Understanding EASE

An NTP Software White Paper

What is EASE and what can it do for me?

Abstract

EASE is a unique technology that simplifies the administration of distributed applications and reduces administrative costs and Total Cost of Ownership (TCO). This paper explains the features and benefits of EASE in detail with the goal of giving the reader the ability to understand how EASE-enabled applications will benefit them and their company.

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Introduction

The purpose of this paper is to describe Enterprise Application Services Extension™ (EASE™), a unique platform technology for managing and configuring distributed applications. Its intended audience includes IT decision-makers, technical leads, and systems management staff, who want to understand what EASE is and how it will help them and their organizations.

EASE provides the infrastructure that 'enabled' applications (applications that have been integrated with EASE) use to exchange configuration information, and interact with each other and their underlying operating systems. EASE dramatically reduces the cost of administering enabled applications.

Industry analysts (Gartner, IDC) have shown that acquisition cost (purchase price) is only a minor component (25% or less) of Total Cost of Ownership (TCO). EASE eliminates much of the remaining 75%, thereby becoming one of the most important aspects in reducing your overall cost of ownership, and improving the return on your application investment. This paper helps you understand what EASE is and how it allows you to realize these benefits.

The Challenge of Living with Enterprise Applications

The single most expensive and time-consuming aspect of information technology is on-going application configuration and management. Forrester Research reported that 46% of an application's Total Cost of Ownership (TCO) is expended in on-going systems management (out of an average total cost of over $8,100 per user/year). Anything that can be done to reduce this expense has a direct impact on an organization's bottom line.

In large networked environments, system updates and changes are not straightforward propositions. Most applications are configured per installed device. In a best case scenario, this means that time and cost increase in proportion to the number of systems on which the application is installed. More often than not, costs increase faster than this, as the need to coordinate many discrete changes creates even more overhead. As a result, configuration changes cannot be made quickly or easily, and the condition of the environment deteriorates over time. Short cuts are taken; important items are forgotten.

For these reasons and more, simplifying the management of enterprise applications is a critical objective for everyone. Specifically, we need to:

- Establish a clear and easy to understand set of systems configuration policies
- Reduce complexity and redundancy
- Enable changes to be made quickly throughout the enterprise
- Reduce the time and cost to implement and maintain systems
- Distribute or off-load application management
- Reduce the systems training burden

The deployment of the right applications at the right time can mean the difference between winning and losing battles against competitors. Companies that can deploy and reconfigure their applications faster will see a return on their investment sooner. In fact, ease of administration can make the difference between creating a profit or a loss.

Ease of management and the on-going administrative burden of systems configuration is the major input into how fast applications can be deployed.

> ***To remain competitive, companies need software that meets their business needs, while being flexible and easy to deploy and manage over time.***

Specifically what is needed, is something that brings together the discrete copies of each application and allows them to be addressed and configured as a whole. Recognizing that that every system cannot be configured identically, this unifying architecture must allow for local variation while still retaining the leverage of a configuration that is largely similar from machine to machine.

The way to do this is to start with policy-based systems management and add a hierarchy that provides group management and inheritance down the tree (down the hierarchy). Add to this a replication system that can carry the configuration from machine to machine. Taken together, these abilities allow us to control and configure the maximum number of systems and applications with the minimum amount of effort.

This is the heart of what EASE provides.

EASE – A Quick Look

As discussed above, EASE includes several components: a policy engine, a hierarchical structure with inheritance in which to manage policies, a replication engine, along with additional services.

Enterprise-wide policy-based Systems Management

Policy-based systems management is a best practice approach for configuring and managing your computers and applications. Whether we are managing security, file access, performance, or a custom line-of-business application, the best strategy for expressing the rules that govern system and user behavior is as a structured collection of policy records.

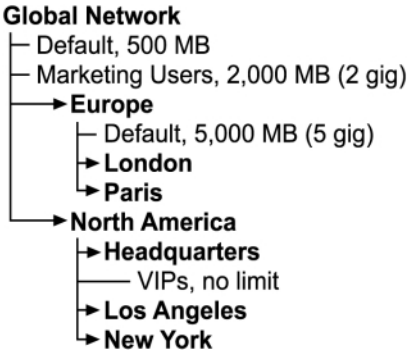
The right policy structure gives us a flexible and extensible syntax for systems management. It frees us from the cost and confusion of having different paradigms for different applications, in the same way that SQL databases have standardized the way we look at stored data.

But a collection of policy records alone is not enough. As with SQL statements we also need a way to organize these records and define how they relate to one another.

Policy Hierarchies with Inheritance

For the most part, organizations are managed hierarchically. Some policies are global in their scope, for example ‘Salaries are paid on Friday.’ Others are merely broad, for example, ‘North American employees with 2 years of tenure or less get 2 weeks vacation’, and ‘European employees with 2 years or less get 4 weeks.’ Some policies are local: ‘All building 12 employees must use the back parking lot.’

Systems and applications management follow along the same path. We can set some policies globally: 'All users have a 500 megabyte storage quota on their home directory.' Other quota polices are broad, but not global in scope: 'Users in Europe are allowed up to five gigabytes in their home directory.' And others are local: 'VIPs at Headquarters have no limit.'

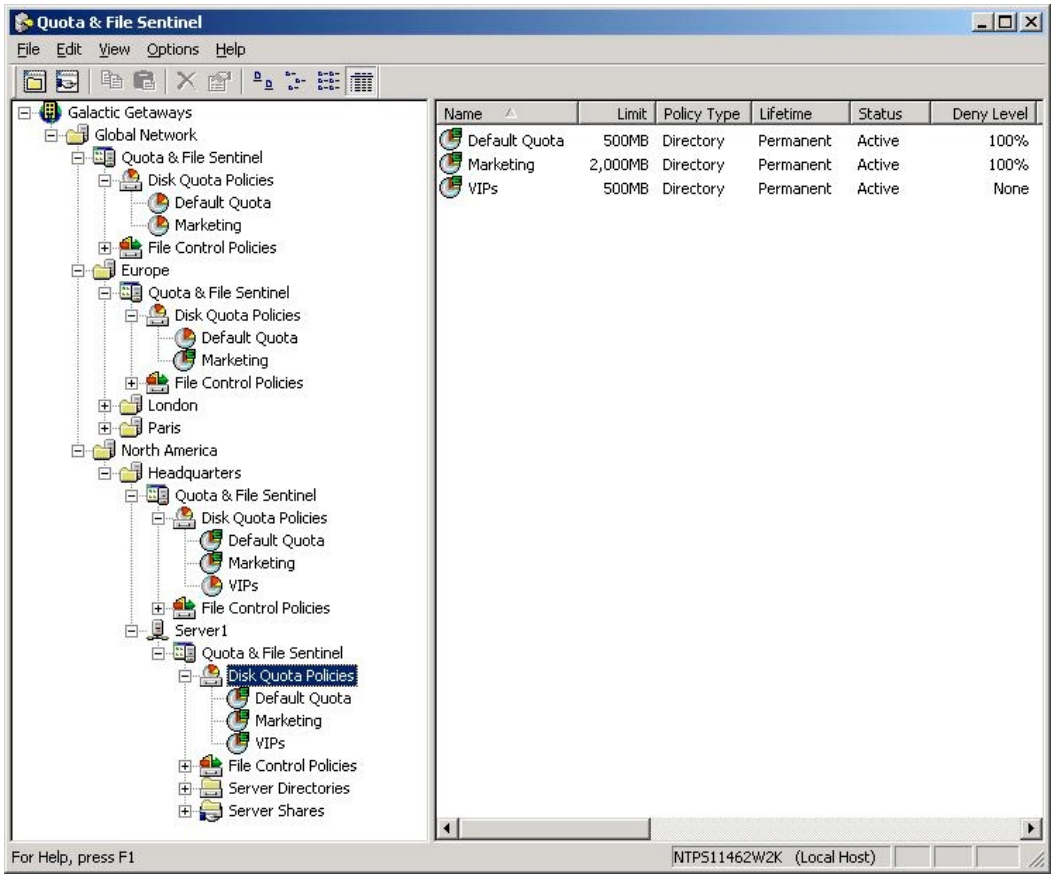


The diagram at the right shows how these policies look as a schematic. The different scopes are reflected by position in the hierarchy. Policies closer to the top are broader in scope. Those below them are more limited.

From this you should be able to see that you can set the configuration for an arbitrarily large collection of systems or applications with only a few, easy to express, policies.

To implement the policies as laid out above efficiently, we need a hierarchical framework that allows those policies whose scope is more than one machine to be carried down (or across) to the other machines for which they are appropriate. This is a *Policy Hierarchy with Inheritance*, which is what EASE provides. We also need a user interface for EASE-enabled applications that makes it easy to convert our schematic into actual policies.

The image below shows the storage limits from our schematic as they would be expressed in NTP Software Quota & File Sentinel, an EASE-enabled product.



The hierarchy provided by the EASE user interface gives us a cost-effective and time-efficient way of expressing policies that apply to more than one machine. With inheritance we can manage hundreds or even thousands of systems with no more time or effort than we would use to control one machine.

Multi-master, distributed datastore with replication

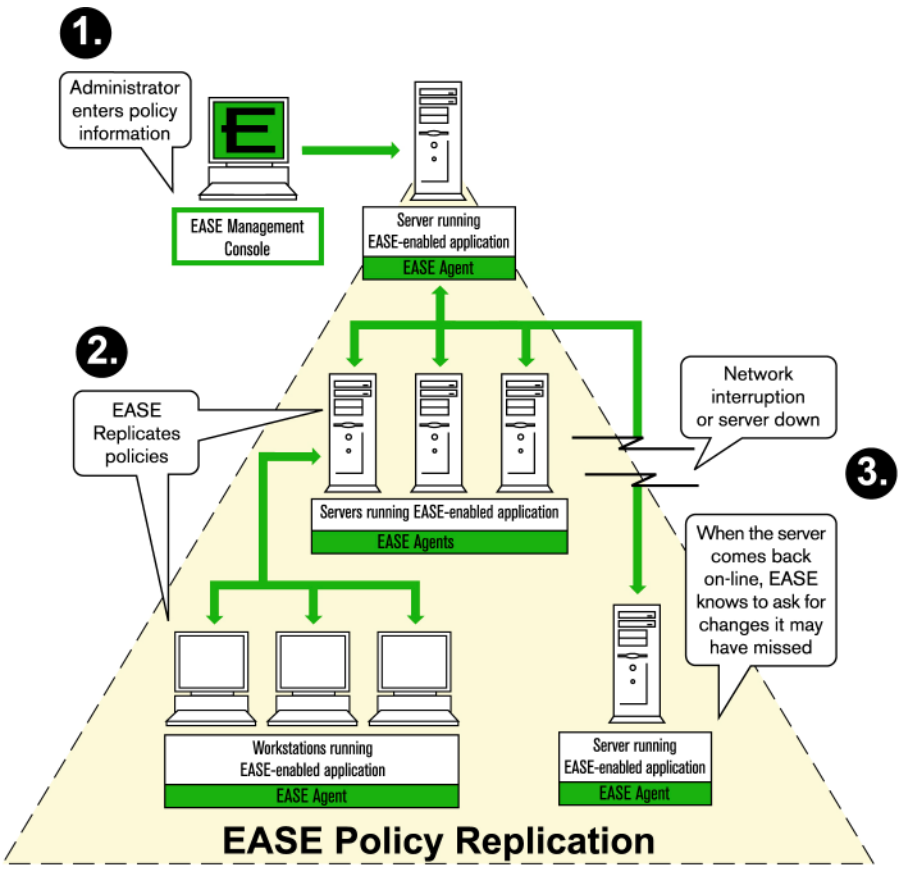
Having established our policy hierarchy, we need a way to convey it to each managed system. This means EASE needs a mechanism to propagate configurations and changes from one machine to another. This mechanism is *Replication*.

EASE includes a multi-master, distributed database and a replication system much like that used for Windows Active Directory. It is EASE replication that exchanges configuration and status information between the members of your EASE hierarchy.

As you install EASE on new computers they 'join' your existing hierarchy. This means that they receive their initial configuration from EASE. Subsequent changes to your policies are replicated to the new machines as well as to the previously configured systems. As you bring new systems on-line, you do not need to supply the base configuration for the EASE-enabled application on these machines. They receive it automatically.

EASE In Action

The figure below shows how policy changes are managed by EASE:



The Vision Behind EASE

NTP Software of Manchester, New Hampshire, is a developer of packaged software with a successful track record and customers on every continent. Recognized by Microsoft as one of its top 75 ISVs in 1999, NTP Software has been through the same challenges faced by IT managers and other developers of applications software. NTP Software understands the value of making systems easy to manage.

To that end, NTP Software conceived and built the Enterprise Application Services Extension (EASE) technology specifically to address this issue. EASE is a new technology, different from anything else in the marketplace. EASE fills a void in systems management by:

- **Reducing application development and deployment time**
- **Reducing the time and cost of configuring and maintaining enterprise applications**
- **Providing a platform for application and policy integration**
- **Being open, allowing multiple applications from different developers to share a common policy base and configuration engine**

The Vision

The EASE platform product embodies NTP Software's vision for applications development and configuration management. NTP Software has diligently worked to create the EASE environment to provide its and your staff with a leg up in the development and deployment of distributed systems – consolidating and pre-packaging commonly used distributed application infrastructure. The vision at NTP Software is one of enhanced applications that are easier to manage and made more valuable and cost-effective because they are EASE-enabled.

Driven by experience

During the last seven years while developing several pre-packaged applications, NTP Software realized that more than half of the code dealt with the same issues repeatedly. This common logic was gathered, fully tested in a variety of environments, and put into the form of the EASE Object Library that developers can draw upon to handle common system tasks.

NTP Software offers EASE as a way to get ahead of the curve and gain expertise in technology with which others may have limited experience. In short, EASE lets your systems administrators and developers spend more of their time with the business end of their applications.

EASE-enabled packaged software

NTP Software has "EASE-enabled" several of its products to provide them with enterprise manageability, and will continue to develop other applications integrated with the EASE environment. Other developers, such as Raxco Software, an early adopter, have done the same.

Enterprise application management is now a primary feature and a competitive advantage of these commercial products. It makes them easier to deploy, easier to use, and they are integrated right out of the box.

Technology from a proven leader

An established and respected industry leader, innovator, and global provider of popular packaged software, NTP Software's accomplishments include:

- Over seven years of successfully developing and selling packaged software products on every continent
- Twice recognized by Microsoft, once as Solution Provider Partner of the Year, World-wide, and again as a Top 75 ISV
- NTP Software has been in the Fast 50 / Fast 500 list of the fastest growing high-technology companies in New England and the United States as compiled by Deloitte & Touche, multiple years

NTP Software's CTO, Bruce Backa, has been twice recognized as a Technology Pioneer: once by the National Computer Conference in the United States for his work on mainframes, and by the World Economic Forum in Davos, Switzerland for his more recent work.

EASE is an enabling platform product for developers and an underlying technology for operations and systems maintenance. EASE supports software development, distribution, and maintenance with an enterprise console, allowing distributed management points (and eliminating single points of failure). It provides the power to manage applications anywhere in your organization, giving you flexibility and further reducing the cost of ownership of your applications.

Key Concepts and Functions

EASE-enabled applications

The phrase *"EASE-enabled"* is used to describe an application that has been integrated into the EASE environment and uses the EASE datastore for its configuration.

EASE-enable any application

An EASE-enabled application may be packaged software developed by an ISV, or it may be a custom, line-of-business application developed in house by an end user organization. In fact, you can even EASE-enable off-the-shelf applications for which you do not have source code. This is done through the use of agents, which provide the link from the EASE datastore to wherever the application in question keeps its configuration data.

EASE Management Infrastructure

The EASE user interface provides a container for the application's client/console within the EASE shell. The EASE console controls and manages all "EASE-enabled" server- and workstation-based applications in your enterprise. It displays a hierarchical management structure for controlling **application policy data** including:

- Settings
- Configuration
- Enterprise and system environment policies
- Alerts and corrective actions
- Application unique characteristics

The EASE console lets you control your applications quickly through an intuitive, user-friendly GUI interface, which provides a logical view of the organization, its OUs (Organizational Units), folders (or containers), servers, and applications. Copy, paste, and drag/drop functions are all supported for the creation of policies and for the reorganization of the policy hierarchy and its elements.

Thus, the minimum number of keystrokes can be used to configure the maximum number of systems. There is no more cost-effective and time-effective way to configure an application.

A Flexible and Configurable Hierarchy

The EASE policy hierarchy consists of the following elements:

- Organization (top level or root)
- User defined folders (also known as Organizational Units) – whatever structure may be appropriate: geography, department, system type, system role, etc.
- Systems
- Applications
- Application defined policy folders

All of these elements can be renamed, moved, or copied as necessary. Policies can be disabled without needing to be being removed. Policy sets created in one scope can be easily applied to other areas.

Security and Delegated Administration

EASE provides secure delegation across the enterprise. Each EASE object is configurable as to who can view and/or manipulate its data. Your can have as many points of control and administration as you need. There is no single point of failure.

Administrators permissions within EASE allow or deny read, write, and create functionality. Each person can be limited to viewing or managing only the folders (containers), servers, workstations, and applications for which they are responsible.

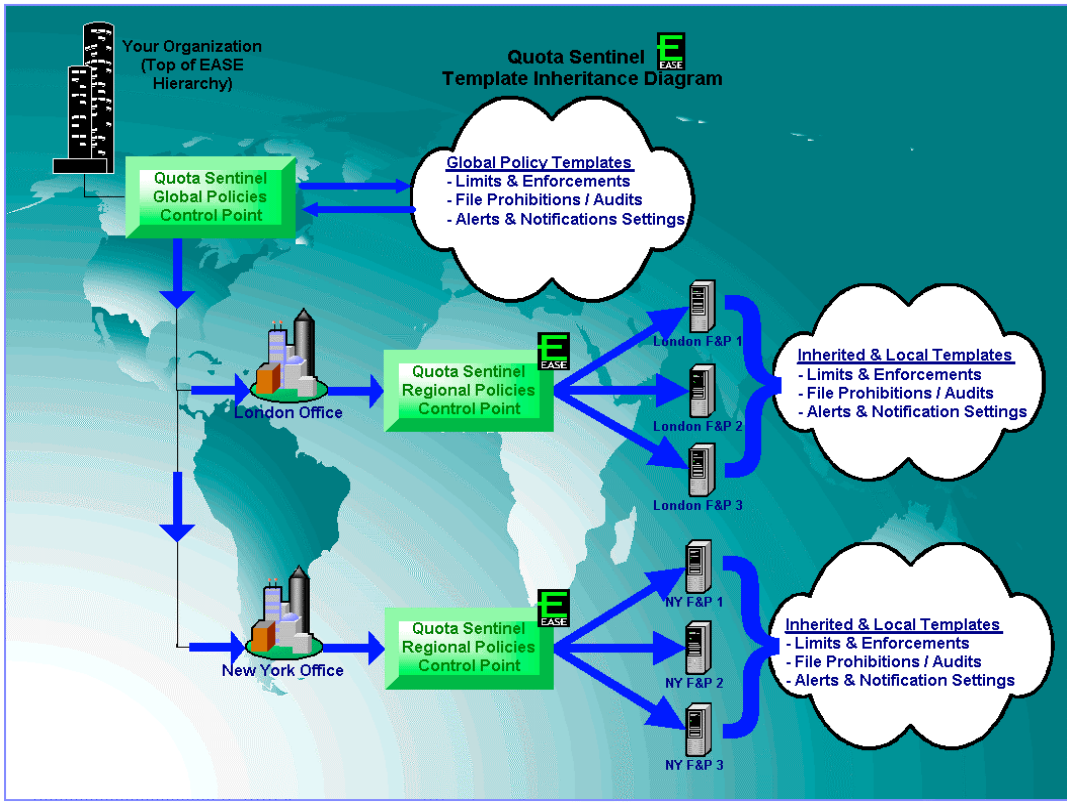
Management through groups

EASE creates a group relationship between applications that are put in its folders (containers). Groups of servers or workstations and their applications can be controlled both through inheritance and by their membership in a common management group.

Policy inheritance

Policy inheritance is the distribution of application policy data down the hierarchy. Any policies you create at a higher level are automatically available to all folders and the systems below them. The subordinate systems and applications inherit these settings or changes as they are made in the EASE environment with no further effort on your part.

This is illustrated by the image on the next page.



Network friendly Replication

EASE uses TCP/IP services and XML for its inter-process communication. It will operate through inter-networking devices including VPNs and firewalls. EASE works across LANs/WANs, the Internet, Extranets and Intranets.

EASE replication only sends “deltas” (changes) in application policy data. These changes are sent in blocks to keep traffic on the network low. In contrast, legacy applications are typically configured individually, machine by machine. Changes are made inefficiently, in series, from different consoles, until all the changes that are needed are completed. With EASE, the change is entered once, and communicated on a group basis, once and only once.

Network interruptions and downed machines are also accommodated. When an EASE-enabled server or workstation returns to operation from an off-line or disconnected state, EASE requests any policy updates that may have been missed.

Distributed Data Store

EASE maintains an independent data store on each server. This data store synchronizes with other EASE data stores according to the hierarchy and the network configuration set at the management console. Should a system lose its connection to the network or another machine, it is still fully functional.

Other EASE services

Hierarchical Policy-based management and Replication are the core benefits of EASE. Beyond this, EASE includes several other services that expand the benefits of EASE-enabled applications.

Push technology

As one of its core facilities, EASE provides the technology to push itself or an EASE-enabled application to another system. This means that the process of installing an EASE-enabled application on a new machine is as simple as selecting the target system from the EASE hierarchy and right-clicking 'New → Application'. The EASE-enabled application will be pushed to the target system and automatically configured.

System discovery

EASE includes a discovery connector that can automatically determine when computers are added to or dropped from your network. The information about new and missing systems appears in the EASE hierarchy.

Once a new system is discovered, EASE enabled applications can be pushed to the new systems with the click of a mouse.

Targeted policy sets

A common occurrence is to have the same management software or applications on both servers and workstations and to want different policies for each, for example: prohibit the creation of office documents on workstations that are without backup, but allow MP3s; on servers prohibit MP3s, but allow office documents.

EASE policies can be coordinated with the system's role on the network. EASE-enabled applications can apply different policy sets to each group of machines.

Basic asset management

Along with system discovery, EASE provides basic asset management information for the systems on which it is installed. This means the network administrator never needs to worry whether the underlying system can support the application about to be pushed. The capabilities of all EASE enabled systems are readily available and easily viewed.

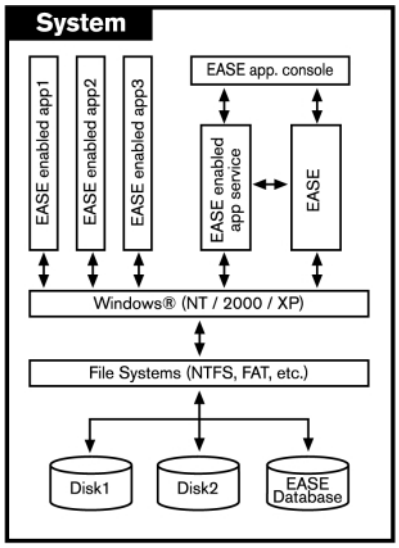
EASE Architecture

Now that we know what EASE does, let's look at how it does it. First we will examine an EASE-enabled application as it runs on a stand-alone machine. Then we can look at that same application on multiple systems.

Single system view

The figure on the next page shows the components of an EASE-enabled application as it runs on a single machine.

Above the Operating System is the EASE Service. The EASE Service runs as a regular Windows (NT / W2K / XP) service (or a UNIX Daemon) and communicates and coordinates with the external environment and the EASE-enabled applications. For the most part, each EASE-enabled application has its own Windows Service to execute its functions.

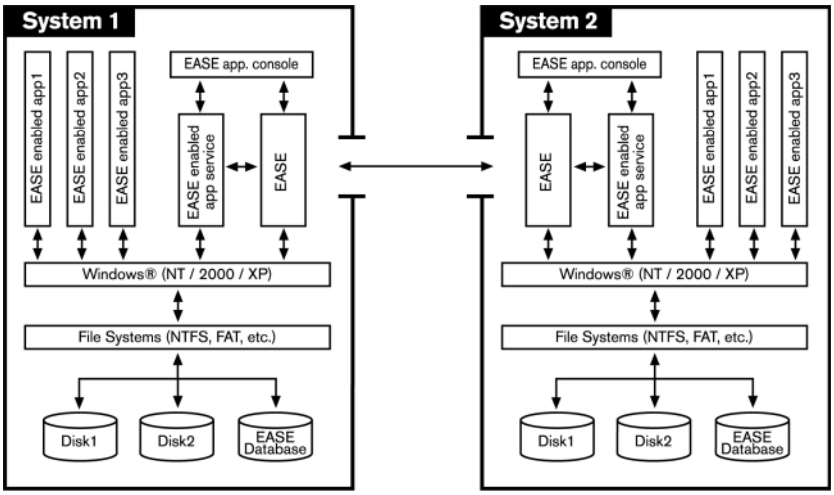


The EASE application console provides a consistent user interface for all ease applications and is the place from which policy records are viewed and manipulated. The EASE application console does not need to run on the same system as the enabled application.

Finally, EASE maintains a local datastore, which includes all the policy records that apply to this machine and potentially all other policy records. EASE is a multi-master database just like Active Directory.

EASE on multiple systems

When EASE is installed on more than one server, the EASE Service allows those servers to communicate with each other and exchange configuration and status information, as shown on the next page. It is EASE that maintains the policy library for all applications. It also replicates those policies across systems. EASE is the glue that binds a collection of physically separate machines into a coherent whole that can be managed as one unit.



Each EASE service communicates with its neighbors as needed to ensure that policies are uniformly enforced across the enterprise. In addition, EASE supports the systems management hierarchy found in most organizations, so the configuration of an EASE-enabled application can be made to reflect the manner in which other corporate policies are established and conveyed.

This architecture gives EASE-enabled applications several significant advantages over non-EASE products. The most important of these are:

- A unified, enterprise-wide policy view. The configuration of all systems can be seen in one place, at all times. The interaction between policies is clear, as is what policies are being applied to which systems
- Cost and time-effective systems management. A small number of policies can control the behavior of a large number of systems. With minimal effort the configuration of these systems can be changed
- A single, simple paradigm for the management of multiple applications. Systems and network administrators only need to learn one method of system configuration and they can apply that to as many EASE-enabled applications as may exist in their environment

Conclusion – The Benefits of EASE

EASE relieves the pain of managing distributed applications by reducing the time required to deploy and configure them, thereby lowering their Total Cost of Ownership (TCO).

EASE delivers reduced cost of ownership and administration, the largest part of your Total Cost of Ownership (TCO) for all EASE-enabled applications.

Specifically, EASE-enabled applications give you:

- Lower cost of ownership
- Integrated solutions
- Reduced systems configuration management and administration time
- An enterprise-wide view of systems configuration
- Single seat management

EASE greatly simplifies the workload to maintain applications in a complex environment, making it a particularly good value proposition for companies with a complex server environment. This leverage comes from the grouping and inheritance functions built into the EASE architecture to manage applications.

EASE-enabled applications in the enterprise can be controlled directly by the EASE management console (or consoles). Authority can be easily delegated to subgroups of the organization (i.e. regional EASE console(s) for the local personnel to manage their areas server applications).