



VitalQIP[®] DNS/DHCP & IP Management Software

Appliance Overview | Release 1.8

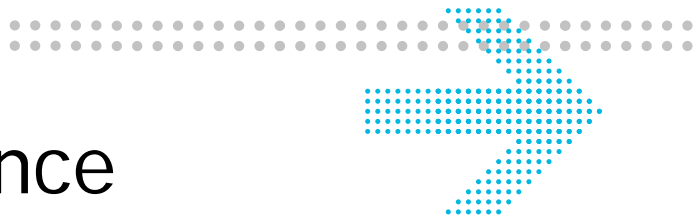
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Licenses

Refer to Appendix C, “Third party software license statements” in the *VitalQIP Release 8.0 Installation Guide* (9YZ047050001RJZZA) for a complete description of all software licenses used to develop this product.



1 VitalQIP Appliance

Overview

The Alcatel-Lucent VitalQIP® product is a powerful tool that simplifies IP Address Management (IPAM) functions and supports mission-critical services, such as Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP). The VitalQIP Appliances provide further benefits by consolidating the VitalQIP functionality in a high-performance, security-hardened platform. The VitalQIP Appliances utilize the Red Hat Enterprise Linux (RHEL) Operating System and are available as Hardware, Software and Virtual Appliances.

This guide provides an overview of the VitalQIP Appliances and is intended to assist you in the planning process related to installing and configuring the appliances. Please review this guide thoroughly prior to installing your first VitalQIP Appliance.

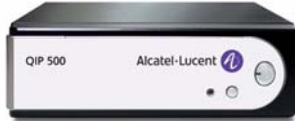




If you have any questions or problems, please contact Alcatel-Lucent VitalQIP Technical Support listed at the end of this guide.

VitalQIP Appliances

Alcatel-Lucent provides the industry's most flexible line of Hardware, Software and Virtual appliances:

- **VitalQIP Hardware Appliances** - Alcatel-Lucent provides a line of QIP™ hardware-based appliances that contain the VitalQIP Appliance Manager software. All platforms utilize the Red Hat Enterprise Linux (RHEL) operating system.

Table -1 VitalQIP Appliances

 <p>The image shows a compact, white VitalQIP 500 appliance with the Alcatel-Lucent logo and 'QIP 500' printed on the front panel.</p>	<p>QIP 500 - A compact appliance that is ideal for Retail or Small Office applications. Powered by the 64-bit Atom processor in a desktop platform. Includes (2) Gigabit Ethernet (GigE) NICs, 1GB memory, 250GB disk and Lights-Out management. Performance: 1,000+ DHCP leases/sec and 10,000+ DNS queries/sec.</p>
 <p>The image shows a 1U rack-mountable VitalQIP 700 appliance with a silver and black front panel.</p>	<p>QIP 700 - An Enterprise appliance ideally suited for DNS/DHCP operations in remote locations. Powered by a 64-bit Intel Pentium processor in a 1U rack-mountable platform. Includes (4) GigE NICs, 4GB memory, 500GB disk and dedicated Enterprise Lights-Out management. Performance: 1,500+ DHCP leases/sec and 50,000+ DNS queries/sec.</p>
 <p>The image shows a 1U rack-mountable VitalQIP 1200 appliance with a silver and black front panel.</p>	<p>QIP 1200 - A high-powered Enterprise appliance that is perfectly suited as a server running VitalQIP Enterprise applications or as a remote server running DNS/DHCP. Powered by a 64-bit Intel Xeon processor in a 1U rack-mountable platform. The dual power supplies provide increased reliability. Includes (4) GigE NICs, 4GB memory, 500GB disk and dedicated Enterprise Lights-Out management. Performance: 12,000+ DHCP leases/sec and 100,000+ DNS queries/sec.</p>
 <p>The image shows a 1U rack-mountable VitalQIP 1200-RAID appliance with a silver and black front panel.</p>	<p>QIP 1200-RAID - Extends the QIP 1200 platform to include 8 GB memory and (4) 500GB disks in a RAID-10 configuration providing 1TB of hot-swappable, highly-reliable disk. The QIP 1200-RAID can be used for Enterprise or Remote applications. Performance: 12,000+ DHCP leases/sec and 100,000+ DNS queries/sec.</p>
 <p>The image shows a carrier-grade VitalQIP 5000 appliance with a silver and black front panel.</p>	<p>QIP 5000 - A high-powered Carrier grade appliance. Powered by (2) 64-bit Intel Xeon processors in a NEBS-3 compliant 1U platform and mirrored RAID disks. Includes dual power supplies, (4) GigE NICs, 8GB memory and dedicated Lights-Out management. Available in AC or DC power. Performance: 6,400+ DHCP leases/sec and 60,000+ DNS queries/sec.</p>

- **VitalQIP Software Appliance** - The same VitalQIP Appliance software and Red Hat Enterprise Linux (RHEL) Operating System that is installed on the VitalQIP Hardware Appliances is available in a software formatted ISO image. (An ISO image is a standardized disk format.) The ISO image can be installed on any Red Hat certified

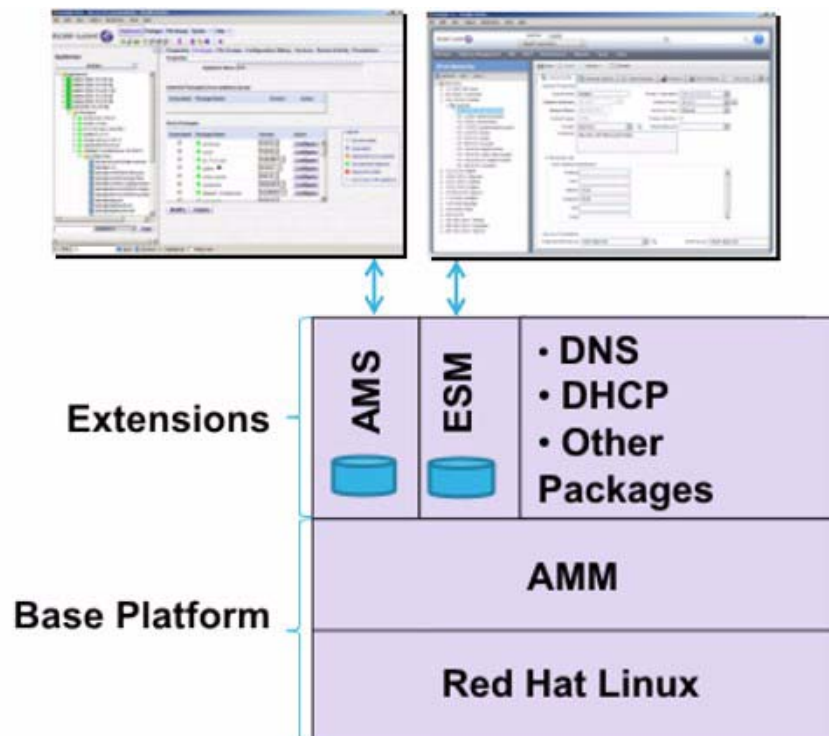
64-bit hardware platform. This enables you to utilize your corporate standard hardware as VitalQIP Appliances. The ISO image can also be used to create virtual environments.

- **VitalQIP Virtual Appliance** - Alcatel-Lucent also packages the VitalQIP Software Appliance within a VMware virtual machine. The virtual machine can be installed within various VMware virtual environments, such as ESXi, Workstation or Server. The virtual machine definition can be extended or converted as necessary to suit your own needs using VMware Converter. The VitalQIP Software Appliance is also available as a virtual machine tailored to run in the Riverbed Steelhead WAN optimizer appliance.

Appliance platform and Packages

The base platform of the VitalQIP Appliance consists of a security-hardened version of the Red Hat Enterprise Linux (RHEL) Operating System and a layer of custom appliance software referred to as the AMM (*Appliance Management Module*). The AMM provides the utilities and secure communication that is necessary for VitalQIP Appliances to perform high-performance IPAM, DNS, DHCP and other operations and to interact in a secure manner. In addition to the AMM, there are two other major functions in a VitalQIP Appliance environment - AMS and ESM - as explained below.

Figure 1 VitalQIP Appliance Platform and Packages



AMS (Appliance Management Software)

The AMS is used to manage VitalQIP Appliances and is installed on an AMM base appliance. The AMS allows you to define appliances, configure appliances, deploy necessary software packages (e.g., AMS, IPAM/ESM, DNS, DHCP, etc.) and monitor appliances. You must have at least one AMS instance in your network if you are using VitalQIP Appliances. Each VitalQIP Appliance (hardware, software, virtual) has a preloaded version of the AMS that can be activated using the appliance console (Refer to [“Configurations”](#) section). The AMS has a web-based interface and includes a separate database for storing appliance definitions. The AMS has a complete set of documentation (Refer to [“Documentation”](#) section).

ESM (Enterprise Server Module)

The ESM provides the VitalQIP IP Address Management (IPAM) functionality and is used to define and manage networks, subnets, domains, scopes, objects, etc. The ESM software is installed on an AMM base appliance. The ESM includes the VitalQIP web-based GUI, the Sybase database, update services, CLIs and other components. You must have at least one ESM instance running in a VitalQIP Appliance or have the VitalQIP Enterprise services running on a non-appliance platform (Solaris, Linux or Windows). The AMS can be used to deploy the ESM to a VitalQIP Appliance (as described in the Configurations section below). The ESM has a web-based interface and includes a separate database for storing network objects. The VitalQIP functionality contained in the ESM is explained in the VitalQIP documentation (Refer to [“Documentation”](#) section).

Appliance Packages

Alcatel-Lucent provides an extensive line of packages that can be deployed to VitalQIP Appliances. These packages include: VitalQIP Enterprise Services, Sybase DBMS, VitalQIP Remote Services, Red Hat OS patches, AMM patches, Auto Discovery, Alcatel-Lucent DNS, Alcatel-Lucent DHCP (including DHCP Failover), ENUM, DNS Probes, DHCP Probes, DNS High-Availability (DNS-HA), DNS Anycast, SNMP (Server, DNS, DHCP), TFTP, VitalQIP User Exits, NTP, JRE, Dashboard/Nagios, etc. These packages are explained in the Package Configuration Guide (Refer to [“Documentation”](#) section). The AMS is responsible for associating and deploying VitalQIP Appliance Packages to the appliances.

Documentation

Appliance Documentation

A full set of Appliance Documentation is available on the Alcatel-Lucent download site: <http://support.alcatel-lucent.com>. You can download the documents by logging in to the portal using your registered User Name and Password. If you are not yet registered on the site, you can click the "Register for Access" link and submit a request.

The appliance-related documents are contained in the VitalQIP Appliance Manager area:

- ***VitalQIP Appliance Overview*** - This guide.
- ***VitalQIP Hardware Appliance Quick Start Guides*** - Describes how to install the hardware appliances. A hardware-specific guide is provided for each type of hardware. A paper copy of the appropriate guide is included in the shipping box along with the hardware.
- ***VitalQIP Software/Virtual Appliance Quick Start Guide*** - Describes how to download, install and configure the VitalQIP Software and Virtual Appliances.
- ***AMS User's Guide*** - Describes how to use the features included in the AMS web-based interface.
- ***Appliance Packages Configuration Guide*** - Describes how to configure each of the packages that are available for the appliances, including DNS, DHCP, DNS-HA, DNS Anycast, DNS/DHCP Probes, Enterprise Services, Remote Services, SNMP, etc.
- ***Installation and Configuration Guide*** - Provides instructions for installing and upgrading the AMS as well as details for configuring the product after installation is complete.
- ***Release Notes*** - Describes the changes in the various releases. Always consult this guide prior to installing the appliances or upgrading to a new release.

VitalQIP Documentation

A full set of VitalQIP documentation is also contained in the VitalQIP area on the download site. This documentation describes how to use the ESM web-based interface after the ESM is installed. The important documents to be familiar with are as follows:

- ***VitalQIP Web Client User's Guide*** - Provides instructions on how to use the features included in the VitalQIP web-based interface.
- ***VitalQIP Administrator Reference Manual*** - Describes how to prepare for the installation and rollout of the VitalQIP product. It contains an overview of VitalQIP and its relationship with DNS and DHCP, as well as network planning and software configuration information.

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- ***VitalQIP Quick Start Guide*** - Provides an overview of how to create networks, subnets, DNS/DHCP servers, objects, domains, etc., within the VitalQIP web-based interface.
 - ***VitalQIP Command Line Interface (CLI) User's Guide*** - Describes how to use the many CLI commands available to you within VitalQIP. These CLIs can be tremendous time savers for repetitive tasks or for integrating VitalQIP with other systems.
 - ***VitalQIP Release Notes*** - Describes the changes in the various releases, hardware requirements and support operating systems. Always consult this guide prior to installing VitalQIP or upgrading to a new release.

If you are facing difficulty in accessing the download site, contact technical support by referring to [“Contacting technical support”](#) section.

License Keys

Every appliance that is running as an AMS or ESM appliance requires a license key. Before proceeding with the configuration of the appliances, send a request to Technical Support (support@alcatel-lucent.com) to request your AMS and ESM license keys.

To expedite the license key generation process, please include the following information with your request:

- **Product:** VitalQIP Appliance Manager
- **Company:** [Your Company]
- **Contact:** [Your name, email address, phone number(s)]
- **AMS:** [IPv4 Address], [Type: Production | Disaster Recovery | Lab], [Version: Latest | 1.8, 1.7, 1.6, etc.]
- **ESM:** [IPv4 Address], [Type: Production | Disaster Recovery | Lab], [Version: Latest | 8.0, 7.3, 7.2, etc.]

Note: You may include multiple AMS and ESM requests as necessary. If a particular version is not provided, a license corresponding to the most recent AMS or ESM version will be provided.

Configurations

The VitalQIP Appliances provide a wide variety of configuration options. The specific configuration you choose depends on your specific needs. The following sections describe example configurations ranging from fairly simple to more complex. The configurations can also be changed over time to support the expanding needs of your organization. Alcatel-Lucent provides Professional Services that can be leveraged to help determine the best approach.

The configuration diagrams depict VitalQIP Hardware Appliances, however, please note that VitalQIP Software and/or Virtual Appliances may also be used wherever the Hardware Appliances are shown. Due to the flexibility of the VitalQIP Appliances, you may combine the approaches (*hardware/software/virtual*) as you see fit. In addition, VitalQIP Appliances can be used in conjunction with VitalQIP software running on non-appliance legacy hardware.

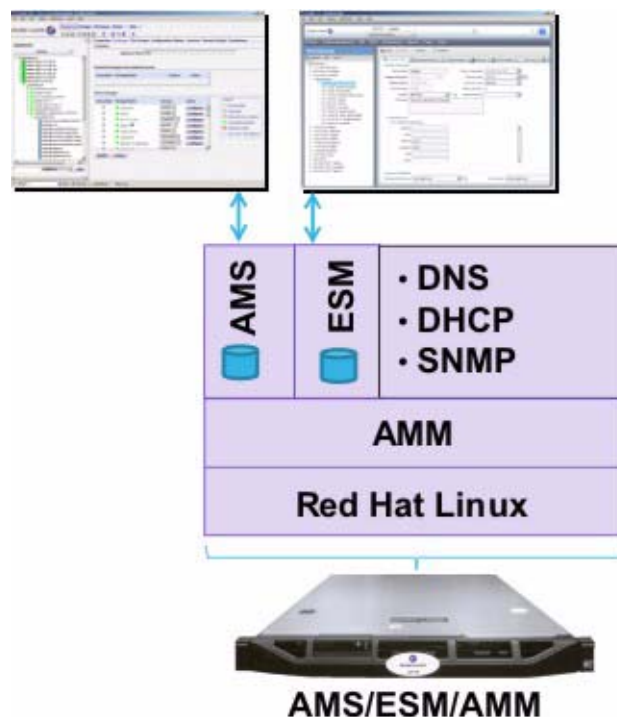
The configuration steps below are not intended to provide the complete details of what you need to do, but rather, provide an overview of the steps. Please refer to the respective *Quick Start Guides*, *AMS User's Guide* and *Appliance Packages Configuration Guide* for complete details.

Single-Appliance Configuration

The most basic configuration is to install the AMS, ESM and AMM functions together on a single QIP Appliance, as shown in the figure below.

Note: Alcatel-Lucent recommends that you use a minimum of a QIP 1200 appliance wherever the ESM services are running.

Figure 2 Single-Appliance Configuration



Step 1: Install Appliance

- Install the Appliance following the instructions in the appropriate *Quick Start Guide*.
- Using the appliance console, configure the network settings of the appliance. You will need to provide the following information: **Hostname**, **IPv4 Address**, **IPv6 Address** (optional), **Netmask**, **Gateway Address**. Save the settings and reboot the appliance to activate the changes.

Step 2: Activate AMS

- Activate the AMS and import the packages into the AMS via the appliance console following the instructions in the *Quick Start Guide*. In brief, this will involve issuing the **enable**, **amserver**, **activate** and **importpackages** commands.
- Invoke the AMS web-based interface by entering https://<ipv4_address>:9985/ams in a browser. You must accept the certificate. Login with Username "amsadmin" and Password "amsadmin".
- You will note that an appliance instance (corresponding to the <Hostname> you defined) will be created in the AMS.
- Install the AMS license key that you received from Alcatel-Lucent. You will do this by expanding Appliances, expanding the <Hostname> appliance, expanding Packages, expanding the AMS package, expanding Config Files and selecting the *.Lic* file. In the right-hand pane, click **Modify** and insert the contents of the new license key file. Click **Save and Deploy**. Once the license file has been deployed, you must restart the AMS service by selecting the **Services** tab, checking the box next to the tomcat service and clicking **Restart**. You will then need to re-login to the AMS.
- In the AMS, click **Help/About** to view the license information and ensure that it is correct. (The AMS must have network connectivity to validate the license.)

Step 3: Install ESM

- The ESM is installed by deploying the following packages: *jre*, *sybase64* and *vitalqipX.Y-enterprise* (where X.Y is the version of VitalQIP that you want to deploy). You do this by selecting the appliance in the AMS, clicking the **Packages** tab in the right-hand pane and clicking the **Modify** button. Select the latest versions of those packages (or previous versions if you desire), **Save and Deploy**. You can track the deployment process on the **Configuration History** and **Recent Activity** tabs.
- Install the ESM license key that you received from Alcatel-Lucent. You will do this by expanding Appliances, expanding the <Hostname> appliance, expanding Packages, expanding the *vitalqipX.Y-enterprise* package, expanding Config Files and selecting the *.Lic* file. In the right-hand pane, click **Modify** and insert the contents of the new license key file. Click **Save and Deploy**.

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- Start the qipd service. Do this by selecting the <Hostname> appliance and clicking the **Services** tab in the right-hand pane. Select the qipd service and click **Start**. If the service does not start, this would indicate that there is something wrong with the license key. Contact technical support by referring to “[Contacting technical support](#)” section.
 - Invoke the VitalQIP web-based interface by entering http://<ipv4_address>:8080/qip in a browser. Login with Username "qipman" and Password "qipman".
 - In the VitalQIP web-browser, click **Help/About** to view the license information and ensure that it is correct.
 - You are now ready to begin entering your network infrastructure. To learn how to do this, please refer the *VitalQIP Quick Start Guide*. For more detailed information, refer to *VitalQIP Web-Client User's Guide*.

Step 4: Set Date/Time on AMS

- Set the date, time and timezone of the appliance by clicking **System/DateAndTimeZone**.
- If you would like to point the appliance to an ntp server, modify the *ntp.conf* file contained in the *ntp-server* package and change the public servers to point to corporate or public domain ntp servers. Deploy the configuration file.

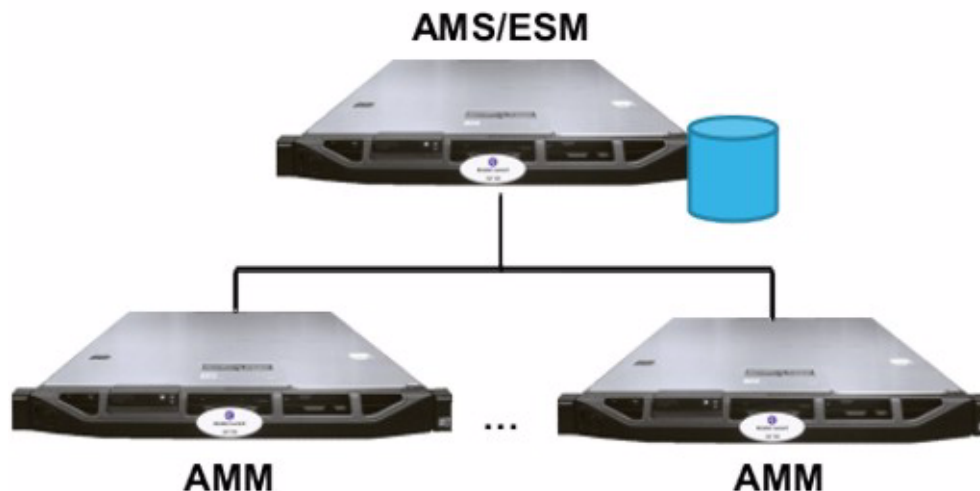
Step 5: Install Other Packages

- Use the AMS to install DNS, DHCP, SNMP and other packages. You do this by selecting the <Hostname> appliance in the left-hand pane and selecting the **Packages** tab in the right-hand pane. Click **Modify** and select the packages that you would like. This could include: *qddns*, *qdhcp*, *qddns-snmp*, *qdhcp-snmp*, *snmp-server* and other packages that you desire. Click **Save** and **Deploy**. A complete description of each package is contained in the *Appliance Packages Configuration guide*.
- Deploy the dashboard package to utilize Nagios to monitor the appliance and services. Once the dashboard package has been deployed, you can access the Nagios web-based interface by entering http://<ipv4_address>:9970/nagios. Login with Username "nagiosadmin" and Password "nagiosadmin".

Co-Resident AMS/ESM Configuration

Another configuration is to place the AMS and ESM functionality on a single appliance and utilize AMM appliances for DNS/DHCP and other functions, as shown in the figure below.

Figure 3 Co-Resident AMS/ESM Configuration



Step 1: Install AMS/ESM Appliance

- Install the AMS/ESM Appliance following the instructions from the Single-Appliance Configuration above. You may or may not choose to deploy DNS/DHCP services on the AMS/ESM Appliance.

Step 2: Create AMM Appliance Instances

- Create appliance instances for the AMM appliances in the AMS.
- Click the **Setup Info** button for each AMM appliance to get the information that must be defined during installation for each AMM appliance. This will include: **Hostname**, **IPv4 Address**, **IPv6 Address (optional)**, **Netmask**, **Gateway Address**, **AMS URI** and **Secret Key**.

Note: By clicking the **Generate File** button, the Setup Info can be saved on a USB memory stick and inserted into the AMM during the boot process for Auto Config mode.

Step 3: Install AMM Appliances

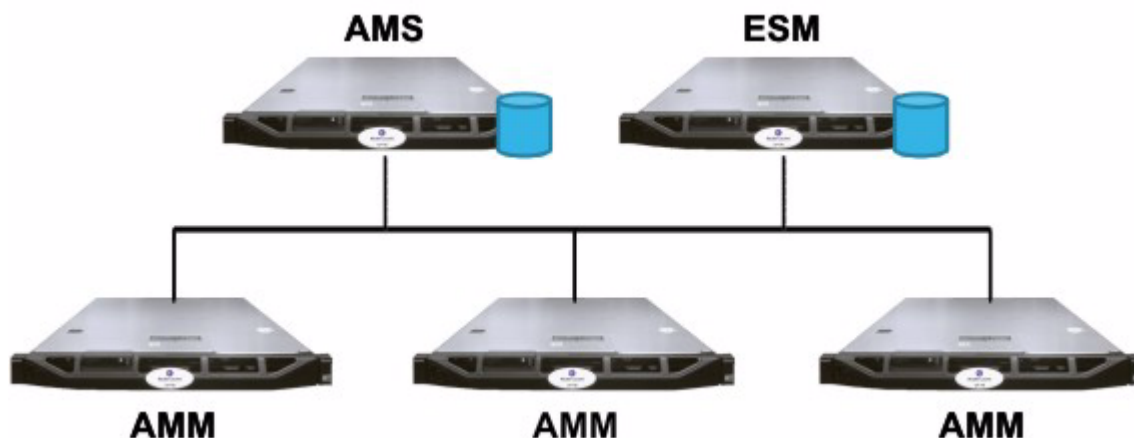
- Install the AMM appliances following the respective *Quick Start Guides*.
- When you configure the appliance, you can either
 1. Insert the USB memory stick containing the Setup Info into a USB port (Auto Config mode)
or
 2. Enter the Config Info manually using the appliance console (Manual Config mode). The difference between the modes is explained in the *Quick Start Guides*.

- For **Auto Config mode**, you simply insert the USB memory stick into the appliance and boot. When the appliance boots up, it will read the Config Info off of the stick and configure the network settings appropriately. The appliance will also automatically authenticate with the AMS.
- For **Manual Config mode**, you must manually enter the Setup Info using the appliance console. After rebooting, you must issue the **enable** and **authenticate** commands so that the appliance is securely connected to the AMS.
- In the AMS, select the AMM appliance and click **Verify Communication** to ensure that the communication is established between the AMS and AMM. If the communication is not properly established, consult the troubleshooting steps in the *Quick Start Guide*.
- Synchronize the packages between the AMS and AMM by selecting the **Configuration History** tab and clicking the **Query** button.
- Proceed to the **Packages** tab and select and deploy the packages that you want installed on the AMM.
- Once everything is up and running, you will be able to use the AMS and ESM web-based interfaces as explained in the Single-Appliance Configuration section.

Dedicated AMS and ESM Configuration

Many customers will choose to run the AMS and ESM on individual appliances when the number of managed appliances or the number of managed addresses reaches a critical mass. Alcatel-Lucent recommends a dedicated AMS for 25 or more appliances and a dedicated ESM for 50,000 or more managed addresses. However, these numbers are just guidelines and there are no built-in checks to enforce limits. An example configuration with dedicated AMS and ESM is shown below:

Figure 4 Dedicated AMS and ESM Configuration



The installation of the Dedicated AMS and ESM Configuration is similar to the Co-Resident AMS/ESM Configuration with the exception that the ESM is installed on a separate appliance.

Using the Console Menu

The Console Menu is the primary interface on the VitalQIP Appliances to configure the network and other settings on the appliance. The menu is accessible by connecting a monitor and keyboard to the appliance (no mouse is necessary). The commands and sub-commands are as follows:

enable - enter privileged mode

authenticate - authenticate this appliance with the AMS

config - system configuration options

show - show current configuration

hostname - change system hostname

address - change IPv4 address

netmask - change IPv4 netmask

gateway - change IPv4 gateway

v6address - change system IPv6 address

ams - change AMS URI

key - change system key

password - change the console password

autoconfig - enable/disable autoconfiguration

sysloghost - change the remote syslog host (can also be changed via AMS)

sysloghost (s) - addresses of syslog servers separated by spaces

timezone - change the timezone

[TZ] or GMT[+|-][1-12]

(Use TZ from <http://en.wikipedia.org/wiki/Zone.tab>. For example, "America/New_York")

unset - unset a configuration entry

save - save changes

back - return to previous menu

help - display this help message

resolver - resolv.conf DNS name servers configuration
nameserver(s) - addresses of name servers separated by spaces (entries are populated in /etc/resolv.conf)

disable - enter user mode

amserver - AMS utilities - activate, deactivate, import packages

activate - activate AMS on this appliance

deactivate - deactivate AMS on this appliance

importpackagesfromUSB - import packages from Import_Packages dir on USB into AMS

importpackages - import packages bundled with this appliance into AMS

clean - delete packages bundled with this appliance

back - return to previous menu

help - displays this help message

help - display this help message

reboot - restart the system

shutdown - shutdown the system

verify - verify communication with the AMS

version - display the version information

help - displays this help message

verify - verify communication with the AMS

version - display the version information

ping - ping an IPv4 address

ping6 - ping an IPv6 address

show - show appliance information [this is a hidden command]

config - show the config information (hostname, address, netmask, gateway, ams)

hardware - show the CPU and memory

packages - list the installed packages

status - show authentication status

The appliance console allows "type ahead" so you do not need to type the entire command. You can just type the beginning of a command and hit the Tab key to complete the command. You may also enter "?" at any time for help.

To secure the appliance console, you should select **enable/config/password** and set a password. This will require users to enter a password to get into privileged mode (typing enable). The console password can also be set on the AMS by selecting the appliance and clicking **Manage Accounts**.

Additional Concepts

The following are some additional concepts to assist in the proper management of your VitalQIP Appliances:

- **Install latest packages** - When you activate the AMS and import the packages, the packages may not be the latest versions. To get the most recent packages, log onto the Alcatel-Lucent download site (<http://support.alcatel-lucent.com>) and download the packages from the VitalQIP Appliance Manager area. You can then import the packages into the AMS by clicking the **Packages** tab, selecting **Import Package** from **Actions** and selecting the downloaded packages. This is explained in the *AMS User's Guide*.
- **Subscribe to Alerts** - When new releases of packages are available as a result of security and other software fixes, Alcatel-Lucent sends out email alerts. To subscribe to alerts, log into the Alcatel-Lucent download site and select **Alerts**. Click on the **Alerts subscription** page link and select VitalQIP, VitalQIP Appliance Manager and other VitalQIP products you are interested in. When you receive alerts, they will contain links to any new appliance packages for download purposes.
- **Logging into an Appliance** - Alcatel-Lucent allows you to remotely log into a VitalQIP Appliance using ssh, PuTTY or other secure methods. To do this, you must first enable the ammuser account on the appliance by selecting the appliance in the AMS, clicking the **Manage Accounts** button and selecting the **User Account** tab. Then, click **Modify, Set Password** and enter the password. Click **Submit** to activate the ammuser account on the appliance. The default root password is appl1anc3. Customers should change the root password using the AMS by selecting **Manage Accounts** and **Root Account**.

Note: Those customers who do not want to allow direct access to the appliances should not set the ammuser password.

Troubleshooting

To troubleshoot problems on the appliances, review the steps included in the respective *Quick Start Guides*. As always, contact Technical Support if you continue to have problems.

Contacting technical support

If you need assistance with the vitalQIP Appliance, contact technical support via phone or web.

Region	Address	Contact information
North America	Alcatel-Lucent 400 Lapp Road, Suite 101 East Whiteland, PA 19355, USA	Phone: 1-866-LUCENT8 (582-3688) Option 1, Option 2 E-mail: support@alcatel-lucent.com Web: http://www.alcatel-lucent.com/support
Europe, Middle East, and Africa	Alcatel-Lucent Voyager Place Shoppenhangers Road Maidenhead Berkshire SL6 2PJ, UK	Phone: 00 800 00 LUCENT or +353 1 692 4579 E-mail: support@alcatel-lucent.com Web: http://www.alcatel-lucent.com/support
Central and South America	Alcatel-Lucent Brasil S/A Avenida Marginal Direita Anchieta, 400 - Km 11,5 CEP: 04182-901 - Jardim Santa Cruz - Sao Paulo - SP, Brazil	Phone: 0800 89 19325 or +55 11 3205 7626 E-mail: support@alcatel-lucent.com For other local CALA numbers, consult the web site http://www.alcatel-lucent.com/support or contact your local sales representative.
Asia Pacific	Alcatel-Lucent Australia 280 Botany Road Alexandria NSW 2015 Australia	Phone: 1800-458-236 (toll free from within Australia) (IDD) 800-5823-6888 (toll free from Asia Pacific - China, Hong Kong, Indonesia, South Korea, Malaysia, New Zealand, Philippines, Singapore, Taiwan, and Thailand) (613) 9614-8530 (toll call from any country) E-mail: support@alcatel-lucent.com Web: http://www.alcatel-lucent.com/support