



Cisco CloudCenter Solution Use Case: Application Migration and Management

Application migration and management

Cloud computing is here to stay. According to recent Gartner research¹, from 2011 to 2014 the global number of virtual machines hosted in public cloud Infrastructure as a Service (IaaS) grew from 3 percent to 20 percent of the total number of virtual machines deployed. This rapid growth is propelled by the compelling advantages of moving some applications to the cloud, which include ready scalability, wide accessibility, and pay-as-you-go pricing.

As enterprises move applications to the cloud, however, they are quickly discovering that the undertaking is by no means trivial.

And afterward, many enterprises find that long-running applications can be more expensive in a pay-per-use environment and seek to move some applications back to the data center.

The Cisco CloudCenter™ solution simplifies the application migration process. You can easily model, securely deploy, and manage applications in any data center, private cloud, or public cloud environment. And you can maintain application portability—without the need to modify the application. So you can have a flexible hybrid IT strategy and change where workloads are deployed without cost penalty.

¹ Internal Private Cloud Is Not for Most Mainstream Enterprises, Gartner, 2015

Any application, any cloud, one platform

The Cisco CloudCenter platform is a hybrid cloud management solution that offers wide flexibility in migrating applications among various cloud and data center environments. With the Cisco CloudCenter solution, you can easily model any application and then either deploy it one time in a migration scenario or deploy it on demand as the foundation for a hybrid IT-as-a-Service (ITaaS) solution.

As Figure 1 illustrates, you can migrate applications to, from, and between data centers and clouds. The Cisco CloudCenter solution supports more than 19 data center, private cloud, and public cloud environments. It works in both simple and complex scenarios. It can simplify the migration of one application to one cloud, and it can meet the needs of the most demanding data center consolidation or multicloud migration project.

Applications on the move

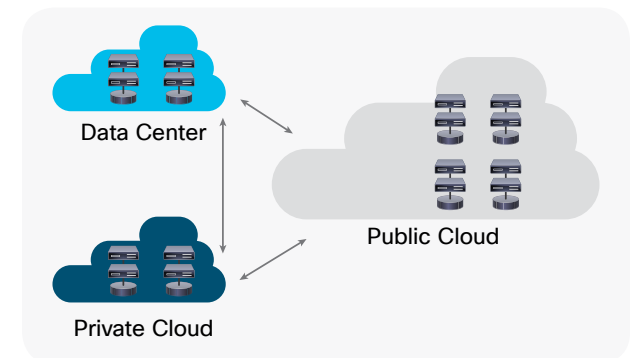
Enterprises are migrating their applications to, from, and between environments in a variety of ways and for a variety of reasons:

- **Data center to cloud:** Enterprises are moving workloads to the cloud to avoid the need to build and manage infrastructure, to build capacity for steady-state workloads while renting resources for peak or transient workloads such as development and test work or mobile and web tier applications, and to replace Capital Expenditures (CapEx) with a pay-per-use expense model.
- **Cloud to cloud:** Increasingly, IT is managing a portfolio of cloud services that are a best fit for a range business requirements. As enterprises gain expertise and experience with the cloud, IT may decide to migrate different types of workloads or different tiers of a single workload, to different cloud offerings to achieve the best fit.
- **Cloud to data center:** Many IT organizations may see the cloud as an excellent fit for variable and transitory workloads, but they may find that the public cloud is not the optimal home for steady-state, long-running applications. As IT gains experience with the cloud, the organization may move some workloads back to the data center to reduce costs or meet security and compliance requirements.
- **Data center to data center:** Data center consolidation and modernization typically requires the migration of a large number of currently deployed applications from one

physical data center to another. The reasons for the move include the need to accommodate mergers and acquisitions, reduce costs, improve operating efficiency, standardize IT service offerings, and respond to a new CIO's mandate for change.

Consequently, to take full advantage of cloud computing as a powerful part of a hybrid IT strategy, IT must have broad flexibility when migrating applications among environments. When business objectives indicate a need to move applications to, from, or between clouds, IT needs to be able to respond, "We have the operational processes and tools in place to do it efficiently and securely."

Figure 1. Migrate among data centers and clouds



The Cisco CloudCenter solution supports any starting point, including new applications and existing traditional applications that need to be migrated in bulk

Migrate and manage

Migration is more than just lifting and shifting a machine image from one location and dropping it in another. You need a way to effectively manage and govern applications after migration. For that, you need more than a simple migration tool. You need a comprehensive solution that enables you to both migrate and manage applications.

Achieving fast, efficient migration with ongoing management requires three capabilities:

- **Day-2 management:** IT organizations need to be able to immediately manage workloads as soon as they are moved. Therefore, a migration solution should provide a management capability that supports horizontal autoscaling and load balancing, ongoing maintenance and upgrading of application code and underlying middleware, and automated deprovisioning at prespecified times to control costs.
- **Application portability:** Avoiding lock-in to single execution environment is essential. Plans change, and you shouldn't have to pay an exit fee each time you change an execution environment. Consequently, a migration solution should not limit an application to only one environment, but instead should enable application portability.
- **Built-in governance:** Migration often affects multiple business units and IT teams. So a migration solution should include governance controls that help IT manage the transition with complete visibility and control that spans the boundaries of applications, clouds, and users.

The Cisco CloudCenter solution meets all three requirements. Many migration solutions don't offer management capabilities after migration. The Cisco solution provides a common management fabric that works across multiple environments.

The unique benefits of the Cisco CloudCenter solution

The Cisco CloudCenter solution offers a unique and compelling value proposition for IT professionals seeking to migrate applications:

- **Integrated management and governance:** The Cisco CloudCenter solution includes extensive administrative and governance features. Tag-based deployment and run-time automation, Role-Based Access Control (RBAC), and detailed usage reporting give IT visibility and control across environments.
- **Portability:** The unique Cisco CloudCenter model, deploy, and manage approach to migration enables secondary and tertiary moves. The solution's portable, cloud-independent application profile can be deployed to any data center, private cloud, or public cloud without the need to change the profile or application code. This portability provides a strategic "insurance policy" as your hybrid IT strategy evolves.
- **Single platform:** In many enterprises, migration is part of a service delivery portfolio that includes multiple data center and cloud environments. The Cisco CloudCenter solution offers single-pane visibility and control across all environments.

- **Cloud abstraction:** The Cisco CloudCenter solution abstracts the application from the unique services and specific APIs of each execution environment, simplifying migration. You can implement migration without deep knowledge of the target cloud or unique cloud services.
- **Cost control:** With the comprehensive Cisco CloudCenter management and governance capabilities, you can avoid cloud sprawl and eliminate cost overruns that jeopardize the business value of your migration strategy.

Advanced features

Cisco CloudCenter advanced features enable you to migrate existing applications to, from, or between any data center, private cloud, or public cloud and manage them on an ongoing basis after migration.

Unique application profile and orchestrator combination

The Cisco CloudCenter solution employs a patented application profile and orchestrator combination that creates an effective solution for any migration and management scenario. The application profile is a cloud-independent, ready-to-deploy blueprint that enables application and infrastructure automation.

The orchestrator is a cloud-specific, multitenant orchestration tier that is installed in each supported data center, private cloud, or public cloud environment and is transparent to users. It securely deploys both the infrastructure and the application, manages the deployment including runtime policies, and aggregates usage and cost information.

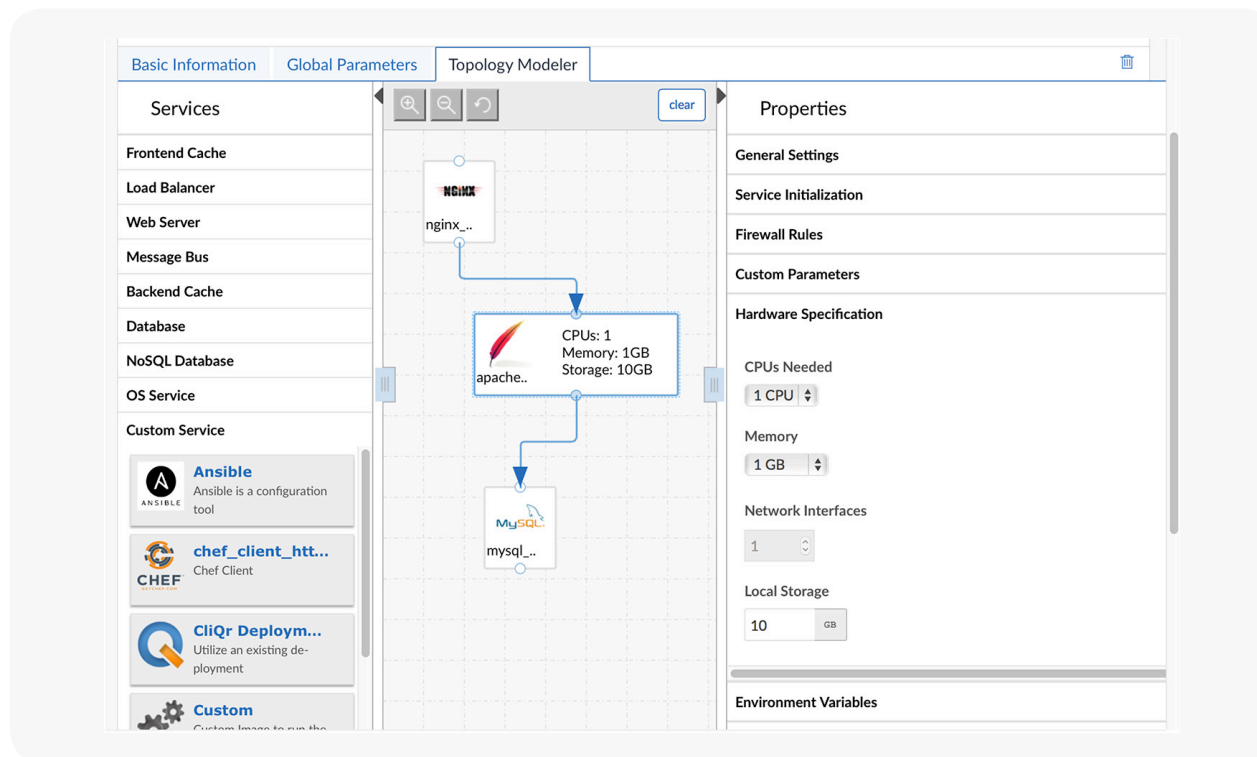
The unique profile and orchestrator combination simplifies migration by deploying the profile wherever you want it to run, regardless of the starting point or how much you know about workload details. It automatically and natively installs the necessary infrastructure resources and application components.

Model or Import

You can create an application profile in either of two ways:

- **Use the Cisco CloudCenter templates and topology modeler.** The modeler, shown in Figure 2, is a graphical drag-and-drop interface on which an engineer or architect models the application stack and related dependencies. The model approach is best for users who have detailed knowledge of the application to be migrated.

Figure 2. Cisco CloudCenter topology modeler and services library



- **Import an existing application description in another compatible format.** The import approach is best for users who don't have detailed knowledge of the application and related components.

Benchmark

The Cisco CloudCenter solution simplifies the task of determining the actual monthly costs of a migrated application. The Cisco CloudCenter benchmarking feature deploys the application profile to each candidate cloud and returns price and performance information to help you make informed placement decisions. Benchmarking can also help you optimize instance sizing by deploying an application profile with multiple different instance combinations to find the optimal price and performance configuration.

Deployment environments

The Cisco CloudCenter solution includes a logical construct called the deployment environment that simplifies management of multiple users accessing a single cloud billing account for multiple purposes. Administrators can create a deployment environment with shared access to one or more cloud regions linked to a single cloud account that is reserved for a specific use such as development or production. With deployment environments, the migration team can easily identify the appropriate target environment for each application and maintain cost and usage accounting after the move.

Tag-based governance

The Cisco CloudCenter solution uses rules-based automation that can guide placement decisions, deployment decisions, and run-time decisions for each application migration. An administrator can create system tags for various entities such as development, production, HIPAA (Health Insurance Portability and Accountability Act), or any other easily recognized label.

Real-world examples

Cisco customers have used the power of the Cisco CloudCenter platform in a range of migration and management scenarios.

Large mobile provider

To accommodate a corporate spin-off, the IT staff migrated a custom business-critical user-portal application that includes 70 virtual machines from the data center to the public cloud. IT then migrated the application to a different cloud when the spin-off was acquired by another company. A subsequent ownership change resulted in yet another migration to a cloud in China. Using the Cisco CloudCenter solution, IT accomplished all these substantial moves without changing the application code or the application profile.

Municipal government

City officials wanted to offer standard cloud services to a range of departments based on the ITaaS delivery model. They also wanted to convert from a fixed-fee payment for service to a pay-as-you-go model. The Cisco CloudCenter solution helped IT accomplish these objectives by migrating applications from the data center to the public cloud.

Media content delivery provider

This provider rationalized its application portfolio and set up a hybrid cloud strategy that includes five cloud providers and 24 availability zones globally. The IT staff employed the Cisco CloudCenter solution to migrate a wide range of applications and continues to use the solution as a critical part of its ongoing ITaaS hybrid IT strategy.

The administrator then specifies the rules to be associated with each tag, such as firewall rules, aging policies, and the selection of an appropriate deployment environment. When you deploy an application profile, you simply add the required tags as specified by the administrator's instructions. The solution automatically deploys all rules associated with the tags you include.

Cost controls

The Cisco CloudCenter solution supports cost- and usage-based plans and bundles to help ensure that migration does not result in cost overruns that undermine the strategic value of migration. These plans and bundles give you control over the move from the data center to the cloud (from CapEx to Operating Expenses [OpEx] funding), eliminating the risk of cloud sprawl.