

Creating a portable data center “in a box” using VMware Infrastructure 3



The Challenges of Portable Remote Data Centers

Today's competitive “go anywhere” business environment is requiring many IT organizations to provide all of the capabilities of their data center in a package that can be shipped anywhere and at anytime. This requirement has burdened organizations with a high cost to deploy and support these mobile data centers in sometimes very remote locations.

Ideally, what is required is the near full functionality and range of applications provided by a traditional data center, delivered in a fully portable package that can be rapidly deployed, activated, shut down, and moved on demand.

Some of the areas where the need for remote deployment has become necessary include:

- Emergency Response - where operations must be quickly setup with a complete remote data center in a disaster area.
- Military Operations - where command centers move on the fly, sometimes without notice.
- Scientific and Engineering Explorations – where operational resources need to be moved or must sustain long periods in harsh environmental conditions with little or no access to a central IT data center.
- Events and Tradeshows - where set up and tear down are a regular occurrence and remotely supporting systems that are continuously on the road is an ongoing challenge.

These applications share a common requirement: a complete data center that is flexible and can be deployed rapidly to any location. However, in most cases, the ideal system that is both portable and robust is compromised by limited functionality and fewer capabilities when it is either developed or deployed.

Configuration and Deployment Challenge

Configuring the data center in the field is not realistic because companies don't have qualified IT resources to send to remote locations. Regardless of where a data center is deployed, countless hours are spent configuring and testing the set up which ties up valuable IT resources and can decrease the speed and efficiency of the deployment.

Difficulty of Field IT Support

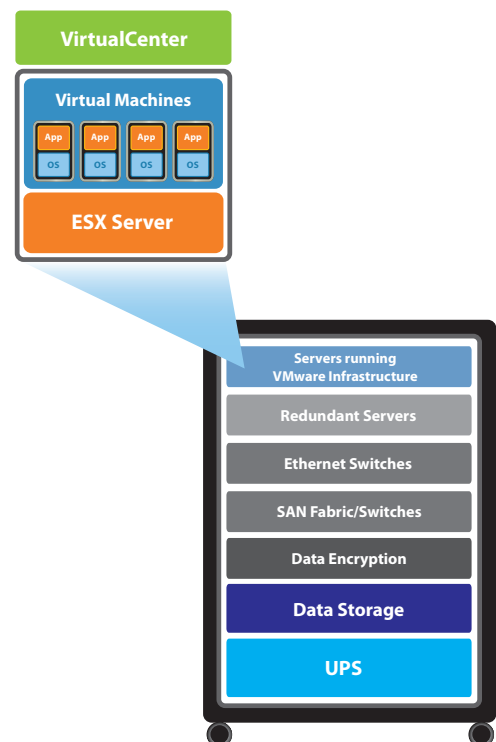
In many cases systems that are deployed to remote locations are not connected to a corporate network: it is difficult if not impossible to patch, upgrade or back up these systems. The costs, time and resources required to set up and support a mobile data center make it nearly impossible for organizations to grow and change them quickly in response to new demands.

A Truly Portable Solution

With the help of VMware® Infrastructure 3 virtualization technology, organizations can make portable data centers much easier to transport – build a portable data center “in a box”.

As shown in Figure 1, the solution encompasses a ruggedized case enclosed with power distribution, servers, network switches, and storage. On top of the hardware, VMware Infrastructure software manages the hardware and applications that were previously deployed across multiple systems. Instead the portable data center can run on as few as two servers for tabletop demands or four (or more) servers for larger missions.

Figure 1:



VMware Portable Data Center Solution

VMware Portable Data Center: Minimum Requirements.

- **Compact server rack or blade chassis with multiple servers.**
- **VMware Infrastructure 3 suite includes VMware ESX Server and VMware VirtualCenter software.**
- **Shared storage.**
- **Reliable network connectivity between all elements.**

At its core VMware Infrastructure 3 is virtualization software that allows several entire server images, which include a configured operating system and related applications, to run inside of virtual machines. The servers running virtual machines are networked through virtual switches and share access to virtualized storage.

The portable data center that once had too many underutilized servers that were difficult to transport can now be deployed with even more applications, using less hardware and achieving comparable performance.

Transforming Mobile Field Operations

The VMware portable data center solution has been working in VMware customer organizations for years, transforming the way organizations deploy, support, and manage their remote data centers around the world.

Rapid deployment.

- VMware Infrastructure makes it possible to cut the complicated time-consuming process of setting up a data center down to just hours. The ability for organizations to encapsulate all of their applications inside of virtual machines gives them great deployment capabilities: just load up the virtual machines on shared storage and away you go.
- The entire portable data center configuration, consisting of the virtual machines, shared storage, and other "virtual" servers can be tested ahead of time. Each configuration that's proven can be stored in the VMware VirtualCenter library of virtual machine templates for reuse. Because virtual machines are hardware independent, preconfigured virtual machines can be deployed on any system without further testing.

Efficiency and flexibility.

- The VMware portable data center solution gives organizations the flexibility of loading additional applications. Where typical mobile deployments achieved 5–10% server utilization, with VMware virtualization they can achieve 60–80% server utilization.

- Portable data centers using VMware virtualization technology can be made to react more quickly to changing circumstances in the field. Just as virtual machines are easy to set up on any hardware, they are equally easy to "tear down." VMware ESX includes a feature called, "Snapshots", that allow users to reset the virtual machine or image of the PC to a previous clean state. Portable data centers can also be configured to support wireless gateway technology on laptops which are connected via Wi-Fi for improved productivity and versatility.

Improved manageability.

- In the field, the portable data center can be completely managed centrally. All applications, data and configurations run on a single unit where installations, upgrades, backups and maintenance can be performed. The remote site can also take advantage of standard VMware management tools, including VMware VirtualCenter to turn on and off virtual machines, check server utilization rates, and move live running virtual machines via VMware VMotion™ to other systems for maintenance.

Disaster recovery

- Organizations can mitigate software and hardware failures by maintaining their portable data center on standard hardware using virtualization software. Within the same single server rack for example, a server configuration can be set up to fail over to other hardware which can be running the same virtual machines. Even a box full of additional hardware components can be stored remotely for quick exchanges if something fails. In the event of a hardware failure, recovery is much quicker because virtual machines can revert to previous states using Snapshots.

Summary

No other solution gives organizations the ability to quickly deploy a complete data center in the field anywhere, anytime in such an efficient and flexible package. VMware Infrastructure can be deployed as a portable data center "in a box" solution for a vast number of applications.

To learn more about VMware solutions, visit our Web site at <http://www.vmware.com/solutions> or contact your VMware representative.