

Cisco Intelligent Automation for Cloud



Introduction

Cloud technology is leading a transformation not only in data centers but also in the way companies and institutions evaluate, procure, and deploy IT assets. One of the clearest expressions of cloud-based change is the growing influence of line-of-business (LoB) consumers who want to consume both IT and non-IT services through a self-service model, preferably from a single portal.

The role of IT is changing in organizations. Seen in the past as simply a technology provider, IT is increasingly becoming a broker or intermediary for cloud services that are offered to the organization's LoB consumers. This new role includes orchestration of the procurement and delivery processes across internal and external clouds as well as management of third-party processes.

Many existing cloud management solutions are firmly rooted in delivery of infrastructure-as-a-service (IaaS). But with cloud technology maturing, end users want to move beyond basic infrastructure to broader-reaching service delivery use cases such as bring-your-own-device (BYOD), collaboration, networking, and other services. Customers, however, are quickly reaching the limits of their IaaS-centric solutions' capabilities to support these broader use cases. Continued attempts at automation using traditional IT service management (ITSM) tools or IaaS fixed solutions result in high investment costs and complex processes for the organization.

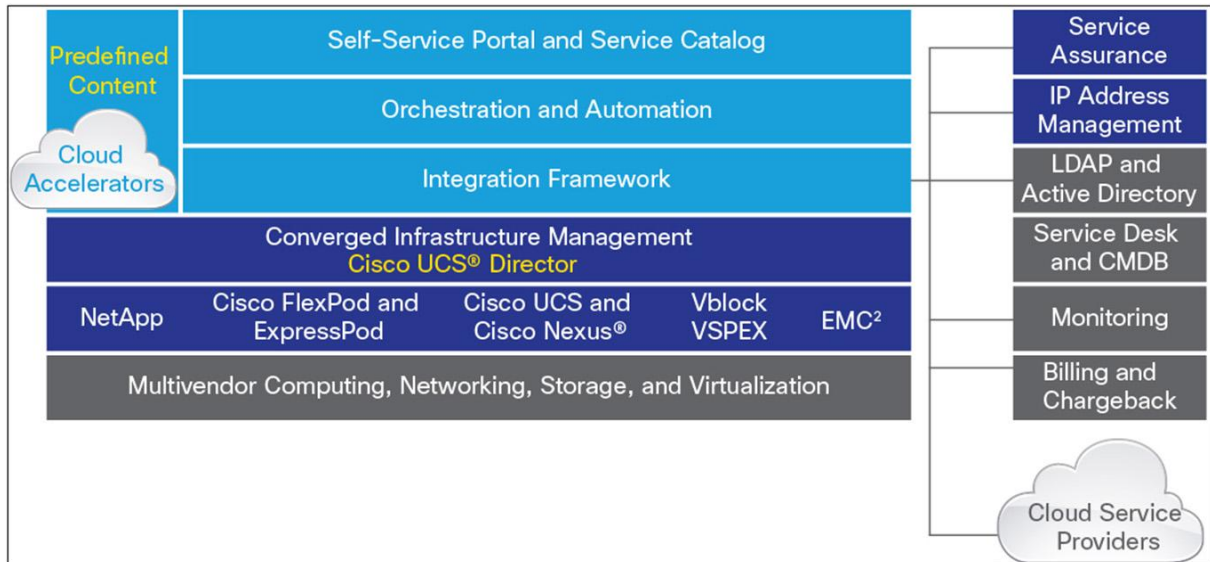
You need a flexible solution with capabilities that go beyond basic infrastructure provisioning to manage suppliers across private, public, and hybrid cloud environments and that takes advantage of technologies such as platform-as-a-service (PaaS) and network automation functions - all from a single cloud management platform. This solution requires a self-service cloud model that expands to include non-data center services that are ordered, delivered, and managed from a single shopping-cart experience across multiple disciplines.

Product Overview

Cisco® Intelligent Automation for Cloud (IAC) delivers a comprehensive cloud management solution spanning service offerings from underlying infrastructure to anything-as-a-service (XaaS) platforms that can be ordered and managed from a single, robust self-service portal (Figure 1). The simple intuitive user interface provides role-based access for end users as well as administrators and simplifies system, lifecycle, governance, and consumption with views tailored to each user type.

Cisco's industry-leading orchestration layer delivers 99.995 percent high availability to place your mission-critical applications in the cloud, as well as scalability to support a wide range of applications. Workflows are visually configured with drag-and-drop ease for physical, bare-metal, and virtual resources. Cisco IAC orchestration extensions for customized functions are upgrade safe, providing investment protection for customization across future Cisco IAC versions.

Figure 1. Cisco Intelligent Automation for Cloud Solution



With cloud-based use cases expanding beyond IaaS at such a rapid pace, customers can no longer wait for annual product releases of their cloud management solutions. To help you keep pace with cloud service advancements, Cisco has created cloud accelerators, which are cartridges with content defined by Cisco that snap directly into the Cisco IAC framework, allowing immediate consumption of new functions through the self-service portal.

The integration of Cisco UCS® Director into the Cisco IAC user interface provides cloud administrators with a single management solution to deploy and manage end-to-end service delivery from the application through the infrastructure on which the application resides. This eliminates the need for the cloud administrator to use multiple tools to manage both cloud and infrastructure resources.

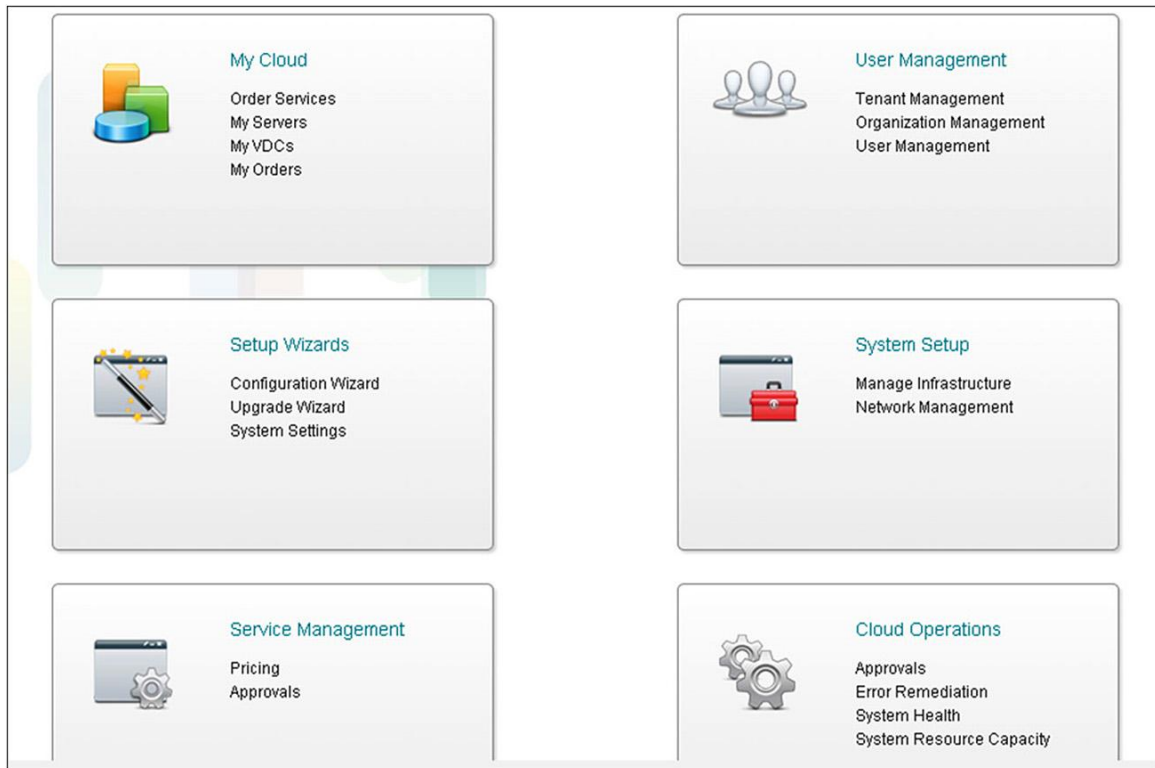
Features and Benefits

The release of Cisco IAC 4.0 delivers substantial improvements that take your organization significantly beyond IaaS to more robust use cases.

Self-Service Business Portal and Service Catalog

Cisco IAC 4.0 delivers a next-generation user interface through Cisco Prime™ Service Catalog, which provides a shopping-cart experience for customers ordering extensible IT and non-IT business services. The Cisco IAC user interface provides role-based access for end users and administrators (Figure 2), allowing them to order, obtain service reports for, and manage the lifecycle of their IT and business service requests. Tenant-level and organization-level customization is available with private logos and labeling and the capability to tailor directional and navigational text.

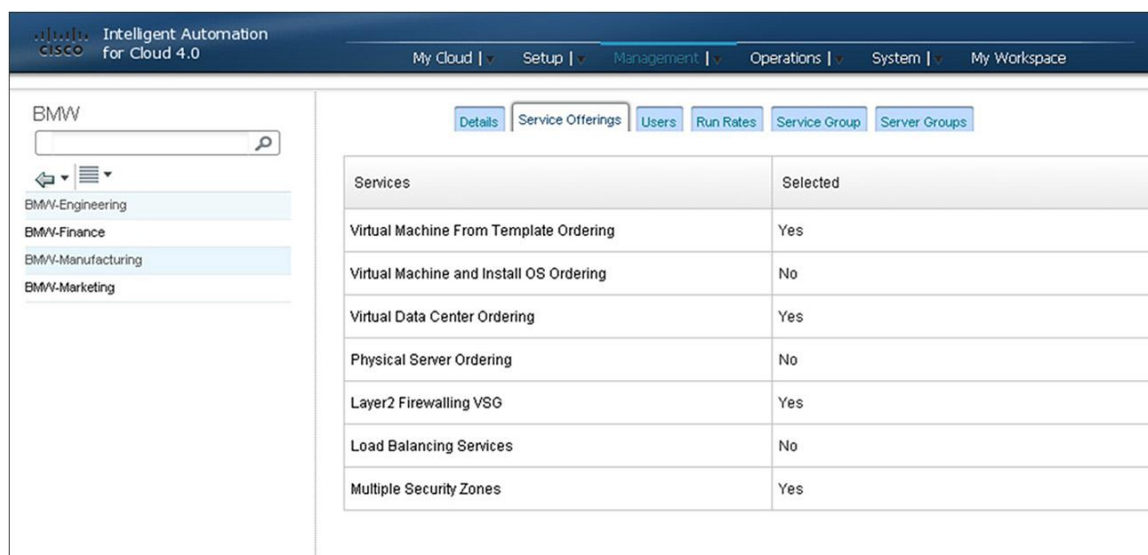
Figure 2. Administrator View of Service Portal



Network Automation

With increasing amounts of data being placed in the cloud, manual preprovisioning of the network layer is becoming unwieldy, and demand-based provisioning through trouble tickets can extend time-to-value by weeks. Using Cisco Prime Network Services Controller (NSC), Cisco IAC accelerates deployment of network resources with out-of-the-box templates that enable you to deploy network services through the Cisco IAC self-service portal with a single order. Cisco Prime NSC is included out of the box with Cisco IAC and installed as part of the complete installation process.

Figure 3. Ability to Establish Service Offerings by Tenant



The screenshot shows the Cisco Intelligent Automation for Cloud 4.0 interface. The top navigation bar includes 'My Cloud', 'Setup', 'Management', 'Operations', 'System', and 'My Workspace'. The left sidebar shows a search bar and a list of tenants: BMW-Engineering, BMW-Finance, BMW-Manufacturing, and BMW-Marketing. The main content area is titled 'BMW' and contains a table of service offerings. The table has two columns: 'Services' and 'Selected'. The 'Selected' column contains 'Yes' or 'No' for each service.

Services	Selected
Virtual Machine From Template Ordering	Yes
Virtual Machine and Install OS Ordering	No
Virtual Data Center Ordering	Yes
Physical Server Ordering	No
Layer2 Firewalling VSG	Yes
Load Balancing Services	No
Multiple Security Zones	Yes

Cisco IAC network automation provides the following benefits:

- Creation of real network topologies that focus on users and the applications that they use
- Dynamic installation of virtual network devices on demand with onboarding and offboarding of tenants and organizations
- Lifecycle operations for Layers 2 through 7, including modification and removal, that maintain the relationships and lifecycles of users, tenant organizations, and applications associated with network capabilities

Cloud Governance

With use cases expanding beyond the data center, LoB managers are looking to the cloud to set and enforce governance processes beyond traditional performance and system uptime measures to include business-oriented metrics that can be tracked by budgetary or capacity limits.

Automated cloud governance in Cisco IAC delivers automated financial and portfolio management across multiple cloud environments and can be extended across multiple suppliers. With detailed pricing capabilities, the solution provider or enterprise administrator can specify billing rates for services and resources on a per-tenant basis (Figure 4) and lock down the specific services available to tenant organizations. Cisco IAC also provides the capability to bill for one-time operations or multiple operations based on hourly rates.

Figure 4. Billing Tables Establishing Pricing Per Tenant Per Instance

Rate Code	Rate	Unit of Measure	Instantiated from VM template
IAC-CSP-Linnin6.4	220.00000	Currency	IAC-CSP-Linnin6.4
Convert-VM4	250.00000	Currency	Convert-VM4
IAC-RHEL5-x64	260.00000	Currency	IAC-RHEL5-x64
CloneVM-9	275.00000	Currency	CloneVM-9
Ubuntu-Teeny	290.00000	Currency	Ubuntu-Teeny
IAC-Windows7Ent-x64	300.00000	Currency	IAC-Windows7Ent-x64
TryoutVM-2	310.00000	Currency	TryoutVM-2
CloudVM-3-Temp	200.00000	Currency	CloudVM-3-Temp
T-w2K8	999.00000	Currency	T-w2K8

At the time of a service order, Cisco IAC uses these billing rates to show service costs to the end user and deliver budgetary baselines, and these baselines can be tracked over time. When a customer has used, for example, 80 percent of a predetermined budget, Cisco IAC will notify the customer, who can either add additional funds or retire the service.

Cisco IAC cloud governance benefits include the following:

- Allows organizations to establish quotas and limits ahead of time, eliminating the surprise of large bills from public service providers
- Gives end users an understanding of the costs of services at time of ordering before requests are finalized
- Financial or consumption limits deliver financial granularity for project budgets
- Allows enterprises or service providers to fund service expansion or staff additions from savings or from incremental revenue derived from offering Cisco IAC services to their customers

Advanced Multitenancy

Cisco IAC multitenancy delivers completely isolated containers, allowing multiple tenants to reside safely segregated in a shared environment. Cloud administrators control tenant organizations and users, offloading user management work from the cloud provider. Service pricing can be set per tenant, and services can be individually enabled or disabled per tenant and per organization. Tenant quotas can also be set to limit use or set without a limit to encourage and allow continuous growth (Figure 5).

Within each container, customers can customize the branding and appearance for their individual environments.

Figure 5. Setting Quotas for Resources by Tenant

Service Item Type	Aggregate Method	Service Item Attribute	Quota	Used	Available
Virtual Machine (VM)	Count		100	0	100
Virtual Machine (VM)	Sum	# of vCPUs	1000	0	1000
Virtual Machine (VM)	Sum	O/S disk size (in GB)	1024	0	1024
Virtual Data Center	Count		10	0	10
Virtual Machine (VM)	Sum	Memory (in GB)	2024	0	2024
RunRateSummary	Sum	CurrentRate(Currency)	100	0	100

Cisco IAC advanced multitenancy provides the following benefits:

- Role-based administration for tenant administrator and organization administrator with summaries of lifecycle activities
- Tenant-specific pricing policies per instance or for multiple instances
- Onboarding, modification, and offboarding of tenants and organizations, including instantiation of network devices to enable secure containers
- Control of service options and global templates per tenant (on or off)

Multicloud Management

Organizations are no longer content to stay with a single, proprietary platform for their public and private resources but are seeking to manage multiple cloud platforms from a single tool. Cisco IAC delivers out-of-the-box provisioning and management capabilities for Amazon EC2, OpenStack, VMware vCloud Director, and VMware vSphere and is designed to be extended to additional hypervisors and cloud providers. Multicloud management allows enterprises and service providers to tailor service offerings to the specific costs and functions of hypervisor platforms and specific project needs.

Minimum Hardware Requirements

Table 1 presents the minimum hardware requirements for Cisco IAC.

Table 1. Hardware Requirements for Cisco IAC

Platform Element	Component	Client	Server
Cisco Process Orchestrator server¹	CPU	2.8 GHz or higher core (dual-core systems recommended)	64-bit 2.8-GHz or higher core (quad-core systems recommended)
	Memory	2 GB minimum (4 GB or higher recommended)	<ul style="list-style-type: none"> • 2 GB minimum (8 GB or higher recommended) • 8 GB of RAM (if Microsoft SQL Server is installed on same machine as Cisco Process Orchestrator) • Recommended that the database reside on a separate server
	Disk space	1 GB dedicated to Cisco Process Orchestrator (2 GB or higher recommended)	1 GB of available hard disk space dedicated to Cisco Process Orchestrator (2 GB or higher recommended) ²
Cisco Prime Service Catalog	CPU		Intel® Core™ 2 dual processor or equivalent
	Memory		4 GB RAM
	Disk space		40 GB free hard disk space
Cisco Prime Service Catalog database	CPU		Intel® Core™ 2 dual processor or equivalent
	Memory		4 GB RAM
	Disk space		50 GB free hard disk space ³
Cisco Server Provisioner	CPU		EM64T, Intel® 64, or AMD64
	Memory		512 MB
	Disk space		40 GB ⁴

¹ For complete installation prerequisites, see the Cisco Process Orchestrator installation and administration guide on cisco.com.

² For the disk space sizing formula, see the Cisco Process Orchestrator installation and administration guide on cisco.com.

³ The disk space requirement depends on the projected size of your service portal databases over time to account for growth in user data, service definitional data, transactional data, and reporting data.

⁴ For additional information about scoping disk space, see the Cisco Service Provisioner documentation on LinMin.com.

More Information

- Additional information about Cisco Intelligent Automation for Cloud is available at <http://cisco.com/go/iacloud>.
- This product includes software developed by Stanford University and University of California, Berkeley, and its contributors.
- Additional information about Cisco cloud accelerators is available at <http://www.cisco.com/go/accelerators>.



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