# Ximian Report
# Linux Software Management
# 2003

# Ximian

Ximian is the leading provider of desktop and server solutions enabling enterprise Linux adoption. Ximian products, in use by over 1,000,000 people worldwide, provide the interoperability, management functionality and ease of use required to integrate Linux users and systems into mixed corporate computing environments. Ximian offers both a complete Linux desktop environment and productivity application suite and enterprise software management solutions to dramatically reduce the cost of deploying and maintaining Linux systems. Ximian founders are pioneers of the open source GNOME and Mono projects. The company has secured funding from leading venture firms Charles River Ventures and Battery Ventures. It can be reached at www.ximian.com.

Ximian is a major contributor to the GNOME project, the world's most popular open-source graphical desktop environment for Linux and UNIX systems. Ximian also leads the Mono project, a ground-breaking open source community effort to implement the Microsoft .NET development framework as a set of open source tools.

## Ximian Reports

Ximian Reports are technology briefs on key issues affecting enterprise Linux adoption designed for customers and corporate evaluators. They summarize the latest market research, feature user anecdotes and include the latest findings of Ximian-sponsored studies.  As appropriate, the reports discuss technical alternatives and solutions that Ximian believes will faciliate enterprise-wide deployment of Linux for both servers and workstations.

## Contacting Ximian

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| Ximian, Inc. | 401 Park Drive, 3 West<br>Boston, MA 02215<br>phone: 617-375-3800<br>fax: 617-236-8630 |
| Business Development | partners@ximian.com |
| Sales: | sales@ximian.com |

# Ximian Report: Linux Software Management 2003

# Executive Summary

Linux servers and workstations are making more and more inroads into corporate computing environments – recent International Data Corp (IDC) research indicates that over 27% of corporate servers run Linux and that the number of Linux desktops grew to reach 6.6 million at the end of 2002. By 2006, the world wide installed base of Linux servers is expected to exceed 10 million and the number of Linux desktops will reach 28 million. Already, in many organizations, the Linux has reached critical mass, finding applications in web servers, print, file and database servers, on technical desktops, and increasingly, on traditionally non-technical desktops.

As organizations turn to Linux to take advantage of its power, flexibility, and open source model, they face significant new software management challenges. Linux operating systems and applications, unlike typical closed source operating systems and applications, are constantly being refined and updated by vendors. OS updates, for example, are available weekly from most vendors, and some application developers deliver bug fixes for packages daily. The decentralized model for software development is one of Linux's key strengths, however, that benefit comes at a cost. Ximian research has shown that some Linux users are spending 5-10 hours per week manually updating and maintaining systems.

To take advantage of all the Linux deployments have to offer in a time- and cost-effective way, system administrators and IT managers need to acquire tools and develop procedures and policies for Linux software updating and version management. Within some organizations, the acute need for solutions has driven the internal development of a variety of ad hoc solutions, but although these solutions that satisfy the short-term needs for software management, they lack the scalability required to become an organizational solution.

## Manual solutions are inadequate, script-based solutions cumbersome.

Many administrators attempt to manage internal software updates manually, by combing newsgroups and ftp servers for software revisions, and sending emails to their clients when software is updated, or posting information on an intranet/web site and hoping that people check it. Sometimes administrators must resort to distributing files internally or even manually configuring machines. Not only are these methods of installation time-consuming, they may promote invisibility to management tools built into the operating systems. Other "home grown" solutions, such as scripts and software used to solve distribution problems, may satisfy the needs of the organization, but at the expense of dedicated resources to maintain and improve the system as requirements change over time. In almost all cases, internally developed solutions cannot scale to meet the needs of the enterprise.

## Customized Solutions are Expensive and Impractical

Single vendor updating solutions can be modified to meet basic corporate requirements, for example, distributing internally developed or customized versions of software packages. These customizations require costly and time-consuming professional services engagements. Once in place, a customized solution is little better than a homegrown solution – the expertise to further customize the solution resides with the third-party consultants, so further refinements come at a very high cost.

In each of these scenarios, valuable resources are derailed from the more important function of moving the business forward into the maintenance of basic infrastructure. What is needed is an automated solution for server and workstations software updating and version management that combines cross-platform flexibility with a scalable, secure architecture. The system would need to provide maximum security for the Enterprise deploying it. Such a system would replace inefficiency with productivity for technology-savvy organizations that are deploying Linux for their servers and workstations.

## Red Carpet Enterprise: Secure, Automated and Scalable

Red Carpet Enterprise™, part of the Ximian™ family of Red Carpet™ products and services, is an automated, scalable solution that eliminates one of the most difficult and costly challenges facing administrators, deploying and maintaining Linux software standards across hundreds or thousands of company workstations and servers. It provides administrators with a secure, customizable software management solution that provides automated software dependency and conflict resolution for systems performing RPM (Red Hat Package manager) or dpkg (Debian package) software updates. Red Carpet Enterprise is the only commercially available solution that simultaneously supports systems running a wide range of Linux distributions. For organizations running Red Hat Linux, including Red Hat Advanced Server, or any of the other leading Linux distributions, including SuSE, Mandrake, Debian and more, Red Carpet Enterprise is the best, most scalable and most cost effective software management solution.

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**KEY EVALUATION CONSIDERATIONS**

- **Do your security needs require that the solution be deployed entirely within your corporate firewall?**

- **Will the solution support servers and workstations running multiple distributions, for example, Red Hat, Mandrake and SuSE?**

- **Does the solution support the distribution of packages that have been developed or customized internally?**

- **Does the solution scale to meet the needs of your current and planned deployment?**

- **Does the solution require additional software, for example an Oracle database license, to run?**

- **What are the actual costs of implementing the solution -- including professional services engagements, software licenses and resources?**

- **How easily is the solution customized to meet your specific needs?**

Red Carpet Enterprise is deployed inside a corporation's firewall, so it is a completely secure solution. With Red Carpet Enterprise, administrators set up and maintain groups of desktop and/or server systems to receive software Linux packages and updates. Software is organized into easy-to-understand channels, and a simple subscription metaphor is used to ensure that the right groups get access to the right software. In addition, Red Carpet Enterprise supports the distribution of internally developed or customized applications to their users. Both an elegant web UI and a powerful command line interface ensure that administration happens quickly and efficiently.

Red Carpet Enterprise uses proven Red Carpet technology to manage software updates on servers and workstations. When operating system updates or new versions of software are distributed, all potential dependencies and conflicts are analyzed and resolved. Red Carpet Enterprise ensures that systems keep working through the update process, securely and safely. The scalable architecture makes it easy to automate software management on hundreds or thousands of systems. For example, dependency detection and conflict management is performed on the servers and workstations being updated, not on a single central server, ensuring that updates occur smoothly, even during periods of heavy demand.

## A Powerful, Centralized Solution for Workgroups and Corporations

With Red Carpet Enterprise, administrators use a single, powerful solution to automatically deliver and update packages across their organizations.

- Behind-the-firewall architecture for maximum security and flexibility
- Centralized administration
- Easy to use graphical interface and scriptable command-line interface for power users
- Support for internally developed or customized applications
- Time-saving automation tools: Autopull™, Roll Back, and Package Locking
- Support for systems running Red Hat, Red Hat Advanced Server, SuSE, Mandrake, Debian and more.

From either an intuitive web-based administration console or a powerful command line interface, administrators centrally configure and distribute software selections, manage users and create group profiles of target machines for installations and updates. Updates for workstations or servers can initiated by users on an on-demand basis, and/or centrally scheduled using Red Carpet Enterprise's Autopull™ technology.

To organize and simplify software options, administrators can build secure, private software channels containing their own internally developed or customized packages. Optionally, Red Carpet Enterprise customers can subscribe to access software and updates selections from the broad Red Carpet public library of applications, including applications from Ximian, Linux OS publishers and other leading Linux vendors. Red Carpet Enterprise is designed to help you manage your unique software configurations right out of the box, without any additional customizations or satellite applications. And Red Carpet Enterprise's built-in on-screen reports make it easy to monitor system status.

# Enterprise Linux Management

Linux is the fastest growing corporate technology (IDC). It has not only become a mission-critical platform for servers, it is rapidly finding corporate acceptance on technical desktops. IDC forecasts that Server adoption is forecasted to grow 21% CAGR though 2006, and in 2006, Linux servers are forecast to attain a 35% market share.

## Linux is Moving Inwards from the Edge of the Enterprise

Distinguishing corporate Linux adoption in 2003 is the Linux migration from the edge of the network to the datacenter and mission -critical corporate functions.  Linux servers, originally adopted in a decentralized manner for web, print, file, DNS, proxy and other functions, are now moving to departmental and enterprise-wise use as application servers, database systems, and ERP functions, with C-level corporate IT leadership making centralized deployment decisions.  This is reflected in growing ISV support from Oracle, Veritas and a host of others.

On the desktop, Linux is similarly moving from edge to mainstream use.  Starting with technical workstations (often replacing UNIX systems) for engineers and system administration personnel, Linux is taking over more "transactional" desktop applications. Using a web browser as the primary application environment, Linux PCs are being used for customer service, CRM, retail store management, manufacturing shop floor, POS systems, and a host of other functions.
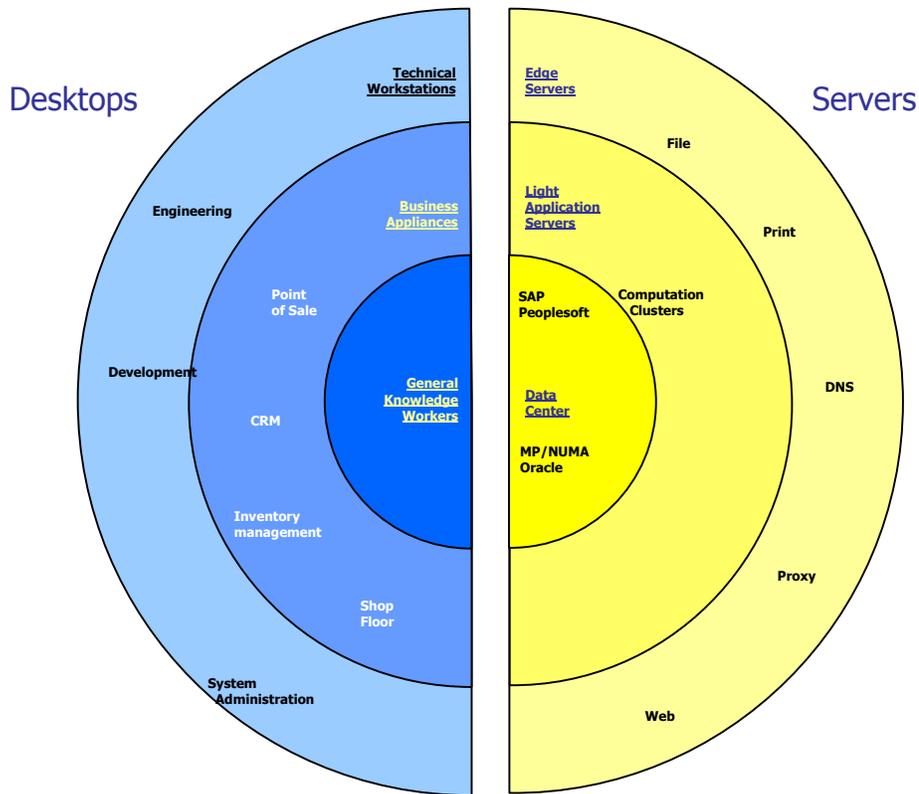
A recent report by Forrester Research confirms the explosive growth in enterprise Linux adoption (<u>The Linux Tipping Point/March 2003</u>).  Their survey of 50 major corporate customers reflected that:

- 72% of respondents expect to use more Linux in 2004.
- Thirteen of 50 respondents are using Linux on the desktop for number-crunching end-user workstations.
- About a quarter are replacing Windows servers with Linux.

| Forrester Research |
| :-- |
| **In 2004, Linux adoption will explode in every datacenter, challenging CIOs to keep proliferation under control.** |

## Linux Cost of Ownership Advantage

Linux adoption creates unique opportunities and unique challenges for Enterprise IT departments. First and foremost is cost reduction. Both a Microsoft-sponsored IDC report and an independent report from the Robert Frances Group showed that software and hardware costs associated with deploying Linux were far lower than comparable costs for Windows-based deployments, principally by enabling low-cosy Linux operating systems and core applications on commodity Intel boxes.

The Robert Frances Group reported "the ability to massively scale [Linux projects] horizontally without paying additional licensing fees can yield significant savings over the long term."  According to the Robert Frances Group, Linux deployment and operations costs are 40% less than comparable Windows costs in a typical first year of implementation, and by the third year of use, comparable Linux costs continue to fall to an estimated 65% <u>less</u> than the corresponding Windows costs – Microsoft's Software Assurance licensing scheme raised costs of Windows ownership significantly over the long term.

| Robert Frances Group |
| :-- |
| **The ability to massively scale [Linux projects] horizontally without paying additional licensing fees can yield significant savings over the long term** |

## Administrative Costs

Not surprisingly, a Microsoft-sponsored IDC report on Linux Cost of ownership points to administrative and support costs as being the largest contributors to the overall costs of both Windows and Linux deployments.  Looking at web, print, file, security and DNS servers, the study found that administrative and support costs accounted for over 60% of three year TCO.

The Microsoft conclusion that Windows offers better total cost of ownership than Linux in all but one of these applications (web servers) is driven by two questionable assumptions.  First, the Microsoft study assumes that Windows system administrators can handle larger workloads (more systems per admin) than their Linux counterparts. This point is contradicted by most other reports, including Robert Francis Group, below.

Second, the MS report assumes that most Linux administration will be outsourced to paid consultants, instead of traditionally salaried staff, and that the costs of these consultants will be relatively high, because there is not a large supply of Linux administrators.

> ### Robert Frances Group
>
> Linux administration costs are approximately 25% of the costs of administering Windows servers - $12K/year for each Linux server compared with $52K/year for each Windows server.

Regardless of the assumptions, IDC notes the importance of the high costs associated with traditional, manual software management. IDC writes that today, Linux software is often managed using internally developed systems that are expensive to maintain and scale poorly. Despite these findings, however, IDC reports that they expect "a more mature Linux ecosystem to develop, including management tools and system management framework products."

The independent research published by the Robert Frances Group paints a different picture. System administration costs in the Robert Frances study are a fraction of the corresponding Windows charges, because Linux system administrators are typically responsible for 4x as many servers as their Windows counterpart. RFG also reports that support costs (exclusive of software updates) for Linux deployments average less than $10/year per supported system. This is primarily because of the wealth and effectiveness of the free support tools – mailing lists, news groups, online knowledge bases – that typical Linux enterprises are using.   In summary, Robert Frances Group reports that Linux administration costs are approximately 25% of the costs of administering Windows servers - $12,000/year for each Linux server compared with $52,000/year for each Windows server.

Based on these figures, it is not surprising that Linux adoptions are growing rapidly.


### Software Management

All of the currently available research emphasizes the importance of software management and version control for enterprises deploying Linux.

Aberdeen Group reported in their January 2002 report on Linux Software Management, "within an enterprise, IT managers require the capability to standardize the software applications and versions

> ### Business Week
>
> But [Microsoft] assertions about Linux hidden costs don't always pan out in the real world. "Our experience is different," says Jeff Davis, Global Technology Lead at Amerada Hess.

used internally and to control access privileges and maintain security."

This is the main arena where Linux deployments generate costs.

Reports IDC, "One possible reason for the comparably high management costs is that, in many instances, customers custom build the software tools that are used to manage Linux server systems." This practice creates huge maintenance and scalability issues for the enterprise. The Robert Frances Group makes a similar point, "system automation tasks, such as scheduled maintenance scripts [were being written internally], and network management agents…had not yet been deployed…."

| International Data Corp (IDC) |
|---|
| IDC reports that they expect a more mature Linux ecosystem to develop, including management tools and system management framework products. |

# Red Carpet Enterprise Product Overview
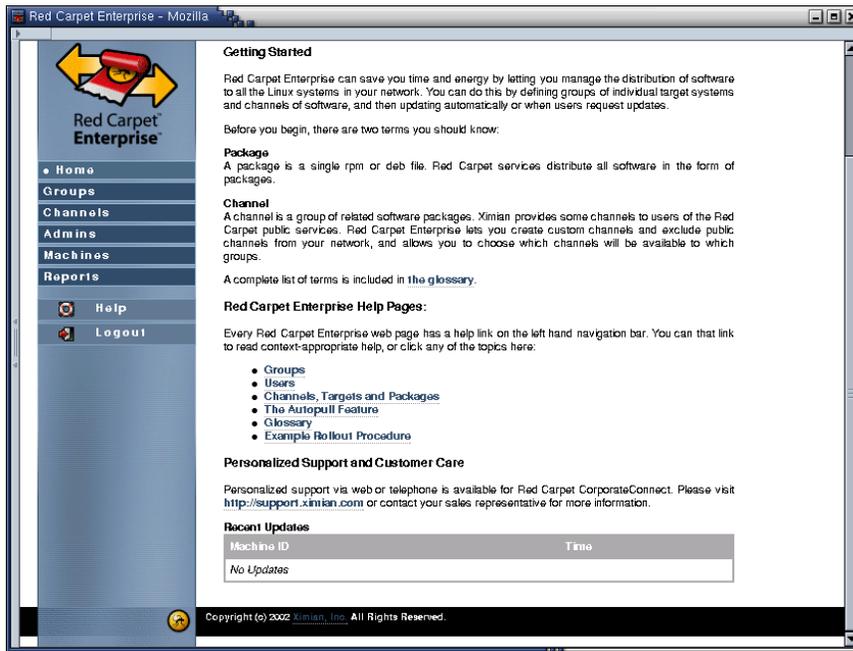


To address these requirements, Ximian has developed Red Carpet Enterprise (RCE), designed for rapid deployment, quick training and easy maintenance. The product is deployed locally in minutes and can be run entirely behind a corporate firewall. RCE contains four basic components, the Red Carpet Client, the Red Carpet Daemon, The Red Carpet Console and the Red Carpet Server. Additional key features are channels, groups, Autopull, and the command line/rcman interface.

The Red Carpet Client
The Red Carpet Client, in use by almost one million Linux users running a broad range of Linux distributions world wide, is a market-proven solution for managing software versions and installations on local machines.

Software packages are presented to users in easy-to-understand groupings, called "channels." A simple subscription metaphor is used to present channels to end-users. Of course, end users can only see the channels that their administrators have designated. Channels typically include OS security updates and internally developed or customized packages; they can also include software from Ximian or other third party applications/tools.

Red Carpet Daemon
The Red Carpet Daemon runs on every server or workstation that is to be updated using Red Carpet Enterprise. The Daemon enables many of the advanced features in Red Carpet Enterprise, including software dependency resolution, and manages the communications between a system and the Red Carpet Enterprise Server.

The Red Carpet Daemon also manages System rollbacks. Administrators can restore the last working configuration of software and configuration files. This is especially important in cases where newly installed software doesn't work as predicted. The Daemon also handles package locking, which enables administrators to stop updates for specific packages. For example, package locking could be used to freeze a specific version of a package while the newer version is being tested. After the testing is complete, the package can be unlocked.

Red Carpet Enterprise Console
The Enterprise Administrator's Console is the central graphical workbench for configuring and maintaining users, groups, software channels, and Autopull schedules. The console also provides access to built-in system logging and analysis for flexible on-screen reports detailing download and installation activities. The system supports multiple administrators, allowing the cost-effective management of multiple organizations through a single system.

Red Carpet Server
The Red Carpet Server is installed inside your firewall for maximum security. It provides a centralized point of system management for the entire company. Software configuration information for your machines is stored on the Red Carpet server.

Autopull™
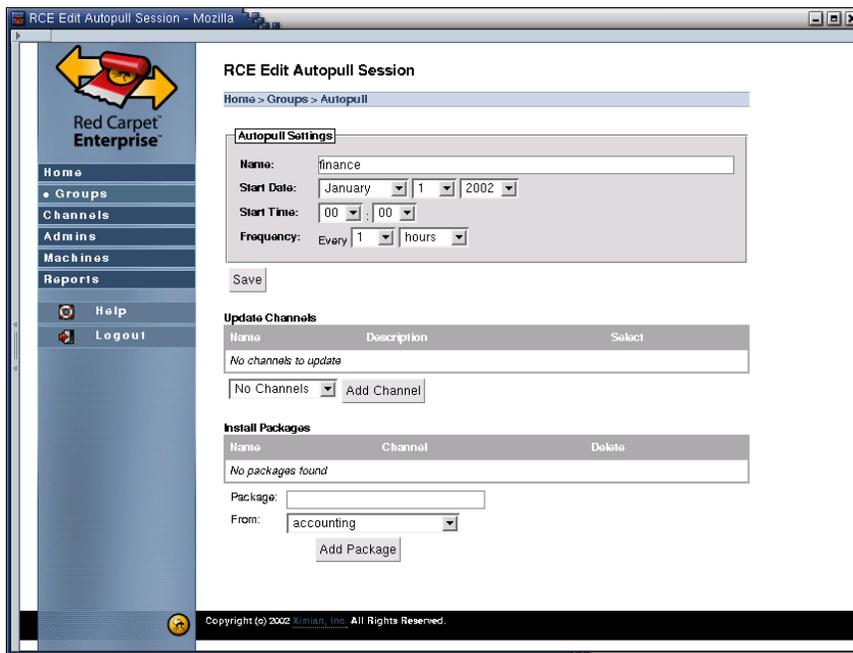


Autopull™ is a powerful Red Carpet tool that eliminates the administrative load required to update and manage software packages on remote machines.  After a simple initial configuration, Autopull clients receive their new packages and updates according to a customizable schedule.  With Autopull, time spent working on updating machines "one-

at-a-time" is eliminated. Individual machines, or groups of machines can be updated automatically using Autopull. In addition to Autopull, Red Carpet Enterprise includes "Instapull," a feature that allow administrators to execute immediate updates of software packages to groups of Linux systems.


## Command Line Interface (CLI)/rcman interface

The Red Carpet Enterprise Command Line Interface provides direct access Red Carpet from a standard terminal window. It is a perfect tool for remotely managing large numbers of servers and workstations. The CLI was designed specifically for power users and administrators. With it, administrators can quickly configure machines or groups of machines, schedule updates and verify configurations. The Red Carpet Manager (rcman) allows system administrators to manage multiple desktop or server systems, ship their own custom software, and automate software management in general. Most tasks involving multiple machines are best accomplished with rcman.

## Channels

Channels are the Red Carpet Enterprise metaphor for organizing software packages for distribution.  Channels contain groups of software packages, typically organized around a functional need. For example, one channel might contain packages and tools for engineers, and another channel might contain communications packages. Channels support your own internally developed or customized packages.

## Groups

Within Red Carpet Enterprise, systems that will access the same set of channels (or, the same set of software) are placed into a group. You may organize your groups according to department, project, or simply by whether a specific machine is a desktop or server system. Overlapping groups are permitted -- the same machine can be in multiple Red Carpet groups.

# Red Carpet Enterprise: Architecture/Security

Red Carpet Enterprise is a self-contained software product that runs entirely behind a corporate firewall and on a corporate network. All sessions are conducted under SSL encryption. The system can be used to update and maintain package configuration on servers, workstations and laptops across the organization.
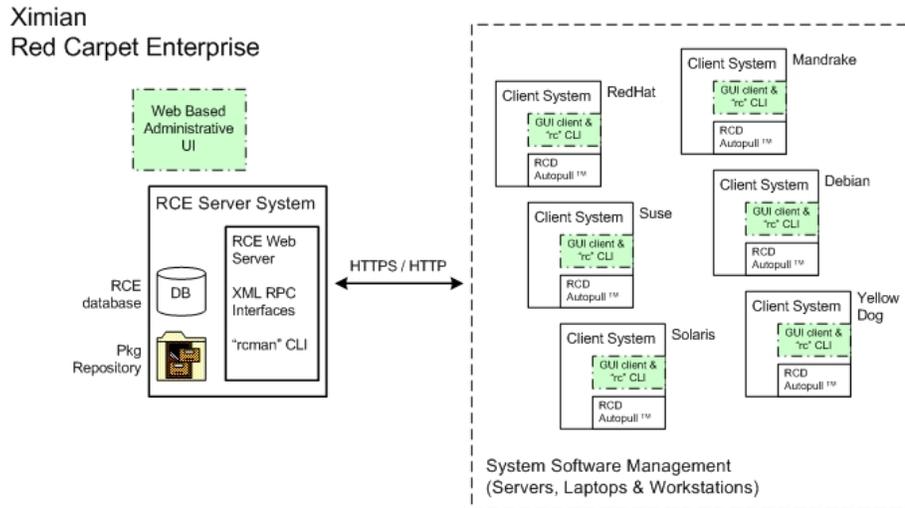


Ximian Red Carpet Enterprise comprises of both client and server components. The RCE Server contains a central software management engine and the associated package repository. The engine contains relational information regarding the systems under management (i.e. systems can be in groups, software within channels and then abstract associations formed between groups and channels), Autopull session support, RCE Server administration and access control, detailed package dependency information, historical information on software management transactions as well as functionality to support both browser and command line based administration (through XML RPC interfaces).

The RC Client comprises of a background process (i.e. the RC daemon or RCD) as well as functionality that supports both a GUI client as well as a command line interface. The Autopull functionality is configured and managed centrally at the RCE Server and subsequently transparently handled by the RC Client (i.e. through the RCD). RC Clients may communicate directly (or via proxy) with the RCE Server using either HTTP or HTTPS protocols.

# Red Carpet Enterprise Key Features and Benefits

## Complete Administration and Management
- **Intuitive Web-based Administration:**
  Quickly configure software standards, define profiles and manage users through the easy-to-use web-based administration console.
- **Powerful Command Line Option**
  Using a powerful administrator's command line interface, query machines, set up groups create channels and initiate updates.
- **Multiple Administrator Support**
  Create multiple Enterprise administrators to simplify the management of large groups of workstations or servers.
- **Secure Private Software Channels**
  Define customized channels of applications; tools and designated platform that include both internally developed or customized packages, or externally developed packages.
- **Centralized Standards Management**
  Allocate specific packages (or restrict packages) to users via centrally created custom group profiles**.**
- **Autopull™ Updating**
  Schedule automatic software installations and updates on servers and desktops from the centralized Red Carpet Enterprise console.
- **Built-in Logging and Reports:**
  View download statistics and installations though convenient on-screen reports.
- **Instapull**
  Rapidly send security or system updates to managed systems when needed.
- **Rollback**
  Go back to a previous install versions of software – including configuration files
- **Package Locking**
  Specify packages that should be excluded from automatic installations to increase control of software standards on targeted systems

## Robust Security
- **Behind-the-Firewall Deployment**
  Red Carpet Enterprise is installed on a local server and runs entirely within your corporate firewall for maximum security
- **Secure Package Transfer**
  SSL encryption protects the security of all sessions, ensuring the safety of administrator and user information.
- **Internal Package Storage:**
  Your private, internal company software remains stored behind your firewall.
- **Package Verification:**
  Built-in MD5 checksum and GPG cryptographic verification of digitally signed packages ensures you always get software from a trusted source.

## Intuitive Channels Design
- **Channels**
  Red Carpet intuitively organizes and presents available software into logical channels.

- **Simple Subscription Metaphor**
  Quickly select software to install, update or remove using a simple subscription metaphor.
- **One-Click Maintenance**
  Install, update or remove subscribed software in one quick and easy process.
- **Update Notifications**
  On-screen summary alerts provide you important information on software updates, fixes or patches needed for your system
- **Priority Presentation**
  Newly available packages are presented in order of importance to optimize the updating process.
- **Package Information**
  Get detailed information about each new package, including version number, dates, usage, and dependencies.

**Automatic Process Management**
- **Dependency and Conflict Resolution**
  Before you begin copying files, Red Carpet automatically checks and alerts you to package dependencies and conflicts between applications on your system.
- **Intelligent Conflict Resolution**
  Red Carpet ensures your system integrity by installing; updating or removing needed packages to solve identified dependencies.
- **Disk Space Analysis**
  Minimizes installation issues by analyzing disk space requirements prior to updating.

**Unique Cross-Platform Support**
- **Broad OS Support**
  Update systems running any of a broad range of Linux distributions, or UNIX variants that support RPM or dpkg.  Supports Red Hat, SuSE, Mandrake, Debian, Solaris 8 and more.
- **Red Carpet Mirror**
  Obtain package updates for Red Hat and SuSE operating systems directly from their respective vendor repositories.
- **Automatic OS Detection**
  Red Carpet detects the Linux distribution and only presents new packages and updates that are appropriate for that workstation.
- **System Abstraction**
  The Red Carpet XML-based abstraction layer enables sophisticated conflict resolution for different packaging systems, such as RPM (version 3 and 4) and dpkg.

**Optional Software Library\***
- **Leading Linux Distributions:**
  Current releases and updates and security patched for Linux distributions from Red Hat, Mandrake, SuSE, Debian, Yellow Dog, and other leading Linux OS publishers.
- **The Latest From Ximian:**
  Access point releases and daily snapshots of Ximian products through special pre-release channels.
- **Leading Third Party Applications:**
  Choose applications, tools and packages from leading Linux vendors, including Codeweavers, Open Office, Opera Software, Sun (StarOffice) and more.

* For an additional cost, Red Carpet Enterprise purchasers can gain access to Ximian's broad library of software updates.

# Comparing Red Carpet Enterprise to Other Solutions

Ximian Red Carpet (the underlying technology for Red Carpet Enterprise) is used by hundreds of thousands of Linux users around the world to administer the software on their Linux systems. Other vendors provide solutions that share the same goal - keeping software up-to-date - but their approaches are very different.

## Unique Channels and Group Design

Red Carpet Enterprise extends the centralized software management feature set by offering system administrators the ability to organize customized selections of software packages into easily maintained channels. Unlike other solutions, which deal with packages on an individual basis, these Red Carpet Enterprise channels dramatically simplify the creation and maintenance of software standards within organizations.

Specific channels can be implemented for different sets of workstations or servers, for example, one channel can be created with applications specific to the engineering team and another

| REQUIRED SOLUTION ATTRIBUTES |
| --- |
| • **Internal ("behind-the-firewall") deployment** |
| • **Automated updating process** |
| • **Secure distribution of internally developed applications** |
| • **Comprehensive software dependency and conflict resolution** |
| • **Access to broad library of third-party applications** |
| • **Support for pre-scheduled and client-initiated updates** |
| • **Cross-platform compatibility** |
| • **Centralized administration** |

channel can be created to ensure that security patches are always up to date on the e-commerce server farm.  To further simplify the management of version updates across an organization, machines to be updated using Red Carpet Enterprise are placed in specific groups. In this way actions can be easily applied to large number of systems -- even systems that are geographically remote, for example, the engineering group might include desktops in San Mateo and Bangalore.

Other solutions, such as solutions offered by Red Hat, offer channel-like customizations, but these are high priced add-ons and often require the implementation of extensive professional services projects or the additional purchase of satellite applications. Red Carpet Enterprise channels are part of the basic service and can be implemented in seconds.

## Support for Internally Developed or Internally Customized Applications.

Among the leading solutions, only Red Carpet Enterprise provides administrators with an out-of-the-box solution that allows for the distribution of internally developed or internally customized packages, using the service's flexible channel architecture. Since one of the chief benefits of adopting open source solutions is the ease with which they can be customized to meet local requirements, when comparing alternatives, it makes sense to strongly weight a version management solution's ability to manage distribution

and updates of locally developed or customized packages.

Other solutions can be customized or tailored to provide this type of functionality but only through costly, time consuming professional services engagements or additional software purchases. With Red Carpet Enterprise, once you're installed, you're ready to go.

## **Cross-platform Support**

A key design aspect of Red Carpet Enterprise is its support for heterogeneous environments using the leading Linux distributions. From one centralized console, updates can be managed for workstations and servers running not only Red Hat Linux, but leading Linux distributions published by vendors like SuSE, Mandrake, Debian and Yellow Dog.  For organizations supporting internal engineering teams, this is an important distinction.

You can use Red Carpet Enterprise to update workstations or servers running any of the following distributions

>
> Red Hat 6.2, 7.1, 7.2, 7.3, 8.0
> Red Hat Advanced Server
> Mandrake 8.1, 8.2
> SuSE  7.3, 8.0, 8.1
> SuSE Linux Enterprise Server
> Yellowdog  Linux 2.3
> Debian Potato
> Solaris 8  (using RPM)

Note: Distributions current as of 3/7/2003, check www.ximian.com for the latest information.

# Red Carpet Enterprise vs. Red Hat Network

Red Hat Network from Red Hat, plus its associated add-on Proxy and Satellite services, is a version management solution that provides some of the same functionality as Red Carpet Enterprise -- both may be deployed behind a corporate firewall, and both can be used to update both servers and workstations. Note that Red Carpet Enterprise is completely compatible with Red Hat Advanced Server, Red Carpet Enterprise users deploying Red Hat Advanced Server will get their packages directly from Red Hat and then use Red Carpet Enterprise to manage their systems. Red Carpet Enterprise is usually the more scalable, more flexible and more cost effective solution., Here are some key issues you should evaluate when choosing between Red Carpet Corporate Connect and Red Hat Network:

**Red Carpet Enterprise is the easiest to install and maintain.**
Red Carpet Enterprise completely installs onto a standard Linux server in about 60 minutes. Once the installation is complete, you're ready to create groups, add packages and schedule server and workstation updates.

Red Hat Network requires a professional services engagement for initial installation. In addition, to deploy any customized packages via Red Hat Network, prospective users must have secured an Oracle Database license and must have Oracle up and running.

*The Red Carpet Enterprise installation is self-administered and occurs quickly. Usually the software is up and running within sixty minutes.*

**Red Carpet Enterprise is the most scalable solution.**
Red Carpet Enterprise employs a scalable architecture that lends itself to enterprise deployments.  Basically, dependency checking and conflict evaluation are performed locally, on the machines that are being updated, rather than centrally, on the main server.

Red Hat Network is architected differently. All conflicts and dependencies from every machine in the organization are evaluated at the main Red Hat Network server in the order that they are received.

*By distributing the work across many machines, Red Carpet Enterprise is not prone to system slowdowns or other load related issues. This is especially important for high priority operating system updates that must be quickly delivered to many machines across the organization.*

**Red Carpet Enterprise supports multiple operating systems.**
Red Carpet Enterprise is designed to update servers and workstations running a variety of Linux distributions. This means, for example, that you can use Red Carpet Enterprise to manage software on web servers running Mandrake, database servers running Red Hat and workstations running SuSE, or any of the other leading distributions. Red Carpet's flexibility is especially important for organizations that have created their own internal Linux distribution, or for multi-national organizations where regional standards

for Linux must be considered.

Red Hat Network is designed to work with Red Hat operating systems only. For Red Hat Network to be an optimal solution <u>every</u> server and <u>every</u> workstation that will be updated must be running an operating system a Red Hat operating system.

*Red Hat Network effectively locks organizations into a one-vendor solution for operating system software.*

**Red Carpet Enterprise can be used to update customized packages.**
Red Carpet Enterprise places very few limits on packages that can be distributed and updated. The basic requirement is that the packages must be created using the rpm or dpkg standard.  You can distribute software created by leading third parties or software created or customized locally by your own internal development organization or consultants. Ximian also delivers an optional library of desktop packages from Ximian and other publishers that you can provide to your users.

Red Hat Network can only be used to update packages that are distributed through Red Hat. Locally built packages, even locally built editions of Red Hat packages are considered customized packages and cannot be added to the Red Hat Network system without additional software purchase elaborate on site customizations and expensive Red Hat led professional services engagements.

*Red Carpet Enterprise provides the out-of-the-box flexibility to deliver the packages you need to your users who need them. As new packages available in the market (or as you develop your own) you can add them to your system quickly, easily and without additional cost.*

**Red Carpet Enterprise is the price/performance leader**
Red Carpet Enterprise is sold through a simple license arrangement. You pay a one-time fee for each Red Carpet Enterprise server and a smaller one-time license for each server or workstation that will be updated using the system. Annual software maintenance fees, a fraction of the initial license purchase price, ensure support and access to upgrades. An extensive library of third party software and updates is available from Ximian for a modest per seat subscription fee.

Most of the components of the Red Hat Network solution are sold on a subscription basis. Only a small number of components are purchased outright. Customizations and Satellite software – needed to distribute customized packages – are also priced using a subscription model. Finally, for customizations to be support, an organization needs to obtain an Oracle database license, which is also sold through a subscription.

*Licensed-based pricing ensures means that Red Carpet Enterprise is economical. Depending upon required customizations, for a typical deployment Red Carpet Enterprise and Red Hat Network will have similar first year costs, however, in subsequent years, Red Carpet Enterprise costs only a fraction of Red Hat Network.*