

HOSTING SERVICES

Savvis Symphony Virtual Private Data Center (VPDC)

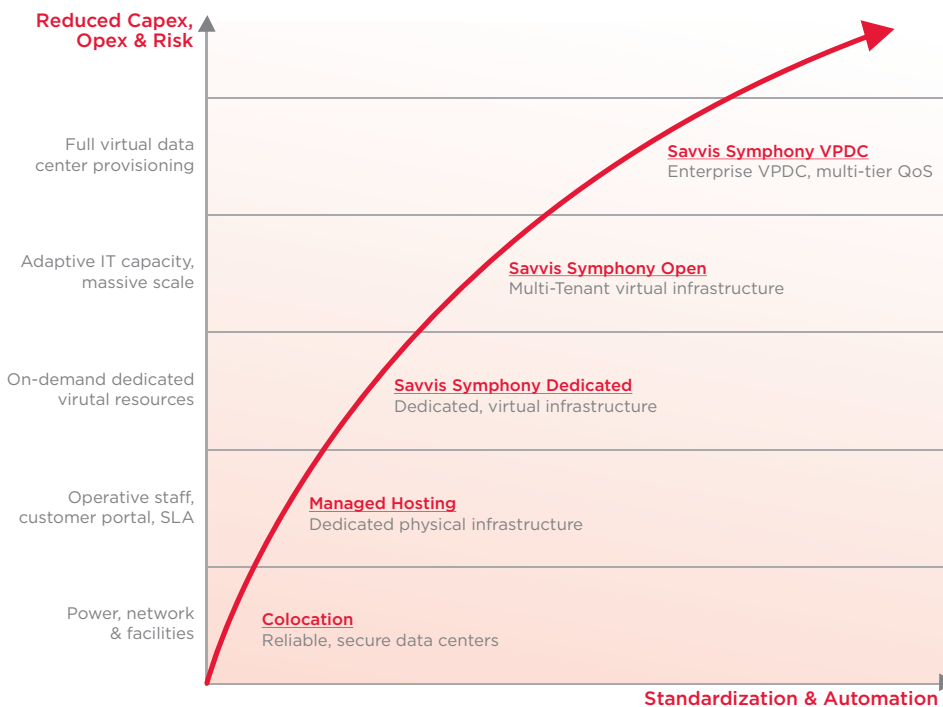


Savvis Symphony Virtual Private Data Center (VPDC)

As a leader in IT infrastructure outsourcing, Savvis provides a broad range of service offerings for customers. From networking to colocation, to managed hosting and cloud computing, Savvis provides a spectrum of solutions to address a varying set of customer IT requirements at dramatically reduced cost. With Savvis Symphony VPDC, Savvis introduces a new era of its leading cloud computing services. Complementing the existing Savvis Symphony Open and Savvis Symphony Dedicated cloud compute services, Savvis Symphony VPDC introduces one of the industry's first enterprise-grade Virtual Private Data Center (VPDC) solutions with multi-tiered security and Quality of Service (QoS) levels.

Savvis Symphony VPDC provides powerful new capabilities for enterprise IT:

- Full data center provisioning through the VPDC concept
- Fast, self-service data center provisioning through Web-based drag-and-drop topology designer or application programming interface (API)
- Multi-tiered QoS levels with policy enforcement
- Enterprise-grade security, platform redundancy, and high-performance information lifecycle management (ILM) storage
- Massive scalability for all data center services



Savvis Symphony VPDC provides a number of dramatic enhancements to deliver on the true promise of cloud computing. The VPDC delivers a powerful capability for defining, configuring, and deploying a full virtual data center without having to procure, install, configure, or manage any hardware. A VPDC can contain a complete set of enterprise data center services, including compute instances of varying sizes, multiple tiers of storage, a wide variety of security features, high-performance, redundant bandwidth, and load balancing. This provides a major leap from virtual hosting environments that emphasize just the compute instances.

Savvis Symphony VPDC also introduces multi-tiered QoS levels that provide a set of predefined, selectable service levels to optimize the cloud for a variety of applications, features, complete redundancy, and storage. This provides a key enabler for the application lifecycle: Test/development, quality assurance (QA), Web hosting, and enterprise mission-critical applications all have unique requirements. Each VPDC can be created with a specified service level that is optimized for its intended use case. As the application in the VPDC later progresses in its lifecycle, it can be promoted to a higher service level to address new production requirements.

Built on cutting-edge VMware[®] virtualization technology, Cisco virtual fabric technologies, and a best-of-breed hardware platform, Savvis Symphony VPDC is designed to deliver what other vendors' cloud computing services have not — true enterprise-class computing, massive scale, and advanced enterprise services — but achieved at the cost points promised by a shared virtual cloud solution. Savvis' professional 24/7 service team provides the proactive monitoring, alerting and support to provide a cloud solution that delivers reliable service for the most demanding enterprise applications.

The VPDC

A VPDC provides a virtual data center inside a multi-tenant cloud. The VPDC portal is a simple, Web-based drag-and-drop interface designer, integrated into the SavvisStation Portal. The VPDC portal provides users with self-service access to data center creation, configuration, and ongoing management. The system provides access to a rich suite of data center services, including virtual hosts with a selection of pre-loaded operating systems such as Microsoft Windows[®] and Red Hat[®] Enterprise Linux[®], virtual security appliances such as firewalls, utilities such as load balancers, and virtual storage devices. The user simply drags and drops the desired objects onto his or her designer palette, configures custom parameters such as host names and storage pool sizes, and activates and deploys the data center when complete.

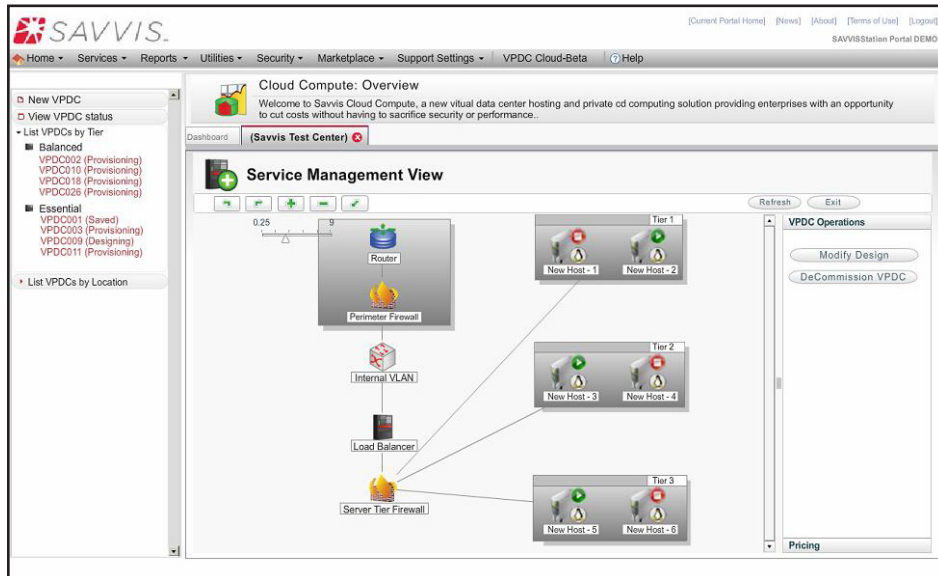


Figure 1: VPDC Topology Designer

Savvis Symphony VPDC provides a flexible multi-tier QoS capability that enables selectable, pre-defined service levels to optimize the infrastructure for a variety of applications. Savvis has defined three basic service levels to fit the application lifecycle, from test & development to mission-critical application deployment. Each service level configures the infrastructure optimally in many dimensions, including virtual compute services, bandwidth, storage, and security services. When creating a new VPDC, the user may specify which QoS profile level is required as follows:

- **Essential:** Optimized for test & development environments
- **Balanced:** Optimized for Web hosting applications
- **Enterprise:** Optimized for mission-critical/enterprise applications

Savvis has created the VPDC designer with implicit support for the industry-standard enterprise three-tiered application architecture model (Web tier, application server tier, and database tier). Each QoS level implicitly understands this model, and implements appropriate security services (such as configuring separate private VLANs for each tier in the Enterprise QoS level).

QoS Level	Essential	Balanced	Enterprise*
Description	Entry-level enterprise cloud - lowest cost of entry	Higher-level security & SLA	Corporate Data Center security, redundancy, SLA
SLA	99.9%	99.99%	99.995%
Location	No location transparency	Regional level transparency	Metro level transparency
Compute	<ul style="list-style-type: none"> • Small, medium, large 	<ul style="list-style-type: none"> • 3x3 choice of vHosts 	<ul style="list-style-type: none"> • 4x4 choice of vHosts
Networking	<ul style="list-style-type: none"> • Managed bandwidth • Best effort QoS • 1 public VLAN 	<ul style="list-style-type: none"> • 100 Mb/sec guarantee • Enterprise-grade QoS • 1 private VLAN • Dual Internet connections • Server load balancing 	<ul style="list-style-type: none"> • 1 Gb/sec guarantee • Dedicated bandwidth • Enterprise-grade QoS • Multiple private VLANs • Dual Internet connections • Global site & server load balancing
Security	<ul style="list-style-type: none"> • Policy enforcement • ACL 	<ul style="list-style-type: none"> • Virtual infrastructure firewall • Policy enforcement • Server load balancing • SSL acceleration & ACL • URL filtering, app firewall 	<ul style="list-style-type: none"> • Perimeter & server firewall • Policy enforcement • File integrity monitoring • SSL acceleration & ACL • URL filtering, app firewall
Storage	1-Tier SATA	2-Tier ILM	3-Tier ILM with high-performance FC SAN

* Enterprise QoS level availability 2H 2010

In addition to the VPDC portal Web interface, Savvis Symphony VPDC provides a RESTful API to enable access to cloud services from popular scripting and programming environments. This enables independent software vendors (ISVs) and corporations to easily embed Savvis Symphony VPDC services in their cloud-enabled applications.

Security

The system is designed on the established Savvis Security Architecture, which is a set of processes and architecture designed to provide end-to-end security on the Savvis Symphony virtual platform. The system provides well-defined security policies and procedures, and ensures compatibility between newer security protections designed specifically for virtualized environments and more traditional, physical security controls. This enables the system to address the unique security challenges of a virtualized environment, such as those introduced for VM mobility, VM patching, and inter-VM network traffic.

Comprehensive security features and processes are integrated with Savvis Symphony VPDC at all QoS levels to optimize the cost/security tradeoff for each VPDC and its use case. At the Essential level, cost is optimized for the test/development use case, so the system configures the VPDC with a single public VLAN, plus authenticated access through security access control lists (ACLs). At the Balanced QoS level, the system additionally configures the back-end servers (application servers and database servers) onto a dedicated private VLAN, and configures a VMsafe™ virtual firewall in front of the servers. For the Enterprise QoS level, the system configures three separate private VLANs, for each server tier and additionally configures dedicated physical (stateful) firewalls for each tier. In addition, the Balanced and Enterprise tiers provide SSL acceleration and URL filtering. In this manner, Savvis Symphony VPDC provides a comprehensive end-to-end security infrastructure but optimized for each VPDC use case.

Technology

Savvis Symphony VPDC is built on an enterprise-grade infrastructure that provides enterprise levels of availability, reliability, and security. The platform starts with best-of-breed hardware including Cisco networking and virtual fabrics, and uses cutting-edge virtualization technology from VMware. The cloud provides total platform-level redundancy at all levels of the infrastructure. The infrastructure provides compute node and network path redundancy as well as storage mirroring to ensure high availability. At higher service levels, the system configures redundancy at the virtual machine (VM) level, with VMware HA providing high-availability monitoring and automated failover.

The system has been designed from the ground up for massive scale through a modular design. With the underlying virtualization technology, new virtual machines can be provisioned instantly along with additional bandwidth and storage capacity. Users can dynamically scale their compute resources up or down, as it suits their changing requirements. Resources are re-provisioned on demand, so applications can execute at peak efficiency. Billing for resources can be performed on an hourly or monthly basis, to best fit users' business requirements.

Savvis also provides one of the industry's first cloud computing architectures with the availability of high-performance, enterprise-class storage area network (SAN) storage. The system provides three tiers of storage with Information Lifecycle Management (ILM) capabilities. This provides low-latency, high I/O operations per second (IOPS) storage for the most-demanding transactional applications; mid-tier storage for Web hosting; and low-cost, low-rpm storage for backup and archival purposes. In this manner, Savvis Symphony VPDC can be employed for a very wide range of enterprise applications.

Summary

Cloud Computing promises major advantages in data center agility, speed of provisioning, and lower capital expenditure. Savvis augments this basic value proposition with Savvis Symphony VPDC, one of the industry's first enterprise Virtual Private Data Center solutions with multi-tiered QoS levels. This allows customers to select a service level that best fits their application requirements, and to have the cloud automatically provision and configure the infrastructure for those requirements. Savvis Symphony VPDC is designed and built on a massively scalable, best-of-breed infrastructure, with virtualization technology from VMware, an industry leader. The service is also the first of its kind with enterprise-grade availability, total redundancy, security options, and high-performance ILM storage.

About Savvis

Savvis, Inc. (NASDAQ:SVVS) is an outsourcing provider of managed computing and network infrastructure for IT applications. By outsourcing to Savvis, enterprises can focus on their core business while Savvis ensures the quality of their IT infrastructure. Leading IT organizations around the world have selected Savvis to help them improve their service levels, reduce capital expense and deal with the rising costs of bandwidth, energy, real estate, staff and expertise. As a pioneer in utility computing, Savvis understands and harnesses the latest advances in technology like virtualization, cloud computing and support process automation.

**For more information
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