Cisco Network Services Manager 5.0

Cisco® Network Services Manager is designed to help enable customers to organize their network resources into a flexible multi-tenant infrastructure that integrates the network with their existing IT operational tools and processes. Network Services Manager's network abstraction layer allows customers to automatically provision a set of network features into an end-to-end topology, or "network container", much more easily and quickly than previously possible with template- and script-based systems, dramatically reducing network operations costs and the potential for misconfiguration while optimizing capacity utilization and accelerating service delivery.

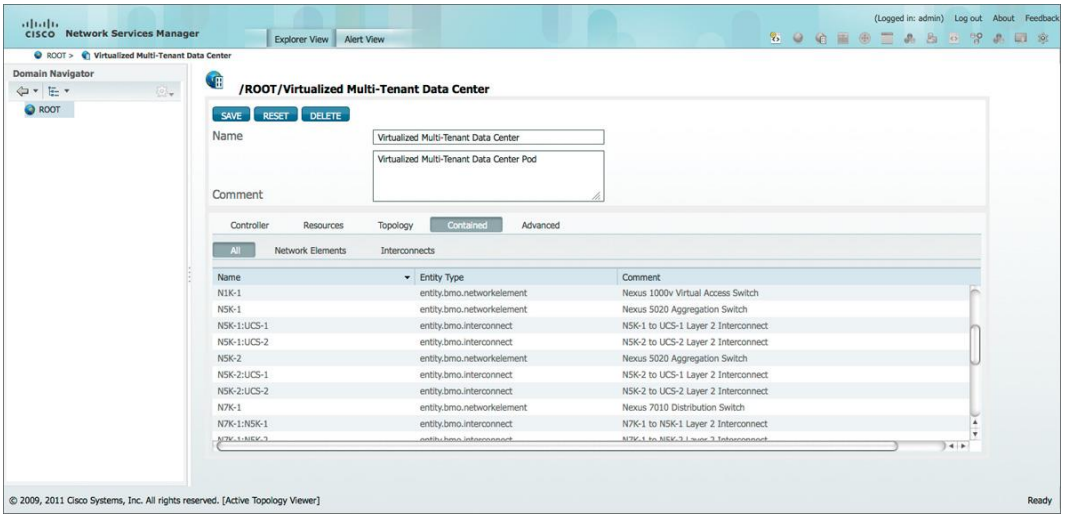
Network infrastructure can now be virtualized and fully automated in support of multitenant data center deployments through the use of network hypervisor technology. Cisco Network Services Manager extends the capabilities of traditional network hypervisors by helping enable customers to create dynamic, automated network containers providing security, partitioning, and access control - the building blocks to provide IT as a service for any class of customer.

Easily Create Service Tiers in Multi-Tenant Data Centers

Cisco Network Services Manager offers a flexible, policy-driven approach to how network services are managed and controlled. This is achieved by abstracting the components needed to build an isolated virtual network infrastructure for each tenant. Through an administrative interface (Figure 1), Network Services Manager helps enable administrators to dynamically define and control sets of features from across multiple physical and virtual platforms in combination with behavior policies that support:

- Creation of different levels of service capability or "service tiers" for tenant use
- Definition of the capabilities and resources available in each tier
- Structuring of a system of "containment" tailored to tenant application and deployment model needs

Figure 1. Network Services Manager Browser-based Interface



Network Services Manager's policy-driven approach allows network containers to be managed in a lifecycle. Containers can be designed and stored for later use, each with potentially different and unique offerings and operational behaviors, then requested and instantiated in one or more data center network pods.

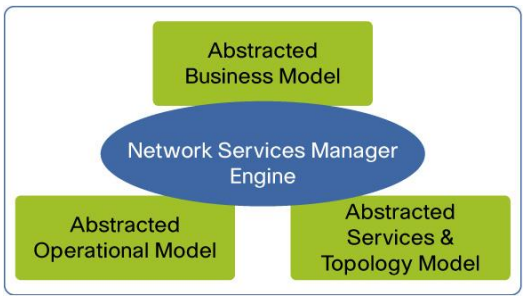
As an example, a container may offer the network features necessary for a simple self-service development environment, while another may offer a network topology to support a multi-tiered application with defined quality of service attributes for customer- and partner-facing web content, and yet another may support sophisticated multi-tiered containers to support an internal business application with multiple firewalled zoning capabilities.

Define and Control the Behavior and Characteristics of a Multi-Tenant Network

Cisco Network Services Manager abstracts the features, services, and resources from the underlying network infrastructure that are critical to multi-tenant operations, and models these in software. The resulting models, objects and policies are used to enable administrators to define and control the behavior and characteristics of the network to support a multi-tenant data center.

These abstracted models are used by the Network Services Manager Engine when network container instances are requested. The result is a flexible and agile provisioning process that ensures topologies are configured to policy and resources are managed effectively as they are consumed or released (Figure 2).

Figure 2. Cisco Network Services Manager Business, Operational, and Service and Topology Models



- Business Model: Defines which tenants and groups can have access to various network resources
- Operational Model: Specifies the resources, available network containers, and policies that, together, define and control the behavior of a particular multi-tenant environment
- Service and Topology Model: Defines the relationship between physical and logical resources pools, topology models and policies.

Table 1. Features and Benefits

Feature	Benefits
Business-policy driven	Policies enforce topology models, network features and network behaviors to ensure adherence to organizational or architectural requirements e.g. all the security, isolation, features and resources to support the desired "tier of service", and control the characteristics and behavior of multi-tenant data centers. As business needs evolve, new policies can be constructed and existing policies adjusted. For example, a policy for access to a customer relationship management (CRM) system can be established to automatically adjust the network services when new sales personnel are hired or when the CRM application moves physically or virtually.
Automates end-to end infrastructure as a service	Enables just-in-time service delivery models to automatically translate a "Network Container" request into an end-to-end network service topology, including configuration of all associated routers, switches, firewalls, and other devices on the network.
Self-healing network containers	Network Services Manager is topology aware and seeks to maintain the integrity of any end-to-end topology it is managing. If an individual component should fail or be impacted in some way Network Services Manager will reestablish necessary configurations to put that topology back into an operational state. Helps enable administrators to maintain highly available multi-tenant network operation.

Network Services Manager Architecture

The Network Services Manager architecture consists of browser-based interface, allowing administrators to define network characteristics, services, and behaviors as well as construct business polices that define who (users and groups) or what (other computer resources) can access network resources.

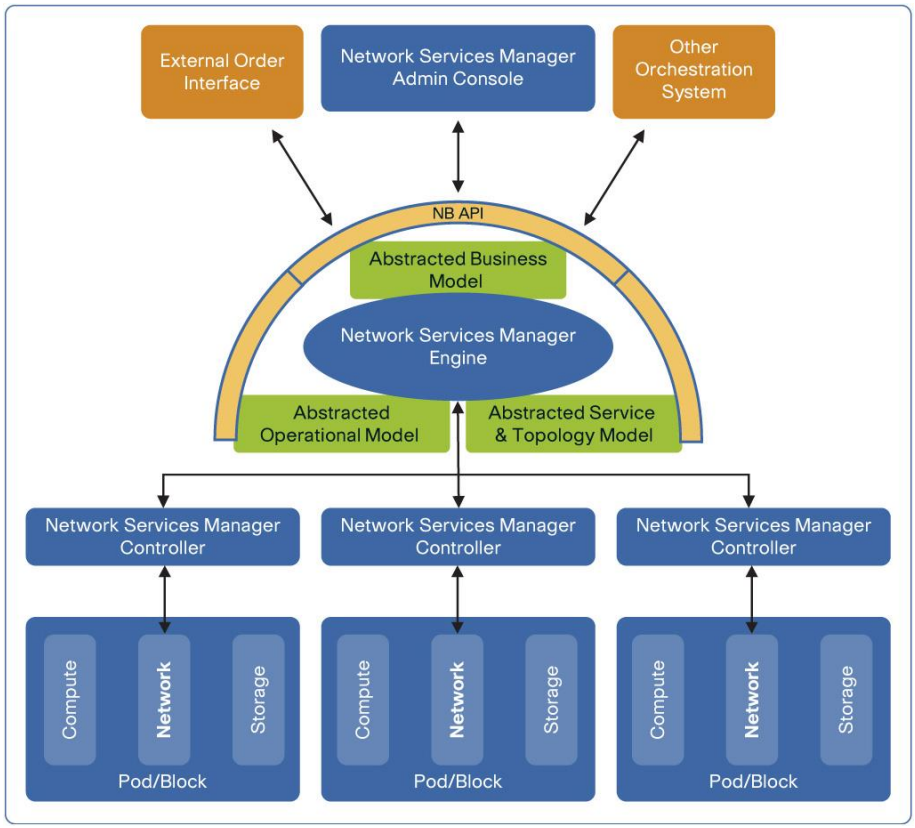
The heart of the system is the Network Services Manager Engine, which automates the provisioning of end-to-end network services and dynamically generates the configuration instructions that control the devices and services in the multi-tenant environment.

The Network Services Manager Engine dynamically builds and deploys these configuration instructions that are pushed down to the Network Services Manager Controllers that translate the instructions into the exact network service topology configuration semantics for each device type/model in the pod.

The Network Services Manager Controllers interact with the network devices and network services in the pod in real time to determine the exact service characteristics of the network devices and status of the deployed network services.

Network Services Manager can be integrated with external systems such as order entry portals or service catalogs where user requests for network services can be captured and pushed to the Network Services Manager Engine for provisioning. Cisco Intelligent Automation for Cloud, or other ecosystem technologies such as higher-level orchestration frameworks or specific configuration management systems can also use this interface to move critical information to and from Network Services Manager. See Figure 3.

Figure 3. Network Services Manager Admin Console



System Requirements

Network Services Manager consists of two Linux servers deployed as OVA images in a VMware virtual datacenter reserved for management of the equipment. Table 2 lists system requirements for Network Services Manager Engine software, Table 3 gives the system requirements for Network Services Manager Controller software, and Table 4 lists the system requirements for browser access to Network Services Manager.

Table 2. Network Services Manager Engine Software

Hardware	Dual Core CPU
Disk space	40 GB
Memory	1 GB minimum

Table 3. Network Services Manager Controller Software

Hardware	Dual Core CPU
Disk space	40 GB
Memory	2 GB

Table 4. Browser Software Access to Network Services Manager

Hardware	Microsoft Windows or Apple Mac desktop
Software	Firefox 3.6 to 15, Internet Explorer 7, 8, and 9

Ordering Information

For ordering information please contact your local Cisco account representative.

Service and Support

Using the Cisco Lifecycle Services approach, Cisco and its partners provide a broad portfolio of end-to-end services and support that can help increase your network's business value and return on investment. This approach defines the minimum set of activities needed, by technology and by network complexity, to help you successfully deploy and operate Cisco technologies and optimize their performance throughout the lifecycle of your network.

For More Information

For more information on Cisco Network Services Manager, visit http://www.cisco.com/go/nsm contact your local Cisco account representative, or send an email to ask-nsm@cisco.com.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

Printed in USA C78-693133-02 11/12