

# Novell

## OnDemand Services v1.5

### Reviewer's Guide

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## Quick Profile

**Product:** ONDEMAND SERVICES 1.5

**Summary:** Novell OnDemand Services\* (ODS) is a Web-based solution that allows service providers to host, manage, and deliver electronic goods and services, and to report on the use of these by their customers or employees. Specifically, by leveraging the power and functionality of NDS eDirectory™ and thin-client technology, ODS enables users by way of a Web browser to purchase, lease, or access free of charge almost any content represented as an eDirectory™ object, including Windows™ 32-bit and Web applications, audio and video files, documents, etc. In addition to content offerings, ODS provides the technology and infrastructure for other important online services such as disk-space leasing, self-serve directory classified ads, and X.509 digital certificates. ODS includes easy-to-use tools for creating objects to represent new types of content that providers may want to offer, all of which are distributed quickly and efficiently through a Web browser.

**Announce date:** March 14, 2001

**Availability:** ??????????????

**Key Benefits:** Ability to provide controlled and measured access to digital goods and resources including Windows™ 32-bit applications, Web content, audio/video files and other resources from a standard Web browser. Includes management infrastructure and tools and the ability to charge for services.

**Pricing:** Per Novell enterprise and subscription price lists

**Licensing:** Through Novell enterprise and subscription licensing

**Availability**

- Novell Authorized Resellers
- Through Novell Sales
- Novell Web Site - <http://www.novell.com/products/ondemand>

**For Additional Information:** [www.novell.com/products/ondemand](http://www.novell.com/products/ondemand)

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# Installation Requirements

## Overview

Novell OnDemand Services is a solution comprised of several Novell and third-party products. Depending on the functionality needed, different components and hardware are required.

## OnDemand Services Components

The following products are necessary for full OnDemand Services functionality:

- Novell NetWare™ 5.1 (SP2)
- NDS eDirectory™ v8.5
- ZENworks™ for Desktops 3.0 (SP1)
- NetWare Enterprise Web Server v3.6
- IBM WebSphere™ Application Server v3.5
- Novell ConsoleOne™ v1.2d
- ConsoleOne Snap-in for Directory Commerce
- ConsoleOne Snap-in for Novetrix DeFrame
- Novell Client 32
- Novell JVM 1.2.2 for NetWare
- Microsoft Windows Terminal Server (optional for thin-client access)
- Citrix Independent Computing Architecture (optional)

## Server Requirements

- Server-Class PC with Pentium II or higher processor
- VGA or higher resolution display adapter (SVGA recommended)
- DOS partition of at least 50MB with 35MB available space
- 1.3GB for Novell SYS: volume
- Minimum 256MB RAM (512MB recommended)
- CD-ROM Drive
- One or more network boards

## Overview

The combination of Internet, directory and application technology is enabling securely authorized and metered access to digital goods and services from practically any location in the world. This new accessibility is forcing organizations to reconsider the way in which they provide services to their employees, customers and partners.

Novell has developed OnDemand Services (based on industry leading Novell Directory Services (NDS) eDirectory technology) as a solution for organizations that desire centralized management of widely accessible resources. OnDemand Services is ideal for application service providers (ASPs), managed service providers (MSPs), network service providers (NSPs), as well as enterprise companies that wish to provide easy, monitored access to digital resources.

OnDemand Services enables the following activities:

- Remote access to Windows 32-bit applications from a Web browser
- Secure authentication to digital resources
- Controlled access to network files, intranets or digital resources in authorized domain
- User/customer self registration
- Usage tracking for software
- Controlled access to digital resources for billing purposes

Service providers can use OnDemand Services as a management infrastructure for customer authentication, access control, access auditing, application metering, and resource sharing. Many enterprise companies, particularly if they are geographically dispersed, can also benefit from this same functionality.

The benefits of using OnDemand Services include:

- Metered Access - monitor and measure access to software resources for application leasing, pay-per-use, and to provide accurate usage reporting
- Quick Scalability - many users can be provided access to applications and resources without the need to manually set up access or physically configure workstations
- Low Cost - OnDemand Services enable 'thin clients' which eliminate the expense of installation and management of individual workstation applications
- Simplified Management - OnDemand Services are administered through eDirectory which simplifies management by consolidating all management operations to a single interface
- Thin-client Computing - easy user access to applications – requires no installation, easier to use, simpler to manage and quicker to deploy
- Self Service - customers can provision applications themselves and immediately start using without administrative intervention
- Digital Rights Management - users are able to access different resources based on identity
- QOS/SLA Enablement - quality of service (QOS) levels in service license agreements (SLA) can be guaranteed using intelligent load balancing and identity-based prioritized traffic

## Application Hosting Market Facts

The application service provider market has a defined future with all leading market analyst organizations predicting healthy growth. According to IDC, The 1999 ASP market was \$298 million and is predicted to grow to \$7.8 billion in 2004 – a compound annual growth rate of 92 percent. InfoTech Trends believes the market will grow annually at about 73.9 percent and reach \$9.1 billion in 2004. Gartner Dataquest's projections are much more aggressive with the application service provider (ASP) market expected to grow from \$3.6 billion in 2000 to more than \$23.5 billion by 2004.

Despite this type of growth, Gartner Dataquest also projects that of the nearly 500 application service providers today, 60 percent will be out of business or acquired by the end of next year. "The barriers to entry into the ASP market are very low, and many ASP vendors are chasing the billion-dollar market projections, but many aren't taking the time to fully bake their business models", according to Gartner analyst Audrey Apfel.

In order for service providers to achieve dominant or sustained positions they must be able to continually augment their collection of digital goods and services. This requires a solid foundation and infrastructure that is flexible and dynamic with the following capabilities:

- Easily add access to new services of all types from legacy applications to the latest Web services
- Accurately monitor and measure use of resources
- Scale to accommodate large numbers of users
- Quickly reconfigure offerings based on new releases, security, or new market forces
- Provide failsafe security with accurate authentication
- Seamlessly integrate new acquisitions and provide superior support

According to the Giga Information Group, "The appeal of a thin-client architecture becomes even more alluring and apparent if you can integrate the management of those thin clients into an existing directory services database such as Novell's NDS (eDirectory)." (source: NDS and Windows Terminal Server/MetaFrame: Coexisting Peacefully, Laura DiDio, Giga Information Group, January 1999)

Novell's OnDemand Services provides the foundation and infrastructure for successful management of access to digital resources by large numbers of users. ODS enables service providers to easily add new services and accurately monitor and meter usage in environments that are rapidly changing to accommodate new services and increased numbers of users.

## Who Uses OnDemand Services?

OnDemand Services is a solution that is valuable to both service providers and enterprise companies. Any organization that has the need to provide remote users access to applications, goods or services will benefit from OnDemand Services' robust feature set. These users include application service providers (ASPs), Internet service providers (ISPs), management service providers (MSPs), network service providers (NSPs), hosting service providers (HSPs), and enterprise companies that need to provide applications, services and resource access to employees, customers or partners.

Organization Type	What They Do	OnDemand Services Implementation
Application Service Providers (ASPs)	Lease applications of all types on a per period or per use basis	Provides the ability to lease Windows and Web applications to any Internet user. Authentication is secure and usage monitoring is accurate.
Internet Service Providers (ISPs)	Provide Internet access including e-mail, Web hosting, news, DNS resolution, etc.	ODS provides the ability to easily track users. Simplifies management of all Internet resources through eDirectory—access to all resources is managed through a single point.
Management Service Providers (MSPs)	MSPs provide IT infrastructure in the areas of security, backup, content delivery and file storage	ODS provides the ability to manage and monitor any type of digital resource including X.509 certificate management, backup, file storage, etc.
Network Service Providers (NSPs)	Organizations that wish to completely outsource their network management can do so with NSPs	Organizations using NSPs only require Internet access for user workstations or NetPCs. Access to all file storage, applications, Web content, gateways, and network resources are handled through eDirectory and OnDemand Services. NSPs seamlessly host the IT infrastructure and applications for organizations using these services.
Hosting Service Providers (HSPs)	Hosting Service Providers make space and services available for organizations or individuals to host web-based content using three main types of hosting services: shared, dedicated, and colocation.	ODS enables HSPs to provide hosting services that are self service and easily configured. Using shared or dedicated HSP resources, customers can manage their own Web application sites and monitor use. HSPs can provide the capability for companies to set up their own ASP solutions.
Enterprise Companies	Any large organization (corporation, non-profit, educational) with the need to provide access to digital resources and applications	OnDemand Services becomes a powerful management tool for IT organizations in large companies by enabling thin-client access to applications and resources of all types. IT departments can monitor and meter application and resource use. ODS can be particularly beneficial to organizations that require e-Business solutions with secure interaction and sharing of data between partners and customers. ODS also enables the creation of scaleable and easily accessible intranets.

## What can I do with OnDemand Services?

As a resource and infrastructure management tool, OnDemand Services can be used for many different activities. Listed below is a brief summary of the types of implementations and uses that are of value for service providers and enterprises.

Activity	Example
Thin-client Computing	Using ODS, it is possible to provide access to any Windows application from only a standard Web browser. With ODS, applications such as Microsoft Office (97/2000), SQL Server, and other Win32™ applications do not require software to be loaded on the client machine. Application executable is located on a Windows Terminal Server or Citrix Independent Computing Architecture (ICA) server and ODS manages the connection and interface to the browser. Thin-client computing is very efficient for narrowband (64K or less) connections because only mouse clicks and keyboard strokes are transmitted with most processing occurring at the server.
Customized User Experience	Based on eDirectory user rights, the user experience can be customized for resources access and look and feel. For example, users in a supervisor role may have access to 'edit' or 'modify' options while regular users only have 'read' rights. Users that may be part of a particular eDirectory group can be granted/denied access to application resources or data repositories.
Individualized Content Access	Individual users can be granted unique combinations of access to applications and other digital content. Different applications or resources are accessible based on user identity.
Customized Branding	Again, based on eDirectory identity, different branding may appear that reinforces marketing messages with coloring, fonts, logos, taglines, etc.
Integration with Third-party Services	Reporting, billing and other third-party applications can be integrated to take advantage of metering and usage statistics generated by OnDemand Services.
Merchant Payment Gateways	OnDemand Services components connect with standard Internet payment gateways and merchant services to complete the billing processes for service providers.
Self Registration	Using OnDemand and DeFrame, users can self-register and gain access to any authorized resources including applications, files, Web sites, certificates, directories, etc.
Support for Existing WTS/Citrix Environments	In organizations where Windows Terminal Server (WTS) or Citrix Independent Computing Architecture (ICA) are installed, OnDemand fully supports these environments and seamlessly allows customers to use both.
Digital Certificates	ODS enables advanced digital rights management by using eDirectory to store and manage the generation and distribution of X.509 digital certificates.
Disk Space	Disk space is a digital resource that can also be managed using ODS. ODS enforces authentication and controls access to online storage that can be used for any purpose.
Classifieds	Combining the DirCommerce components of ODS with eDirectory, it is possible to provide user-generated classified ads. Access tracking abilities of ODS make it feasible to charge for these services.

Controlled Document Access	Document access can be monitored, measured and tracked for remuneration on a per-use basis.
Access to Legacy Applications	Using Web front ends, provide access to existing enterprise resource planning (ERP), customer resource management (CRM), fulfillment and shipping applications and information.
Audio/Video	Audio and video file usage can also be controlled, monitored with the ability to charge for use.
Web Applications	Any standard Web application (Web page, servlet, database front end, custom processes, Java applications, etc.) can be controlled for access, usage and payment.
Windows 32-bit Application Access on Local Machines	Using Novell's ZENworks for Desktops 3, ODS enables the installation, management and access control for applications that reside locally on a client machine. Applications with heavy processing requirements that perform better if run locally can still be centrally managed. Application executable resides locally but access is only available through eDirectory.
QOS/SLA	Guarantee quality of service (QOS) for service license agreements (SLA) using load balancing and prioritized traffic based on eDirectory identity.

## Benefits

The benefits afforded by Novell's OnDemand Services are of value not only to service providers and enterprise companies but also to the customers/users that they serve. Benefits generally include increased management ability, lower costs of administration, and simplified access to more resources. General benefits for service providers and users are as follows:

	<b><i>Service Provider and Enterprise Benefits</i></b>
<b>Additional Revenue</b>	Application leasing and resource metering can be additional sources of revenue for service providers and enterprise companies.
<b>Accelerated Time to Market</b>	New applications and digital goods can be rapidly made available to customers and users. Posting or making resources available through ODS provides immediate access to any authorized party.
<b>Asset Security</b>	eDirectory security provides the industry's strongest levels of security through encryption and secure authentication. Digital asset owners can rest assured that their interests are protected.
<b>Application Metering</b>	Monitor and measure usage of any software resource to determine usage for billing purposes.
<b>Controlled User Experience</b>	Centrally controlling a user experience offers several benefits such as reduced training and orientation costs, limited access to only relevant applications, and branding opportunities. Service providers or enterprise companies can control the interactive user experience (based on identity) to include branding and messaging.
<b>Support for Merchant Services</b>	OnDemand benefits include the ability to provide full-featured e-commerce functionality including the ability to initiate orders and process payments.

<b>Simplified Windows 32-bit Application Management</b>	Significantly simplify the administration of Win32 applications by making them available through the network rather than on individual machines.
<b>Reduced Management</b>	As a directory-based management solution, ODS significantly reduces the effort and resources required to manage and control digital assets. Centralized management for all resources no matter what type or where they are located combined with a single, consistent user interface dramatically reduces the need for management.
<b><i>End User Benefits</i></b>	
<b>Anywhere Access</b>	Users can access applications and resources from anywhere on the Internet. Use the same applications and files whether at home, at work, on the road or from any computer.
<b>Less Costly Applications</b>	Without the need to locally install desktop applications, costs can be reduced both in terms of management and licensing. You only pay for applications that you are actually use when you are using them.
<b>Latest Version</b>	Centrally hosted applications allow users to have immediate access to the latest features and version updates. There's no need to wait for local installs or even for network upgrades—a central upgrade by the service provider makes the latest version immediately available to all subscribers.
<b>Software Evaluation</b>	Try applications before you buy them. Determine whether an application has practical use before purchasing or signing long term contracts.
<b>Short-term Use</b>	Have a complete selection of software available for short-term use on a temporary or per project basis. Pay only for actual resources used.
<b>Simplified Access</b>	Applications and resources can be utilized through the familiar and common interface of a Web browser. No need to learn cryptic or complex interfaces for legacy applications. Standard Web browser functionality with hot links, menu buttons, drop-down lists, etc. are intuitive and require little training.

## OnDemand Services Features

Feature	Description
<b>Reliability</b>	
Load Balancing	Intelligent and secure load balancing for application server farms and fail-over capabilities for Windows 32-bit applications
NDS eDirectory	Novell's eDirectory is recognized as the industry leading directory service. eDirectory's architecture provides for robust reliability and scalability through the use of partitions and replicas that enable a directory to be geographically distributed yet tied together as a virtual whole. Downed connections or inaccessible servers do not limit the ability to use eDirectory.
NetWare OS	NetWare is considered the industry's most reliable network operating system available. NetWare's robust nature and high levels of uptime contribute to OnDemand's reliability.
<b>Scalability</b>	
High User Count Management	ODS scales to support large numbers of users. The distributed nature of eDirectory allows for increasing users without bottlenecks. As the number of users increases, new processing power can be added to augment scalability.
Manage Large Quantities of Resource	Similar to users, the number of managed resources possible with eDirectory has no practical limit. All resources appear as part of the virtual management pool, no matter where they may be located.
<b>Window 32-bit Applications</b>	
Windows Terminal Server	ODS DeFrame components allow users to access Win32 applications on a Microsoft Windows Terminal Server using thin-client (browser) technology. No need to install application software or 'fat clients' at each individual workstation.
Citrix ICA	ODS also enables users to access Win32 applications hosted on Citrix Independent Computing Architecture using a standard Web browser.
<b>Personal Management</b>	
Directory-based Sign-on	Supplying a single user ID and password provides access to multiple applications and resources. Using Novell Single Sign-on™, there is no need to maintain user IDs for applications on different platforms or resources in different locations.
Self Service	ODS allows users to self-register for access to authorized digital goods and services.
Individualized Content	Only applications and information specific to individual users is visible or accessible. eDirectory identity makes it possible to customize individualized content without involved or detailed hands-on management.
<b>Access Features</b>	
Broadband and Narrowband Access	OnDemand supports user access in both broadband and narrowband (64K or less) environments. Windows 32-bit applications can easily be accessed over narrowband connections with only keystrokes and mouse clicks being transmitted.

<b>E-commerce</b>	
Classifieds	Use ODS to create self-service classifieds.
Audio/Video	ODS enables the identity verification that is necessary for paid access to any digital goods including audio and video files.
Billing	All billing information related to accessing digital goods and services is stored in eDirectory with the ability to charge for services.
Payment	Payment gateways are available for the processing of billing information to collect revenues (Go2Net).
<b>Manageability</b>	
Single Point of Management	All management related to goods and services access and management can be done from a single point – Novell's ConsoleOne interface.
Consistent Interface	All operations for managing users, access, objects, transactions, etc. can be performed using the same interface.
<b>Security</b>	
Strong Authentication	Novell's security mechanisms, powered by RSA, provide the highest levels of security available.
Distributed Security Rights	eDirectory provides the ability to distribute rights management without compromising security.

# How OnDemand Services Works

## ***ODS Components***

Novell OnDemand Services is a collection of integrated tools from Novell and other third party companies. This collection of tools includes the following:

**Novell DirCommerce Engine v1.5** - The DirCommerce Engine is a set of JavaBeans that enables auditing and billing for e-commerce. DirCommerce extends the eDirectory schema to include Package, Purchase, Usage, and CommerceService objects. It also extends the schema for user objects to include Account ID and Purchase List information. Using these eDirectory extensions, it is possible to securely authenticate and then track resource use and purchase activity.

**Auditing Tool** - OnDemand's Web-based auditing tool tracks user purchases of OnDemand Services during a specific time period and generates reports that can be viewed by administrators. Users are able to view their purchases from the MyAccount page.

**DeFrame** - DeFrame enables the integration of Microsoft Windows Terminal Server (WTS) and Citrix ICA technology with eDirectory. This combination allows thin client access (browser-based) to server-based applications. The DeFrame solution consists of several components including the following:

*DeFrame Security Model* - The security component dynamically applies user rights collected from one of several sources to enable access. These sources can include NDS, NT Domains or Active Directory.

*Application-based Load Balancing* - DeFrame's load balancing distributes connection loads across multiple servers, giving preference to those with the least amount of traffic. Load balancing is accomplished by monitoring each available resource and calculating optimal usage based on CPU utilization, memory utilization, page file utilization and number of users.

*DeFrame Application Launcher* - The DeFrame Application Launcher prepares an application session by applying security rights, mapping drives, and requesting the application.

*DeFrame Client* - The DeFrame thin client is a Web-browser plug-in that intelligently initiates a session with a Microsoft Windows Terminal Server or Citrix ICA.

**NDS eDirectory Version 8.5** - At the core of ODS is Novell Directory Services (NDS). ODS uses eDirectory for digital rights management to control access to content and application objects in the directory tree. eDirectory also provides user authentication services, serves as an object store and as a central repository for transaction information (including rates and terms for each application), and stores the lease status of applications and resources.

**ZENworks for Desktops 3 (SP1)** - Novell Application Launcher (NAL), a component of ZENworks, enables ODS to manage and control access to applications that are resident on a local machine. This functionality is valuable in situations where performance can be enhanced by having application processes or data on the client workstation.

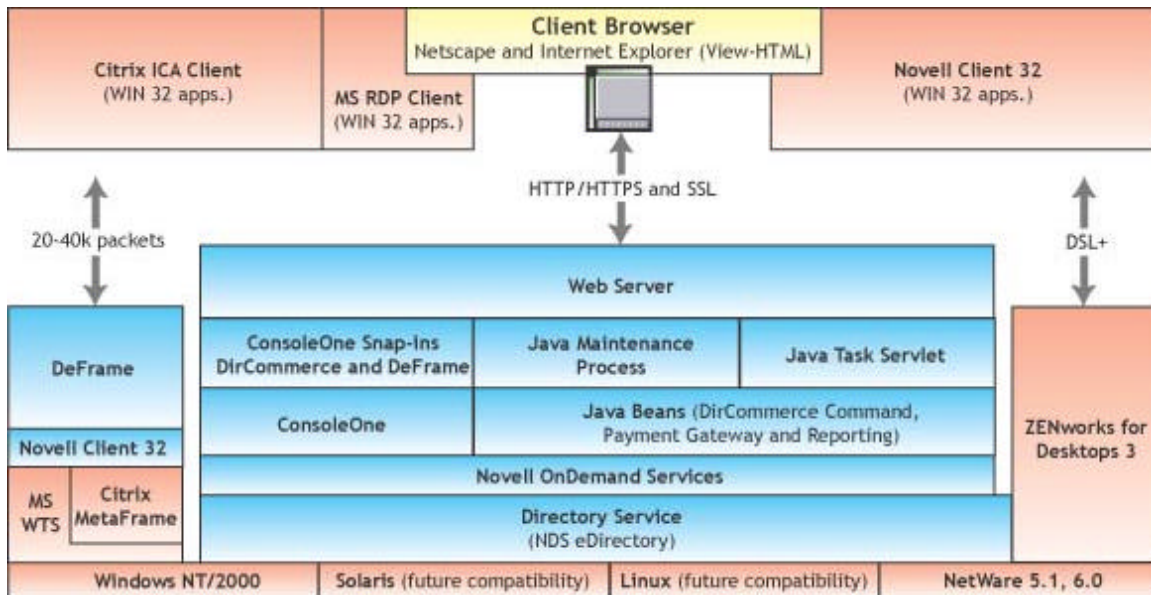
**NetWare Enterprise Web Server 3.6** - Novell's implementation of the Netscape Enterprise Server™ enables service providers to configure a NetWare server as a Web server for use by

many of the ODS components. Enterprise Server can also be used to display any file or application information that is visible through HTML.

**IBM WebSphere Application Server 3.5** - WebSphere is an open standards based Java® application server. The WebSphere servlet engine compiles business logic contained in JavaServer™ Pages (JSPs) or Java servlets and renders the results as HTML.

**Novell ConsoleOne v1.2d** - ConsoleOne is a complete, Java-based management tool for eDirectory. Since OnDemand Services are built on eDirectory, ConsoleOne is the management interface for ODS making it the only interface needed for management----- ODS includes two ConsoleOne Snap-ins. The Snap-in for Directory Commerce is used to configure application packages with attributes such as cost, location, purchases and usage. The Snap-in for DeFrame is used to configure and manage all of the DeFrame components.

**Novell Client 32™** - Novell's Client 32 is a client code that is required in limited situations. Client 32 must be installed on each Windows Terminal Server. Each end user workstation must have Novell Client 32 installed if using ZENworks for Desktops 3 for application distribution.



## ODS Operations

Depending on how OnDemand Services is being used, different components will be implemented. At a high level, the following processes and operations will be at work for a typical implementation.

Novell eDirectory is at the core of all resource management and is the primary component. eDirectory 'identifies' and 'controls access to' each and every resource that will be managed. In the case of OnDemand Services, this includes individual users, resource managers, and individual resources (applications, certificates, files, Web resources, packages, etc.). eDirectory stores information about all of these resources and this information is used to control access and

monitor use. Each resource in eDirectory is a unique 'object' with associated 'attributes' that describe or clarify the object's identity or value. A simple list of eDirectory objects with some of their associated attributes is as follows:

Object	Description	Attributes
User	Any type of user (employee, partner, customer, supervisor, etc.)	Name, user ID, password, address, private key, account number, purchase list, groups belonged to, roles, access rights
Merchant	Electronic merchant identity	Name, account information
Package	Can be any digital resource (application, file, audioc/video, image, data feed, etc.)	Name, location, type, and other unique attributes which describe the package
Purchase	Object that contains specific transaction information	Date, time, amount, quantity, package, etc.
Usage	Object that tracks and meters usage of other objects	Time start, time stop, access time, user identity, etc.
Commerce	Business logic objects that process transactions	Connections, process logic, etc.

A complete description of how OnDemand Services works is beyond the scope of this guide but a brief summary is as follows. NDS eDirectory is used for authentication and access to all objects in the tree. OnDemand extends the standard eDirectory schema to include Package, Purchase, Usage and CommerceService objects. These are part of the DirCommerce engine which is a set of JavaBeans™ that allow service providers to create and use new resource objects and then enable auditing and billing.

eDirectory User objects are extended to include account ID and purchase list information. Merchant account information is also created as an eDirectory object and stored in the directory. The establishment of User and Merchant identities in the directory provides the basis for authorized communication and transactions to occur. Whenever interaction takes place between Users and Merchants or resource objects, this information is also stored in the directory where it is available for tracking and billing.

For example, when a user makes a purchase (or activates a Package) the User is given security equivalence to the Package object. The Object purchase and usage information is then stored in eDirectory. This information can be extracted from the directory to create object usage reports that can be used for tracking or billing purposes. Reports can be generated and customized using third-party reporting tools such as Crystal Reports or Actuate.

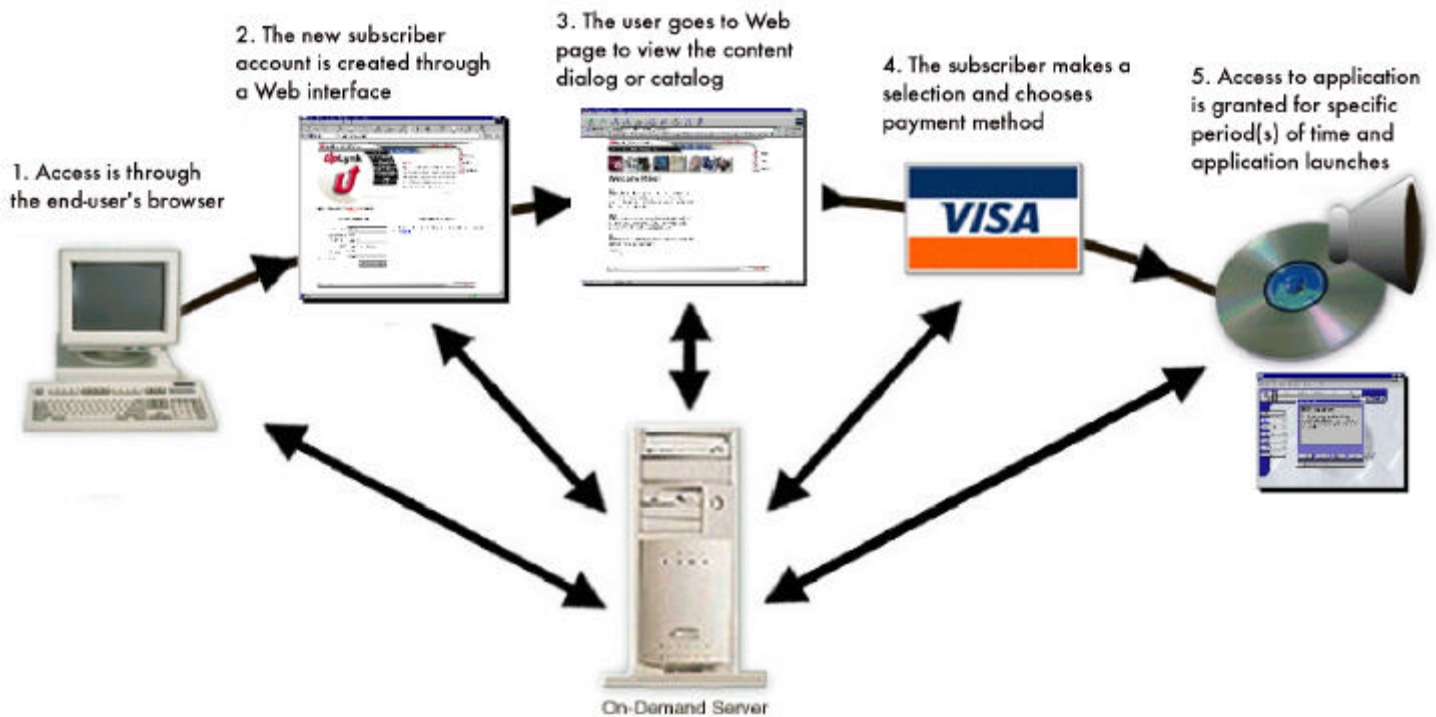
For a complete description on how OnDemand Services works see the OnDemand Services Technical White Paper. [www.novell.com/products/ondemand](http://www.novell.com/products/ondemand)

## Using OnDemand Services

Novell OnDemand Services can be applied in many different environments to manage user access to various types of resources and applications. Some of the more common uses of ODS include the following:

### *ISP Self Service and User Management*

An ISP could create a self-service application for new subscribers using ODS. A new user would access the ISP Web site using a standard browser. A new user registration process collects all relevant information and stores it in eDirectory (name, address, user name, password, etc.) and a new subscriber account is created through the Web interface.



The user then goes to the ISP's Web page to view all of the available resources and applications. The user can sign up for any or all authorized applications which could include disk space, e-mail, access to special utilities, news feeds, etc. In the case of an ASP, these services could include Win32 apps running on WTS or Citrix.

After making selections, the user can then specify payment method and pay for the goods or services. Access to the applications and services are granted for specific periods of time. The user has full access and the applications can then be launched and utilized.

### *ASP Hosted Applications*

OnDemand Services can provide the framework for full-service application service providers (ASPs). In many cases, applications are specialized and require significant resources for implementation, management and administration. For many companies, small or large, the effort required to implement these applications locally is too costly, even though they would benefit greatly from use of the applications.

ASPs using ODS can easily host these complex applications such as facilities management, accounting, human resources (HR), enterprise requirements planning (ERP), customer resource management (CRM), project management and others, and economically provide them for many different companies. The cost of implementation and management is spread among all users making it cost effective for companies of all sizes. ASPs using ODS are currently hosting specialized applications such as social services case management, shipping vessel load and route planning, engineering data management systems (EDMS), and geographic information systems (GIS). ASPs use ODS for user and application management as well as usage tracking and billing.

# Installation Overview

OnDemand Services will typically be installed by consulting services or specialized personnel. In most cases, some development work will be necessary in order to provide customized access to specific applications and digital resources. This overview summarizes, at a high level, the requirements for installing and implementing OnDemand Services and its components.

1. Install Novell NetWare 5.1 (SP2)
2. Install Novell eDirectory 8.5
3. Install Novell JVM 1.2.2 for NetWare
4. Install IBM WebSphere Application Server v3.5
5. Install Novell ConsoleOne v1.2d
6. (Optional) Install Novell Client 32 (on WTS servers or for ZENworks for Desktops 3 users)
7. (Optional) Install Novell Certificate Server™ 2.0.2 if digital certificates are desired
8. (Optional) Install Novell International Cryptographic Infrastructure (NICI)
9. (Optional) Install ZENworks for Desktops 3 and SP1
10. (Optional) Install DeFrame 2.0
11. Install OnDemand Services 1.5

OnDemand Services installs various programs and files to the server, including:

- The Java Server Pages that make up the customer interface
- The OnDemand Servlet, Command Beans, Format Beans, and the Credit Card Bean that process the requests received through the customer interface
- The DCOMCERT.NLM program that is required to enable customers to purchase digital certificates
- The DCOMDS.NLM program that is required to enable customers to purchase disk space
- The OSAGENT.NLM program and UsageServer Java program that are required to set up a per-minute or per-use charge for software packages
- A Java program, CommerceMaintenance, and its associated configuration files

Technically, OnDemand Services is ready to use out of the box with the generic Web site. However, customers will need to minimally customize the Web interface for their look and feel. The OnDemand install adds the CommercePackage, CommercePurchase, CommerceUsage, and CommerceService objects, and extends the User, Application, and Organization objects. DeFrame adds deframeServer, deframeLicense, deframeReg, and deframeWatchDog and also extends the User and Application objects.

Other installation activities will depend on the type of OnDemand services to be offered. Defining users, groups and setting access rights will be required to enable users to access services. A service provider may elect to configure OnDemand Services to lease disk space, host applications or enable the purchase of digital goods such as documents, audio files and video.

Each of these services requires the creation of a 'package' in eDirectory that defines the attributes and parameters of the service. Attributes include information such as URL, graphics files, descriptions, time restrictions, etc. Please refer to the *OnDemand Services Administrator's Guide* for a complete description of how to set up packages for Digital Certificates, Disk Space, Documents, Audio, Videos, and Software. Application objects are created using the ConsoleOne Snap-in.

## Comparative Information

Novell OnDemand Services faces limited competition due to the fact that there are no other comparably featured directory services solutions on the market. eDirectory's features and capabilities combined with thin-client technology provide a comprehensive application provision and management solution that OnDemand's competitors find difficult to match.

Those solutions that are available are usually custom built, client/server applications or a collection of off-the-shelf solutions that have been meshed together to solve a unique problem. In either case, these solutions are often very expensive to develop, implement and maintain.

Since the hosting services market does have significant growth projections, several major vendors are expected to provide solutions in the future. Microsoft has announced intentions to participate with its Microsoft.Net platform and content provisioning. Other companies such as Xevo (ASP Workbench) and Trarantella (Enterprise) are providing early market solutions.

At this point, the only marketed solution that is similar to OnDemand Services is Metaframe from Citrix™. MetaFrame is Citrix's flagship product offering that supports centralized "application server computing" where the application runs on the server for multiple users and only screen changes in the user interface are sent to the individual client machines.

<b>Functionality</b>	<b>Advantages of OnDemand Services over MetaFrame</b>
Application Provisioning	Applications are brokered from eDirectory. Content may reside anywhere on the Internet and may be any type. Application self-service is available.
Application Support	Supports Microsoft Terminal Server and Citrix ICA. Also supports RDP and ZENworks for Desktops applications.
Management	Applications and users are managed through eDirectory providing simpler, less costly administration.
Features	More features with personalization, billing, and reporting.
Security	Both directory and application levels of support.

## About Novell

Novell, Inc. (NASDAQ:NOVL) is the world's leading provider of directory-enabled networking software. Novell solutions give businesses total control of their private networks and the Internet, simplifying the management of user access and identity. Novell's worldwide channel, consulting, developer, education and technical support programs are the most extensive in the network computing industry.

For information on Novell's complete range of products and services, contact Novell's Customer Response Center at (888) 321-4CRC (4272), or visit Novell's Web site at <http://www.novell.com>. Press may access Novell announcements and company information on the World Wide Web at <http://www.novell.com/pressroom>. Novell, NetWare, NDS and Novell Directory Services are registered trademarks, and NDS eDirectory and NetWare Management Portal are trademarks of Novell, Inc. in the United States and other countries. All third-party trademarks are the property of their respective owners.

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# Glossary

**Citrix ICA** - Citrix Independent Computing Architecture technology provides the foundation for turning any client device--thin or fat--into the ultimate thin client.

**ConsoleOne** - Java-based console management interface for all of Novell's directory-based products. ODS can only be managed through ConsoleOne.

**DirCommerce Engine** - The *DirCommerce engine* provides interfaces to credit card authentication networks and billing services and controls the users access to electronic content.

**DirXML** - Novell product that gives eDirectory the ability to replicate data to external application data stores and to eDirectory itself in a filtered fashion. DirXML servers can expose the filtered set of eDirectory data through LDAP, XML, or any application data format.

**eDirectory** - Novell's latest generation directory service designed to accommodate eBusinesses and the Internet.

**HTML** - HyperText Markup Language, the document format used on the World Wide Web.

**Identity** - Identities include all information that defines an individual's profile. This information at a minimum includes user ID and password. It can be extended to include address and contact information as well as a comprehensive collection of access rights and authorities.

**Indexes** - In NDS eDirectory, indices are lists of all or portions of a directory that are available for high-speed lookup or quick access by applications.

**Inheritance** - Characteristics or relationships passed on by virtue of relationship.

**Java Server Pages** - Java servlet technology from Sun that provides a simple programming vehicle for displaying dynamic content on a Web page. The JSP is an HTML page with embedded Java source code that is executed in the Web server or application server.

**Java Beans** - A Java Bean is a reusable software component that can be visually manipulated in builder tools.

**LDAP** - Lightweight Directory Access Protocol is a standards based protocol used to access directory information. LDAP is a simplified version of the DAP protocol, which is used to gain access to X.500 directories.

**NDS** - Novell Directory Service, the industry's first true directory service introduced in 1993.

**Objects** - Objects in eDirectory represent any type of resource or identity in the directory tree. Objects represent users, groups, computers, peripherals, applications, files, and even transactions.

**Packages** - In eDirectory, packages represent applications in the directory. Metering and usage is controlled by tracking access to packages.

**Policies** - Policies are the enforcement of rules and regulations associated with activities, events, and processes. In ODS, the rules and regulations governing installation, monitoring, and managing of network resources.

**Policy Engine** - The policy engine is an eDirectory enabled mechanism that enforces established rules and regulations.

**Replica** - Replicas are 'copies' of a directory or portions of a directory. Replicas are strategically distributed reduce latency in directory access and lookup.

**WTS** - Microsoft Windows Terminal Server is an extension of the Windows NT Server product line that delivers the Windows<sup>®</sup> experience to diverse desktop hardware through terminal emulation.

**XML** - Extensible Meta Language is an open standard for describing data and defining data elements on a Web page and business-to-business documents.

**XSL** - XML Stylesheet Language is a style sheet format for XML documents.