

## Frequently Asked Questions (FAQ)

### General Topics

#### 1. What is Cloud Computing?

Cloud Computing is a model where scalable and elastic virtualized IT capabilities are delivered on-demand as a service to internal (private, “behind the firewall”) or external (public) users via Internet technologies.

There are several forms of cloud computing. IT Xpress Cloud delivers *Infrastructure-as-a-Service* (IaaS) where servers, storage, network and other capabilities are delivered to customers on-demand as a service for the purpose of running customer applications in the cloud.

#### 2. What is FusionStorm IT Xpress Cloud (ITXC)?

IT Xpress Cloud is a secure, enterprise-class cloud infrastructure service based on VMware technology and hosted by FusionStorm. Unlike legacy cloud services, IT Xpress Cloud is secure, scalable and ready for the enterprise.

IT Xpress Cloud features include:

- Delivered completely as a service - no hardware or software to purchase, no data center space to rent, and no IT infrastructure to maintain
- Provides one or more private “Virtual Data Centers” (vDCs) for each Customer
- Self-service provisioning of compute resources, or FusionStorm can provide full provisioning and end-to-end management services
- Easy to use, self-service graphical user interface (GUI) for self-provisioning or monitoring of cloud systems
- Flexible billing options including “Reservation” and “Pay as you Go” models
- Centralized catalogue of services, vApps, and Media, plus the ability to create your own vApps and vApp templates for easy deployment of applications
- Flexible role-based security model for delegated management of cloud systems
- Application mobility between VMware-based clouds means no “cloud lock-in” as with legacy cloud services
- Easy script-driven deployment and management of cloud systems using the open vCloud API

#### 3. When will IT Xpress Cloud be available for customer deployments?

IT Xpress Cloud is available today for customer deployments out of our Las Vegas Data Center. It will be available in other data centers in 2011.

On-line demos run by the Managed Services sales team are available today.

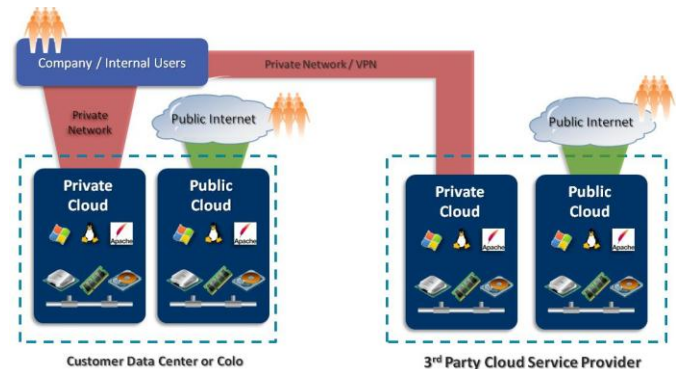
#### 4. Is IT Xpress Cloud a “Public Cloud” or a “Private Cloud” offering?

IT Xpress Cloud can be used to deliver both *Private* and *Public* Cloud services to organizations, in both cases, hosted by FusionStorm.

By definition, a *Private Cloud* delivers applications and services to *internal* users “behind the firewall”, while a *Public Cloud* delivers applications and services to external users outside of an organization.

Please note that both Public and Private Clouds can be hosted either in a customer’s own data center or colo facility, or with a 3<sup>rd</sup>-party Cloud Service Provider like FusionStorm (though Private Clouds are most often thought of as hosted internally and Public Cloud hosted externally).

The following diagram helps illustrate this concept.



#### 5. For Private Cloud applications, how do I securely connect my organization’s network and internal users to the Cloud resources located in the FusionStorm Data Center?

This can be done in several ways, including:

- Via a secure VPN (Virtual Private Network) between the customer’s network and the FusionStorm data center(s).
- A dedicated point-to-point circuit between your corporate network and the FusionStorm Data Centers(s)
- MPLS or other Private IP network connecting your corporate network with the FusionStorm data center(s).

FusionStorm can assist with acquiring and provisioning all three type of private-network connectivity. We also provide comprehensive consulting service to help customers choose the right connectivity options.

Please note that some customers may choose to bypass the above and use only application-level security (e.g. SSL encryption and secure user authentication) to provide remote access for internal users to a “Private” Cloud hosted by FusionStorm and connected the public Internet.

#### 6. What kind of pricing models do you offer for IT Xpress Cloud?

FusionStorm offers multiple pricing and billing models for ITXC:

## Frequently Asked Questions (FAQ)

- **Reservation Model:** You pay a fixed charge per month for a specified pool of CPU, memory, storage, network and other resources assigned to your vDC(s). Your monthly bill is fixed so there are never any surprises in what you pay. The pool of reserved resources assigned to your vDC(s) can be easily changed on a month-by-month basis as your business needs change.
- **Usage-based Model:** You pay a variable fee each month based on the amount of resources actually consumed during that month in your vDC(s). Your monthly bill each can be unpredictable if you don't know what resources you will consume. *(The usage-based, pay-as-you-go billing model will be available in Q2 2011).*

Under both models, you have full visibility into what your bill is and what resources you are being charged for.

Significant discounts are provided for long-term contracts.

### 7. What kind of server applications is IT Xpress Cloud designed for?

IT Xpress Cloud is ideal for both mission-critical production applications and test/development applications as it features both high-performance and high-reliability computing.

It supports a wide range of x86 operating systems, middleware, databases and applications. Anything that will run on VMware vSphere will run on ITXC including Windows, Linux and Solaris x86 operating systems and applications.

### 8. What industries is IT Xpress Cloud targeted at?

ITXC is suitable for any industry that requires secure, flexible high-performance computing delivered as a service.

FusionStorm provides complete cloud-based hosted solutions for several markets including the following:

- High-technology, ISV and SaaS providers
- Financial services
- Health care and life sciences
- Government
- Multiuser online gaming (MMOG)

Contact your FusionStorm Account Executive for additional details.

### 9. Who deploys and manages the cloud resources within a Virtual Data Center, FusionStorm or the Customer?

IT Xpress Cloud supports both use cases:

- **Customer-Managed:** Customers provision and manage their own vDCs, vApps, VMs and other resources provided by FusionStorm from the pool of resources using the IT Xpress Cloud GUI with full administrative rights for their own Organization. In this model, FusionStorm provides just core infrastructure services and the Customer provides most or all other services.

- **Provider-Managed:** FusionStorm provisions and manages the vDCs, vApps, VMs and other resources on behalf of the Customer. The Customer has access to the IT Xpress Cloud GUI, but with a reduced level of capabilities (remote console to a server, reset VMs, etc.). This model is ideal for customers looking to outsource not only the hosting but also the management of their IT systems.

### 10. What underlying hardware systems are used to deliver IT Xpress Cloud?

FusionStorm uses enterprise-class blade servers, storage systems and networking hardware from major manufacturers including:

- IBM BladeCenter servers
- EMC and Isilon storage systems
- Cisco Nexus 10 Gbps Ethernet switches
- F5 hardware and VM-based load balancers

The ITXC hardware infrastructure is architected for zero-point-of-failure and a high level of redundancy and performance. The network is based on a unified 10Gbps fabric from end to end. Additional architectural details can be provided by your FusionStorm Managed Services Solutions team.

### 11. What are the underlying software components you are using to deliver IT Xpress Cloud?

IT Xpress Cloud is powered by VMware software technology including:

- VMware vSphere 4.1
- VMware Cloud Director 1.0
- VMware vCenter Chargeback

VMware is the market leader in enterprise-class virtualization technology with a greater than 84% market share.

### 12. Can my existing VMware vApps and VM images be imported into and used in IT Xpress Cloud, and vice-versa?

Yes, existing vApps and VMs can be used inside ITXC. vApps and VMs can also be exported out of ITXC and used in your own or another VMware-based environment.

This portability means that you are not locked into a proprietary cloud system or cloud service provider.

### 13. Can servers and applications be deployed and managed programmatically with scripting?

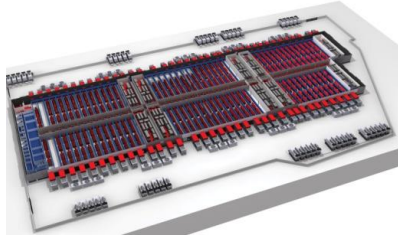
Yes, IT Xpress Cloud supports the public "vCloud" API, which is an easy-to-use, RESTful programming interface. Using the vCloud API you can perform almost any function programmatically from a script including starting and stopping vApps and VMs, deploying new vApps, configuring vApps and other functions.

For additional details see [www.vmware.com/go/vcloudapi](http://www.vmware.com/go/vcloudapi).

### 14. Where is IT Xpress Cloud hosted?

## Frequently Asked Questions (FAQ)

IT Xpress Cloud is currently hosted at FusionStorm's SuperNAP data center in Las Vegas, the most advanced and secure commercial data center in the world. The SuperNAP features N+N redundant power systems, 24 tier-1 network providers, and financial-grade physical security features including biometric access control, video surveillance and an armed 24x7 security force.



Since Las Vegas is one of the most disaster-safe locations in the U.S., ITXC is ideal business continuity applications.

In 2011, we will be offering IT Xpress Cloud services from our other data center locations in the eastern U.S. and Europe. For more information, or to schedule a tour of the SuperNAP, contact the FusionStorm Managed Services Solutions team.

### 15. What are some of the redundancy and fault-tolerant features provided by IT Xpress Cloud?

- The IT Xpress Cloud hardware platform is built with enterprise-class blade servers, storage systems and networking components to minimize the likelihood of hardware failures.
- The IT Xpress Cloud platform features several capabilities to minimize outages including VMware High Availability (HA). The VMware HA feature will automatically restart a VM on another physical server if there is a hardware failure on the original server.
- Note: The VMware Fault Tolerance (FT) feature, which the highest level of non-stop availability for the most mission-critical applications is not currently supported in IT Xpress Cloud, but may be at a future date.
- FusionStorm provides extensive 24x7 monitoring of hardware and software infrastructure components to proactively detect and remediate systems problems.

Contact the FusionStorm Managed Services Solutions team for more information on these features and options.

### 16. Do you offer SLAs and uptime guarantees for IT Xpress Cloud?

Yes, FusionStorm offers a comprehensive SLA which can be customized to meet virtually any business need, including application-level availability and performance.

Contact the FusionStorm Managed Services Solutions team for more information.

### 17. What security features are provided by IT Xpress Cloud?

- **Physical security.** The SuperNAP facility in Las Vegas is the most secure commercial data center in the U.S.

- **vShield Firewall:** vShield is a cloud-integrated firewall capability which controls network access to sensitive areas of your vDC such as a DMZ or servers with sensitive data subject to PCI or SOX compliance regulations.
- **Physical firewall.** FusionStorm can provide hardware-based stateful packet-layer and application firewalls for additional security capabilities.
- **Threat Management Service (TMS).** The optional FusionStorm Threat Management Service provides proactive, network-based vulnerability scanning and intrusion detection services.

### 18. Do my Virtual Data Center(s) run on customer-dedicated physical servers or on shared physical servers?

By default, customer VMs and applications run on shared server hardware on logically-isolated Virtual Data Centers (vDC) for each customer. The security features provided by VMware provide a high degree of isolation between customer VMs and virtual networks.

However, if required, FusionStorm can optionally dedicate physical servers to individual customers, vDCs or applications and guarantee that all customer applications reside only on physical servers dedicated to one customer.

### 19. Can IT Xpress dedicated physical servers (non-virtualized) and IT Xpress Cloud Virtual Machine servers be integrated on the same network?

Yes, we can provision non-virtualized, dedicated physical servers and Cloud-based VM servers on the same network so that if you have applications which run better on physical hardware they can be integrated into the IT Xpress Cloud Virtual Data Center.

### 20. What optional, value-add services do you offer with IT Xpress Cloud?

FusionStorm offers a range of optional, add-on services to complement the core Cloud offerings:

- **Server and Application Monitoring.** We leverage a powerful software toolset to monitor key operating system, database and application parameters to assure availability and performance of servers, services and applications.
- **Operating System-level Management.** OS-level management for Windows, Linux and Unix operating systems and associated software. This can include a variable number of "Change Credits" which can be used to have FusionStorm system administrators perform requested tasks on your behalf. We can also integrate with your existing Change Control processes and procedures if required.
- **Physical Firewall Services.** For protection of your hosting environment we offer both self-managed and fully-managed network firewall services.
- **Sever Load Balancing.** For distribution of application load and for redundancy, we offer a fully-managed, fully-customizable Server Load Balancing Service.

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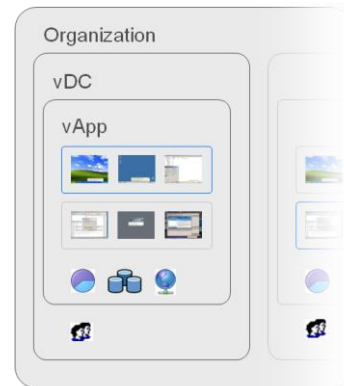
- **Database Administration.** FusionStorm provides full-service DBA services for Oracle, Microsoft SQL Server and MySQL. We offer database design, deployment, tuning, optimization and ongoing maintenance of your mission-critical databases and related systems.
- **Data Protection Service.** To protect your valuable data from loss, our Data Protection Service can provide secure backup of your file-based or database-resident data. We also offer both electronic and tape-based off-site backup and archival options.
- **Threat Management Service (TMS).** The TMS option provides regular, proactive, network-based vulnerability scanning and intrusion-detection services with 24x7 incident response to help secure your environment against network-based threats. A secure, web-based portal provides customers with secure access to threat dashboards and reports.

### 21. Is there a Customer Portal?

FusionStorm provides a secure, web portal with the following features:

- Access to the IT Xpress Cloud manager console.
- Incident Tickets - including the ability to search for and view open and closed incidents.
- Dashboards – near-real-time views of the cloud environment including server availability, CPU, memory and storage usage, application response time and more (requires optional Monitoring Services)
- Historical Reports – historical views of key server, storage, network and application metrics
- Backup Reports – backup success and failure reporting
- Threat Management System – web console for the optional TMS service

## IT Xpress Cloud Concepts



### 22. What is an Organization?

An Organization is a container for one or more Virtual Data Centers (vDCs) and associated with a Customer. All of the servers, networks, applications, data and other resources used by an Organization are private and are not accessible to other Organizations/Customers hosted by FusionStorm.

### 23. What is a Virtual Data Center (vDC)?

An Virtual Datacenter (vDC) contains the virtualized resources to an Organization including CPU, memory, storage and network resources. vDCs provide an environment where virtual systems can be stored, deployed and operated. They also provide storage for virtual media, such as floppy disk and CD/DVD media files.

FusionStorm can provision a single Organization with multiple vDCs if required. For example, a single Organization might have a vDC for engineering and another for business operations, where each vDC contains its own set of resources.

### 24. What is a Catalog?

A Catalog is a container for vApp Templates and media files in an Organization. Organization administrators and catalog authors can create catalogs in an organization. Catalog contents can be shared with other users in the organization and across vDCs.

### 25. What is a vApp?

A vApp consists of one or more Virtual Machines (VMs) that communicate over a network and use resources and services in a Virtual Data Center. vApps contains one or more multiple Virtual Machines (all VMs used in a Cloud must be assigned to a vApp). Typically, vApps are used to define all of the VM servers and other resources required to host a single application or set of applications.

### 26. What is a vApp Template?

A vApp template is a virtual machine image that is loaded with an operating system, applications, and data. These templates ensure that virtual machines are consistently configured across an entire organization.

### 27. What are Media Files?

## Frequently Asked Questions (FAQ)

Media files are .ISO image files of CDs or DVDs which can be uploaded into a Catalog for use in creating a Virtual Machine or for importing data. Media can also be loaded from floppy disk image file (.FLP file type).

