Solutions for Systems Management

Tools for managing large-scale deployments of Mac computers in Education

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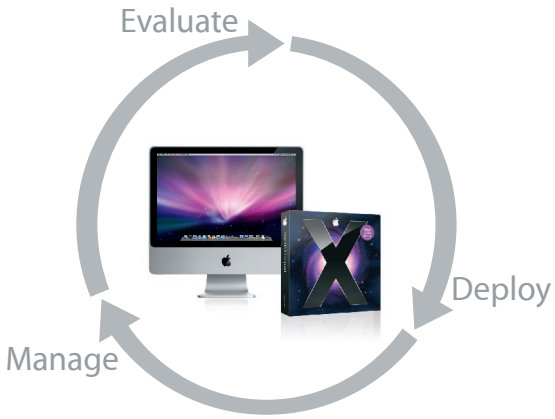
Introduction

As an IT professional at an educational institution, your role in IT and systems management is to design, test, deploy, and manage clients and servers throughout your organization—whether it's a single elementary school or a leading university with campuses around the world. As if that weren't enough of a challenge, the technology solutions you deploy must meet the many (sometimes conflicting) requirements of teachers, students, researchers, and administrators in these institutions.

Systems Management Lifecycle

In order to identify the best possible technology solutions, it's helpful to treat systems management as a continuous process of discovery, adaptation, and maintenance. With iterations typically every school year, this systems management lifecycle involves evaluating current systems, modifying requirements, testing and deploying new systems, and managing those systems as long as they remain in place.



Evaluate
Toward the end of the fall quarter, it's appropriate to determine with teachers and administrators how the entire educational "technology ecosystem" is functioning. Is the current set of hardware and software meeting the needs of faculty and students? Are there technical issues that need to be addressed? This portion of the cycle may take a few weeks or several months. Once the evaluation is complete, it's time to recommend software and hardware additions, replacements, and modifications.

Deploy

The result of the evaluation phase is a technology plan for the following school year. New sets of hardware, software, and management tools are tested and modified as required. This process can run from the end of the fall quarter all the way to spring quarter. After the final configurations are in place, the deployment phase involves extensive testing of the new solutions in a live environment. Many schools begin pilot deployments during spring break and then test until the end of the school year—or even through summer break.

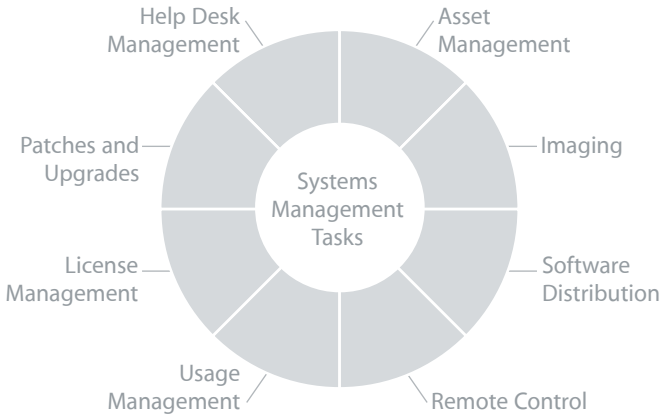
Manage

The management phase begins as soon as deployment is complete and extends throughout the year, overlapping the next iteration of the evaluation and deployment phases.

As the cycle progresses, some steps may iterate within the cycle. For example, images may need to be tested repeatedly, and systems may require occasional updates or repairs.

Systems Management Tasks

The systems management lifecycle is supported by a set of IT tasks that drive the effective management of large deployments, while meeting the requirements of the organization. To maintain control and keep systems up and running, it's critical to have solutions in place to fulfill each task. This guide provides an overview of some of the best IT solutions available today for managing these aspects of large-scale Mac system deployments.



Asset management
What happened to those new cameras? Which systems can be upgraded to Mac OS X version 10.5 Leopard? To maintain control, you must keep track of all the hardware and software your organization has purchased or acquired. To plan upgrades, you need to know, at a glance, which systems have enough RAM. Asset management refers to the knowledge of what's on your systems as well as where it's located.

Imaging
Creating, maintaining, and deploying images is an essential part of systems management. The required number of images depends on many factors, such as portables versus desktops, servers versus clients, basic-use systems versus high-end workstations. It's also essential to have an imaging process in place, starting with the proper configuration of images and extending to a procedure for deploying them—whether manually or automatically, in person or across a network.

Software distribution
Once you have applied the core system images, you may need to customize them with special applications and settings for different sites. Software distribution refers to the addition of capabilities to baseline images.

Remote control
It's often necessary to "reach out and touch" your end users—whether they are teachers in a classroom or support desk staff solving a user issue. Remote control capabilities are key to interacting with users in these scenarios.

Usage management
How do end users interact with their systems? How do you keep systems in shared environments up and running? And how do you provide a consistent user experience that adheres to organizational policies? Usage management combines technology with acceptable use policy and touches workflow management, which provides a mechanism for users to interact with each other in day-to-day operations.

License management
This task includes tracking software use, controlling access to certain applications, and reporting on application misuse. Through license management, you can help ensure that the software on your organization's equipment is legal and is only used by authorized individuals.

Patches and upgrades
Despite your best intentions to deploy the "perfect" image, you need to allow for critical patches and upgrades to current applications on deployed systems.

Help desk management
What issues are coming up? What problems are users having, and how can you help them? Help desk operations involve short-term training, trouble ticket management, and reporting on which systems aren't working properly.

Matching Tasks to Solutions

The Macintosh platform enjoys a variety of powerful yet easy-to-use management solutions. The following pages catalog software solutions for managing Mac computers throughout the systems management lifecycle. The software solutions listed include Apple products and technologies as well as third-party tools designed to operate either in a Mac environment or within a Windows-based infrastructure.

Solution	Asset management	Imaging	Software distribution	Remote control	Usage management	License management	Patches and upgrades	Help desk management
Apple Remote Desktop	•		•	•	•		•	•
Mac OS X Server		•	•		•		•	
Casper Suite	•	•	•	•	•	•	•	•
Deep Freeze Mac					•			
Power Save Mac					•			
Device Filter Mac					•			
FileWave and Asset Trustee	•	•	•		•	•	•	•
Remote Management Console					•			
K2 KeyAuditor and KeyServer	•				•	•		•
LANrev Client Management	•	•	•	•	•	•	•	•
Web Help Desk	•							•
Altiris Total Management Suite	•	•	•				•	•
LANDesk Management Suite	•	•	•	•		•	•	•

Apple Solutions

Apple offers powerful solutions to help you manage and support the Mac users in your organization, covering most of the tasks in the systems lifecycle.

Apple Remote Desktop 3

System requirements
Apple Remote Desktop 3 administrator and client systems run on any Mac with Mac OS X version 10.3.9 or later. Automator actions and the Remote Desktop widget require Mac OS X version 10.4 or later on the administrator system. Remote Spotlight search requires Mac OS X version 10.4 or later on the client system.

For more information, including licensing information, visit www.apple.com/remotedesktop.

Apple Remote Desktop 3 is an integrated desktop management tool that allows system administrators and instructors to perform tasks within three areas: reporting, managing, and interacting. Run the Apple Remote Desktop agent on Mac OS X clients and servers to gather system information and enable client-side interactions, and run the Apple Remote Desktop administrator to create reports and manage and interact with those systems. In addition, a copy of Apple Remote Desktop can be installed on a system as a task server to act as a central database for reports, package installs, and agent information.

Asset management
Using the Spotlight technology in Mac OS X, Apple Remote Desktop can perform detailed searches on all your Mac OS X systems.You can quickly generate comprehensive user histories and application usage reports, as well as hardware and software inventories about servers, desktop systems, and portable computers.

Software distribution
Apple Remote Desktop makes it easy to install or copy software across a network of Mac computers, including remote systems. You can make sure that all systems in your organization are running the most current version of Mac OS X or running the same applications, fonts, and templates. And with the "Send UNIX command" tool, you can interact with the Apple Software Update Server (SUS) to send approved updates to client systems without requiring user response.

Remote control
Apple Remote Desktop allows you to configure systems, run applications, empty the Trash, log out current users, set the startup disk, and lock screens—from anywhere on the network. For complete remote control, you can use Apple Remote Desktop to share, observe, or control any number of remote Mac or Virtual Network Computing (VNC)–enabled computers.

Usage management
Use Apple Remote Desktop to gather information and generate reports so you can see who's logging into client systems and which applications are being run by which users.

Patches and upgrades
With Apple Remote Desktop, you can copy new files, install package (PKG) files, locate and delete old files, and interact with the Software Update Server to update client systems automatically. The task server can act as a "Store and forward" location for PKG files, even while systems are offline.

Help desk management
Since you can use Apple Remote Desktop to observe or control remote Mac or VNC-enabled computers, it's easy to assist and train remote users. Features include easy drag and drop of files, remote copy and paste of text and images, and Curtain Mode for concealing sensitive information from users.

Mac OS X Server

System requirements
Mac server or desktop computer with an Intel, PowerPC G5, or PowerPC G4 (867MHz or faster) processor; 1GB of physical RAM; 20GB of available disk space.

For more information about Mac OS X Server and Apple server solutions, visit www.apple.com/server/macosx.

Mac OS X Server is Apple's fully compliant UNIX server operating system that includes services and applications designed to support many systems lifecycle tasks.

Imaging and software distribution
The NetBoot service in Mac OS X Server enables multiple Mac systems to boot from a single, server-based disk image, instead of from their internal hard drives.

This allows you to create a standard configuration and use it on all of the desktop systems in a department or classroom—or host multiple images customized for different workgroups. You can even create server configurations and run all of your servers from one image. Updating the disk image on the NetBoot server updates all of these systems automatically the next time they restart. In addition, you can copy a directory server configuration to all clients using the same system image. For security-conscious organizations, NetBoot permits Mac computers to boot "disklessly"—without having to read from or write to the computer's local drive.

The NetInstall service provides an easy method for standardized deployment, giving you control over the software installed in your organizations. By creating server-based disk images with custom configurations, you can upgrade or restore Mac clients anywhere on your network—saving time and eliminating the expense of distributing software on DVD or FireWire drives.

The System Image Utility included in Mac OS X Server version 10.5 leverages the power of Automator, giving you an intuitive interface for creating NetBoot and NetInstall disk images. Choose from a preloaded library of actions that allow you to specify settings, additional software packages, and installation procedures—and then save them as a workflow that builds the installation image.

Usage management
Workgroup Manager is a powerful application for centralizing client management, defining administrative policies across users and computers, and facilitating classroom and workgroup collaboration.

Using Workgroup Manager, you can grant access to network services, establish password policies, and create standardized desktop environments. By setting system preferences on a per-user, per-group, or per-computer basis, you can provide a level of flexibility appropriate to your administrative needs. For example, you can create custom environments—with appropriate applications, settings, and permissions—for a workgroup or classroom. When users log in, predefined group applications launch automatically, and shared network resources are mounted on the desktop. The same functionality can be used to restrict operations: For example, you can set preferences that disable media burning or restrict outgoing email traffic or that require authentication for access to specific devices or printers. The preferences and policies you define in Workgroup Manager can be stored in any LDAP directory server—including Apple's Open Directory and proprietary systems such as Microsoft's Active Directory.

Directory-based management simplifies Mac OS X system administration and support while protecting your organization's resources. Use Workgroup Manager to control access to hardware, software, and digital assets, preventing unauthorized or excessive use of valuable resources. For example, you can prevent any user, group, or computer from burning media, copying unauthorized files, or connecting to certain servers. You can set print quotas to restrict the use of expensive printers; control application and device use in classrooms and open-access labs; or require password-protected, authenticated login to special-purpose systems. By enabling login privileges for authorized administrators on a per-server basis, you can even manage administrative access to the servers on your network. With client-side system controls for automatic logout and scheduled restart and shutdown, Workgroup Manager can be used to control systems in computer pools and labs. And because computers are similarly configured across labs, classrooms, or departments, it's easier for you to support large numbers of client systems.

Managed system settings allow users to log in to an environment that's appropriate to their needs and consistent from one computer to the next. For example, you may choose a set of applications and documents that should always be in the Dock for each classroom; or when a kindergarten student logs in, the system can launch Simple Finder. In a lab environment, you can set systems to open Final Cut Studio and mount shared storage volumes when a member of the video editing group logs in to any computer. Users' individual and group settings are immediately in effect, and they have streamlined access to authorized resources—no matter where they log in. Workgroup Manager even allows you to manage policies for notebook computer users. With the portable accounts feature, you can sync their home directories back to a network location for complete mirroring of their documents and data.

With Workgroup Manager, you can help groups work more efficiently by sharing files and folders. Create and designate a folder exclusively for members of a particular group, and add documents and applications of special interest to group members. The group folder can be configured to mount on client systems when group members log in; it can also be set to appear in the user's Dock. Workgroup Manager ensures that all current and future members of a group gain access to assigned applications; users who are removed from the group automatically lose access to group-specific shared folders and resources.

Patches and upgrades

Software Update Server in Mac OS X Server acts as a cache for the official updates posted by Apple for all supported hardware and software. On a large network, one server can be designated as the primary update server, with other servers in outlying areas set to get their updates from the primary. This reduces the overall Internet traffic for systems attempting to locate and obtain Apple software updates.

Software Update Server downloads all, or a designated subset, of the available updates for all Apple computers currently supported, as well as for supported Apple software applications—including Final Cut Studio, iWork, iTunes, and iLife. With the updates on the local server, you can use the Managed Preferences in Workgroup Manager to force local client systems to download the updates over your organization's fast intranet, instead of updating from the Internet. Used in conjunction with Apple Remote Desktop, Software Update Server provides a quick method of displaying available updates and deploying them to hundreds of client systems at the same time.

Third-Party Solutions for Apple Infrastructures

Third-party solutions for Apple work within the Mac OS X and Mac OS X Server infrastructure—although a Windows server may be required for their central databases. While highlighted for their support of Mac OS X clients, these tools may also support Microsoft Windows–based clients.

Casper Suite

By JAMF Software

System requirements
Casper Suite server software requires a Mac or Xserve running Mac OS X Server version 10.4 or later (utilizes Tomcat and MySQL). Client management features require Mac OS X version 10.3 or later. Windows inventory requires Windows NT 4.0 or later; Macintosh inventory requires Mac OS 8.6 or later, or Mac OS X version 10.0 or later.

For more information, visit www.jamfsoftware.com.

The Casper Suite is a set of tools that simplifies several tasks in the systems management lifecycle. Its central component, the JAMF Software Server (JSS), runs on Mac OS X Server to provide a centralized database and storage location for all information and installation sets. The JSS acts as a single point of management, as the other applications in the suite communicate back to it using industry-standard SSL encryption.

Asset management
The Casper Suite provides cross-platform inventory and asset management for Mac OS 8.6 and later, Mac OS X version 10.0 and later, and Microsoft Windows NT 4.0 and later. By collecting hardware and software information—such as MAC address(es), RAM installed, serial numbers, and version numbers—it enables you to easily create reports and plan for upgrades on your network. And thanks to the ability to track the location of assets and tie assets to accounts in a directory service such as Open Directory or Active Directory, it's simple to find computers and peripherals on your network. Casper also tracks purchasing information, making it easier when you need to send hardware in for repairs—or to plan which computers should be replaced.

All inventory reports can be created from a standard web browser and can easily be exported to Microsoft Excel. Purchasing information, as well as facilitating service incidents, requesting repairs, or checking statuses, can also be accessed from Apple Global Service Exchange (GSX) for customers with service contracts.

Imaging

The Casper Suite uses a package-based approach to imaging. Most organizations need multiple images to meet varying requirements, such as the differences between portables and desktops or among departments that require specific sets of software. Using Casper's package-based approach, you can maintain one copy of each application and assign packages to images. Once your packages have been created, modifying images is as simple as modifying a playlist in iTunes.

Casper also allows you to perform many common postfixes automatically. Printers can be dynamically deployed at imaging time. Local accounts can be created ahead of time, and binding to Active Directory is completely automated. Other common tasks—such as setting a manual IP address, setting the four custom info fields for Apple Remote

Desktop, and setting the Open Firmware password—are also built into the interface. For lab environments, the imaging process can be completely automated, allowing you to reimage entire computer labs with no interaction.

Software distribution
Creating packages for distribution is simple with the Composer tool. Composer takes a snapshot of your boot drive and asks you to install and configure your software. Once the software is installed, Composer takes a second snapshot and finds all of the changes for you. The packages can be easily modified before completion and can be saved as a DMG package or in the standard PKG format.

The Casper Suite offers a choice of models for remote software deployment. You can use the Casper Remote application to initiate distribution to clients that are currently on the network. You can also use the Policy framework to set up distribution from a web browser: Clients will initiate the action when they are on the network or according to a set schedule. As a third option, you can allow users to install their own software using the Self Service application. All three deployment mechanisms pull the packages from one or more distribution points (AFP, SMB, or HTTP), allowing you to reduce network traffic between geographic locations.

Remote control
CasperVNC is a secure solution for remote screen control. Since the VNC connection is tunneled through SSH, no client software needs be installed. Casper starts the VNC server on the client only when you control or observe the computer. As soon as the VNC connection is closed, the VNC server stops running—removing the security risk of most VNC implementations in which the VNC server runs continuously in the background on the client.

All VNC connections are centrally authenticated back to the central JSS, where a permanent log of the event is stored. For finer grained control, the Casper Suite can enforce multiple access levels, for example, requiring some administrators to utilize a knock-knock feature when attempting to control the end user's screen.

Usage management
The Casper Suite helps ensure that all users across your network have consistent work environments. Casper's Fill User Template and Fill Existing Users options allow you to dynamically populate application-specific preferences to all users across the network. Casper's Restricted Software also allows you to restrict access to specific titles of software so that unauthorized software is not run on your network.

For compliance purposes, the Casper Suite can assist by centrally tracking login and logout events across your network. Casper's Policy engine can also be used to change local account passwords on a set schedule. Power Management can be enforced using a combination of Casper's Policy engine and JAMF Software's Resource Kit.

License management
Casper's inventory system allows you to generate reports that show the number of copies of any software installed on your network. You can also blacklist unwanted applications from your network: If a specific application is found, Casper can prohibit it from running, delete it automatically from the computer, and/or send you an email notification of the violation.

Patches and upgrades
In addition to deploying upgrade packages, the Casper Suite integrates with the Software Update Server in Mac OS X Server, allowing you to host one or more Software Update Servers on your network, while the JSS maintains records of the updates. Using the Casper application or the Policy framework, you can force client computers to update from the closest server on the network and to install all available updates

from the internal servers—whether on demand or according to a set schedule. End users do not need to be involved in the process, and reboots are handled flexibly and automatically. If you prefer to give users more control, you can allow them to trigger updates using the Self Service application.

Deep Freeze Mac

By Faronics

System requirements
Deep Freeze Mac requires a Mac with a PowerPC G3 or later or an Intel processor, with at least 256MB of RAM and running Mac OS X version 10.3 or later. Apple Remote Desktop integration requires Apple Remote Desktop version 2.2 or later.

For more information, visit www.faronics.com/mac.

Deep Freeze Mac allows you to maintain protected, or "frozen," local systems. Any changes to a frozen system, including installation or removal of software and changes to application preferences, are temporary for the working session. Upon restart, changes are eradicated, ensuring that the standard system configuration is available for each new user. This eliminates the need to perform rebuilds or to reimage or troubleshoot computers, resulting in an increase in system uptime. Deep Freeze Mac also integrates with Apple Remote Desktop for enterprise control and management and offers command-line control for integration with other management tools.

Usage management
Deep Freeze Mac ensures that end users have a consistent, unrestricted work environment that stays up and running with no software-related difficulties. If you need to add applications, update software, or perform system work on a frozen computer, you can "thaw" the Mac, apply changes, and refreeze the Mac to incorporate changes into the standard configuration. Alternatively, updates may be performed as a scheduled maintenance, in which Deep Freeze Mac automatically thaws, applies Apple software updates, and refreezes when complete.

Deep Freeze Mac also permits integrated user data mapping. Data such as documents, pictures, and bookmarks can be stored in an unfrozen area of the drive and remain in effect across sessions and restarts.

Power Save Mac

By Faronics

System requirements
Power Save Mac requires a Mac with a PowerPC G3 or later or an Intel processor, with at least 256MB of RAM and running Mac OS X version 10.3 or later. Apple Remote Desktop integration requires Apple Remote Desktop version 2.2 or later.

For more information, visit www.faronics.com/mac.

Power Save Mac is an energy management utility that takes into account CPU, disk, keyboard, mouse, and application activity before implementing power management actions. And with built-in reporting, you can see exactly how much energy (and how much money) has been saved through energy management. Power Save Mac also features integration with Apple Remote Desktop for enterprise control—with command-line control for integration with other management tools—as well as flexible policy scheduling and idle threshold customization.

Usage management
Power Save Mac extends the power savings capabilities built into every Mac system. It allows implementation of workstation energy management without disrupting existing IT routines or impacting critical user applications or data. For example, Power Save Mac won't shut down computers if background jobs such as VPN, remote access, or remote backup are running. You can also set applications and CPU and Disk Utilization features so that systems are not powered down when you or your users do not want them to be. Power Save Mac also supports Standby (recommended) and Hibernate power modes to help ensure that any unsaved user data is not lost in the event of shutdown.

Power Save Mac generates accurate reports detailed by computer and monitor that show the incremental savings—in both kilowatt hours and dollars—gained through the use of Power Save Mac. This data can be exported to any other reporting tool for additional analysis.

Device Filter Mac

By Faronics

System requirements
Device Filter Mac requires a Mac with a PowerPC G3 or later or an Intel processor, with at least 256MB of RAM and running Mac OS X version 10.3 or later. Apple Remote Desktop integration requires Apple Remote Desktop version 2.2 or later.

For more information, visit www.faronics.com/mac

Device Filter Mac enables you to prevent users from connecting unauthorized peripherals to Mac computers—which, in turn, prevents unauthorized data transfers. Thanks to integration with Apple Remote Desktop, you can deploy a customized device connectivity configuration package to multiple computers.

Usage management
Device Filter Mac prevents data theft and software uploads over unauthorized peripherals, which may include iPods, USB drives, or Bluetooth® devices. Any attempt to connect an unauthorized device will be denied and recorded in the system logs, enabling you to identify the user involved in the intrusion. Device Filter Mac balances security with flexibility. For example, you can authorize devices on a permanent, temporary, or one-time-only basis so that users can open or save their work using a portable device, if needed.

FileWave and Asset Trustee

By FileWave (USA), Inc.

System requirements
FileWave requires Mac OS X version 10.3.9 or later or Windows 2003 or later. The client installs on all currently supported Mac OS X, Windows, and Linux systems.

For more information, visit www.filewave.com.

FileWave is an automated cross-platform solution for installing, configuring, and managing new software and patches across large deployments of Mac, Windows, and Linux systems.

The FileWave XServer acts as the central repository for file and application packages, or FileSets, to be distributed to client systems. To create a FileSet, use the FileSet Magic application or simply drag and drop a folder, application bundle, PKG installer, or MSI Installer. The FileWave XServer connects to FileWave Clients, which may be organized into groups of clients with similar attributes, such as a department or computer type. You can also create a group by querying the Asset Trustee Inventory database, using live system information—such as disk space, total memory, or operating system version—to define the group. The FileWave Client will download, activate, deactivate, and delete software deliveries at specified dates and times.

Asset management
Asset Trustee automatically scans the network and gathers details about installed applications, patches, application usage, and hardware configurations from 10 to 10,000 Macintosh and Windows-based computers—and imports them into the Asset Trustee Inventory database at scheduled times. This allows you to run reports without crawling through the network to search for information. Thanks to support for industry-standard formats, data can be exported for analysis using other products.

The central repository features an innovative, easy-to-use browser interface for accessing information, facilitating asset management and calculation.

Imaging
FileWave allows you to create FileSets of specific application bundles for deployment. Simply start with an image based on a core operating system configuration and build it out with designated FileSets for different operational or educational needs.

License management
By providing the exact number of applications in use, Asset Trustee Inventory can quickly determine if your site is legally compliant with software licensing.

Patches and upgrades
Schedule an update during nonpeak network traffic times. If the upgrade does not perform to expectations, roll back the software to the prior version by reactivating the deactivated FileSet and deactivating the faulty upgrade. When deactivated files are no longer needed, schedule a time for the files to be deleted from the client computers.

The FileWave Client can be totally customized to meet your requirements, whether you are running your software distribution on a gigabit network or via a wireless network. If a download is interrupted, the Client resumes exactly where it left off. If there's a problem with a file, the Client automatically downloads just the missing file, known as "self-healing."

Remote Management Console

By Intego

System requirements
Remote Management Console Admin requires Mac OS X version 10.4.11 or later. Remote Management Console Client requires Mac OS X version 10.3.9 or later.

For more information, visit www.intego.com.

Remote Management Console allows you to manage Intego Internet security software on multiple Macintosh computers. Create and load settings files, configure individual settings and functions, and make changes to Intego programs on all managed computers quickly and easily—whether for individual users or groups. You can apply the same settings to all users or apply templates with preset configurations to specific users and groups.

Usage management
Remote Management Console connects to client computers over a local network via Bonjour—or over the Internet through a VPN or by entering an IP address. Using the same interface as Intego security products, Remote Management Console shows system and hardware information for client computers. View the current settings for client computers and change the configuration and preferences for the following programs: NetBarrier X4; VirusBarrier X, X4, and X5; ContentBarrier X4; Personal Backup X4; Personal Antispam X4; and Intego NetUpdate.

Presets allow the same settings to be easily applied to multiple Mac computers, while the Groups function allows security policies to be applied across computers. Integrated logs record all activity.

K2 KeyAuditor and KeyServer

By Sassafras Software

System requirements
Requirements for KeyAuditor and KeyServer and for K2 client access are available on the Sassafras website.

For more information, visit www.sassafras.com.

K2 is a cross-platform solution for managing software license entitlements throughout an enterprise. For each computer, K2 displays a hardware profile with a complete audit of installed software available in detailed or summary formats. K2 also tracks and reports on software usage. It can be configured to control access or enforce compliance with software licenses based on computer ID, user account, network location, organizational division, concurrent usage limits, and other criteria.

K2's comprehensive reports provide a complete software usage history for each client computer, while summary reports and histograms show trends and usage patterns across the enterprise and its divisions. Customizable report modules provide an integrated view of software and hardware asset allocation, software usage, and license compliance for Windows, Mac, Linux, and virtual computers.

The Web Reports component of K2 supports an RSS feed for delivering HTML-formatted reports. Customizable report templates can be scheduled for periodic execution. The web service maintains an archive of previous reports, which are organized by thread to give an intuitive overview of how usage and deployment are evolving over the hardware and software lifecycle. This same archive of reports is available directly from the K2 administrative interface, providing instant access to derivative reports that explore related data and to associated configuration options.

Asset management
KeyAuditor, K2's auditing service, integrates enterprisewide software and computer hardware audits with KeyServer's software license management service. Using a transparent, auto-discovery protocol, KeyAuditor runs periodic incremental, or on-demand, audits to automatically keep information current for desktop and portable computers. KeyAuditor can identify more than 200,000 Mac and Windows software applications, while hardware audits provide details about operating system revision, computer configuration, computer asset tag, and location data.

Usage management
K2 can be configured to control, log, or ignore software usage for each software application and each version. It can optionally permit or deny access to software applications—or reserve access for specific users, groups, or divisions at scheduled times.

License management
KeyServer allows you to centralize software license management. The intuitive administrative interface permits management of one or more licensing policies for each program, application suite, or software version. K2 then tracks deployment and usage across your site. An enforcement option automatically manages license compliance for single-computer (node-locked) licenses, concurrent-use (floating) licenses, or custom licensing policies. K2 quickly reclaims and redeploys abandoned software license entitlements without the overhead of reimaging client computers.

Help desk management
With K2, you can quickly get an overview of operating system patch level and installed application software on both troublesome and healthy computers. This information, coupled with recent application usage data, can often provide valuable insight when you are troubleshooting systems. Using its ODBC interface, K2 easily links its own internal audit, license, and usage data with help desk tools, custom report-generation tools, purchasing systems, and other IT management systems.

LANrev Client Management

By LANrev LP

System requirements
LANrev Admin and LANrev Server require Mac OS X version 10.3 or later, or Windows 2000 with Service Pack 4 or later. LANrev Agent requires Mac OS X version 10.2.8 or later, or Windows 2000 with Service Pack 4 or later.

For more information, visit www.lanrev.com.

LANrev client management suite provides comprehensive cross-platform tools for managing Mac OS X and Windows clients throughout the lifecycle. With LANrev Admin, LANrev Server, and LANrev Agent, you can administer an entire homogeneous network from a Mac and stage software deployments from Mac or Windows servers. LANrev offers tremendous scalability: It operates with equal efficiency as a single-server deployment or in a distributed architecture managing thousands of clients in multiple locations across a large enterprise.

Asset management
Track hundreds of details about the clients and servers throughout your network, as well as information about connected PCI, ATA, USB, and FireWire devices. Thanks to script support, you can add custom items, even if LANrev doesn't have a built-in information item for them. For all items, you can collect real-time updates or comprehensive periodic inventories and create customized reports using a simple drag-and-drop interface.

Imaging
LANrev ImageLive enables the deployment of a complete disk image to any managed computer, even while it is being used. Upon restart, end users can find a new operating system, or a clean image of the existing system, with no interruption in productivity or uptime. ImageLive also allows you to edit disk images that have already been created.

Software distribution
LANrev determines the hardware and operating system compatibility of the clients on your network, and it can deploy virtually any Macintosh or Windows installation package, including MSI, EXE, PKG, MSP, and others, as well as VISE and DMG installers. LANrev Throttle Control promotes maximum bandwidth efficiency, and real-time summary reports audit the deployment results.

Remote control
LANrev fully integrates with Apple Remote Desktop 3, Mac OS X Screen Sharing, Timbuktu Pro, VNC, Microsoft Remote Desktop, and PCAnywhere. Any of these remote control sessions can be initiated from the LANrev console.

Usage management
Track the usage of individual users, and deploy—and customize—assets based on their specific needs.

License management
With LANrev tracking tools, you can keep track of installed software, application usage, and authorized licenses—whether they are per-seat or concurrent—and remove unlicensed and/or unauthorized applications. For supported applications, you can track installation date, activation, serial number, and license information.

Patches and upgrades
LANrev determines what patches and upgrades are needed on both Mac OS X and Windows clients—and installs them centrally and automatically.

Help desk management
LANrev's ODBC interface links audit information with purchasing systems, help desk tools, and other IT management systems.

Direct integration with Web Help Desk enables technicians working on a Web Help Desk ticket to access all hardware and software information via LANrev. And by using the integrated remote control systems—for example, Mac OS X Screen Sharing or VNC—to observe or control remote Mac or VNC-enabled computers, it's easy to assist and train remote users.

Web Help Desk

By MacsDesign Studio

System requirements
Web Help Desk requires a Mac running Mac OS X version 10.4 or later (for SQL database). Client can run any current browser on Mac OS X, Windows, or Linux.

For more information, visit www.webhelpdesk.com.

Web Help Desk provides a dedicated help desk management system to dynamically route, track, and fulfill technical support requests and nontechnical work orders. Remote access is available via a web browser from any Internet-connected computer.

Asset management
In addition to the current Asset Manager, Web Help Desk v9 integrates with Apple Remote Desktop 3 and LANrev. In addition, a new plug-in architecture permits integration with third-party asset discovery tools, including those with a nonproprietary relational-database back end, such as JAMF Software's Casper Suite and FileWave's Asset Trustee.

Remote Control
Web Help Desk fully integrates with Apple Remote Desktop 3, Mac OS X Screen Sharing, and LANrev's remote control integration. Remote control sessions can be initiated directly through links in the Web Help Desk browser.

Help desk management
Job prioritization—Web Help Desk uses intelligent business logic to match a new ticket to the "right" technician, based on location, problem type, and load balancing.

You can group locations to centrally manage and track requests from separate entities in your organization. Jobs can also be assigned to a pool, so your technicians can select jobs as they become available.

Search—Efficiently track your clients, tickets, assets, purchase orders, and FAQs with Web Help Desk's built-in search functionality. You can also save queries to make it easy to find relevant information in the future.

iCal integration—Monitor your ticket due dates and scheduled work hours using iCal in Mac OS X or Mozilla.org's Calendar application for Windows and Linux. Complete ticket information is entered in the notes field of each event. To stay informed, you can subscribe to the calendar of any technician, tech group, or saved query.

Billing, invoicing, and reporting—Track labor and travel time, and then generate instant PDF quotes or invoices, which can be downloaded from the web by designated users. View your billing status in real time with powerful reporting options, or download report results as Excel files for further manipulation.

Email-based reporting and updating—Web Help Desk sets up and monitors a dedicated help desk email account. Whenever a user sends a new message to the help desk address, a ticket is generated automatically. Users may also update or cancel their requests via email.

Email alerts—Web Help Desk keeps your technicians and users up to date by emailing new tickets and ticket updates to the appropriate recipients. Email can also alert technicians when jobs are left unchecked for a specified length of time.

Asset tracking—Use Web Help Desk to manage hardware, software, and the users to which they're assigned. Define asset types, status, locations, manufacturers, and models, and specify parent/child relationships to simplify tracking. And when you enter purchase information for your assets, Web Help Desk can calculate warranty and lease end dates.

FAQ knowledge base—Built-in knowledge base functionality makes it easy to create a searchable database of common requests and their resolutions—available for viewing and editing by clients, technicians, and administrators. You can also attach files to your FAQs to share even more knowledge.

Performance reports—With Web Help Desk's graphic reporting tools, you'll always know how your technicians are performing, which locations are in need of extra assistance, and what problem types are causing the most trouble.

Database back end—With its integrated FrontBase server for Mac OS X and Windows, Web Help Desk ensures that all your information is safely stored in a relational database, providing a robust back end to handle your growing needs. Also supported are OpenBase, Microsoft SQL Server, MySQL, and Oracle.

LDAP support—Use your LDAP directory with Web Help Desk to authenticate users and look up their contact information. With built-in connectivity for traditional LDAP directories and Microsoft's Active Directory, Web Help Desk seamlessly integrates with your company's IT infrastructure.

Cross-platform Java™ technology—Web Help Desk uses Java technology to provide a flexible and extensible architecture. Because Web Help Desk is written in Java, it can run on any server with Java 2 SE installed. Supported platforms include Mac OS X Server, Windows Server, Linux, and Sun Solaris.

PDF file generation and tab-delimited text generation—Web Help Desk integrates real-time PDF file generation to make printing job lists and asset reports a seamless experience. Reports can also be downloaded as tab-delimited text files, for easy manipulation using a spreadsheet or other analytical tool.

Third-Party Solutions for Windows Infrastructures

This section includes systems management solutions that run on Windows servers and administration systems, supporting both Mac OS X clients and Windows-based systems.

Altiris Total Management Suite from Symantec

By Symantec Corporation

This solution suite addresses the entire systems management lifecycle, including Client Management Suite, Server Management Suite, Asset Management Suite, and Total Management Suite. At the heart of the Altiris suite and architecture is Notification Server, the database for management operations. Altiris Agents communicate with the Notification Server via HTTP(S) over a web-based administrative console. Using client pull methods rather than server push methods, the Notification Server delivers XML policy files for client configuration, loads inventory and event data into its database, and executes various scheduled tasks—including internal operations such as validating packages or updating dynamic collections.

System requirements
Notification Server requires Microsoft Windows Server 2003 with Service Pack 1 or 4, Microsoft SQL Server 2000 with Service Pack 3 or later, and Microsoft .NET Framework 1.1.

Altiris Agent for Mac, Software Delivery Solution for Mac, and Inventory Solution for Mac require Mac OS X version 10.2.8 or later. An older Inventory Agent supporting Mac OS 8.6 and later is available to gather a limited set of data from older systems.

For more information, visit www.altiris.com.

Asset management
Altiris Inventory Solution for Mac gathers information about hardware (serial number, configuration details, available disk space, and memory), software, peripherals, operating system, and users and sends it to the Notification Server for upload to the database. You can also use the Inventory Solution to track leases and licenses, map associated resources—such as a user to a department or building—and link the data with electronically collected data in the inventory. Barcode functionality allows you to scan and track equipment that's not on the network, such as projectors and cameras.

Altiris has developed "connectors" to integrate these solutions with solutions from other vendors, including HP OpenView, Microsoft SMS 2003, PeopleSoft, and Remedy. Also available is a generic Connector Solution that accommodates data mapping and imports from a wide variety of data sources, such as Excel spreadsheets, CSV files, or ODBC sources.

Imaging
Altiris Deployment Solution allows you to quickly install operating systems and software. To provide extensive management capabilities, it leverages these Altiris technologies: Imaging (requires Mac OS X Server version 10.4 or later), Get Inventory, Modify Configuration, Deploy New Software, Run Script (Bash, Shell, Perl, Python, and so on), and Power Control.

Software distribution
The Altiris Software Delivery Solution for Mac leverages the Altiris Agent, which can download packages via HTTP directly from the Notification Server or from an Altiris Package Server. Standard Altiris Agents may be promoted to Package Servers to handle volume or to keep the package cache closer to the managed agents, allowing data to

traverse slow WAN links only once. Specifically designed for large packages and bad links (for example, when a laptop is closed), Altiris architecture provides checkpoint recovery to help ensure that minimal data will ever need to be retransmitted. Robust scheduling allows you to specify when software delivery and downloads will execute—as soon as possible, only at a scheduled time, as soon as possible after a scheduled time, only when the user is logged in, and so forth—and to define blackout periods.

Patches and upgrades
Altiris Inventory and Software Delivery solutions work together to facilitate updates on Mac OS X systems. The Inventory Solution can discover a list of required system updates, which provides an easy collection target for the Software Delivery Solution—though the administrator must download the updates manually. The Inventory Solution also reports back details concerning all the files in /Library/Receipts, so you'll always know which patches have been installed on which systems.

Help desk management
Altiris includes a Helpdesk Solution that leverages system data to automate and streamline IT processes.

LANDesk Management Suite

By LANDesk, An Avocent Company

System requirements
LANDesk requires a core server running Windows 2000/2003 Server. The management console is a Win32 application supplemented by a web-based console that runs on Safari or Mozilla based browsers. Supported client platforms include Mac OS 9.2.2, Mac OS X version 10.2 or later, Windows 95B or later, Linux, and UNIX, as well as operating systems for thin clients and PDAs.

For more information, visit www.landesk.com.

The LANDesk solution integrates LANDesk Management Suite, LANDesk Security Suite, and LANDesk Service Desk for complete configuration and security management of desktops, servers, and mobile devices in complex cross-platform environments—all from a unified management console. Additional products and services are available to extend non-IT asset management (LANDesk Asset Manager) and automate IT and business processes (LANDesk Process Manager).

Asset management
An inventory scanner analyzes and reports on the hardware and software attributes of each managed computer in your organization. To help with auditing, license monitoring, targeting, and configuration management, it can discover installed applications, copied applications, fonts, utilities, and individual files, with features to specifically identify and catalog media files (MP3, M4P, MOV, and so on).

LANDesk Asset Manager extends your asset management capabilities by relating computers and software to noncomputer assets, such as contracts, service agreements, cell phones, monitors, and desks. This facilitates asset lifecycle management, hardware and software purchase planning, and aggregated asset management. Full integration with LANDesk management solutions gives you access to hardware and software inventory, license monitoring, and configuration data.

Imaging
LANDesk leverages NetBoot in Mac OS X Server to distribute images to managed computers on the network. The next major release will feature a full Provisioning engine that enables the installation of operating systems, applications, security software, patches, and configuration elements as scriptable elements that can be combined in a single, extended operation. Any standard configuration can form the baseline for desired state management.

Software distribution
Use the LANDesk console to distribute and execute installers, executables, batch files, shell scripts, or other client-executable packages. Package definition is separated from delivery methodology to enable a more modular approach. A task scheduler controls when packages are distributed and how failure conditions are handled. Full bandwidth throttling and checkpoint restart are supported for all distributions.

Software distribution jobs can be defined as hard push, policy-assisted push (using an application policy to help ensure a hard push), required policy (fulfilled automatically at the client's next policy check), or optional policy (client can select from a list of applications).

LANDesk software distribution features patented LANDesk Targeted Multicast (TMC) technology that enables a managed computer on a local subnet to function as a multicast subnet representative. This representative does an HTTP pull of a package and then implements a multicast broadcast on the local subnet—eliminating the router reconfiguration and the performance and security issues inherent in traditional multicast scenarios. In conjunction with local package caching through Peer Download (a derivative technology), TMC enables managed computers to pull packages from the TMC cache of a local computer for policy fulfillment, largely eliminating the need for dedicated package servers on the subnet.

Remote control
Remote problem resolution from the LANDesk console is easy thanks to full remote direction of keyboard, video, and mouse—along with chat, file transfer, remote execute, and remote power control. Integrated, certificate-based authentication promotes security, and remote control activities are logged for easy auditing.

License management
LANDesk helps you manage and audit software licenses by fully monitoring application usage—such as number of launches, last launch, and total time active—in conjunction with application blocking and license definition tools. Both discovered applications and custom application definitions are supported.

Patches and upgrades
A vulnerability scanner identifies patch or configuration vulnerabilities based on user-definable rules (LANDesk Management Suite, LANDesk Security Suite) or predefined content provided by LANDesk (Security Suite). This enables you to centrally manage patches and updates to application, operating system, and security software, as well as firewall, AV/security settings, and desired state configurations.

Help desk management
LANDesk Service Desk provides full help desk capability, including incident handling, asset tracking, problem identification and resolution, change management, escalation, and service-level management. Tight integration with LANDesk Management Suite enables technicians to access inventory, configuration, and remote problem resolution tools to quickly address and close incidents. Full reporting and tracking are included.

LANDesk Service Desk was developed with service delivery frameworks such as ITIL in mind, and it specifically supports the ITIL Incident, Problem, and Change disciplines.

For More Information

To find out more about Mac OS X, visit www.apple.com/macosx.

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