5.1

QUORUM

Installation Guide

Version 5.1

ROSS

Thank You for Choosing Ross

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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
david.ross@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.)*

Quorum · Installation Guide

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Notice

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Important Regulatory and Safety Notices to Service Personnel

Before using this product and any associated equipment, refer to the "**Important Safety Instructions**" listed in the front of this manual to avoid personnel injury and to prevent product damage.

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

Symbol Definitions

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.

Important: 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

General Safety Instructions

1. **Warning:** Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with manufacturer's instructions.
8. Do not install near heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, 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.
14. Do not expose this apparatus to dripping or splashing, and ensure that no objects filled with liquids, such as vases, are placed on the apparatus.
15. To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.
16. The mains plug of the power supply cord shall remain readily operable.
17. **Warning:** Indoor Use: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

18. 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.

19. **Warning:** This apparatus, when equipped with multiple power supplies, can generate high leakage currents. To reduce the risk of electric shock, ensure that each individual supply cord is connected to its own separate branch circuit with an earth connection.

20. **CAUTION:** These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

21. Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after servicing.

22. 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.

23. Use only power cords specified for this product and certified for the country of use.

24. The safe operation of this equipment requires that the user heed and adhere to all installation and servicing instruction contained within the equipment's Setup Manuals.

25. **Warning:** This product includes “Ethernet Ports” which allow this product to be connected to local area networks (LAN). Only connect to networks that remain inside the building. Do not connect to networks that go outside the building.

26. For use at altitude 2000m or lower.

27. For use in non-tropical locations.

28. **CAUTION:** Do not make mechanical or electrical modifications to the equipment or add metallic items, such as metallic foil labels, to the printed circuit boards. Modifications can impair regulatory compliance, or performance and may void your warranty.

29. **CAUTION: RISK OF ABNORMAL SUPPLY LOADING:** USB connected accessory loading not to exceed 5 USB unit loads. Each USB unit Load on Rear panel is limited to 250mA max.

30. **CAUTION:** This apparatus contains a Lithium battery, which if replaced incorrectly, or with an incorrect type, may cause an explosion. Replace only with a CR2032 coin type lithium battery. Dispose of used batteries according to the manufacturer’s instruction by qualified service personnel.

EMC Notices

United States of America — 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.

Important: Changes or modifications to this equipment not expressly approved by Ross Video Limited 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.

Korea - Class A Statement

이 기기는 업무용 환경에서 사용할 목적으로 적합성 평가를 받은 기기로서 가정용 환경에서 사용하는 경 우 전파간섭의 우려가 있습니다 .

This device has been evaluated for conformity for use in a business environment. When used in a home environment, there is a danger of interference.

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 32:2015** along with amendment **AMD1:2019**, and found to comply with the limits for a Class A Digital device.

Important: 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.

General Handling Guidelines

- Careful handling, using proper ESD precautions, must be observed.
- Power down the system before PCB removal.

A Word About Static Discharge

Throughout the many procedures in this manual, please observe all static discharge precautions.

CAUTION: Avoid handling the switcher circuit boards in high static environments such as carpeted areas, and when synthetic fiber clothing is worn. Touch the frame to dissipate static charge before removing boards from the frame, and exercise proper grounding precautions when working on circuit boards.

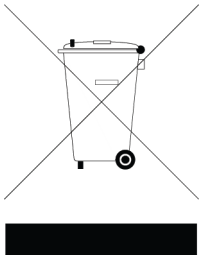
Environmental Information

Waste Electrical and Electronic Equipment Directive (WEEE Directive)

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

Power Information

To ensure safe operation and to guard against potential shock or risk of fire, ensure your AC power source for the system is within the required voltage range and frequency.

- Input AC Power Requirements:
  - 100-127VAC / 15.0-12.0A / 50-60Hz (x2)
  - 200-240VAC / 8.5-7.0A / 50-60Hz (x2)

Operating Environment

The optimum operating environment is within the following ranges:

- Recommended Operating Temperature: 13°C to 35°C (55°F to 95°F)
- Recommended Operating Humidity: 20% to 80% non-condensing

✶ High temperature/humidity should be avoided at all times.

Company Address

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Email (General Information): solutions@rossvideo.com

Website: http://www.rossvideo.com

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Introduction

A Word of Thanks

Thank you for choosing Ross Video Quorum as your meeting control solution.

We are committed to providing you with the highest level of customer satisfaction possible. If, for any reason, you have questions or comments, please call Ross Video at +1-613-652-4886 or send us an email at techsupport@rossvideo.com.

We hope that you visit our website at www.rossvideo.com to stay up to date with ongoing software releases, join our customer forum and learn more about the complete range of Ross Video products.

Note that software maintenance and extended warranties are available for your system to protect and extend the life of your investment. Our sales team is more than happy to provide further information on the plans available. Members of our sales team promptly respond to emails sent to: solutions@rossvideo.com.

Again, thank you for your purchase of a Quorum meeting control solution from Ross Video. We are confident of your future pleasure with your choice.

Yours sincerely,

Ben Gatien
Product Manager
ben.gatien@rossvideo.com

About This Guide

This guide contains the following chapters that cover the installation and configuration of Quorum Server software:

1. "**Introduction**" summarizes the guide and explains important terms, conventions, and features.
2. "**System Overview**" provides an overview of Quorum system components and connections.
3. "**Installation Notes**" provides pre-installation instructions for your Quorum system.
4. "**IP Address Configuration**" provides instructions for configuring the IP addresses for the Windows and Linux environments on the server computer in your Quorum system.
5. "**Software Installation**" provides instructions for installing your Quorum software after a system re-image.
6. "**Software Upgrade**" provides instructions for upgrading Quorum Server software.
7. "**Software Licensing**" provides instructions for licensing Quorum Server software.
8. "**Caprica Communication Configuration**" provides instructions to connect your Caprica Server to your Quorum Server to enable Quorum to control the switcher, graphics engine, cameras, and other devices in your meeting control system.

If you have questions pertaining to the operation of the Ross Video product, please contact us at the numbers listed in the section "**Contacting Technical Support**" on page 1–3. Our technical staff is always available for consultation, training, or service.

Documentation Conventions

This guide uses special text formats to identify parts of the user interface, text that a user must enter, or a sequence of menus and submenus that a user must follow to reach a particular command.

Interface Elements

Bold text identifies a user interface element such as a dialog box, a menu item, or a button. For example:

In the **Media Manager Client**, click **Channel 1** in the **Channels** section.

User Entered Text

Courier text identifies text that a user must enter. For example:

In the **File Name** box, enter `Channel01.property`.

Referenced Guides

Italic text identifies the titles of referenced guides, manuals, or documents. For example:

For more information, refer to the section "**User Interface Layout**" on page 3–6 in the ***Quorum User Guide***.

Menu Sequences

Menu arrows indicate a sequence of menu items that a user must follow to reach a particular command. For example: if a procedure step contains "**Server** > **Save As**," a user should click the **Server** menu and then click **Save As**.

Important Instructions

Star icons indicate important instructions or features. For example:

✶ After installing Quorum Server software, you must obtain Quorum feature licenses from Ross Video Technical Support before users can access Quorum features.

Getting Help

To access the Quorum Online Help system, click the **Help** icon in the main toolbar. For help about the currently open panel, click the **Help** button in a panel title bar to view a help topic about the panel.

The Online Help system contains the following navigation tabs to locate and access Online Help topics:

- **Contents** — table of contents
- **Search** — full text search
- **Favorites** — preferred information storage and access

Ross Video also supplies print-ready PDF files of the ***Caprica User Guide for Quorum***, ***Quorum Installation Guide***, and the ***Quorum User Guide*** in the **Printing and Guides Download** section of the Quorum 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 is 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

Email: techsupport@rossvideo.com

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

System Overview

Quorum is an automation system that controls your switcher, graphics engine, cameras, and microphone systems through a web browser, helping to simplify the production of meeting broadcasts.

This chapter discusses the following topics:

- Quorum System Connections
- Quorum Server Computer

Quorum System Connections

Quorum is installed on a server computer in your facility and is accessed through a web browser. To control all the devices in your meeting broadcast system, Quorum uses the following Ross Video software products:

- **Caprica** — controls the switcher, graphics engine, and camera devices.
- **Media IO** — routes the Multiviewer feed from the switcher to the Quorum user interface.
- **XPression DataLinq** — communicates with the Quorum Server to send graphic data used by the XPression graphics engine.

Quorum, Caprica, and Media IO software are all installed on the Quorum Server computer. The following diagram (**Figure 2.1**) shows the interaction between the hardware and software parts of a Quorum system.

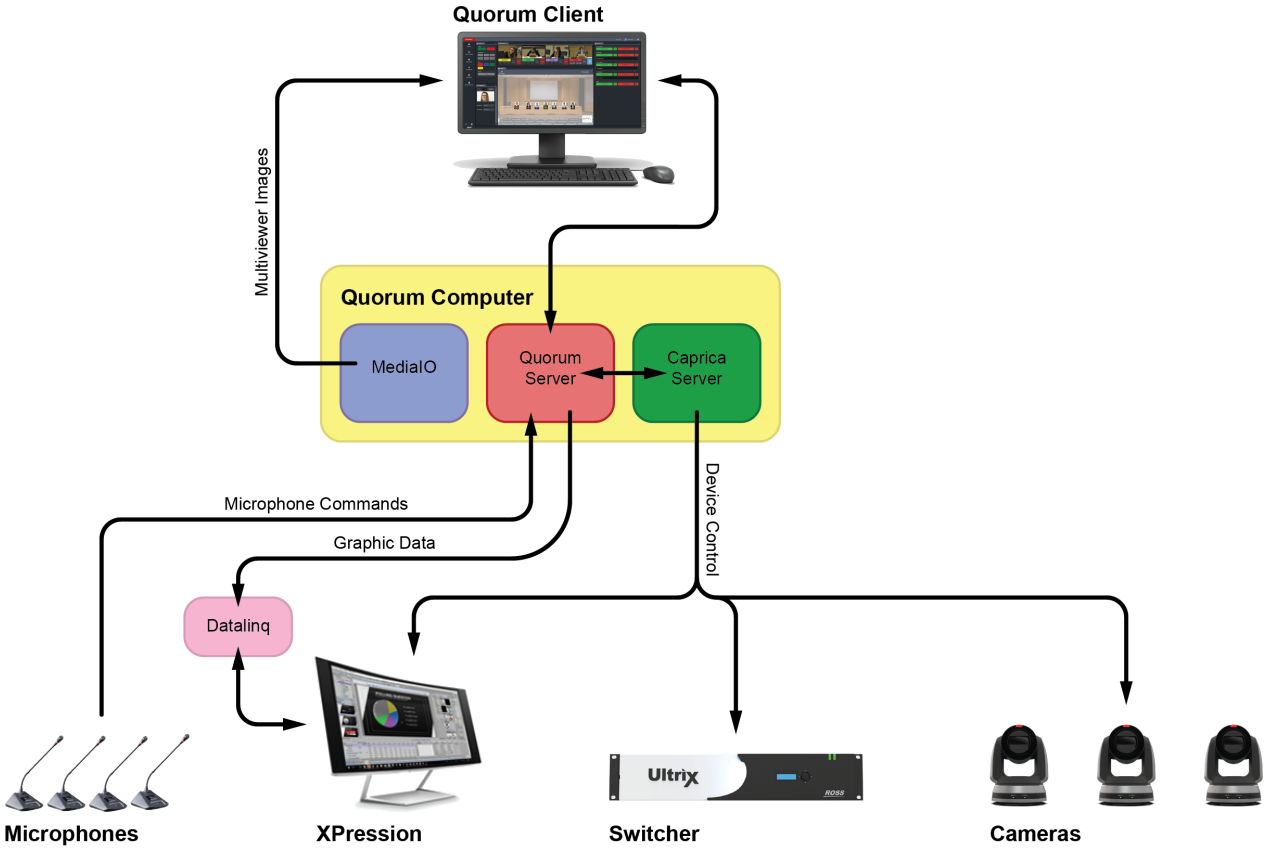


Figure 2.1 Quorum Systems Connections

Quorum Server Computer

The Quorum Server computer is the hub of your Quorum system. Quorum, Caprica, and Media IO software all run on the Quorum Server computer.

Front Panel

The power button and the LED status indicator are the main controls on the Quorum Server computer front panel (**Figure 2.2**).

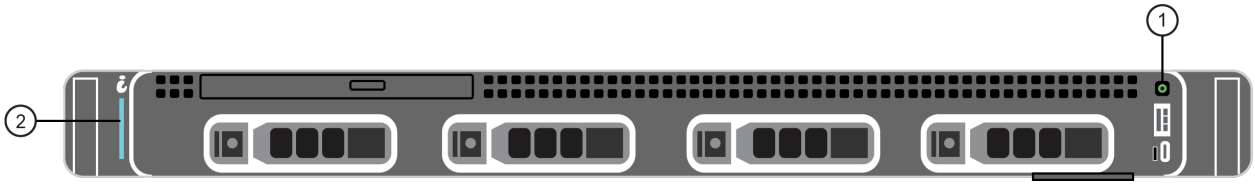


Figure 2.2 Quorum Server — Front Panel (Door Removed)

1) Power Button	2) LED Status Indicator

1. Power Button

The main power button for the Quorum Server.

2. LED Status Indicator

Indicates system health and system ID status. The LED status indicator can display the following codes:

- **Solid Blue** — system is powered on, the system is healthy, and the system ID mode is not active.
- **Blinking Blue** — system is powered on, the system is healthy, and the system ID mode is active.
- **Solid Amber** — system is in fail-safe mode.
- **Blinking Amber** — system is experiencing an error.

Back Panel

The Quorum Server computer back panel contains the power, network, and monitor connections (**Figure 2.3**).

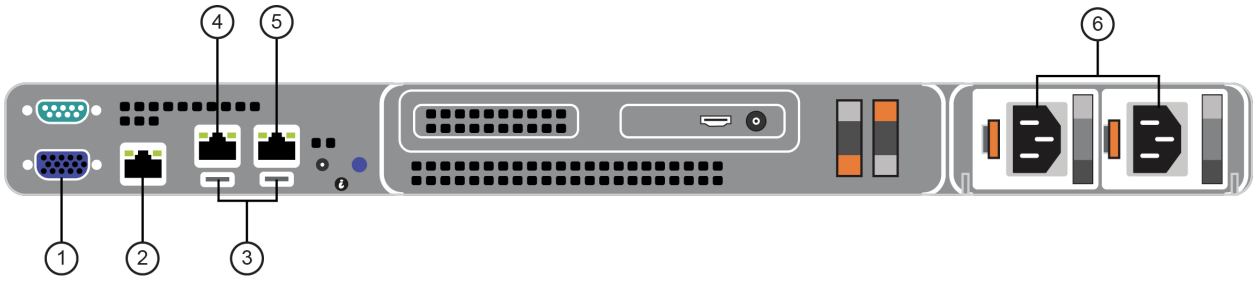


Figure 2.3 Quorum Server — Back Panel

1) VGA Port	2) iDRAC9 Port	3) USB 3.0 Ports
4) 1 GigE Ethernet Port	5) 2 GigE Ethernet Port	6) AC Power Connections

1. VGA Port

Connects a monitor to the Quorum Server computer using a VGA cable.

2. iDRAC9 Port

Quorum does not use this port.

3. USB 3.0 Ports

Connects USB devices to the Quorum Server computer. You can connect the included USB-C to Display Port adapter to connect a monitor to these USB 3.0 ports.

4. 1 GigE Ethernet Port

Connects the Quorum Server computer to the local area network using an Ethernet cable. This Ethernet port has a maximum throughput of one Gbps (Gigabits per second).

5. 2 GigE Ethernet Port

Connects the Quorum Server computer to the local area network using an Ethernet cable. This Ethernet port has a maximum throughput of two Gbps (Gigabits per second).

6. AC Power Ports

Connects the Quorum Server computer to AC mains power using AC power cords.

Installation Notes

This chapter provides information about the general requirements of a Quorum system. The following topics are discussed in this chapter:

- Switcher and Caprica Software Compatibility
- Computer System Requirements
- Ports
- Processes

Switcher and Caprica Software Compatibility

To ensure proper function of a Quorum system, the software version installed on the switcher and the version of Caprica must be compatible with the installed Quorum software. Quorum 5.1 software is compatible with the following versions of switcher and Caprica software:

Table 3.1 Quorum 5.1 Switcher and Caprica Software Compatibility

Acuity	v9.2 or greater
Ultrix Acuity	v10.1b or greater
Carbonite Black	v13.0.6 or greater
Carbonite Ultra	v4.0 or greater
Ultrix Carbonite	v6.0.0 or greater
Graphite	v4.0 or greater
Caprica	v7.2h or greater

Computer System Requirements

To ensure the proper function of a Quorum system, verify that the Quorum Server computer meets the requirements described in the following sections:

Server Hardware

Ross Video recommends the following minimum computer hardware configuration to run Quorum software:

Table 3.2 Dell R350 PowerEdge Quorum Server Specifications

CPU	Intel® Xeon®
RAM	32GB
Storage	2 x 480GB Hot-plug AG Drive
RAID Controller	PERC H355
LAN	1Gb
Power Supply	Dual, Hot-Plug, Redundant Power Supply (1+1), 600W
Operating System	Windows 2022 Server 64-bit
Trusted Platform Module	TPM 2.0 V3

Operating System

Ross Video recommends the following minimum operating systems for Quorum Server and client computers:

Table 3.3 Quorum Computer Software

Server	Microsoft® Windows Server 2019 or 2022 with the latest patches. **Windows Server 2022 is recommended**.
Client	Microsoft® Windows® 10 or 11 64 bit with the latest patches. **Windows 11 is recommended**.

✶ Ensure 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

Ports

As part of the Quorum Server software installation process, the installer automatically creates the required firewall exceptions locally for the ports that Quorum uses to communicate with Quorum clients and MOS devices.

✶ If an external firewall separates your Quorum Server from your Quorum clients and MOS devices, you may need to update the port exceptions on your external firewall to enable communication with the Quorum Server.

Quorum

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

Table 3.4 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
MariaDB	3306	MariaDB database	Internal	Quorum Server and client computers to the computer running the MariaDB 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
Taiden	7370	Taiden microphone system	Internal	Microphone system to Quorum Server

Caprica

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

Table 3.5 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	Legacy 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

Processes

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

Table 3.6 Quorum System Processes

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

* Development environment

† Multiple NRCS configuration

IP Address Configuration

This chapter provides instructions for configuring the IP addresses in the Windows and Linux environments of the server computer in your Quorum system. The procedures in this chapter apply to Quorum Server computers supplied by Ross Video. IP address configuration on customer-supplied server computers may differ from the procedures in this chapter.

✶ If you are in doubt about configuring the IP addresses for your Quorum system, please contact Ross Video Technical Support for assistance.

The following topics are discussed in this chapter:

- Set the Windows Server IP Address
- Set the Caprica VM (Hyper-V) IP Address

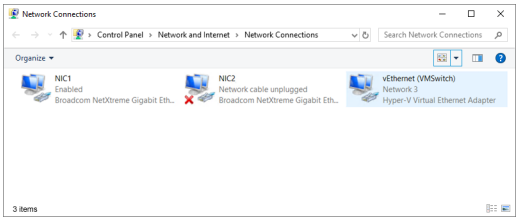
Set the Windows Server IP Address

Set the IP address for your Quorum Server in your network.

To set the Windows Server IP address

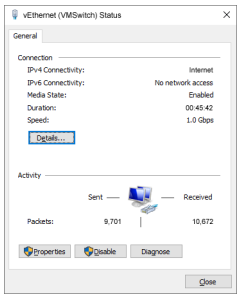
1. Use the following credentials to log in to the Quorum Server computer.
   - **User**: `quorum`
   - **Password**: `password`
2. Open the **Control Panel**.
3. In the **Control Panel**, click **Network and Internet**.
4. In the **Network and Internet** panel click, **Network and Sharing Center**.
5. In the left-hand list of the **Network and Sharing Center** panel, click **Change adapter settings**.

   The **Network Connections** window opens.



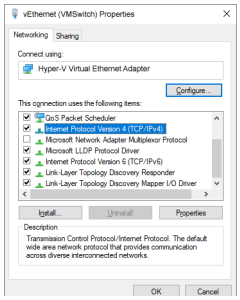
6. Double-click the **vEthernet (VMSwitch)** network.

   The **vEthernet (VMSwitch) Status** dialog box opens.



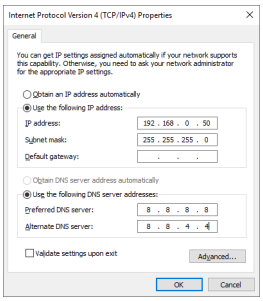
7. Click Properties.

   The **vEthernet (VMSwitch) Properties** dialog box opens.



8. Select **Internet Protocol Version 4 (TCP/IPv4)**.
9. Click **Properties**.

   The **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box opens.



10. Select the **Use the following IP address** option.
11. In the **Use the following IP address** section, enter the IP address settings for your Quorum Server.
12. Select the **Use the following DNS server addresses** option.
13. In **Use the following DNS server addresses** section, enter the IP addresses for your DNS server.
14. Click **OK**.

    The **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box closes.
15. Close the **vEthernet (VMSwitch) Properties** dialog box.
16. Close the remaining open dialog boxes and windows.

Set the Caprica VM (Hyper-V) IP Address

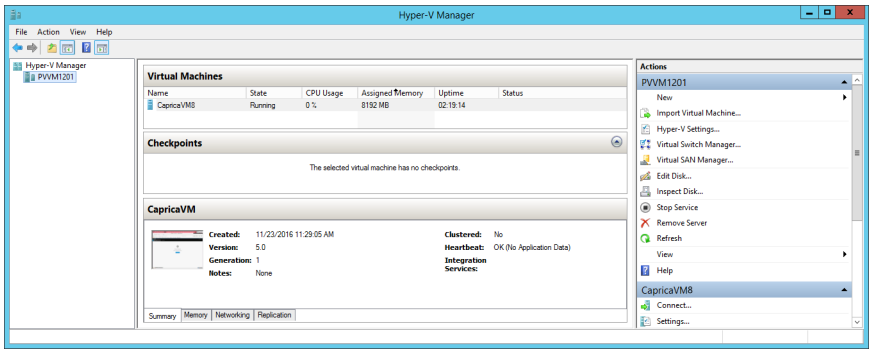
Set the IP address for your Caprica VM (Hyper-V) in your network.

★ If you are setting up a Redundant Caprica system, refer to the "**Redundant Caprica System**" chapter in the ***Caprica User Guide***.

To set the Caprica VM (Hyper-V) IP address

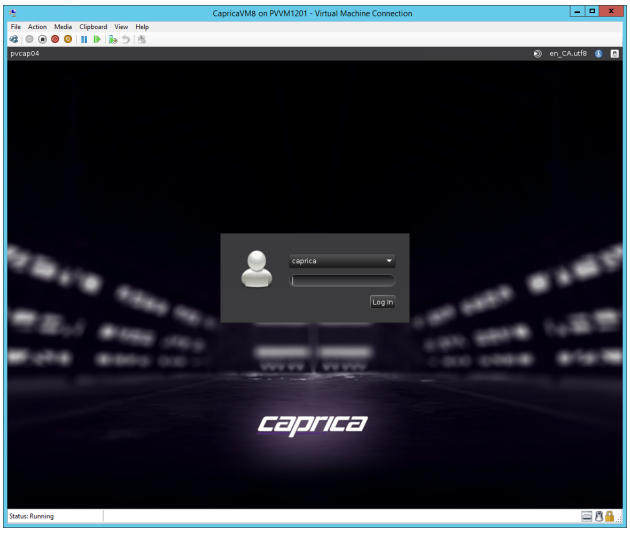
1. Use the following credentials to log in to the Quorum Server computer that hosts your Caprica Server in Hyper-V:
   - **User**: `quorum`
   - **Password**: `password`
2. Use the **Start** menu to select **Hyper-V Manager**.

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



3. In the **Virtual Machines** section, double-click **CapricaVM8**.

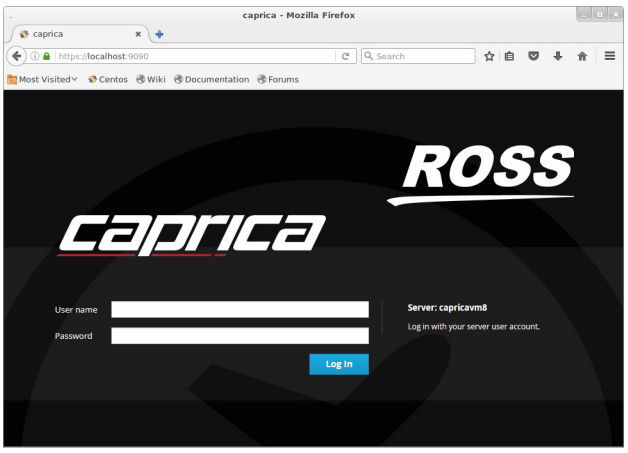
   The **Hyper-V Manager** window opens.



4. Use the following credentials to log in to the Caprica Server.
   - **User**: `caprica`
   - **Password**: `password`
5. Use a web browser to open the **Caprica** web page at the following URL:

   `https://localhost:9090`

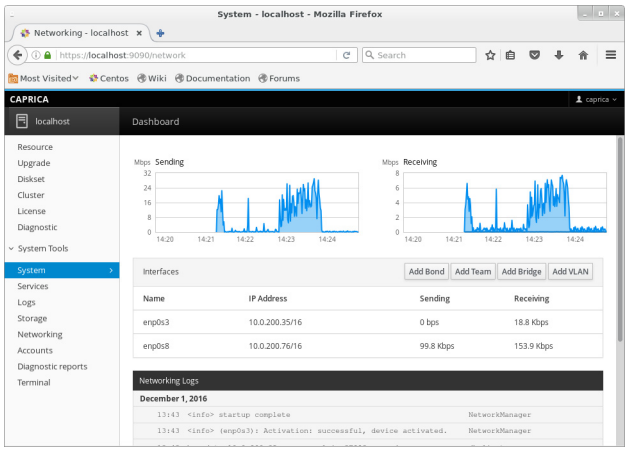
   The **Caprica Login** web page opens.



6. Use the following credentials to log in to the Caprica web page:
   - **User**: `caprica`
   - **Password**: `password`
7. Click **Log In**.

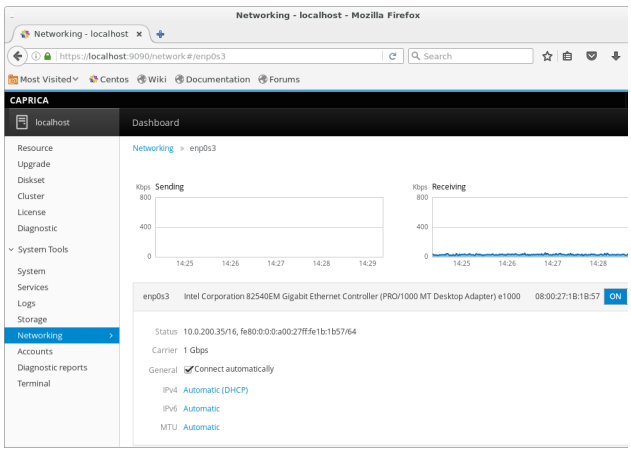
   The **Caprica** web page opens.
8. In the tree view, expand the **System Tools** node.
9. Click **Networking**.

   The **Networking** web page opens.



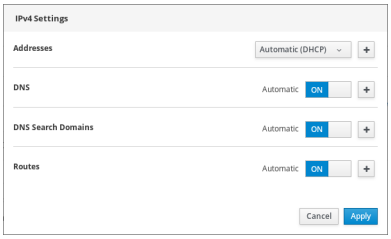
10. In the **Interface** section, click the first **NIC** in the list of available network interfaces.

    A panel opens for the selected NIC.



11. In the **IPv4** field, click the current setting.

    The **IPv4 Settings** dialog box opens.



12. Use the **Addresses** list to select **Manual**.
13. In the **Address** box, enter a static IP address for NIC 1 of your Caprica Server.
14. In the **Prefix length or Netmask** box, enter the network mask for NIC 1 of your Caprica Server.
15. In the **Gateway** box, enter the gateway for NIC 1 of your Caprica Server.
16. Click **Apply**.

    The **IPv4** field displays the set IP address for NIC 1 of your Caprica Server.

Software Installation

This chapter provides instructions for installing Quorum software on a Quorum Server computer for the first time or after a system re-image.

This chapter discusses the following topics:

- Before You Install Software
- Installing Quorum Database Software
- Installing Quorum Server Software
- Tuning the Quorum Server for Performance
- After You Install Quorum Server Software

Before You Install Software

Before you install Quorum version 5.1 software on the Quorum Server in your Quorum system, you must prepare your Quorum system for the new Quorum software.

★ After installing Quorum Server software, you must obtain Quorum feature licenses from Ross Video Technical Support before users can access Quorum features.

To prepare your Quorum system for Quorum version 5.1

1. Configure the IP addresses for your server computer.
2. Contact Ross Video Technical Support to obtain the following software installers for Quorum version 5.1:
   - Quorum v5.1
   - Caprica-Quorum v5.1
   - Ross Platform Manager (latest version)
   - Media IO (latest version)
   - MariaDB 11.4.4
3. Verify that the Quorum Server computer hostname only contains the uppercase or lowercase ASCII letters “A” through “Z”, the digits “0” through “9”, or the hyphen character (“-”). No other symbols, punctuation characters, or white space are permitted.
4. Update Quorum Server and client computers with the latest Windows® updates recommended by your Network Administrator.
5. Exit all other Windows® programs currently running on the Quorum Server computer.
6. Temporarily disable antivirus software running on the Quorum Server computer. Some heuristic-based intrusion detection systems may prevent the installation of Quorum software. Re-enable antivirus software after installing Quorum software.

Installing Quorum Database Software

Quorum uses the MariaDB database to store and manage application data. Only initial or recovery installations of Quorum Server software on a computer require the installation of the MariaDB database software.

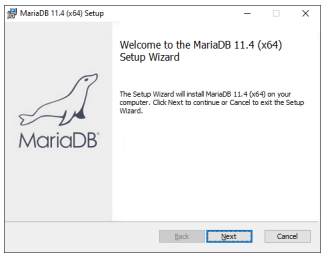
★ You must install and configure MariaDB database software on the Quorum Server computer before installing Quorum Server software on the computer.

Upgrading Quorum Server software to a new version does not require a reinstallation of the MariaDB database software. For the complete upgrade procedure, refer to the chapter “**Software Upgrade**” on page 6–1.

To install MariaDB database software for an initial installation of Quorum software

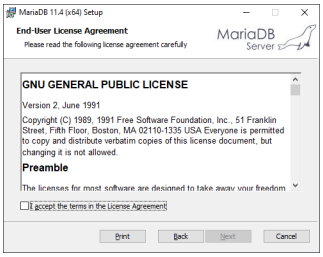
1. On the Quorum Server computer, exit all currently running Windows® applications.
2. Locate the MariaDB database software installer, **mariadb-11.4.4-winx64.msi**, that you obtained from Ross Video Technical Support.
3. Double-click the **mariadb-11.4.4-winx64.msi** icon.

   The **Setup** wizard opens.



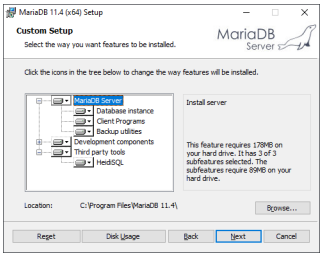
4. Click **Next**.

   The **End-User License Agreement** screen opens.



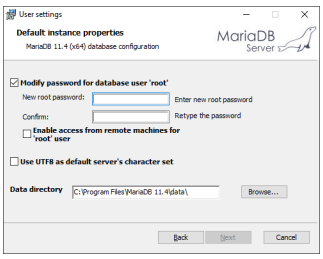
5. Read the **GNU GENERAL PUBLIC LICENSE**.
6. Select the **I accept the terms of the license agreement** check box.
7. Click **Next**.

   The **Custom Setup** screen opens.



8. Click **Next**.

   The **Default instance properties** screen opens.

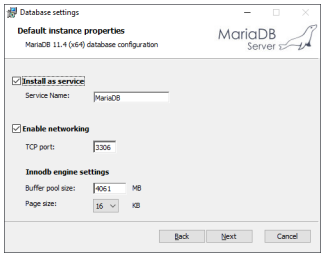


9. Select the **Modify password for database user 'root'** check box.
10. In the **Password** box, enter a password that meets the password security requirements set by your organization.

    Record the entered password to replace the default password `mariadb` with your password when installing, reinstalling, or upgrading Quorum Server software.
11. In the **Confirm** box, enter the same password as entered in the **Password** box.
12. Record the **root** user **password** in a safe place.
13. Select the **Enable access from remote machines for 'root' user** check box.

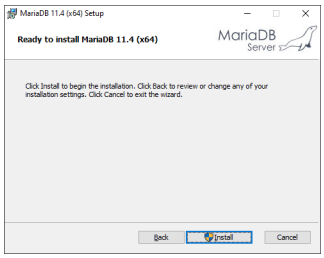
14. Click **Next**.

    The second **Default instance properties** screen opens.



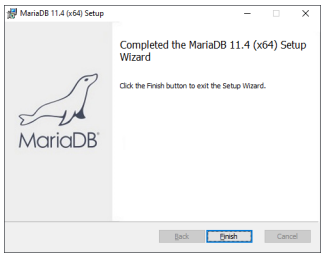
15. Click **Next**.

    The **Ready to Install** screen opens.

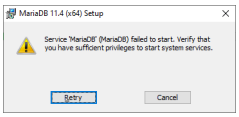


16. Click **Install**.

    The **Installing MariaDB 11.4 (x64)** screen opens. A progress bar displays the installation status. After the installer finishes installing the required files, the **Completed the MariaDB 11.4 (x64) Setup Wizard** screen opens.



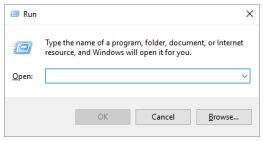
If the **Setup** wizard cannot start the **MariaDB** service, it displays the following alert:



Follow these steps to continue the MariaDB installation:

a. From the Windows Desktop, press **Windows Key R**.

   The **Run** dialog box opens.

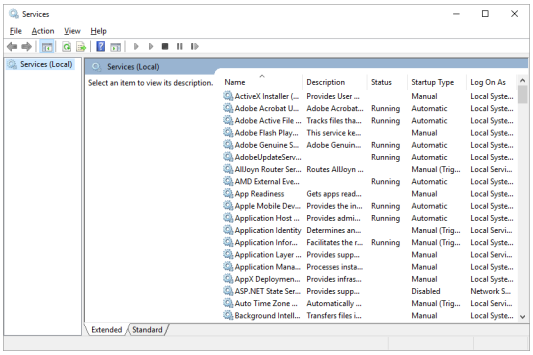


b. In the **Open** box, type the following application name:

   ```
   services.msc
   ```

c. Click **OK**.

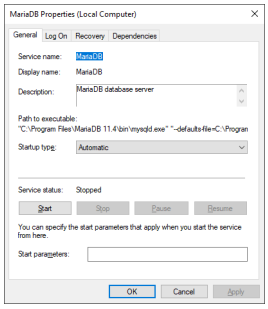
The **Services** window opens.



d. In the **Services** list, locate the **MariaDB** service.

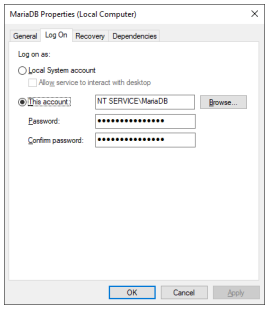
e. Right-click the **MariaDB** service and select **Properties** from the shortcut menu.

The **MariaDB** dialog box opens.



f. Click the **Log On** tab.

The **Log On** tab opens.



g. Select the **Local System Account** option.

h. Click **OK**.

The **MariaDB** dialog box closes.

i. In the **Services** window, click Restart for the **MariaDB** service.

j. Use the **File** menu to select **Exit**.

The **Services** window closes.

k. In the open **alert**, click **Retry**.

17. Click **Finish**.

The **Setup** wizard closes.

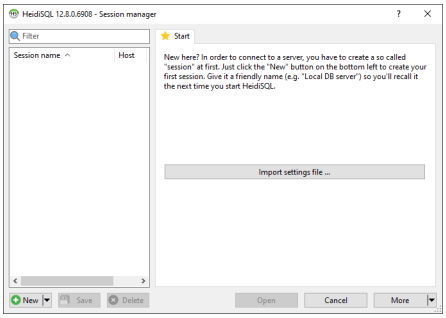
Quorum Database

You must create a MariaDB database named “quorum” before you install Quorum Server software.

To create the database for Quorum

1. From the Windows Desktop, use the **Windows** menu to select **All Programs > MariaDB 11.4 (x64) > HeidiSQL**.

   The **HeidiSQL Session Manager** window opens.



   The first time you open HeidiSQL, you must create a session to connect to the MariaDB Server. Complete the following steps to create a MariaDB Server session:

   a. In the **Session name** column, right-click the **Unnamed** session name and select **Rename** from the shortcut menu.

   b. Enter a name that describes the session, for example: `Local Quorum DB`.

   c. In the **Password** box of the **Settings** tab, enter the **password** that was set in step **10** of the “**To install MariaDB database software for an initial installation of Quorum software**” on page 5–2.

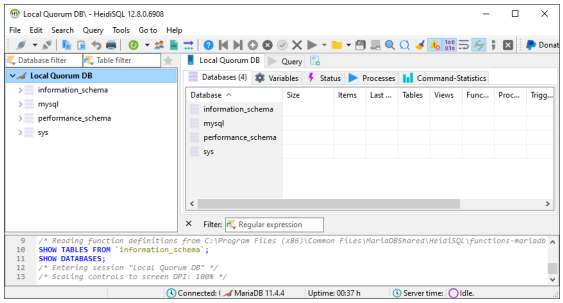
   d. Click **Save**.

   The Session Manager saves the defined session.

2. In the **Session name** column, select the session to connect to the MariaDB Server.

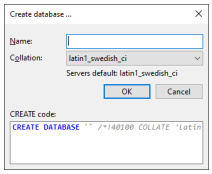
3. Click **Open**.

   The **HeidiSQL Session Manager** window closes, and the **Session** window opens.



4. In the **Object Browser** tree view, right-click the **session name** and select **Create new > Database** from the shortcut menu.

   The **Create database** dialog box opens.



5. In the **Name** box, enter the following name:

   `quorum`

6. Click **OK**.

   The **Create database** dialog box closes, and **HeidiSQL** adds the **quorum** database to the **Object Browser** tree view.

7. In the **Session** window, use the **File** menu to select **Exit**.

   The **Session** window closes.

Installing Quorum Server Software

After installing and configuring the MariaDB database software on the Quorum Server computer, you can install the Quorum Server software.

★ After installing Quorum Server software, you must obtain Quorum feature licenses from Ross Video Technical Support before users can access Quorum features.

To install Quorum Server software

1. On the Quorum Server computer, exit all currently running Windows® applications.
2. Temporarily disable antivirus software running on the Quorum Server computer.

   Some heuristic-based intrusion detection systems prevent the installation of Quorum software.

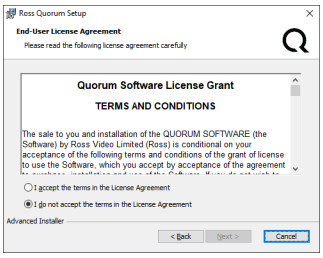
3. Locate the Quorum Server software installer, **Quorum-5.1.x-xxx-xxx.msi**, that you obtained from Ross Video Technical Support.
4. Double-click **Quorum-5.1.x-xxx-xxx.msi**.

   If a **Security Warning** message displays, click **Run**.

   The **Ross Quorum Setup** wizard opens.

5. Click **Next**.

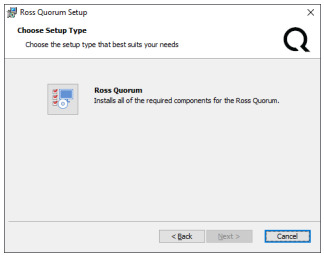
   The **End-User License Agreement** screen opens.



6. Read the **Quorum Software License Grant**.
7. Select the **I accept the terms of the license agreement** option.

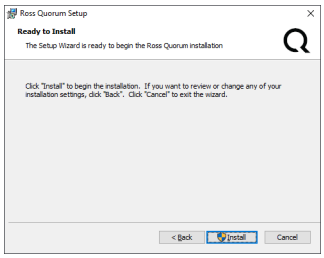
8. Click **Next**.

   The **Choose Setup Type** screen opens.



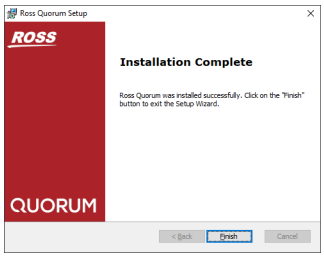
9. Click the **Ross Quorum** icon.

   The **Ready to Install** screen opens.



10. Click **Install**.

    After installation of the Quorum Server is complete, the **Installation Complete** screen opens.



11. Click **Finish**.

    The **Ross Quorum Setup** wizard closes and adds the **Ross Quorum** icon to the Desktop.

12. Re-enable antivirus software.

Tuning the Quorum Server for Performance

The goal of Quorum Server tuning is to maximize the use of system resources to perform work as efficiently and rapidly as possible. The installation or upgrade of Quorum Server software configures the Quorum Server to manage work efficiently, but it is possible to greatly improve performance by tuning the values of a few key Quorum Server settings.

The Quorum Server saves configuration settings in the jvm.conf file. The settings to tune are as follows:

- **wrapper.java.initmemory** — sets the initial java heap size for the Quorum Server.
- **wrapper.java.maxmemory** — sets the maximum java heap size for the Quorum Server.

★ You must retune Quorum Server settings after each install or upgrade of Quorum Server software.

To tune Quorum Server settings in the jvm.conf file:

1. On the Quorum Server computer, locate the **jvm.conf** file in the following folder.

   `C:\Program Files\Ross Video\Quorum\configuration`

2. Use a text editor to open and edit the **jvm.conf** file.
3. In the **jvm.conf** file, locate the following setting:

   `wrapper.java.initmemory`

4. Replace the default memory value for the **wrapper.java.initmemory** setting with a tuned value. The tuned value for **wrapper.java.initmemory** depends on the software running on your Quorum Server computer and the amount of RAM installed in the computer. Use the following table to set the **wrapper.java.initmemory** value for your Quorum system:

	System RAM					
	2 GB	**4 GB**	**8 GB**	**12 GB**	**16 GB**	**32 GB**
Quorum Server & Database	256	512	1024	1536	2048	4096
Dedicated Quorum Server	1024	2048	4096	6144	8192	16384

5. Locate the following setting:

   `wrapper.java.maxmemory`

6. Replace the default memory value for the **wrapper.java.maxmemory** setting with a tuned value. The tuned value for **wrapper.java.maxmemory** depends on the software running on your Quorum Server computer and the amount of RAM installed in the computer. Use the following table to set the **wrapper.java.maxmemory** value for your Quorum system:

	System RAM					
	2 GB	**4 GB**	**8 GB**	**12 GB**	**16 GB**	**32 GB**
Quorum Server & Database	512	1024	2048	3072	4096	8192
Dedicated Quorum Server	1536	3072	6144	9216	12288	24576

7. Save the updated **jvm.conf** file and exit the text editor.
8. Restart the Quorum service as follows:
   a. From the Windows Desktop, press **Windows Key R**.
   b. In the **Open** box, type `services.msc`.
   c. Click **OK**.
   d. In the **Services** list, locate and select the **Ross Quorum** service.
   e. Click **Restart** for the **Ross Quorum** service.
   f. Use the **File** menu to select **Exit**.

After You Install Quorum Server Software

After successfully installing Quorum Server software, perform the following tasks:

- Re-boot the Quorum Server computer.
- Read the ***Quorum Software Release Notes*** document in the `C:\program files\Ross Video\RossQuorum` folder.
- Obtain a license activation key from Ross Video Technical Support for Quorum features.
- Activate your Quorum product key in Ross Platform Manager.

For More Information on...

- licensing Quorum Server software, refer to chapter "**Software Licensing**" on page 7–1.

Software Upgrade

This chapter provides instructions for upgrading Quorum Server software on the Quorum Server computer to the latest version of Quorum Server software.

This chapter discusses the following topics:

- Before You Upgrade Software
- Upgrade to the Latest Quorum Server Software

Before You Upgrade Software

Before you upgrade software on a Quorum Server in your Quorum system, you must prepare your Quorum system for the new Quorum software.

✶ After upgrading Quorum Server software, you must also update your Quorum feature licenses.

To prepare your Quorum system for Quorum version 5.1

1. When upgrading Quorum Server software from version before 3.1, contact Ross Video Technical Support to migrate your Quorum Server data to a MariaDB database.
2. Contact Ross Video Technical Support to obtain the following software installers for Quorum version 5.1:
   - Quorum v5.1
   - Caprica-Quorum v5.1
   - Media I/O (latest version)
3. Use the **Add/Remove Programs** control panel to remove any existing versions of Quorum Server software.
4. Verify that the Quorum Server computer hostname only contains the uppercase or lowercase ASCII letters “A” through “Z”, the digits “0” through “9”, or the hyphen character (“-”). No other symbols, punctuation characters, or white space are permitted.
5. Update Quorum Server and client computers with the latest Windows® updates recommended by your Network Administrator.
6. Exit all other Windows® programs currently running on the Quorum Server computer.
7. Temporarily disable antivirus software running on the Quorum Server computer. Some heuristic-based intrusion detection systems prevent the installation of Quorum software. Re-enable antivirus software after installing Quorum software.

Upgrade to the Latest Quorum Server Software

This section provides instructions for upgrading Quorum Server software on the Quorum Server computer to Quorum Server software version 5.1.

✶ When upgrading Quorum Server software, do not uninstall the Quorum database. Quorum Server software upgrade procedures only require the uninstallation of the previous version of Quorum Server software.

✶ Performance tuned Quorum Server settings must be retuned after a Quorum Server software upgrade.

To upgrade Quorum Server software to version 5.1

1. Use **Add/Remove Programs** on the **Control Panel** to remove the currently installed version of Quorum Server software from the Quorum Server computer.
2. Restart the Quorum Server computer.
3. After the Quorum Server computer restarts, log in to the Quorum Server computer.
4. Locate the Quorum Server software installer, **Quorum-5.1.x-xxx-xxx.msi**, that you obtained from Ross Video Technical Support.
5. Double-click **Quorum-5.1.x-xxx-xxx.msi** to run the **Ross Quorum Setup** wizard.

   For the complete installation procedure, refer to the chapter “**Software Installation**” on page 5–1.
6. Retune the Quorum Server settings by completing the procedure “**To tune Quorum Server settings in the jvm.conf file:**” on page 5–9.
7. Update your Quorum product key in **Ross Platform Manager**.

For More Information on...

- updating a Quorum Server license key, refer to the chapter “**Software Licensing**” on page 7–1.

Software Licensing

Ross Video uses a product key and feature license keys to control user access to Quorum features. You can obtain a Quorum product key from Ross Video Technical Support. This chapter provides instructions for licensing a Quorum Server.

✶ When a Quorum Server computer has multiple active network adapters (wireless, wired, or multiple NIC cards), disabling an adapter after licensing the Quorum Server may invalidate your Quorum product key. To re-license your Quorum Server, restart the server and reactivate the product key.

This chapter discusses the following topics:

- Ross Platform Manager Setup
- Activate Quorum Product Keys
- License Your Quorum Software

Ross Platform Manager Setup

Complete the following sections to initially set up Ross Platform Manager for a Quorum system.

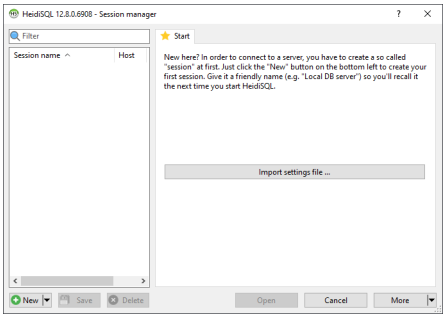
Create the Ross Platform Manager Database

You must create a MariaDB database named “platform_manager” before you install Ross Platform Manager software on the Ross Platform Manager computer in your Quorum system.

To create the Ross Licensing Service database

1. From the Windows Desktop, use the **Windows** menu to select **All Programs > MariaDB 11.4 (x64) > HeidiSQL**.

   The **HeidiSQL Session Manager** window opens.

   The first time you open HeidiSQL, you must create a session to connect to the MariaDB Server. Complete the following steps to create a MariaDB Server session:

   a. In the **Session name** column, right-click the **Unnamed** session name and select **Rename** from the shortcut menu.

   b. Enter a name that describes the session, for example: `Local Quorum DB`.

   c. In the **Password** box of the **Settings** tab, enter the **password** that was set in step **10** of the “**To install MariaDB database software for an initial installation of Quorum software**” on page 5–2.

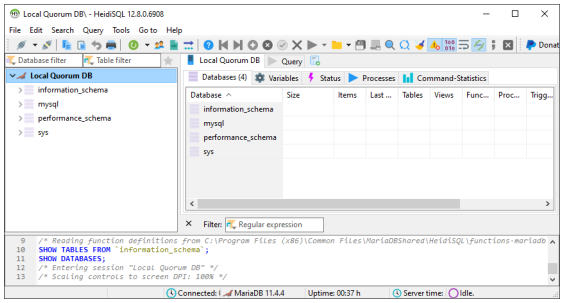
   d. Click **Save**.

   The Session Manager saves the defined session.

2. In the **Session name** column, select the session to connect to the MariaDB Server.

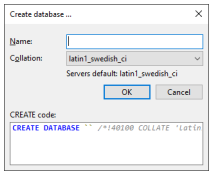
3. Click **Open**.

   The **HeidiSQL Session Manager** window closes, and the **Session** window opens.

4. In the **Object Browser** tree view, right-click the **session name** and select **Create new > Database** from the shortcut menu.

   The **Create database** dialog box opens.



5. In the **Name** box, enter the following name:

   `platform_manager`

6. Click **OK**.

   The **Create database** dialog box closes, and **HeidiSQL** adds the **quorum** database to the **Object Browser** tree view.

7. In the **Session** window, use the **File** menu to select **Exit**.

   The **Session** window closes.

Install Ross Platform Manager

After you create the platform_manager database, you can install Ross Platform Manager to manage your Quorum product keys.

To install Ross Platform Manager software

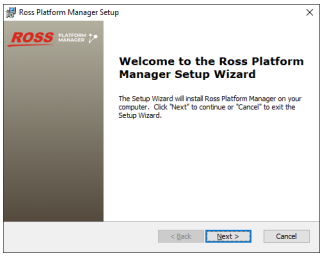
1. Contact Ross Video Technical Support to obtain the most recent **Ross Platform Manager** software installer.
2. On the **Ross Platform Manager** computer, exit all currently running Windows® applications.
3. Temporarily disable antivirus software running on the Ross Platform Manager computer.

   Some heuristic-based intrusion detection systems prevent the installation of Ross Platform Manager software.

4. Copy the **Ross Platform Manager** software installer obtained from Ross Video Technical Support to your Ross Platform Manager Server computer.
5. Navigate to the folder where you copied the Ross Platform Manager software installer.
6. Double-click **PlatformManager-X.X.X-XXXX.XX.XX-XX.XX.msi**.

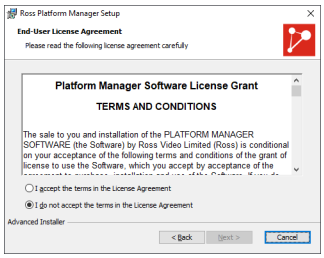
   If a **Security Warning** message displays, click **Run**.

   The **Ross Platform Manager Setup** wizard opens.



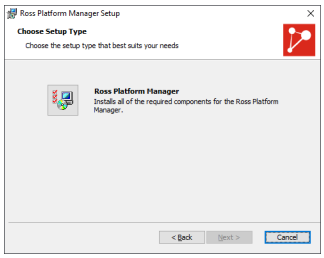
7. Click **Next**.

   The **End-User License Agreement** screen opens.



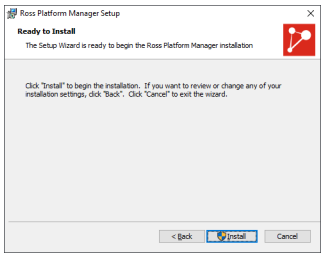
8. Read the **Platform Manager Software License Grant**.
9. Select the **I accept the terms of the License Agreement** option.
10. Click **Next**.

    The **Choose Setup Type** screen opens.



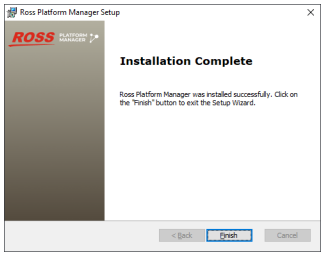
11. Click the **Ross Platform Manager** icon.

    The **Ready to Install** screen opens.



12. Click **Install**.

    After the Ross Platform Manager installation completes, the **Installation Complete** screen opens.



13. Click **Finish**.

    The **Ross Platform Manager Setup** wizard closes and adds the **Ross Platform Manager** icon to the Desktop. Ross Platform Manager Server starts automatically after the installation of the Ross Platform Manager software.

14. Re-enable antivirus software.

Configure the Ross Platform Manager Port Number

Before you can run Ross Platform Manager in your Quorum system, you must configure Ross Platform Manager to run on port number 3030 or the port number on which you ran Horizon.

To run Ross Platform Manager port number 3030

1. On the Ross Platform Manager Server computer, locate the **http.conf** file in the following folder.

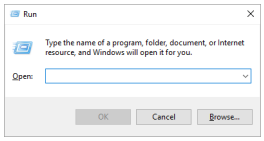
   `C:\Program Files\Ross Video\RossPlatformManager\configuration`

2. As an administrator use a text editor to open and edit the **http.conf** file.
3. In the **http.conf** file, locate the following setting:

   `wrapper.java.additional.41=-Dorg.eclipse.equinox.http.jetty.http.port=80`

4. Replace **80** with **3030** or the port number on which your Quorum Licensing Service ran.
5. Save the updated **http.conf** file and exit the text editor.
6. From the Windows Desktop, press **Windows Key+R**.

   The **Run** dialog box opens.

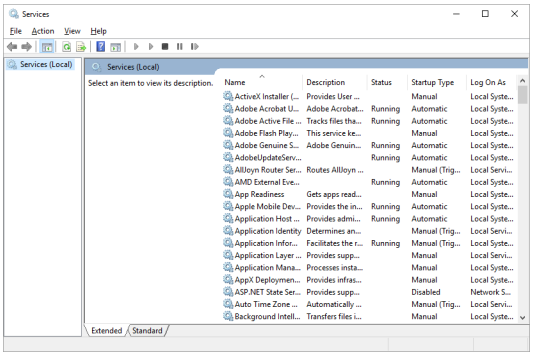


7. In the **Open** box, type the following application name:

   `services.msc`

8. Click **OK**.

   The **Services** window opens.



1. In the **Services** list, locate and select the **Ross Platform Manager** service.
2. Click **Restart** for the **Ross Platform Manager** service.
3. Use the **File** menu to select **Exit**.

   The **Services** dialog box closes.

Activate Quorum Product Keys

You must activate your Quorum product key in your Ross Platform Manager before you can use it to license your Quorum Server software.

To activate a product key in the Ross Platform Manager

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

   `http://<Ross Platform Manager Server>:3030`

2. Log in to the **Ross Platform Manager** web page as an **administrator**.

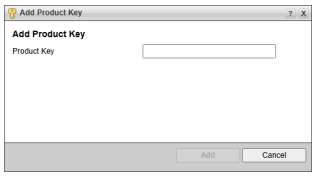
3. Point to the **Product Keys** icon in the toolbar and then select **Product Key Manager** from the menu.

   The **Product Key Manager** panel opens.

4. Add a Quorum or Caprica product key by completing the following steps:

   a. In the **Product Key Manager** panel toolbar, click the **Add Product Key** icon.

   The **Add Product Key** dialog box opens.



   b. In the **Product Key** box, enter your product key.

   c. Click **Add**.

   Ross Platform Manager adds the entered product key to the **Product Key Manager** panel.

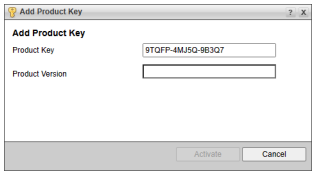
5. Activate your added Quorum or Caprica product keys by completing the following steps:

   a. Double-click a **Not Active** product key.

   The selected product key opens in the **Product Key View** panel.

   b. In the **Product Key View** panel toolbar, click the **Activate** icon.

   The **Add Product Key** dialog box opens.



   c. Enter the associated Quorum or Caprica version in the **Version** box.

   d. Click **Activate**.

6. After activating your product keys, close the **Ross Platform Manager** web page.

7. Open Quorum or Caprica to verify that your product keys license your applications as expected.

   You should not encounter **Invalid License** or **License Not Present** warnings.

License Your Quorum Software

After you have activated your Quorum product key on the Ross Platform Manager, you can license your Quorum Server software. Ross Video uses a product key to control access to Quorum. You can use your Quorum product key with the following licensing servers to license your Quorum software:

- **Ross Activation Licensing Server** — your Quorum system must have access to the Internet to use the Ross Activation licensing server.
- **Ross Platform Manager** — use this licensing server when your Quorum system does not have access to the Internet. The Ross Platform Manager must be installed on a computer in your local network that your Quorum system can access. For information on setting up the Ross Platform Manager, refer to the section "**Ross Platform Manager Setup**" on page 7–2 in the ***Quorum Installation Guide***.

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

For More Information on...

- contacting Ross Video Technical Support, refer to the section "**Contacting Technical Support**" on page 1–3.

Accessing Quorum

Quorum is installed on a server computer in your facility and accessed through a web browser. Before you can use Quorum, you must log in to Quorum.

To access Quorum

1. Verify that the **Ross Platform Manager** is installed on a computer in your network to which your **Quorum** computer can connect.

   For information on installing and configuring the Ross Platform Manager, refer to the section "**Ross Platform Manager Setup**" on page 7–2.

2. Verify the **Quorum** product key is activated on the **Ross Platform Manager** in your system.

   For information on using the Ross Platform Manager to activate product keys, refer to the section "**Activate Quorum Product Keys**" on page 7–6.

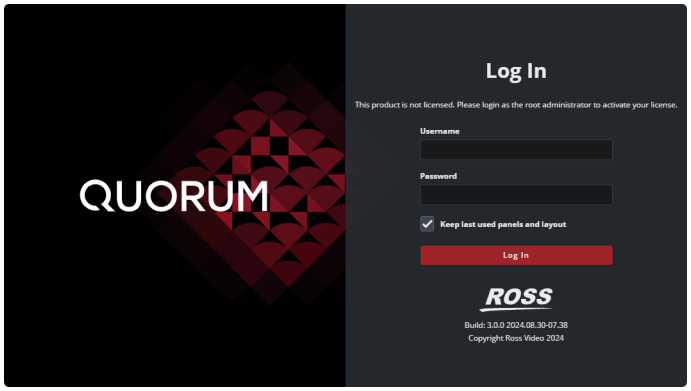
3. Use one of the following methods to open the **Quorum** web page:

   - On the desktop of your **Quorum** computer, double-click the **Ross Quorum** icon.
   - On your **Quorum** computer, use the **Start** menu to select **Ross Quorum** > **Ross Quorum**.
   - On a computer connected to the same subnetwork as your Quorum computer, use a supported web browser to open the following URL:

     `http://<Quorum_Server>:8059/`

     In the URL, `<Quorum_Server>` is the hostname or IP address of the Quorum Server in your Quorum system.

The **Log In** web page opens.

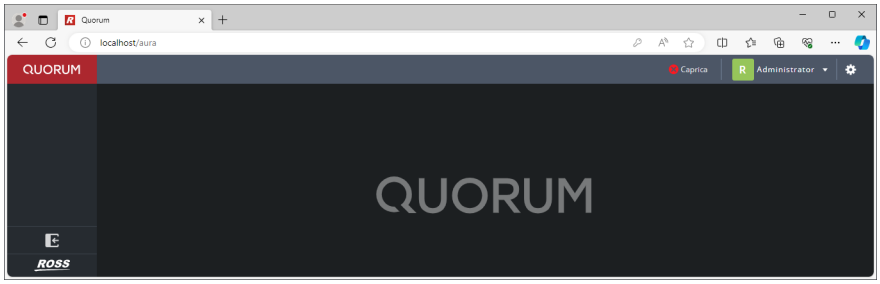


✶ If a message displays indicating that the system is in **maintenance** mode, the Quorum Server cannot communicate with the database. Please contact Ross Video support.

4. In the **Log In** section, enter the login credentials of a Quorum user with administrator privileges in the **Username** and **Password** boxes.

5. Click **Log In**.

   The **Quorum** opens.



✶ For security, the Quorum automatically logs you out after 30 minutes of inactivity.

6. After logging in to Quorum, you can license your Quorum Server software through the **Ross Activation Licensing Server** or **Ross Platform Manager**.

Ross Activation Licensing Server

When your Quorum system has access to the Internet, you can use the Ross Activation licensing server to activate your product key. You can obtain a Quorum product key from Ross Video Technical Support.

✶ When you activate a Quorum product key, your Quorum system computer must contact the Ross Activation licensing server through the Internet.

To use the Ross Activation Licensing Server to activate product keys

1. Verify that the **Quorum** computer can connect to the Internet.

2. Log in to **Quorum** as a user with **administrator privileges**.

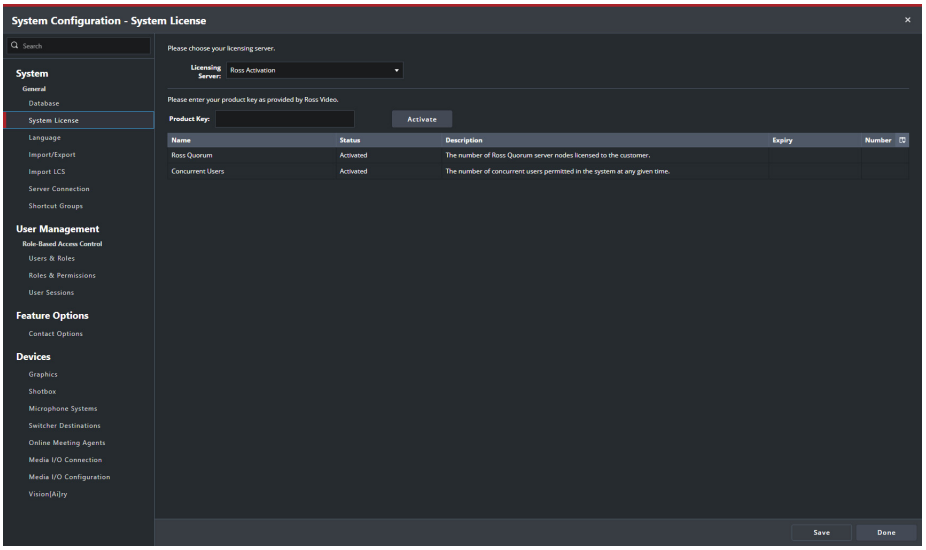
   Quorum opens.

3. On the main toolbar, click the **System Configuration** icon.

   The **System Configuration** window opens.

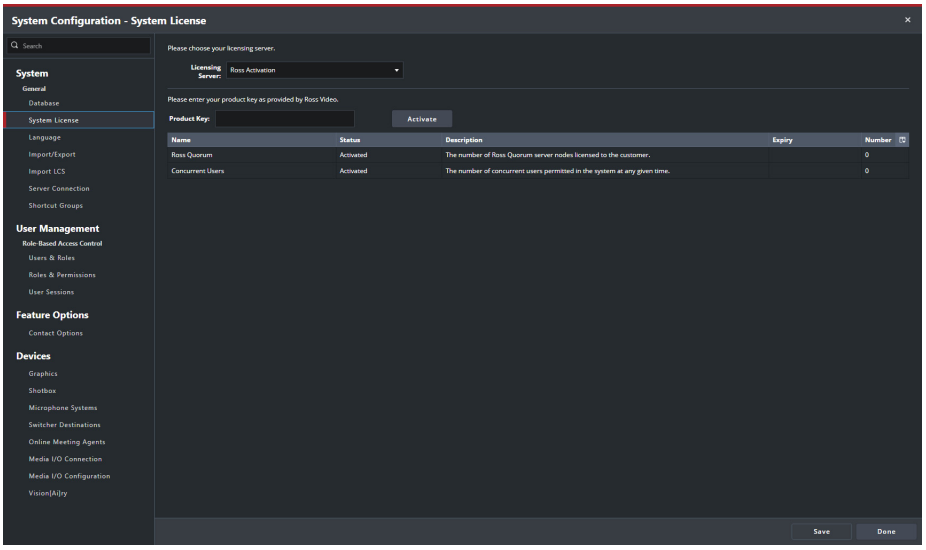
4. In the **System** section of the side navigation, click **System License**.

   The **System License** panel opens.



5. Obtain a Quorum product key from Ross Video Technical Support.
6. Use the **Licensing Server** list to select **Ross Activation**.
7. In the **Product Key** box, enter the product key obtained from Ross Video Technical Support.
8. Click **Activate**.

   The **System License** panel updates to display the feature licenses associated with the activated product key.



   The **Status** column displays one of the following states:

   - **Activated** — feature is active and available to Quorum users.
   - **Expires in # days** — feature availability for Quorum users expires in the displayed number of days.
   - **Expired** — feature has expired and is no longer available to Quorum users.
   - **Invalid MAC** — feature license key is invalid for the active network interface card of the Quorum computer.
   - **Not Purchased** — feature is not accessible to Quorum users, but it is available for purchase.

9. Click **Save**.

   Quorum saves the set licensing configuration.

10. Click **Done** when you want to close the **System Configuration** window.

    When the **System Configuration** window contains unsaved changes, the **Unsaved Changes** alert opens to enable you to save your changes before closing the window.

Ross Platform Manager

When your Quorum system does not have access to the Internet, use the Ross Platform Manager licensing server to activate your Quorum product key. You can obtain a Quorum product key from Ross Video Technical Support.

To use the Ross Platform Manager licensing server to activate product keys

1. Verify that the **Ross Platform Manager** is installed on a computer in your network to which your **Quorum** computer can connect.

   For information on installing and configuring the Ross Platform Manager, section "**Ross Platform Manager Setup**" on page 7–2 in the ***Quorum Installation Guide***.

2. Activate your **Quorum** product key on the **Ross Platform Manager** in your system.

   For information on using the Ross Platform Manager to activate product keys, section "**Activate Quorum Product Keys**" on page 7–6 in the ***Quorum Installation Guide***.

3. Log in to **Quorum** as a user with **administrator privileges**.

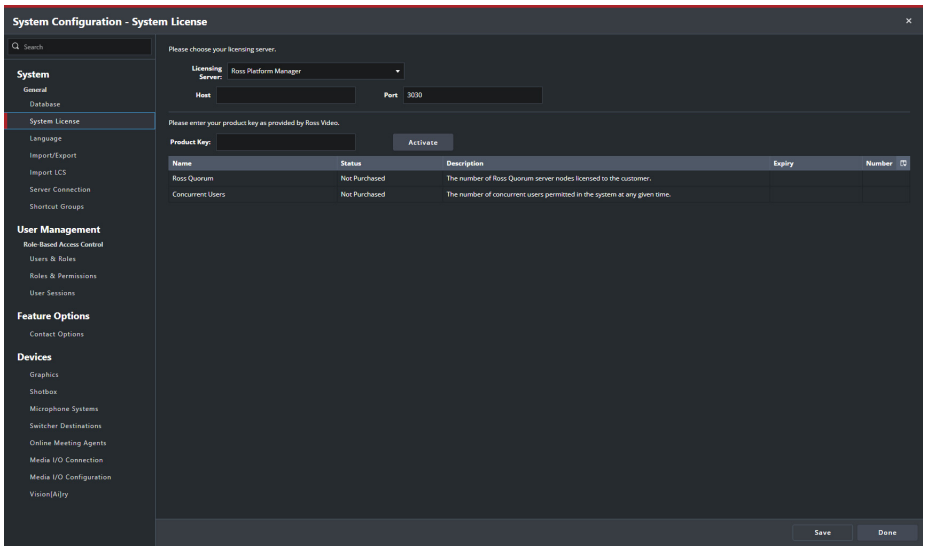
   Quorum opens.

4. On the main toolbar, click the **System Configuration** icon.

   The **System Configuration** window opens.

5. In the **System** section of the side navigation, click **System License**.

   The **System License** panel opens.



6. Obtain a Quorum product key from Ross Video Technical Support.

7. Use the **Licensing Server** list to select **Ross Platform Manager**.

8. In the **Host** box, enter the IP address or hostname of your **Ross Platform Manager Server** computer.

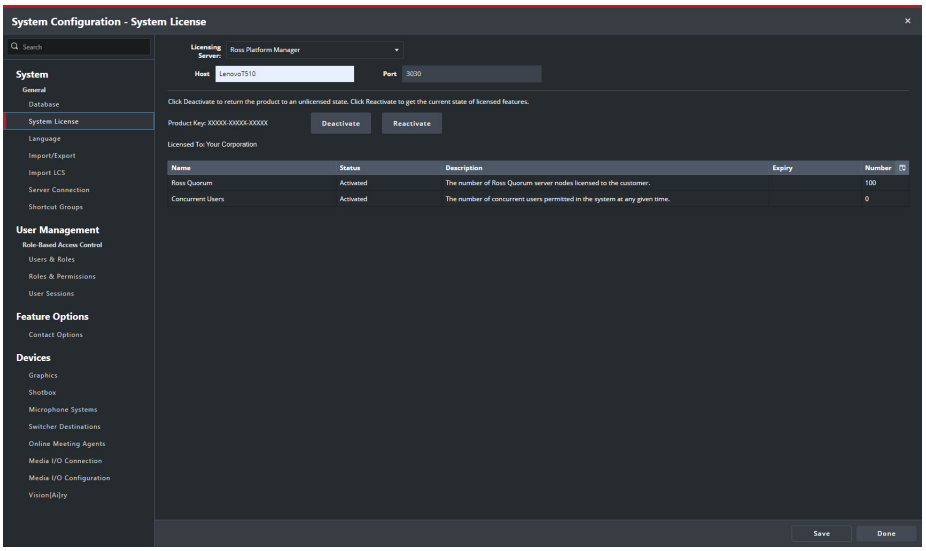
9. In the **Port** box, enter the network port number of your **Ross Platform Manager Server**.

   Ross Platform Manager Servers in a Quorum system use port `3030` as the network port for unsecured HTTP connections. **Ross Platform Manager Servers** use port `443` for secure HTTPS connections.

10. In the **Product Key** box, enter the product key obtained from Ross Video Technical Support.

11. Click **Activate**.

    The **System License** panel updates to display the feature licenses associated with the activated product key.



    The **Status** column displays one of the following states:

    - **Activated** — feature is active and available to Quorum users.
    - **Expires in # days** — feature availability for Quorum users expires in the displayed number of days.
    - **Expired** — feature has expired and is no longer available to Quorum users.
    - **Invalid MAC** — feature license key is invalid for the active network interface card of the Quorum computer.
    - **Not Purchased** — feature is not accessible to Quorum users, but it is available for purchase.

12. Click **Save**.

    Quorum saves the set licensing configuration.

13. Click **Done** when you want to close the **System Configuration** window.

    When the **System Configuration** window contains unsaved changes, the **Unsaved Changes** alert opens to enable you to save your changes before closing the window.

Reactivate a Product Key

After purchasing new features for your Quorum system, the Quorum product key requires reactivation to make the purchased features available to Quorum users.

To reactivate a Quorum product key

1. Log in to **Quorum** as user with **administrator privileges**.

   Quorum opens.

2. On the main toolbar, click the **System Configuration** icon.

   The **System Configuration** window opens.

3. In the **System** section of the side navigation, click **System License**.

   The **System License** panel opens.

4. Click **Reactivate**.

   The **System License** pop-up message reports the status of your product key reactivation.

5. Click **Save**.

   Quorum saves the set licensing configuration.

6. Click **Done** when you want to close the **System Configuration** window.

   When the **System Configuration** window contains unsaved changes, the **Unsaved Changes** alert opens to enable you to save your changes before closing the window.

Deactivate a Product Key

When you want to move Quorum software to another computer, you must first deactivate the Quorum product key on the current Quorum computer.

To deactivate a Quorum product key

1. Log in to **Quorum** as user with **administrator privileges**.

   Quorum opens.

2. On the main toolbar, click the **System Configuration** icon.

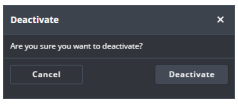
   The **System Configuration** window opens.

3. In the **System** section of the side navigation, click **System License**.

   The **System License** panel opens.

4. Click **Deactivate**.

   The **Deactivate** alert opens.



5. Click **Deactivate** to deactivate the product key or **Cancel** to keep it active.

   The **Deactivate** alert closes. When you clicked **Deactivate**, the product key displayed in the **Product Key** box deactivates. You can now use the deactivated product key to activate Quorum software on another computer.

   Deactivating a product key unlicenses and removes Quorum user access to all the Quorum features associated with the product key.

6. Click **Save**.

   Quorum saves the set licensing configuration.

7. Click **Done** when you want to close the **System Configuration** window.

   When the **System Configuration** window contains unsaved changes, the **Unsaved Changes** alert opens to enable you to save your changes before closing the window.

Caprica Communication Configuration

This chapter provides instructions for connecting the Quorum Server to the Caprica Server in your Quorum system. The Caprica Server connection enables Quorum to control the switcher, graphics engine, cameras, and other devices in your meeting control system.

✶ To connect the Caprica Server and the Quorum Server in your Quorum system, you must enter the IP address of the Quorum system on both servers.

The following topics are discussed in this chapter:

- Set the Connection Between Quorum and Caprica Servers
- Set the Quorum System IP Address on the Caprica Server

Set the Connection Between Quorum and Caprica Servers

On a Quorum Server, the IP address of the Quorum Server and the Caprica port number are set in the Caprica Connection panel of the System Configuration window.

To set the Quorum Server IP Address and Caprica port to enable Caprica to connect

1. Log in to **Quorum** as a user with **administrator privileges**.

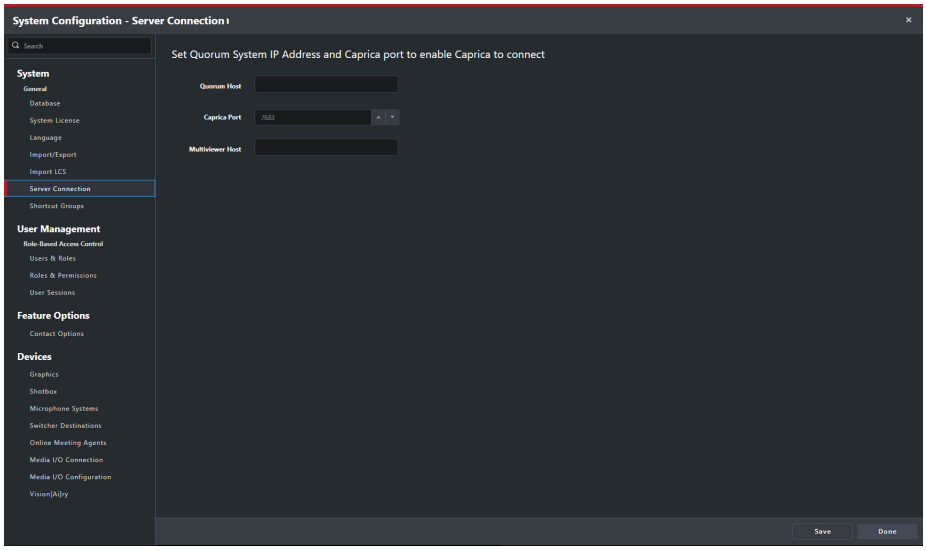
   Quorum opens.

2. On the main toolbar, click the **System Configuration** icon.

   The **System Configuration** window opens.

3. In the **System** section of the side navigation, click **Server Connection**.

   The **Server Connection** panel opens.



4. In the **Quorum Host** box, enter the **hostname** or **IP address** of your **Quorum Server**.

5. The default `7683` port number works for most Caprica Servers. If your Caprica Server uses a different port number than the default, you can use the **Caprica Port** box to enter or select the port number for your Caprica Server.

6. In the **Multiviewer Host** box, enter the **hostname** or **IP address** of the Media IO Server that sends the Multiviewer feeds to your Quorum Server. This is usually the IP address of your Quorum Server. The Media IO Server can run on a different computer than the Quorum Server.

7. Click **Save**.

   Quorum saves the configured IP address of your Quorum Server and the Caprica port number.

8. Click **Done**.

   The **System Configuration** window closes. When the **System Configuration** window contains unsaved changes, the **Unsaved Changes** alert opens to enable you to save your changes before closing the window.

   Follow the procedure in the next section to set the Quorum system IP address on your Caprica Server.

Set the Quorum System IP Address on the Caprica Server

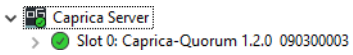
After setting the IP address of your Quorum Server and the Caprica port number on the Quorum Server, you are ready to complete the connection by setting the IP address of your Quorum Server on the Caprica Server. On a Caprica Server, the IP address of the Quorum Server is set in the Quorum device.

To set the Quorum System IP Address on your Caprica Server

1. Verify that a **Caprica Server** is connected to your internal network as part of your Quorum system.
2. On a 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.
3. 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**.

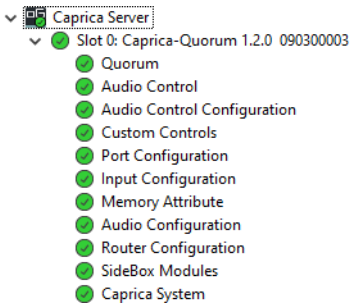
   DashBoard opens.
4. In the **DashBoard Tree View**, expand the **Caprica Server** node.

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



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

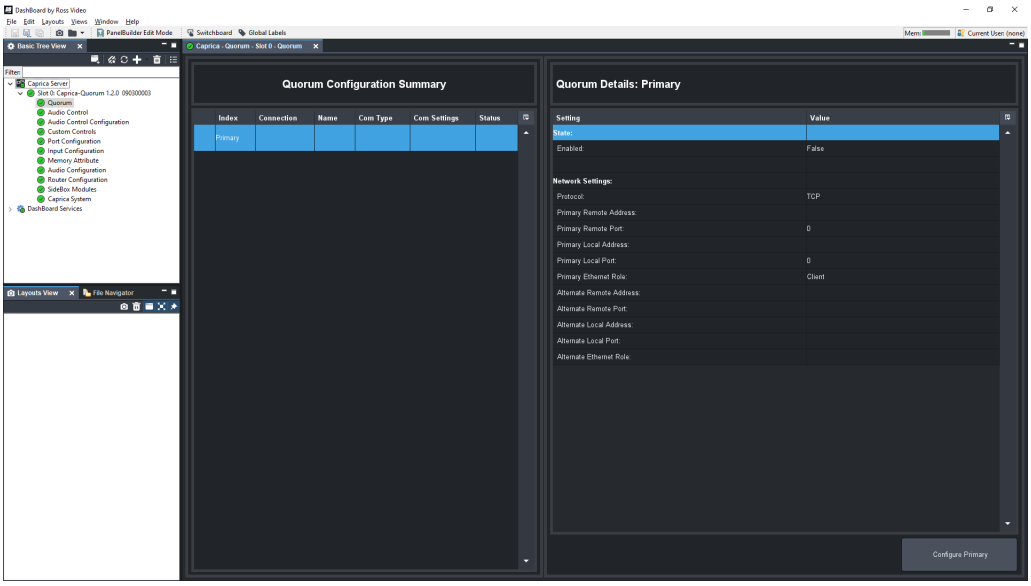
   The **Slot 0: Caprica** node displays the available Caprica Server clients.



6. Double-click the **Quorum** node.

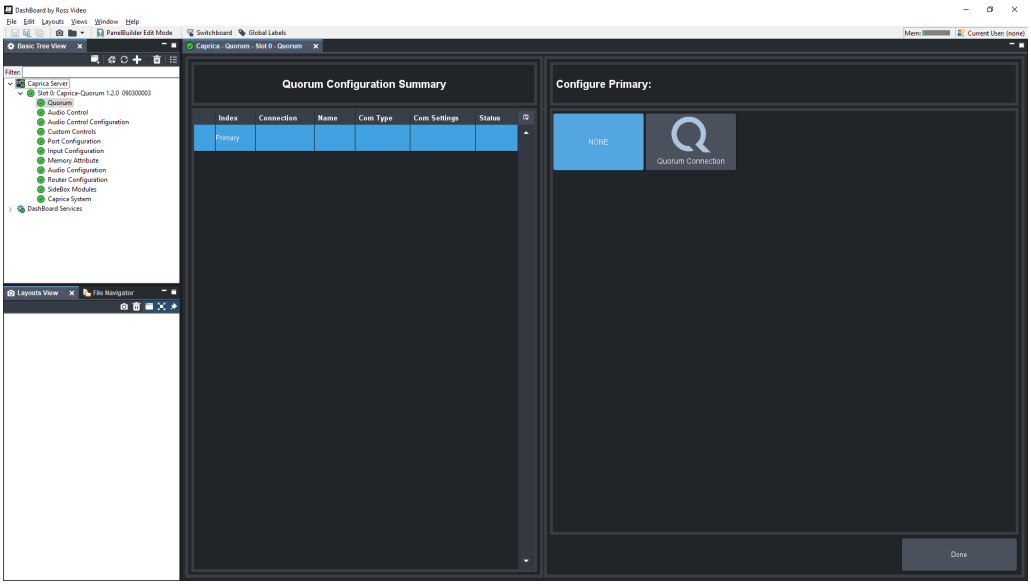
   The **Quorum** client opens in the **Device View**.
7. Use the **Window** menu to select **Full Screen**.

   The **Quorum** client expands to full screen view.



8. In the **Index** column of the **Quorum Configuration Summary** table, double-click the **Primary** Quorum connection.

   The **Configure Primary** panel opens.

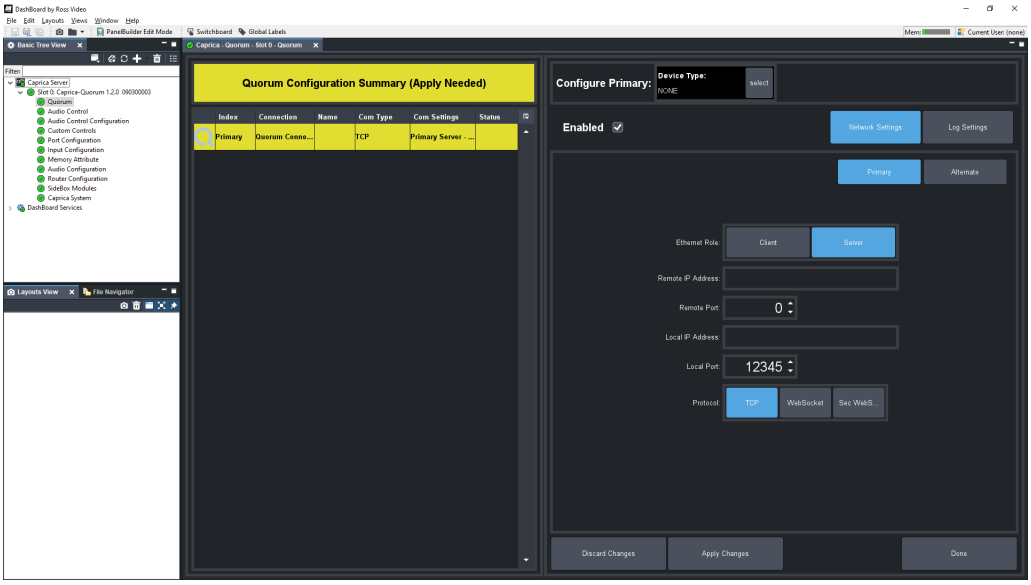


9. In the **Configure Primary** panel, click **Quorum Connection**.

   The **Configure Primary** panel displays the available settings.

10. Click **Network Settings**.

    The **Configure Primary** panel displays the **Network Settings** for the **Primary OD Connection**.



11. In the **Configure Primary** panel, select the **Enable** check box to enable Caprica Server to Quorum Server communication by WebSocket.

12. Use the following settings to configure the **Network Settings** for the **Primary OD Connection**:
    - **Ethernet Role** — click **Client**.
    - **Remote IP Address** — enter in this box the **IP address** or **hostname** of your **Quorum Server**.
    - **Remote Port** — in this box, enter or select **7683** as the port number that your Quorum Server uses to communicate with your Caprica Server.
    - **Local IP Address** — enter `0.0.0.0` in this box.
    - **Local Port** — enter `0` in this box.
    - **Protocol** — click **WebSocket** to set the communication protocol.
13. Click **Apply Changes** to save the Quorum Connection device settings.
14. In the **Quorum Main** toolbar, verify that the **Caprica** icon is a (green check mark) indicating that the Quorum Server is connected to the Caprica Server in your Quorum system.

    A (red X) **Caprica** icon indicates that the servers in your Quorum system are disconnected. To repair your server connection, check the following settings:
    - Quorum System IP address is set identically on your Quorum Server and your Caprica Server.
    - Quorum Connection device settings match those in step **12** on page 8-5.

For More Information on...

- Caprica Server configuration, refer to the ***Caprica User Guide for Quorum***.
- Caprica switcher device configuration, refer to the ***Caprica User Guide for Quorum***.

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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.

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2.2 Sub-Licensing. Licensee shall not grant sub-licenses of the Software.

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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.

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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.

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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

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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.

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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.

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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.

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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.

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Version 2, June 1991

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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
```

```
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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
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Unix systems for simple password protection. Copyright 1996 Aki Yoshida,
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