CHAPTER 4

Infrastructure Management Tools

The following Information management tools were used in VMDC 3.0 testing.

UCSM

Cisco Unified Computing System (UCS) Manager provides unified, embedded management of all software and hardware components in the Cisco UCS. It controls multiple chassis and manages resources for thousands of virtual machines.

Through its unified, embedded, policy-based, and ecosystem-friendly approach, Cisco UCS Manager helps reduce management and administration expenses, which are among the largest items in most IT budgets.

Cisco UCS Manager supports data center automation, helping increase operational agility and scalability, while reducing risk. It provides policy-based management with service templates and service profiles.

Cisco UCS Manager offers the following benefits:

- A unified embedded management interface that integrates server, network, and storage access
- Policy and model-based management with service profiles that improves agility and reduces risk
- Auto discovery to detect, inventory, manage, and provision system components that are added or changed
- A comprehensive open XML API, which facilitates integration with third-party systems management tools
- Role-based administration that builds on existing skills and supports collaboration across disciplines

For further details refer to the *Cisco UCS Manager Configuration Guides* at:

http://www.cisco.com/en/US/products/ps10281/products_installation_and_configuration_guides_list.html

VNMC

Cisco Virtual Network Management Center (VNMC) provides centralized multi device and policy management for Cisco network virtual services. The product addresses those issues by automating processes, freeing staff to focus on optimizing the network environment. Cisco VNMC supports greater scalability along with standardization and consistent execution of policies.

When combined with the Cisco Nexus 1000V Switch, ASA 1000V Cloud Firewall, or the Cisco Virtual Security Gateway (VSG), you can implement the solution to provide

- Rapid and scalable deployment through dynamic, template-driven policy management based on security profiles
- Easy operational management through XML APIs to help enable integration with third-party management and orchestration tools
- A non-disruptive administration model that enhances collaboration across security and server teams while maintaining administrative separation and reducing administrative errors

Cisco VNMC operates in conjunction with the Cisco Nexus 1000V Virtual Supervisor Module (VSM) to improve operations and collaboration across IT. It streamlines the services performed by security, network, and server administrators.

This solution allows the security administrator to author and manage security profiles and Cisco Virtual Security Gateway (VSG) instances through the VNMC programmatic interface with Cisco Nexus 1000V. Cisco VSG provides trusted multi-tenant access with granular, zone-based, and context-aware security policies.

Cisco VNMC also manages the Cisco ASA 1000V Cloud Firewall to enable rapid and scalable security at the edge through dynamic, template-driven policy management.

For more information refer to the Cisco Virtual Network Management Center.

DCNM

Cisco Prime Data Center Network Manager (DCNM) is designed to help you efficiently implement and manage virtualized data centers. It includes a feature-rich, customizable dashboard that provides visibility and control through a single pane of glass to Cisco Nexus and MDS products. DCNM optimizes the overall uptime and reliability of your data center infrastructure and helps improve business continuity. This advanced management product:

- Automates provisioning of data center LAN and SAN elements
- Proactively monitors the SAN and LAN, and detects performance degradation
- Helps secure the data center network
- Eases diagnosis and troubleshooting of data center outages
- Simplifies operational management of virtualized data centers

This provides the following benefits:

- Faster problem resolution
- Intuitive domain views that provide a contextual dashboard of host, switch, and storage infrastructures
- Real-time and historical performance and capacity management for SANs and LANs
- Virtual-machine-aware path analytics and performance monitoring

- Easy-to-use provisioning of Cisco NX-OS features with preconfigured, customized templates
- Customized reports which can be scheduled at certain intervals

DCNM can be used to configure and manage VMDC technologies such as:

- Cisco virtual PortChannel (vPC)
- Virtual device context (VDC)
- Cisco FabricPath
- Fibre Channel over Ethernet (FCoE)
- Fabric zoning
- Virtual SANs (VSANs)

http://www.cisco.com/en/US/products/ps9369/products_installation_and_configuration_guides_list.html

VMware vCenter

VMware vCenter Server is an integral component of the VMDC 3.0 architecture which provides a centralized management point for all virtualized hosts and virtual machines. VMware vCenter Server gives the administrator deep visibility into the configuration of all the critical components of a virtual infrastructure. The Cisco Nexus 1000V is integrated into VMware vCenter which provides a uniform interface for network configuration for all virtualized hosts.

VMware vCenter Server provides centralized visibility and proactive management for the VMDC virtual infrastructure.

Centralized Control and Visibility

- vSphere Web Client enables managing the essential functions of vSphere from a browser
- Hardware monitoring with CIM SMASH enables alarms when hardware failures of key components
- Storage maps and reports convey storage usage, connectivity and configuration.
- Customizable topology views give you visibility into storage infrastructure and assist in diagnosis and troubleshooting of storage issues.

Proactive Management

- Host Profiles standardize and simplify how you configure and manage ESXi host configurations
- Capture the blueprint of a known, validated configuration - including networking, storage and security settings - and deploy it to many hosts, simplifying setup
- Host profile policies can also monitor compliance

Configuration, Compliance Chores

- Resource management for virtual machines - Allocate processor and memory resources to virtual machines running on the same physical servers.
- Establish minimum, maximum, and proportional resource shares for CPU, memory, disk and network bandwidth.
- Dynamic allocation of resources - vSphere DRS continuously monitors utilization across resource pools and intelligently allocates available resources among virtual machines based on pre-defined rules that reflect business needs and changing priorities.

- Energy efficient resource optimization - vSphere Distributed Power Management continuously monitors resource requirements and power consumption across a DRS cluster.

Automatic restart of virtual machines with vSphere HA

For more information on VMware vCenter Server refer to the *VMware vSphere 5.1 vCenter Documentation at the following URL*

http://www.vmware.com/support/pubs/vsphere-esxi-vcenter-server-pubs.html

Zenoss—Cloud Service Assurance for VMDC

Cloud Service Assurance for VMDC is provided by Cisco Partner Zenoss, Inc. through the Solution Plus program. Zenoss Cloud Service Assurance (Zenoss CSA) is an advanced software solution for Cisco Data Center Cloud infrastructure deployments. It provides an essential platform for resource monitoring, relationship modeling, adaptive dependency discovery, and continuous delivery of quantitative impact and root cause analysis.

Cisco and Zenoss have jointly validated the Zenoss Cloud Service Assurance product, extending and customizing it to work with the VMDC architecture.
Zenoss Cloud Service Assurance product provides the following business benefits;

- Automatic discovery of the VMDC network, Cisco Unified Computing, and virtual machines
- Comprehensive VMDC device coverage includes Out-of-the-box support for compute, virtualization, storage, and networking services
- Dynamic cloud infrastructure model auto identifies components and relationships eliminating need to develop, and maintain, ever changing service-specific rules
- Service impact awareness and root cause analysis identifies service-impacting events across multiple technology stacks, rapidly focusing resources on incident root cause
- Enhanced SLA reporting provides tenant-service fault & performance reporting.

To learn more about Cloud Service Assurance for VMDC, download the Cisco Validated Design Guide from http://www.cisco.com/go/cloudassurance.