F5 White Paper

The F5 Dynamic Services Model

Align IT capabilities with your business needs by adopting a fluid and responsive architecture.

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Executive Overview

Today, agility in both business logic and an organization's underlying IT infrastructure is imperative to success. Yet traditional IT infrastructures and processes simply are not agile. It is no surprise, then, that CIOs routinely express frustration with the time and effort required to align IT functions to changing business needs.

F5 believes a new approach to infrastructure design must emerge—one that enables enterprises to add, remove, grow, and shrink IT services on demand, regardless of location. This new infrastructure must dynamically optimize the interaction between users and resources in the face of rapidly changing conditions. It must allow the IT enterprise to adapt quickly to changing organizational demands for security, data protection, ease of access, market responsiveness, low cost, and high performance.

This paper outlines F5's vision for such an approach, explores its business benefits, defines F5's architecture for delivery, and outlines a roadmap for implementation.

The F5 dynamic services model provides a more flexible platform on which enterprises can build future solutions with reusable services, resulting in faster time to market, improved resource utilization, and lower capital and operational costs for applications and data.

The Challenge: Aligning IT to Business

Designed and managed thoughtfully, a responsive IT infrastructure can create sustainable competitive advantage and help drive a business forward.

CIOs often list aligning IT to business as their top priority. Business environments change rapidly, and IT leaders want their organizations to respond in kind. Whether changes emerge from the introduction of new security requirements—such as the doubling of SSL key length—or from a shift in business strategy influenced by competition—such as the effect of on-demand video on the brick-and-mortar video rental store—an enterprise's ability to respond or even survive often hinges on the agility of its underlying infrastructure.

The F5 dynamic delivery model establishes a flexible platform on which enterprises can build future solutions with reusable services, resulting in faster time to market, improved resource utilization, and lower capital and operational costs for applications and data.

While the priority shifts from time to time, over the last decade CIO goals have remained largely the same and are surprisingly common across companies and industries—aligning IT to business, improving IT agility, and reducing IT cost.

Current IT Initiatives

As the requirements for business and IT agility crystallize, organizations often pursue infrastructure initiatives and programs focusing on:

- **Virtualization:** Introducing software to reduce and consolidate isolated resources and move to a utility model.
- **Data center consolidation:** Reducing hardware and fixed costs by focusing on necessary services and resources.
- **Access and security:** Balancing the need to protect corporate assets with supporting mobile users and their devices.
- **New applications:** Rapidly spinning up new and improved applications to increase competitiveness, service, and revenue.
- **Storage management:** Reducing the cost of storing and protecting rapidly growing volumes of data.
- **Cloud computing:** Offering on-demand services, either through dynamic provisioning of private in-house resources, or by accessing public service providers.

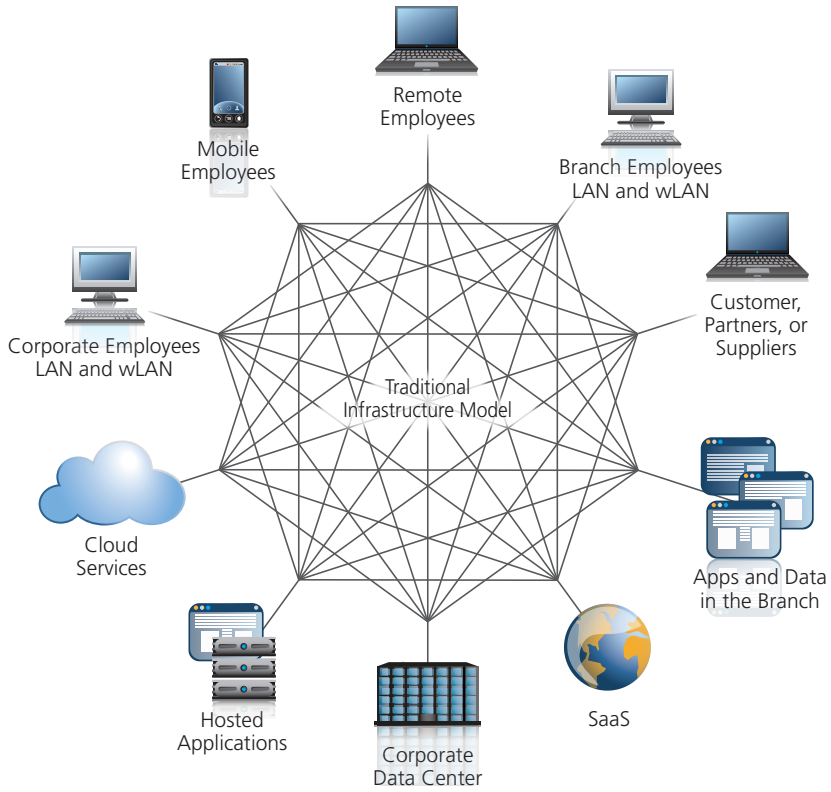
While these kinds of improvement initiatives reflect the goal of aligning IT to business, their promise often goes unrealized. Although many factors can stall an initiative, a few key systemic issues typically block its forward momentum.

Limitations of the Traditional Data Center

The rigidity of the traditional data center results from the accretion of decades of enterprise computing technologies.

Historically, traditional data centers focused on managing dedicated IT resources—servers, applications, and storage—and making these resources appropriately available to various users such as branch offices, mobile users, and external clients.

The central data center required an elaborate physical infrastructure. Supplemental sites provided disaster protection, but also increased costs and management.



To negate the design constraints of traditional data centers, designers built intelligence into the clients and resources themselves—into storage, applications, and servers. This dispersion of intelligence makes it very difficult for the infrastructure to adapt to change, or to reuse services, because modifications in any individual element affect the whole. The infrastructure locks users, applications, and data into fixed, rigid relationships.

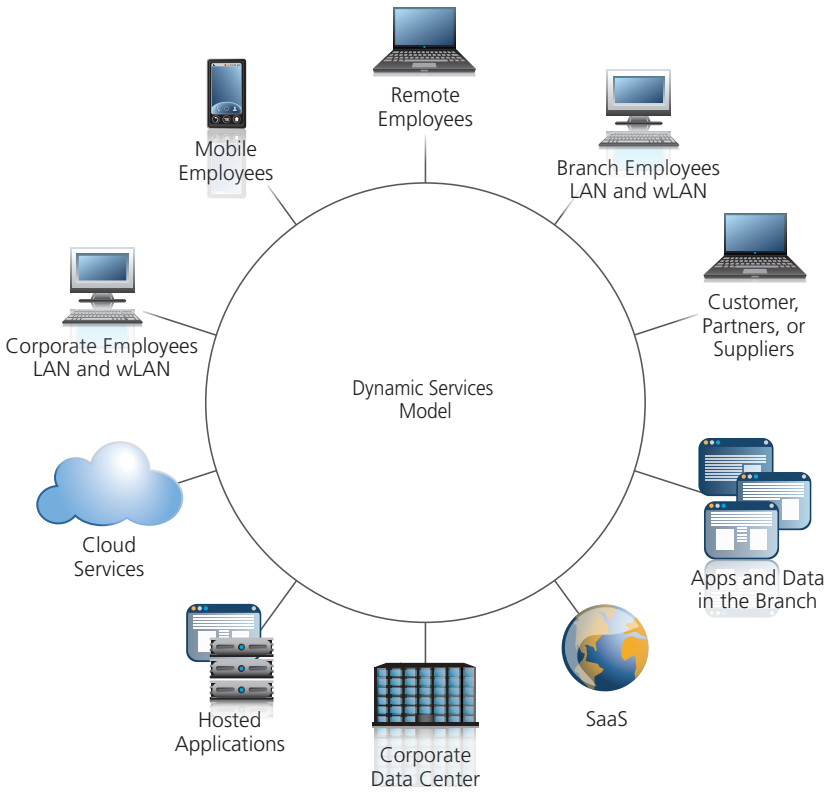
Unfortunately, IT often expends the bulk of its efforts maintaining and operating existing systems. Adding new applications or services in such an environment can take months or even years, pushing IT deliverables further out of alignment with business needs.

Although the goal of IT is to increase agility while reducing cost, the static nature of traditional infrastructures often trends results in the opposite direction.

The Dynamic Services Model

An ideal IT state is one that allows rapid response to change, with applications, users, data, and services provisioned in minutes, not hours or weeks, cost-effectively supporting new business applications.

The long-term answer lies in an architectural approach that anticipates change and enables rapid adaptation to any situation. This ideal state replaces point-to-point connections with a flexible dynamic services model that serves as an intelligent proxy between users and resources.



This dynamic services model understands the context of the user (for example, location, access policy, connection type) and resource (application, storage location, security policy) and can adjust dynamically to change. In this model, the intelligence to adapt is located in the infrastructure itself, not in the endpoint devices, allowing resources to be loosely coupled through the proxy, and thus easier to share.

The dynamic services model offers a flexible framework for connecting users to the resources they need without the static constraints inherent in traditional infrastructures.

Such an approach moves the focus from the IT resources themselves to the business services these resources provide. Key services become reusable since differentiating business logic, such as user experience, security, storage policy, or compliance requirements, can be managed by the intelligent infrastructure itself, rather than separately within each individual resource.

With this form of agile IT infrastructure in place, organizations can take advantage of new trends, technologies, offers, and market fluctuations quickly and efficiently. A flexible infrastructure then becomes a critical lynchpin that helps IT leaders better achieve business goals.

The F5 Dynamic Services Architecture

The F5 dynamic services model presents a new approach to infrastructure design. This new architecture decouples logical access to resources from those resources' physical locations. F5 places intelligent controllers in the network that act as strategic points of control. These points of control monitor interactions between resources and users, put those interactions into context, and enforce preordained business policies. This approach transforms physical assets like servers and storage devices into reusable services.

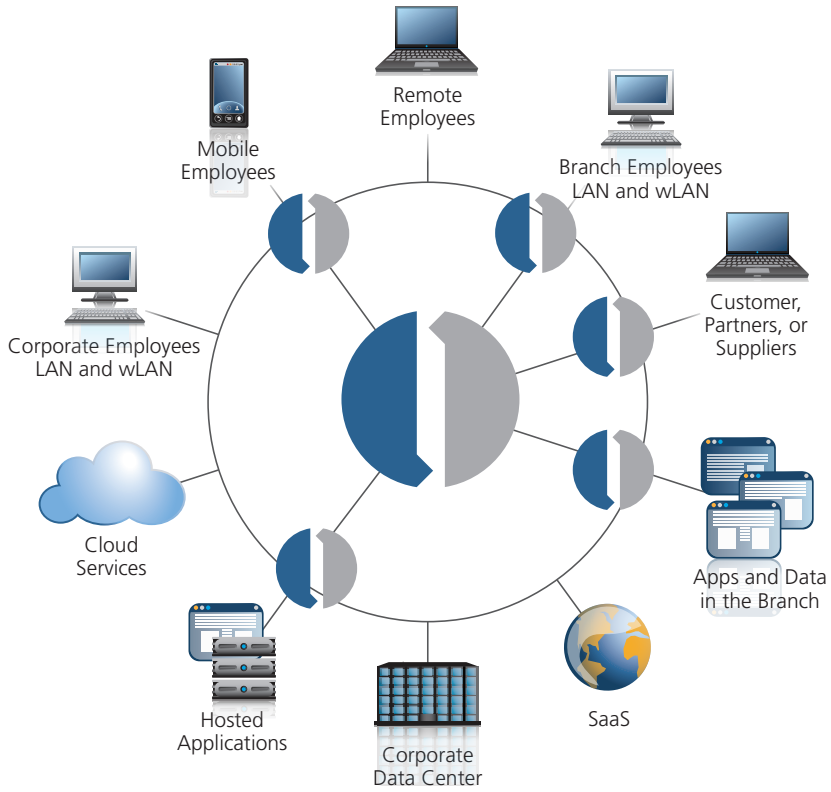
Strategic Point of Control

(n) a location within an architecture at which it is strategically beneficial and efficient to apply and enforce policies governing security, performance, and reliability of services.

- Proxy application and data streams
- Understand context of who, what, when, where, and how
- Coorelate business policy

- Determine appropriate response
- Take action—redirection, data placement, security, performance, provisioning
- Synchronize distributed points of control

By working together in a coordinated fashion, these sets of strategic control points can effectively manage a range of service delivery decisions such as provisioning new virtual servers, replicating data, modifying security policies, adjusting access controls, and a host of other potential actions. Services are now consistent, reusable, and manageable across multiple resources and users. Rather than requiring constant manual intervention, the infrastructure itself becomes agile, intelligent, proactive, and in a word, dynamic.



Strategic points of control create a dynamic, agile infrastructure

This approach enables the infrastructure to:

- Support rapid deployment of new services and applications.
- Incorporate external resources like SaaS or cloud computing safely and easily.
- Enable new resources or users to leverage existing services immediately.
- Manage all infrastructure elements as fluid resources.
- Ensure availability of services.
- Optimize performance and user experience.
- Ensure and consistently manage security, access control, and compliance.

In short, F5's dynamic services model enhances the ability of IT to meet business goals by aligning IT to business, improving IT agility, and reducing IT cost.

Roadmap to the Dynamic Services Model

No single technology or vendor can simply erase the complexity of the traditional environment and instantly transform it into a dynamic services–based model.

However, organizations can take three potential paths to improve the flexibility of their IT infrastructure:

- Start fresh by implementing a completely new solution.
- Apply a single vendor software stack from top to bottom.
- Employ a transitional approach.

Starting fresh with a new IT infrastructure is a luxury few established enterprises can afford. Nor could many afford to adopt a single vendor solution (if such an offering even existed).

Instead, F5 recommends a transitional approach. By applying improvements incrementally, starting with singular aspects of the existing infrastructure—resolving storage management or enabling remote users, for instance—without wholesale disruption, this approach maintains future flexibility and ensures the cost benefits of a multi-vendor strategy. F5's extensive investments in integration and testing ensure new solutions are compatible with current infrastructure. Further, this model can be designed up front with a view to the whole, and then rolled out incrementally over time through a series of individual yet interlocking solutions.

Next Steps

In summary, reducing IT complexity and increasing IT agility have been difficult goals to achieve. Traditional IT infrastructure has intelligence embedded in resources, applications, and clients, with little intelligence embedded in the infrastructure or network itself. This approach led to complex, static connections between resources and users, making change difficult and disruptive.

The ideal solution is a dynamic services model, based on intelligent points of control that understand the context of interactions, and are able to apply controls to optimize relationships between users and resources, offering them fluid access to the services they require. Such a solution simplifies the offloading of existing services to more

efficient delivery vehicles, while more rapidly delivering new services that were not previously available.

This approach allows prioritization of specific IT initiatives such as server virtualization, data center consolidation, access and security, new applications, storage management, or cloud computing.

Many F5 customers have already started the transition to a dynamic services model by implementing the concept of "points of control" to provide reusable services that understand user-to-resource context and provide controlling capabilities for applications, virtualization, users, devices, platforms, and locations.

Examples of improved services include:

- **High availability services:** Including local load balancing, global load balancing, traffic management, application and content switching, redirection, storage tiering and management, and high-performance scale.
- **Acceleration services:** Improving user experience through TCP optimization, network optimization, compression, caching, web acceleration, client- and device-based symmetric WAN optimization, and storage optimization.
- **Security services:** Providing encryption, VPN, application and data security, network and application access control, and file auditing.

As a next step, we suggest meeting with F5's experts (visit f5.com/about/contact) to establish a roadmap for applying the power of the dynamic services model to your business. Regardless of the path you choose for implementation, this approach offers significant benefits by increasing IT agility, reducing cost, increasing utilization, and speeding deployment of new applications and services.

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