

SteelCentral™ Controller for SteelHead™ Mobile Installation Guide

Version 4.8

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riverbed®

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NetApp Manageability Software Development Kit (NM SDK), including any third-party software available for review with such SDK which can be found at <http://communities.netapp.com/docs/DOC-1152>, and are included in a NOTICES file included within the downloaded files.

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Preface

Read this preface for an overview of the information provided in this guide. This preface includes the following sections:

- [“About This Guide” on page 7](#)
- [“Documentation and Release Notes” on page 8](#)
- [“Contacting Riverbed” on page 9](#)

About This Guide

The *SteelCentral Controller for SteelHead Mobile Installation Guide* provides an overview of SteelCentral Controller for SteelHead Mobile (Mobile Controller) features and specifications. This guide describes how to install and connect the Mobile Controller to your network.

This guide is written for storage and network administrators who are familiar with administering and managing WANs using common network protocols such as TCP, CIFS, HTTP, FTP, and NFS.

You must also be familiar with administering and managing a network of deployed SteelHeads.

This guide includes information relevant to the following products:

- Riverbed SteelCentral Controller for SteelHead Mobile (Mobile Controller)
- Riverbed Mobile Controller (virtual edition) (Mobile Controller-v)
- Riverbed SteelHead Mobile (SteelHead Mobile)
- Riverbed SteelHead (SteelHead)

Audience

This guide is written for storage and network administrators who are familiar with administering and managing WANs using common network protocols such as TCP, CIFS, HTTP, FTP, and NFS.

This guide also assumes that you are familiar with administering and managing a network of deployed SteelHeads.

Document Conventions

This guide uses the following standard set of typographical conventions.

Convention	Meaning
<i>italics</i>	Within text, new terms and emphasized words appear in <i>italic</i> typeface.
boldface	Within text, CLI commands, CLI parameters, and REST API properties appear in bold typeface.
Courier	Code examples appear in Courier font: <pre>amnesiac > enable amnesiac # configure terminal</pre>
< >	Values that you specify appear in angle brackets: interface <ip-address>
[]	Optional keywords or variables appear in brackets: ntp peer <ip-address> [version <number>]
{ }	Elements that are part of a required choice appear in braces: {<interface-name> ascii <string> hex <string>}
	The pipe symbol separates alternative, mutually exclusive elements of a choice. The pipe symbol is used in conjunction with braces or brackets; the braces or brackets group the choices and identify them as required or optional: { delete <filename> upload <filename>}

Documentation and Release Notes

To obtain the most current version of all Riverbed documentation, go to the Riverbed Support site at <https://support.riverbed.com>.

If you need more information, see the Riverbed Knowledge Base for any known issues, how-to documents, system requirements, and common error messages. You can browse titles or search for keywords and strings. To access the Riverbed Knowledge Base, log in to the Riverbed Support site at <https://support.riverbed.com>.

Each software release includes release notes. The release notes identify new features in the software as well as known and fixed problems. To obtain the most current version of the release notes, go to the Software and Documentation section of the Riverbed Support site at <https://support.riverbed.com>.

Examine the release notes before you begin the installation and configuration process.

Contacting Riverbed

This section describes how to contact departments within Riverbed.

- **Technical support** - If you have problems installing, using, or replacing Riverbed products, contact Riverbed Support or your channel partner who provides support. To contact Riverbed Support, open a trouble ticket by calling 1-888-RVBD-TAC (1-888-782-3822) in the United States and Canada or +1 415-247-7381 outside the United States. You can also go to <https://support.riverbed.com>.
- **Professional services** - Riverbed has a staff of professionals who can help you with installation, provisioning, network redesign, project management, custom designs, consolidation project design, and custom coded solutions. To contact Riverbed Professional Services, email proserve@riverbed.com or go to <http://www.riverbed.com/services-training/Services-Training.html>.
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CHAPTER 1 Overview of SteelHead Mobile 4.8

This chapter provides an overview of SteelHead Mobile 4.8. It includes the following sections:

- [“Overview of the Mobile Controller Solution” on page 11](#)
- [“Software and Configuration Requirements” on page 14](#)
- [“Firewall Requirements” on page 17](#)
- [“Antivirus Compatibility” on page 17](#)
- [“VPN Requirements” on page 18](#)
- [“Smart Card Access Software” on page 19](#)
- [“Safety Guidelines” on page 20](#)
- [“New Features in the SteelHead Mobile 4.8 Software” on page 20](#)
- [“New Feature in the SteelHead Mobile 4.8.2 Software” on page 21](#)
- [“Upgrading to SteelHead Mobile 4.8 Software” on page 21](#)

When using this guide, if you are not familiar with the installation, configuration, and management of networks with deployed SteelHeads, consult the documents listed below at this site:

<http://www.riverbed.com>.

- *SteelHead Installation and Configuration Guide*
- *SteelHead Management Console User’s Guide*
- *SteelHead Deployment Guide*

Before you begin the installation and configuration process for the Mobile Controller, you must select a network deployment. For specific Mobile Controller deployment options, see the *SteelHead Deployment Guide*.

Overview of the Mobile Controller Solution

The Mobile Controller solution enables you to optimize application protocols such as HTTP and MAPI and to reduce bandwidth for other protocols, providing LAN-like performance to remote users who are accessing your computer network using any type of remote access (dial-up, broadband, wireless, and so forth). Managed by a Mobile Controller, remote users employ client software to exchange optimized data with a SteelHead. The controller can be either a Mobile Controller appliance or a Mobile Controller-v.

The Mobile Controller solution enables you to optimize traffic for the following types of users:

- **Mobile users** - Mobile users are employees who connect to the WAN from various locations and also connect to the LAN locally.
- **Home users** - Home users are employees who use computers that connect to the corporate network.
- **Small branch office users** - Small branch office users are located at offices with fewer than ten employees that connect to the WAN but do not require a standard SteelHead.

Definition of Terms

The following terms are used to describe features, attributes, and processes in the Mobile Controller.

Term	Definition
Endpoint	An endpoint is a client computing device, such as a personal computer.
Client install package	<p>A client install package installs SteelHead Mobile software onto each of your endpoints.</p> <p>A package created on a Mobile Controller contains complete endpoint settings, including the fully qualified domain name (FQDN) of the Mobile Controller and a certificate that secures communication between the client and the controller.</p> <hr/> <p>Note: The default package that ships with the Mobile Controller contains the default (initial) policy, with complete endpoint settings. The default package is designed to be suitable for most network environments. Typically, you install and deploy SteelHead Mobile clients without modifying the default policy. Consider deploying the SteelHead Mobile client software to your endpoints using the policy defaults and modifying them only as necessary. For detailed information about the default policy settings, see the <i>SteelCentral Controller for SteelHead Mobile User's Guide</i>.</p>
Policy	A policy specifies computer-specific software settings for acceleration (such as protocol and SSL settings) and endpoints (such as data store size and Mobile Controller to connect to). A policy is required for optimization to occur.
Assignment	An assignment occurs when a policy is matched to a group ID (GID).
Group ID (GID)	<p>A group ID (GID) governs which policies and packages the Mobile Controller provides to endpoints. The GID enables you to assign policies to groups of endpoints. When you create the package, you can assign a GID to it. The GID is associated with the endpoint upon installation. The Mobile Controller subsequently uses the GID to identify the endpoint and provide assigned policies and updates.</p> <p>Group ID was called Deployment ID in Mobile Controller 2.x and earlier.</p>
Demilitarized Zone (DMZ)	A Demilitarized Zone (DMZ) is a computer or small subnetwork that sits between a trusted internal network, such as a corporate private LAN, and an untrusted external network, such as the public Internet. Typically, the DMZ contains devices accessible to Internet traffic, such as web (HTTP) servers, FTP servers, SMTP (email) servers, and DNS servers.

Mobile Controller Components

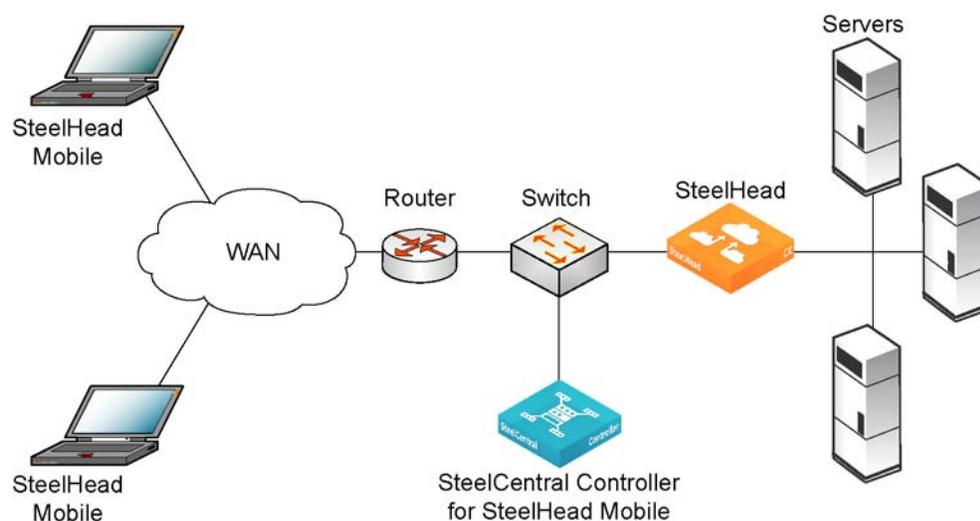
A Mobile Controller deployment consists of the following components:

- Mobile Controller** - The Mobile Controller acts as a gateway for remote users and is installed at a data center or at the server side of the WAN, where it is accessible to users. The Mobile Controller features a web-based GUI, the Management Console, that you use to centrally manage endpoints. You can also use the Management Console for endpoint software upgrades, licensing, reporting, and monitoring. Each Mobile Controller appliance and Mobile Controller-v for ESXi supports up to 4000 concurrent users. Each Mobile Controller-v for Riverbed Services Platform (RSP) and Mobile Controller-v for Virtual Services Platform (VSP) supports up to 100 concurrent users.
- SteelHead Mobile Client** - The SteelHead Mobile client enables endpoint PCs and Macs to optimize data when connected to a Mobile Controller. You distribute SteelHead Mobile software to endpoints using *packages*. You create packages using the Management Console, and you deploy them to your endpoints using the deployment tool of your choice. You can use a commercial deployment tool (for example, Microsoft SMS, Active Directory, or Altiris) to deploy packages, or you can email the link to your remote users. For detailed information about deployment options for packages, see the *SteelCentral Controller for SteelHead Mobile User's Guide*.
- SteelHead** - SteelHeads deployed throughout the network optimize data generated and accessed by end users. The Mobile Controller allows SteelHead Mobile clients to exchange optimized data with the SteelHead. For details on the SteelHead, see the *SteelHead Deployment Guide* and the *SteelHead Management Console User's Guide*.

When you start the SteelHead Mobile client, it accesses the specified Mobile Controller to obtain a license and a policy. After the endpoint retrieves a license and a policy from the Mobile Controller, traffic can be optimized between the SteelHead Mobile client and the server-side SteelHead. The SteelHead Mobile client performs data optimization using the same mechanisms as a client-side SteelHead. The endpoint maintains a connection with the Mobile Controller to download new policies from the Mobile Controller. This connection also enables the Mobile Controller to monitor your endpoints and to upload logs from them.

Figure 1-1 shows a typical Mobile Controller deployment. The Mobile Controller is located at the main data center. SteelHead Mobile clients communicate with the Mobile Controller for management and reporting purposes. SteelHead Mobile clients are optimized by SteelHeads at the data center.

Figure 1-1. Typical Mobile Controller Deployment



Software and Configuration Requirements

This section provides information about product dependencies and compatibility.

Mobile Controller

The following table summarizes the software and configuration requirements for deploying the Mobile Controller.

Component	Software and Configuration Requirements
Mobile Controller Console	<p>A Mobile Controller console is any computer (including Microsoft Surface Pro tablets) that supports a web browser with a color image display.</p> <p>The Mobile Controller console has been tested with Mozilla Firefox 24 ESR and Microsoft Internet Explorer 8 and 9.</p> <p>JavaScript and cookies must be enabled in your web browser.</p> <p>If you want to encrypt your communication, you must have an SSL-capable browser.</p> <p>No particular operating system is required.</p>

Component	Software and Configuration Requirements
SteelHead Mobile	<ul style="list-style-type: none"> • Operating Systems: <ul style="list-style-type: none"> – Windows 7 (32-bit and 64-bit versions) – Windows 8 (32-bit and 64-bit versions) – Windows 8.1 (32-bit and 64-bit versions) – Windows 10 (32-bit and 64-bit versions) – Windows Server 2008 and Windows Server 2012
	<hr/> <p>Note: For Windows operating systems, Windows XP, 2000, 2003, and Vista are no longer supported.</p> <hr/>
	<ul style="list-style-type: none"> – Mac OS X 10.10, 10.9, and 10.8 (Intel only). <hr/>
	<p>Note: For Macintosh operating systems, Mac OS X 10.7 and 10.6 are no longer supported.</p> <hr/>
	<ul style="list-style-type: none"> • SharePoint - SharePoint 2010 or SharePoint 2013 • CPU - 1 GHz or greater. • RAM - 1 GB or greater. (2 GB recommended.) • Disk - At least 256 MB of free disk space for the data store. <hr/>
	<p>Caution: Carefully consider the data store size for your SteelHead Mobile appliances. Changing the data store size later requires clearing the data store, which temporarily slows performance.</p> <hr/>
	<ul style="list-style-type: none"> • SteelHead Appliance - At least one SteelHead is required, running RiOS 4.x or later. • Mobile Controller - Either the Mobile Controller or the Mobile Controller-v for RSP, Mobile Controller-v for VSP, or Mobile Controller-v for ESXi is required. • Concurrent Clients Supported per Mobile Controller - Each Mobile Controller and Mobile Controller-v for ESXi supports up to 4000 concurrent users. The Mobile Controller 9000 can support up to 20,000 concurrent users. Each Mobile Controller-v for RSP (which can be converted to run on VSP) supports up to 100 concurrent users. • VPN Compatibility - For detailed VPN specifications, see “VPN Requirements” on page 18. • Smart Card Access Software - For a list of the smart card access software supported, see “Smart Card Access Software” on page 19.
	<p>If you are enforcing outbound security, your firewall must allow the following client application components:</p>
	<ul style="list-style-type: none"> • For Windows - rbtdebug.exe, rbtmon.exe, shmobile.exe, and rbt sport.exe • For Mac OS X - rbtdebug, rbtmond, rbt sport, and rbtuseragentd
	<p>The Windows SteelHead Mobile client software must be installed on a New Technology File System (NTFS). Installation on a FAT or FAT32 file system is not supported.</p>
	<p>Administrator privileges are required to install SteelHead Mobile software. Limited or standard user privileges are required to run or upgrade the software.</p>
	<p>You cannot have more than one SteelHead Mobile software installation per endpoint. Fast user switching is also not supported.</p> <hr/>

Mobile Controller-v for RSP

The following table summarizes the hardware, software, and configuration requirements for deploying the Mobile Controller-v for Riverbed Services Platform (RSP).

Component	Hardware and Software Requirements
Memory and processor	3 GB of RAM, 1 processor
Hard disk	At least 20 GB
Networks and serial ports	2 networks, 1 serial port
Licenses	A total of 100 concurrent user licenses and 200 users that are connected but not optimized. (Only 100 can be optimized at a time.)

For detailed information, see [“Installing Mobile Controller-v for RSP” on page 35](#) and the *Riverbed Services Platform Installation Guide*.

Mobile Controller-v for VSP

The following table summarizes the hardware, software, and configuration requirements for deploying the Mobile Controller-v for Virtual Services Platform (VSP).

Component	Hardware and Software Requirements
Memory and processor	3 GB of RAM, 1 processor
Hard disk	At least 20 GB
Networks and serial ports	2 networks, 1 serial port
Licenses	A total of 100 concurrent user licenses and 200 users that are connected but not optimized. (Only 100 can be optimized at a time.)

For detailed information, see [“Installing Mobile Controller-v for VSP” on page 55](#) and the *SteelHead EX Management Console User’s Guide*.

Mobile Controller-v for ESXi

Mobile Controller-v for ESXi is supported on VMware ESXi 5.0, 5.1, and 5.5. Install and configure Mobile Controller-v for ESXi using VMware VI or the VMware vSphere Client.

Virtual machine snapshots are not supported by Mobile Controller-v for ESXi.

For detailed information about Mobile Controller-v for ESXi, see [“Installing Mobile Controller-v for ESXi” on page 41](#).

Firewall Requirements

This section lists the required firewall settings for Mobile Controller deployments.

Port requirements:

- Ports 80 and 443 must be open for the server-side firewall management connection to the Mobile Controller. Port 22 must be open for access to the command-line interface (CLI).
- Either port 80 or port 443 and port 7870 must be open for the connection to the SteelHead Mobile clients.
- For out-of-path deployments, port 7810 must be open.
- For in-path deployments, port 7800 must be open.

If you are using application control, you must allow the following processes:

- **For Windows** - rbtdebug.exe, rbtmon.exe, rbtsport.exe, and shmobile.exe
- **For Mac OS X** - rbtsport, rbtmond, rbtuseragentd, and rbtdebug

Antivirus Compatibility

The SteelHead Mobile 4.8 software has been tested with the following antivirus software with no impact on performance:

For Windows systems

- McAfee Internet Security Suite 2010
- Microsoft Windows Firewall (allow rbtsport)
- Symantec Endpoint Protection 11.0

For Mac systems

- IP Firewall (IPFW)
- Mac OS X Application Firewall
- McAfee Internet Security
- Symantec for Mac

Earlier Releases

- CA Anti-Virus 2009
- CA eTrust Anti-Virus r8.x
- Cisco Security Agent 5.2
- McAfee VirusScan 10.0
- McAfee VirusScan Professional 9.0
- McAfee VirusScan Plus 2009
- McAfee Internet Security Suite 2009

- McAfee Internet Security Suite 2007
- McAfee Internet Security Suite 2006
- McAfee Internet Security Suite 2005
- McAfee Internet Security Suite 2004
- Norton AntiVirus 2010 with Antispyware
- Norton AntiVirus 2009
- Norton AntiVirus 2008
- Norton Internet Security 2010
- Symantec AntiVirus Corporate Edition 10.2
- Symantec AntiVirus Corporate Edition 10.1
- Symantec Internet Security Suite 2009
- Symantec Internet Security Suite 2008
- Symantec Endpoint Protection 11.0
- Trend Micro PC-Cillin 2009 Internet Security (including firewall)
- Trend Micro PC-Cillin 2008 Internet Security (including firewall)
- ZoneAlarm Internet Security Suite 3U

VPN Requirements

When deploying the SteelHead Mobile software, make sure that the VPN tunnel is not optimized. If the VPN tunnel uses TCP for transport, when you configure a policy, you must add a pass-through rule for the VPN port number connected to the client. Depending on your deployment scenario, this rule might be the first rule in the list. If the port uses UDP, no rule is required.

For details about configuring policies, see the *SteelCentral Controller for SteelHead Mobile User's Guide*.

VPN software products that use IPSec as the transport protocol do not need a pass-through rule because IPSec is its own non-TCP/IP protocol and, by default, the SteelHeads do not optimize it.

Note: For Cisco SSL VPN AnyConnect for use on both Windows and Macintosh platforms, you must configure a fixed-target rule or configure the Cisco ASA to allow TCP options if you plan to use in-path rules. For details, see the Riverbed Knowledge Base article at the following URL:

<https://support.riverbed.com/kb/solution.htm?id=501700000008i6G&categoryName=SteelHead+Mobile>

Note: The Cisco ASA 5500 Series (used only on the Windows platform) requires additional configuration to be compatible with the Mobile Controller. You can either configure an in-path, fixed-target rule for the Mobile Controller policy, or you can make configuration changes on the Cisco ASA. For details about configuring in-path, fixed-target rules for acceleration policies, see the *SteelCentral Controller for SteelHead Mobile User's Guide*. For details about configuring the Cisco ASA, consult the Riverbed Knowledge Base article located at the following URL:

<https://supportkb.riverbed.com/support/index?page=content&legacyid=501700000008i6G>

The SteelHead Mobile 4.8 software has been tested with the following VPN software:

Supported VPNs for Windows

- Array Networks (8.4.0.72)
- AT&T NetClient
- Checkpoint Remote Access Client (E75.30)
- Cisco SSL VPN AnyConnect (3.1.05170)
- Cisco VPN Client (5.0.07.0440)
- Citrix Access Gateway (10.1.121.10)

Note: Citrix Access Gateway Standard Edition 4.5 requires additional configuration to be compatible with the Mobile Controller. You must add a subnet for each of the following components: the data center, the server being accessed, the SteelHead, and the Mobile Controller. The server-side SteelHead must be configured as an out-of-path deployment.

- Dell SonicWall Aventail (10.6.4)
- F5 Firepass (7.0)
- Fortinet VPN (5.2.1.0605)
- Juniper Network Connect 7.4R9
- Junos Pulse (5.0R4.0)
- Microsoft PPTP
- Microsoft L2TP IPSEC VPN and SSL VPNNetilla SSL VPN
- NetMotion Mobility Client 10.10
- Nortel
- Palo Alto Networks (GlobalProtect 2.3.2)
- WatchGuard

Supported VPNs for Mac

- Apple VPN in PPTP mode
- Cisco SSL VPN AnyConnect (3.1.05170)
- Juniper Network Connect 7.4R9
- Junos Pulse (5.0R4.0)
- OpenVPN (2.3.6); Open VPN (Tunnelblick 3.4.3)
- Palo Alto VPN (GlobalProtect 2.3.2)

Smart Card Access Software

The SteelHead Mobile client has been tested with the Active Client 6.2 (Windows 7 only) access software.

Safety Guidelines

Follow the safety precautions outlined in the *Safety and Compliance Guide* when installing and setting up your equipment.

Caution: Failure to follow these safety guidelines can result in injury or damage to the equipment. Mishandling of the equipment voids all warranties. Please read and follow safety guidelines and installation instructions carefully.

Many countries require the safety information to be presented in their national languages. If this requirement applies to your country, consult the *Safety and Compliance Guide*. The guide contains the safety information in your national language. Before you install, operate, or service the Riverbed products, you must be familiar with the safety information. Refer to the guide if you do not clearly understand the safety information provided in the documentation.

New Features in the SteelHead Mobile 4.8 Software

The SteelHead Mobile 4.8 software includes the following functionality:

- **SSL Proxy Support** - With SteelHead Mobile 4.8 software, SSL proxy support can be enabled by using either the GUI or by using the command-line interface **policy id ssl proxy-support enable** command.

For more information about enabling SSL proxy support, see the *SteelCentral Controller for SteelHead Mobile User's Guide* and the *SteelHead Management Console User's Guide*.

For more information about SteelHead Mobile commands, see the *Riverbed Command-Line Interface Reference Manual*.

- **Support for Windows 10** - SteelHead Mobile 4.8 software now supports this version of the Microsoft operating system. The SteelHead Mobile 4.8 software has been qualified with Windows 10 build #10586 Cumulative Update (CU) KB3120677.

For more information about Windows 10 support, see the Riverbed Knowledge Base for any known issues, system requirements, and common error messages. You can browse for titles or search for keywords and strings. To access the Riverbed Knowledge Base, log in to the Riverbed Support site at <https://support.riverbed.com>.

Note: Each software release includes release notes. The release notes identify new features in the software as well as known and fixed problems. To obtain the most current version of the release notes, go to the Software and Documentation section of the Riverbed Support site at <https://support.riverbed.com>.

Examine the release notes before you begin the installation and configuration process.

New Feature in the SteelHead Mobile 4.8.2 Software

The SteelHead Mobile 4.8.2 software includes the following feature:

- **Citrix Independent Computing Architecture (ICA) over Secure Sockets Layer (SSL) Support for SteelHead Mobile (SHM)** – This feature activates Citrix-over-SSL optimization when specifying in-path rules for a policy.

For more information about optimization and in-path rules, see *the SteelCentral Controller for SteelHead Mobile User's Guide* and the *SteelHead Management Console User's Guide*.

Upgrading to SteelHead Mobile 4.8 Software

This section describes how to upgrade your Mobile Controller appliance to SteelHead Mobile 4.8 software. These instructions assume that you are familiar with the Riverbed CLI and Management Console.

To upgrade your software

1. Log in to the Management Console using the administrator account (admin).
2. Choose Configure > Maintenance > Software Upgrade page and select one of the following options:
 - **From URL** - Type the URL that points to the software image. Use one of the following formats:
`http://host/path/to/file`
`https://host/path/to/file`
`ftp://user:password@host/path/to/file`
`scp://user:password@host/path/to/file`
 - **From Riverbed Support Site** - Select the target release number from the drop-down list to download a delta image directly to the appliance from the Riverbed Support site. The downloaded image includes only the incremental changes. You do not need to download the entire image. The system downloads and installs the new image immediately after you click **Install**. To download and install the image later, schedule another date or time before you click **Install**.
 - **From Local File** - Browse your file system and select the software image.
 - **Schedule Upgrade for Later** - Select this check box to schedule an upgrade for a later time. Type the date and time in the Date and Time text boxes using these formats:
`yyyy/mm/dd` and `hh:mm:ss`.
3. Click **Install** to immediately upload and install the software upgrade on your system, unless you schedule it for later.

The software image can be quite large; uploading the image to the system can take a few minutes. Downloading a delta image directly from the Riverbed Support site is faster because the downloaded image includes only the incremental changes and is downloaded directly to the appliance.

As the upgrade progresses, status messages appear. After the installation is complete, you are reminded to reboot the system to switch to the new version of the software.

4. Choose Configure > Maintenance > Reboot/Shut Down and click **Reboot**.

The appliance can take a few minutes to reboot. This behavior is normal because the software is configuring the recovery flash device. Do not press Ctrl+C, unplug, or otherwise shut down the system during this first boot. There is no indication displayed during the system boot that the recovery flash device is being configured.

After the reboot, the Home page, the Software Upgrade page, and the Support page of the Management Console display the version upgrade.

CHAPTER 2 Managing Riverbed Licenses

This chapter describes the Riverbed licensing methods and how to manage Riverbed licenses. It includes the following sections:

- [“Riverbed Licensing Methods” on page 23](#)
- [“Automatic Licensing” on page 24](#)
- [“Manual and Token Licensing Using the Riverbed Licensing Portal” on page 25](#)

Riverbed Licensing Methods

A license is a string issued by Riverbed that embeds information that ties the license to data to prevent tampering. After you install the license, the system saves it in the configuration database and enables the functionality associated with the license. Riverbed employs the following licensing methods:

- **Automatic Licensing** - Once you connect your Mobile Controller to the network, the appliance automatically contacts the Riverbed Licensing Portal, which downloads and installs the licenses.
- **Manual Licensing** - You can manually fetch and activate licenses for Riverbed products using the Riverbed Licensing Portal. Go to <https://licensing.riverbed.com/index.htm> and follow the instructions to retrieve license keys. After you manually retrieve your license keys, you need to install them on the appropriate appliance.
- **Factory Licensing** - You can have all your Riverbed licenses installed at the factory for a small fee.
- **Token Method** - You use tokens to activate Riverbed software, such as the Mobile Controller-v, SteelHead-v appliance, and Core-v. For detailed information, see the respective installation guides for these products.

Automatic Licensing

Automatic licensing allows the appliance, once connected to the network, to automatically contact the Riverbed Licensing Portal to retrieve and install license keys onto the appliance. Automatic licensing simplifies inventory management and provides an automated mechanism of fetching licenses for Riverbed products without having to manually activate individual appliances and licenses.

If the appliance is behind a firewall, you can retrieve licenses at the Riverbed Licensing Portal using the email option or by downloading an XML file to the Mobile Controller. For detailed information, see [“Retrieving Licenses Using the Riverbed Licensing Portal” on page 25](#).

Automatic licensing also works over a web proxy. For details on setting up a web proxy, see the *SteelCentral Controller for SteelHead Mobile User’s Guide*.

Note: If automatic licensing fails, an error message appears in the Management Console. Go to the Riverbed Licensing Portal and follow the instructions for retrieving your licenses.

To download licenses on a new appliance

- Connect the new Mobile Controller to the network.
 - The Mobile Controller automatically contacts the Riverbed Licensing Portal and downloads and installs the licenses. The Management Console Licensing page displays a success message, or the Alarm Status page reports an actionable error message.

To replace expired licenses

- Purchase new downloadable licenses to replace the expired license.
 - At the time of the next scheduled automatic license fetch, the Mobile Controller automatically contacts the Riverbed License Portal and downloads the new licenses. The Management Console Licensing page displays a success message, or the Alarm Status page reports an actionable error message. You do not need to delete the expired license. The system uses the license with the latest expiration date.

To fetch a license on demand

1. Choose Configure > Maintenance > Licenses to display the Licenses page.
2. Click **Fetch Updates Now**.

The Licensing page displays a success message, or the Alarm Status page reports an actionable error message.

Note: Only administrator users can fetch and install licenses. For detailed information on administrator and monitor users, see the *SteelCentral Controller for SteelHead Mobile User’s Guide*.

Manual and Token Licensing Using the Riverbed Licensing Portal

You can retrieve and manage Riverbed licenses using the Riverbed Licensing Portal. Once you retrieve a license from the Riverbed Licensing Portal, you need to install it.

Retrieving Licenses Using the Riverbed Licensing Portal

The licensing portal requires a unique product identifier to retrieve a license. Depending on the product, the identifier can be a serial number, license request key (activation code), or a token. The steps to retrieve a license vary based on the product identifier. Online instructions guide you through the process.

To retrieve your licenses for an appliance using a serial number

1. Go to the Riverbed Licensing Portal at <https://licensing.riverbed.com/index.htm>.

2. Enter your appliance serial number as your unique product identifier.

The serial number is on a label located on your appliance and it also appears in the Support tab of the Management Console.

3. Click **Next**.

4. Provide the contact information for the license, including your name and email.

5. Click **Submit**.

The Licensing Portal displays license information for all the products purchased with the serial number you specified.

6. Click a serial number to see license details.

7. Optionally, if the appliance is behind a firewall, type the email address in the Email address text box and click **Email Keys** to have the license keys emailed to you.

8. Optionally, if the appliance is behind a firewall, click **Download XML** to download an XML file. You can import the XML file by using the Mobile Controller.

Note: Click **New Search** to look for additional license records.

To retrieve your licenses for a virtual appliance using a token

1. Go to the Riverbed Licensing Portal at <https://licensing.riverbed.com/index.htm>.

2. Enter your token as the unique product identifier.

3. To submit more than one product identifier, click the **Add** button.

4. Click **Next**.

5. Verify the token and enter your license key request (activation code).

You need a license request key (activation code) to generate a license key. You can generate a license request key from the Management Console or command line using an available token.

6. Click **Next**.

Licenses appear on the screen and are emailed to the customer address linked to the token.

Installing Your License Keys

Because each license key is generated for a specific appliance, ensure that you install your license key on the appropriate appliance.

To install a license using the CLI

1. Connect to the CLI of the appliance and enter configuration mode.

For details see the *Riverbed Command-Line Interface Reference Manual*.

2. At the system prompt, enter the following commands:

```
<license-key> install  
write memory
```

where <license-key> is the key you retrieved from the Riverbed Licensing Portal.

To install a license using the Management Console

1. Connect to the Management Console of the appliance.

For details, see the *SteelCentral Controller for SteelHead Mobile User's Guide*.

2. Choose **Configure > Maintenance > Licenses** to display the Licenses Page.
3. Click **Add a New License**.
4. Enter or paste the license key provided by Riverbed Licensing Portal into the text box. Separate multiple license keys with a space, Tab, or Enter.
5. Click **Add**.

CHAPTER 3 Installing the Mobile Controller

This chapter describes how to install and configure the Mobile Controller. It includes the following sections:

- [“Basic Steps for Deploying the Mobile Controller” on page 27](#)
- [“Checking Your Inventory” on page 28](#)
- [“Site Requirements” on page 28](#)
- [“Completing the Configuration Checklist” on page 29](#)
- [“Powering on the Mobile Controller” on page 30](#)
- [“Connecting to the Mobile Controller” on page 30](#)
- [“Initial Configuration of the Mobile Controller” on page 31](#)
- [“Connecting the Mobile Controller to Your Network” on page 32](#)
- [“Logging In to the Management Console” on page 33](#)

Before using this guide, you should be familiar with installing and configuring networks with deployed SteelHeads. For detailed information about the SteelHead, see the *SteelHead Installation and Configuration Guide*, the *SteelHead Management Console User’s Guide*, and the *SteelHead Deployment Guide*.

Basic Steps for Deploying the Mobile Controller

This section describes the basic steps required to install and configure the Mobile Controller.

Typically, you install and deploy SteelHead Mobile clients without modifying the default policies that ship with the product. Modify the default policies only if necessary.

If your network environment requires the deployment of multiple packages, create the packages you need before deploying the default package. For details, see the *SteelCentral Controller for SteelHead Mobile User’s Guide*.

Basic Steps for Deploying the Mobile Controller

1. Complete the configuration checklist to ensure that you have the necessary information before you begin the configuration process. For details, see [“Completing the Configuration Checklist” on page 29](#).
2. Power on the Mobile Controller. For details, see [“Powering on the Mobile Controller” on page 30](#).

3. Connect to the Mobile Controller using a terminal emulation program such as Tera Term. For details, see [“Connecting to the Mobile Controller” on page 30](#).
4. Complete the configuration wizard steps. For details, see [“Initial Configuration of the Mobile Controller” on page 31](#).
5. Connect to the network and log in to the Mobile Controller. For details, see [“Connecting the Mobile Controller to Your Network” on page 32](#).
6. Deploy the default package to the endpoints in your network using the deployment tool of your choice (for example, Microsoft SMS). For details, see the *SteelCentral Controller for SteelHead Mobile User’s Guide*.
7. Verify your endpoint connections in Reports > Endpoints > Endpoint Report on the Mobile Controller. For details, see the *SteelCentral Controller for SteelHead Mobile User’s Guide*.

Checking Your Inventory

This section describes the contents of the Mobile Controller appliance shipping carton. Check your shipment to confirm that it contains the following items:

- One Mobile Controller appliance
- One CAT-6 straight-through cable (gray or beige)
- One CAT-6 crossover cable (orange)
- One RS-232 serial extension cable
- One power cable
- One mounting kit
- One Phillips screwdriver

The Mobile Controller appliance is completely assembled, with all the equipment parts in place and securely fastened. The Mobile Controller is ready for installation with no further assembly required.

If any items are damaged or missing, notify Riverbed Support at <https://support.riverbed.com> for replacement or repair.

Site Requirements

This section lists the prerequisites to installation. Your site must meet the following requirements:

- A standard electronic environment in which the ambient temperature does not exceed 40°C (104°F) and the relative humidity does not exceed 80 percent (noncondensing). For detailed information, see [“Environmental Specifications” on page 62](#).
- An Ethernet connection available within the standard Ethernet limit.
- Space on a two-post or four-post, 19-inch, Telco-type mounting rack. The Mobile Controller requires 1U of rack space. For details about installing the Mobile Controller in a rack, see the *Rack Installation Guide* or the printed instructions included with your Mobile Controller.
- A clean power source dedicated to computer devices and other electronic devices.

Completing the Configuration Checklist

The following checklist contains the parameters you specify to complete the initial configuration of the Mobile Controller.

Note: Verify system requirements before you begin. For details, see [“Software and Configuration Requirements”](#) on page 14.

Be prepared to provide values for the parameters listed in the following checklist.

Component	Parameter	Your Value
Mobile Controller	Host Name	
	IP Address	
	Netmask	
	Default Gateway (the WAN gateway)	
	Primary DNS Server (Domain Name Server IP address)	
	Domain Name	
	Administrator Password	
SteelHead Mobile client	Data Store Size - A minimum size of 256 MB is required for the data store. For PCs, the default value is 10 GB.	
	Maximum Log Size - The default value is 5000 KB.	
	Maximum Number of Log Files - The default value is 2.	
	VPN Port Number - Enter a port number if you are adding a pass-through rule.	

Note: Values for Data Store Size, Maximum Log Size, and Maximum Number of Log Files are needed only if you do not use the default package that ships with the Mobile Controller.

Memory Usage

Ensure that there is enough memory on your client computers to run the SteelHead Mobile software. The following table provides an example of memory usage per data store size. Your memory usage might vary.

Data Store Size	Memory Usage
256 MB	81 MB
512 MB	81 MB
1 GB	81 MB
2 GB	100 MB
5 GB	112 MB

Data Store Size	Memory Usage
10 GB	161 MB
15 GB	171 MB
20 GB	228 MB

Powering on the Mobile Controller

This section describes how to connect and power on the Mobile Controller.

Powering on the Mobile Controller

1. If your model has a master power switch, make sure that it is in the off position.
2. Plug one end of the AC power cord provided in your shipment into the Mobile Controller.
3. Plug the other end of the AC power cord into an uninterrupted AC outlet.
4. If your model has a master power switch, press it (ON).
5. Check the status lights on the Mobile Controller. For detailed information, see [“Mobile Controller Status Lights and Ports” on page 62.](#)

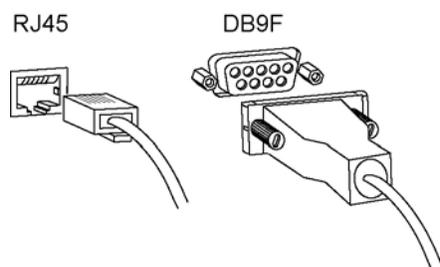
Connecting to the Mobile Controller

To access the configuration wizard and the SteelHead CLI, you establish a serial connection using a terminal emulation program.

To connect to the Mobile Controller

1. Plug the serial cable provided in your shipment into the Console port on the Mobile Controller.
Depending on your model, the Console port is either a DB9F or an RJ45 port. The model 8650 uses the DB9F port, and the model 9000 uses the RJ45 port. The appropriate console cable ships with your model.

Figure 3-1. Connecting the Mobile Controller



2. Start a terminal emulation program such as PuTTY or HyperTerminal. The terminal device must have the following settings:
 - Baud rate: 9600 bps
 - Data bits: 8
 - Parity: none
 - Stop bits: 1
 - No flow control
3. Log in as an administrator user (**admin**) and enter the default password (**password**):


```
login as: admin
Sent username "admin"
password: password
```

The configuration wizard automatically starts.
4. Check the system and disk status lights to see if the lights are illuminated and to see if the system and hard disks are operating normally.

Initial Configuration of the Mobile Controller

This section describes how to complete the initial configuration of the Mobile Controller using the configuration wizard.

To configure the Mobile Controller

1. When you log in to the Mobile Controller as an administrator, the system prompts you to start the configuration wizard. Type **yes**.


```
Configuration wizard.
Do you want to use the wizard for initial configuration? yes
```
2. Complete the configuration wizard steps as described in the following table.

Note: Press **Enter** to enter the default value. Click **?** for help. Press **Ctrl+B** to go back to the previous step.

Wizard Prompt	Description	Example
Step 1: Host Name?	Enter the hostname for the Mobile Controller.	Step 1: Hostname? minna
Step 2: Use DHCP on primary interface?	You are given the option to enable the DHCP to automatically assign an IP address to the primary interface for the Mobile Controller. Riverbed recommends that you do not set DHCP. The default value is no .	Step 2: Use DHCP on primary interface? no
Step 3: Primary IP address?	Enter the IP address for the Mobile Controller.	Step 3: Primary IP address? 10.0.0.74

Step 4: Netmask?	Enter the netmask for the network on which the Mobile Controller is to reside.	Step 4: Netmask? 255.255.0.0
Step 5: Default gateway?	Enter the default gateway for the network on which the Mobile Controller is to reside.	Step 5: Default gateway? 10.0.0.1
Step 6: Primary DNS server?	Enter the primary DNS server for the network on which the Mobile Controller is to reside.	Step 6: Primary DNS server? 10.0.0.2
Step 7: Domain name?	Enter the domain name for the network on which the Mobile Controller is to reside. If you set a domain name, you do not need to specify the domain names when you set up remote appliances to be managed by the Mobile Controller.	Step 7: Domain name? example.com
Step 8: Admin password?	Riverbed strongly recommends that you change the default password. The password must be a minimum of six characters.	Step 8: Admin password? xxxxyy

3. The system confirms your settings:

You have entered the following information:

1. Hostname: minna
2. Use DHCP on primary interface: no
3. Primary IP address: 10.0.0.74
4. Netmask: 255.255.0.0
5. Default gateway: 10.0.0.1
6. Primary DNS server: 10.0.0.2
7. Domain name: example.com
8. Admin password: xxxyyy

To change an answer, enter the step number to return to.
Otherwise hit <enter> to save changes and exit.

The Mobile Controller configuration wizard automatically saves your initial configuration settings.

4. To log out of the system, enter the **exit** command at the system prompt:

```
amnesiac> exit
```

You can always restart the configuration wizard and change your answers by entering **configuration jump-start** at the system prompt. Using this command can be an easy way to change the primary IP address or other values as configuration requirements change.

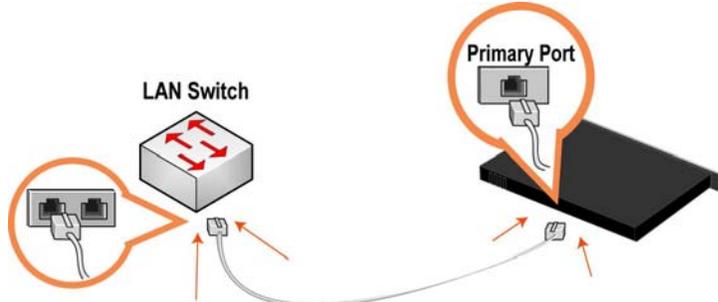
Connecting the Mobile Controller to Your Network

This section describes how to connect the Mobile Controller to your network.

To connect the Mobile Controller to your network

1. Plug the straight-through cable provided in your shipment into the primary port of the Mobile Controller and the LAN switch. The primary port can be any port on your LAN switch that acts as a host.

Figure 3-2. Connecting the Primary Port and LAN Switch



2. If your controller has a front bezel, and you removed it previously, put the bezel back in place.

Logging In to the Management Console

This section describes how to log in to the Mobile Controller using the Management Console. Use this front-end, web-based GUI to configure and manage your Mobile Controller deployment.

It is possible to connect to the Mobile Controller Console through any supported web browser. To connect to the Mobile Controller, you must know the hostname, domain name, and administrator password that you entered during the initial setup of the Mobile Controller.

To log in to the Management Console

1. Enter the URL for the Mobile Controller in the address bar of your browser:

`<protocol>://<host>.<domain>`

`<protocol>` is HTTP or HTTPS. HTTPS uses SSL protocol to ensure a secure environment. If you use HTTPS to connect, you are prompted to inspect and verify the SSL key.

`<host>` is the name that you entered for the Mobile Controller during initial configuration. If your DNS server maps that IP address to a name, you can specify the DNS name.

`<domain>` is the full domain name for the Mobile Controller.

The Mobile Controller Console GUI appears, displaying the login page.

Figure 3-3. Login Page



In the Username text box, the default account username admin appears.

You must use the admin account the first time you log in.

Note: Later, you can configure the monitor username, RADIUS users, or TACACS+ users. For detailed information about these options, see the *SteelCentral Controller for SteelHead Mobile User's Guide*.

2. In the Password text box, type the password you assigned in the Mobile Controller configuration wizard.
3. Click **Log In** to log in and display the home page.

After you have logged in to the Mobile Controller, you are ready to create a package to deploy to your endpoints. For details, see the *SteelCentral Controller for SteelHead Mobile User's Guide*.

CHAPTER 4 Installing Mobile Controller-v for RSP

This chapter describes how to install and configure the Mobile Controller-v for RSP. It includes the following sections:

- [“Installing and Configuring RSP” on page 35](#)
- [“Installing the RSP Installation Image” on page 36](#)
- [“Adding an RSP Package” on page 36](#)
- [“Navigating to the Mobile Controller-v Console” on page 38](#)

This guide assumes that you are familiar with installing, configuring, and managing networks with deployed SteelHeads. For detailed information about the SteelHead and RSP, see the *SteelHead Installation and Configuration Guide*, the *SteelHead Management Console User’s Guide*, *RSP User’s Guide*, and the *SteelHead Deployment Guide*.

Installing and Configuring RSP

The Mobile Controller-v for RSP is a virtualized edition of the Mobile Controller appliance running on the RSP platform available on series xx50 and some xx20 SteelHeads. You can use the Mobile Controller-v for RSP to manage Mobile Controller licenses and control the deployment, management, and reporting of SteelHead Mobile clients. The Mobile Controller-v for RSP has the same functionality and performance as the Mobile Controller, except that it supports fewer licensed endpoints.

Your site must have RSP installed before you install Mobile Controller-v.

In RiOS 5.5.1 and later, RSP offers branch-office-in-a-box services with the following benefits:

- A VMware-based virtualization platform provides the benefits of the most commonly deployed and advanced virtualization tool set.
- Support for running up to five different additional services simultaneously on a single SteelHead, depending on the service and SteelHead model.
- Support for more services and types of services. These services include in-band packages that sit in-line with optimization such as the Universal Threat Management (UTM) security services; proxy solutions such as video or network monitoring services; improved support for out-of-band packages like Windows Active Directory, DNS, and DHCP management software; and print services.
- A comprehensive and integrated user-management interface that controls RSP, including setup, reporting, and definition of the data flow between services.

For detailed information, see the *RSP User's Guide* and the *SteelHead Management Console User's Guide*.

Installing the RSP Installation Image

This section describes the prerequisites and the basic steps required to install the RSP installation image using the SteelHead Management Console.

Prerequisites

- RSP is available only on SteelHead models 250, 520, 550, 1020, 1050, 1520, 2020, 2050, 3020, 3520, 5050, 6050, and 7050. RSP is not supported on SteelHead CX xx55 models.
- RSP requires 3 GB of additional memory.
- You must log in using an account with read/write permission for RSP (such as admin) to install RSP. For more information about role-based permissions, see the *SteelHead Management Console User's Guide*.
- Before installing a new RSP image, you must stop the RSP service currently running on the SteelHead.
- If you have previously installed RSP for RiOS 5.0.x, you must reinstall the RSP image for RiOS 5.5 and later. RSP for RiOS 5.0.x is not compatible with RSP for RiOS 5.5 and later.
- Installing a new RSP image replaces the previously installed image (the virtual machine packages are unmodified).
- For details on SteelHead RSP support for guest operating systems, see the product specification sheets at <http://www.riverbed.com/products/appliances/>.

You can install, start, stop, and restart RSP in the Configure > Branch Services > RSP Service page. For detailed information, see the *RSP User's Guide* and the *SteelHead Management Console User's Guide*.

Adding an RSP Package

You add an RSP package in the SteelHead Management Console Configure > Branch Services > RSP Packages page. First upload, or fetch, your Mobile Controller-v for RSP package and then install it in a slot.

An RSP package contains the service or applications in a virtual machine and RSP-specific configuration files. An RSP package also contains RiOS configuration files, including the package virtual machine network interfaces (VNI). An RSP package includes a .vmx (virtual machine configuration) file and one or more .vmdk (virtual machine disk) files. You do not need to open or modify any of the files in the package. The package files can be quite large and can sometimes take up several gigabytes of disk space.

Before installing a package, you must install the RSP installation image. After installing the RSP image, you must start the RSP service, and then you can download and install a Mobile Controller-v for RSP package.

When you install an RSP package, you must select an RSP slot. A slot is a directory on disk. When you install a package into a slot, the system unpacks the VM into the directory. When you remove a package, the system deletes the files from the slot.

You can install only one Mobile Controller-v for RSP on a SteelHead. The Mobile Controller-v for RSP package must be named RiverbedSMC.pkg. The name of the slot must be the same as the name of the package. You can install only one package in each slot. Each slot must have a unique name.

For detailed information about RSP, including how to create a package and system requirements, see the *RSP User's Guide*. For detailed information about the SteelHead Management Console, see the *SteelHead Management Console User's Guide*.

To install the Mobile Controller-v for RSP package

1. Obtain a Mobile Controller-v RSP package from Riverbed Technology.
For detailed information about fetching packages, see the *Riverbed Services Platform Installation Guide*.
2. Choose Configure > Branch Services > RSP Packages to display the RSP Packages page.
3. Under Packages, select Add a Package to display the Fetch a Package option.

Figure 4-1. Fetch a Package Option

The screenshot shows the 'Configure > Branch Services > RSP Packages' page. Under the 'Packages:' section, the 'Fetch a Package' button is selected. Below it, there is a 'Name:' field (optional) and two radio button options: 'From URL:' and 'From Local File (for packages less than 2GB in size):'. The 'From Local File' option is selected. A 'Browse...' button is next to the file path input field. A red warning message states: 'Navigating away from this page may interrupt the file transfer.' An 'Add Package' button is at the bottom.

4. Type the location of your package and download it by clicking **Add Package**. The RSP Packages page appears.

Figure 4-2. RSP Package Page

The screenshot shows the same 'Configure > Branch Services > RSP Packages' page. A modal dialog box is overlaid on the page, displaying a progress indicator and the text: 'Transferring: 216.92 MB (77% complete)'. The 'Add Package' button is now highlighted with a dashed border, indicating it is active. The red warning message is still visible at the bottom.

Your Mobile Controller-v for RSP package should now be listed.

For more information about fetching packages, see the *Riverbed Services Platform Installation Guide*.

Installing a Package in a Slot

You can install one package per slot. By default, the RSP slots are numbered 1 to 5. You must rename the slot you plan to use for Mobile Controller-v for RSP to RiverbedSMC.

To install an RSP package in a slot

1. Choose **Configure > Branch Services > RSP Slots** to display the RSP Slots page.
To install an RSP package in an occupied slot, you must first uninstall the package for that slot. Installing a package into a slot and uninstalling that particular slot affects only the slot directory, not the package itself.
2. Click the slot name for the slot you want to use for Mobile Controller-v for RSP and enter the new name RiverbedSMC.
If a slot with the name RiverbedSMC already exists, you must use that slot. RSP slot names are case sensitive.
3. Click **Rename Slot**.
4. Select the RiverbedSMC.pkg from the Install from RSP Package drop-down list.
5. Click **Enable** to enable the RiverbedSMC slot.

Navigating to the Mobile Controller-v Console

This section describes how to open a virtual machine (VM) console for an RSP package using either the command-line interface or the Mobile Controller Management Console.

Opening a VM Console Client

After installing an RSP package, you can open the VM console client for the package from the RSP Slots page.

To open the VM console client for a package

1. Choose **Configure > Branch Services > RSP Slots** to display the RSP Slots page.
Make sure the RSP service is enabled.
2. Click the **RiverbedSMC** slot.
3. Click **VM Settings**.
4. Click **Launch VM Console**. When the VMware console login screen appears, log in and open the VM console connection to the package.

Opening a VMware Console Using the CLI

After installing an RSP package, you can open a VM console for the package using the SteelHead CLI.

To open a VMware console using the CLI

1. Connect to the SteelHead CLI. For details, see the *Riverbed Command-Line Interface Reference Manual*.
2. Enter the following commands:

```
enable
configure terminal
rsp shell RiverbedSMC
```

Note: The administrator user can configure the Mobile Controller-v IP settings.

Logging In to the Management Console

You log in to the Management Console on the Mobile Controller-v for RSP just as you would log in to the Management Console on a Mobile Controller appliance. For instructions on logging in to the Management Console, see [“Logging In to the Management Console” on page 33](#).

CHAPTER 5 Installing Mobile Controller-v for ESXi

This chapter describes how to install and configure the Mobile Controller-v for ESXi. It includes the following sections:

- [“Mobile Controller-v for ESXi” on page 41](#)
- [“VMware ESXi” on page 42](#)
- [“Basic Steps for Installing and Configuring Mobile Controller-v for ESXi” on page 43](#)
- [“Obtaining the Mobile Controller-v Image” on page 44](#)
- [“Gathering Information” on page 44](#)
- [“Opening VMware VI or vSphere Client” on page 45](#)
- [“Virtual Machine Configuration” on page 51](#)
- [“Mobile Controller-v for ESXi Initial Configuration” on page 52](#)
- [“Purchasing the Token and Receiving the Licenses” on page 53](#)

This guide assumes that you are familiar with installing, configuring, and managing networks with deployed SteelHeads. For detailed information about the SteelHead, see the *SteelHead Installation and Configuration Guide*, the *SteelHead Management Console User’s Guide*, and the *SteelHead Deployment Guide*.

Mobile Controller-v for ESXi

The Mobile Controller-v for ESXi is a virtualized edition of the Mobile Controller appliance running on VMware ESXi. The Mobile Controller-v for ESXi has the same functionality and performance as the Mobile Controller, depending on how you provision your virtual machine.

Recommended Hardware Resources

It is important to know the number of endpoints you plan to support before you allocate resources for your Mobile Controller-v for ESXi installation. The following table lists the resources Riverbed recommends for the indicated maximum number of endpoints.

Maximum Endpoints	Memory	Hard Disk 2	Minimum CPU Cycles
100	3 GB	3 GB	500 MHz
1000	3 GB	15 GB	1 GHz
2000	4 GB	50 GB	2 GHz
4000	6 GB	100 GB	2 GHz

By default, Mobile Controller-v for ESXi is configured to support 100 endpoints. To support additional endpoints, provision appropriately.

Mobile Controller-v for ESXi uses Hard Disk 1 for management and Hard Disk 2 for statistics. When the size of Hard Disk 2 is increased to accommodate additional endpoints, Mobile Controller-v resizes Hard Disk 2 nondestructively. The contents of Hard Disk 2 are deleted if the size of the disk is decreased.

If you do not allocate memory, data storage, and CPU resources sufficient for the maximum number of endpoints, you trigger the Virtual Machine Configuration alarm "Raise Alarm When Virtual Machine is Detected to be Underprovisioned." This alarm displays a specific message for each underprovisioned resource.

VM Resource	Alarm Message
Memory	Not enough memory (available = X MB, required = X MB)
Storage	Not enough disk 2 storage (available = X MB, required = X MB)
CPU	Not enough cumulative CPU (available = X MHz, required = X MHz)

For example, you might receive the following alarm message:

```
Not enough cumulative CPU (available = 1861.260000 MHz, required = 2000.000000 MHz)
```

For detailed information about Mobile Controller alarms, see the *SteelCentral Controller for SteelHead Mobile User's Guide*.

VMware ESXi

Mobile Controller-v for ESXi is supported on VMware ESXi. The VMware ESXi is a virtualization platform that enables you to install and run the Mobile Controller-v for ESXi as a virtual appliance. For details about VMware ESXi, see the following link:

<http://www.vmware.com>

The hardware must support virtual technology.

To ensure hardware compatibility, see <http://www.vmware.com/resources/compatibility/search.php>.

Note: Virtual machine snapshots are not supported by Mobile Controller-v for ESXi.

Performance Guidelines

The VMware ESXi is a virtualization platform that enables you to install and run the Mobile Controller-v for ESXi as a virtual appliance. Follow these guidelines for best results:

- **Always reserve virtual CPU cycles** - For best performance, it is important that the Mobile Controller-v receive sufficient CPU resources. To allocate CPU cycles, reserve the number of clock cycles (in terms of CPU MHz) required for the number of endpoints you plan to support on the Mobile Controller-v for ESXi. The overhead introduced by VMware is approximately 5 percent.
- **Do not overprovision the physical CPUs** - Do not run more virtual machines than there are CPUs. For example, if an ESXi host is running on a four-core CPU, all the virtual machines on the host should use not more than four virtual CPUs.
- **Use a server-grade CPU for the ESXi host** - For example, use a Xeon or Opteron CPU.
- **Always reserve RAM** - Memory is another very important factor in determining Mobile Controller-v performance. Reserve the RAM that is needed to accommodate the maximum number of endpoints you plan to support with your Mobile Controller-v, plus 5 percent more for the VMware overhead; this RAM allocation provides a significant increase in performance. For example, 100 endpoints require 3 GB RAM, so you need to reserve 3 GB + 110 MB.
- **Do not overprovision physical RAM** - The total virtual RAM needed by all running VMs should not be greater than the physical RAM on the system.
- **Do not use low-quality storage for the datastore disk** - Make sure that the Mobile Controller-v for ESXi disk used for the datastore VMDK is located on a physical disk medium that supports a high number of input/output operations per second (IOPS). For example, use NAS, SAN, or dedicated SATA disks.
- **Do not share host physical disks** - VMware recommends that to achieve near-native disk I/O performance, you do not share host physical disks (such as SCSI or SATA disks) between VMs. While deploying a Mobile Controller-v for ESXi, allocate an unshared disk for the data store disk.

Basic Steps for Installing and Configuring Mobile Controller-v for ESXi

The following table provides an overview of the basic steps to install and configure a Mobile Controller-v for ESXi. Detailed procedures are provided in the referenced sections.

Task	Reference
1. Verify your hardware requirements, to ensure that the hardware you have set aside is sufficient to run Mobile Controller-v for ESXi.	“Recommended Hardware Resources” on page 42
2. Obtain the Mobile Controller-v for ESXi package from Riverbed Support.	“Obtaining the Mobile Controller-v Image” on page 44
3. Gather network settings for the configuration wizard.	“Gathering Information” on page 44
4. Deploy the Mobile Controller-v image.	“Deploying the OVA Package” on page 45
5. Configure your virtual machine.	“Recommended Hardware Resources” on page 42 and “Virtual Machine Configuration” on page 51

Task	Reference
6. Power on the VM, start the Mobile Controller (virtual edition), and log in.	—
7. Complete the Mobile Controller-v configuration.	“Mobile Controller-v for ESXi Initial Configuration” on page 52
8. Exit the configuration wizard.	—
9. Purchase a token from Riverbed Sales.	“Purchasing the Token and Receiving the Licenses” on page 53
10. Refer to the <i>SteelCentral Controller for SteelHead Mobile User’s Guide</i> for configuration specifics and other Riverbed product documentation for additional information.	Getting Started Guide SteelHead Management Console User’s Guide Riverbed Command-Line Interface Reference Manual SteelHead Deployment Guide

Obtaining the Mobile Controller-v Image

The Mobile Controller-v for ESXi is provided by Riverbed as an image that contains the VMX and VMDK files necessary to create the virtual machine.

The Mobile Controller-v for ESXi image is an installable open virtual appliance (OVA) package. OVA is a platform-independent, efficient, extensible, and open packaging distribution format. The OVA package provides a complete specification for Mobile Controller-v for ESXi, including its required virtual disks, CPU, memory, networking, and storage.

The OVA file is a compressed .tar.gz package that quickly creates a virtual machine with predefined settings. It contains the following files:

- **OVF file** - The XML description of the Mobile Controller-v.
- **Two VMDK files** - One file contains the management system (the smaller VMDK) and the other contains the data store. The separate files let you resize the data store without losing any data in the management partitions.
- **Manifest file** - The SHA1 checksum of the OVF and VMDK.
- **VMX file** - The primary configuration.

To obtain the OVA package, log in to your customer account at the following site:

<https://support.riverbed.com>

Gathering Information

Before you begin, read the release notes for the product at the following site:

<https://support.riverbed.com>

They contain important information about this release. Next, gather the hostname, domain name, IP address, DNS server, in-path interface IP address, netmask, and default gateway.

Opening VMware VI or vSphere Client

Each package contains a predefined virtual hardware configuration for a Mobile Controller-v designed to support up to 100 endpoints. Do not open or modify any of the files in the package. If your Mobile Controller-v must control more than 100 endpoints, you can reconfigure your virtual machine after installation. The package files require several gigabytes of disk space.

Installation procedures vary depending on whether you are using the VMware VI or vSphere client. The examples in this document are created using the vSphere client.

The Mobile Controller-v on ESXi is provided by Riverbed as an OVA file for VMware ESXi.

Deploying the OVA Package

This section describes how to install and configure the default (100 endpoint) Mobile Controller-v on a VMware ESXi host using the vSphere client.

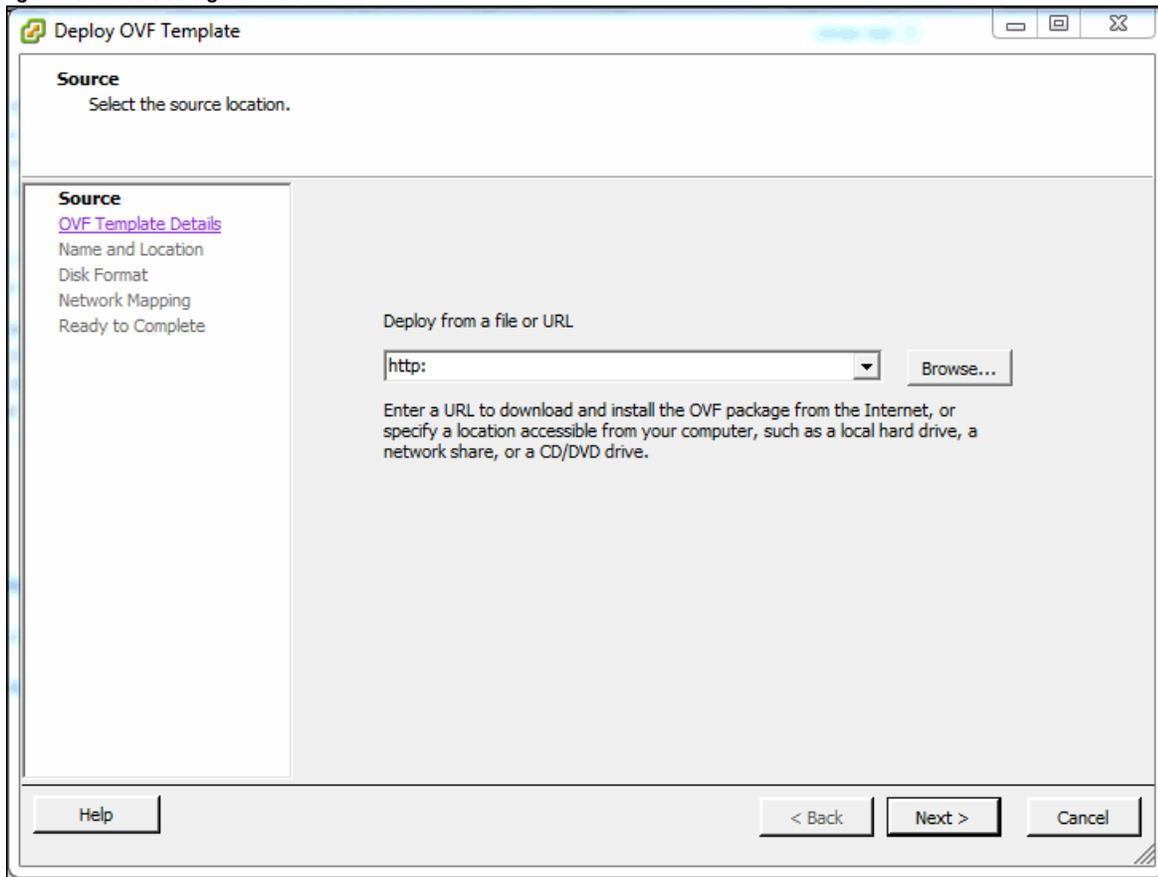
The standard installation puts both VMDKs in a single local storage location. The local storage holds the virtual machine files and is referred to as a “datastore” during OVF deployment, but it is not used for the Riverbed Optimization System (RiOS) data store, which is used for network optimization.

Make sure that the data store you select has enough capacity for the OVA package to be installed. You need at least 25 GB. The larger VMDK containing the management system can be installed on any data store type. The smaller VMDK contains the Mobile Controller-v statistics. The data store must have enough room to expand to the required size of the Mobile Controller-v. Do not share host physical disks (such as SCSI or SATA disks) between VMs.

To deploy the OVA template

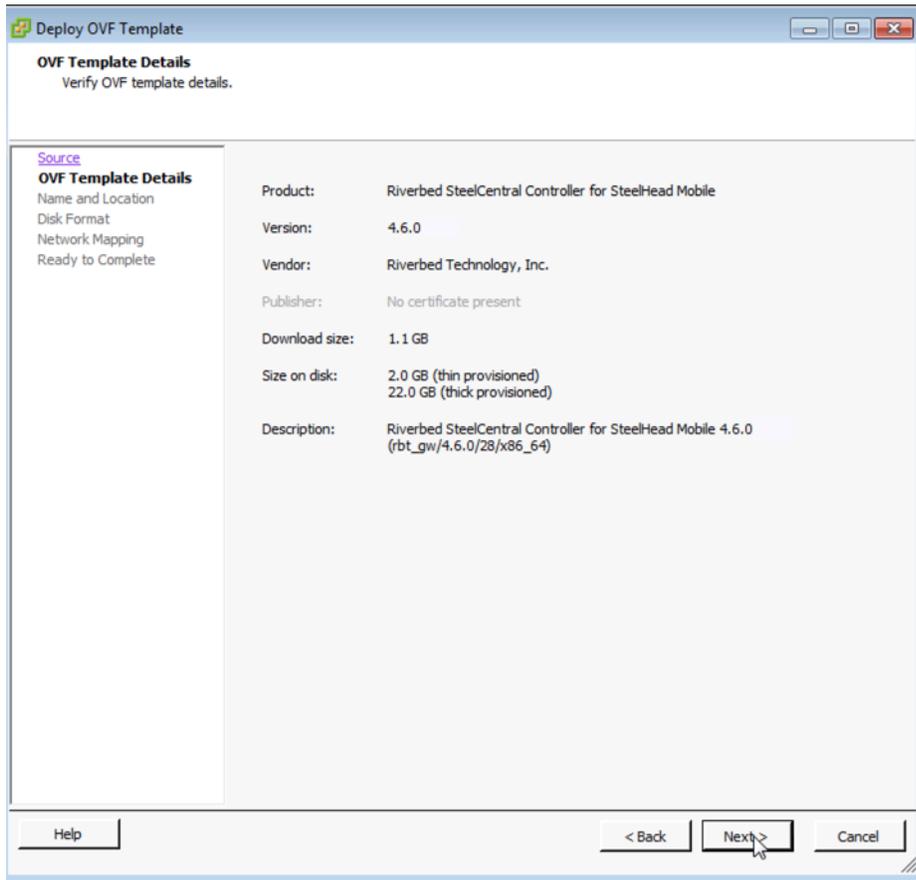
1. Open VMware vSphere, type the hostname IP address or name, your username, and your password, and click **Login**.
2. Choose File > Deploy OVF template.
3. Click **Deploy from file**, and then click **Browse**.
4. Select the OVA file (filename ending in .ova) and click **Open** to display the Deploy OVF Template page.

Figure 5-1. Choosing the OVF File



5. Click **Next**.
6. Verify that the OVA file (shown in the OVF Template Details page) is the one you want to deploy.

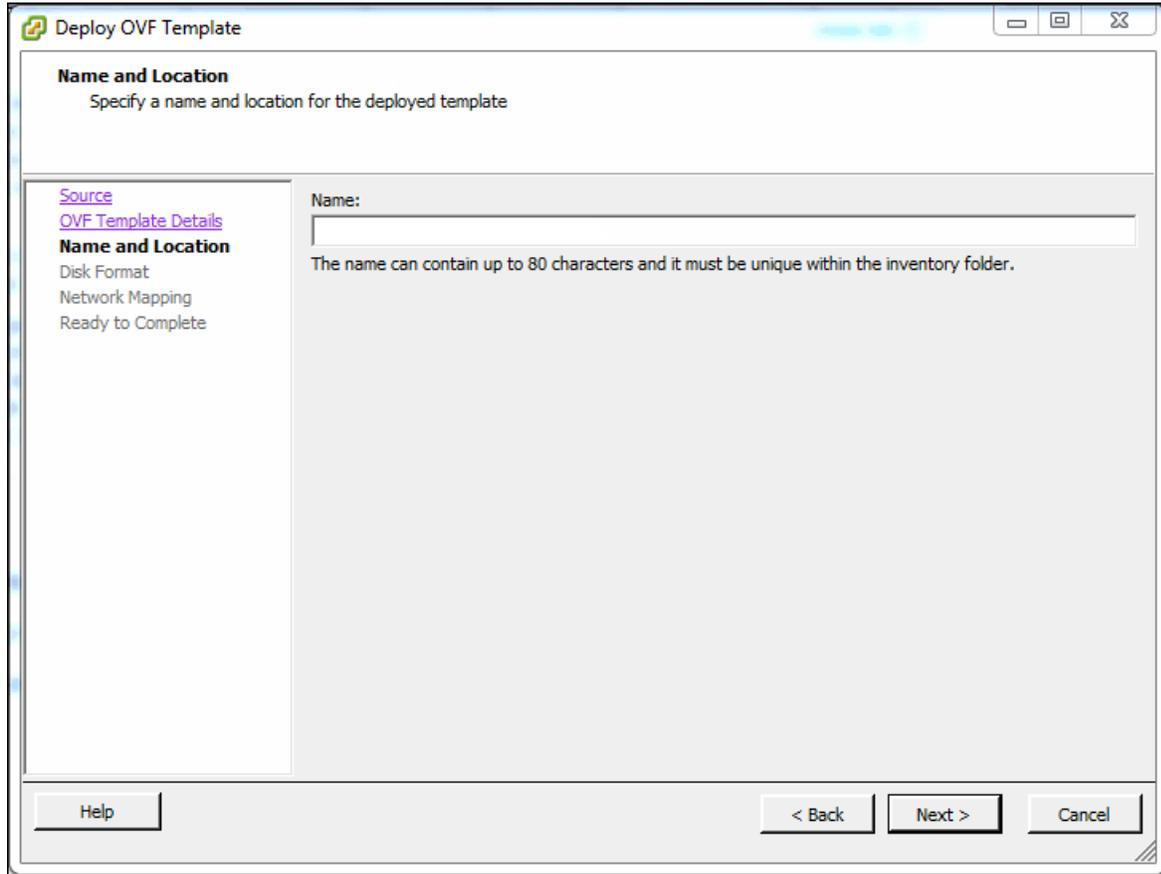
Figure 5-2. OVF Template Details



7. Click Next.

8. Type a name for the virtual machine in the Name and Location page.

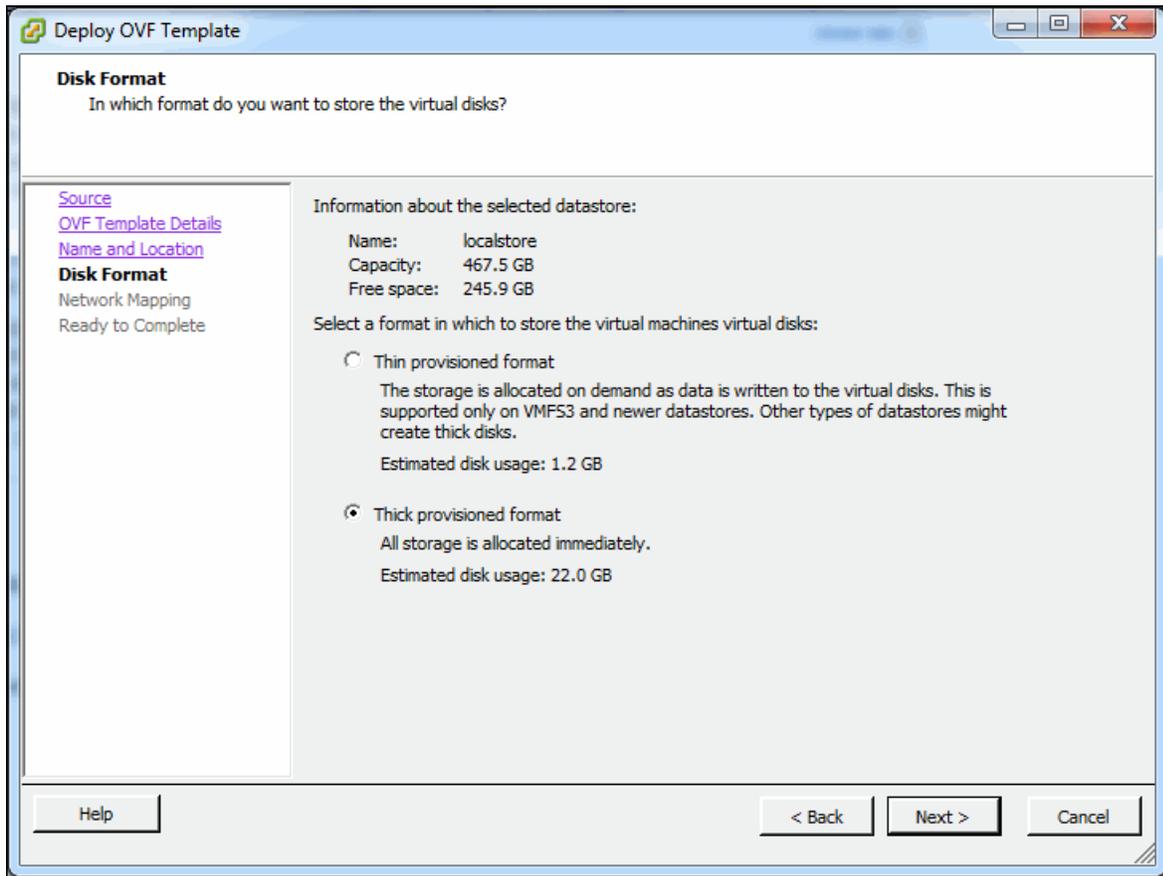
Figure 5-3. Name and Location Page



9. Click Next.

10. Select Thick provisioned format (in the Disk Format page) unless you have a specific reason for requiring thin provisioning.

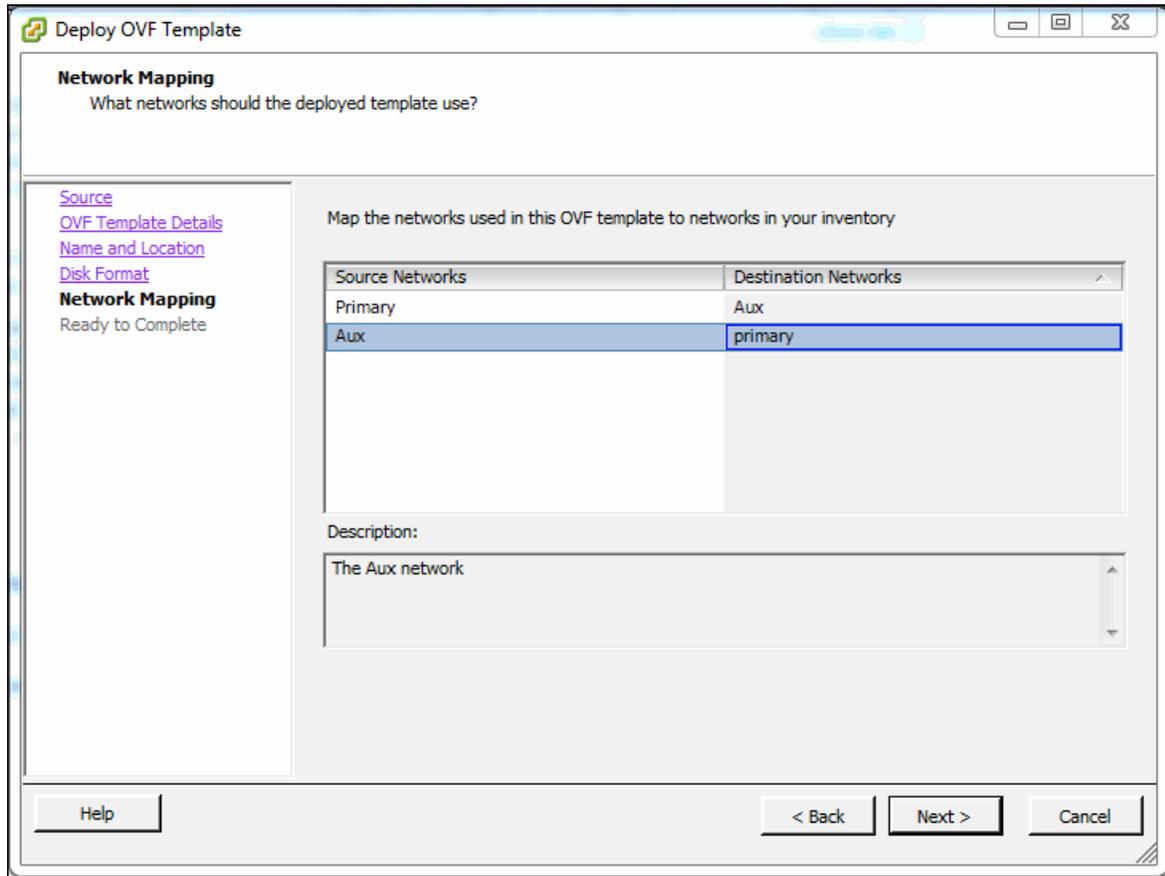
Figure 5-4. Disk Format Page



11. Click Next.

- In the Network Mapping page, select the destination network name and select a network from the drop-down list to map the source network to a destination network. Set Primary to Aux and Aux to primary.

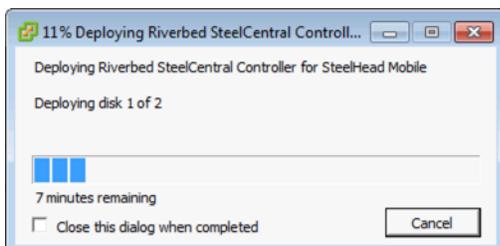
Figure 5-5. Network Mapping



- Click Next.

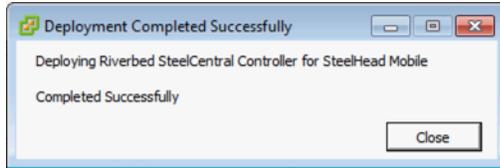
- Verify the deployment settings and click **Finish**. Deployment status messages display.

Figure 5-6. Deployment Status



A message shows the amount of time before the deployment finishes. When the deployment finishes, a message tells you the deployment was successful (see [Figure 5-7](#)). You can edit disk size and provisioning settings later by right-clicking the name of your virtual machine.

Figure 5-7. Successful Completion Message



15. Click Close.

The new virtual machine appears under the hostname or host IP address to the virtual machine inventory.

Virtual Machine Configuration

Log in to VMware vSphere to configure your virtual machine.

To log in to vSphere

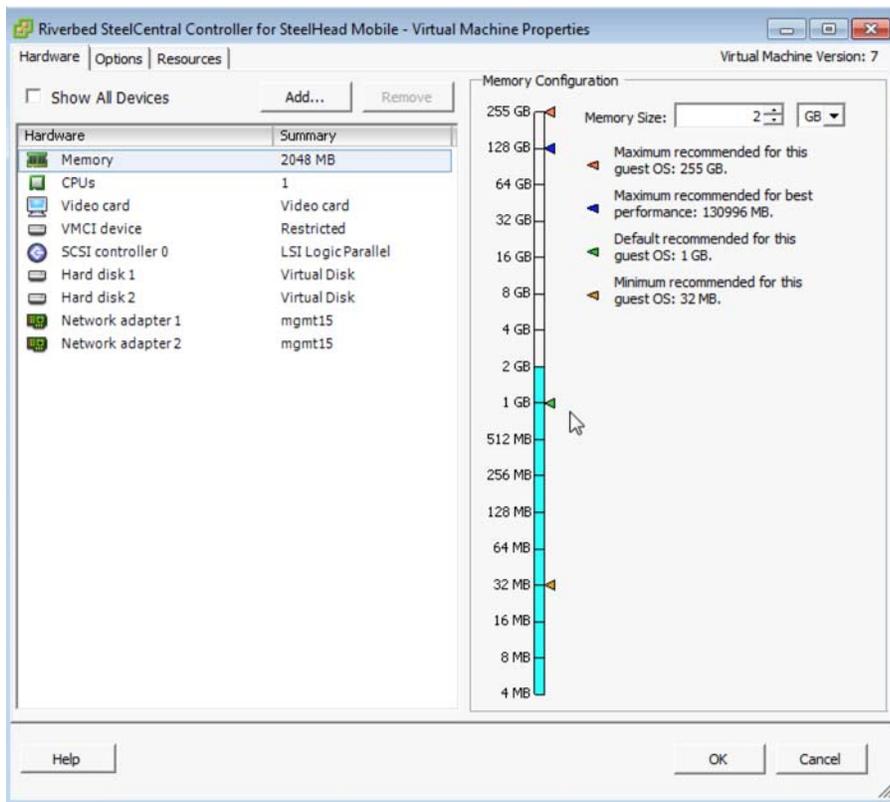
1. Open vSphere to display the VMware vSphere Client window. Type the hostname IP address or name, type your username and password, and click **Login**.

Figure 5-8. vSphere Client



2. Select your virtual machine. Select the Resource tab and click the Edit link or right-click the name of your virtual machine and select Edit Settings.

Figure 5-9. Hardware Tab



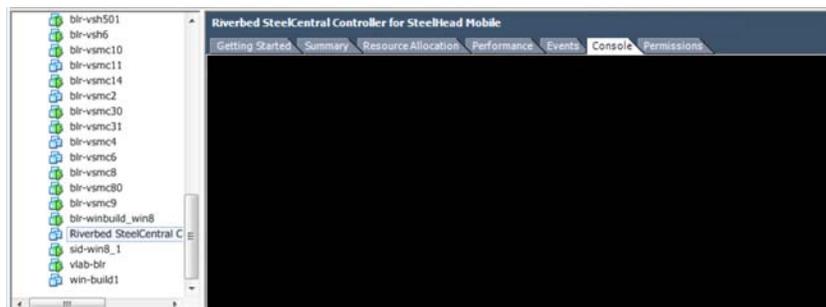
Mobile Controller-v for ESXi Initial Configuration

Configure your Mobile Controller-v by following the instructions in the configuration wizard. Access the configuration wizard from the Console tab of the vSphere client.

To configure the Mobile Controller-v

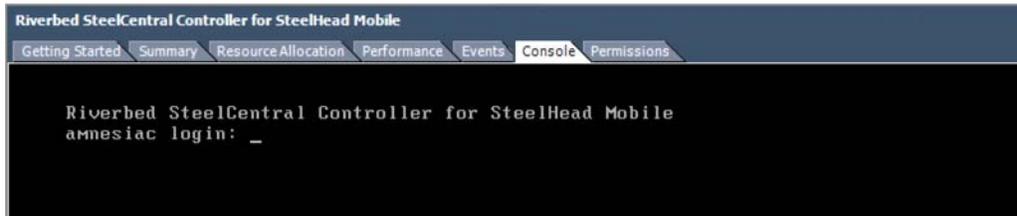
1. In the vSphere client, click your virtual machine and select the Console tab to display the Console page.

Figure 5-10. Console Tab



2. Log in to the Mobile Controller-v as administrator (admin). The Login page is displayed.

Figure 5-11. Logging In to the Console



3. After you log in to the Mobile Controller-v as administrator, the system prompts you to start the configuration wizard.

Enter **yes** at the system prompt. For example:

```
Configuration wizard.
Do you want to use the wizard for initial configuration? yes
```

Note: Press **Enter** to enter the default value. If you mistakenly answer no, you can start the configuration wizard by entering the **configuration jump-start** command at the system prompt. Click **?** for help. Press **Ctrl+B** to go back to the previous step.

4. Complete the configuration wizard steps on the Mobile Controller-v as described in [“To configure the Mobile Controller”](#) on page 31.
5. To log out of the system, enter **exit** at the system prompt:

```
amnesiac> exit
```

Note: To release the cursor from the console, press **Ctrl+Alt**.

Logging In to the Mobile Controller Console

You log in to the Mobile Controller Console on the Mobile Controller-v for ESXi just as you would log in to the Mobile Controller Console on a SteelCentral Controller for SteelHead Mobile appliance. For instructions on logging in to the SteelCentral Controller for SteelHead Mobile Console, see [“Logging In to the Management Console”](#) on page 33.

Purchasing the Token and Receiving the Licenses

Before you can add licenses to Mobile Controller-v for ESXi, you must purchase a token from Riverbed. The token has a model number assigned to the new Mobile Controller-v after you complete its licensing. To view your purchased token, log in to your account at the following site:

<https://support.riverbed.com>.

After you receive a token, you are ready to install the licenses.

To activate the token and install the license

1. Log in to the Mobile Controller-v and display the Mobile Controller Management Console.
2. Choose Setup > Licenses to display the Licenses page.
3. Under License Request Token, type the token and click **Generate License Request Key**.
When you enter the token, RiOS returns a license request key.
4. After you have obtained the license request key, go to the Riverbed Licensing Portal at <https://licensing.riverbed.com> (nonregistered users) or to the Riverbed Support site at <https://support.riverbed.com/account/tokens/> (registered users) to generate your license keys. The license keys include the VBASE license, as well as any other licenses needed for the Mobile Controller-v model.
The Licensing Portal is a public website; the Riverbed Support website requires registration.
After your licenses are generated, they appear online and are also emailed to you for reference.
5. Copy and paste the license key into the text box. Separate multiple license keys with a space, tab, or Enter.
6. Click **Add License(s)**.
The Mobile Controller-v status should change to Healthy, indicated in green, a few seconds after you add the VBASE and Endpoint licenses.
7. Click **Save**, next to the Healthy status indicator, to save your configuration.

CHAPTER 6 Installing Mobile Controller-v for VSP

This chapter describes how to install and configure the Mobile Controller-v for Virtual Services Platform (VSP). It includes the following sections:

- [“Mobile Controller-v for VSP” on page 55](#)
- [“Installing the VSP Installation Image” on page 56](#)
- [“Navigating to the Mobile Controller-v Console in EX 1.0” on page 58](#)
- [“Navigating to the Mobile Controller-v Console in EX 2.0 and Later” on page 59](#)
- [“Purchasing the Token and Receiving the Licenses” on page 59](#)

This guide assumes that you are familiar with installing, configuring, and managing networks with deployed SteelHeads. For detailed information about the SteelHead and VSP, see the *SteelHead Installation and Configuration Guide*, the *SteelHead EX Management Console User’s Guide*, and the *SteelHead Deployment Guide*.

Mobile Controller-v for VSP

The Mobile Controller-v for VSP is a virtualized edition of the Mobile Controller appliance running on the VSP platform of a SteelHead EX. You can use the Mobile Controller-v for VSP to manage Mobile Controller licenses and control the deployment, management, and reporting of SteelHead Mobile clients. The Mobile Controller-v for VSP has the same functionality and performance as the Mobile Controller appliance except that it supports fewer licensed endpoints.

In SteelHead Mobile clients, VSP offers branch-office-in-a-box services. Mobile Controller-v for VSP requires VSP running on a SteelHead EX. The procedure for setting up Mobile Controller-v for VSP is different for EX 1.0, as described in [“Installing Virtual Mobile Controller in VSP for EX 1.0” on page 56](#) and [“Installing Virtual Mobile Controller in VSP for EX 2.0 and Later” on page 58](#).

Mobile Controller-v is not compatible with Riverbed Services Platform (RSP).

- For detailed information about VSP with SteelHead EX 1.0, see the 1.0 version of the *SteelHead EX Management Console User’s Guide*, Chapter 2, “Configuring and Using VSP.”
- For detailed information about VSP with SteelHead EX 2.0 and later, see the corresponding version of the *SteelHead EX Management Console User’s Guide*, Chapter 3, “Working with the Virtual Services Platform.”

Resources

Mobile Controller-v for VSP requires at least 3 GB of RAM, at least 20 GB of available storage, and one 500 MHz CPU. If you do not allocate sufficient memory and CPU resources, you trigger the Virtual Machine Configuration alarm **Raise Alarm When Virtual Machine is Detected to be Underprovisioned**. This alarm displays a specific message for each underprovisioned resource.

VSP Resource	Alarm Message
Memory	Not enough memory (available = X MB, required = X MB)
CPU	Not enough cumulative CPU (available = X MHz, required = X MHz)

For example, you might receive the following alarm message:

```
Not enough memory (available = 1022 MB, required = 3000 MB)
```

For VSP with SteelHead EX 1.0, you can set the Memory Footprint for each slot on the VSP Slots page. Do not change the default disk size set in the Mobile Controller-v for VSP package. Extending the disk size invalidates your licenses.

For VSP with SteelHead EX 2.0, you can configure the memory settings in vSphere or vCenter.

For detailed information about Mobile Controller alarms, see the *SteelCentral Controller for SteelHead Mobile User's Guide*. For detailed information about setting Memory Footprint, see the *SteelHead EX Management Console User's Guide*.

Installing the VSP Installation Image

This section describes the prerequisites and the basic steps required to install the VSP installation image using the SteelHead Management Console. The section contains two parts. The first section describes the steps for setting up the Mobile Controller-v on a SteelHead EX 1.0, and the second section describes the steps for setting up the Mobile Controller-v on a SteelHead EX 2.0 and later:

- [“Installing Virtual Mobile Controller in VSP for EX 1.0” on page 56](#)
- [“Installing Virtual Mobile Controller in VSP for EX 2.0 and Later” on page 58](#)

Installing Virtual Mobile Controller in VSP for EX 1.0

You add a VSP package in the SteelHead Management Console Configure > Branch Services > VSP Packages page. Use the Add a Package menu to upload a Mobile Controller-v for VSP package and then install it in a slot.

A VSP package contains the service or applications in a virtual machine and VSP-specific configuration files. A VSP package also contains RiOS configuration files, including the package virtual machine network interfaces (VNI). A VSP package includes a .vmx (virtual machine configuration) file and one or more .vmdk (virtual machine disk) files. You do not need to open or modify any of the files in the package. The package files can be quite large, and can sometimes take up several gigabytes of disk space.

You can install only one Mobile Controller-v for VSP on a SteelHead. The Mobile Controller-v for VSP package must be named RiverbedSMC.pkg. The name of the slot must be the same as the name of the package, without the extension. Since your package has the name RiverbedSMC.pkg, your slot must have the name RiverbedSMC.

For detailed information about VSP in SteelHead EX 1.0, including how to create a package and system requirements, see the 1.0 version of the *SteelHead EX Management Console User's Guide*.

To fetch the Mobile Controller-v for VSP package

When you install a VSP package, you must select a VSP slot. A slot is a directory on disk. When you install a package into a slot, the system unpacks the VM into the directory. When you remove a package, the system deletes the files from the slot.

1. Obtain a Mobile Controller-v VSP package from Riverbed Technology.

For detailed information about fetching packages, see the *SteelHead EX Management Console User's Guide*.

2. Choose Configure > Branch Services > VSP Packages to display the VSP Packages page.
3. Under Packages, select Add a Package to display the Add a Package page.

Figure 6-1. Add a Package

4. Type the location of your package and download it.
5. Check to make sure that your Mobile Controller-v for VSP package is listed.

For more information about fetching packages, see the 1.0 version of the *SteelHead EX Management Console User's Guide*.

Installing a Package in a Slot

You can install one package per slot. By default, the VSP slots are numbered 1 to 5. You must rename the slot you plan to use for Mobile Controller-v for VSP to RiverbedSMC.

To install a VSP package in a slot

1. Choose Configure > Branch Services > VSP Slots to display the VSP Slots page.

To install a VSP package in an occupied slot, you must first uninstall the package for that slot.

Installing a package into a slot and uninstalling that particular slot affects only the slot directory, not the package itself.

2. Click the slot name for the slot you intend to use for Mobile Controller-v for VSP and type the new name, RiverbedSMC.

If a slot with the name RiverbedSMC already exists, you must use that slot. VSP slot names are casesensitive. The slot must be named RiverbedSMC.

3. Click **Rename Slot**.
4. Select the RiverbedSMC.pkg from the Install from VSP Package drop-down list.
5. Click **Enable** to enable the RiverbedSMC slot.

Note: To install a VSP package in an occupied slot, you must first uninstall the package for that slot. Installing a package into a slot and uninstalling that particular slot affects only the slot directory, not the package itself.

Installing Virtual Mobile Controller in VSP for EX 2.0 and Later

In SteelHead EX 2.0 and later, you no longer install a VSP package in a slot on the appliance. Instead, you set up VSP for ESXi on the SteelHead EX and install the VSP image as described in [Chapter 5, "Installing Mobile Controller-v for ESXi."](#)

For detailed information about VSP in SteelHead EX 2.0 and later, including system requirements, see the corresponding version of the *SteelHead EX Management Console User's Guide: SteelHead EX (xx60)*, Chapter 3, "Working with the Virtual Services Platform."

Upgrading from SteelHead EX 1.0 to 2.0

If you are running Mobile Controller-v on a SteelHead EX 1.0 appliance and want to upgrade to a SteelHead EX 2.0 appliance, you can migrate your Mobile Controller-v installation from 1.0 to 2.0. See version 2.0 of the *SteelHead EX Management Console User's Guide: SteelHead EX (xx60)*.

Navigating to the Mobile Controller-v Console in EX 1.0

This section describes how to open a virtual machine (VM) console for a VSP package using either the command-line interface or the Mobile Controller Console.

Opening a VM Console Client

After installing a VSP package, you can open the VM console client for the package from the VSP Slots page.

To open the VM console client for a package

1. Choose Configure > Branch Services > VSP Slots to display the VSP Slots page.
2. Click **RiverbedSMC**.
3. Click **VM Settings**.

4. Click **Launch VM Console**. When the VMware console login screen appears, log in and open the VM console connection to the package.

Opening a VMware Console Using the CLI

After installing a VSP package, you can open a VM console for the package using the SteelHead CLI.

To open a VMware console using the CLI

1. Connect to the SteelHead CLI. For details, see the *Riverbed Command-Line Interface Reference Manual*.
2. Enter the following commands:

```
enable
configure terminal
vsp shell RiverbedSMC
```

Note: The administrator user can configure the Mobile Controller-v IP settings.

Navigating to the Mobile Controller-v Console in EX 2.0 and Later

For Mobile Controller-v for VSP with SteelHead EX 2.0 and later, use the procedure described for ESXi in [“Mobile Controller-v for ESXi Initial Configuration” on page 52](#).

Logging In to the Management Console for Mobile Controller

You log in to the Management Console on the Mobile Controller-v for VSP just as you would log in to the Mobile Controller Console on a Mobile Controller appliance. For instructions on logging in to the Mobile Controller Console, see [“Logging In to the Management Console” on page 33](#).

Purchasing the Token and Receiving the Licenses

Before you can add licenses to a Mobile Controller-v for VSP, you must purchase a token from Riverbed. The token has a model number assigned to the new Mobile Controller-v after you complete its licensing. To view your purchased token, log in to your account at the following site:

<https://support.riverbed.com>.

After you receive a token, you are ready to install the licenses.

To activate the token and install the license

1. Log in to the Mobile Controller-v and display the Mobile Controller Console.
2. Choose Setup > Licenses to display the Licenses page.

3. Under License Request Token, type the token and click **Generate License Request Key**.

When you enter the token, RiOS returns a license request key.

4. After you have obtained the license request key, go to the Riverbed Licensing Portal at <https://licensing.riverbed.com> (nonregistered users) or to the Riverbed Support site at <https://support.riverbed.com/account/tokens/> (registered users) to generate your license keys. The license keys include the VBASE license, as well as any other licenses needed for the Mobile Controller-v model.

The Licensing Portal is a public website; the Riverbed Support website requires registration.

After your licenses are generated, they appear online and are also emailed to you for reference.

5. Copy and paste the license key into the text box. Separate multiple license keys with a space, tab, or Enter.
6. Click **Add License(s)**.

The Mobile Controller-v status should change to **Healthy**, indicated in green, a few seconds after you add the VBASE and Endpoint licenses.

7. Click **Save**, next to the Healthy status indicator, to save your configuration.

APPENDIX A Technical Specifications

This appendix describes the technical specifications for the Mobile Controller. It includes the following sections:

- [“Hardware System Requirements” on page 61](#)
- [“Environmental Specifications” on page 62](#)
- [“Mobile Controller Status Lights and Ports” on page 62](#)

Hardware System Requirements

The following table summarizes the system requirements for the SteelHead.

	Model 8650	Model 9000
Form factor (U = unit)	1U	Desktop
Height, width, and depth	1.71 x 17.2 x 25.41 in. (4.35 x 43.6 x 64.54 cm)	13 x 8 x 1.73 in. (33.02 x 20.32 x 4.4 cm)
Weight	30 lb (13.6 kg)	6 lb (2.7 kg)
Voltage Frequency	100–240V 50–60 Hz	100–240V 50–60 Hz
Power (watts)	151 W	50 W
Amps	1.8 A	1.3 A
Volt-amperes	153 VA	n/a
BTU	515 (per hour max.)	165
Hard disk	2 x 500 GB	1 x 500 GB HDD 1 x 480 GB SSD
Power requirement	151 W	50 W
Power supply	Single 650 W	I/P: 100–240 VAC, 1.3 A, 50–60 Hz O/P: 12 VDC, 7 A, max

Environmental Specifications

The following table summarizes the environmental requirements for the Mobile Controller.

	Model 8650	Model 9000
Temperature (operating)	10°–40°C 50°–104°F	0°–45°C 32°–113°F
Temperature(storage)	-40°–65°C -40°–149°F	-40°–65°C -40°–149°F
Relative humidity	20%–80% noncondensing	20%–80% noncondensing
Storage humidity	5%–80% noncondensing	5%–95% noncondensing
Operating altitude	Up to 10,000 ft.	Up to 10,000 ft.

Mobile Controller Status Lights and Ports

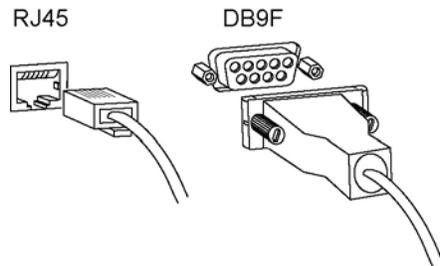
This section describes the status lights and ports for the Mobile Controller 8650 and 9000.

Console Port Connections

Depending on your model, the Console port is either a DB9F or an RJ45 port. The model 8650 uses the DB9F port, and the model 9000 uses the RJ45 port.

The appropriate console cable ships with your model.

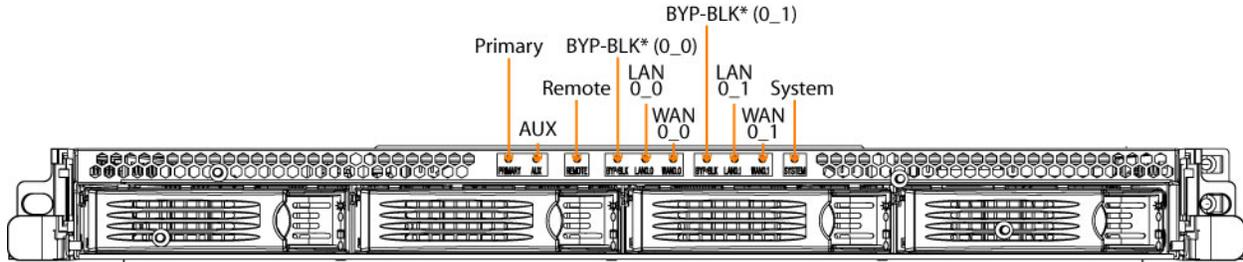
Figure A-1. Connecting to the Console Port



Mobile Controller 8650 Status Lights and Port Locations

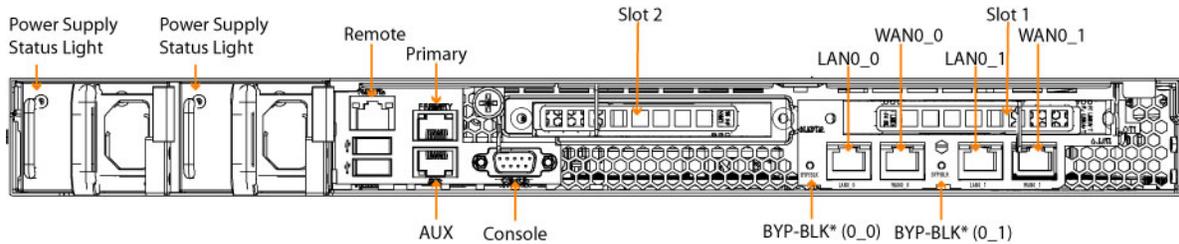
The following figures show the Mobile Controller 8650 status light and port locations on the front and back panels.

Figure A-2. Front Panel



*Fail-to-Bypass (Bypass) and Fail-to-Block (Disconnect)

Figure A-3. Back Panel



*Fail-to-Bypass (Bypass) and Fail-to-Block (Disconnect)

The following table summarizes the system lights.

Light	Function
System	Healthy = Blue Degraded = Yellow Critical = Red System boot = Yellow
Front LAN/WAN lights (network status)	Link = Solid blue Activity = Blinking blue
BYP/BLK (bypass or block (disconnect) mode)	Normal = No light Bypass or Block (Disconnect) = Orange
HDD lights	Disk connected = Solid blue Read/Write activity = Blinking blue Failed disk = Orange

Light	Function
LAN/WAN lights	<p>Left LED Link = Solid green Activity = Blinking green</p> <p>Right LED GB = Orange 100 MB = Green 10 MB = No light</p>
Power supply lights	<p>Solid green = Healthy power supply with AC power connected.</p> <p>Blinking green = Unit is halted, but the power supplies are still connected to AC power.</p> <p>Solid orange = AC power is not connected to this power supply, but the unit is still powered on by the alternate power supply. The solid orange light might indicate that the AC power has shut off automatically due to a trouble condition, such as an overheat.</p> <p>Blinking orange = Indicates a power supply predictive-fail condition, such as a fan failure. The power supply might then shut itself off, which changes the LED to solid orange. You can view a log entry of this predictive-fail using the show hardware error-log all command in the command-line interface.</p> <p>No light = No AC power connected.</p>

Mobile Controller 9000 Status Lights and Port Locations

The following figures illustrate the Mobile Controller 9000 status light and port locations on the front and back panels.

Figure A-4. Front Panel

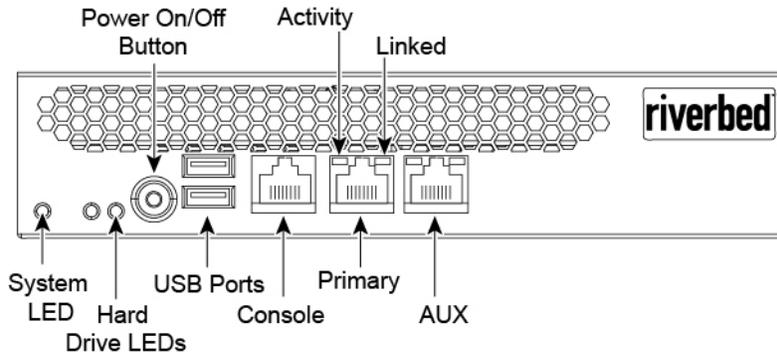
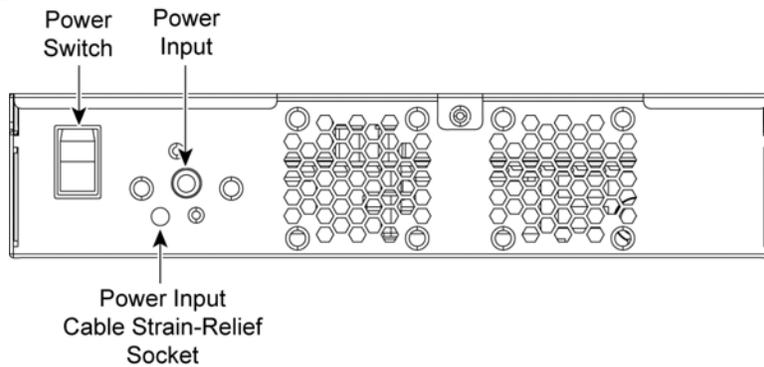


Figure A-5. Back Panel



The following table summarizes the system lights.

Light	Function
System	Healthy = Blue Degraded = Yellow Critical = Red System boot = Yellow
Front LAN/WAN lights (network status)	Link = Solid blue Activity = Blinking blue
BYP/BLK (bypass or block (disconnect) mode)	Normal = No light Bypass or Block (Disconnect) = Orange
HDD lights	Disk connected = Solid blue Read/Write activity = Blinking blue Failed disk = Orange

Light	Function
LAN/WAN lights	Left LED Link = Solid green Activity = Blinking green Right LED GB = Orange 100 MB = Green 10 MB = No light
Power supply lights	Solid green = Healthy power supply with AC power connected. Blinking green = Unit is halted, but the power supplies are still connected to AC power. Solid orange = AC power is not connected to this power supply, but the unit is still powered on by the alternate power supply. The solid orange light might indicate that the AC power has shut off automatically due to a trouble condition, such as an overheat. Blinking orange = Indicates a power supply predictive-fail condition, such as a fan failure. The power supply might then shut itself off, which changes the LED to solid orange. You can view a log entry of this predictive-fail using the show hardware error-log all command in the command-line interface. No light = No AC power connected.

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