License, Version 2.0 and may include FreeType. Such programs are licensed to you under their original licenses.

Oracle facilitates your further distribution of this package by adding the Classpath Exception to the necessary parts of its GPLv2 code, which permits you to use that code in combination with other independent modules not licensed under the GPLv2. However, note that this would not permit you to commingle code under an incompatible license with Oracle's GPLv2 licensed code by, for example, cutting and pasting such code into a file also containing Oracle's GPLv2 licensed code and then distributing the result.

Additionally, if you were to remove the Classpath Exception from any of the files to which it applies and distribute the result, you would likely be required to license some or all of the other code in that distribution under the GPLv2 as well, and since the GPLv2 is incompatible with the license terms of some items included in the distribution by Oracle, removing the Classpath Exception could therefore effectively compromise your ability to further distribute the package.

Failing to distribute notices associated with some files may also create unexpected legal consequences.

Proceed with caution and we recommend that you obtain the advice of a lawyer skilled in open source matters before removing the Classpath Exception or making modifications to this package which may subsequently be redistributed and/or involve the use of third party software.

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

```
Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.
```

```
[This is the first released version of the Lesser GPL. It also counts
 as the successor of the GNU Library Public License, version 2, hence
 the version number 2.1.]
```

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the “Lesser” General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a “work based on the library” and a “work that uses the library”. The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

1. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called “this License”). Each licensee is addressed as “you”.

A “library” means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The “Library”, below, refers to any such software library or work which has been distributed under these terms. A “work based on the Library” means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term “modification”.)

“Source code” for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a

tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

   You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

   a. The modified work must itself be a software library.

   b. You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

   c. You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

   d. If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

   (For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

   These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

   Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

   In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

   Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

   This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a “work that uses the Library”. Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a “work that uses the Library” with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a “work that uses the library”. The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a “work that uses the Library” uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a “work that uses the Library” with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a. Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable “work that uses the Library”, as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b. Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c. Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d. If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e. Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the “work that uses the Library” must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the

major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a. Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b. Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

    Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

BSD License

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. The name of the author may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICTLIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License

Version 2.0, January 2004

http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

“License” shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

“Licensor” shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

“Legal Entity” shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, “control” means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

“You” (or “Your”) shall mean an individual or Legal Entity exercising permissions granted by this License.

“Source” form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

“Object” form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

“Work” shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

“Derivative Works” shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

“Contribution” shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, “submitted” means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as “Not a Contribution.”

“Contributor” shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a

Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution.

You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

- **a.** You must give any other recipients of the Work or Derivative Works a copy of this License; and
- **b.** You must cause any modified files to carry prominent notices stating that You changed the files; and
- **c.** You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
- **d.** If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

  You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions.

Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks.

This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty.

Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability.

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability.

While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

Eclipse Public License - v 1.0

THE ACCOMPANYING PROGRAM IS PROVIDED UNDER THE TERMS OF THIS ECLIPSE PUBLIC LICENSE (“AGREEMENT”). ANY USE, REPRODUCTION OR DISTRIBUTION OF THE PROGRAM CONSTITUTES RECIPIENT'S ACCEPTANCE OF THIS AGREEMENT.

1. DEFINITIONS

“Contribution” means:

a) in the case of the initial Contributor, the initial code and documentation distributed under this Agreement, and

b) in the case of each subsequent Contributor:

i) changes to the Program, and

ii) additions to the Program;

where such changes and/or additions to the Program originate from and are distributed by that particular Contributor. A Contribution 'originates' from a Contributor if it was added to the Program by such Contributor itself or anyone acting on such Contributor's behalf. Contributions do not include additions to the Program which: (i) are separate modules of software distributed in conjunction with the Program under their own license agreement, and (ii) are not derivative works of the Program.

“Contributor” means any person or entity that distributes the Program.

“Licensed Patents” mean patent claims licensable by a Contributor which are necessarily infringed by the use or sale of its Contribution alone or when combined with the Program.

“Program” means the Contributions distributed in accordance with this Agreement.

“Recipient” means anyone who receives the Program under this Agreement, including all Contributors.

2. GRANT OF RIGHTS

a) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free copyright license to reproduce, prepare derivative works of, publicly display, publicly perform, distribute and sublicense the Contribution of such Contributor, if any, and such derivative works, in source code and object code form.

b) Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free patent license under Licensed Patents to make, use, sell, offer to sell, import and otherwise transfer the Contribution of such Contributor, if any, in source code and object code form. This patent license shall apply to the combination of the Contribution and the Program if, at the time the Contribution is added by the Contributor, such addition of the Contribution causes such combination to be covered by the Licensed Patents. The patent license shall not apply to any other combinations which include the Contribution. No hardware per se is licensed hereunder.

c) Recipient understands that although each Contributor grants the licenses to its Contributions set forth herein, no assurances are provided by any Contributor that the Program does not infringe the patent or other intellectual property rights of any other entity. Each Contributor disclaims any liability to Recipient for claims brought by any other entity based on infringement of intellectual property rights or otherwise. As a condition to exercising the rights and licenses granted hereunder, each Recipient hereby assumes sole responsibility to secure any other intellectual property rights needed, if any. For example, if a third party patent license is required to allow Recipient to distribute the Program, it is Recipient's responsibility to acquire that license before distributing the Program.

d) Each Contributor represents that to its knowledge it has sufficient copyright rights in its Contribution, if any, to grant the copyright license set forth in this Agreement.

3. REQUIREMENTS

A Contributor may choose to distribute the Program in object code form under its own license agreement, provided that:

a) it complies with the terms and conditions of this Agreement; and

b) its license agreement:

i) effectively disclaims on behalf of all Contributors all warranties and conditions, express and implied, including warranties or conditions of title and non-infringement, and implied warranties or conditions of merchantability and fitness for a particular purpose;

ii) effectively excludes on behalf of all Contributors all liability for damages, including direct, indirect, special, incidental and consequential damages, such as lost profits;

iii) states that any provisions which differ from this Agreement are offered by that Contributor alone and not by any other party; and

iv) states that source code for the Program is available from such Contributor, and informs licensees how to obtain it in a reasonable manner on or through a medium customarily used for software exchange.

When the Program is made available in source code form:

a) it must be made available under this Agreement; and

b) a copy of this Agreement must be included with each copy of the Program.

Contributors may not remove or alter any copyright notices contained within the Program.

Each Contributor must identify itself as the originator of its Contribution, if any, in a manner that reasonably allows subsequent Recipients to identify the originator of the Contribution.

4. COMMERCIAL DISTRIBUTION

Commercial distributors of software may accept certain responsibilities with respect to end users, business partners and the like. While this license is intended to facilitate the commercial use of the Program, the Contributor who includes the Program in a commercial product offering should do so in a manner which does not create potential liability for other Contributors. Therefore, if a Contributor includes the Program in a commercial product offering, such Contributor (“Commercial Contributor”) hereby agrees to defend and indemnify every other Contributor (“Indemnified Contributor”) against any losses, damages and costs (collectively “Losses”) arising from claims, lawsuits and other legal actions brought by a third party against the Indemnified Contributor to the extent caused by the acts or omissions of such Commercial Contributor in connection with its distribution of the Program in a commercial product offering. The obligations in this section do not apply to any claims or Losses relating to any actual or alleged intellectual property infringement. In order to qualify, an Indemnified Contributor must: a) promptly notify the Commercial Contributor in writing of such claim, and b) allow the Commercial Contributor to control, and cooperate with the Commercial Contributor in, the defense and any related settlement negotiations. The Indemnified Contributor may participate in any such claim at its own expense.

For example, a Contributor might include the Program in a commercial product offering, Product X. That Contributor is then a Commercial Contributor. If that Commercial Contributor then makes performance claims, or offers warranties related to Product X, those performance claims and warranties are such Commercial Contributor's responsibility alone. Under this section, the Commercial Contributor would have to defend claims against the other Contributors related to those performance claims and warranties, and if a court requires any other Contributor to pay any damages as a result, the Commercial Contributor must pay those damages.

5. NO WARRANTY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, THE PROGRAM IS PROVIDED ON AN “AS IS” BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR CONDITIONS OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Each Recipient is solely responsible for determining the appropriateness of using and distributing the Program and assumes all risks associated with its exercise of rights under this Agreement, including but not limited to the risks

and costs of program errors, compliance with applicable laws, damage to or loss of data, programs or equipment, and unavailability or interruption of operations.

6. DISCLAIMER OF LIABILITY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, NEITHER RECIPIENT NOR ANY CONTRIBUTORS SHALL HAVE ANY LIABILITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS), HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OR DISTRIBUTION OF THE PROGRAM OR THE EXERCISE OF ANY RIGHTS GRANTED HEREUNDER, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

7. GENERAL

If any provision of this Agreement is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this Agreement, and without further action by the parties hereto, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.

If Recipient institutes patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Program itself (excluding combinations of the Program with other software or hardware) infringes such Recipient's patent(s), then such Recipient's rights granted under Section 2(b) shall terminate as of the date such litigation is filed.

All Recipient's rights under this Agreement shall terminate if it fails to comply with any of the material terms or conditions of this Agreement and does not cure such failure in a reasonable period of time after becoming aware of such noncompliance. If all Recipient's rights under this Agreement terminate, Recipient agrees to cease use and distribution of the Program as soon as reasonably practicable. However, Recipient's obligations under this Agreement and any licenses granted by Recipient relating to the Program shall continue and survive.

Everyone is permitted to copy and distribute copies of this Agreement, but in order to avoid inconsistency the Agreement is copyrighted and may only be modified in the following manner. The Agreement Steward reserves the right to publish new versions (including revisions) of this Agreement from time to time. No one other than the Agreement Steward has the right to modify this Agreement. The Eclipse Foundation is the initial Agreement Steward. The Eclipse Foundation may assign the responsibility to serve as the Agreement Steward to a suitable separate entity. Each new version of the Agreement will be given a distinguishing version number. The Program (including Contributions) may always be distributed subject to the version of the Agreement under which it was received. In addition, after a new version of the Agreement is published, Contributor may elect to distribute the Program (including its Contributions) under the new version. Except as expressly stated in Sections 2(a) and 2(b) above, Recipient receives no rights or licenses to the intellectual property of any Contributor under this Agreement, whether expressly, by implication, estoppel or otherwise. All rights in the Program not expressly granted under this Agreement are reserved.

This Agreement is governed by the laws of the State of New York and the intellectual property laws of the United States of America. No party to this Agreement will bring a legal action under this Agreement more than one year after the cause of action arose. Each party waives its rights to a jury trial in any resulting litigation.

Expat License

Copyright (c) 1998, 1999, 2000 Thai Open Source Software Center Ltd. and Clark Cooper

Copyright (c) 2001, 2002, 2003 Expat maintainers.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the “Software”), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

1. The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.
2. THE SOFTWARE IS PROVIDED “AS IS”, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

IMLIB2

Copyright (C) 2000 Carsten Haitzler and various contributors (see AUTHORS)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the “Software”), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies of the Software and its Copyright notices. In addition publicly documented acknowledgment must be given that this software has been used if no source code of this software is made available publicly. This includes acknowledgments in either Copyright notices, Manuals, Publicity and Marketing documents or any documentation provided with any product containing this software. This License does not apply to any software that links to the libraries provided by this software (statically or dynamically), but only to the software provided.

Please see the COPYING.PLAIN for a plain-english explanation of this notice and it's intent.

THE SOFTWARE IS PROVIDED “AS IS”, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Jiffy

Copyright (C) 2009 Paul Duncan pabs@pablotron.org

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the “Software”), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the of the Software.

THE SOFTWARE IS PROVIDED “AS IS”, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Fedora 14 - License Agreement

LICENSE AGREEMENT

FEDORA(TM) 14

This agreement governs the download, installation or use of the Software (as defined below) and any updates to the Software, regardless of the delivery mechanism. The Software is a collective work under U.S. Copyright Law. Subject to the following terms, Red Hat grants to the user (“User”) a license to this collective work pursuant to the GNU General Public License version 2. By downloading, installing or using the Software, User agrees to the terms of this agreement.

1. THE SOFTWARE. Fedora (the “Software”) is a modular Linux operating system consisting of hundreds of software components. The end user license agreement for each component is located in the component's source code. With the exception of certain image files containing the Fedora trademark identified in Section 2 below, the license terms for the components permit User to copy and redistribute the component. With the potential exception of certain firmware files (denoted in the License field of the RPM packaging), the license terms for the components permit User to copy, modify and redistribute the component, in both source code and binary code forms. This agreement does not limit User's rights under, or grant User rights that supersede, the license terms of any particular component.

2. INTELLECTUAL PROPERTY RIGHTS. The Software and each of its components, including the source code, documentation, appearance, structure and organization are copyrighted by Red Hat and others and are protected under copyright and other laws. Title to the Software and any component, or to any copy, modification, or merged portion shall remain with the aforementioned, subject to the applicable license. The “Fedora” trademark is a trademark of Red Hat, Inc. (“Red Hat”) in the U.S. and other countries and is used by permission. This agreement permits User to distribute unmodified copies of Software using the Fedora trademark on the condition that User follows Red Hat's trademark guidelines located at http://fedoraproject.org/wiki/Legal. User must abide by these trademark guidelines when distributing the Software, regardless of whether the Software has been modified. If User modifies the Software, then User must replace all images containing the “Fedora” trademark. Those images are in the fedora-logos package.

3. LIMITED WARRANTY. Except as specifically stated in this agreement or a license for a particular component, TO THE MAXIMUM EXTENT PERMITTED UNDER APPLICABLE LAW, THE SOFTWARE AND THE COMPONENTS ARE PROVIDED AND LICENSED “AS IS” WITHOUT WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT OR FITNESS FOR A PARTICULAR PURPOSE. Neither the Fedora Project nor Red Hat warrants that the functions contained in the Software will meet User's requirements or that the operation of the Software will be entirely error free or appear precisely as described in the accompanying documentation. USE OF THE SOFTWARE IS AT USER'S OWN RISK.

4. LIMITATION OF REMEDIES AND LIABILITY. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, FEDORA PROJECT AND RED HAT WILL NOT BE LIABLE TO USER FOR ANY DAMAGES, INCLUDING INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOST PROFITS OR LOST SAVINGS ARISING OUT OF THE USE OR INABILITY TO USE THE SOFTWARE, EVEN IF FEDORA PROJECT OR RED HAT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

5. EXPORT CONTROL. As required by U.S. law, User represents and warrants that it: (a) understands that the Software is subject to export controls under the U.S. Commerce Department's Export Administration Regulations (“EAR”); (b) is not located in a prohibited destination country under the EAR or U.S. sanctions regulations (currently Cuba, Iran, Iraq, North Korea, Sudan and Syria); (c) will not export, re-export, or transfer the Software to any prohibited destination, entity, or individual without the necessary export license(s) or authorizations(s) from the U.S. Government; (d) will not use or transfer the Software for use in any sensitive nuclear, chemical or biological weapons, or missile technology end-uses unless authorized by the U.S. Government by regulation or specific license; (e) understands and agrees that if it is in the United States and exports or transfers the Software to eligible end users, it will, as required by EAR Section 741.17(e), submit semi-annual reports to the Commerce Department's Bureau of Industry & Security (BIS), which include the name and address (including country) of each transferee; and (f) understands that countries other than the United States may restrict the import, use, or export of encryption products and that it shall be solely responsible for compliance with any such import, use, or export restrictions.

6. GENERAL. If any provision of this agreement is held to be unenforceable, that shall not affect the enforceability of the remaining provisions. This agreement shall be governed by the laws of the State of North Carolina and of the United States, without regard to any conflict of laws provisions, except that the United Nations Convention on the International Sale of Goods shall not apply.

All rights reserved. “Red Hat” and “Fedora” are trademarks of Red Hat, Inc. “Linux” is a registered trademark of Linus Torvalds. All other trademarks are the property of their respective owners.

PSF LICENSE AGREEMENT FOR PYTHON 2.7.3

1. This LICENSE AGREEMENT is between the Python Software Foundation (“PSF”), and the Individual or Organization (“Licensee”) accessing and otherwise using Python 2.7.3 software in source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, PSF hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 2.7.3 alone or in any derivative version, provided, however, that PSF’s License Agreement and PSF’s notice of copyright, i.e., “Copyright © 2001-2012 Python Software Foundation; All Rights Reserved” are retained in Python 2.7.3 alone or in any derivative version prepared by Licensee.

3. In the event Licensee prepares a derivative work that is based on or incorporates Python 2.7.3 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python 2.7.3.

4. PSF is making Python 2.7.3 available to Licensee on an “AS IS” basis. PSF MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 2.7.3 WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON 2.7.3 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 2.7.3, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between PSF and Licensee. This License Agreement does not grant permission to use PSF trademarks or trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By copying, installing or otherwise using Python 2.7.3, Licensee agrees to be bound by the terms and conditions of this License Agreement.

Jetty

Jetty 9 (as well as 7 and 8) is dual licensed under the Apache License 2.0 and Eclipse Public License - v 1.0. Jetty is free for commercial use and distribution under the terms of either license, with exceptions listed in the following NOTICE file:

```
============================================================
 Jetty Web Container
 Copyright 1995-2015 Mort Bay Consulting Pty Ltd.
============================================================
The Jetty Web Container is Copyright Mort Bay Consulting Pty Ltd
unless otherwise noted.
Jetty is dual licensed under both
 * The Apache 2.0 License
 http://www.apache.org/licenses/LICENSE-2.0.html
 and
```

```
 * The Eclipse Public 1.0 License
 http://www.eclipse.org/legal/epl-v10.html
Jetty may be distributed under either license.
------
Eclipse
The following artifacts are EPL.
 * org.eclipse.jetty.orbit:org.eclipse.jdt.core
The following artifacts are EPL and ASL2.
 * org.eclipse.jetty.orbit:javax.security.auth.message
The following artifacts are EPL and CDDL 1.0.
 * org.eclipse.jetty.orbit:javax.mail.glassfish
------
Oracle
The following artifacts are CDDL + GPLv2 with classpath exception.
https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html
 * javax.servlet:javax.servlet-api
 * javax.annotation:javax.annotation-api
 * javax.transaction:javax.transaction-api
 * javax.websocket:javax.websocket-api
------
Oracle OpenJDK
If ALPN is used to negotiate HTTP/2 connections, then the following
artifacts may be included in the distribution or downloaded when ALPN
module is selected.
 * java.sun.security.ssl
These artifacts replace/modify OpenJDK classes. The modifications
are hosted at github and both modified and original are under GPL v2 with
classpath exceptions.
http://openjdk.java.net/legal/gplv2+ce.html
------
OW2
The following artifacts are licensed by the OW2 Foundation according to the
terms of http://asm.ow2.org/license.html
org.ow2.asm:asm-commons
org.ow2.asm:asm
------
Apache
The following artifacts are ASL2 licensed.
org.apache.taglibs:taglibs-standard-spec
org.apache.taglibs:taglibs-standard-impl
```

```
------
MortBay
The following artifacts are ASL2 licensed. Based on selected classes from
following Apache Tomcat jars, all ASL2 licensed.
org.mortbay.jasper:apache-jsp
 org.apache.tomcat:tomcat-jasper
 org.apache.tomcat:tomcat-juli
 org.apache.tomcat:tomcat-jsp-api
 org.apache.tomcat:tomcat-el-api
 org.apache.tomcat:tomcat-jasper-el
 org.apache.tomcat:tomcat-api
 org.apache.tomcat:tomcat-util-scan
 org.apache.tomcat:tomcat-util
org.mortbay.jasper:apache-el
 org.apache.tomcat:tomcat-jasper-el
 org.apache.tomcat:tomcat-el-api
------
Mortbay
The following artifacts are CDDL + GPLv2 with classpath exception.
https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html
org.eclipse.jetty.toolchain:jetty-schemas
------
Assorted
The UnixCrypt.java code implements the one way cryptography used by
Unix systems for simple password protection. Copyright 1996 Aki Yoshida,
modified April 2001 by Iris Van den Broeke, Daniel Deville.
Permission to use, copy, modify and distribute UnixCrypt
for non-commercial or commercial purposes and without fee is
granted provided that the copyright notice appears in all copies.
```

Apache ActiveMQ

The Apache License, Version 2.0 covers Apache ActiveMQ ™.