

From the Data Center to the **DESKTOP**

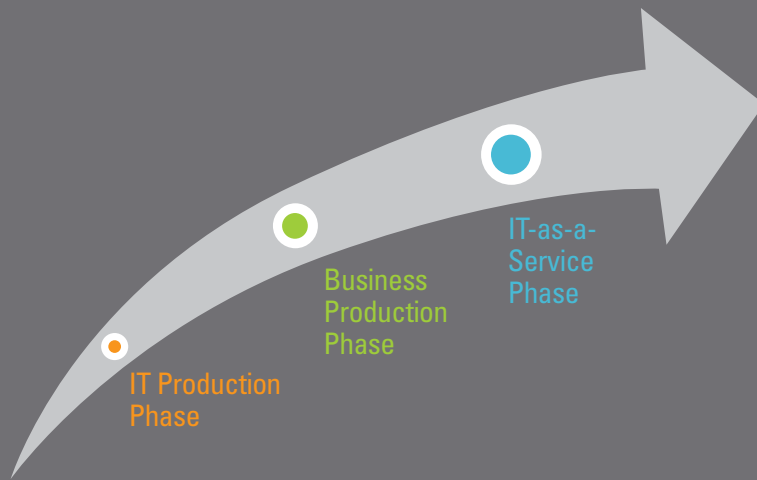


Data Center Solutions

VIRTUALIZATION SOLUTIONS

Mainline Information Systems has developed a specialization practice around virtualization. We have the experience and expertise that it takes to work with organizations of all sizes. Distinct from other solution providers, we offer technical expertise and leadership resources across ALL of the key IT elements – servers, desktops, networking and storage – where virtualization can pay off.

Solutions for all your Virtualization **NEEDS**



THE VIRTUALIZATION JOURNEY

1 – IT Production Phase

The first step of the journey is the “IT Production” phase. Here the IT organization is virtualizing what it owns, such as servers used for file and print or test and development.

Virtualization of File Servers
Virtualization of Application Servers

2 – Business Production Phase

The second phase of the journey is the “Business Production” phase. This begins when customers virtualize their first business application, such as a database, ERP system or enterprise email. Here the value proposition shifts as companies are virtualizing to achieve better quality of service (performance, reliability) or business continuity.

Virtualization of Database Servers
Virtual Desktop Infrastructure

3 – IT-as-a-Service Phase

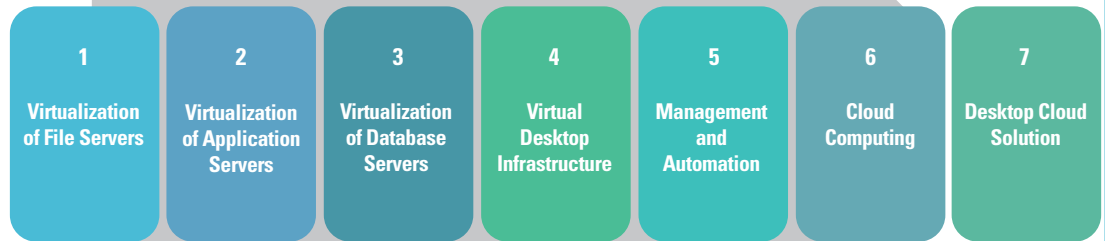
Customers in this phase typically have more than 50% of their data center virtualized. Virtualization has become the norm—its just part of what IT does. The result: These companies have automated more processes, can deploy new services faster than ever before, and are getting extremely high levels of utilization. Now, resources can be allocated on demand when and where needed. IT is nimble. This model for the data center—made possible by virtualization and automation—could be described as a Private Cloud.

Management and Automation
Cloud Computing
Desktop Cloud Solution

To learn more about how Mainline can help you plan and implement virtualization solutions, call **866.490.MAIN(6246)**

VIRTUALIZATION

The process of creating a logical, rather than a physical, environment for an organization's computing resources — delivers significant performance and cost improvements in your server, storage, desktop and network environments.



Why Mainline for your Virtualization Solutions?

- Proven track record that has helped us achieve recognition as one of VMware's National Premier Business Partners
- Power of industry-leading products from IBM, HP, VMware, Cisco, Red Hat, Novell, Wyse and other companies with gold-standard virtualization solutions
- Best practices gained from more than 1,500 real-world server and desktop virtualization deployments of all sizes and complexity
- Proven, repeatable methodology for assessment, planning, implementation and follow-up
- Field-tested team of IT service professionals certified across a broad range of platform, application and vertical environments



University of Connecticut

THE VIRTUALIZATION AND CONSOLIDATION SOLUTION HAS POSITIONED US TO REALIZE A BETTER ROI AND TO BE A GREENER SHOP.

Texas Wesleyan University



THE MAINLINE TEAM RESPONDED WITH BEST PRACTICES TO EVERYTHING WE WERE TRYING TO DO. WE COULD NOT HAVE DONE THIS WITHOUT MAINLINE'S HELP.

THE VIRTUALIZATION JOURNEY - OVERVIEW

The process of implementing virtualization in data centers has often been described as a journey. Along this path, there are several destinations. The first being a more cost-effective and secure environment for your non-critical file systems, and the last being a nimble and automated “Cloud” environment for your critical systems and desktops. Like any trip, virtualization achieves the best results when it includes careful planning.

Mainline Information Systems has developed a highly recognized specialization practice around virtualization. In addition to advanced technical skills, certifications and experience, we offer the most compelling portfolio of virtualization products and services in the industry, to make your journey a successful reality.

The benefits of virtualization truly are impressive in terms of simplification, flexibility and ease of management.

- Consolidation ratios ranging from 8:1 to as high as 30:1
- Dramatic reduction of staff time spent deploying, repurposing and decommissioning servers and desktops
- Drastic reduction in power and cooling costs
- Budgetary savings, that can either flow to the bottom line or be reinvested in further IT innovations, which improve a business’s performance
- ROI within six months or less
- Reduction in total cost of ownership of between 30 and 70 percent
- Rise in server utilization rates to as high as 80 percent, instead of rates commonly in the 5 to 15 percent range.

1 – Virtualization of File Servers

With storage capacity needs growing at 45% per year on average, many companies are looking for ways to store more data for less money. The best way to do that is to utilize file virtualization.

File virtualization is normally the first virtualization project for IT organizations, due to the ease of deployment and fast ROI. It allows you to transparently move data from a server with expensive Tier-1 storage, to another server with high-capacity, lower-priced storage, without the end-user ever knowing the file was moved.

This makes possible a very aggressive migration to a disk archive. Data can be moved to the archive server within days of inactivity, as opposed to the typical months-long timeframe. As a result, less of the expensive primary storage needs to be purchased. And, with all of this old data out of the way, backup windows are much easier to meet because there is simply less data to protect.

While aggressive archiving means an investment in a disk-based archive, these systems are designed to be very cost-effective by using high-capacity drives and data optimization techniques like de-duplication, while offering massive scalability and reliability.

2 – Virtualization of Application Servers

To continue the benefits of server consolidation, lower costs and greater redundancy, many organizations look next at virtualizing their application servers (web servers). The advantages of such a deployment include the ability to scale up or down hardware, with little or no downtime. Also, virtualized web servers can be moved between physical hosts, when maintenance is required. In addition, resources can be load-balanced across a pool of physical hosts at a level that is more efficient than simple Web traffic load balancing. With careful planning and benchmarking, virtualization for web servers results in a flexible, highly available Web infrastructure.

3 – Virtualization of Tier-1 Applications

You’ve virtualized your file and application servers, improved your hardware utilization, reduced your server administration costs, and optimized your energy consumption. Now it’s time for your databases, the most critical of all Tier-1 applications, and your email servers.

Database and email server virtualization is a way to improve flexibility, maximize efficiency, lower costs and ease administrative overhead.

Many of our customers are in this phase of the journey and have begun the virtualization of applications such as Microsoft SQL, Microsoft Exchange, SAP and Oracle. Measurable benefits include the ability to meet or exceed application service levels, as well as develop and deploy applications on time and under budget. Provisioning time is cut from weeks to minutes, and application licensing costs are reduced, where possible. Many customers have found that virtualizing these mission-critical applications not only improves their reliability, but even more impressive, it improves their overall performance.

4 – Virtual Desktop Infrastructure

By applying the prevailing methodology of server virtualization and consolidation to a desktop environment, Mainline can reduce a significant cost component of every business – desktop management – while making significant contributions to IT optimization.

Mainline’s strategy for desktop virtualization permits companies to host individual desktops inside virtual machines – in some cases, on the same hardware platform with adjacent virtual machines hosting virtual servers – but on more reliable, more fault-tolerant industry-standard x86 servers. Users can have the flexibility to access their desktops remotely, from any PC or thin client in the world, using the remote desktop protocol (RDP) or the more high-performance PC-over-IP (PCoIP) protocol. With the operating system and applications managed centrally within a corporate data center, organizations gain better control over their desktops, as well as the data that these desktops access. Operating system and application installations, updates, patches and backups are completed easier and faster when desktops are all aggregated centrally, as virtual machines within your datacenter. This makes it easier to deploy to end users without the necessity of visiting individual desktop systems or pushing multiple updates via SMS or other third-party desktop management tools. This provides easier management, consumes less network bandwidth for updates, and speeds fulfillment of specific application and resources needs for certain users, as well as simultaneous global changes and updates for all users.

5 – Management and Automation

After simplifying your infrastructure through virtualization, the next step is simplifying IT management complexity with next generation management and automation solutions.

Traditional management tools assume static, rigid bindings throughout the stack – application to OS to server to storage to network – resulting in brittle design, slow performance, frequent outages, and sensitivity to change. With virtualization and cloud computing, applications become mobile and must be managed separately from the underlying infrastructure.

Management and automation solutions are built for dynamic environments, to dramatically transform how organizations manage IT and deliver services. It allows you to simplify how IT is managed, accelerate IT service delivery, increase operational efficiency, automatically assure compliance and reduce business risks.

6 – Cloud Computing

The goal of Cloud Computing is to enable IT-as-a-Service. Cloud deployments can help you to achieve lower total cost of ownership (TCO), while minimizing unnecessary IT infrastructure investments, management and maintenance resources, as well as system lock-in. Many organizations are considering this as they find themselves caught between shrinking resources and growing business needs. Cloud computing provides a more efficient, flexible and cost-effective model for computing—one that allows IT to operate much more efficiently and respond faster to business opportunities.

During the process, you do not need to “rip and replace” existing infrastructure. You can leverage current investments to transform an internal datacenter into a private cloud environment. You can build and deploy a private cloud today that yields improved IT efficiency and agility, while enhancing security and choice.

Most companies begin building their cloud with the applications most frequently requested by users, which tend to be the following:

1. Transient apps – Applications that will have a rapid rate of provisioning, cloning, reallocation and so on - for example, a staging or preproduction development and test environment
2. Elastic apps – Applications where the demand for resources will vary greatly over time, so users will request adjustments to the application resources - for example, scientific computation or anything with seasonal transactions
3. “Long tail” apps – Applications that never get prioritized by IT organizations - for example, a customized Web farm for an extranet

Our customers have prioritized these types of applications for self-service, due to the high rate of change they experience with them. Often, the bulk of requests that consume IT staff time are generated by ad hoc workloads, rather than business-critical production applications. Plus, ad hoc workloads cause the biggest cost and administrative headaches for IT. Applications, such as these, will benefit considerably from being served out of a cloud environment and can drive immediate value to the business.

7 – Desktop Cloud Solution

As cloud computing focuses on improving the applications with the biggest costs and administrative headaches for IT, we should consider that managing and provisioning end user desktops is another costly and inefficient business process that can also be greatly improved with cloud computing alternatives. As a subscription service, users will be able to access the required applications and data, as services, over the network, whether they have an iPad, Android phone, Windows machine or a Mac – location agnostic, device agnostic, OS agnostic – true compute flexibility.

Centrally controlling and managing end user desktop environments, and making them available as a cloud service, is a great way to reduce support costs and increase end user productivity. A desktop cloud solution provides an excellent environment for efficiently using CPU, memory and I/O to manage thousands of concurrent desktop users.

Mainline’s Consulting Services

In today’s hard-nosed cost environment, management isn’t simply going to take the word of IT that virtualization will have a positive impact on the organization. They will want to see the business case for virtualization, including estimates on the number of servers that can be consolidated, the amount of technical staff time that will be directed to developing IT services that previously were dedicated to monitoring under-utilized servers, and the amount saved in energy costs. They will also want assurances that performance and disaster recovery won’t be compromised. Mainline can help you develop this business case. We can provide technical support from start to finish. No matter where you are in your virtualization journey, Mainline can help.

Mainline Professional Services are designed to identify and architect an appropriate solution, based upon the unique requirements of your environment and budget.

Mainline can lead a pilot or proof of concept, within your environment, to test the technology with your applications and network, prior to production deployment.

Mainline can deliver post-sales technical support, for all components of the virtualization solution, to give you a single point of contact for any post-deployment issues.

Real-world virtualization expertise for real-world business needs. No one has done it more. No one does it better. That’s the Mainline difference.

