Cisco Cloupia

Modern data centers need IT management solutions with deep and broad coverage of dynamic environments. Organizations that embrace such solutions can be more agile, innovative, and proactive.

Challenges

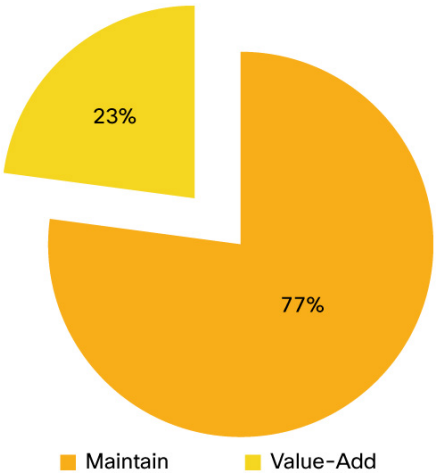
Data center strategy has become a critical part of business strategy overall. Today, more than ever, the ways and means of IT deployment can make the difference between an efficient, successful organization and an inefficient one. That is because today IT applications and services support increasing numbers of business operations and create competitive differentiation in many industries. However, the resulting proliferation of applications and their underlying server, storage, and networking technologies is placing increasingly greater burdens on IT staff, demanding more from IT than ever before. One of the major burdens is the management of this complex IT environment, with considerable staff time needed to configure, deploy, and manage application infrastructure.

A recent IDC study shows just how heavy this burden has become. IT decision makers report that approximately three-quarters (76.8 percent) of IT staff time and resources are spent maintaining existing environments, and less than one-quarter (23.2 percent) of staff time is spent on value-added activities (Figure 1). Analysis of the maintenance portion reveals the following:

- 24 percent of staff time and resources is consumed by pre-system deployment.
- 23 percent of staff time and resources is consumed by turning on and preparing systems for applications.
- 29 percent of the remaining time is spent on monitoring and maintaining the IT infrastructure, including patch management, health monitoring, software and application updating, analysis, and troubleshooting.[1]

[1] IDC, 2011

Figure 1. IT Staff Time & Resources Distribution



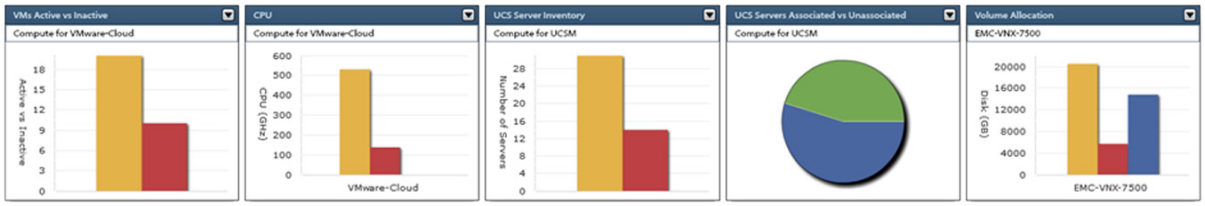
Concurrent with the challenges of adapting to these changes in the IT industry is the continued challenge for IT to do more with flat or decreasing budgets. This confluence of factors has caused IT managers to become eager to identify and adopt new technologies and solutions that deliver efficiency for those maintenance activities that are consuming more than three-quarters of staff time. The goal of IT managers is to deliver excellent maintenance service with less staff effort and increase the focus on deployment of new services for the organization. This trend is at the center of evolving data center strategy. Therefore, enterprises are seeking data center solutions that deliver on the efficiency promises of unified infrastructure and management products.

The adoption of converged infrastructure solutions has been increasing because converged infrastructure that spans computing, networking, and storage resources can improve IT agility, protect business investments into the future, streamline deployment, and significantly increase asset utilization. Converged infrastructures alone helps reduce floor space needs and energy costs and provides operation benefits by creating a virtualized pool of resources; however, the real reduction in the total cost of ownership (TCO) occurs when converged infrastructure is combined with end-to-end simplified automated management.

Traditional management solutions that were designed for the physical data center are not suited for these new environments and have struggled to support converged infrastructure, resulting in a diverse set of data center management tools that, in fact, increase IT complexity. Traditional tools also increase operating costs because they focus primarily on the physical environment, leaving the rapidly expanding virtual and bare-metal environments to be managed and monitored manually. Vendors see these challenges and are responding with new tools designed to support these dynamic environments across physical and virtual resources.

Cisco® Cloupia (formerly Cloupia Unified Infrastructure Controller) delivers unified management for the industry's leading converged infrastructure solutions, which are based on the Cisco Unified Computing System™ (Cisco UCS®) and Cisco Nexus® platforms. Cisco Cloupia extends the unification of computing and network layers through Cisco UCS to provide data center professionals with single-pane management and storage solution choice. Cisco Cloupia supports the industry's leading converged infrastructure solutions, NetApp FlexPod and ExpressPOD, EMC VSPEX, and Virtual Computing Environment (VCE) Vblock™ Systems, based on the Cisco UCS and Cisco Nexus platforms.

Figure 2. Cisco Cloupia Manages Key Infrastructure Components from Unified Console



Cisco Cloupia automates the provisioning of resource pools across physical, virtual, and bare-metal environments from a unified, centralized management console, reducing time-to-value for both applications and end users. Cisco Cloupia delivers native automated monitoring, OS and software updates, and resource utilization analysis to free your IT staff from mundane maintenance tasks, allowing them to focus on competitive innovation for your business.

Solution Overview

Cisco Cloupia is a centralized management solution that enables IT departments to experience the full benefits of their converged infrastructure investment by continuing to reduce TCO and save staff time with transparent unified management. When combined with the industry's leading converged infrastructure solutions, Cisco Cloupia:

- Improves agility of IT to meet growth and business initiatives
- Lowers cost per user without sacrificing scalability
- Reduces the need for specialized operation skills and processes and decreases costs
- Delivers management capabilities for multitenant and secure multitenant environments to accommodate virtualized workloads running alongside non-virtualized workloads

Cisco Cloupia delivers these benefits through the features listed in Table 1.

Table 1. Features and Benefits

Feature	Benefit
Central management	• Provides single interface through which administrators monitor, provision, and manage the system across physical, virtual, and bare-metal environments • Provides unified dashboards, reports, and heat maps, drastically reducing troubleshooting and performance bottlenecks
Self-service catalog	• Enables end users to order and deploy new infrastructure instances following IT-prescribed policies and governance
Adaptive provisioning	• Uses real-time available capacity, internal policies, and application workload requirements to optimize availability of the most beneficial or best-suited resources
Dynamic capacity management	• Through continuous monitoring, shows real-time infrastructure consumption, significantly improving capacity planning and management • Identifies underutilized and overutilized resources
Multiple-hypervisor support	• Supports VMware ESX, Microsoft Hyper-V, and Red Hat hypervisors
Computing management	• Monitors, manages, and provisions physical, virtual, and bare-metal servers as well as blades • Enables end users to implement virtual machine lifecycle management and business continuance through snapshots • Provides administrators with server utilization trending analysis
Network management	• Delivers policy-based provisioning of physical and virtual switches and dynamic network topologies • Enables administrators to configure VLANs, virtual network interface cards (vNICs), port groups and port profiles, IP and Dynamic Host Control Protocol (DHCP) allocation, and access control lists (ACLs) across network devices

Feature	Benefit
Storage management	• Enables policy-based provisioning and management of filers, virtual filers (vFilers), logical unit numbers (LUNs), and volumes • Provides unified dashboards, giving administrators complete visibility into organization use, trend, and capacity analysis details
CloudGenie	• Provides mobile management from Apple iPad and iPhone and Android devices • Enables mobile self-service provisioning, virtual machine management, and viewing of administrative dashboards

Cisco Cloupia Out-of-the-Box Management Features

Table 2 lists the physical and virtual management features of Cisco Cloupia.

Table 2. Cisco Cloupia Physical and Virtual Management Features

Physical Server Management • Discover and collect configurations and changes • Monitor and manage physical servers • Perform policy-based server provisioning • Manage blade power • Manage the server lifecycle • Perform server use trending and capacity analysis • Perform bare-metal provisioning using preboot execution environment (PXE) boot management	**Virtual Computing Management** • Discover, collect, and monitor virtual computing environment • Perform policy-based provisioning and dynamic resource allocation • Manage the host server load and power • Manage the virtual machine lifecycle and snapshots • Perform analytics to assess virtual machine capacity and sprawl and host utilization
Physical Storage Management • Discover, collect, and monitor storage filers • Perform policy-based provisioning of vFilers • Provision and map volumes • Create and map LUN and iGroup instances • Perform SAN zone management • Monitor and manage network-attached storage (NAS) and SAN based storage • Implement storage best practices and recommendations	**Virtual Storage Management** • Discover, collect, and monitor storage vFilers and storage pools • Perform policy-based storage provisioning for thick and thin clients • Create new data stores and map them to virtual device contexts (VDCs) • Add and resize disks to virtual machines • Monitor and manage organizational storage use • Perform virtual storage trend and capacity analysis
Physical Network Management • Discover, collect, and monitor physical network elements • Provision VLANs across multiple switches • Configure ACLs on network devices • Configure the storage network • Implement dynamic network topologies	**Virtual Network Management** • Add networks to virtual machines • Perform policy-based network provisioning with IP and DHCP allocation • Configure and connect vNICs to VLANs and private VLANs • Create port groups and port profiles for virtual machines • Monitor organization use of virtual networks

Cisco Differentiators

As converged infrastructure solutions continue to be adopted in today's virtualized data centers, organizations want management solutions that transparently integrate with these solutions and provide IT with greater efficiency and benefits and low TCO. Cisco Cloupia is the leader among standalone converged management solutions, providing IT with:

- Unified, centralized management of physical and virtual assets
  - Cisco Cloupia is the only solution available today that provides unified single-pane management for multivendor, multiprotocol converged infrastructure.
  - Cisco Cloupia is the only solution available today that manages physical, virtual, and bare-metal instances (where supported) from an IT administrator self-service portal.
  - Heterogeneous management eliminates the vendor lock-in for both converged infrastructure and management experienced with a single-stack solution.

- Out-of-the-box turnkey solution
  - With a task library containing over 400 tasks, Cisco Cloupia allows IT administrators to quickly drag and drop tasks to create workflows and templates in minutes.

Figure 3. Cisco UCS Tasks Available for Workflow Automation

Cisco UCS Tasks	
Select UCS Server	Clone UCS Boot Policy
Reset UCS Server	Modify UCS Boot Policy WWPN
Power On UCS Server	Add VLAN
Power Off UCS Server	Delete UCS Boot Policy
Create UCS Service Profile from Template	Delete UCS VLAN
Create UCS Service Profile	Add VLAN to Service Profile
Select UCS Service Profile	Delete VLAN from Service Profile
Modify UCS Service Profile Boot Policy	Add iSCSI vNIC to Service Profile
Delete UCS Service Profile	Delete iSCSI vNIC from Service Profile
Associate UCS Service Profile	Add vNIC to Service Profile
Disassociate UCS Service Profile	Delete vNIC from Service Profile
Create UCS Boot Policy	Create Service Profile iSCSI Boot Policy
Modify UCS Boot Policy LUN ID	Modify Service Profile Boot Policy to Boot from iSCSI

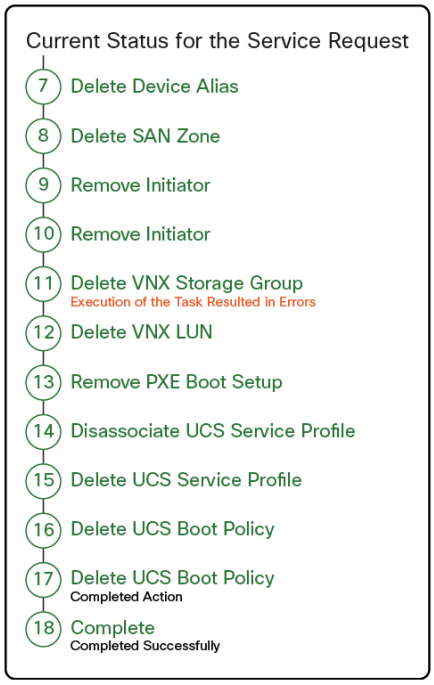
  - Included in the task library are Day 1 through Day 3 maintenance and update activities, eliminating the need to upsell to expensive IT service management solutions.

Figure 4. Only Cisco Cloupia Automates Day 1-3 Maintenance

Day-1	Day-2	Day-3
• Add Tenants • Migrate or Add Applications • Integration with Enterprise Systems • Self-Service Portal	• Monitor Performance • Metering & Billing • Tenant Changes • Self-Service IaaS	• Add/Upgrade HW • Repurpose

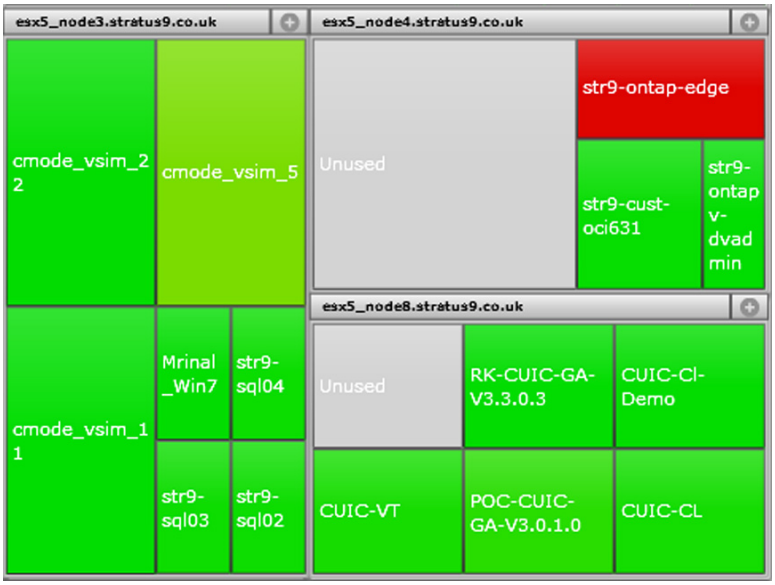
- Model-based orchestration
  - Cisco Cloupia's model-based orchestration enables IT administrators to customize and automate infrastructure administrative and operation tasks with an easy-to-use workflow designer.
  - A library of over 400 built-in tasks and out-of-the-box workflows enables administrators to extend and customize the system to meet their individual needs.

Figure 5. Detailed Workflow Creation and Execution



- Built-in monitoring for health and status
  - Cisco Cloupia has native monitoring for health, status, and resource utilization. Native monitoring eliminates the need for expensive software upgrades to IT service management solutions, maintaining a lower TCO for tight IT budgets.

Figure 6. Heat Map Shows VM Utilization At-a-Glance



- Best in-depth computing integration with Cisco UCS
  - Cisco Cloupia provides outstanding management for Cisco UCS, helping ensure optimal utilization of your Cisco UCS resources.

Cisco Cloupia and related Cisco solutions are ultimately differentiated from other solutions by capabilities that enable them to work cohesively and collaborative within today's dynamic and heterogeneous data centers to help enterprises implement IT strategies that promote business success.

System Requirements

Table 3 lists the main system requirements for the Cisco Cloupia solution.

Table 3. Main System Requirements

Cisco Cloupia virtual appliance deployment	• VMware ESX 3.5 or 4.0 and ESXi 4.0 or 5.0 • 2 vCPUs • 3 GB of memory • 40-GB hard disk • CentOS 5.0 • MySQL 5.0 • Oracle 10g and 11g
Virtualization	• VMware vCenter 5.0, 4.1, and 4.0 • VMware ESX or ESXi 5.0.0, 4.1.0, 4.0.0, and 3.5 • NetApp VSC plug-in (Version 2.1) • Microsoft Hyper-V and Windows 2008 R2 SP1 (all versions) • Microsoft System Center Virtual Machine Manager 2008 R2 SP1 (Version 2.04521.0 SP1) • Red Hat RHEV-H 5.6 to 9.3el5_6 and RHEV-M 2.2.4.51796 • Red Hat VDSM 2.2.63.23
Computing	• Cisco UCS 5100 Series Blade Server Chassis, B-Series Blade Servers, and C-Series Rack Servers • Cisco UCS 6100 and 6200 Series Fabric Interconnects • Cisco UCS Manager Release 1.0, 1.3, 1.4, and 2.0
Network	• Data center: Cisco Nexus 5000 Series Switches (Release 5.0 and later), Cisco Nexus 1000V Series Switches (Release 4.2), and Cisco Catalyst® 6500 Series Switches • Access layer: Cisco Catalyst 3500 Series Switches and Cisco MDS 9000 Family directors and fabric switches • Security: Cisco PIX® Firewall Software Version 8.0 and Cisco ASA 5500 Series Adaptive Security Appliances (Release 7.0) • Fabric OS switch: Brocade 300, Version 6.3.0a • Network OS switch: Brocade VDX 6710-54, Version 2.1.1; VDX 6720-24, Version 2.1.1; and VDX 6730-32, Version 2.1.1
Storage	• Storage controller: NetApp FAS2000, FAS3000, and FAS6000 Series • Interface: OnCommand 4.0.2; ONTAP 7.3.6, 8.0.1, or 8.0.2 (7-mode); and ZAPI 1.13 and later • EMC VNX: Block, File, and Unified Versions 5100, 5300, and 7500

Conclusion

As IT departments continue to implement converged infrastructure solutions to respond more quickly to new business applications and projects, the management solution needs to expand the operation benefits of the converged infrastructure with transparent management, automation, and monitoring.

Cisco Cloupia delivers the management operation benefits and management tool consolidation desired by IT to reduce management software cost and operation complexity, while increasing enforcement and adherence to IT policies and procedures.

This solution aligns with the Cisco vision of enabling cohesive, flexible data centers with unified management that dramatically reduces the 76 percent of IT time spent today on data center management, so that IT can spend much more than 23 percent of its time delivering advanced services to the business.

For More Information

Learn more about Cisco Cloupia, please visit http://www.cisco.com/go/cloupia.

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