

Why Cloud Computing?

Building, operating and upgrading IT infrastructure is a costly, complicated and resource-intensive endeavor which often distracts companies from achieving their primary business goals of serving customers and growing a profitable business.

- How much compute, storage and network capacity do we need?
- What are the business risks if we purchase too little or not enough?
- Can I scale quickly to meet rapidly changing business requirements?
- Do we have the staff to build, run and upgrade our systems?
- Do we have the expertise and training to handle new technologies?
- What about data center space and power for future expansion?
- How do I handle 24 x 7 x 365 global support requirements?
- Are my systems and data adequately protected from disasters?
- Is my business-critical data safe and secure?
- How much of my IT spending is really helping advance the business?

Cloud computing is high on the agenda for most CIOs because it can help address these challenges and enable companies of all sizes and types to achieve a competitive advantage in the marketplace.

Since 1995, FusionStorm has been a nationally-recognized leader in delivering IT solutions to customers of all sizes and types. We know IT infrastructure like no one else – compute, storage, networking, virtualization, data protection and security. As a top-tier partner with leading vendors including Cisco, EMC, VMware, Microsoft and Red Hat, and with multiple managed services certifications including SAS-70 and MSCSP, we are uniquely qualified to handle even the most complex and challenging environments.

FusionStorm IT Xpress Cloud

IT Xpress Cloud is our latest offering -- a secure, flexible hosting service which delivers on the promises of cloud computing for the enterprise. Unlike first-generation cloud services, IT Xpress Cloud is ready for the enterprise -- secure, flexible, highly scalable, and backed by an industry-leading SLA.

With IT Xpress Cloud, Virtual Machine Servers, and even entire applications consisting of many servers, can be deployed in minutes instead of months.

Powered by VMware vCloud technology, IT Xpress Cloud delivers powerful, on-demand computing without the cloud “lock-in” factor common to other services. Migrate existing VMware Virtual Machine Servers and complete applications (vApps) to IT Xpress Cloud, then move them back to your data center or to another vCloud provider if the need arises. You can also use IT Xpress Cloud to build “hybrid” clouds consisting of both in-house and FusionStorm-hosted clouds.

IT Xpress Cloud is available in both customer-managed and provider-managed delivery models. In the customer-managed model you can create Virtual Machine Servers and entire applications yourself in minutes via the IT Xpress Cloud Director Web portal. With the provider-managed model, FusionStorm creates and manages the Virtual Machine Servers and other resources on your behalf. We also offer a rich set of optional IT Xpress Managed Services including OS and patch management, managed firewall and VPN services, data backup, intrusion detection, database management, managed data replication and more. The choice is yours –self-managed, let FusionStorm’s experts do the work for you, or a combination of the two in the same environment.



Flexible, powerful, enterprise-ready cloud computing service

Hosted in secure, high-availability data centers in the U.S. and Europe

Guaranteed up-time with industry leading, customizable SLAs

One or more Secure Virtual Data Centers (vDCs) per customer

VMware-based vCloud technology eliminates “cloud lock-n”

Customer-managed and/or provider-managed cloud options

Rich set of optional IT Xpress Managed Services for monitoring, patch management, system administration, backup, database, firewall, threat management, server load balancing, data replication and security

Web-based IT Xpress Cloud Director application allows servers and entire applications to be deployed in minutes instead of months

Built on enterprise-class, high-availability infrastructure from Cisco, EMC, VMware and other top-tier vendors

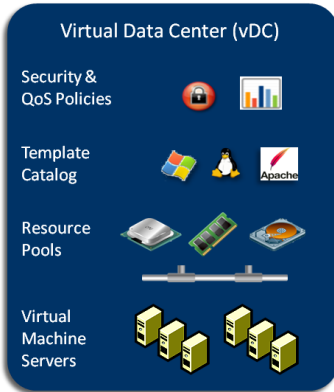
IT Xpress Cloud vDCs can be integrated with IT Xpress dedicated physical servers to create mixed virtual/physical cloud environments

24x7 support provided by FusionStorm’s Service Desk staffed with certified support experts

FusionStorm is a SAS-70 Type II and Cisco Master MSCSP certified service provider

Private Virtual Data Center (vDCs)

A key feature of IT Xpress Cloud is the private Virtual Data Center (vDC), which is a secure container for your cloud resources including “pools” of compute, memory, storage and network resources; virtual firewalls; vApp templates, which can be used to build virtual machines and applications; and fully-configured Virtual Machine Servers (VMS) and virtual applications (vApps).



Hosted Private or Public Clouds

Your IT Xpress Cloud can be used to deliver a hosted private cloud for delivering internal-facing, corporate applications to your users where your vDC(s) are securely connected to your corporate network. We support a wide range of connection types including secure Virtual Private Network (VPN), private MPLS network and dedicated point-to-point circuits. Your company’s corporate directory service (Active Directory, LDAP, etc.) can then be extended to the vDC for simplified management.

Of course IT Xpress Cloud is also perfect for external-facing, public-cloud applications such as delivering software-as-a-service (SaaS) applications, massively-multiplayer online games (MMOG), corporate web sites and other types of web applications or services.

Customer and/or Provider-Managed Clouds

We recognize that when it comes to Cloud Computing services there are different needs with different customers, so IT Xpress Cloud offers multiple delivery models for different applications.

- **Provider-managed Virtual Machine Servers (VMS).** These are virtual machines which are provisioned by FusionStorm within a Customer vDC and monitored and managed 24x7 by FusionStorm staff. The Provider-Managed VMS model is ideal for customers who want to leverage FusionStorm’s deployment, monitoring and management services. In this model, we provide a 99.98% uptime SLG (Service Level Guarantee) at the individual VMS level. The Provider-Managed VMS model is ideal for both production and non-production applications where a server-level SLA is required.
- **Customer-managed vDC Resource Pools (VRP).** In this model, Customers can use the IT Xpress Cloud Director Web application to provision their own Virtual Machine Servers and applications in minutes from pre-defined vApp Templates contained in the template library. In this model, customers are responsible for creating and managing the individual Virtual Machine Servers. In this model, we provide a 99.98% uptime SLG (Service Level Guarantee) at the vDC level. This model is ideal for test,

development, staging and other “sandbox” environments where you want to be able to self-provision new servers and applications in minutes and then manage them yourself.

High-Availability Infrastructure

IT Xpress Cloud is delivered using high-availability enterprise-class infrastructure hardware and software from Cisco, EMC, VMware, Microsoft, Red Hat and other top-tier vendors.

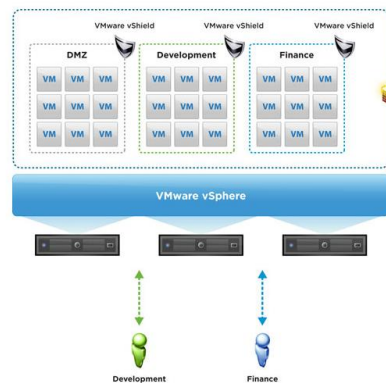
- Enterprise-class compute, storage and network hardware
- High-availability, multi-path, no single point of failure
- 10 gigabit/second, end-to-end unified network fabric
- Intelligent storage migration using EMC FAST technology to optimize and balance storage performance
- VMware vSphere and vCloud virtualization and cloud automation technology
- IT Xpress Cloud leverages VMware High Availability (HA) to minimize outages in the event of hardware failures.

Operating system support includes Microsoft Windows, Red Hat Enterprise Linux, Centos and other selected Linux distributions

Secure Cloud Computing

IT Xpress leverages several standard and optional, end-to-end security features to help protect your data:

- **Secure Data Centers.** IT Xpress Cloud is hosted in highly-secure, enterprise data centers with local 24x7 security staff, biometric control access systems, video surveillance with recording and other physical security features. FusionStorm is a SAS-70 Type II certified and audited service provider in all of data centers where IT Xpress Cloud is offered.
- **Private vDCs.** One or more private Virtual Data Centers (vDC) are provisioned for each customer. Each vDC is a secure container for Virtual Machine Servers, applications and other resources. Multiple vDCs within a single Customer Organization can be easily fenced off from each other for security.
- **Private VLANs.** One or more customer-dedicated, private Virtual Local Area Networks (VLANs) are provisioned to segment network traffic between customer vDCs.
- **vShield.** A Virtual Firewalls can also be used to “fence” Virtual Machine Servers and applications from each other, for example, Development and Finance vDCs. Virtual firewalls are based on VMware vShield Edge and vShield App technology.



- **Physical Firewalls.** We offer both dedicated and shared physical firewall services for applications where a hardware firewall is called for. Site to site VPNs are supported via physical firewall services.
- **Proactive Threat Management.** The optional Threat Management Service (TMS) provides proactive, network-based vulnerability scanning and real-time intrusion detection services for IT Xpress Cloud environments (see the TMS Solution Brief for more information).

Shared and Dedicated Clouds

IT Xpress Cloud vDCs are provisioned from shared compute and storage resources to deliver the most cost-effective solution for most customer applications. However, some applications may require fully or partially-dedicated compute and storage hardware, and IT Xpress Cloud can also be delivered in this model for customers who require it.

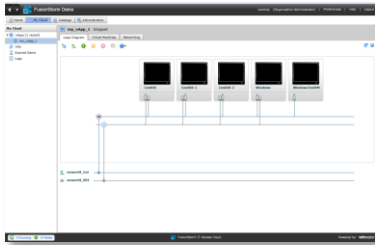
Mixed Physical/Virtual Clouds

An IT Xpress Cloud vDC can be linked to physical servers provisioned under our IT Xpress Dedicated Server model. This is ideal for applications where a few servers still need to run on “bare metal” dedicated hardware without a hypervisor, while the remainder of the servers can be cloud-based.

In this model the IT Xpress Dedicated Server(s) are linked to your cloud environment via a Layer-2 private VLAN. The physical servers must be provisioned by FusionStorm in this model.

IT Xpress Cloud Director Web Portal

The IT Xpress Cloud Director portal is a web-based application which allows Customers who are managing their own vDCs and virtual machines to self-provision and control the virtual machines in their cloud environment.



IT Xpress Cloud Director includes the following functions:

- Remotely access the primary console and log into any running Virtual Machine Server.
- Stop, start and restart vApps (applications) and individual Virtual Machine Servers.
- Provision new virtual applications (vApps) from a pre-existing template or from an another existing vApp
- Reconfigure individual virtual machines or vApps, including setting compute, memory, storage, network and other resource allocation settings
- Provision and configure vShield virtual firewalls
- Upload new vApps and virtual machines from our in-house VMware environment into the IT Xpress Cloud environment (.OVF file format)
- Upload new CD/DVD image files into the IT Xpress Cloud environment (.ISO file format). Image files can be used to create new Virtual Machines from scratch or to install application software

from a CD/DVD image.

- Manage IT Xpress Cloud Director user accounts and roles for your Organization (Administrator privilege)

For customer-managed vDC Resource Pools, all of the above functions are available. For provider-managed Virtual Machines Servers, customer access is limited to remote console and server start, stop and restart functions.

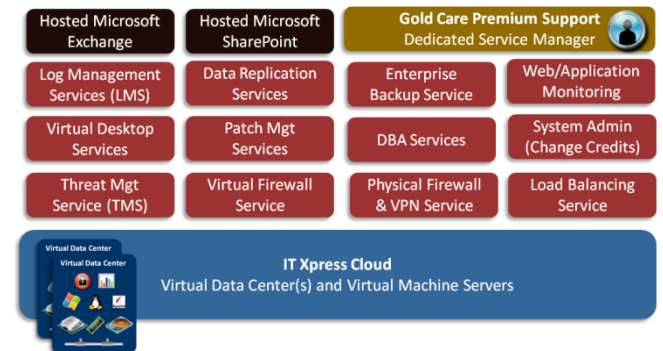
Delegated Administration

In the customer-managed model, the Administrator for the Customer Organization can delegate out the management of individual vDCs and vApps using a role-based delegation model. For example, this allows one group within the Origination to manage their own vApp or vDC separately and securely from other groups within the same organization.

Optionally, user authentication for the IT Xpress Cloud Director portal can be integrated with a Customer’s Active Directory or other LDAP-compatible directory service for single sign-on capability.

IT Xpress Managed Services

FusionStorm offers a rich set of optional managed services to complement the base IT Xpress Cloud infrastructure service, as illustrated below.



- **Provider-managed Virtual Machine Server (VMS).** These are virtual machines which are provisioned by FusionStorm within a Customer vDC and monitored and managed at the OS level 24x7 by FusionStorm staff.
- **System Administration.** For implementing changes to a provider-managed cloud environment, we allocate a variable number of “Change Credits” per month which can be used to have FusionStorm engineers perform requested tasks on your behalf. We can integrate with your existing Change Control processes and procedures if required.
- **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. Application monitoring can be a simple web URL, an application-specific agent or a complex synthetic transaction.
- **Managed Physical Firewall & VPN Services.** For protection of your hosting environment we offer both dedicated and shared hardware firewall and VPN services.

- **Managed Virtual Firewall Services.** For protection of your hosting environment, and for “fencing” applications within a vDC across vDCs, we offer a fully managed virtual firewall service based on VMware vShield technology.
- **Sever Load Balancing.** For distribution of application load and for redundancy, we offer a fully-managed, fully-customizable Server Load Balancing Service.
- **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.
- **Enterprise Backup Service.** To protect your valuable data from loss, our Enterprise Backup 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.

vCloud API for Cloud Automation

IT Xpress Cloud supports the public “vCloud” API, which is an easy-to-use, “REST-like” programming interface. Using the vCloud API you can perform almost any function programmatically from a script including starting and stopping vApps and Virtual Machine Servers, deploying new vApps, configuring vApps and other functions.

For additional details on the vCloud API see www.vmware.com/go/vcloudapi.

Flexible Pricing Models

FusionStorm offers two primary billing models for IT Xpress Cloud:

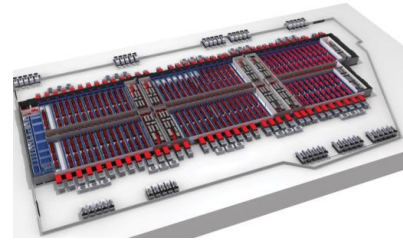
- **Reservation Model:** You pay a fixed charge per month for a specified pool of CPU, memory, storage, network and other resources assigned to your vDC(s), and/or any complete Provider-managed Virtual Machine Servers. Your monthly bill is fixed so there are never any surprises in what you pay. The pool of reserved resources assigned to your vDC(s), and new Provider-managed Virtual Machine Services, can be easily adjusted on a month-by-month basis as your business needs change,
- **Burstable Model:** As above, but in addition to reserved resources but you can “burst-allocate” resources on-demand to handle unpredictable or on-demand workloads. In this model, your monthly bill can change from month to month based on usage above and beyond the baseline level. (*The Burstable 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 longer-term contracts.

Enterprise Data Centers

IT Xpress Cloud is currently hosted at the 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.



As Las Vegas is one of the most disaster-safe locations in the U.S., this makes IT Xpress Cloud ideal for business continuity applications.

IT Xpress Cloud will also be available from other enterprise data center locations in the Eastern U.S. and Europe in 2011. For more information, contact your FusionStorm Managed Services team.

Contact FusionStorm Managed Services at:

- US: 800.228.TECH (8324)
- EU: +33.613.60.51.17
- info@fusionstorm.com

URL: www.fusionstorm.com/ManagedServices/ITXpressManagedHosting.aspx