Avaya Virtualization Provisioning Service

Delivering visibility, validation, automation and reporting across applications, servers and network devices for the next-generation Virtualized Data Center

AVAYA

The Avaya Virtualization Provisioning Service is a management tool that automatically synchronizes the network to react to changes in the compute environment - increasing IT efficiency, reducing time to service and ensuring consistent application performance - in a highly dynamic, virtualized data center environment.

Highlights

- Automates service provisioning within the data center

- Provides insight into the entire Virtual Machine (VM) lifecycle from activation, to mobility, to deletion

- Gives an end-to-end view of the virtualized data center including applications, servers and network devices across both physical and virtual environments

- Provisions network devices to "follow" VMs as they migrate between servers

- Applies connectivity services and port profiles (QoS, ACLs) to edge devices at an individual VM level

- Provides historical reporting and tracking on VM moves and network provisioning

- Enables network and server teams to work more efficiently and smarter together

It's a Virtual World

It's a fact. Server virtualization is already well adopted.[1] The savings, both through consolidation of multiple servers and dramatic reductions in power and cooling requirements, have been significant. The next step for many enterprises is mobilization of Virtual Machines - where VMs migrate from server-to-server, from corporate data center to data center, and from private to public clouds. These moves can be triggered by maintenance schedules, failures in the underlying server, exceeding server performance thresholds or for disaster avoidance (i.e. hurricane forecasted near a data center).

While VM mobility offers a number of benefits, it can create a number of challenges on the networking side:

Inconsistent application performance. While Virtual Machines can dynamically move between servers, corresponding network configuration on the edge device cannot. Without appropriate configuration of the edge port that is connected to the new server there can be inconsistency in application performance, a reduced or complete lack of connectivity, and security and compliance challenges.

[1]Yankee Group's Anywhere Enterprise—Large: 2009 U.S. Transforming Infrastructure and Transforming Applications Survey, Wave 1-12, reveals that 71 percent of responding organizations have already deployed server virtualization.

Inefficient troubleshooting. Typically server administrators have a view of the virtualized server topology and network administrators have a view into network topology. When these two worlds remain separate in a dynamic virtualized environment, troubleshooting application performance and network connectivity issues can be a lengthy, inefficient process.

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Virtualization Provisioning Service is a management tool that enables visibility, validation, reporting and provisioning process optimization for network infrastructure, servers, and applications across both physical and virtual environments within the next-generation virtualized data center.

Virtualization Provisioning Service, a plug-in to Avaya Configuration and Orchestration Management, can be co-located on the same server as Configuration and Orchestration Management and, once installed, looks like any other Configuration and Orchestration Management manager. Virtualization Provisioning Service utilizes Configuration and Orchestration Management for

network device inventory and topology, device configuration features (VLAN, ACL and port setting features) and for setting device credentials, roles and permissions.

Virtualization Provisioning Service delivers a complete view of the end-to-end virtualized Data Center by providing a relay mechanism between Configuration and Orchestration Management and server virtualization management tools. In its initial release, Virtualization Provisioning Service supports VMware's vCenter management platform, with server configuration and management platforms from other vendors to be added in future.

Virtualization Provisioning Service will evolve towards delivering a complete IEEE 802.1Qbg framework enabling a standards-based multi-vendor end-to-end Data Center virtualization management platform.

A Component of the Avaya Virtual Enterprise Network Architecture

Virtualization Provisioning Service is an important component of the Avaya Virtual Enterprise Network

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Avaya Virtualization Provisioning Service Key Benefits

- Increases IT efficiency
  - Streamlines data center provisioning processes, helping ensure freedom from error and delay.
  - Synchronizes network to changes made in the virtualized server environment.
  - Resolves network issues faster through an end-to-end view of the virtualized network, spanning applications, servers and network devices.

- Reduces time to service for deploying new applications
  - Deployable within and between data centers, the Virtual Enterprise Network Architecture Virtual Services Fabric limits network provisioning to the edge.
  - Reducing time required to activate or to make changes to applications or services, Virtualization Provisioning Service automates edge provisioning based on changes to the application / server environment.

- Delivers consistent application performance in a highly dynamic, virtualized environment
  - Alleviating connectivity and/or performance issues, Virtualization Provisioning Service ensures that corresponding network devices are appropriately provisioned before VMs are activated and moved.

Architecture, an open, end-to-end virtualization architecture that enables enterprises to build their own private cloud infrastructure – extensible from data center to campus and beyond.

Customers today are looking to increase efficiency and become more responsive by reducing time-to-service. Virtual Enterprise Network Architecture achieves this by simplifying the design, deployment, and management of the next-generation network, starting with the data center.

Creating a unified fabric (the Virtual Enterprise Network Architecture Virtual Services Fabric) within and between data centers establishes an infrastructure that is highly resilient, maximizes use of available bandwidth and simplifies provisioning of the logical network by decoupling it from the physical infrastructure, which significantly improves support for a virtualized server environment and, more importantly, for VM mobility. With a unified fabric, new applications and services are instantiated at the edge of the Virtual Services Fabric, obviating the need for re-designs or configuration changes in the core. With Virtualization Provisioning

Service, all edge provisioning can be automated, dramatically reducing the time required to activate or make changes to applications or services.

Delivers a complete Virtualized Data Center View

Virtualization Provisioning Service connects with VMWare's vCenter and registers for real-time updates. Synchronization between Virtualization Provisioning Service and VMware vCenter can be configured to occur automatically (in set time intervals) or can be initiated by the end user manually. VMware vCenter provides the virtualized server topology (VMs and vSwitches) with information on which VMs are active, where they reside (switch, port, time), which VLANs they are associated to and which QoS/QoE parameters have been assigned. By stitching this information to network topology information (automatically discovered through Configuration and Orchestration Management), Virtualization Provisioning Service provides an invaluable end-to-end view of the virtualized data center, enabling network operators to more effectively manage and troubleshoot the network.

Provisions network devices to "follow" VMs as they migrate between servers

Using its insight into the entire VM lifecycle including creation, migration, cloning and deleting of VMs, Virtualization Provisioning Service updates Avaya devices, as needed, to react to lifecycle changes. As lifecycle changes occur, Virtualization Provisioning Service can apply predefined templates to switch ports when a defined set of rules is matched. Port templates include the connectivity services (VLAN and iSIDs for SPB enabled devices) as well as, QoS, ACLs, port shaping, and bandwidth limiting parameters that can be applied (at a VM level) to the port of the edge device connected to the server.

Users can establish rules and create templates within the Virtualization Provisioning Service rule and template manager. Rules can include a type of VM and lifecycle trigger and an associated action. Users have the flexibility to set up Virtualization Provisioning Service to identify VMs by application type, by IP address, or by which port group it is assigned to so that, when a specified change (such as a move) occurs, a specified

action executes. For example, a user could create a rule saying that if a new Microsoft® Outlook VM is created, VLAN ID 100 should automatically be assigned to it, giving that new VM connectivity without any user intervention.

Provisioning changes can be set to occur automatically or manually. In automated mode, changes are applied based on rules that, when applicable, are implemented automatically. In manual mode, an action is proposed to a network operator who can execute the change manually through an intuitive guided workflow.

Ensures network is ready before a VM move takes place

Virtualization Provisioning Service can be configured to receive planning triggers from VMware vCenter, which alerts Virtualization Provisioning Service of pending changes on the VM side. Virtualization Provisioning Service validates whether or not the proposed change requires a change to the network configuration. If a network configuration change is required, Virtualization Provisioning

Workflow Example: Activation of a new Virtual Machine

1) A new Microsoft Exchange VM is requested

2) A "Microsoft Exchange-profile" for the Microsoft Exchange-VM is created in Virtualization Provisioning Service with the required connectivity attributes (VLAN, IP subnet, QoS level, and security filters) filled in by the network operator.

3) The system administrator creates the Microsoft Exchange VM on VMware ESX server

4) Virtualization Provisioning Service ties the Microsoft Exchange VM with the Microsoft Exchange-profile and matches the proper network configuration to the edge device attached to the VMware ESX server either automatically or manually through a guided workflow.

Service makes the change automatically or requests action by the operator before the VM change is implemented. This ensures that network configuration is in place before VMs migrate from one server to another, avoiding potential connectivity and/or performance issues.

Avaya Virtualization Provisioning Service key attributes

Operational choice

Providing flexibility to network operators, Virtualization Provisioning Service can operate in a variety of modes: view and reporting mode, auto-validation mode, or auto-provisioning mode.

View and reporting mode provides an up-to-date, complete physical and virtual, end-to-end topology. In this mode, Virtualization Provisioning Service sends notification and/or alerts on VM changes and provides an updated VM inventory view in Configuration and Orchestration Management and Virtualization Provisioning Service.

In the auto-validation mode, virtual server changes are correlated to the network devices so that required provisioning changes can be detected. Virtualization Provisioning Service alerts the network administrator as to whether or not network ports conform to predefined templates but does not apply a configuration template automatically. Instead, changes can be applied manually, by the operator, through a guided workflow.

In auto-provisioning mode, where configuration templates are applied automatically, Virtualization Provisioning Service alerts the network administrator as to whether or not network ports conform. If ports do not conform, Virtualization Provisioning Service applies the configuration automatically.

Flexible dashboard

The Virtualization Provisioning Service dashboard provides a real-time view of different aspects of the virtualized data center including: (1) a view of the server environment from vCenter only, providing an active inventory of all VMs, (2) a monitoring view, showing which

rules are being applied to which devices, (3) an applied configuration view, showing all successful configuration changes on the various devices, and (4) a pending and failed action view, including all VMware vCenter triggers that were not applied. The Virtualization Provisioning Service dashboard gives end users the flexibility to customize their own layout such as number of panes and which components appear in those panes.

Seamless integration into existing VMware vCenter environment

Virtualization Provisioning Service is an out-of-band management solution that integrates directly into an existing Data Center environment. Unlike competitive solutions requiring replacement of the VMware vCenter vSwitch (performs switching functions for multiple VMs on and between servers), Virtualization Provisioning Service works in conjunction with the VMware vSwitch and does not require its removal. This ensures that Virtualization Provisioning Service installation is completely transparent to the virtualized server environment.
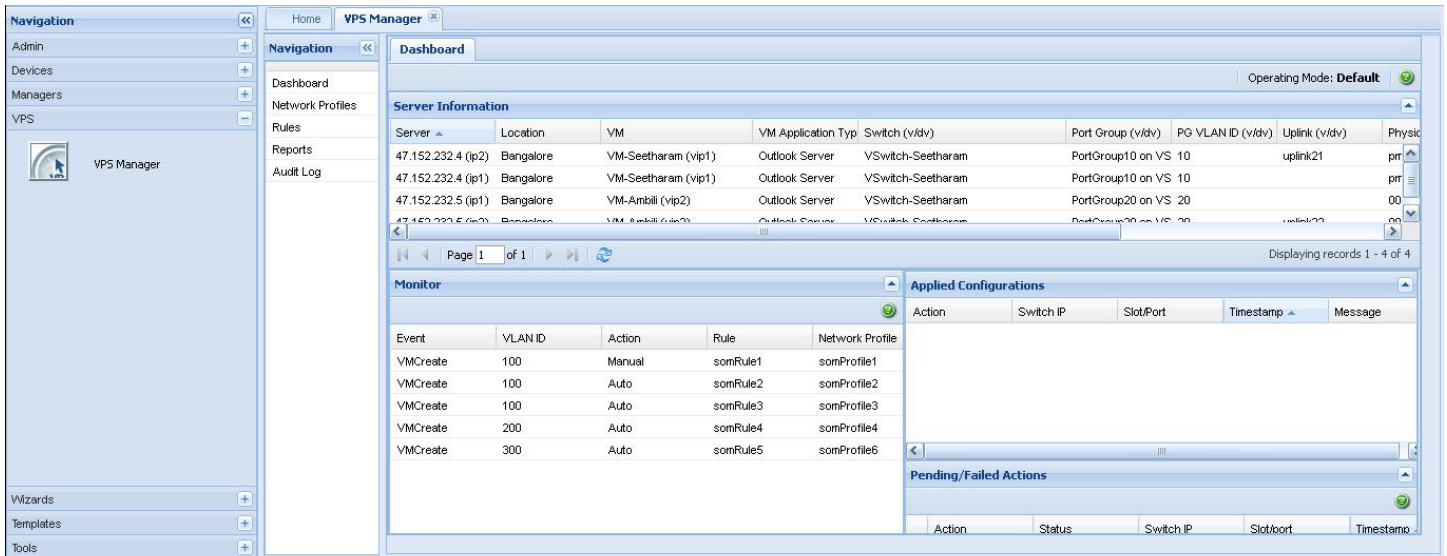
Avaya Virtualization Provisioning Service Dashboard

Service bundles

To help ensure flawless deployment of Virtualization Provisioning Service, Avaya offers both basic and advanced service bundles. The basic service bundle covers Virtualization Provisioning Service installation, integration and operation. The advanced service bundle adds a complete network and server analysis, the creation of a set number of rules and templates specifically tailored to the customer's environment and a full demonstration of the entire Virtualization Provisioning Service workflow in a live network environment.

Devices supported

Avaya network devices - Avaya Ethernet Routing Switch 86xx/88xx, Avaya Ethernet Routing Switch 45xx, Avaya Ethernet Routing Switch 5xxx, Avaya Virtual Services Platform 9xxx and Avaya Virtual Services Platform 7xxx

VMware ESX/ESXi support - ESX 3.x, ESX 4.X

VMware vCenter support – v 2.5.x and 4.x

Learn More

To learn more about Avaya Virtualization Provisioning Service, contact your Avaya Account Manager or Avaya Authorized Partner. Or, visit us online at **avaya.com**.

About Avaya

Avaya is a global provider of business collaboration and communications solutions, providing unified communications, contact centers, data solutions and related services to companies of all sizes around the world. For more information please visit **www.avaya.com**.