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IT as a Service

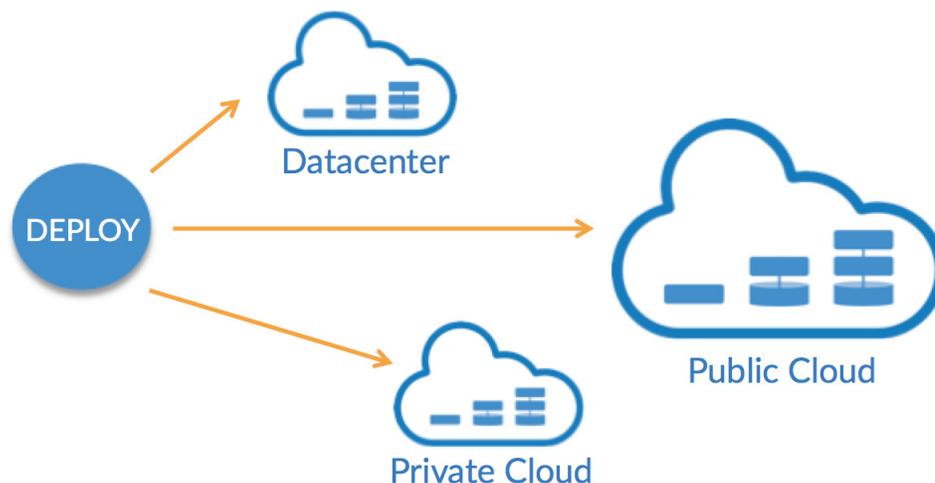
IT as a Service

Enterprises are leveraging technology solutions to gain a competitive edge, and many of the newly emerging business opportunities are technology dependent. Success in this technology-driven environment requires agility and flexibility. And if IT wants to be the primary technology solution partner to the business, the IT staff needs process and tools in place to deliver solutions at a much faster pace.

As digital services drive more and more business processes, cloud technology is proving to be a crucial addition to the IT services portfolio. It's far more scalable, and in many cases more cost effective than its predecessors. Cloud infrastructure as a service (IaaS) and software-defined datacenter technologies – virtualized compute, network, and storage – have helped IT tackle the “fast IT” challenge.

But not all services are or will be cloud based. That's why an effective IT-as-a-Service (ITaaS) strategy must encompass a range of service delivery options. As Figure 1 illustrates, that strategy must include a seamless mix of datacenter-, private cloud -, and public cloud-sourced services. In implementing that strategy, IT must continue to meet cost, service quality, security, and compliance requirements.

Figure 1. An effective ITaaS strategy includes a range of options



The IT-as-a-Service Challenge

Delivering the value of an IT as a Service strategy requires meeting several key challenges.

IT as a Service delivers value to a range of constituents:

- **For the business** – It offers the flexibility and scalability to combine services from a mix of datacenter- and cloud-based sources, and the ability to scale costs with usage based on a pay-per-use model.
- **For users** – It's fast and easy for people to get the services they need when they need them, in a way that is on par with public cloud service provider experience.
- **For IT operations** – Highly automated and standardized service delivery drives efficiency-related benefits such as predictable results, reduced low-value-add provisioning work, and fewer problems introduced by manual process.

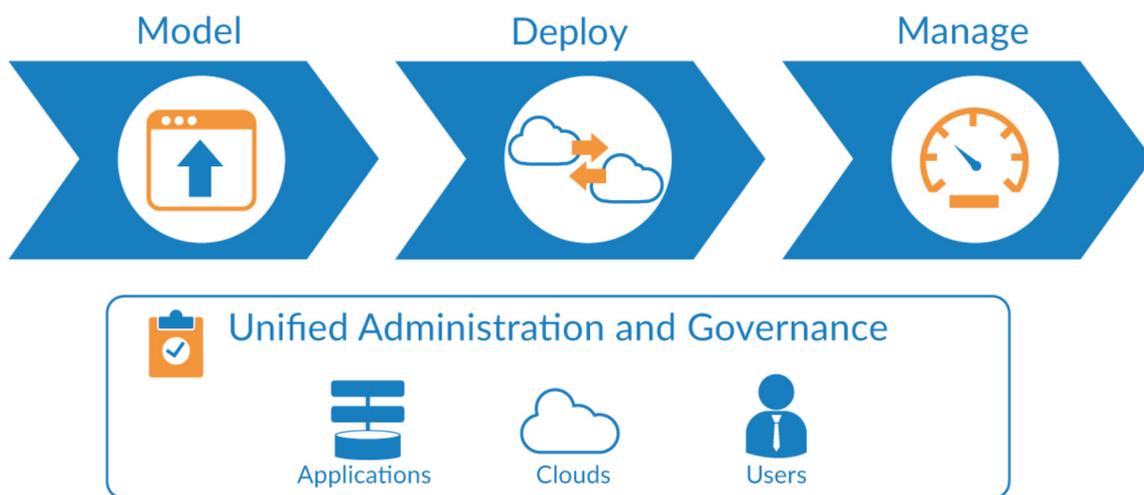
However, to succeed IT must address three major challenges:

1. **Balance agility and control.** Users want to request and access IT services on demand. Yet IT must control who can do what, where, when, and how much so it can meet cost, security, and compliance requirements. Striking the right balance requires thoughtful design of user interface and processes that makes it easy for people to get what they need within boundaries that don't impede their progress. It also requires IT visibility and control across a range of users, applications, and service-sourcing environments.
2. **Source services from heterogeneous environments.** Successfully delivering ITaaS requires a high degree of service standardization and automation. And standardization across datacenter, private and public cloud infrastructure requires automation that is not environment specific and does not result in application lock-in to any one environment.
3. **Move beyond infrastructure.** Users want more than raw infrastructure resources. They want instant application deployment with access to fully configured application stacks that include databases, application and web servers, load balancers, including those delivered via containers. Many automation solutions are infrastructure focused, so adding application automation to infrastructure automation introduces layers and complexity that can undermine the cost and agility benefits of the ITaaS strategy.

The Answer: CliQr CloudCenter

CliQr CloudCenter is an ideal solution for an ITaaS strategy. Its unique application-centric technology abstracts applications from underlying cloud environments. It ensures that the infrastructure adapts to meet the deployment and management requirements of each application. As seen in Figure 2, CloudCenter empowers users with consistent self-service, on-demand experience that doesn't vary across service delivery environments, and it gives IT comprehensive governance and control.

Figure 2. Full Lifecycle Management



Users can quickly and easily model, deploy, and manage applications in any environment. Whether deploying simple or complex workloads to one or many environments, CloudCenter enables users to serve themselves without having to understand the nuances of the underlying automation mechanisms or cloud environments.

Administrators gain single-pane-of-glass visibility and control that spans all boundaries of applications, clouds, and users. They can manage cloud accounts and permissions, set financial controls, and report on usage and costs. They can also manage tenants and users through federated multitenant management capabilities and role-based access control. Tag-based automation makes it easy for IT to guide user decisions and underlying automation, without slowing them down or requiring them to have detailed knowledge of rules and policies.

With CloudCenter, IT can offer a flexible mix of standardized, automated delivery of infrastructure and application services, across a diverse portfolio of datacenter, private cloud, and public cloud environments – all while striking the right balance between agility and control.

Three Design Patterns

CloudCenter automates the deployment of workloads that range in complexity from a single virtual machine (VM) or operating system (OS) image to complex application configurations with 50+ components. Users can start simple and grow with three basic design patterns:

1. **On-demand infrastructure.** IT can provide access to commonly requested server configurations. Users can deploy a virtual machine or OS image to a datacenter managed by vSphere or UCS Director, to a private cloud such as OpenStack, or to any of the public cloud providers. IT can specify who can deploy to which environments by offering bundles or plans that limit usage or costs, and can also limit deployment to specific environments if required.

Consistent, repeatable, and automated deployment without involving the IT service desk saves time and money for both users and IT operations personnel.

2. **On-demand application.** For many users, self-service deployment of a virtual machine is not enough. With CloudCenter, IT can go beyond simple VM provisioning and offer self-service deployment of fully configured application stacks. The ability to deploy a full application stack eliminates the unproductive time people spend manually installing the database, load balancers, and application and web servers that are often required to test the latest build.

By offering automated deployment of more than infrastructure resources, IT can tailor services for specific users and groups. CloudCenter supports common application types, including batch, parallel processing, and cluster, as well as traditional multitier applications and loosely coupled containerized topologies. CloudCenter also supports many popular application technologies including Java, .NET, LAMP, Ruby on Rails, Hadoop, and others.

3. **Service broker.** IT can offer a range of service delivery options that meet a wide spectrum of requirements. In so doing, IT can remain the preferred service provider for the business even if some services are outsourced to public cloud providers. With CloudCenter, IT can offer a single platform from which people can request, deploy, and manage — on demand — infrastructure and application stacks in any datacenter, private cloud, and public cloud environment. This enables IT to provide rapid access while still maintaining control.

Advanced Features

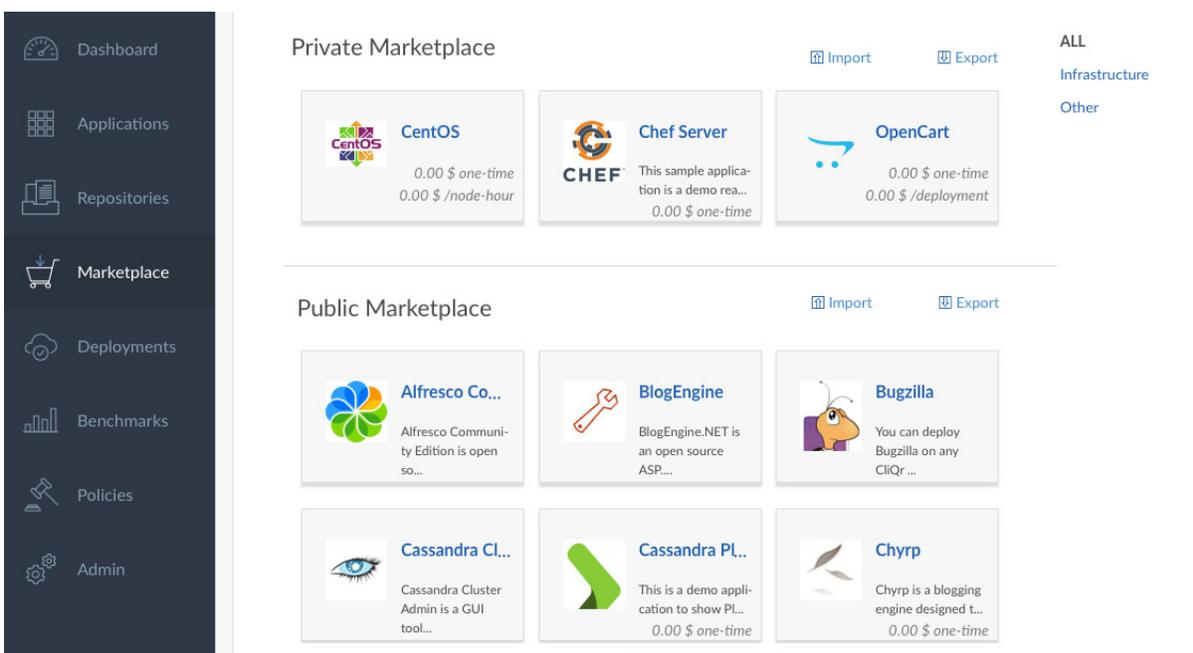
CloudCenter’s advanced features enable IT to maintain a critical balance of user agility with IT governance and control, a balance required for an effective ITaaS strategy.

One-Click Deployment

The Application Profile is a user created blueprint that defines the deployment and management requirements of a simple OS image, or a complex multitier or multiservice application. Any authorized user can deploy the profile to any supported datacenter, private cloud, or public cloud.

As Figure 3 shows, users who are part of different tenants can share Application Profiles by posting to or importing from a public marketplace. Users and groups within a tenant can share profiles via a private marketplace. Users can also deploy profiles via an application programming interface (API), so they can integrate them into a custom frontend or an existing service catalog such as ServiceNow.

Figure 3. Application marketplace



Tag-based Governance

CloudCenter administrators can control user actions with tag-based automation that simplifies users' placement, deployment, and run-time decisions.

The administrator identifies tags with easily understandable labels such as Dev, Prod, or HIPAA (Health Insurance Portability and Accountability Act). The administrator specifies the rules to be associated with each tag, for example rules that specify the selection of appropriate deployment environment, firewall rules, or aging-policy rules. When users deploy an application profile, they simply add the required tags. They don't have to understand the underlying rules and policies.

Placement decisions – Tags can specify deployment to the appropriate deployment environment. For example, a tag labeled Dev may specify deployment to AWS and a tag labeled HIPAA may specify deployment to a datacenter with a VPN or security zone that is appropriate for sensitive data.

Deployment decisions – Tags can specify firewall rules and port settings. A tag may be linked to a security profile and applied to a specific tier or to an entire deployment. A Dev tag, for example, may specify a security profile that opens all ports. A Prod tag may specify a security profile that closes all ports except the one needed for network monitoring.

Run-time decisions – Tags can specify day-two operations. For example, tags can be used to specify aging and scaling policies that are monitored and enforced over time. By linking tags to runtime policies, administrators can control ongoing management of the workloads deployed by CloudCenter.

Benchmark

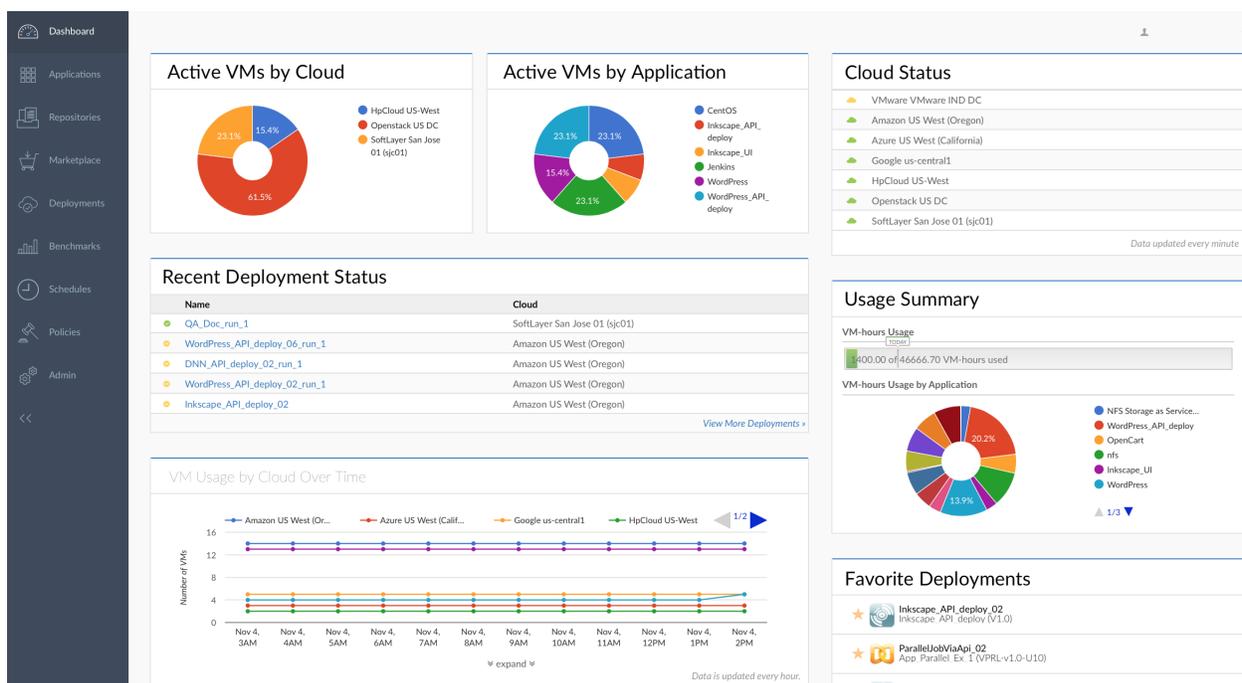
CloudCenter includes a benchmark feature that can help IT optimize its ITaaS strategy in two key ways:

- 1. Optimize cloud placement** – The user can deploy a single application profile to different deployment environments. CloudCenter returns a price/performance report for each deployment. The reports can be compared to determine the best deployment environment for that workload.
- 2. Optimize instance sizing** – The user can deploy multiple variations of a single instance to a single cloud and compare the resulting price/performance reports to determine the most cost-effective configuration. This feature helps IT reduce costs and improve cost predictability when multiple factors are involved that affect cost and performance.

Dashboard

As Figure 4 shows, CloudCenter gives administrators a consolidated view of all application deployment activity across all datacenter, private cloud, and public cloud environments. The CloudCenter dashboard provides an at-a-glance view of cloud status and the active VMs in each environment. The administrator can also view deployment status and virtual machine usage by application. The dashboard provides hover-over and drill-down capabilities for retrieving additional detail on items of interest.

Figure 4. Consolidated view across datacenter, private clouds, and public clouds



Cost Controls and Reporting

CloudCenter provides effective cost controls supported by comprehensive usage and cost reporting. IT can apply a wide mix of cost- or usage-based plans and bundles that help ensure self service does not result in cost overruns that undermine the value of the ITaaS strategy. IT can roll up usage and cost reports by specific users, groups, or business units, or by application, cloud, or cloud account.

Real-world Examples

A college of medicine IT organization serves a wide range of independent research departments. Previously, research scientists were deploying applications and data to public cloud service providers. This shadow IT activity resulted in underutilization of datacenter resources and exposed the college to potential HIPAA violations.

With CloudCenter, IT offers self-service, on-demand access to simple database services that are deployed to centralized storage resources that have the high levels of security required for sensitive data. Users get instant access to needed resources. IT gets more efficient resource utilization, gains control of regulated data, and eliminates shadow IT.

A large, global telco runs an innovation lab that serves a broad range of internal and external customers. They company needed a single cloud management solution to serve a complex organization that includes various groups that must be isolated as separate tenants.

CloudCenter delivers a powerful multitenant ITaaS platform with strong isolation between tenants, each of which consumes a core set of shared IT services. The solution supports a multi-cloud service-broker strategy that delivers a broad range of cloud services. Users choose from seven different cloud regions via separate custom portals, with each region having separate usage metering and billing.

A city government IT organization needed to shift to a consumption-based service delivery and chargeback strategy to use taxpayer money more effectively in meeting the service needs of 50 different city departments. IT wanted to offer basic infrastructure services, such as Windows 2008 server or Ubuntu virtual machine, deployed on demand to Amazon Web Services (AWS) or Microsoft Azure clouds, or to a traditional datacenter.

CloudCenter separates tenants and allows each to consume a basic set of core services. IT can control usage based on predetermined plans and bundles according to each department's budget restrictions. Moreover, IT can generate granular accounting reports that roll up usage and costs by department, and forward the reports to the offices of the mayor and city controller.



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