



# **Automated Server Provisioning Benefits and Practices**

**White Paper**

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## ABOUT ALTIRIS

Altiris, Inc. is a pioneer of IT lifecycle management software that allows IT organizations to easily manage desktops, notebooks, thin clients, handhelds, industry-standard servers, and heterogeneous software including Windows, Linux, and UNIX. Altiris automates and simplifies IT projects throughout the life of an asset to reduce the cost and complexity of management. Altiris client and mobile, server, and asset management solutions natively integrate using a common Web-based console and repository. For more information, visit [www.altiris.com](http://www.altiris.com).

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BootWorks U.S. Patent No. 5,764,593.

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## INTRODUCTION

The data center has evolved greatly over the last few years; growing in size and gaining importance in the corporate environment. With this growth, IT organizations are managing a complex dance of vendors, software, configurations, patches, and more. As a result, it is increasingly difficult to keep pace with configuration changes while minimizing system downtime and maximizing staff productivity. In fact, IT administrators are often manually making the required changes and updates needed to maintain the data center.

In May 2004, Gartner <sup>1</sup> identified the following growing server administration challenges:

- Unprecedented server growth, taxing already-limited staffs in the areas of installation and configuration
- Increase in the frequency and number of changes made to manual installation and deployment processes primarily due to the rollout of new Web farms and e-commerce applications requiring frequent updates
- Consistent configuration changes required to ensure that critical applications are highly available

These growing pains have led to a greater need for more in-depth automation for repeatability and predictability. The recent increase in identified vulnerabilities and subsequent outbreaks has created an additional need for IT organizations to use security patching and automation tools. Automation of routine administrative tasks can help achieve higher availability and continuous operations for business-critical applications, while implementing standards and processes to free up resources and speed technology changes.

Altiris Deployment Solution for Servers is designed specifically for maximum deployment and configuration efficiency when provisioning network or web servers. With documented significant reductions in server provisioning time (up to 75 percent), additional savings in IT operations costs (up to 20 percent), and the ability to remotely deploy and manage servers automatically, Altiris Deployment Solution for Servers can take a server from bare metal to production ready in the shortest time possible. Server-specific features include scripted installs for initial installation, and support for remote management cards, multiple network adapters, history transfers to support rip and replace redeployment, and additional functionality required for automating server deployment.

This paper discusses deploying and provisioning your server assets in the easiest, most cost-effective way possible no matter how your environment looks today using Altiris Deployment Solution for Servers.

*To continue to cut costs in IT organizations, the business must invest in automation for highly manual tasks.*

**- Meta Research <sup>2</sup>**

## **AUTOMATED PROVISIONING BENEFITS**

IT organizations are often faced with a dilemma based on two conflicting challenges. How can an organization effectively improve the services they provide and lower the costs at which they provide them within an increasing complex computing environment? When the challenges are not met, the consequences are usually costly and potentially disastrous: labor increases, human errors increase, and ultimately, servers become unavailable.

The answer lies in the effective implementation of standardized processes enforced through the right automation tools. The result is that enterprises can mitigate their exposure to the majority risks involving people, error and vulnerabilities through the right blend of process and tools. IT operations and staff are then empowered to do more than react – they will be increasing agile in responding to projects that really impact and support a thriving business.

### **Improved IT Staff Efficiency**

Managing servers is tedious and time-consuming and, in most organizations, is managed by a small group of key individuals. These people become quickly overworked and lack time to get to other important projects. The solution, according to Gartner, is to work smarter, not harder.

With Altiris Deployment Solution for Servers, you can leverage your highly-trained resources to create deployment jobs that automate and solidify the installation, configuration, and management of server assets. Once corporate standards are set and policies are created, local IT staff can easily implement the server by using images and deployment jobs created by the best and most experienced IT staff members. Or, if local resources cannot take on the roll-out tasks, these servers can be rolled out across the Web, reducing the need for intervention at the local level.

As servers are provisioned, all aspects of the provisioning cycle can be automated – from operating system to application deployment, reducing the time it takes to manage servers and freeing your key assets to work on more important assignments. Software packages can be quickly deployed, software patches can be automatically installed, and server maintenance can be automated.

Once the standard is set, Altiris jobs and tasks allow the same configuration rules to be applied across all servers. This eliminates redundant tasks and the need to deal with individual servers. This makes management across all servers easier and more cost-effective. And it frees your most valuable asset—your highly trained IT staff—to spend their time where they are most needed.

*Server provisioning and configuration management tools can drive efficiencies in staffing, and lead to staff reallocation for the purpose of taking on more strategic and previously unattainable project.*

**- Gartner Group <sup>1</sup>**

## Implementation of Consistent Processes

One of the largest costs that organizations face is dealing with hardware and software conflicts, which cause delays in productivity, as well as an increase in man hours and costs. Often large IT groups face the problem that servers and their configurations vary from group to group and location to location. Servers fall out of synchronization and software updates occur randomly throughout the network.

The most important element to creating a highly available, flexible and efficient server environment is to create a structured server environment. Such an environment reduces complexity and allows the following to occur <sup>5</sup>:

- Rapid provisioning  
*Server deployment is based on repeatable processes.*
- The ability to sustain a high rate of change with low error rates  
*System behavior is testable and predictable.*
- Operational efficiency  
*Systems are understandable to support personnel and amenable to automation.*

*Successful organizations have implemented processes implemented via tools.*

**- Meta Group** <sup>3</sup>

Using automated tools to deploy servers enables IT professionals to create a structured server environment that is built on a set of standards and processes.

With Altiris Deployment Solution for Servers, organizations can create consistency in multiple server environments with features like:

- Install a standard operating system image
- Configure the hardware, storage, and system roles
- Install the applications and appropriate configuration policies
- Consistent server images
- Consistent provisioning tasks
- Perform initial backup of provisioned systems
- Perform quality assurance tests

Servers will be provisioned, deployed, and configured consistently. This, in turn, reduces conflicts and issues on the network. And administrators get one console to easily manage content and configuration across multiple servers in multiple locations further reducing the complexity needed to manage servers in distributed locations.

*Enterprises that are struggling to keep pace with the vast number of patches from operating system vendors and dealing with a multiplatform environment often find that provisioning servers exacerbates their problems, leaving them exposed to security and availability risks.*

**- Gartner Research <sup>4</sup>**

### **Minimized Security Risks**

Organizations often struggle with the high cost of managing large corporate network. However, reliability and security cannot be sacrificed. Security risks can occur through operating system and application configuration errors as well as failed patch updates. The time from when a new vulnerability occurs, to the time it's exploited by intruders can be just a few hours. The window of vulnerability needs to be closed quickly and reliably to minimize damage.

Provisioning can streamline these factors so that deployed systems are already protected when they are added to the network as opposed to reacting afterwards. With Deployment Solution for Servers, configuration settings and patches can be applied as a part of the provisioning process; ensuring that a server is protected before it ever joins a product network. Using Altiris' jobs (or grouping of discreet tasks), you can quickly roll out approved patches, making the organization better prepared to deal with these malicious attacks.

For emergency situations as well as regular preventive care, there is no substitute for an active, aware architecture. Change management, vulnerability closure, and roll-back or recovery/restore processes are more effectively triggered and managed when modules work together in an integrated manner. In addition, to provisioning and patch deployment, Altiris Deployment Solution for servers includes recovery capabilities. Protecting computers with backup eases recovery from outages or virus attacks. Regular snapshots automatically capture changes and secure data. Continuity is ensured and time-consuming reinstallation is avoided.

**ALTIRIS  
DEPLOYMENT  
SOLUTION FOR  
SERVERS**

Altiris Deployment Solution for Servers provides a superior way to provision and maintain all types of network and web servers across your organization. No matter if you have standardized on one hardware vendor and one OS or are running a complex dance of vendors and software, You can provision servers using a graphical interface that allows you to assign and schedule different server provisioning tasks using abstracted jobs, computer groups, scripts and software packages.

**Provisioning Options**

Your deployment model determines the overall architecture and processes that you will use to deploy servers. Factors to consider include whether you will perform scripted or image based installations, the total number of servers to be deployed, and the location of the deployment server components.

Deployment Server provides three basic methods to install and deploy servers using imaging and scripting features.

- **Imaged installation**  
*Servers can be deployed by copying an image from a reference server and imaging it to a selected target server.*
- **Scripted installation over the network**  
*Remote install across the network for both install and answer files, allowing easy set up and installation from network files for each server type.*
- **Scripted installation using imaged operating system files**  
*Use a combination of scripting and imaging features by imaging installation files, copying (or multicasting) the operating system install files image to each server's hard drive, and installing through a script.*

Using one these installation methods, you can establish a reference system that can be used as a template to deploy and configure servers throughout your organization.

By creating a reference server before all the hardware is delivered, you can prepare to automatically install future hardware as it is delivered. The hardware vendor provides a list with the server information for the newly purchased servers. The information is imported into Altiris Deployment Solution for Servers before the hardware arrives. When the servers arrive and are plugged into the network, they are identified based on the MAC address, serial number, or model. Complete configuration can be done from the Deployment Console including preparing a drive and installing the server operating system. All this is accomplished with a simple drag-and-drop process and with no manual

*“Deployment Solution will allow us to reduce the number of man hours needed to deploy and rebuild servers by 75 percent.”*

**Senior Systems  
Engineer  
MSN Operations  
Microsoft Corporation**

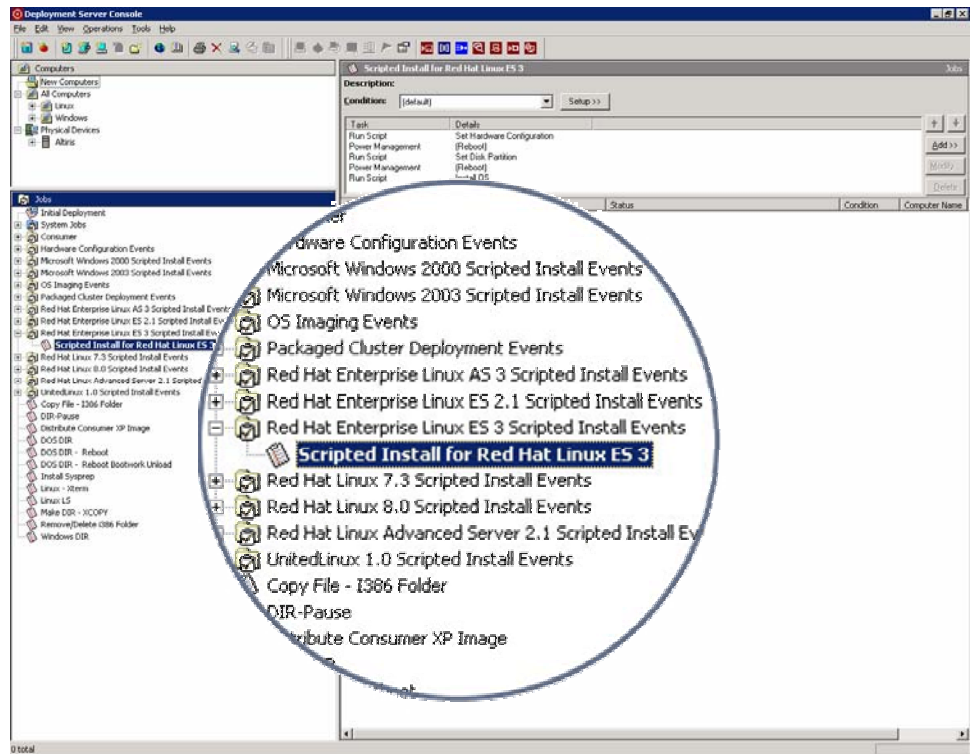
intervention. Jobs are cued up for the servers and run when they are online to get them ready for production.

Creating a reference computer and replicating it to bare metal servers using disk imaging is an easy solution. However, imaging servers may not be the best solution when you support different hardware and software configurations because it requires you to create and manage an image for each different configuration. Deployment Solution for Servers also provides features for a scripted install solution that offers more flexibility by enabling scripts to be customized and allowing the operating system to go through a normal installation, without relying on an operating system image.

Using pre-built jobs that include basic deployment tasks, including scripts and utilities for each server vendor and model, or you can provision servers in a single job or complete each individual task using specific tasks. You can automatically deploy, configure and provision new server blades using a variety of features, including initial deployment, virtual bays, and server deployment rules. When new blades are identified in a bay that has not been used previously (if it has been used previously then the bay object will be identified in the physical view), then both the initial deployment and virtual bays features can be set up to automatically run configuration tasks and deployment jobs.

Figure 1

Console view illustrating preconfigured jobs.



Hardware vendors like HP, Dell, IBM, and Fujitsu Siemens have add-on packs for Altiris Deployment Solution for Servers. The add-on solutions contain pre-configured events and scripts specifically tested for each vendor based on their current hardware and component devices. The additional events and scripts utilize the same Altiris technology and simply extend Altiris' native capabilities. You can manage everything from the same graphical interface. This allows you to set up the RAID configuration, BIOS configuration, and other settings like power management and Wake on LAN cards.

And if you are running both Linux and Windows, you can use the same interface to manage both without leaving your office. If you run a Linux-only shop, Altiris has a Linux-based Deployment Console so you do not need to install a Windows server to manage your servers. No matter how you provision servers, Altiris has solutions to make it less expensive, quicker, and more secure.

### **Network Settings and Application Stack**

Provisioning consists of more than just deploying the operating system. Each server requires specific network, hardware, and user settings that need to be set after the operating system has been installed. Other software and applications must also be installed for the server to work in production. You may need to install monitoring and backup agents and infrastructure software.

Altiris Deployment Solution for Servers allows you to easily install and configure software packages, launch patches, and deploy drivers without having to touch each server individually to do it. Images can include network settings, IP addresses, print drivers, applications, data files, configuration settings of all types, and more. From a Deployment Console, you can also build deployment jobs to run scripted unattended installs that are run directly over the network for individual web or network servers. Answer files can be created and edited from a Deployment Console for each scripted install. You can also execute server-specific scripts and redeployment tasks.

Because Altiris Deployment Solution for Servers uses the flexible design of jobs to complete tasks, you have the flexibility to roll out server tasks to all servers at one time or at various intervals you determine based on organizational needs. Jobs are designed as objects with defined deployment tasks. Jobs can be built, organized, and scheduled to run on selected computers or computer groups from a Deployment Console. Jobs automate both simple and complex IT administrative duties — from complete deployment and migration tasks to simple DOS commands and modification of configuration settings. You can build and schedule jobs from any of the Deployment Consoles. After the image is deployed, the

*“It used to take approximately 250 hours to manually install a hot fix to all of our servers. With Altiris, the same job can be deployed in about two hours and we can schedule numerous servers to deploy at night or over the weekend. The time and money savings seem infinite.”*

**Server Technology  
Engineer  
US Utility Company**

computer can be fully functional and ready for use after post-configuration operations.

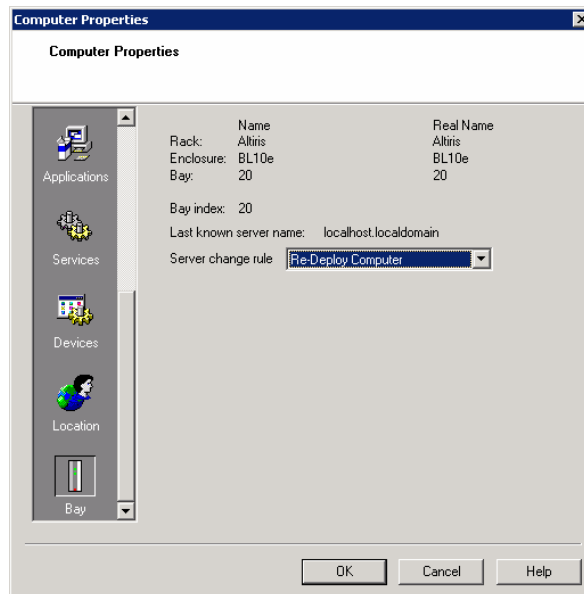
## Recovery

Altiris Deployment Solution for Servers also includes recovery capabilities. From the Deployment Console, you can automatically re-deploy servers that have failed based on a deployment history and saved server images or automated scripted installs—or as a combination strategy (which works very well for managing ultra-dense server farms). The same capabilities used to recover from server failures can also be used for rapid provisioning of new servers.

Enhanced task logging and history tracking features let you recall deployment actions to quickly re-deploy mission-critical servers. If a server goes down, it can be restored remotely using various methods, usually in 20 minutes to an hour from any Web browser in the world.

**Figure 2**

*Console view illustrating Altiris' recovery capabilities when managing blade servers.*



Altiris provides fail-safe features to ensure that no server is mistakenly overwritten and ensures that all disk images, software, data, and patches are applied to the new server from the history of jobs assigned to the previous server blade.

## Blade Management

Altiris Deployment Solution for Servers allows you to manage high-density server blades with Rack/Enclosure/Bay (R/E/B) hardware and properties. From the Deployment Console you can deploy and manage these space-efficient server blades using the physical view to assign

jobs to the rack, enclosure or bay level of the server cluster, or you can manage each server blade directly from the logical view.

In blade technology, new servers are deployed by sliding blades in and out of a chassis. In advanced blade server systems that leverage Altiris Deployment Solutions, the software end of deployment is enhanced to simplify the process of deploying blades. All you need to do is slide a blade into a profiled bay and Altiris Deployment Solution for Servers automatically loads a designated operating system and application image on to the blade. The server is up and running without human intervention. Or keep a hot blade waiting to replace a failing blade. Using Altiris Deployment Solution for Servers alone, the spare blade can replace a failing blade or help handle peak loads.

### **Remote Administration**

Altiris Server Management Suite increases reliability, stability, and resilience through the power to manage both local or remote servers using a streamlined configuration management, application and patch distribution, replication, inventory, scheduling, file clean-up, remote management, and monitoring.

With Altiris Deployment Solution for Servers, you can create consistency in multiple server environments with rules-based deployment, server images, and provisioning jobs and tasks. Servers will be provisioned and configured consistently all from one location and one console. Remote configuration can standardize SID generation, computer naming, licensing, user accounts, Active Directory OU/Domain membership, and TCP/IP configuration. You can deploy and run packages—RIPs, images, personality packages, msi programs, and others—to migrate applications, configure computer settings, deploy complete hard disk images, and much more all from one location.

### **Secure Administration**

Role and scope-based security also allows you to control access to every asset of your management environment. Control tasks that each administrator can perform based on employee role and responsibility. In addition, the scope of management tasks that can be performed on specific computers is likewise centrally governed ensuring complete control of all management tasks within your enterprise.

Role-based administration also accommodates various IT organizational structures and support workflows that are executed by different groups of system owners. No matter what your organizational structure, Role-based administration provides security and control.

## MORE INFORMATION

For more information on Altiris and Deployment Solution for Servers visit the following links

Altiris website: [www.altiris.com](http://www.altiris.com)

Altiris Deployment Solution for Servers:  
<http://www.altiris.com/products/deploymentsol/>

Altiris Deployment Solution Multimedia Demo:  
<http://www.altiris.com/products/deploymentsol/mmdemo/>

Altiris Deployment Solution Data Sheet:  
<http://www.altiris.com/docs/products/DeploySol-6.pdf>

Altiris Server Management Suite:  
<http://www.altiris.com/products/server/>

Network Computing Review:  
<http://www.nwc.com/1320/1320f32.html>

Network Computing Award:  
<http://www.nwc.com/1408/1408wcasec82.html>

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