



Avaya Network Management Solution Description

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Contents

Chapter 1: Introduction	6
Purpose.....	6
Chapter 2: New in this document	7
COM Plus and VPFM Plus Release 1.0.....	7
Avaya Fabric Orchestrator (AFO) Release 1.1.....	7
Chapter 3: Overview	10
Network management overview.....	10
Management and orchestration.....	11
Avaya Fabric Orchestrator (AFO) overview.....	13
AFO features.....	14
COM Plus and VPFM Plus overview.....	16
COM Plus and VPFM Plus features.....	17
Chapter 4: Specifications	18
Reference configurations.....	18
Licensing.....	18
AFO licensing.....	18
COM Plus and VPFM Plus licensing.....	20
PLDS support.....	21
High Availability.....	22
Browser support.....	23
Avaya Network Management supported browsers.....	23
Migration of installed Avaya management applications.....	23
Migration of installed management applications to AFO.....	23
Migration of installed management applications to COM Plus and VPFM Plus.....	24
Software upgrade and patching.....	25
Chapter 5: Resources	26
Support.....	26
Training.....	26
Viewing Avaya Mentor videos.....	26
Documentation.....	27
Searching a documentation collection.....	29
Subscribing to e-notifications.....	29

Chapter 1: Introduction

Purpose

Use this document to understand the Avaya Fabric Orchestrator, and Avaya Configuration and Orchestration Manager Plus and Avaya Visualization Performance and Fault Manager Plus Network Management solutions. This document provides a high-level overview of the following topics:

- Network Management
- Avaya Fabric Orchestrator
- COM Plus and VPFM Plus
- Licensing

Chapter 2: New in this document

The following sections detail what is new in this document. This document supports multiple Avaya Network Management products:

- Avaya Configuration and Orchestration Manager Plus and Avaya Visualization Performance and Fault Manager Plus Release 1.0
- Avaya Fabric Orchestrator (AFO) Release 1.1

COM Plus and VPFM Plus Release 1.0

Avaya Network Management Solution Description, NN48100–100 is a new document for Release 1.0 of Avaya Configuration and Orchestration Manager Plus and Avaya Visualization Performance and Fault Manager Plus so all of the features are new in this release. See *Avaya COM Plus and VPFM Plus Release Notes* for a list of supported features.

Avaya Fabric Orchestrator (AFO) Release 1.1

The following section provides a brief overview of the new features in this release.

Customizable dashboards

The system has two customizable dashboards. The Home page dashboard provides a real-time statistical view of the various management functions on the system in the form of widgets. You can add, edit, and delete the widgets provided by Avaya and customize the home dashboard to fit your needs.

The Network monitoring dashboard displays information about the health of the system and consists of different widgets that delve deeper into the network health. You can add, edit, delete, and clone widgets provided by Avaya to customize the Network monitoring dashboard.

High Availability

AFO Release 1.1 introduces an optional High Availability (HA) feature. HA requires two AFO appliances and a HA license. The HA feature uses the Active-Standby model for failover and data replication.

RESTful Northbound API framework with OAuth 2.0 authorization support

Avaya and third-party developed clients can access APIs supported by AFO using OAuth-based 2.0 authorization. AFO exposes the APIs for accessing discovery, detailed inventory, and device topology.

AFO Release 1.1 supports the North Bound Interface (NBI) Access control. NBI Access Control is a module, that enforces control and allows which user can access which API methods. NBI Access Control simplifies which user can perform which function, by allowing the administrator to create new OAuth clients, users or credentials, specify the roles and give permissions to the endpoints or API methods that are allowed for the given role.

Only the user with the AFO system administrator role can access the NBI Access Control page. To access, login to the AFO GUI using the system administrator credentials and navigate to **Administration > NBI Access Control**.

VxLAN Tunnel Management

AFO supports the consolidated view and provisioning of VxLAN tunnels and per-device configuration of the VxLAN tunnels (using EDM plugins).

VxLAN is an overlay networking protocol that disassociates workloads from physical networks, allowing for possible transition to the cloud-based providers. You can use VxLAN Manager to configure the VxLAN tunnels on the Avaya VxLAN capable devices and to manage the VxLAN tunnels in the network.

To access, login to the AFO GUI and navigate to **Configuration > VxLAN**.

This feature is available on VSP8xxx and VSP72xx running on VOSS v6.0 release.

Fabric Attach provisioning

AFO Release 1.1 supports the consolidated view and provisioning of the Fabric Attach feature on multiple devices. AFO also supports the configuration of Fabric Extend tunnels between two isolated SPB setups.

Device License Manager

AFO Release 1.1 allows you to manage Avaya L2/L3 switches from a user interface which resides in AFO. Use Device License Manager to view the list of capable devices and to discover device license information.

To access Device License Manager, login to the AFO GUI and navigate to **Administration > Device Licensing**.

Device support for new device models and versions

AFO Release 1.1 updates support for Avaya devices, releases, and provides support for new device discovery, EDM plugins, and license management. For more information, see *Avaya Fabric Orchestrator Release Notes* and *Avaya Network Management Supported Devices, Device MIBs, and Legacy Devices Reference*, NN48100–701.

Safari web browser support

AFO Release 1.1 adds support for the Safari web browser (macOS 10.8 Mountain Lion and above).

Out of Band device management

AFO Release 1.1 deployment provides an option to create and configure a second device management network. The option allows you to provision a separate network for management from

the switch network. The Out of Band device management network uses NIC2 on the appliance. A script is also available to enable or disable the Out of Band management anytime after deployment.

Monitoring reports enhancements

AFO Release 1.1 allows export of predefined reports in xml, excel, or csv format so that applications developed by the customer or other third party applications can consume the reports. You can also email predefined reports to configured email addresses according to a schedule. Hypercube reports are enhanced and new default and custom report outputs are available.

ISID Name Management

With ISID Name Management, you can assign service names to service identifier (ISID) numbers and group the ISID names into service groups. The AFO user interface includes a Manage ISID Names tool through which you configure the groups and names. You can navigate to **Tools > ISID Name Management** to launch this tool in the user interface.

Chapter 3: Overview

Network management overview

The next generation network management solutions from Avaya are Avaya Fabric Orchestrator (AFO) and Avaya Configuration and Orchestration Manager Plus and Avaya Visualization Performance and Fault Manager Plus.

AFO is a unified network and device management platform with full FCAPS functionality for customers with more than 250 network devices or 1000 nodes for monitoring. AFO is a physical pre-staged hardware appliance running RHEL KVM.

Avaya Configuration and Orchestration Manager Plus (COM Plus) provides comprehensive configuration and provisioning functionality for Avaya networks with 250 devices or less.

Avaya Visualization Performance and Fault Manager Plus (VPFM Plus) provides network monitoring and fault correlation for networks with 1000 managed devices or less. COM Plus and VPFM Plus is a VMware vSphere-based OVA that requires a physical server running VMware ESXi 5.5 or 6.0 to be deployed.

Table 1: Network management product comparison

Features	COM Plus	VPFM Plus	AFO
Supported nodes	250 or less	1000 or less	250 or more for Configuration 1000 or more for Monitoring
Management features	Discovery, Network configuration features, Virtual Service Network (VSN) Manager, Bulk Configuration functionality, VxLAN support, and Fabric Extend.	Discovery, Monitoring, Fault Correlation, Automated and customizable actions for thresholds and events, L2 and L3 Diagnostics Management, Health indicator graphs, and built in reports.	All of the functionality of COM Plus and VPFM Plus, IP Flow Manager, Virtualization Provisioning Service (VPS), advanced monitoring (including third-party devices), VxLAN support, NBI with OAuth support, and Device License Manager
Delivery	Standalone Software virtualized appliance — VMWare VSphere only	Standalone Software virtualized appliance — VMWare VSphere only	Standalone and active-standby HA pair, pre-installed hardware appliance
Co-existence	Can co-exist with VPFM Plus	Can co-exist with COM Plus	Not Applicable

Management and orchestration

Avaya network management solutions offer management features to deliver automation and simplify operational processes.

Unified Management

Unified Management is an integrated set of functionality that offers best-in-class monitoring, provisioning, and troubleshooting for Avaya network devices. It helps reduce the administration, complexity, and related costs of managing the network through a single unified framework. This allows businesses to centralize and streamline their management workflows, while reducing installation, configuration, and maintenance time.

Discovery and visualization

Avaya network management solutions provide rich discovery and visualization capabilities of Avaya network devices. The application discovers all devices and nodes attached to the network such as servers, storage servers, switches, routers, IP phones, Avaya Aura® applications, and VM hosts. In addition, it identifies the relationships that exist among devices in the network including topology and links. If the security settings allow it, operating systems and applications on servers can also be part of the discovery process.

Highlights

- Network discovery
 - Support for standards, proprietary, application, and OS-based discovery
 - Device information can be used to provide a network inventory listing
 - Devices can be classified based on their function in the network such as core switches and Internet routers
- Network visualization
 - Hierarchy-based topology and service-based views
 - Device connectivity and their relationships to each other

Configuration and orchestration

* Note:

This feature is available with AFO and COM Plus only.

Configuration and orchestration provide topology based network wide configuration and provisioning for the Avaya enterprise family of devices. Avaya network management solutions simplify the configuration and provisioning process, so that IT resources can focus on managing the network.

Highlights

- Consolidates configuration, provisioning, and orchestration through topology-driven, Web-based, integrated network management
- Supports multiple concurrent users and includes powerful access controls such as role-based user control functionality
- GUI-driven, network-wide configuration and provisioning of new or existing network devices

- Device element management, inventory, updates, and device and user access control through centralized element management
- Simplified, intuitive wizards and easy-to-use templates that can be reused as required
- A common set of configuration commands can be run on multiple system devices
- Automate routine backups with regular device backups
- Automate the management of security updates
- User-based views allow administrators to create device groupings, which can be assigned to users and displayed on the topology map.
- Advanced event management allows administrators associate colors to trap types or severities. The topology map icons in the trap can be color-highlighted and sent through an email to users.
- Proactive change management compares device configurations with a previous baseline and generates a report or an email.
- IP phone discovery with centralized oversight of related Ethernet switch parameters.
- Scalability to manage large networks
- Automatically synchronize changes to the network. For example, VM configurations such as adding, moving, and changing are monitored and applied automatically to the network.

Monitoring and diagnostics management

Note:

This feature is available with AFO and VPFM Plus only.

Using information collected from the network and the devices, Avaya network management solutions perform status monitoring and send the information required to perform event correlation and root cause analysis (RCA). The system determines the most likely cause of the network outage by correlating all network events and determining the primary and secondary devices affected.

Avaya network management solutions also provide a set of event handling features. An action can be associated with an event so that the action runs automatically when the event appears on a specific device. For example, sending an email notification or paging the appropriate personnel.

Highlights

- SNMP Trap Receiver and Syslog Collector
- Event correlation
- Device status monitoring
- Event handling and scripting
- MIB compiler and browser
- Layer 2 and 3 diagnostics management, including tools such as ICMP ping, SNMP Gets, MIB Walker, and Browser.

Performance management

Avaya network management solutions provide basic performance management features to help two key activities in a customer environment: capacity planning and change monitoring.

The system monitors thresholds on any instance and reports if thresholds reach or exceed. For example, if traffic on a particular link exceeds a pre-determined threshold, such as 30 percent, the system records and reports the performance.

Highlights

- Instance-based performance monitoring (MIB-browser based)
- Long-term (trending) performance monitoring

Application performance management

* Note:

This feature is available with Avaya Fabric Orchestrator (AFO) only.

Avaya network management solutions provide tools to monitor, analyze, and report application behaviors and their bandwidth utilization trends. The system uses standard IP Flow technology combined with analysis using packet capture, trending, and alert notification capabilities.

Highlights

- IPFIX collector that supports IPFIX (Netflow v5 and v9) flows
- Real time analysis of the flow to provide trending and traffic pattern
- View of top 10 customers of network resources at various levels within network hierarchy

Virtualization provisioning

* Note:

This feature is available with Avaya Fabric Orchestrator (AFO) only.

Avaya network management solutions provide VM agnostic lifecycle management and support for multiple vCenters in a large data center. With service profiling definition, you can create fabric connections per service. The AFO network follows VM and supports dynamic fabric provisioning.

Highlights

- Hypervisor VM agnostic lifecycle management
- Support for multiple vCenters in a large data center
- Service profiling definition allowing creation of fabric connections per service
- Supports dynamic fabric provisioning

Avaya Fabric Orchestrator (AFO) overview

AFO is a single, pre-installed, easily deployable appliance with a web-based multi-user solution. AFO integrates all its tools in a single device. AFO includes a set of management applications that helps lower the TCO, delivers automation, and simplifies operational processes. The following is a list of the network management applications.

Table 2: Network management applications

Application	Description
Configuration	Provides an intuitive interface to configure and manage the Avaya Enterprise family of devices from a discovered network.
Bulk Provisioning	Provides the tools to perform a variety of management tasks across multiple device types using a web-based interface.
Monitoring	Monitors the managed objects and reduces troubleshooting issues because of a more complete view of the network.
IP Flow	Collects and analyzes IP flows from IPFIX-, NetFlow v5- and NetFlow v9-enabled devices. All management functions are provided through a web-based user interface.
Virtualization	Connects the vCenter server to the configuration application to help the data center administrator configure the network changes that apply to the data center. Monitors the virtual infrastructure and provisions the network.

AFO delivers enterprise-class reliability, efficiency, and scaling to mission-critical networks around the globe. Thus, significantly reducing the cost of managing networks.

AFO features

AFO provides the following features:

Hardware appliance

The appliance is a HP DL360 Generation 9 server shipped with a RHEL KVM OS pre-staged to boot into a quick and easy AFO software deployment utility, all software and tools are integrated in a single device to reduce deployment time and complexity.

Unified management

The system provides unified management of wired, wireless, physical, and virtual resources to provide a single point to monitor and manage all Avaya elements.

Integrated user interface

The system has an integrated user interface for a common user experience, with data-driven menus, that simplifies management of all Avaya systems.

Customizable dashboards

AFO Dashboard has been enhanced to support customization of the dashboard. The enhanced dashboard has the following capabilities:

- **View Mode and Edit Mode:** The dashboard loads in the View mode, where you can view all the widgets created. Click Edit mode to customize the dashboard view.
- **Multiple layout options:** You can change the layout of the dashboard from the several layout options at any time and can save it with the title. When the layout is changed, all the widgets get rearranged according to the chosen layout.
- **Configuring and customizing each widget:** The widgets are the content of the dashboard. A widget can be selected from a library of widgets and can be customized in the Edit mode of the

Dashboard. When a widget is maximized, the single widget is displayed in a popup on the full screen mode.

- **Drag, Drop and Moving Widgets:** You can change the location of each widget by dragging and dropping option.

Two-click application access

You can access any application from the web interface in two clicks. Click or move the mouse pointer over an application on the menu bar located at the top of the window to access the primary level application page. The tools within the primary applications may require more clicks.

Fabric Management

AFO automates the Avaya experience with Fabric Connect and creates mapping between Avaya endpoints and infrastructure. AFO enables VMware-automated virtual machine orchestration, and automates the creation of end-to-end connectivity and uniform quality of experience. AFO is an appliance with auto-attach to Avaya fabric, known as Avaya OVS.

AFO supports the consolidated view and provisioning of the Fabric Attach feature on multiple devices. AFO supports the consolidated view and provisioning of VxLAN tunnels and per-device configuration of the VxLAN tunnels (using EDM plugins). AFO also supports the configuration of Fabric Extend tunnels between two isolated SPB setups.

AFO supports ISID management, the color-coding of Fabric Attach ports, the configuration of an FA server for each port, and the ability to display the topology of Fabrics connected over the Fabric Extend tunnel.

Increased scalability

This release of AFO provides an increase in a number of the concurrent user sessions. AFO supports scaling to a maximum of 10/20/30 concurrent user sessions for 250/1500/5000 node licenses, respectively. Out of the maximum sessions (10/20/30) for AFO, only a maximum of 10/15/15 concurrent user sessions (for 250/1500/5000 node licenses) can access configuration features.

AFO provides scaling of up to 5,000 devices (Avaya switches) for configuration workflows and up to 30,000 nodes for monitoring.

Automatic one-click upgrade and patching

The system provides the ability to upgrade and update with one-click. The system automatically downloads the applicable updates and binary configuration files directly from the Avaya Product Licensing and Distribution System (PLDS) repository.

RESTful Northbound API framework with OAuth 2.0 authorization support

AFO 1.1 provides support for Northbound APIs to retrieve basic information on the discovered devices. Avaya and third-party developed clients can access the APIs using OAuth-based 2.0 authorization. Access to the APIs is restricted only to registered clients and users of the Northbound Interface APIs. APIs filters and sorts the responses and displays in XML/JSON format.

The following table shows the Northbound web service APIs supported in this release:

API	Description
Discovery API	1. Provides the list of all the domains

Table continues...

API	Description
	2. Provides statistics of the domain like number of ip phones, switches, routers etc.
Devices API	Provides list of devices present in a domain
Inventory API	Provides all the information about the device like port, power supply, fans, sensors, chassis etc.

High Availability

AFO provides a High Availability (HA) framework to support redundancy at the hardware, hypervisor, and application levels. To provide High Availability for AFO you must have a HA license, and two hardware appliances, one configured as an active Leader server and another as a standby Master server. The two hardware appliances must be inter-connected through appliance port NIC3. On failover, all data on the active server is replicated to the Standby server.

Out of Band device management option

The AFO deployment configuration provides an option to create and configure an out of band device network. Out of Band management (OOB) allows you to provision separate network for the management of AFO appliance from the network used for the switches. During deployment, you can specify if you need to use the Out of Band management. OOB management can be enabled or disabled any time after the deployment if the NICs are connected appropriately. AFO appliance uses different port NICs for In Band and Out of Band Management.

- Port NIC1 is used for In Band Network.
- Port NIC2 is used for Out of Band network.

The OOB network devices connect to appliance port NIC2. If you do not create an out of band device network, all devices must connect In Band through appliance port NIC1.

Device License Manager

AFO provides a device license manager to simplify and support license management for Avaya L2 and L3 switches. You can view the list of devices and discover the license information. You can download the device licence for the licensed number of devices and manage (checkout, install, un-install, check-in and migrate) these licenses using AFO.

COM Plus and VPFM Plus overview

COM Plus and VPFM Plus are the next generations of the Avaya Configuration and Orchestration Manager and Avaya Visualization Performance and Fault Manager products. COM Plus and VPFM Plus are combined as a single software install with features available according to the licenses. The software is a VMware-based OVA that requires a physical server running VMware ESXi 5.5 or 6.0. The following is a list of COM Plus and VPFM Plus management applications.

Table 3: COM Plus and VPFM Plus network management applications

Application	Description
Configuration (COM Plus)	Provides an intuitive interface to configure and manage the Avaya Enterprise family of devices from a discovered network.
Bulk Provisioning (COM Plus)	Provides the tools to perform a variety of management tasks across multiple device types using a web-based interface.
Monitoring (VPFM Plus)	Monitors the managed objects and reduces troubleshooting issues because of a more complete view of the network.

COM Plus and VPFM Plus features

COM Plus and VPFM Plus provide the following features.

Single installation for configuration, monitoring, or both

COM Plus and VPFM Plus is a single installable for the end-to-end configuration and monitoring of small networks. The product and features that are available is based on the licensing. COM Plus and VPFM Plus is easy and quick to deploy and you can license to enable one or both products with the single software installation.

Integrated user interface

The system has an integrated user interface for a common user experience, with data-driven menus, that simplifies management of all Avaya systems.

Customizable dashboards

COM Plus has a Home page dashboard that provides a real-time statistical view of the various management functions on the system in the form of widgets. You can add, edit, and delete the widgets and customize them to fit your needs.

VPFM Plus supports the Home page dashboard as well as a Network monitoring dashboard that displays information about the health of the system and consists of different widgets that delve deeper into the network health. You can add, edit, delete, and clone widgets to customize your Network monitoring dashboard.

Two-click application access

You can access any application from the web interface in two clicks. Click or move the mouse pointer over an application on the menu bar located at the top of the window to access the primary level application page. The tools within the primary applications may require more clicks.

Fabric management

COM Plus and VPFM Plus provide a complete end-to-end solution for Fabric management.

Migrate data from legacy COM and VPFM products

Existing customers on the latest versions of COM and VPFM can migrate to COM Plus and VPFM Plus.

Chapter 4: Specifications

Reference configurations

AFO is a hardware appliance that operates virtualized management modules on a RedHat Enterprise Linux (RHEL) Kernel-based Virtual Machine (KVM) Hypervisor. For information on AFO deployments, see *Deploying Avaya Fabric Orchestrator*, NN48100–101.

COM Plus and VPFM Plus is a VMware-based OVA. You must have a server running VMware ESXi 5.5 or 6.0 to deploy COM Plus and VPFM Plus.

COM Plus and VPFM Plus support vCenter and standalone ESXi deployments. For vCenter, COM Plus and VPFM Plus deploy as a vApp. For ESXi, COM Plus and VPFM Plus deploy as three different VMs. For information on COM Plus and VPFM Plus deployments, see *Deploying Avaya COM Plus and VPFM Plus*, NN48110–101.

Licensing

AFO licensing

Licensing in AFO uses the System Manager WebLM as the license server to add or remove licenses.

Each AFO appliance requires a license. The licenses are node locked to the appliance and the WebLM server, hence they cannot be transferred from one appliance to the other. The type of license you purchase determines the device count and features available for each application. The Advanced Monitoring license includes all of the applications and features.

! **Important:**

High Availability (HA) requires a HA license installed on the leader AFO appliance. For HA the standby AFO appliance does not require additional stand-alone node licenses.

License activations in PLDS require the HostID of the WebLM server and Monitoring VM HostID for inclusion in the license file. The HostID of the WebLM server is displayed on the Server Properties page of the WebLM.

License type

The following list outlines the types of AFO licenses:

- 250-Node

! Important:

- Carefully consider your starting license. You cannot go from the 250–Node license to the 1500–Node license by way of an AFO upgrade. If you know that you will need more than 250 nodes, start with the 1500–Node license.
- AFO supports upgrade from 1500–Node license to 5000–Node license.

- 1500-Node
- 5000-Node
- Additional 10000–Node for Monitoring
- High Availability

The following table outlines the device count for each module.

Table 4: Device count for modules

Application	250-Node	1500-Node	5000-Node
Configuration	250	1,500	5,000
Monitoring	1,000	6,000	<ul style="list-style-type: none"> • The device count is 20,000 (without +10000 Monitoring add-on license) • The device count is 30,000 (with +10000 Monitoring add-on license)
IP Flow	10	10	10
Virtualization	220	220	220

The following table outlines the device count for the AFO Monitoring module.

Table 5: Device counts for Monitoring

Managed Devices	250-Node	1500-Node	5000-Node
Avaya Networking Switches	250	1,500	5,000
UC, CC, phones, Avaya solution (EMC, HP), Servers, VMs, 3rd party Switches, other managed objects	750	4,500	<ul style="list-style-type: none"> • The device count is 15,000 (without +10000 Monitoring add-on license) • The device count is 25,000 (with +10000 Monitoring add-on license)
Total	1,000	6,000	<ul style="list-style-type: none"> • 20,000 (5,000+15,000) • 30,000 (25,000+5,000)

Additional features

At the time of acquiring a license, you must select any additional features you wish to access along with the license type. This include the Advanced Monitoring features.

The Advanced Monitoring feature is available for all license types and can be enabled or disabled based on your requirement.

If you wish to purchase any additional features after you acquire a license, you can contact Avaya support to receive a new license for AFO from PLDS. You must replace the existing license with the new license on the WebLM server.

Trial version

AFO provides a trial version of 15 days which will be available soon after the configuration of AFO on the hardware appliance for the first time. You do not require any trial license file to run the trial version. The standard license will be active during the trial period.

Grace Period

A grace period of 30 days is available in case of any of the following scenarios :

- The absence of a valid license after the trial period expires or at any given time.
- If after installing license there is any loss of connectivity to the license (WebLM) server.

For more information about licenses, see *Administration using Avaya Fabric Orchestrator*, NN48100–600.

COM Plus and VPFM Plus licensing

Licensing in COM Plus and VPFM Plus uses the System Manager WebLM as the license server to add or remove license files.

Each COM Plus and VPFM Plus software virtualized appliance requires a license.

License activation in PLDS requires the HostID of the WebLM server and Monitoring VM HostID for inclusion in the license file. The HostID of the WebLM server is displayed on the Server Properties page of the WebLM.

License type

A single license file is available and the features for both COM Plus and VPFM Plus are specified in the single license file. Through Licensing, you turn on Configuration features or Monitoring features or both.

The following COM Plus values are available:



- Base = 50 node
- Incremental 1 = 150 node
- Incremental 2 = 250 node

The following VPFM Plus values are available:

- Base = 500 node
- Incremental = 1000 node

The following table outlines the device count for the COM Plus and VPFM Plus module both individually and together.

Table 6: Device counts for COM Plus and VPFM Plus

Product		COM Plus License			
		No COM Plus  Important: No configuration capability for devices.	Base COM Plus	Incremental 1 COM Plus	Incremental 2 COM Plus
VPFM Plus License	No VPFM Plus  Important: No monitoring capability for devices.	Not Applicable	1000 node: 50 Switches + 950 End Nodes.	1100 node: 150 Switches + 950 End Nodes.	1200 node: 250 Switches + 950 End Nodes.
	Base VPFM Plus	500 node: 50 Switches + 450 End Nodes.	500 node: 50 Switches + 450 End Nodes.	600 node: 150 Switches + 450 End Nodes.	700 node: 250 Switches + 450 End Nodes.
	Incremental VPFM Plus	1000 node: 50 Switches + 950 End Nodes.	1000 node: 50 Switches + 950 End Nodes.	1100 node: 150 Switches + 950 End Nodes.	1200 node: 250 Switches + 950 End Nodes.

 **Note:**

Switches are Avaya L2 or L3 switches.

 **Note:**

End Nodes are UC, CC, phones, Avaya solution (EMC, HP), Servers, VMs, 3rd party switches, and other managed objects

PLDS support

Avaya Product Licensing and Distribution System (PLDS) enables you to perform licensing and entitlement management.

For more information about how to generate a license file, see *Getting Started with Avaya PLDS for Avaya Networking Products*, NN46199-300. All licensing activities are performed through the Avaya PLDS Portal at <http://plds.avaya.com>.

High Availability

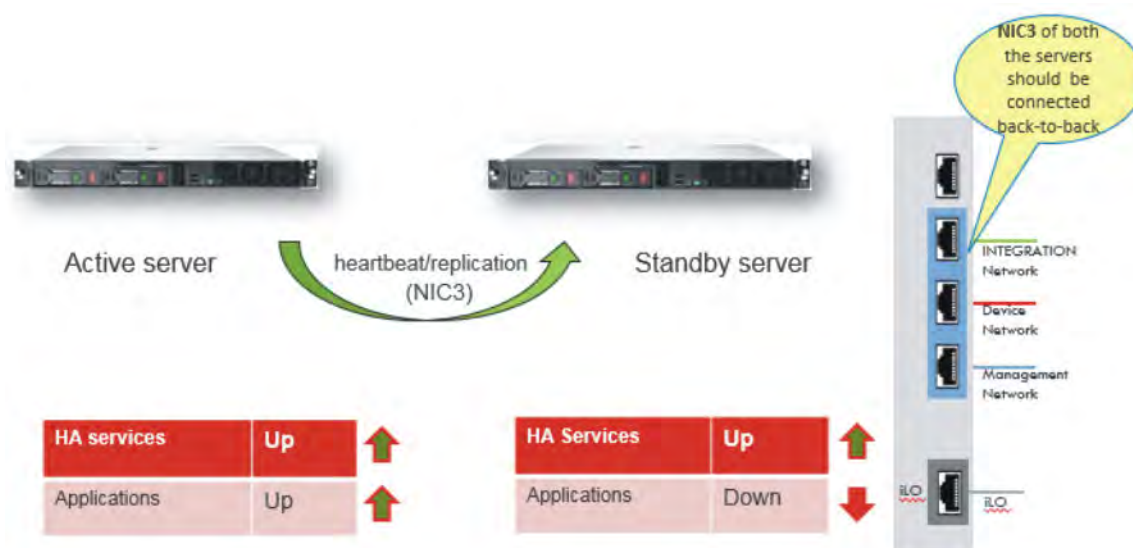
High Availability (HA) ensures devices recover quickly from a failure by:

- Eliminating single points of failure.
- Detecting failures.

To ensure high availability and redundancy for one node failure, the solution requires two HP ProLiant DL360 Gen9 servers. One appliance as active Leader server and another as a standby Master server. You must connect both servers directly or through a dedicated network for data replication and heartbeat.

! Important:

An AFO High Availability License must be installed on the Leader node to support and deploy a HA solution.



Active-Standby

The virtual machines of the AFO appliance that function in active standby are the following: platform, configuration, monitoring, IP Flow, ADS, and MSC applications.

As part of the active-standby HA solution:

- Applications are installed and data is mirrored on the standby Master node using disk based replication.
- In case of active Leader node failure, the applications are started on the standby node.
- The recovery time in case of an active Leader node failure is approximately five minutes.

Active-Active

Only the Custer Engine (CE) virtual machine operates in Active-Active mode.

Cluster engine

The cluster engines on the leader and master server act as watchdogs, watching the system to ensure the various services or VMs are running properly. The cluster engines consists of three parts:

- Cluster engine virtual machine
- Cluster engine client
- Cluster engine server

The cluster engines appear as one, and share a management virtual IP address. When you log into the virtual IP address through VNC, you log into the primary cluster engine (the leader master), but you have access to a view of both cluster engines.

The cluster engine does the following:

- Monitors the health of all virtual machines and processes.
- Takes corrective measures if a process or virtual machine fails.
- Applies the corrective mechanism.
- Detects planned and unplanned failovers.
- Performs the failover.
- Provides API interfacing for clients to get/set clustering parameters.

Browser support

Avaya Network Management supported browsers

The AFO and COM Plus and VPFM Plus user interface supports the following web browsers:

- Internet Explorer, version 11
- Mozilla Firefox, versions 47 and above
- Safari on macOS 10.8 Mountain Lion and above

Migration of installed Avaya management applications

Migration of installed management applications to AFO

If you are using the current Avaya network management applications, Avaya Configuration and Orchestration Manager (COM), Avaya Bulk Configuration Manager (BCM), Avaya Visualization

Performance and Fault Manager (VPFM), Avaya IP Flow Manager (IPFM), and Avaya Virtualization Provisioning Service (VPS), you can migrate the application data, including add-ons, to AFO.

You can migrate data to AFO from the following applications.

Table 7: Supported migration

Applications	Version number
Configuration & Orchestration Manager (COM)	3.0.2, 3.1, 3.1.1, 3.1.2, and 3.1.3
Virtualization Provisioning Service (VPS)	1.0.2, 1.0.3, and 1.1
IP Flow Manager (IPFM)	2.0.2 and 2.1
Visualization, Fault & Performance Manager (VPFM)	3.0.3.1, 3.0.3.2, 3.0.3.3, and 3.0.4

Application data includes:

- device credentials
- users
- roles
- certificates and security policies

For more information about migrating installed Avaya management applications to AFO, see *Deploying Avaya Fabric Orchestrator*, NN48100–101.

Migration of installed management applications to COM Plus and VPFM Plus

If you are using the current Avaya network management applications, Avaya Configuration and Orchestration Manager (COM), Avaya Bulk Configuration Manager (BCM), and Avaya Visualization Performance and Fault Manager (VPFM), you can migrate the application data, including add-ons, to COM Plus and VPFM Plus.

You can migrate data to COM Plus and VPFM Plus from the following applications.

Table 8: Supported migration

Applications	Version number
Configuration & Orchestration Manager (COM)	3.0.2, 3.1, 3.1.1, 3.1.2, and 3.1.3
Visualization, Fault & Performance Manager (VPFM)	3.0.3.1, 3.0.3.2, 3.0.3.3, and 3.0.4

Application data includes:

- device credentials
- users
- roles
- certificates and security policies

For more information about migrating installed Avaya management applications to COM Plus and VPFM Plus, see *Deploying Avaya COM Plus and VPFM Plus*, NN48110–101.

Software upgrade and patching

Upgrading is the process of updating the existing managed elements software version with a new version. The managed elements include the virtual machine, applications for all the elements, and devices that are managed by the system.

Software Patch (Update or Feature Pack) is an incremental change to the major release in terms of new features and bug fixes. The process of applying this patch is software patching.

Solution Software Director (SSD)- AFO

Avaya Solution Software Director (SSD) uses the PLDS API to query for entitlement information and download required software bundles and other files automatically. The Solution Software Director (SSD) checks the compatibility of the available software with the managed elements and recommends the required upgrades and updates based on your entitlements.

You can perform software upgrade and patching using SSD through the web interface. SSD runs on the Management Server Console (MSC) and is only accessible for authorized users.

*** Note:**

Internet connectivity is required to use PLDS.

SSD checks for the entitled software based on PLDS login information provided in Management Server Console (MSC) preferences. To download files automatically, ensure that your system has connectivity to the Internet. Alternatively, you can use SSD to upgrade your system in Advanced mode when you do not have connectivity to the Internet.

Solution Software Director (SSD)- COM Plus and VPFM Plus

Avaya Solution Software Director (SSD) uses the PLDS API to query for entitlement information. To upgrade COM Plus and VPFM Plus, manually download required software bundles and other files from PLDS, and upload to SSD.

You can perform software upgrade and patching using SSD through the web interface. SSD runs on the Monitoring VM and is only accessible for authorized users.

Chapter 5: Resources

Support

Go to the Avaya Support website at <http://support.avaya.com> for the most up-to-date documentation, product notices, and knowledge articles. You can also search for release notes, downloads, and resolutions to issues. Use the online service request system to create a service request. Chat with live agents to get answers to questions, or request an agent to connect you to a support team if an issue requires additional expertise.

Training

Ongoing product training is available. For more information or to register, you can access the Web site at <http://avaya-learning.com/>.

Viewing Avaya Mentor videos

Avaya Mentor videos provide technical content on how to install, configure, and troubleshoot Avaya products.

About this task

Videos are available on the Avaya Support website, listed under the video document type, and on the Avaya-run channel on YouTube.

Procedure

- To find videos on the Avaya Support website, go to <http://support.avaya.com> and perform one of the following actions:
 - In **Search**, type `Avaya Mentor Videos` to see a list of the available videos.
 - In **Search**, type the product name. On the Search Results page, select **Video** in the **Content Type** column on the left.

- To find the Avaya Mentor videos on YouTube, go to www.youtube.com/AvayaMentor and perform one of the following actions:
 - Enter a key word or key words in the **Search Channel** to search for a specific product or topic.
 - Scroll down Playlists, and click the name of a topic to see the available list of videos posted on the website.

 **Note:**

Videos are not available for all products.

Documentation

The following table lists the documents related to this product. Download the documents from the Avaya Support website at <http://support.avaya.com>.

Document title	Use this document for:	Audience
<i>Avaya Network Management Solution Description</i> , NN48100–100	Description of each verified reference configuration.	System administrator
<i>Deploying Avaya Fabric Orchestrator</i> , NN48100–101	Installing, configuring, initial administration, and basic maintenance checklist and procedures.	System administrator
<i>Getting Started and Locating the latest software and Release Notes for Avaya Fabric Orchestrator</i> , NN48100–102	Locating the latest software and product release notes.	System administrator
<i>Network Monitoring using Avaya Fabric Orchestrator</i> , NN48100–500	Monitoring the managed objects.	System administrator
<i>Network Configuration using Avaya Fabric Orchestrator</i> , NN48100–501	Configuring and managing Avaya Enterprise family of devices from discovered network.	System administrator
<i>Bulk Device Configuration Management using Avaya Fabric Orchestrator</i> , NN48100–502	Performing a variety of management tasks across multiple device types using a web-based interface.	System administrator
<i>Virtualization Configuration using Avaya Fabric Orchestrator</i> , NN48100–503	Connecting the vCenter server to the system, to help the data center administrator to configure the network changes that apply to the data center.	System administrator

Table continues...

Document title	Use this document for:	Audience
<i>IP Flow Configuration using Avaya Fabric Orchestrator</i> , NN48100–504	Collecting and analyzing IP flows from IPFIX-, NetFlow v5-, and NetFlow v9- enabled devices.	System administrator
<i>Administration using Avaya Fabric Orchestrator</i> , NN48100–600	System administration procedures.	System administrator
<i>Avaya Network Management Traps and Trends Reference</i> , NN48100–700	Viewing a list of supported traps and trends.	System administrator
<i>Avaya Network Management Supported Devices, Device MIBs, and Legacy Devices Reference</i> , NN48100–701	Confirming support for devices and MIBs.	System administrator
<i>Troubleshooting Avaya Fabric Orchestrator</i> , NN48100–702	Troubleshooting information for the system.	System administrator

Document title	Use this document for:	Audience
<i>Avaya Network Management Solution Description</i> , NN48100–100	Description of each verified reference configuration.	System administrator
<i>Deploying Avaya COM Plus and VPFM Plus</i> , NN48110–101	Installing, configuring, initial administration, and basic maintenance checklist and procedures.	System administrator
<i>Network Monitoring using Avaya VPFM Plus</i> , NN48110–500	Monitoring the managed objects.	System administrator
<i>Network Configuration using Avaya COM Plus</i> , NN48110–501	Configuring and managing Avaya Enterprise family of devices from discovered network.	System administrator
<i>Bulk Device Configuration Management using Avaya COM Plus and VPFM Plus</i> , NN48110–502	Performing a variety of management tasks across multiple device types using a web-based interface.	System administrator
<i>Administration using Avaya COM Plus and VPFM Plus</i> , NN48110–600	System administration procedures.	System administrator
<i>Avaya Network Management Traps and Trends Reference</i> , NN48100–700	Viewing a list of supported traps and trends.	System administrator
<i>Avaya Network Management Supported Devices, Device MIBs, and Legacy Devices Reference</i> , NN48100–701	Confirming support for devices and MIBs.	System administrator
<i>Troubleshooting Avaya COM Plus and VPFM Plus</i> , NN48110–702	Troubleshooting information for the system.	System administrator

Searching a documentation collection

On the Avaya Support website, you can download the documentation library for a specific product and software release to perform searches across an entire document collection. For example, you can perform a single, simultaneous search across the collection to quickly find all occurrences of a particular feature. Use this procedure to perform an index search of your documentation collection.

Before you begin

- Download the documentation collection zip file to your local computer.
- You must have Adobe Acrobat or Adobe Reader installed on your computer.

Procedure

1. Extract the document collection zip file into a folder.
2. Navigate to the folder that contains the extracted files and open the file named `<product_name_release>.pdx`.
3. In the Search dialog box, select the option **In the index named** `<product_name_release>.pdx`.
4. Enter a search word or phrase.
5. Select any of the following to narrow your search:
 - Whole Words Only
 - Case-Sensitive
 - Include Bookmarks
 - Include Comments
6. Click **Search**.

The search results show the number of documents and instances found. You can sort the search results by Relevance Ranking, Date Modified, Filename, or Location. The default is Relevance Ranking.

Subscribing to e-notifications

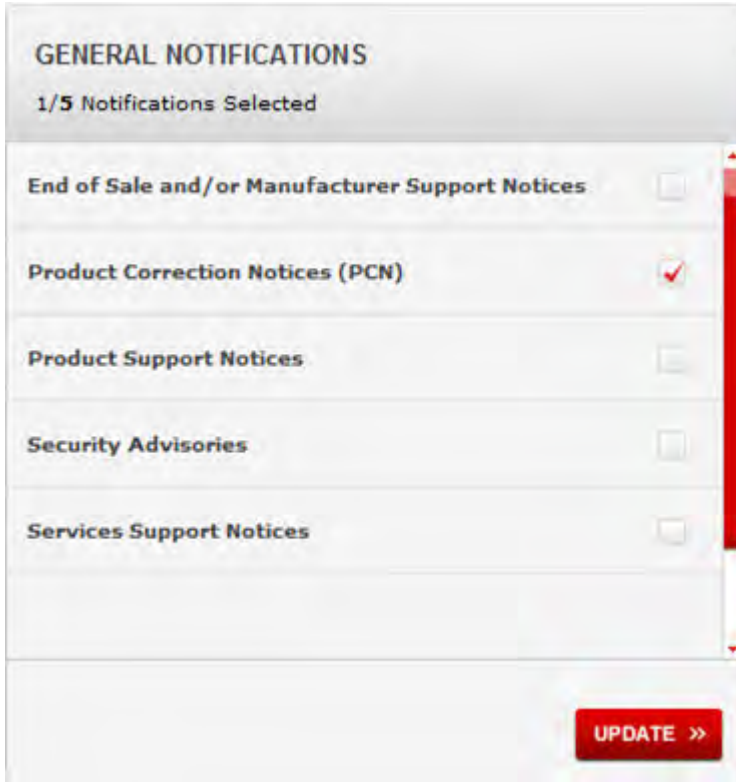
Subscribe to e-notifications to receive an email notification when documents are added to or changed on the Avaya Support website.

About this task

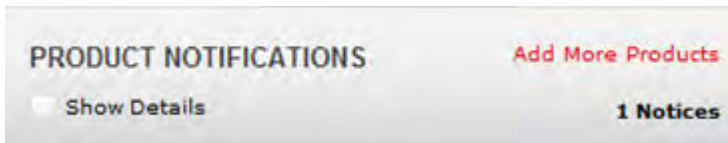
You can subscribe to different types of general notifications, for example, Product Correction Notices (PCN), which apply to any product or a specific product. You can also subscribe to specific types of documentation for a specific product, for example, Application & Technical Notes for Virtual Services Platform 7000.

Procedure

1. In an Internet browser, go to <https://support.avaya.com>.
2. Type your username and password, and then click **Login**.
3. Under **My Information**, select **SSO login Profile**.
4. Click **E-NOTIFICATIONS**.
5. In the GENERAL NOTIFICATIONS area, select the required documentation types, and then click **UPDATE**.



6. Click **OK**.
7. In the PRODUCT NOTIFICATIONS area, click **Add More Products**.



8. Scroll through the list, and then select the product name.
9. Select a release version.
10. Select the check box next to the required documentation types.

PRODUCTS	My Notifications
Virtual Services Platform 7000	VIRTUAL SERVICES PLATFORM 7000 Select a Release Version All and Future
Virtualization Provisioning Service	
Visual Messenger™ for OCTEL® 250/350	
Visual Vectors	
Visualization Performance and Fault Manager	
Voice Portal	
Voice over IP Monitoring	
W310 Wireless LAN Gateway	
WLAN 2200 Series	
WLAN Handset 2200 Series	
	Administration and System Programming <input type="checkbox"/> Application Developer Information <input type="checkbox"/> Application Notes <input type="checkbox"/> Application and Technical Notes <input checked="" type="checkbox"/> Declarations of Conformity <input type="checkbox"/> Documentation Library <input checked="" type="checkbox"/>
	SUBMIT >>

11. Click **Submit**.