Cisco Cloud Solutions: A Roadmap to the Intercloud

As private and public clouds become common and hybrid clouds appear on the horizon, IT leaders are seeking forward-looking strategies that let their organizations benefit quickly from cloud technologies. In this paper, we show how Cloud Solutions from Cisco® can provide you with a roadmap and end-to-end support throughout this process. With our help, you can evolve your IT operations to become an enterprise cloud service brokerage connected to the Intercloud, the cloud of clouds.

As an IT leader, you have to deal with constant change inside and outside of your business. You may already have a private cloud or plans for one, and you may be reaping the benefits of public clouds as well. Both private and public clouds can offer significant advantages, but each option has drawbacks. Mobile technologies might also create issues for you. They may require you to make corporate application and data assets accessible anytime, from anywhere. They may also compound the problems of shadow IT that arise in organizations that use multiple public clouds when employees’ access to cloud services is either not tracked or can’t be tracked. And you still have to manage and use your traditional IT infrastructure. Ideally, you’d like to integrate traditional IT with private and public clouds to maximize your existing technology investment.

Interconnection is the key. Hybrid clouds can integrate and unify private and public clouds, giving you the best of both worlds and enabling your organization to connect to the Intercloud, the growing cloud of clouds. The Intercloud is a distributed interconnection of private, public, and hybrid clouds, where you can compute, aggregate, store, and process information from sources across the globe. It takes your connectivity one step further. Through this multicloud interconnection, the Intercloud can offer your business vast opportunities for growth, efficiency, and cost reduction. But how do you get to the Intercloud from where you are?

Cisco’s unique portfolio of cloud services, frameworks, and technologies can help you achieve your goals quickly and efficiently. To begin, you’ll need to determine an overall hybrid cloud strategy for your organization—a roadmap for getting to the Intercloud. Usually organizations need to completely understand how they’re using the cloud before implementing a hybrid environment. With detailed knowledge of current cloud usage, you can better plan for your hybrid cloud needs. Cisco Cloud Consumption Services can support you by providing cloud usage...
analytics, spend data, and even data on vendor profiles, all in an effort to help you increase control of your cloud use and rein in your shadow IT. After you understand your cloud consumption patterns, you need consistent ways to monitor and control cloud usage and Shadow IT; define processes and policies to ensure data security; and establish governance, compliance, and data sovereignty approaches.

Your hybrid-cloud strategy must also include integrated, secure, and lower-cost technologies that give you data flexibility and workload portability. But most importantly, it must fit the way you do business. To help you with this, we’ve developed the Cisco Domain Ten® framework. Our professional services teams can build on this framework to help you construct a detailed hybrid-cloud strategy and solutions tailored to your organization’s current business requirements, ensuring your alignment with the Intercloud.

Moving to cloud services usually requires your IT organization to build in-house clouds and learn how to broker services from public-cloud providers. The next step is to use your cloud strategy to prototype or implement a hybrid cloud that transparently interconnects your private cloud with public or partner clouds. We have the technologies and services to help you achieve this goal. Cisco Intercloud Fabric enables you to implement your own hybrid cloud and make it part of the Intercloud by connecting it to public and partner clouds. Using Cisco Intercloud Fabric, you can also easily integrate your traditional IT with your Intercloud-enabled hybrid-cloud infrastructure. After everything is connected, your IT organization becomes a brokerage of cloud services for your stakeholders, partners, and users, allowing you to allocate assets quickly and easily. With this setup, you can efficiently move data and workloads between traditional IT and public, private, and partner clouds as your demands and capacity requirements change.

We can help you go beyond strategizing and implementing your hybrid cloud technologies. Most IT departments don’t have the skills, tools, and processes to manage a heterogenous cloud mix. Cisco Cloud Consumption services do more than monitor your cloud usage; they can help you implement a lifecycle approach for brokering cloud services and delivering them more quickly to your clients. We can help you develop your processes to become an enterprise cloud service brokerage, able to mitigate risk, reduce costs, and optimize your overall cloud infrastructure.

The Business Value of Hybrid Clouds

Private clouds help you make the most of your computing and data storage resources. They can easily adapt to changing data-processing requirements and simplify data storage and sharing. At the same time, public clouds provide flexible access to applications and data anywhere, anytime, and at very competitive price points. Employees can use them for daily work, and line-of-business folks can use them to find solutions to problems faster and at lower cost.

Hybrid-cloud technologies give you the best of both worlds. They transparently connect your private cloud to public and partner clouds to become a part of the Intercloud and bring key business value to your organization. Hybrid clouds offer significant benefits for your company. They can:

- Give you the security of private clouds, keeping your corporate applications and data safe
- Offer the competitive price points of public clouds, which provide flexible and easy-to-use infrastructure, applications, and data storage
- Help you find the best configuration of data and processing technologies with data and workload portability
- Cut costs by simplifying infrastructure provisioning and data processing
- Increase productivity by managing large volumes of applications and data and making them accessible on other clouds
• Integrate new technologies, like mobile devices and social media, in the context of driving the need for workload portability and the Intercloud
• Enable you to provide steady compute, network, and storage infrastructure resources to your company while dealing with the complex problems of demand growth and fluctuations
• Help you manage Shadow IT and minimize its risks and costs

Figure 1. Current Challenges and Benefits of Implementing Hybrid Clouds

Intercloud is our strategy for hybrid cloud. By implementing hybrid clouds and moving to the Intercloud, your IT organization can become an enterprise cloud service brokerage, bringing your company all of these benefits (Figure 1) and more. As a cloud service brokerage, you can consolidate services from the Intercloud using a standardized service portfolio in a service-centric structure. This structure simplifies building and deploying processes, policies, and tools while minimizing risk through strict security and compliance enforcement.

Cisco Cloud Solutions: A Roadmap to the Intercloud

From our experience with thousands of global clients, we know that success in cloud services rests on five key factors:

1) **Visibility and cloud strategy**: Understand the cloud services your organization is using today and their associated costs, and build a comprehensive optimization plan based on this information.

2) **Private cloud elasticity**: Map your workloads optimally to your own unified computing and application management infrastructure or managed services as needed.

3) **As-a-service offerings**: Provide much faster service delivery through software-as-a-service (SaaS), platform-as-a-service (PaaS), or infrastructure-as-a-service (IaaS) through your own or partner infrastructure.

4) **Hybrid-cloud readiness**: Provide secure workload portability and optimize cloud usage and cost using open standards, data virtualization, application integration, and software tools that can integrate data, apps, and processes.

5) **Streamline service delivery**: Launch services quickly and securely through a turnkey cloud public-services catalog.
Figure 2. A View of the Intercloud

As a major player in the evolution of the Intercloud, we can help you succeed in all five areas with our cloud solutions and services, including Cisco Cloud Consumption Services, Domain Ten, Intercloud Fabric, marketplaces for turnkey cloud public services, and more (see Figure 3).

Figure 3. Key Success Factors for Cloud Services

Cloud Consumption Services
The first step in defining your hybrid-cloud strategy is to understand how your organization uses cloud services. To do so, you need to monitor and manage your company’s actual cloud usage. Many IT organizations are aware of only the cloud service providers they’ve authorized, which means they might have blind spots. We have found that organizations are typically using 10 to 15 times more cloud services than IT is aware of.

Cisco Cloud Consumption Services automatically discovers all the cloud providers that your employees access. They accomplish this by placing software-based data collection tools in your organization’s network. These tools gather data from Internet gateways, through the Cisco NetFlow network protocol or from web security gateways as shown in Figure 4. The collector assembles network statistics and logs to identify unauthorized or redundant cloud
services, cloud usage trends, and potential business risks. It also shows who’s using those services. The analyzed data is available to you through a customized web portal, which includes analytics, trending, reports, and alerts.

**Figure 4.** Cisco Cloud Consumption Services

Cisco Cloud Consumption Services go beyond monitoring to help you reduce costs and risks and better manage your cloud services. Our professional services can help you develop a complete lifecycle management program that includes governing cloud service providers—from onboarding to creating SLAs to management to termination—and establishing strong risk and cost-avoidance strategies. At the same time, our experts can assist you in evolving your processes to become an enterprise cloud service brokerage that is better equipped to manage your overall cloud infrastructure by implementing a cloud program office. We also offer professional services to help you implement cloud service governance, compliance, and data sovereignty processes.

**Domain Ten Framework for Hybrid Cloud**

To help you create a complete plan for your organization, we developed Cisco Domain Ten, a unique framework for planning IT change in a variety of contexts. It covers a range of areas across the IT infrastructure, which, together, paint a complete picture of your current IT environment. We use it to help identify problem areas and create a strategic roadmap for transforming your IT. First, our professional services team looks at 10 key areas in your IT environment (see Figure 4). Then they build on those findings to create a strategic plan that unlocks your hybrid cloud and IT potential. Whether your organization needs IaaS, PaaS, or SaaS, this framework helps us understand how you can best implement a hybrid cloud strategy and connect to the Intercloud to get what you need.

Figure 5 shows key Cisco Domain Ten topics to consider when you’re planning your hybrid-cloud strategy. Hybrid clouds are most effective when you choose the right cloud infrastructure for each workload over time, which requires you to take a careful look at many interrelated areas.
Together, we examine your unified infrastructure (compute, storage, and network), platform, and workloads to determine the best places to assign them (1, 2, 7, and 8 in Figure 5). You may commonly use automation for deployment, physical to virtual movement, disaster recovery, and application testing or migration. Less often, you may use it to implement automated capacity bursting to the cloud for specific workloads (3). Your users should see a single window to a standard service catalog and complete financial transparency (4, 5, and 6). Security and compliance requirements are key, especially if your company depends on off-premise and multitenant vendors. You need policies and tools that meet these requirements without making problems for business (9). Finally, you need to understand and define your company’s needs to optimize your on- and off-premise clouds. For IT to become a hybrid-cloud service brokerage, you need to define the right governance models and processes (10).

Intercloud Fabric: Hybrid Cloud Management
Cisco Intercloud Fabric provides a foundation for hybrid clouds. Cisco Intercloud Fabric connects clouds across a wide spectrum while simplifying capacity management. It enables you to provide steady compute, network, and storage infrastructure resources to your organization, even when demand and capacity are undergoing unpredictable fluctuations. You can use it to build hybrid clouds that provide a easy-to-use, highly secure extension of your data center resources to a choice of public clouds as needed. Cisco Intercloud Fabric also helps you with application and data migration and provides high availability with strong security and compliance.

With the Cisco Intercloud Fabric cloud management facilities, you can provision workloads and migrate data bidirectionally in a heterogenous cloud environment. You get end-to-end security with consistent policy enforcement, a single point of management, and control for physical and virtual workloads. All that, plus you can choose your favorite cloud providers and infrastructure (hypervisors, etc.).

Figure 6 summarizes the salient characteristics of our hybrid cloud approach with Cisco Intercloud Fabric. We help you build hybrid cloud solutions with open, heterogenous infrastructure and no vendor lock-in. These solutions provide unified workload management and governance, as well as workload mobility across clouds, while ensuring data sovereignty. We also enable you to connect to a wide set of choices in a growing cloud service provider ecosystem.
Connecting to the Intercloud

In an increasingly interconnected world, evolving your organization toward hybrid IT is critical. By moving to the Intercloud, you can ensure data sovereignty and governance, gain efficiency, and cut costs. We can support you throughout the process. We can help you create a detailed roadmap that delivers this vision to your organization, helping it become an enterprise cloud service brokerage and an active part of the Intercloud. Our world-class frameworks, technologies, and professional services are the resources you need to accomplish this goal. Your business can become more agile through automated services, and you can lower risks and cut costs across the board. You can also gain a monitored portfolio of cloud services, improved IT responsiveness to business, and easy-to-use workload and capacity management across heterogeneous clouds. Building your hybrid cloud infrastructure with Cisco Intercloud Fabric gives you complete flexibility in choosing your cloud providers, help you avoid vendor lock-in, and offer your business more possibilities for growth.

For More Information

To learn more about building a roadmap to hybrid cloud and the Intercloud, visit http://cisco.com/go/cloud.