



The F5 Cloud Migration Reference Architecture

Whether you're adopting a public, private, or hybrid cloud, the F5 Cloud Migration solution can help ensure that your applications are fast, secure, and available.

White Paper



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Overview

Cloud computing can help organizations provide better services while reducing costs and streamlining IT. Infrastructure as a Service (IaaS) providers are promising faster build and deployment times, quicker ROI, and more flexible payment terms compared to services deployed from private data centers, and many organizations are looking to capitalize on these benefits. When not deployed properly, however, IaaS can create management overhead, fail to deliver predictable user experiences, and result in a generally disappointing service.

The growth and maturity of the IaaS market have assisted many in the drive to do more with less—providing more services for customers and employees, but doing so more efficiently. Largely driven by a difficult economic climate, the need to be more competitive by running leaner data centers has never been so high. In many cases, however, IaaS providers are not meeting data privacy requirements or Service Level Agreement (SLA) availability expectations for mission-critical production applications. These failures are preventing most organizations from making an all-in commitment to replace private IT infrastructure by migrating to the cloud. In addition, legacy applications can require dedicated infrastructure and ongoing support, hence the popularization of a hybrid architecture consisting of both public IaaS providers and private data centers.

Business Challenges

Organizations are constantly torn between adding applications and services for employees or customers and controlling data center growth. For such organizations, a hybrid model is the answer, enabling the migration of second tier applications or specific business units—those that aren't mission-critical—to IaaS providers. Such applications are often defined or identified by the following criteria:

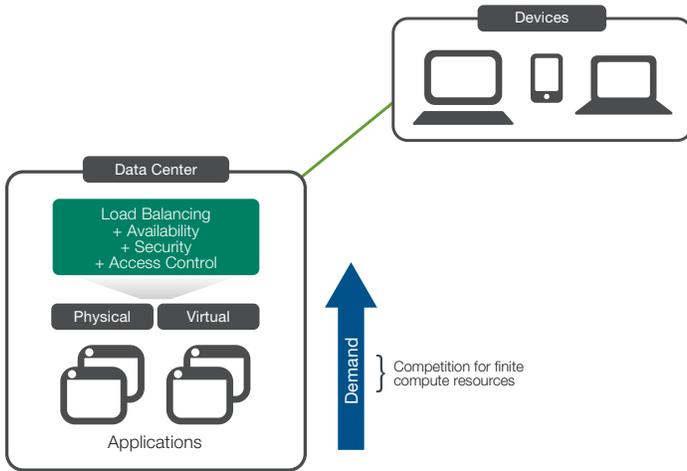
- Applications that don't fall under strict data protection policies
- Virtualized applications that support migration from existing infrastructure
- Non-mission-critical applications and services governed by tight SLAs

The Future of Cloud Computing

“Opportunities exist for vendors to mitigate reliability, security, and complexity challenges associated with increasingly hybrid cloud environments.”

“In five years, more than three-quarters (76 percent) of respondents expect hybrid clouds to be the core of their cloud strategies, overtaking public and private clouds.”

Source: 2013 North Bridge/Gigaom survey



For example, business units such as software development, testing, and quality assurance are ideal for migration to public IaaS providers, along with their relevant applications. These aren't typically Internet-facing applications and therefore need not compete for private, production data center resources. Simply moving virtual machines to an IaaS provider is not enough, however. The migration of applications and services to an IaaS provider can bring many of the frustrations of opening a new private data center, and employees will not be satisfied with a service that offers diminished performance, reduced configurability, and greater complexity.

Moving an IT environment farther from those who consume it can reduce productivity and employee satisfaction. People generally expect that business changes bring an experience at least equal to that enjoyed previously, not a lesser one, and this expectation applies not just to performance but also to functionality. The same tools—or at least functional parity—must be available in the new experience compared to the previous one, and this functional parity must not come at the cost of precious time through additional management overhead. Yet hybrid cloud solutions do not always deliver an equal experience or functional parity, and they often incur substantial management overhead.

Business Solution

While IaaS providers are promising faster build and deployment times, a quicker ROI, and more flexible payment terms—and thus outcompeting services within private data centers—inherent dangers lie in the new infrastructure silos that are created as a result. Enterprises are looking for a single, seamless, self-service IT infrastructure.

Integrating the management tools and connectivity between public and private environments creates a seamless experience across the two, delivering a transparent extension to the



data center environment and avoiding technology silos. The F5 Cloud Migration architecture delivers strategic points of control that enable IT departments to meet expectations for delivery, access, functionality, configurability, and performance—wherever the workload is hosted.

The F5 solution provides integrated and automated application delivery capabilities into the cloud, rapidly reducing the provisioning and deployment times for application networking services. It accomplishes this through:

- Integration into third-party cloud management tools.
- Automation of the provisioning of application networking services across public and privately hosted F5® BIG-IP® products.
- Orchestration that expedites deployment times.
- Extensibility and unparalleled flexibility using the REST API.

Technology Solution

As noted, three keys to implementing a successful hybrid cloud architecture include:

- Consistent performance
- Feature parity
- Zero management complexity

Consistent Performance

The importance of performance is two-fold in a hybrid cloud model. First, applications must be available and responsive for those working with them. Second, the environment and architecture must deliver solid performance in terms of management tools, backup, replication, and other administrative functions. Performance optimization therefore must take into account both user access and data replication. F5 application acceleration technologies deliver on both requirements, ensuring transparency between private and public data center access.



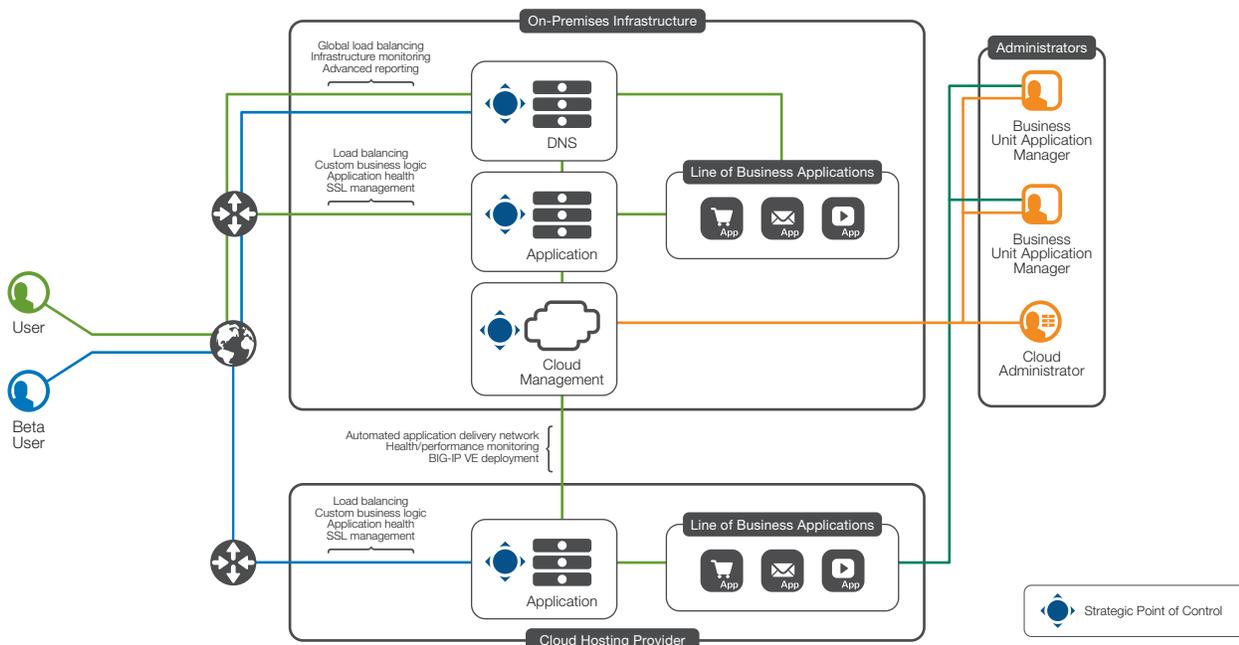
Feature Parity

Migrating to a new environment must not result in reduced capability. To combat feature loss or degradation of the user experience, F5 application delivery functionality is available in both hardware and virtual editions that support all of the leading hypervisors and cloud environments. This choice provides enterprises with the same application delivery toolset—the same operating systems, the same management interface, and the same APIs—wherever their workload is handled, whether in the cloud, in a private data center, or both.

Zero Management Complexity

A key component of the F5 solution, F5 BIG-IQ™ Cloud, federates management of BIG-IP products across both traditional and cloud infrastructures, helping enterprises to deploy and manage application delivery services in a fast, consistent, and repeatable manner, regardless of the underlying infrastructure. In addition, BIG-IQ Cloud integrates with existing cloud orchestration engines such as VMware vCloud Director to streamline overall application deployment.

BIG-IQ Cloud uses F5 iApps® Templates and a self-service model to rapidly provision application delivery services, enabling new applications to be made available to users in minutes instead of weeks. IT organizations can define a catalog of available application delivery services, including customized or multi-tiered offerings, from which administrators and application managers can quickly select as needed.



Business Benefits

The F5 Cloud Migration solution automates and orchestrates the deployment of application delivery services across both traditional and cloud infrastructures. Whether an organization is adopting a public, private, or hybrid cloud, F5 simplifies the optimization of business applications, ensuring that they're fast, secure, and available—wherever they are.

- **Save time:** Reduce deployment and provisioning timelines otherwise extended by management silos.
- **Increase efficiency:** Automate the provisioning of application networking services across public and private data centers.
- **Simplify provisioning:** Coordinate with third-party cloud orchestration solutions to unify application and network services provisioning.
- **Gain flexibility:** Ensure extensibility using the F5 iControl® and REST APIs.

Conclusion

Migrating services to an IaaS provider and reaping the benefits of the cloud can be painless for employees and customers alike. The key to delivering on a hybrid architecture is the creation of a consistent and simple-to-consume environment that doesn't introduce complexities or a poor user experience. F5 cloud optimization and management solutions eliminate these issues, delivering synthesis across a hybrid cloud architecture.

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