



**Avaya Integrated Management
Release 3.1**
Implementation Guidelines

555-233-163
Issue 11
February 2006

© 2006 Avaya Inc.
All Rights Reserved.

Notice

While reasonable efforts were made to ensure that the information in this document was complete and accurate at the time of printing, Avaya Inc. can assume no liability for any errors. Changes and corrections to the information in this document may be incorporated in future releases.

For full legal page information, please see the complete document, Avaya Legal Page for Software Documentation, Document number 03-600758.

To locate this document on the website, simply go to <http://www.avaya.com/support> and search for the document number in the search box.

Documentation disclaimer

Avaya Inc. is not responsible for any modifications, additions, or deletions to the original published version of this documentation unless such modifications, additions, or deletions were performed by Avaya. Customer and/or End User agree to indemnify and hold harmless Avaya, Avaya's agents, servants and employees against all claims, lawsuits, demands and judgments arising out of, or in connection with, subsequent modifications, additions or deletions to this documentation to the extent made by the Customer or End User.

Link disclaimer

Avaya Inc. is not responsible for the contents or reliability of any linked Web sites referenced elsewhere within this documentation, and Avaya does not necessarily endorse the products, services, or information described or offered within them. We cannot guarantee that these links will work all of the time and we have no control over the availability of the linked pages.

Warranty

Avaya Inc. provides a limited warranty on this product. Refer to your sales agreement to establish the terms of the limited warranty. In addition, Avaya's standard warranty language, as well as information regarding support for this product, while under warranty, is available through the following Web site:

<http://www.avaya.com/support>

Copyright

Except where expressly stated otherwise, the Product is protected by copyright and other laws respecting proprietary rights. Unauthorized reproduction, transfer, and or use can be a criminal, as well as a civil, offense under the applicable law.

Avaya support

Avaya provides a telephone number for you to use to report problems or to ask questions about your product. The support telephone number is 1-800-242-2121 in the United States. For additional support telephone numbers, see the Avaya Web site:

<http://www.avaya.com/support>

Contents

Preface	5
Purpose.	5
Intended Audience.	5
Conventions Used in This Book	5
Support Resources	6
Avaya Technology and Consulting (ATAC)	6
Communications, Solutions, and Integration (CSI) Group of Software Services	6
Avaya Technical Service Organization (TSO)	7
Avaya Network Management Software Systems Support Group (NMSSS)	7
Customized Management Solutions for Avaya Integrated Management.	8
Avaya Contact Information	9
Additional Resources	10
Product Documentation	13
How to Access Books on the Web	14
Tell Us What You Think!	14
 Chapter 1: Application Environment.	 15
Overview	15
Voice and Messaging System Compatibility	15
Operating Environment	16
Hardware and Software Components	18
Server Requirements for VoIP Monitoring Manager.	18
Connectivity/Network Connections	23
Remote Access Hardware and Software	23
Symmetric Multi-Processor (SMP) Support	23
 Chapter 2: Implementation Services	 25
Product Packaging	25
Customer Implementation Options.	26
Overview of Avaya Implementation Services	26
Basic Implementation	27
Services Organizations Involved in Avaya Integrated Management Implementations.	28
Service Request Documentation	29
Implementation Request Form	29
Configuration Request Form	29
Avaya and Customer Responsibilities	30

Contents

Specific Implementation Tasks	31
Remote Connectivity	31
Computing Platform	32
IP Connectivity	33
Application Installation and Configuration	33
Implementation Verification.	33
Avaya Fault and Performance Manager and Avaya Proxy Agent.	34
Avaya MultiSite Administration.	34
Avaya SMON Manager.	35
Avaya VoIP Monitoring Manager	35
Avaya Site Administration.	36
Avaya Voice Announcement Manager	36
Avaya Provisioning and Installation Manager	36
Appendix A: Overview of Responsibilities	37
Appendix B: Installation of Red Hat Linux.	41
Overview	41
Installing Red Hat Enterprise Linux ES 4.0 or Red Hat Enterprise Linux AS 4.0	41
Upgrading Red Hat Enterprise Linux ES 3.0 or AS 3.0 to Red Hat Enterprise Linux ES 4.0 or AS 4.0	44
Installing Additional Software.	45
Determining Whether RPM Files are Already Installed	46
Installing RPM Files	46
Security Considerations.	47
Appendix C: Sample VMM Configurator	49
Index	51

Preface

Purpose

This book provides the customer with an overall strategy for implementation of Avaya Integrated Management applications. It describes the roles and responsibilities of the customer and Avaya Services in the implementation of the applications. This book addresses:

- Pre-implementation requirements of the network management computing platforms
- Pre-implementation installation of the operating system on the computing platforms
- Post-implementation verification checklist

The Avaya Data Network Implementation Engineering team (formerly RNIS) provides implementation services for Avaya Integrated Management applications. See [Support Resources](#) on page 6 for more information about planning, consulting, and technical services that are available from Avaya. Avaya Authorized Business Partners may also provide implementation services. Details of implementation services offered by business partners must be obtained from the business partners and are not discussed in book.

Intended Audience

This book is intended for customers to describe the roles and responsibilities of the customer and Avaya Services in the implementation of Avaya Integrated Management applications.

Conventions Used in This Book

The following typographical conventions are used:

- **Bold** type is used to indicate information that you type, buttons in a window, and the **Enter** key on the keyboard. It is also used for emphasis.
- Courier font is used for any information that the computer screen displays.
- Arrows indicate options that you select from cascading menus; for example, “Select File > Open” means choose the “Open” option from the “File” menu.

Support Resources

Avaya provides a variety of planning, consulting, and technical services. The following sections describe the resources and services that are available.

Avaya Technology and Consulting (ATAC)

Avaya Technology and Consulting (ATAC) works with client teams to develop detailed solutions for connectivity to Avaya Communication Manager solutions. The ATAC also designs network configurations.

Communications, Solutions, and Integration (CSI) Group of Software Services

Avaya Communications, Solutions, and Integration (CSI) Group of Software Services offers customers the following services:

- Platform readiness verification
- Remote implementation and installation
- Network management server configuration
- Customer acceptance verification
- Custom on-site services

The CSI Group consists of the following two teams:

- **Converged Solutions Implementation Engineering**

The Converged Solutions Implementation Engineering (CSIE) team implements multi-site media gateway (G350/G650/G700) deployment projects for both voice and data design. The overall direction of the CSIE team is to bring the correct methodology to these complex deployments that span various regions and to provide continuity to the overall project from the voice and data implementation standpoint.

- **Data Network Implementation Engineering (formerly RNIS)**

The Data Network Implementation Engineering team implements and/or upgrades existing or new data networks. This team analyzes the customer's network design requirements and performance expectations, and then creates the hardware and software installation specification used to implement data devices including Cajun, VPN, Wireless LAN, Secure Gateways, Extreme, and multi-vendor data equipment.

The CSI Group provides support on a contract basis. You can purchase various implementation offers from the CSI Group in Tampa, Florida. See [Table 1: Customer-Accessible Resources](#) on page 9 for contact information.

Avaya Technical Service Organization (TSO)

The Avaya Technical Service Organization (TSO) provides support to the Avaya Integrated Management client teams, field technicians, and customers. The TSO will bill customers for support on a time and materials basis if the following conditions exist:

- Customers do not provide remote access.
- Customers do not have a current maintenance agreement.
- Customers do not procure and install the required systems and software as defined in the Integrated Management Services Support Plan.
- Customers request support that is outside the purchase agreement.

The TSO does not support hardware or software that customers purchase from third-party vendors.

Avaya Network Management Software Systems Support Group (NMSSS)

The Avaya Network Management Software Systems Support Group (NMSSS) in Tampa Bay, Florida answers customer calls about products in Avaya Integrated Management. NMSSS will either answer your questions directly or connect you with an associate who can answer questions about the products.

Customized Management Solutions for Avaya Integrated Management

The Integrated Management Product Team understands customer's needs and is focused on customer satisfaction. See [Table 1: Customer-Accessible Resources](#) on page 9 for contact information. The Product Team will assist customers with Avaya Integrated Management projects and will provide:

- **Project Management** — An Integrated Management project person will work with the customer to access configuration and customization requirements for any or all applications within each Avaya Integrated Management offer. If custom work is required, the evaluation will include a proposed statement of work and price. Note that this offer is *not* intended to provide installation for customers that choose to implement Integrated Management applications using Avaya Services or third-party implementation services.
- **Training** — Basic training can be performed remotely using an interactive medium to display the applications and a conference bridge for audio. On-site training can be customized to meet the customer's needs. Customized training will focus on application functionality that is relevant to the customer and provide focused knowledge transfer to facilitate application-specific training.

Avaya Contact Information

[Table 1](#) and [Table 2](#) provide contact information that you may use if you need assistance during the process of installing and setting up Avaya Integrated Management. To access the links in [Table 2](#), you must be able to access the Avaya intranet.

Table 1: Customer-Accessible Resources

Resource	Contact Information
Avaya Support Center	http://www.avaya.com/support
Network Management Software Systems Support (NMSSS)	+1 800 237-0016
Communications, Solutions, and Integration (CSI) Group of Software Services	+1 800 730-9108, prompt 3
Integrated Management Product Team	Send email to: AIMtraining@avaya.com
Toll Fraud Intervention	+1 800 643-2353, prompt 1

Table 2: Avaya Internal Resources

Resource	Contact Information
Avaya System Management Support	http://aem-support.dr.avaya.com
Avaya Technology and Consulting (ATAC)	+1 888 297-4700, prompt 2,6 http://forum.avaya.com (requires a password)
Communications, Solutions, and Integration (CSI) Group of Software Services	http://associate2.avaya.com/sales_market/products/data-implementation-services/
Integrated Management Services Support Plan	http://associate2.avaya.com/solution/support_plans/#Enterprise

Additional Resources

All Avaya Integrated Management Release 3.1 documents are listed in the following tables:

- [Table 3: Overview Guides](#) on page 10
- [Table 4: Installation and Upgrade Guides](#) on page 10.
- [Table 5: Configuration Guides](#) on page 11.
- [Table 6: Help Systems](#) on page 11.
- [Table 7: Network Management Applications](#) on page 12.
- [Table 8: Device Managers](#) on page 13.

Table 3: Overview Guides

Document Title	Document Number
Avaya Integrated Management Release 3.1, Implementation Guidelines	555-233-163
Avaya Integrated Management Release 3.1, Overview	14-300615

Table 4: Installation and Upgrade Guides

Document Title	Document Number
Avaya Integrated Management Release 3.1, Enterprise Network Management Installation and Upgrade	14-300444
Avaya Integrated Management Release 3.1, Network Management for Solaris Installation and Upgrade	14-300445
Avaya Integrated Management Release 3.1, VoIP Monitoring Management Installation and Upgrade	14-300446
Avaya Integrated Management Release 3.1, System Management Installation and Upgrade	14-300448
Avaya Integrated Management Release 3.1, Standard Management Installation and Upgrade	14-300479
Avaya Integrated Management Release 3.1, Administration Tools Installation and Upgrade	14-300480

Table 5: Configuration Guides

Document Title	Document Number
Avaya Integrated Management Release 3.1, MultiSite Administration Configuration	555-233-137
Avaya Integrated Management Release 3.1, Fault and Performance Manager Configuration	555-233-138
Avaya Integrated Management Release 3.1, Proxy Agent Configuration	555-233-139
Avaya Integrated Management Release 3.1, Configuring Red Hat Linux	555-233-152
Avaya Integrated Management Release 3.1, VoIP Monitoring Manager Configuration	555-233-510
Avaya Integrated Management Release 3.1, Integrated Management Database Configuration	14-300039
Avaya Integrated Management Release 3.1, Enterprise Network Management Configuration	14-300210
Avaya Integrated Management Release 3.1, Provisioning and Installation Manager Configuration	14-300286

Table 6: Help Systems

Printable PDF Help System	Document Number
Avaya Integrated Management Release 3.1, MultiSite Administration Reference	14-300607
Avaya Integrated Management Release 3.1, Fault and Performance Manager Reference	14-300608
Avaya Integrated Management Release 3.1, Site Administration Reference	14-300610
Avaya Integrated Management Release 3.1, Integrated Management Database Reference	14-300611
Avaya Integrated Management Release 3.1, Provisioning and Installation Manager Reference	14-300612
Avaya Integrated Management Release 3.1, Voice Announcement Manager Reference	14-300613
Avaya Integrated Management Release 3.1, VoIP Monitoring Manager Reference	14-300614

Table 7: Network Management Applications

Document Title	Document Number
Avaya Integrated Management Release 3.1, Address Manager User Guide	14-300170
Avaya Integrated Management Network Configuration Manager User Guide ^a	14-300167
Avaya Integrated Management Release 3.1, Network Management Console User Guide	14-300169
Avaya Integrated Management Reference Guide ^a	14-300531
Avaya Integrated Management QoS Manager User Guide ^a	14-300216
Avaya Integrated Management Release 3.1, SMON Manager User Guide	14-300209
Avaya Integrated Management Release 3.1, Software Update Manager User Guide	14-300168
Avaya Integrated Management Release 3.1, Secure Access Administration User Guide	14-300537
Avaya Integrated Management Release 3.1, Address Manager User Guide	14-300170

a. This document was not updated for Release 3.1.

Table 8: Device Managers

Document Title	Document Number
Avaya Integrated Management C360 Manager User Guide ^a	14-300164
Avaya Integrated Management C360 SMON User Guide ^a	14-300207
Avaya Integrated Management C460 Manager User Guide ^a	14-300224
Avaya Integrated Management C460 SMON User Guide ^a	14-300225
Avaya Integrated Management Release 3.1, G350 Manager User Guide	14-300166
Avaya Integrated Management P130 Manager User Guide ^a	14-300218
Avaya Integrated Management P130 SMON User Guide ^a	14-300219
Avaya Integrated Management P330 Manager User Guide ^a	14-300221
Avaya Integrated Management P330 SMON User Guide ^a	14-300222
Avaya Integrated Management P330 Load Balancing Manager User Guide ^a	14-300223
Avaya Integrated Management W310 Manager User Guide ^a	14-300163
Avaya Integrated Management W310 SMON User Guide ^a	14-300208

a. This document was not updated for Release 3.1.

Product Documentation

The latest version of Avaya Integrated Management product documentation, including this book, is available from the Avaya Support Web Site. To view or download these books from the Web, you must have access to the Internet, an Internet browser, and Adobe Acrobat Reader, version 5.0 or later. Adobe Acrobat Reader is provided on the Avaya Integrated Management CDs and is also available from <http://www.adobe.com>. See [How to Access Books on the Web](#) for instructions on how to view or download these books.

How to Access Books on the Web

To view or download books from the Avaya Support Web Site, follow these steps:

1. Access <http://www.avaya.com/support>.
2. Click **Find Documentation and Downloads by Product Name**.
3. Click the letter **I** in the alphabet listing.
4. Locate the Integrated Management product or offer name and click the corresponding link.
5. Click **View All Documents** to display a list of available books for that product or offer.

Tell Us What You Think!

Let us know how this book measured up to your expectations. Your opinions are crucial to helping us meet your needs! Send us your comments by mail, fax, or e-mail as follows:

Mail: Avaya Inc.
Avaya Integrated Management Documentation Team
Room 3C-313
307 Middletown Lincroft Rd.
Lincroft, NJ 07738
USA

Fax: Avaya Integrated Management Documentation Team
+ 1 732 852-2469

E-mail: document@avaya.com
Subject: Avaya Integrated Management Documentation Team

Chapter 1: Application Environment

Overview

Avaya Integrated Management provides a standards-based infrastructure for an open application program interface and integrated network management in a converged, multi-vendor environment. Avaya Integrated Management is comprised of a set of applications that provide systems administration, network management, and business integration in a converged voice and data environment. While many of the individual management products have been available on an individual basis, Avaya Integrated Management integrates voice-centric management products and data-centric management products and provides a common user interface.

Voice and Messaging System Compatibility

The Avaya Integrated Management products manage devices using IP. All adjunct devices and non-IP enabled devices may relay alarms to the Avaya Proxy Agent using dial-up (serial) alarming. Avaya Integrated Management is compatible with voice systems, messaging systems, and call management systems as shown in [Table 9](#).

Table 9: Avaya Integrated Management System Compatibility

System	Release
DEFINITY R, DEFINITY SI, DEFINITY CSI, DEFINITY ONE, IP600	Release 9, 10 or MultiVantage (System must be configured for IP administration)
S8100 Media Server	MultiVantage
S8300 Media Server	MultiVantage and later or Communication Manager
S8500	Communication Manager
S8700 Media Server	MultiVantage and later or Communication Manager
S8710 Media Server	MultiVantage and later or Communication Manager
1 of 2	

Table 9: Avaya Integrated Management System Compatibility (continued)

System	Release
INTUITY AUDIX	Release 5.1 and later
INTUITY AUDIX LX	Release IA 1.0-17.X
DEFINITY AUDIX	Release 3.1 or later
Modular Messaging	Release 1.1
Multipoint Control Unit (MCU)	Release 7.2
S8300 INTUITY AUDIX	MultiVantage
IP600/DEFINITY ONE AUDIX	Release 9 or later
INTUITY Interchange	5.1 or later
Call Management System (CMS)	Release 8.3 or later
CONVERSANT	7.0 or later
2 of 2	

Operating Environment

The Avaya Integrated Management products are listed in [Table 10](#). The table identifies the servers on which the products are installed and identifies the products that are installed on the Windows Client PC. The minimum hardware and software requirements of the Windows, Linux, and Solaris servers and the Windows Client PC are described in [Table 11](#), [Table 12](#), [Table 13](#), and [Table 14](#).

Table 10: Operating Environment for Avaya Integrated Management Applications

Product Name	Linux Server	Solaris Server	Windows Server	Windows Client PC
Avaya MultiSite Administration	✓			
Avaya Fault and Performance Manager	✓			
Network Management System Integration (NMSI)		✓	✓	
1 of 2				

Table 10: Operating Environment for Avaya Integrated Management Applications (continued)

Product Name	Linux Server	Solaris Server	Windows Server	Windows Client PC
Avaya Proxy Agent	✓			
Avaya Integrated Management Database	✓			
Avaya Network Management Console with System View			✓	
Avaya Network Configuration Manager		✓	✓	
Avaya Software Update Manager		✓	✓	
Avaya SMON™ Manager		✓	✓	
Avaya Address Manager		✓	✓	
Avaya QoS Manager		✓	✓	
Avaya Secure Access Administration		✓	✓	
Avaya VoIP Monitoring Manager			✓	✓
Avaya Device Managers		✓	✓	
Avaya Provisioning and Installation Manager			✓	
Avaya Site Administration				✓
Avaya Voice Announcement Manager				✓
				2 of 2

Hardware and Software Components

The customer is responsible to provide the hardware platform, operating system, software, and network used to host the Avaya Integrated Management applications. The minimum hardware and software requirements needed to support the Avaya Integrated Management applications are provided in the following tables:

- [Table 11: Windows Server Requirements](#) on page 19.
- [Table 12: Red Hat Enterprise Linux Server Requirements](#) on page 21.
- [Table 13: Solaris Server Requirements](#) on page 21.
- [Table 14: Windows Client PC Requirements](#) on page 22.

In addition to the specifications provided in these tables, Avaya recommends the use of servers that are certified for use with Red Hat Enterprise Linux as listed on Red Hat's Hardware Compatibility List, which can be found at: <http://hardware.redhat.com/hcl/>.

Use of a computing platform that is below the recommended configurations may result in poor performance.

Server Requirements for VoIP Monitoring Manager

In addition to ensuring the Windows server meets the requirements provided in [Table 11: Windows Server Requirements](#) on page 19, it is recommended that you use the VoIP Monitoring Manager Configurator prior to installing VoIP Monitoring Manager. See [Appendix C: Sample VMM Configurator](#) on page 49 to view a copy of the VoIP Monitoring Manager Configurator completed with sample data.

Completing the VoIP Monitoring Manager Configurator will help you determine whether the MSDE database that comes with the VoIP Monitoring Manager application will meet the customer's needs. It will also help you determine whether a single VoIP Monitoring Manager server will be sufficient. For example, in cases where there are more than 4000 simultaneous RTCP streams (2000 concurrent calls) coming into the server, multiple VoIP Monitoring Manager servers should be considered.

You can also use the VoIP Monitoring Manager Configurator to help determine how to configure VoIP Monitoring Manager parameters once the application is installed. For example, you can adjust numbers in the VoIP Monitoring Manager Configurator, such as RTCP Reporting Intervals and History Days to get an idea of how to configure them to achieve the desired goal.

Using the VoIP Monitoring Manager Configurator will require that you gather information from the customer about their volume of IP calls.

To access the VoIP Monitoring Manager Configurator, go to: <http://www.auslabs.avaya.com/ClearCaseView/VMM/StandardsAndGuidelinesSet/General/VMMConfigurator.xls>. To access this link, you must be able to access the Avaya intranet.

Table 11: Windows Server Requirements

Component	Required	Comments
Operating System ¹	Microsoft Windows 2003 Standard Edition server, Microsoft Windows 2003 Enterprise Edition server, or Microsoft Windows 2000 server; VoIP Monitoring Manager can also be installed on Microsoft Windows XP Professional.	Only English operating systems are supported.
Processor	2.8 GHz Pentium® 4	A maximum of two processors is supported.
Hard Drive	40 GB	
Memory	1.5 GB RAM	
Network Connectivity	TCP/IP 100 Mbit Network Card	Only one network interface is supported. Dual network interface cards (NICs) or additional software network interfaces, such as a VPN interface, are not supported.
Modem	56K modem for remote access	
CD-ROM Drive		Required for installation.
Monitor	SVGA 1024 X 768 display	
SNMP Agent	The Simple Network Management Protocol (SNMP) Agent is the Windows Service that runs on your computer. SNMP must be installed prior to installing VoIP Monitoring Manager.	
Extra Software	Anti-virus software pcAnywhere	Required for Avaya support. pcAnywhere is required for remote access by Avaya Services.
Web Browser	Internet Explorer 6.0	Required for access to the Integrated Management Launch Page and web-based clients.
1 of 2		

Table 11: Windows Server Requirements (continued)

Component	Required	Comments
Integration with HP OpenView Network Node Manager	HP OpenView 7.0.1 or HP OpenView 7.5	HP OpenView is not included on any Avaya Integrated Management CD. Customers must purchase, install, and maintain HP OpenView. While Avaya services support Integrated Management when installed over HP OpenView, they do not support the HP OpenView product itself.
Port (for Avaya VoIP Monitoring Manager)	The Avaya VoIP Monitoring Manager client and server software communicate using Java Remote Method Invocation (RMI), and use port 1099 on the machine on which the server is running. If this port is unavailable, the server will attempt to use the following ports: 49177, 51173, or 63006. Although it is unlikely that all of these ports will be in use on a single machine, ensure that at least one of these ports is available.	
2 of 2		

1. The operating system can be on a high-end desktop machine. A server class hardware platform is not required.

Table 12: Red Hat Enterprise Linux Server Requirements

Component	Required	Comments
Operating System	Red Hat Enterprise Linux ES R4.0 or Red Hat Enterprise Linux AS R4.0	For upgrade installations, Red Hat Enterprise Linux ES R3.0 or AS R3.0 are supported. Only English operating systems are supported.
Processor	2.8 GHz Pentium® 4	A maximum of two processors is supported.
Hard drive	40 GB	
Memory	1.5 GB RAM	
Network Connectivity	TCP/IP 100 Mbit Network Card	
Modem	56K external modem connected to COM1 for remote access	
Web Browser	Not required	Linux web client is not supported.
CD-ROM Drive		Required for installation.
Monitor	SVGA 1024 X 768 display	

Table 13: Solaris Server Requirements

Component	Required	Comments
Operating System	Solaris 9 or 10	Only English operating systems are supported.
Processor	SPARC architecture 500MHz	
Hard Drive	40 GB	
Memory	1.5 GB RAM	
Network Connectivity	TCP/IP 100 Mbit Network Card	
Web Browser	Not required	Solaris web client is not supported.
CD-ROM Drive		Required for installation.
1 of 2		

Table 13: Solaris Server Requirements (continued)

Component	Required	Comments
Monitor	SVGA 1024 X 768 display	
Integration with HP OpenView Network Node Manager	HP OpenView 7.0.1 or HP OpenView 7.5	HP OpenView is not included on any Avaya Integrated Management CD. Customers must purchase, install, and maintain HP OpenView. While Avaya services support Integrated Management when installed over HP OpenView, they do not support the HP OpenView product itself.
2 of 2		

Table 14: Windows Client PC Requirements

Component	Required	Comments
Operating system	Microsoft Windows 2000, Microsoft Windows XP Professional, or Microsoft Windows 2003	
Processor	600 MHz Pentium®	
Hard Drive	1 GB	Required to install all of the client components.
Memory	256 MB RAM	
Monitor	SVGA 1024 X 768 display	
Network Connectivity	TCP/IP 10/100 Network Card	
Modem	56K Modem	May be required for remote access to the client PC.
CD-ROM Drive		Required for installation.
Web Browser	Internet Explorer 6.0	Required to access the Integrated Management Launch Page and web-based clients.

Connectivity/Network Connections

Avaya Integrated Management requires a local (or wide) area network connection to all network devices and supporting databases. The customer is responsible for designing and implementing local (or wide) area network connections. The network connections must be in place and tested prior to Integrated Management implementation. Assistance with network setup is not part of an Avaya Integrated Management offer but may be performed by Avaya Services under a different offer.

Implementation requires the following network information:

- The IP address of each DEFINITY® system
- The IP address of each INTUITY® Audix system
- The IP address of each S8300/S8500/S8700/S8710 media server.
- The C-LAN port used for SAT access on each DEFINITY® system or S8500/S8700/S8710 media server.

Remote Access Hardware and Software

[Table 11](#) and [Table 12](#) provide the requirements for a modem and remote access software on Windows and Linux-based computing platforms. However, where multiple network management servers are present and connected via an IP network, only one network management server requires remote access capabilities. The remaining network management servers may be accessed through use of a Telnet session originating at the server with remote access. This arrangement is not dependent on the operating systems (Linux or Windows Server) of the network management servers. This topic is discussed in detail in [Remote Connectivity](#) on page 31.

Symmetric Multi-Processor (SMP) Support

Linux-based applications in Avaya Integrated Management require the latest kernel from Red Hat to run properly in a Symmetric Multi-Processor (SMP) environment.

Microsoft and Red Hat each provide a website where customers can download patches to the Windows and Linux operating systems, respectively. It is strongly recommended that customers keep their servers up-to-date, as patches correct software bugs and also contain security updates.

Chapter 2: Implementation Services

Product Packaging

There are six Avaya Integrated Management offers:

- Enterprise Network Management
- Network Management for Solaris
- VoIP Monitoring Management
- System Management
- Administration Tools
- Standard Management

For more information about the offers, see *Avaya Integrated Management Release 3.1, Overview*, document number 14-300615. Irrespective of product packaging, Avaya will provide implementation services for the following individual applications on the customer's computing platform:

- Avaya MultiSite Administration
- Avaya Proxy Agent
- Avaya Fault and Performance Manager
- Avaya SMON Manager
- Avaya VoIP Monitoring Manager (full version)
- Avaya Site Administration
- Avaya Voice Announcement Manager (Voice Announcement Board Administration)
- Avaya Provisioning and Installation Manager

Customer Implementation Options

Many of the Avaya Integrated Management applications are customer installable. Due to the complexity of application configuration, however, it is strongly recommended that customers seek professional implementation services from Avaya Services to implement any of the following applications:

- Avaya MultiSite Administration
- Avaya Proxy Agent
- Avaya Fault and Performance Manager

If a customer attempts a self-installation and requires assistance with the installation or configuration of an Avaya Integrated Management application, they should contact the Avaya Technical Services Organization (TSO). Note that charges may apply for TSO assistance with application installation or configuration. The Avaya TSO also provides warranty and maintenance services for an application after that application has been properly installed and configured. An application is considered properly installed when the implementation verification tasks defined in [Implementation Verification](#) on page 33 have been successfully completed.

Avaya TSO support is available at 1-800-242-2121, then follow the prompts for “Avaya Integrated Management”.

Overview of Avaya Implementation Services

Avaya implementation services are available for individual or small groups of applications included in Avaya Integrated Management. Due to installation and configuration complexities, it is strongly recommended that Avaya Services implement Avaya MultiSite Administration, Avaya Proxy Agent, and Avaya Fault and Performance Manager. The customer may choose to implement the remaining applications or have Avaya Services perform these implementations. Basic implementation services can be provided in the following ways:

- **Remote Implementation** — Data Network Implementation Engineers can perform basic implementation remotely using remote access technology (e.g., dial-up modem) to access the customer servers. The remote Data Network Implementation Engineer is in telephone contact with the designated customer representative as necessary during the implementation process. The customer representative assists with the implementation as follows:
 - Verifies server readiness (system is powered-on and the operating system is booted)
 - Verifies availability of remote connectivity to the customer servers and managed devices (e.g., voice systems)
 - Places product CDs into the server CD drive as directed by the remote engineer

Once these activities have been completed, the customer representative's assistance is completed. The remote Data Network Implementation Engineer completes the configuration and customization of the application software.

- **Onsite Installation** — For customers in the United States, onsite installation is available for an additional charge. When requested, a field technician is dispatched to the customer site to replace the customer representative. The field technician acts as the hands of the remote Data Network Implementation Engineer. The onsite field technician assists with the implementation as follows:
 - Verifies server readiness (system is powered-on and the operating system is booted)
 - Verifies availability of remote connectivity to the customer servers and managed devices (e.g., voice systems)
 - Places product CDs into the server CD drive as directed by the remote engineer

Once these activities have been completed, the field technician leaves the customer site while the remote Data Network Implementation Engineer completes the configuration and customization of the application software.

- **Onsite Implementation** — Onsite Implementation is available as an add-on offer. The Data Network Implementation Engineer travels to the customer site to perform the implementation. Onsite Installation and Onsite Implementation should never be ordered together.

Basic Implementation

Basic implementation services include the following:

- Installation of an Avaya Integrated Management application on a customer-supplied server
- Configuration of the application to operate with one voice or messaging system (DEFINITY or INTUITY) or one Avaya P130/P330 device/stack as appropriate for the application
- Verification that the application operates correctly with that managed device

Basic implementation services do not include setup of customer server hardware or operating environment, or design/implementation of network connectivity.

For Avaya Integrated Management applications that manage voice systems, some parameters must be configured on the voice system for it to operate with the application. In particular, a login and password is required for all applications. An application-specific login is recommended to enable appropriate access rights and create an application-specific audit trail in the voice system log. In addition, some applications require configuration of the IP address of the network management server and alarm notification information into the voice system.

Note:

In all cases, Data Network Implementation Engineering services described in this document do not include administration of configuration parameters on any Avaya ECLIPS or DEFINITY voice systems.

The following additional services are available:

- **Configuration of Managed Devices Offer** — The customer can request Avaya Services to configure Avaya Integrated Management applications to work with additional managed devices.
- **Solution Evaluation Offer**— The customer can request a Data Network Implementation Engineer to work with them via telephone for a 4-hour block of time to assess configuration and customization requirements for any or all Avaya Integrated Management applications. This offer may be ordered in multiple units if more time is required. Where custom work is required, the evaluation results in a proposed statement of work and price.

Services Organizations Involved in Avaya Integrated Management Implementations

Avaya Communications, Solutions, and Integration (CSI) Group of Software Services provides implementation services for Avaya Integrated Management applications. The CSI Group consists of the following two teams:

- Converged Solutions Implementation Engineering
- Data Network Implementation Engineering (formerly RNIS)

For more information about the CSI Group, see [Communications, Solutions, and Integration \(CSI\) Group of Software Services](#) on page 6.

The Data Network Implementation Engineering team is composed of the following service groups:

- **Data Help Desk (DHD)** — The primary objective of the DHD is management and scheduling of Data Network Implementation Engineering resources. The DHD team receives and tracks all requests to engage Data Network Implementation Engineering support. Requests are reviewed for assignment feasibility, entered into an internal tracking system and assigned to an Implementation Engineer and a Case Implementation Coordinator (CIC) associate.
- **Case Implementation Coordinator (CIC)** — An internal administrative group that tracks Data Network Implementation Engineering service orders from receipt to completion. This group interfaces with all sales teams for service order accuracy, confirms or negotiates service delivery dates with customers, and provides status on service progress throughout the life cycle of an order. Where applicable, the CIC group will see that the necessary FSO/ISO resources have been scheduled for service projects. At the completion of service, the CIC group contacts the customer to gain acceptance of the work performed.
- **Data Network Implementation Engineer** — The Data Network Implementation Engineer receives the order documentation, including the Implementation Request Form (IRF) and Configuration Request Forms (CRFs) from the DHD team and creates the Installation Specification. The Implementation Engineer gathers additional information from the

customer technical contact to add to the Installation Specification. The Installation Specification provides technical information to guide the implementation and is available to Avaya technical services teams that provide maintenance support for the applications. See [Service Request Documentation](#) on page 29 for more information about the IRF and CRFs.

Service Request Documentation

When implementation services for Avaya Integrated Management applications are ordered, the customer must work with your account team to complete an Implementation Request Form (IRF) and applicable Configuration Request Forms (CRFs). These forms provide information that the Data Network Implementation Engineer uses to configure the Avaya Integrated Management software to meet customer requirements.

Implementation Request Form

The Implementation Request Form (IRF) provides the Implementation Engineer with basic customer contact and site information, including:

- Order and contact information
- Product and services requested
- Application description
- General network information

Configuration Request Form

In addition to the IRF, a Configuration Request Form (CRF) must be completed for key Avaya Integrated Management applications to be installed. The CRF contains information that describes the customer requirements for the implementation of the specific application, for example:

- Information on each voice system or data device to be configured
- Filters for forwarding of alarms (for Avaya Fault and Performance Manager).

The Linux CRF must be submitted for implementation of one or more of the following Linux-based applications:

- Avaya Fault and Performance Manager
- Avaya Proxy Agent
- Avaya MultiSite Administration

The Windows CRF must be submitted for implementation of one or more of the following Windows-based applications:

- Avaya VoIP Monitoring Manager
- Avaya Network Management Console
- Avaya Provisioning and Installation Manager

Avaya and Customer Responsibilities

[Table 15: Customer and Avaya Responsibilities](#) on page 37 summarizes the responsibilities of the customer and the Avaya Data Network Implementation Engineering team for implementation of Avaya Integrated Management applications.

Note:

All customer requirements must be completed prior to the scheduled start date of implementation. For a complete list of customer responsibilities, please contact the Data Help Desk.

For all Data Network Implementation Engineering service orders, the customer is responsible to:

- Identify a principal contact for this work
- Schedule a time with the Data Network Implementation Engineering for the implementation
- Complete and submit the Implementation Request Form (IRF) and Configuration Request Forms (CRFs)

For remote implementation, the customer must provide an onsite contact to assist during installation. For onsite installations or onsite implementations, the customer must provide Avaya personnel with access to appropriate facilities and computer systems.

Note:

If required documentation is not provided to the Implementation Engineer or dial-up connectivity has not been verified at least 5 business days prior to the scheduled implementation date, the implementation will be rescheduled to the next available date.

Specific Implementation Tasks

Implementation of Avaya Integrated Management applications includes the following tasks:

- Platform and Network Readiness
 - Remote connectivity
 - Computing platform
 - IP connectivity
- Installation and configuration of one or more of the Avaya Integrated Management applications on customer management servers
- Implementation Verification

The following sections describe these tasks in more detail.

Remote Connectivity

For remote implementations, the Data Network Implementation Engineer must have remote access to the customer's network management server(s). Avaya Services also requires remote access for ongoing maintenance support of installed Avaya Integrated Management applications. The customer is responsible for the installation, configuration, and testing of modems on the server(s) prior to implementation of Avaya Integrated Management applications. Remote access is typically provided by an analog modem connected directly to the server in conjunction with an analog phone line with a telephone number accessible on the public phone network. Testing must include:

- Establishing a dial-up connection and initiation of a pcAnywhere session on a Windows server, and
- Establishing a dial-up connection and initiation of a Telnet session from the Linux command prompt on a Linux server.

Where multiple network management servers are present and connected via an IP network, only one network management server requires remote access capabilities. The remaining network management servers may be accessed through use of a Telnet session originating at the server with remote access. This arrangement is not dependent on the operating systems (Linux or Windows Server) of the network management servers.

If a Linux server hosts remote access, a modem must be connected to serial port COM1 (ttyS0). While internal and USB modems can be configured to work with Red Hat Linux, Avaya recommends a US Robotics Sportster 56k external modem to provide reliable remote connectivity in support of remote implementation and maintenance services.

No additional software is required on Linux servers because the Red Hat Linux installation loads Virtual Network Computing (VNC) software. The Implementation Engineer uses a modem to establish a dial-up point-to-point-protocol (PPP) connection. Once the PPP session is established, they can use VNC to continue installation, configuration, and verification of the Avaya Integrated Management applications.

If a Windows server hosts remote access, it is the customer's responsibility to obtain and load Symantec's pcAnywhere remote control software (version 10.0 or higher). This enables the Implementation Engineer to accomplish remote implementation of Avaya Integrated Management applications, and it is also required for warranty and maintenance services provided by Avaya Services.

Note that Avaya Proxy Agent, running in a Linux environment, may receive alarms from adjunct units, such as messaging systems and integrated voice response systems, over a serial link. Dial-up serial alarming is also used for DEFINITY voice systems running R9.1 and R9.2 software. Additional analog modem(s) and phone line(s) are used to receive these alarms, as the modem on COM1 must be dedicated to implementation and maintenance. Typically, one modem is required to support alarm reception, while a second modem is required to support alarm forwarding. However, the number of required modems (and the possible need for a Serial I/O Board to provide additional serial ports) is dependent on the following:

- Number of managed nodes using serial alarming
- Whether the proxy server is providing alarm reception only or must perform alarm forwarding and filtering
- Whether the managed nodes are duplicated for redundancy or high-reliability.

As a result, the number of modems required to support serial alarming must be determined on a case-by-case basis by the Data Network Implementation Engineer.

Computing Platform

The customer is responsible for acquiring servers and loading the Windows server, Red Hat Enterprise Linux server, or Solaris server operating systems. It is important that the computing platform meet the minimum requirements specified in the following tables:

- [Table 11: Windows Server Requirements](#) on page 19
- [Table 12: Red Hat Enterprise Linux Server Requirements](#) on page 21
- [Table 13: Solaris Server Requirements](#) on page 21

Failure to meet these requirements may result in poor system performance. If desired, Avaya Services will install the Windows server, Red Hat Enterprise Linux server, or Solaris server operating systems for an additional charge.

When loading the Red Hat Enterprise Linux server operating system, it is important to note that the default settings are not appropriate for the Linux-based applications in Avaya Integrated Management. It is mandatory that the installation guidelines provided in [Appendix B: Installation of Red Hat Linux](#) on page 41 be closely followed. Deviation from these guidelines may result in failure of the Linux-based applications to operate on the server or the platform acceptance test to fail, thus delaying the completion of the implementation process.

After Red Hat Enterprise Linux server software has been installed and configured on the computing platform, it is important that the customer verify that a dial-up connection can be established by dialing into the server via a phone line connected to the modem on serial port COM1 (ttyS0). A successful connection is indicated by display of a Linux login prompt. Remote connectivity is required as a condition of warranty and post-warranty service. Where Avaya Services will provide remote implementation services, the customer must verify that a dial-up connection can be established prior to the scheduled date of implementation.

IP Connectivity

Network verification is performed by the Data Network Implementation Engineer prior to implementation of any server-based application in Avaya Integrated Management. This test is performed to ensure that the network management server(s) have IP connectivity to all devices to be managed, including voice systems, messaging systems, and data switches.

It is the customer's responsibility to design and implement local and/or wide area networking such that each management server has IP connectivity to each device it will manage.

Application Installation and Configuration

Based on information on the customer's Implementation Request Form (IRF) and Configuration Request Forms (CRFs) submitted with the order and direct communications with the customer technical contact, the Data Network Implementation Engineer will create an Installation Specification. This document provides technical information to guide the implementation and is available to Avaya technical services teams that provide maintenance support for the applications.

Implementation Verification

Once an application is installed and configured for operation with one or more managed devices, the Data Network Implementation Engineer performs an application-specific Acceptance Test to verify application implementation.

Avaya Fault and Performance Manager and Avaya Proxy Agent

Once Avaya Fault and Performance Manager and Avaya Proxy Agent have been installed and configured, the Data Network Implementation Engineer performs the following steps to verify proper operation with each managed voice and messaging system for which the applications were configured:

- Establish a connection between each voice or messaging system and Avaya Proxy Agent.
- Verify that each voice or messaging system can **send** alarms to the Avaya Proxy Agent.
- Verify that the Avaya Fault and Performance Manager server can **receive** alarms from each voice system.
- Verify that the Avaya Fault and Performance Manager server can retrieve **configuration data** from each voice system.
- Generate a test alarm for each managed node and verify that Avaya Fault and Performance Manager received the alarm.

In addition to verification of the application, the Data Network Implementation Engineer assists the customer in understanding basic operations of Avaya Fault and Performance Manager and Avaya Proxy Agent:

- Verify that the customer has changed the **root** and **g3maadm** logins for the Linux server platform.
- Verify that the customer can **start** and **stop** Avaya Proxy Agent.
- Verify that the customer can **display** the status screen to view the status and statistics of the Avaya Proxy Agent connection and the managed node.
- Verify that the customer can add/modify/delete managed devices from Avaya Proxy Agent via the change managed-nodes command.
- Verify that the customer can set/change voice system login information for Avaya Proxy Agent via the change managed-nodes command.

Avaya MultiSite Administration

Once Avaya MultiSite Administration has been installed and configured, the Data Network Implementation Engineer performs the following steps to verify proper operation with each managed voice system and each messaging system for which the application was configured:

- Verify successful client configuration by launching from **Start** menu and Avaya Integrated Management Launch Page.
- Change the default admin password and report this to the customer.
- Create at least one Avaya MultiSite Administration user for the customer in the Avaya Integrated Management Database application. Then, in Avaya MultiSite Administration, assign a voice system to that user.
- Verify the queue is running for each configured voice system and messaging system.

- Kick-off an initialization for each configured voice system (this can take some time, up to several hours).
- Add and then delete a station on each voice system.
- Add and then delete a voice mail subscriber for each messaging system.
- Ensure that a unique login for use by Avaya MultiSite Administration has been administered on each voice system. (This is necessary to ensure that the Avaya MultiSite Administration cache of system changes remains accurate.)
- Configure the Task Manager to run scheduled housekeeping tasks as recommended for each individual task and as directed by the customer.

Avaya SMON Manager

Verify successful installation by launching from **Start** menu and Avaya Integrated Management Launch Page.

Avaya VoIP Monitoring Manager

Once the Avaya VoIP Monitoring Manager has been installed, the Data Network Implementation Engineer assists the customer in performing the following steps to verify proper operation:

1. Make sure that the voice system is configured with the IP address of the management server hosting the VoIP Monitoring Manager Server.
Start the VoIP Monitoring Manager server application. From the Windows server hosting the VoIP Monitoring Manager Server application, select **Start > Programs > Avaya > VoIP Monitoring Manager > Server**.
2. From the machine hosting the VoIP Monitoring Manager client, select **Start > Programs > Avaya > VoIP Monitoring Manager > Client** to start the VoIP Monitoring Manager client.
3. Start a call between two IP phones.
4. In the left-hand panel in the VoIP Monitoring Manager client, select the **Endpoint** tab, and then click the **Search** button to launch the Search dialog. Select the search option **Sessions active in the last 1 minute**. This is the default setting.
5. Click the **Search** button. The Search Results List updates with a list of Active Endpoints. At least two endpoints should appear in the list. It will also list the Endpoint type, IP address and phone number. Now, select the Endpoint from the list and click the **Report** button to view the QoS data for that Endpoint.
6. Hang up the call and wait one minute.
7. In the left-hand panel of the VoIP Monitoring Manager client, select the **Endpoint** tab, and then click the **Search** button to launch the Search dialog. Select the search option **Sessions active in the last 1 minute**.
8. Click the **Search** button and confirm that there are no active endpoints.
9. Select the **Sessions active from** radio button.

10. Click the top date drop-down arrow to access the calendar and time for the starting period of your Search. Select hours, minutes, seconds and AM/PM, then select the day. Click outside the calendar window to close the calendar. Click the bottom date drop-down arrow to access the calendar and time for the ending period of the query as described above. The top and bottom date fields display the selected date.
11. Click the **Search** button. The Search Results List updates with a list of Historical Endpoints. It also lists the endpoint type, IP address, and phone number. To view the QoS data, select the Endpoint and click the **Report** button.

Avaya Site Administration

Perform the following tasks:

- Verify successful installation by launching from **Start** menu and Avaya Integrated Management Launch Page.
- For upgrades from an existing version of Avaya Site Administration, verify that all customer settings remain in place.

Avaya Voice Announcement Manager

Perform the following tasks:

- Verify successful installation by launching from **Start** menu and Avaya Integrated Management Launch Page.
- Configure at least one voice system in Avaya Voice Announcement Manager and verify IP connectivity to the voice system and Avaya Voice Announcement Manager board.

Avaya Provisioning and Installation Manager

Perform the following tasks:

- Verify successful installation by launching from **Start** menu and Avaya Integrated Management Launch Page.
- Verify that a simple Device Profile can be created and sent successfully.
- Verify that a simple Template can be created and sent successfully
- Verify that for a G250 with Standard Local Survivability (SLS), the SLS data can be collected and viewed in the Device Profile wizard.

Appendix A: Overview of Responsibilities

[Table 15](#) provides an overview of customer and Avaya responsibilities.

Table 15: Customer and Avaya Responsibilities

Task		Customer	Avaya
1.	Software/Hardware Procurement:		
	a. Platform and Software Procurement		
	Server hardware	✓	
	Windows Server Operating System	✓	
	Red Hat Linux Enterprise Server	✓	
	HP OpenView Network Node Manager for Windows (optional)	✓	
	b. Connectivity Device Procurement		
	Remote access equipment to support product maintenance	✓	
2.	Platform Installation and Configuration:		
	a. Microsoft Windows Installation and Configuration	✓	
	Hardware-specific patches and drivers loaded	✓	
	LAN Interface Card configuration	✓	
	Platform Acceptance Test	✓	
	Verification of Platform Readiness		✓
	b. Red Hat Linux Enterprise Server Installation and Configuration	✓	
	Hardware-specific patches and drivers loaded	✓	
	LAN Interface Card configuration	✓	
	Platform Acceptance Test	✓	
	Verification of Platform Readiness		✓
1 of 3			

Table 15: Customer and Avaya Responsibilities (continued)

Task		Customer	Avaya
	c. NMS O/S Installation and Configuration (optional)	✓	
	Hardware-specific patches and drivers loaded	✓	
	LAN Interface Card configuration	✓	
	Install and Configure Trouble Ticketing software	✓	
	Platform Acceptance Test	✓	
	Verification of Platform Readiness		✓
3.	Switch and Connectivity Configuration and Testing:		
	Remote access (via phone line connectivity)	✓	
	LAN and IP connectivity	✓	
	Creation of application-specific administration User ID and Password on managed voice and messaging systems	✓	
	Administration of server IP addresses on voice systems (where required)	✓	
4.	Avaya Integrated Management Application Installation and Configuration:		
	Avaya Site Administration	✓	✓
	Avaya Voice Announcement Manager	✓	✓
	Avaya VoIP Monitoring Manager	✓	✓
	Avaya Network Manager	✓	✓
	Avaya SMON Manager	✓	✓
	Avaya Integrated Management Database	✓	✓
	Avaya Fault and Performance Manager		✓
	Avaya MultiSite Administration		✓
	Avaya Proxy Agent		✓
	Avaya Provisioning and Installation Manager	✓	
2 of 3			

Table 15: Customer and Avaya Responsibilities (continued)

Task		Customer	Avaya
5.	Avaya Integrated Management integration with NMS:		
	Avaya Network Manager	✓	✓
	Avaya Fault and Performance Manager		✓
6.	System Verification and Acceptance:		
	Verify proper operation of Avaya Integrated Management applications	✓	
	Customer acceptance		✓
			3 of 3

Appendix B: Installation of Red Hat Linux

Overview

This chapter specifies the options that you must select during the installation of Red Hat Enterprise Linux ES 4.0 or Red Hat Enterprise Linux AS 4.0 to support Avaya Fault and Performance Manager, Avaya Proxy Agent, and Avaya MultiSite Administration. This document is copied from the appendix of the Avaya Integrated Management Implementation Guidelines, which is available from your Avaya client executive.

Note:

Red Hat Enterprise Linux ES 4.0 or Red Hat Enterprise Linux AS 4.0 is required for new installations. Red Hat Enterprise Linux ES or AS 3.0 is supported only if you are upgrading from Avaya Integrated Management Release 3.0 to Avaya Integrated Management Release 3.1.

Make sure a modem is attached to COM 1 (ttyS0) of the Linux server for dial-in access and turned on while you install Red Hat Enterprise Linux.

Installing Red Hat Enterprise Linux ES 4.0 or Red Hat Enterprise Linux AS 4.0

To perform a new installation of Red Hat Enterprise Linux ES 4.0 or Red Hat Enterprise Linux AS 4.0, perform the following steps:

1. Insert the first Red Hat Enterprise Linux ES or AS 4.0 CD into the CD-ROM drive, and start the Red Hat Enterprise Linux System Installer in graphical mode.
2. Follow the prompts until you come to the Welcome page.
3. Click the **Next** button.

The Disk Partitioning Setup page appears.

4. Click the **Manually Partition with Disk Druid** option button, and click the **Next** button.

The Disk Setup page appears.

5. Perform the following steps:
 - a. Use the **Delete** button to delete any partitioning that appears for the hard drive.

- b. Use the **New** button to add partitions as shown in [Table 16](#).

Table 16: Hard Drive Partitions

Mount Point	File System Type	Partition Size (40 GB HD)	Proportion of Disk Space (>40 GB HD)
/	ext3	800 MB	2%
/boot	ext3	100 MB	1%
/home	ext3	6000 MB	17%
/usr	ext3	6000 MB	15%
/opt	ext3	10000 MB	26%
/var	ext3	10000 MB	26%
swap	swap	2048 MB	2048 MB
/tmp	ext3	3000 MB	8%
Total		37948 MB	100%

Note:

The precise partition sizes are shown for a 40 GB hard drive. (Note that a 40 GB hard drive partitions to approximately 38 GB.) If the hard drive is bigger than 40 GB, use the proportion column to partition the hard drive.

- c. When finished adding the hard drive partitions, click the **Next** button.

The Boot Loader Configuration page appears.

6. Click the **Next** button to accept the default settings.

The Network Configuration page appears.

7. Click the **Edit** button.

The Edit Interface eth0 dialog box appears.

8. In the Edit Interface eth0 dialog box, perform the following steps:

- Click the **Configure using DHCP** check box to deselect it.
- Enter the static IP address and subnet mask.
- Click the **OK** button.

9. In the Network Configuration page, perform the following steps:

- In the Hostname section of the page, enter the fully qualified domain name.
- In the Miscellaneous Settings section of the page, enter the gateway, primary, secondary, and tertiary DNS server IP addresses.

- c. Click the **Next** button.

The Firewall Configuration page appears.

10. In the Firewall Configuration page, perform the following steps:

- a. Click the **No Firewall** option button.
- b. Click the **SELinux** check box to disable secure Linux kernel mode.
- c. Click the **Next** button.

The Additional Language Support page appears.

11. Click the **Next** button to accept the default settings.

Note:

Avaya Integrated Management supports only English operating systems.

The Time Zone Selection page appears.

12. Click the **Next** button to accept the default settings.

The Set Root Password page appears.

13. Enter the root user password, enter it again for confirmation, and then click the **Next** button.

The Package Installation Defaults page appears.

14. Click the **Customize software packages to be installed** option button, and click the **Next** button.

The Package Group Selection page appears.

15. Select the following packages:

- **KDE Desktop**
- **Editors**
- **Web Server (php-pgsql)**
- **FTP Server**
- **Network Servers (openldap)**
- **Legacy Network Server (all)**
- **KDE Software Development**
- **Legacy Software Development**
- **System Tools (vnc, tsclient, uucp)**

If you are using analog modem-based alarming with Avaya Proxy Agent on this server, for the **System Tools** package, perform the following steps:

- a. Click **Details**.

The Details for System Tools dialog box appears.

- b. Click the **UUCP check box**, and then click the **OK** button.

16. In the Package Group Selection page, click the **Next** button.

The About to Install page appears.

17. Click the **Next** button.

The installation status bar appears.

18. Continue with the installation.

19. When the installation is complete, click the **Reboot** button.

20. After the system reboots, follow the prompts to perform initial configuration of the operating system, such as setting the date and time and registering the system with Red Hat.

Note:

Be sure to add at least one regular user account to the system.

Do not update postgres or any components related to postgres. Doing so can cause serious problems in the Avaya Fault and Performance Manager and Avaya Integrated Management Database applications.

Upgrading Red Hat Enterprise Linux ES 3.0 or AS 3.0 to Red Hat Enterprise Linux ES 4.0 or AS 4.0

To upgrade Red Hat Enterprise Linux ES 3.0 or Red Hat Enterprise Linux AS 3.0 to Red Hat Enterprise Linux ES 4.0 or Red Hat Enterprise Linux AS 4.0, perform the following steps:

1. Insert the first Red Hat Enterprise Linux ES or AS 4.0 CD into the CD-ROM drive, and start the Red Hat Enterprise Linux System Installer in graphical mode.
2. Follow the prompts until you come to the Welcome page.
3. Click the **Next** button.

The Upgrade Examine page appears.

4. Click the **Upgrade an existing installation** option button, and click the **Next** button.
5. From the drop-down list box, select the system you want to upgrade, and click the **Next** button.

The Upgrade Boot Loader Configuration page appears.

6. Click the **Next** button to accept the default settings.

The About to Upgrade page appears.

7. Click the **Next** button.

The installation status bar appears.

8. Continue with the upgrade installation.
9. When the upgrade installation is complete, click the **Reboot** button.

Installing Additional Software

To install additional software, perform the following steps:

1. After you install the Red Hat Linux operating system, you must install the **mgetty** Red Hat Package Manager (RPM) files from the Red Hat CD. The mgetty RPM is required for remote maintenance by Avaya Services. This may not be required if alternate remote network access (RAS/VPN) is being provided to Avaya Services personnel.
2. In addition, verify that the following RPM files were loaded during the Red Hat installation:

- **ppp**

The ppp RPM is required for remote maintenance by Avaya Services. This may not be required if alternate remote network access (RAS/VPN) is being provided to Avaya Services personnel.

- **vnc** (located in System Tools)

The vnc RPM is required for remote maintenance by Avaya Services for access to graphical user interfaces for troubleshooting purposes. This may not be required if an alternate method for displaying the XWindow desktop of the Linux server is provided.

- **vnc-server** (located in X Windows System)

The vnc-server RPM is required for remote maintenance by Avaya Services for access to graphical user interfaces for troubleshooting purposes. This may not be required if an alternate method for displaying the X Window desktop of the Linux server is provided.

- **httpd** (installed with Integrated Management 3.1)

The httpd RPM is required by the Integrated Management Database.

- **php** (located on Web Server)

The php RPM is required by the Integrated Management Database.

- **php-pgsql** (located on Web Server)

The php-pgsql RPM is required by the Integrated Management Database.

- **openldap (2.0.23-4)** (located on Network Server)

The openldap RPM is required by MultiSite Administration for Modular Messaging and SSH support.

- **cyrus-sasl (1.5.24-25)** (installed with Integrated Management 3.1)

The cyrus-sasl RPM is required by MultiSite Administration for Modular Messaging and SSH support.

- **openssl (0.9.6b-18)** (installed with Integrated Management 3.1)

The openssl RPM is required by MultiSite Administration for Modular Messaging and SSH support.

Note:

Most of these RPM files are installed during the Red Hat Linux operating system installation, while others are installed during installation of the Integrated Management 3.1 applications that run on the Linux server.

To determine the RPM files installed, see [Determining Whether RPM Files are Already Installed](#) on page 46. To install an RPM file, see [Installing RPM Files](#) on page 46.

Determining Whether RPM Files are Already Installed

To determine whether RPM files are already installed, perform the following steps:

1. In the terminal emulation window, at the command prompt, type **rpm -q <name of RPM package>**.
2. To search for RPM files using a partial RPM package name, at the command prompt type:
rpm -qa | grep <partial name>

For example, **rpm -qa | grep vnc** to determine if any RPM packages beginning with “vnc” have been installed.

Installing RPM Files

To install RPM files, perform the following steps:

1. Insert the Red Hat installation CD in the CD-ROM drive.
2. Open a terminal emulation window.
3. Type **cd /mnt/cdrom/RedHat/RPMS**.

Note:

If Linux responds “directory does not exist,” you may have to manually mount the CD-ROM drive. To do so, perform the following steps:

- a. Type **mount /dev/cdrom**.
 - b. Type **cd /dev/cdrom/RedHat/RPMS**.
4. At the command prompt, type **rpm -iv <name of RPM package>**.

Security Considerations

In order to strengthen system security, it is recommended that you turn off the Remote Procedure Calls (RPC) service on all Linux servers that run Avaya Integrated Management applications. To turn off the RPC service, you must close all related ports that provide the service.

Note:

You must have root access to turn off the RPC service.

Perform the following steps:

1. To turn off the service, at the command line prompt in the terminal emulation window, type **service portmap stop**.
2. To turn off the service so that it does not start again when the Linux server is restarted, at the command line prompt in the terminal emulation window, type **chkconfig -levels 12345 portmap off**.

Appendix C: Sample VMM Configurator

	A	B	C	D	E	F	G	H	I	J
		Call Pattern Variables			Configuration Variables		Data Calculation - incoming			
1	Call Type	Max number of concurrent calls of this type	Number of calls of this type per day	Average call duration (mins)	Reporting Period (secs)	Store Bad Calls only (decimal portion of 'bad' calls - otherwise 0)	Peak concurrent throughput (number of incoming RTPCP streams)	Number packets per session	Bandwidth utilization (kbps)	Data collected daily (ME)
2										
3	IP to IP - shuffled	500	2000	5	5	1	1000	60	400	59
4	IP to IP via one Media Gateway (unshuffled)	500	2000	5	5	1	2000	60	800	117
5	IP to IP via IP trunk (2 MGs)	500	1000	5	5	1	3000	60	1200	88
6	IP to Analog/Digital	100	1000	5	5	1	200	60	80	29
7	IP to some phone completely outside the customer network	100	1000	5	5	1	200	60	80	29
8	Analog/digital to some phone completely outside the customer network via IP trunk	100	1000	5	5	1	200	60	80	29
9	Analog/digital to some phone completely outside the customer network (via no IP address)				5	1	0	0	0	0
10	Totals	1800	8000				6600	360	2640	352
11										
12	Data size per RTPCP packet (for bandwidth and incoming traffic calculations)	Bytes	K.bytes	K.bits						
13		250	0.25	2						
14										
15	Max. Number of concurrent RTPCP Streams to VMM	6800		Number of days data is to be stored:			30			
16	Bandwidth utilisation - Busy-hour RTPCP Streams to VMM (kbps)	2640		Storage size required (MB) excluding indexes:				2623.8		
17	Number VMM Servers recommended	1.7		Storage size required (GB) including indexes:				2.6		
	NOTE: SQL Server recommended if database size exceeds 2GB									

Index

Symbols

>, meaning of in text [5](#)

A

Additional resources [10](#)
 Avaya
 support resources [6](#)
 support web site [14](#)
 Avaya and Customer Responsibilities [30](#), [37](#)
 Avaya implementation services
 overview [26](#)
 Avaya Site Administration [36](#)

B

basic implementation services [27](#)
 additional services [28](#)
 bold text, meaning of [5](#)

C

Case Implementation Coordinator (CIC) [28](#)
 Compatibility
 messaging systems [15](#)
 Configuration Request Form (CRF) [29](#)
 Linux [29](#)
 Windows [30](#)
 Connectivity/Network Connections [23](#)
 contact information for Avaya [9](#)
 courier font, meaning of [5](#)
 Customer Implementation Options [26](#)

D

Data Help Desk (DHD) [28](#)
 Data Network Implementation Engineers [28](#)
 DEFINITY system [23](#)

F

Fault and Performance Manager [34](#)
 feedback about this book [14](#)

G

General Network Information [29](#)

H

hardware and software components [18](#)
 HP OpenView
 Network Node Manager [22](#)

I

Implementation Request Form (IRF) [29](#)
 Application Description [29](#)
 Order and Contact Information [29](#)
 Product and Services Requested [29](#)
 implementation services
 onsite implementation [27](#)
 onsite installation [27](#)
 remote implementation [26](#)
 implementation tasks [31](#)
 Integrated Management
 applications [25](#)
 offers [25](#)
 services organizations [28](#)
 Integrated Management Compatibility
 voice systems [15](#)
 INTUITY Audix system [23](#)

M

MultiSite Administration [34](#)

O

Operating Environment [16](#)

P

Proxy Agent [34](#)

R

Remote access hardware and software	23
resources	
Avaya Communications, Solutions, and Integration (CSI) Group of Software Services	6
Avaya Network Management Software Systems Support Group (NMSSS)	7
Avaya Technical Service Organization (TSO).	7
Avaya Technology and Consulting (ATAC)	6
Customized Management Solutions for Avaya Integrated Management	8

S

S8300/S8500/S8700/S8710 media server	23
Service Request Documentation	29
Simple Network Management Protocol Agent	19
SMON Manager	35
Specific implementation tasks	
application installation and configuration	33
computing platform	32
implementation verification	33
IP connectivity	33
remote connectivity	31
Symmetric Multi-Processor (SMP) support.	23

T

Technical Services Organization (TSO)	26
---	--------------------

V

Voice and Messaging System Compatibility	15
Voice Announcement Manager	36
VoIP Monitoring Manager	35
VoIP Monitoring Manager Configurator.	18