AUTHORIZED DOCUMENTATION

Installation Guide

Novell®
Identity Manager

3.6

September 9, 2008

www.novell.com

Legal Notices

Novell, Inc. makes no representations or warranties with respect to the contents or use of this documentation, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc. reserves the right to revise this publication and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes.

Further, Novell, Inc. makes no representations or warranties with respect to any software, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc. reserves the right to make changes to any and all parts of Novell software, at any time, without any obligation to notify any person or entity of such changes.

Any products or technical information provided under this Agreement may be subject to U.S. export controls and the trade laws of other countries. You agree to comply with all export control regulations and to obtain any required licenses or classification to export, re-export, or import deliverables. You agree not to export or re-export to entities on the current U.S. export exclusion lists or to any embargoed or terrorist countries as specified in the U.S. export laws. You agree to not use deliverables for prohibited nuclear, missile, or chemical biological weaponry end uses. Please refer to the International Trade Services (http://www.novell.com/company/policies/trade_services) for more information on exporting Novell software. Novell assumes no responsibility for your failure to obtain any necessary export approvals.

Novell, Inc. has intellectual property rights relating to technology embodied in the product that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the U.S. patents listed on the Novell Legal Patents Web page (http://www.novell.com/company/legal/patents/) and one or more additional patents or pending patent applications in the U.S. and in other countries.

Novell, Inc.
404 Wyman Street, Suite 500
Waltham, MA 02451
U.S.A.
www.novell.com

Online Documentation: To access the latest online documentation for this and other Novell products, see the Novell Documentation Web page (http://www.novell.com/documentation).

Novell Trademarks

For Novell trademarks, see the Novell Trademark and Service Mark list (http://www.novell.com/company/legal/trademarks/tmlist.html).

Third-Party Materials

All third-party trademarks are the property of their respective owners.

Contents

About This Guide

Novell® Identity Manager is a data sharing and synchronization service that enables applications, directories, and databases to share information. It links scattered information and enables you to establish policies that govern automatic updates to designated systems when identity changes occur. Identity Manager provides the foundation for account provisioning, security, single sign-on, user self-service, authentication, authorization, automated workflow, and Web services. It allows you to integrate, manage, and control your distributed identity information so you can securely deliver the right resources to the right people.

This guide contains information about how to plan, install, or upgrade an Identity Manager system that is useful for your environment.

Audience

This guide is intended for administrators, consultants, and network engineers who plan and implement Identity Manager in a network environment.

Documentation Updates

For the most recent version of this document, see the Identity Manager Documentation Web site (http://www.novell.com/documentation/idm36/index.html).

Additional Documentation

For additional Identity Manager documentation, see the Identity Manager Documentation Web site (http://www.novell.com/documentation/idm36/index.html).

For User Application documentation, see the Identity Manager Roles Based Provisioning Module Documentation Web site (http://www.novell.com/documentation/idmrbpm361/index.html).

Documentation Conventions

In Novell documentation, a greater-than symbol (>) is used to separate actions within a step and items in a cross-reference path.

A trademark symbol (®, ™, etc.) denotes a Novell trademark. An asterisk (*) denotes a third-party trademark.

When a single pathname can be written with a backslash for some platforms or a forward slash for other platforms, the pathname is presented with a backslash. Users of platforms that require a forward slash, such as Linux* or UNIX*, should use forward slashes as required by your software.

Planning

Identity Manager helps you manage the identities and resources in your business. It also automates many business processes for you that are currently manual tasks.

If you have any questions about the different components that make up an Identity Manager solution, see the *Identity Manager 3.6 Overview* guide for more information about each component.

To create an effective Identity Manager solution for your environment, you first must take time to plan and design your Identity Manager solution. There are two major aspects to planning: setting up a test lab to become familiar with the products and creating a project plan to implement an Identity Manager solution. When you create a project plan, you define your business process and create an implementation plan. Most companies have many different business processes that are managed by many different people. A complete Identity Manager solution affects most of these processes. It is extremely important to take the time to plan an Identity Manager solution, so that it can be effectively implemented in your environment.

We strongly recommend that an Identity Manager expert be engaged to assist in each phase of your Identity Manager implementation. For more information about partnership options, see the Novell® Solution Partner Web site (http://www.novell.com/partners/). Novell Education also offers courses that address Identity Manager implementation.

Setting Up a Development Environment

1

Before you begin the planning phase of the Identity Manager deployment, you must be familiar with the Identity Manager products so you can create a useful plan. Setting up a development environment where you can test, analyze, and develop your Identity Manager solution allows you to learn about each component of Identity Manager and find unforeseen issues and complications that can arise.

For example, when you synchronize information between different systems, the information is presented differently for each system. Changing the data to synchronize between these two systems, allows you to see if this change affects other systems that use this same information.

The other major reason to set up a development environment is to make sure your solutions work, without affecting live data. Identity Manager manipulates data, which includes deleting data. Having the test environment allows you to make changes without any loss to the data in your production environment.

You should set up a development environment for each deployment of Identity Manager. Each deployment is different. There are different systems, business policies, and procedures that need to be included in the Identity Manager solution. The development environment allows you to create the solution that is best for each situation.

The most important tool to use when you are developing your Identity Manager solution is Designer. It allows you to capture all of the information about your environment and then use that information to create an Identity Manager solution that fits your needs. Use Designer during all aspects of the planning to capture all of the information. Designer makes it much easier to create a project plan that includes the business information as well as the technical information. For more information about Designer, see the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.

To set up your development environment, use the information in Chapter 4, “Basic Identity Manager System Checklist,” on page 39. It is an installation checklist of all of the Identity Manager components. Use this to make sure you have installed and configured all components for Identity Manager that you can use to develop a project plan. Use the information in Chapter 3, “Technical Guidelines,” on page 27 as you set up your development environment, so you can learn about the technical considerations as you install and configure each component of Identity Manager.

After your development environment is created, the next step is to create the project plan to implement the Identity Manager solution. Use the information in Chapter 2, “Creating a Project Plan,” on page 15 to create the project plan.

Creating a Project Plan

2

This planning material provides an overview of the type of activities that are usually part of an Identity Manager project, from its inception to its full production deployment. Implementing an identity management strategy requires you to discover what all of your current business processes are, what are the needs for these processes, who the stakeholders are in your environment, and then design a solution, get buy-in from stakeholders, and test and roll out the solution. This section is intended to provide you with sufficient understanding of the process so that you can maximize the benefit from working with Identity Manager.

This section is not exhaustive; it is not intended to address all possible configurations, nor is it intended to be rigid in its execution. Each environment is different and requires flexibility in the type of activities to be used.

2.1 Discovery Phase

The Identity Manager solution affects many aspects of your business. In order to create an effective solution, you must take time to define all of your current business processes, then identify how an implementation of Identity Manager changes these processes, who these changes affect, and how the changes are implemented.

The discovery phase provides a common understanding of the issues and solutions for all stakeholders. It creates a plan or road map that contains the key business and systems information that are affected by the Identity Manager solution. It also allows all stakeholders to participate in the creation of the Identity Manager solution so they understand how it can affect their area of the business.

The following list indicates the steps needed to have a successful discovery phase. There might be additional items you find that you need to add to the list as you proceed through the discovery and design phases.

2.1.1 Defining Current Business Processes

Identity Manager automates business processes to easily manage identities in your environment. If you do not know what the current business processes are, you cannot design an Identity Manager solution that automates those processes. You can use the Architecture mode of Designer to capture your current business processes and display them graphically. For more information, see the "Architect Mode" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.

Here are a few business process examples:

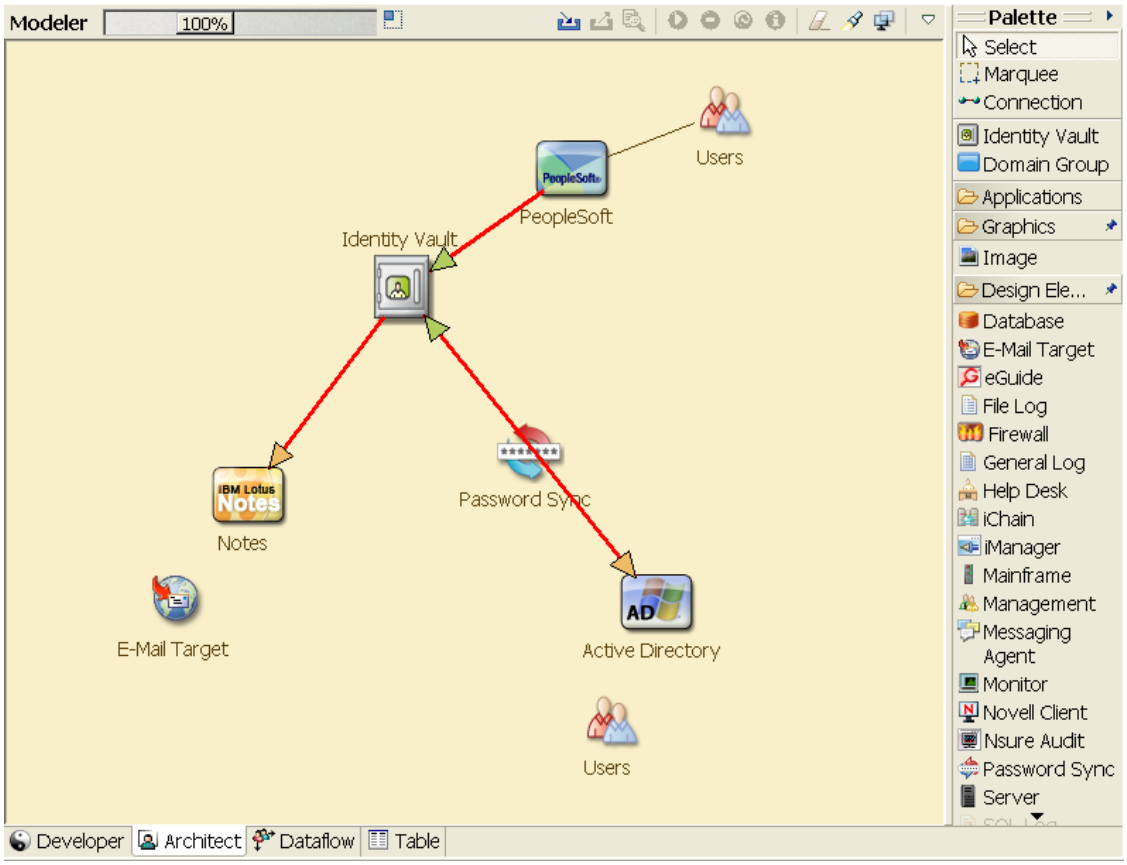
- When an employee is terminated, the user account in the e-mail system is deleted, but the user's account in all other systems is disabled, not deleted.
- The format for a user's e-mail address.
- What systems or resources sales employees can access.
- What systems or resources managers can access.
- What systems generate new accounts? Is it the human resource system or is it through a workflow request?
- A password policy for the company that defines how often a password changes, how complex the password is, and which systems are synchronizing the password.

As you define your business processes, use the following list of items to help you understand all of the processes:

- Define or clarify the current business issues.
- Determine what initiatives are required to address these issues.
- Determine which services and systems are affected by these initiatives.

This step allows you to create a high-level overview of what your business is currently doing and what processes need to be improved. For example, Figure 2-1 is from Designer it shows that new user accounts are generated from the PeopleSoft* system. They are synchronized into the Identity Vault and then synchronized into Lotus Notes* and Active Directory*. Passwords are being synchronized between Active Directory and the Identity Vault. Accounts are synchronizing into the Notes system, but no accounts are synchronizing back to the Identity Vault.

Figure 2-1 *Example of Business Processes*



The next step is in Section 2.1.2, “Defining How the Identity Manager Solution Affects the Current Business Processes,” on page 17.

2.1.2 Defining How the Identity Manager Solution Affects the Current Business Processes

After you have defined your current business processes, you need to decide which processes you want to incorporate into an Identity Manager solution.

It is best to look at the entire solution and then prioritize which processes should be implemented. Identity Manager encompasses so many aspects of your business, it is easier to plan the entire solution rather than approach each business process as its own solution.

Create a list of which business processes are a priority to automate, then identify which systems these changes will affect. The next step is in Section 2.1.3, “Identifying the Key Business and Technical Stakeholders,” on page 18.

2.1.3 Identifying the Key Business and Technical Stakeholders

Identifying all stakeholders involved in the Identity Manager solution is important for the success of the solution. In most companies, there is not just one person you can contact who understands all business and technical aspects of the business processes. You must identify which services and systems are going to be affected by the Identity Manager solution, and you must also identify the person who is responsible for that service or system.

For example, if you are integrating an e-mail system into your solution, you would need to list what the e-mail system is, who the e-mail system administrator is, and what the contact information is. You can add all of this information into the Designer project. Each application icon has a place where you can store information about the system and the system administrator. For more information, see "Configuring Application Properties" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.

After you have identified all of the people involved in each business process, the next step is in Section 2.1.4, "Interviewing All Stakeholders," on page 18.

2.1.4 Interviewing All Stakeholders

Interviews with key business and technical stakeholders allow you to gather information needed for a complete design of the Identity Manager solution. The interviews also allow you to educate each stakeholder about the Identity Manager solution and how the solution affects them. Here is a list of items to cover when you do the interviews:

- Define or clarify the business processes being addressed by the Identity Manager solution. The person you are interviewing might have information that can change the current plan.
- Determine how the solution will impact the stakeholders and address any concerns they have. Also ask the stakeholders how much time their part of the solution might take. They might or might not have an estimate, but gathering this information helps to determine the scope of the solution.
- Capture key business and systems information from the stakeholders. Sometimes a proposed plan might adversely affect a business process or a system. By capturing this information, you can make educated decisions about the Identity Manager solution.

After you have interviewed the key stakeholders, the next step is in Section 2.1.5, "Creating a High-level Strategy and an Agreed Execution Path," on page 18.

2.1.5 Creating a High-level Strategy and an Agreed Execution Path

After all of the information is gathered, you need to create a high-level strategy or road map for the Identity Manager solution. Add all of the features you want to be included in the Identity Manager solution. For example, new user accounts are generated from a request through a workflow, but the type of user depends upon the resources the user is given access to.

Present this high-level strategy to all of the stakeholders in the same meeting, if possible. This allows you to:

- Verify that the included initiatives are the most correct and identify which ones have the highest priority.

- Identify planning activities in preparation for a requirements and design phase
- Determine what it would take to carry out one or more of these initiatives.
- Create an agreed execution path for the Identity Manager solution.
- Define additional education for stakeholders.

Discovery provides a common understanding of the issues and solutions for all stakeholders. It provides an excellent primer for the analysis phase-- a phase that requires stakeholders to have a basic knowledge of directories, Novell® eDirectory™, Novell Identity Manager, and XML integration in general.

After you have completed the discovery phase, proceed to the Section 2.2, "Requirements and Design Analysis Phase," on page 19.

2.2 Requirements and Design Analysis Phase

Take the high-level road map that was created in the discovery phase as a starting point for this analysis phase. The document and the Designer project both need technical and business details added. This produces the data model and high-level Identity Manager architecture design used to implement the Identity Manager solution.

The focus of the design should be specifically on identity management; however, many of the elements traditionally associated with a resource management directory, such as file and print, can also be addressed. Identity Manager synchronizes user accounts to directories that do not have direct access to the operating system's file system. For example, you can have a user account in Active Directory, but that does not grant you access to the file system on the Active Directory server.

Using the information gathered in the discovery phase, answer the following sample questions to see what other information needs to be gathered. This might require additional interviews with stakeholders.

- What versions of system software are being used?
- Is the eDirectory design appropriate? For example, does the Identity Manager server contain a Master or Read/Write replica of the user objects that are synchronizing? If it does not, the eDirectory design is not appropriate.
- Is the quality of the data in all systems appropriate? (If the data is not of usable quality, the business policy might not be implemented as desired.) For example, there might be duplicate accounts for the users in the systems that are synchronizing, or the format of the data might not be consistent throughout each system. Each system's data must be evaluated before information is synchronized.
- Is data manipulation required for your environment? For example, a user's hire date format in the human resource system can only be 2008/02/23 and the hire date in the Identity Vault is 02-23-2008. This requires that the date be manipulated for synchronization to occur.

Review the information in Chapter 3, "Technical Guidelines," on page 27 to help make the correct decisions for your environment.

After the requirements analysis, you can establish the scope and project plan for the implementation, and determine if any prerequisite activities need to occur. To avoid costly mistakes, be as complete as possible in gathering information and documenting requirements. Here is a list of possible requirements:

- Data model showing all systems, authoritative data sources, events, information flow, data format standards, and mapping relationships between connected systems and attributes within Identity Manager.
- Appropriate Identity Manager architecture for the solution.
- Details for additional system connection requirements.
- Strategies for data validation and record matching.
- Directory design to support the Identity Manager infrastructure.

The following tasks should be completed during the requirements and design assessment:

- "Define the Business Requirements" on page 20
- "Analyze Your Business Processes" on page 21
- "Design an Enterprise Data Model" on page 22

2.2.1 Define the Business Requirements

In the discovery phase, you gathered your organization's business processes and the business requirements that define these business processes. Create a list of these business requirements and then start mapping these processes in Designer by completing the following tasks:

- Create a list of the business requirements and determine which systems are affected by this process. For example, a business requirement for terminating an employee might be that the employee's network and e-mail account access must be removed the same day the employee is terminated. The e-mail system and the Identity Vault are affected by this termination process.
- Establish the process flows, process triggers, and data mapping relationships.

  For example, if something is going to happen in a certain process, what will happen because of that process? What other processes are triggered?
- Map data flows between applications. Designer allows you to see this information. For more information, see "Managing the Flow of Data" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.
- Identify data transformations that need to take place from one format to another, such as 2/25/2007 to 25 Feb 2007.
- Document the data dependencies that exist.

  If a certain value is changed, it is important to know if there is a dependency on that value. If a particular process is changed, it is important to know if there is a dependency on that process.

  For example, selecting a "temporary" employee status value in a human resources system might mean that the IT department needs to create a user object in eDirectory with restricted rights and access to the network during certain hours.
- List the priorities.

  Not every requirement, wish, or desire of every party can be immediately fulfilled. Priorities for designing and deploying the provisioning system will help plan a road map.

It might be advantageous to divide the deployment into phases that enable implementation of a portion of the deployment earlier and other portions of the deployment later. You can do a phased deployment approach as well. It should be based on groups of people within the organization.

- Define the prerequisites.

  The prerequisites required for implementing a particular phase of the deployment should be documented. This includes access to the connected systems that you are wanting to interface with Identity Manager.

- Identify authoritative data sources.

  Learning early on which items of information system administrators and managers feel belong to them can help in obtaining and keeping buy-in from all parties.

  For example, the account administrator might want ownership over granting rights to specific files and directories for an employee. This can be accommodated by implementing local trustee assignments in the account system.

After you have defined your business requirements, proceed to Section 2.2.2, "Analyze Your Business Processes," on page 21.

2.2.2 Analyze Your Business Processes

After completing the analysis of your business requirements, there is more information you need to gather to help focus the Identity Manager solution. You need to interview essential individuals such as managers, administrators, and employees who actually use the application or system. Issues to be addressed include:

- Where does the data originate?
- Where does the data go?
- Who is responsible for the data?
- Who has ownership for the business function to which the data belongs?
- Who needs to be contacted to change the data?
- What are all the implications of the data being changed?
- What work practices exist for data handling (gathering and/or editing)?
- What types of operations take place?
- What methods are used to ensure data quality and integrity?
- Where do the systems reside (on what servers, in which departments)?
- What processes are not suitable for automated handling?

For example, questions that might be posed to an administrator for a PeopleSoft system in Human Resources could include:

- What data are stored in the PeopleSoft database?
- What appears in the various panels for an employee account?
- What actions are required to be reflected across the provisioning system (such as add, modify, or delete)?
- Which of these are required? Which are optional?
- What actions need to be triggered based on actions taken in PeopleSoft?

- What operations/events/actions are to be ignored?
- How is the data to be transformed and mapped to Identity Manager?

Interviewing key people can lead to other areas of the organization that can provide a more clear picture of the entire process.

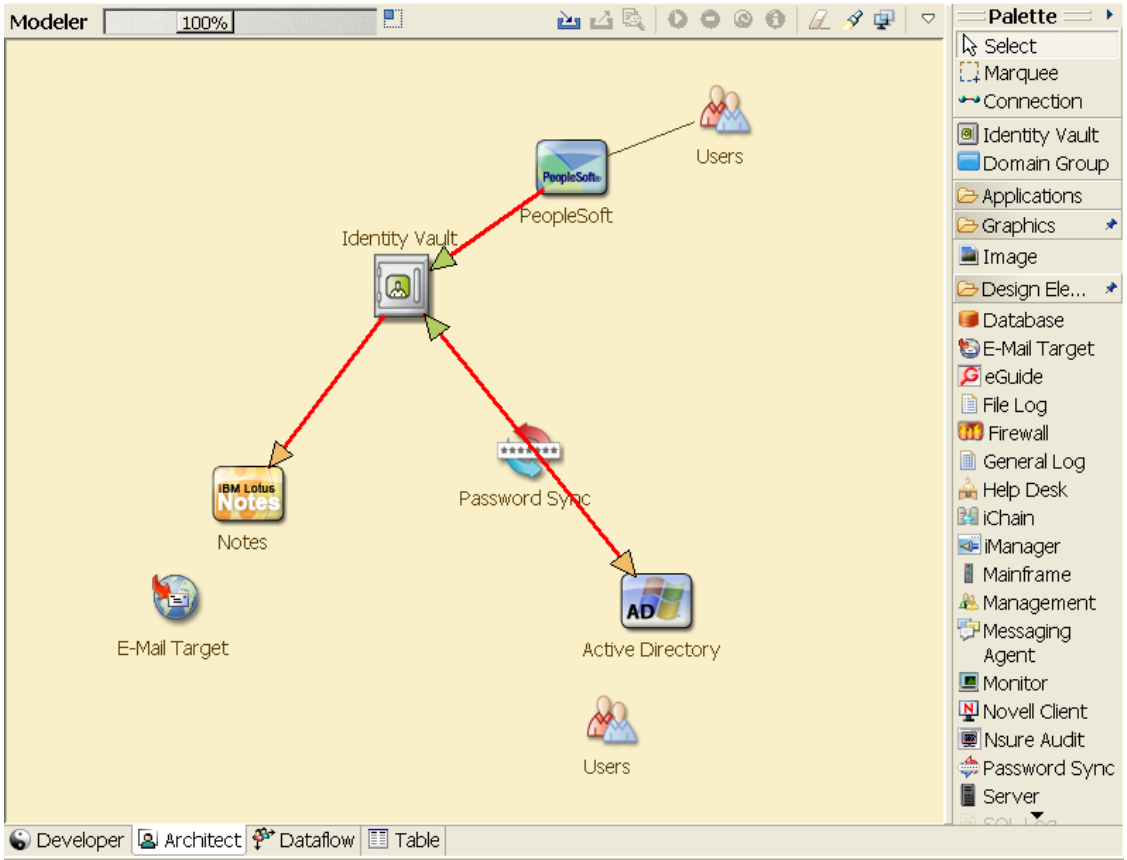
After you have gathered all of this information, you can design a correct enterprise data model for your environment. Proceed to Section 2.2.3, “Design an Enterprise Data Model,” on page 22 to start the design.

2.2.3 Design an Enterprise Data Model

After your business processes have been defined, you can use Designer to begin to design a data model that reflects your current business processes.

The model in Designer illustrates where data originates, where it moves to, and where it can’t move. It can also account for how critical events affect the data flow. For example, Figure 2-2 shows that the data flows from the PeopleSoft, but no data synchronizes back into PeopleSoft.

Figure 2-2 *Data Flow through Designer*



You might also want to develop a diagram that illustrates the proposed business process and the advantages of implementing automated provisioning in that process.

The development of this model begins by answering questions such as the following:

- What types of objects (users, groups, etc.) are being moved?
- Which events are of interest?
- Which attributes need to be synchronized?
- What data is stored throughout your business for the various types of objects being managed?
- Is the synchronization one-way or two-way?
- Which system is the authoritative source for which attributes?

It is also important to consider the interrelationships of different values between systems.

For example, an employee status field in PeopleSoft might have three set values: employee, contractor, and intern. However, the Active Directory system might have only two values: permanent and temporary. In this situation, the relationship between the "contractor" status in PeopleSoft and the "permanent" and "temporary" values in Active Directory needs to be determined.

The focus of this work should be to understand each directory system, how they relate to each other, and what objects and attributes need to be synchronized across the systems. After the design is complete, the next step is to create a proof of concept. Proceed to Section 2.3, "Proof of Concept," on page 23.

2.3 Proof of Concept

The outcome of this activity is to have a sample implementation in a lab environment that reflects your company's business policy and data flow. It is based on the design of the data model developed during the requirement analysis and design and is a final step before the production pilot.

NOTE: This step is often beneficial in gaining management support and funding for a final implementation effort.

Chapter 3, "Technical Guidelines," on page 27 contains information that can help you validate your proof of concept. It contains technical guidelines to help make your Identity Manager deployment successful.

As you create the proof of concept, you need to also create a plan to validate the data that you have in your systems. This step helps you make sure that conflicts don't occur between systems. Proceed to Section 2.4, "Data Validation and Preparation," on page 23 to make sure these conflicts do not occur.

2.4 Data Validation and Preparation

The data in production systems can be of varying quality and consistency and therefore might introduce inconsistencies when synchronizing systems. This phase presents an obvious point of separation between the resources implementation team and the business units or groups who "own" or manage the data in the systems to be integrated. At times, the associated risk and cost factors might not belong in a provisioning project.

You need to have the data model that you completed in the analysis and design phases. You should also have a proposed record matching and data format strategy defined in order to prepare the data correctly. With the data model and format strategy defined, you can:

- Create production data sets appropriate for loading into the Identity Vault (as identified in the analysis and design activities). This includes the likely method of loading (either bulk load or via connectors). The requirement for data that is validated or otherwise formatted is also identified.
- Identify performance factors and validate these factors against equipment being used and the overall distributed architecture of the deployment of Identity Manager.

After the data is prepared, proceed to Section 2.5, "Production Pilot," on page 24.

2.5 Production Pilot

The purpose of this activity is to begin the migration into a production environment. During this phase, there might be additional customization that occurs. In this limited introduction, the desired outcomes of the preceding activities can be confirmed and agreement obtained for the production rollout. The pilot validates the plan that has been created to this point in the process.

NOTE: This phase might provide the acceptance criteria for the solution and the necessary milestone en route to full production.

The pilot solution provides live proof of concept and validation for the data model and desired process outcomes. After the pilot is completed, proceed to Section 2.6, "Production Rollout Planning," on page 24.

2.6 Production Rollout Planning

This phase is where the production deployment is planned. The plan should:

- Confirm server platforms, software revisions, and service packs
- Confirm the general environment
- Confirm the design of the Identity Vault in a mixed coexistence
- Confirm that the business logic is correct
- Confirm that the data synchronization is occurring as planned
- Plan the legacy process cutover
- Plan a rollback contingency strategy

The plan needs to contain implementation and completion dates for each step in the rollout. Each stakeholder provides input for these dates and agrees that these dates work for them. This allows each person involved in the rollout to know when the changes are coming and when they should be completed.

With the production rollout plan completed, proceed to the Section 2.7, "Production Deployment," on page 25.

2.7 Production Deployment

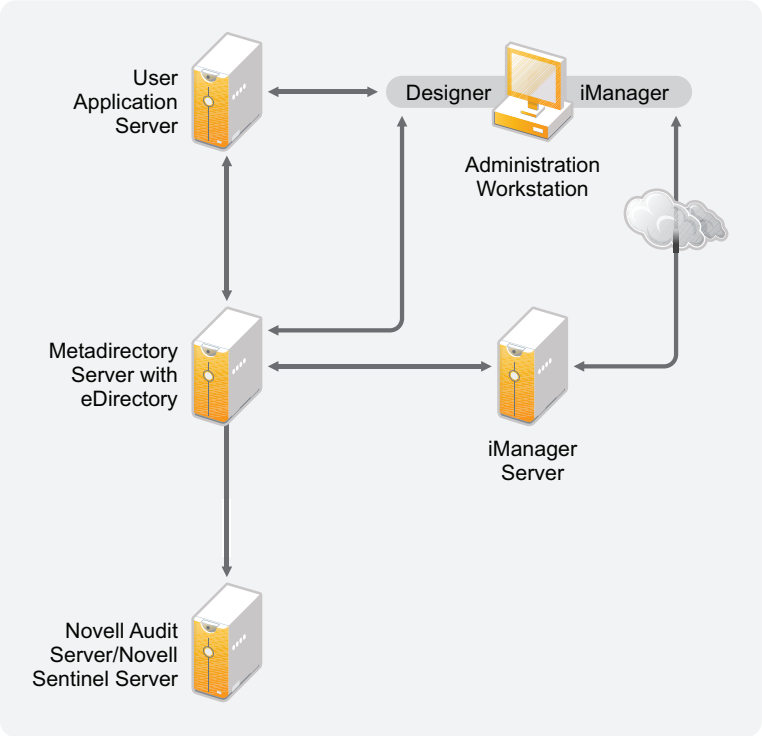
The production deployment phase puts all of the plans into action and the Identity Manager solution is created in the live environment. Use the production rollout plan to put the different pieces of the Identity Manager solution into place. This might take one night or it might be spread across a longer period of time. It depends upon what your plan contains.

Technical Guidelines

3

The information that you gather in Designer allows you to make the technical decisions such as installation location and configuration options, about each component of Identity Manager. For an introduction to each component, see the *Identity Manager 3.6 Overview* guide. Figure 3-1 is one possible configuration of an Identity Manager solution.

Figure 3-1 *Identity Manager Components*

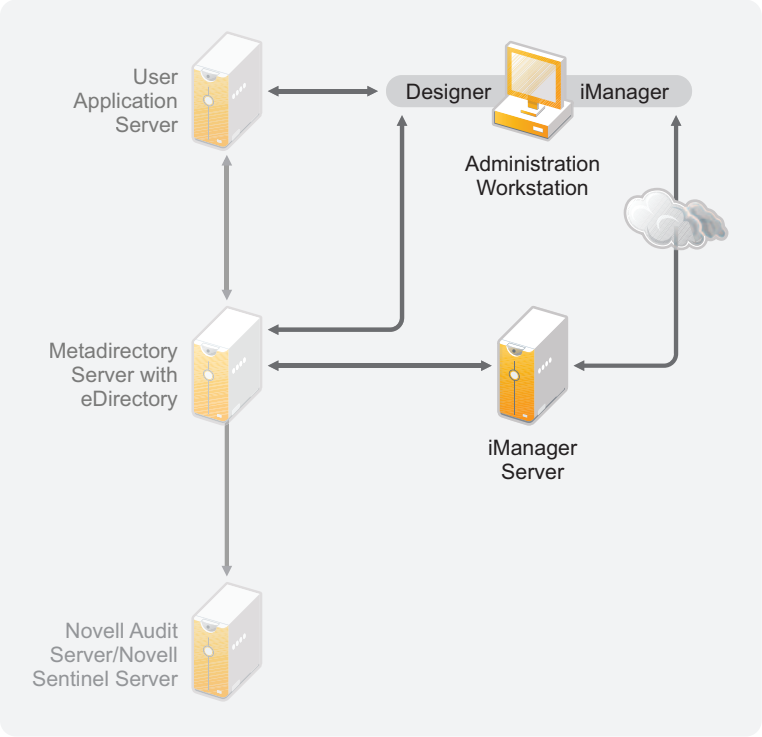


Identity Manager is very customizable. The following sections contain technical best practices guidelines to help set up and configure the Identity Manager solution that works best for your environment. Variables that affect how these guidelines apply to your environment include the type of hardware you have for your servers, how your WAN is configured, and how many objects are being synchronized.

3.1 Management Tools Guidelines

The two main management tools for the Identity Manager solution are Designer and iManager, as illustrated in Figure 3-2. Designer is used during the planning and creation of the Identity Manager solution, and iManager is used for daily management tasks of the Identity Manager solution.

Figure 3-2 *Identity Manager Management Tools*



This document contains information only about Designer and iManager. The User Application uses a Web-based administration page that is not discussed here. For more information about the User Application, see "Administering the User Application" (http://www.novell.com/documentation/idmrbpm361/agpro/data/agpropartadminapp.html) in the *User Application Administration Guide*.

- Section 3.1.1, "Designer Guidelines," on page 28
- Section 3.1.2, "iManager Guidelines," on page 29

3.1.1 Designer Guidelines

Designer is a thick client that is installed on a workstation. Designer is used to design, test, document, and then deploy your Identity Manager solution. Using Designer throughout the planning phase helps you capture information in one place. It also helps you see issues you might not be aware of as you look at all of the components of the solution together.

There are no major considerations for using Designer, unless you have multiple people working on the same project. Designer allows for version control of the project. For more information, see "Version Control" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.

3.1.2 iManager Guidelines

iManager is the administration tool for Identity Manager. When you install Identity Manager, the installation expects that you already have an iManager server installed in your eDirectory™ tree.

If you have more than 10 administrators constantly working in iManager at one time, you should have a server that hosts only iManager. Figure 3-2 represents this configuration of your Identity Manager solution. If you have only one administrator, you can run iManager on your Metadirectory server without complications.

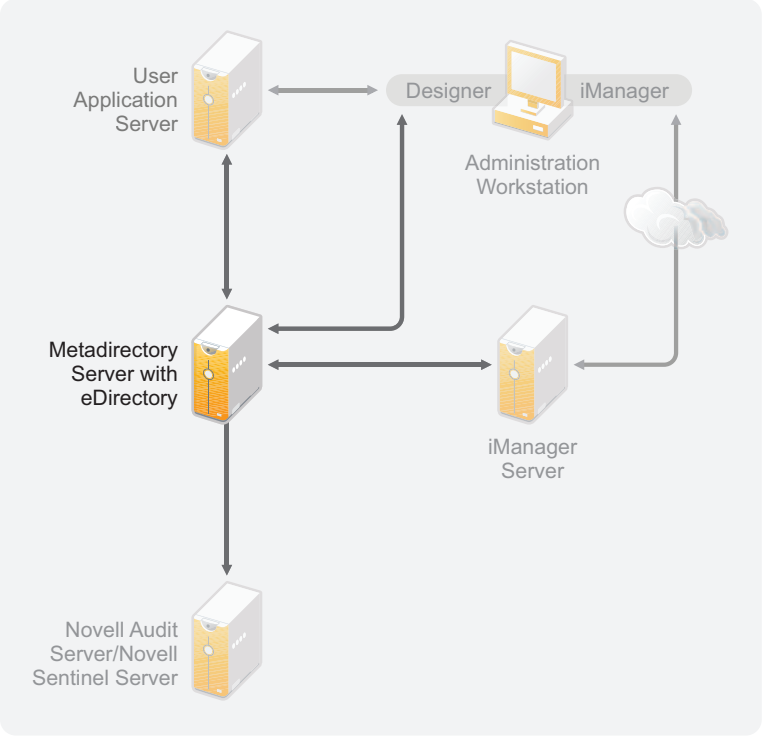
3.2 Metadirectory Server Guidelines

You can have one or more Metadirectory servers in your Identity Manager solution, depending on the server workload. The Metadirectory server requires that eDirectory be installed as shown in Figure 3-3. You can add a Remote Loader server, not represented in the figure, to help with the workload or configuration of your environment.

Drivers must run on the same server as the connected application. For example, to configure the Active Directory driver, the server in Figure 3-3 must be a Member server or a Domain controller. If you do not want to install eDirectory and Identity Manager on a Member server or Domain controller, then you would install the Remote Loader on a Member Server or a Domain controller. The Remote Loader sends all of the events from Active Directory to the Metadirectory server. The Remote Loader receives any information from the Metadirectory server and passes that to the connected application.

The Remote Loader provides added flexibility for your Identity Manager solution. For more information, see the *Identity Manager 3.6 Remote Loader Guide*.

Figure 3-3 *Metadirectory Sever*



There are many variables that affect the performance of the server. You should have no more than ten drivers running on a Metadirectory server. However, if you are synchronizing millions of objects with each driver, you might not be able to run ten drivers on a server. If you are synchronizing 100 objects per driver, you can probably run more than ten drivers on one server.

Setting up the Identity Manager solution in a lab environment gives you the opportunity to test how the servers will perform. You can use the health monitoring tools in iManager to obtain a baseline and then be able to make the best decisions for your environment. For more information about the health monitoring tools, see "Monitoring Driver Health" in the *Identity Manager 3.6 Common Driver Administration Guide*.

For considerations for each driver, see the Identity Manager Drivers documentation Web site (http://www.novell.com/documentation/idm36drivers/index.html). Driver-specific information is provided in each driver guide.

3.3 eDirectory Guidelines

eDirectory is the Identity Vault that stores the objects that are synchronized through the Identity Manager solution. The follow sections contain guidelines that help you plan your deployment of eDirectory.

- Section 3.3.1, "Identity Manager Objects in eDirectory," on page 30
- Section 3.3.2, "Replicating the Objects that Identity Manager Needs on the Server," on page 31
- Section 3.3.3, "Using Scope Filtering to Manage Users on Different Servers," on page 32

3.3.1 Identity Manager Objects in eDirectory

The following list indicates the major Identity Manager objects that are stored in eDirectory and how they relate to each other. No objects are created during the installation of Identity Manager. The Identity Manager objects are created during the configuration of the Identity Manager solution.

- **Driver Set:** A driver set is a container that holds Identity Manager drivers and library objects. A driver is associated with one server at a time, and only one driver set can be active on a server at a time. As a result, all active drivers must be grouped into the same driver set.

  The server that is associated with the driver set must have the Metadirectory engine installed on it.
- **Library:** The Library object is a repository of commonly used policies that can be referenced from multiple locations. The library is stored in the driver set. You can place a policy in the library that every driver in the driver set can reference.
- **Driver:** A driver provides the connection between an application and the Identity Vault. The driver is the connector that enables data synchronization and sharing between systems. The driver is stored in the driver set.
- **Job:** The purpose of a job is to complete a task that occurs many times. For example, a job can configure a system to disable an account on a specific day, or to initiate a workflow to request an extension of a person's access to a corporate resource. The job is stored in the driver set.

3.3.2 Replicating the Objects that Identity Manager Needs on the Server

If your Identity Manager environment calls for multiple servers in order to run multiple Identity Manager drivers, then your plan should make sure that certain eDirectory objects are replicated on servers where you want to run these Identity Manager drivers.

You can use filtered replicas, as long as all of the objects and attributes that the driver needs to read or synchronize are included in the filtered replica.

Keep in mind that you must give the Identity Manager Driver object sufficient eDirectory rights to any objects it is to synchronize, either by explicitly granting it rights or by making the Driver object security equivalent to an object that has the desired rights.

An eDirectory server that is running an Identity Manager driver (or that the driver refers to, if you are using the Remote Loader) must hold a master or read/write replica of the following:

- The Driver Set object for that server.

  You should have one Driver Set object for each server that is running Identity Manager. Unless you have specific needs, don't associate more than one server with the same Driver Set object.

  NOTE: When creating a Driver Set object, the default setting is to create a separate partition. Novell® recommends creating a separate partition on the Driver Set object. For Identity Manager to function, the server is required to hold a full replica of the Driver Set object. If the server has a full replica of the location where the Driver Set object is installed, the partition is not required.

- The Server object for that server.

  The Server object is necessary because it allows the driver to generate key pairs for objects. It is also important for Remote Loader authentication.

- The objects that you want this instance of the driver to synchronize.

  The driver can't synchronize objects unless a replica of those objects is on the same server as the driver. In fact, an Identity Manager driver synchronizes the objects in *all* the containers that are replicated on the server unless you create rules for scope filtering to specify otherwise.

  For example, if you want a driver to synchronize all user objects, the simplest way is to use one instance of the driver on a server that holds a master or read/write replica of all your users.

  However, many environments don't have a single server that contains a replica of all the users. Instead, the complete set of users is spread across multiple servers. In this case, you have three choices:

  - **Aggregate users onto a single server.** You can create a single server that holds all users by adding replicas to an existing server. Filtered replicas can be used to reduce the size of the eDirectory database if desired, as long as the necessary user objects and attributes are part of the filtered replica.
  - **Use multiple instances of the driver on multiple servers, with scope filtering.** If you don't want to aggregate users onto a single server, you need to determine which set of servers holds all the users, and set up one instance of the Identity Manager driver on each of those servers.

To prevent separate instances of a driver from trying to synchronize the same users, you need to use scope filtering to define which users each instance of the driver should synchronize. Scope filtering means that you add rules to each driver to limit the scope of the driver's management to specific containers. See "Using Scope Filtering to Manage Users on Different Servers" on page 32.

- **Use multiple instances of the driver on multiple servers, without scope filtering.** If you want to have multiple instances of a driver running on different servers without using filtered replicas, you need to define policies on the different driver instances that enable the driver to process different sets of objects within the same Identity Vault.

- The Template objects you want the driver to use when creating users, if you choose to use templates.

  Identity Manager drivers do not require you to specify eDirectory Template objects for creating users. However, if you specify that a driver should use a template when creating users in eDirectory, the Template object must be replicated on the server where the driver is running.

- Any containers you want the Identity Manager driver to use for managing users.

  For example, if you have created a container named Inactive Users to hold user accounts that have been disabled, you must have a master or read/write replica (preferably a master replica) of that container on the server where the driver is running.

- Any other objects that the driver needs to refer to (for example, work order objects for the Avaya* PBX driver).

  If the other objects are only to be read by the driver, not changed, the replica for those objects on the server can be a read-only replica.

3.3.3 Using Scope Filtering to Manage Users on Different Servers

Scope filtering means adding rules to each driver to limit the scope of the driver's actions to specific containers. The following are two situations in which you would need to use scope filtering:

- You want the driver to synchronize only users that are in a particular container.

  By default, an Identity Manager driver synchronizes objects in all the containers that are replicated on the server where it is running. To narrow that scope, you must create scope filtering rules.

- You want an Identity Manager driver to synchronize all users, but you don't want all users to be replicated on the same server.

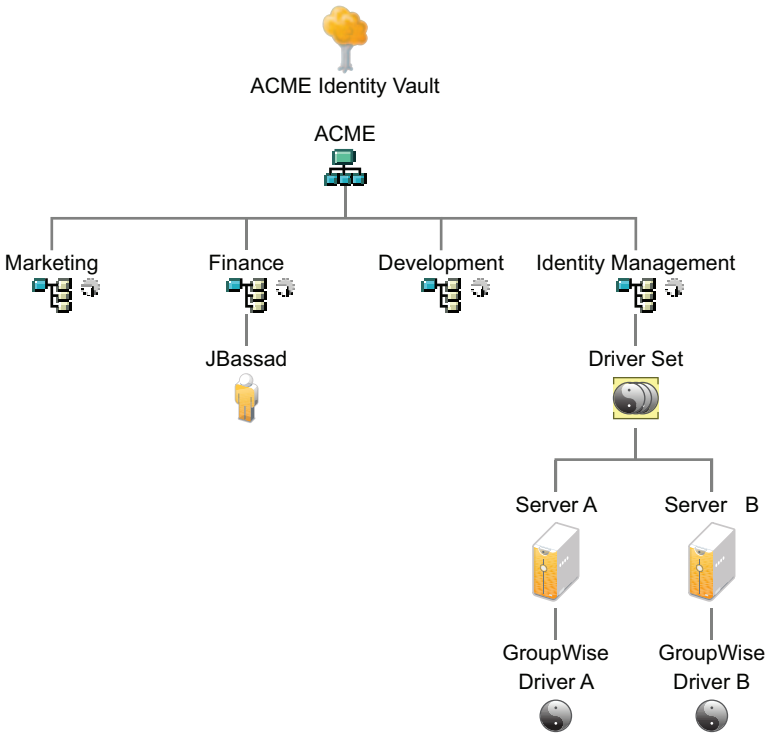
  To synchronize all users without having them replicated on one single server, you need to determine which set of servers holds all the users, and then create an instance of the Identity Manager driver on each of those servers. To prevent two instances of the driver from trying to synchronize the same users, you need to use scope filtering to define which users each instance of the driver should synchronize.

  NOTE: You should use scope filtering even if your server's replicas don't currently overlap. In the future, replicas could be added to your servers and an overlap could be created unintentionally. If you have scope filtering in place, your Identity Manager drivers do not try to synchronize the same users, even if replicas are added to your servers in the future.

Here's an example of how scope filtering is used:

The following illustration shows an Identity Vault with three containers that hold users: Marketing, Finance, and Development. It also shows an Identity Management container that holds the driver sets. Each of these containers is a separate partition.

Figure 3-4 *Example Tree for Scope Filtering*



In this example, the Identity Manager administrator has two Identity Vault servers, Server A and Server B, shown in Figure 3-5 on page 34. Neither server contains a copy of all the users. Each server contains two of the three partitions, so the scope of what the servers hold is overlapping.

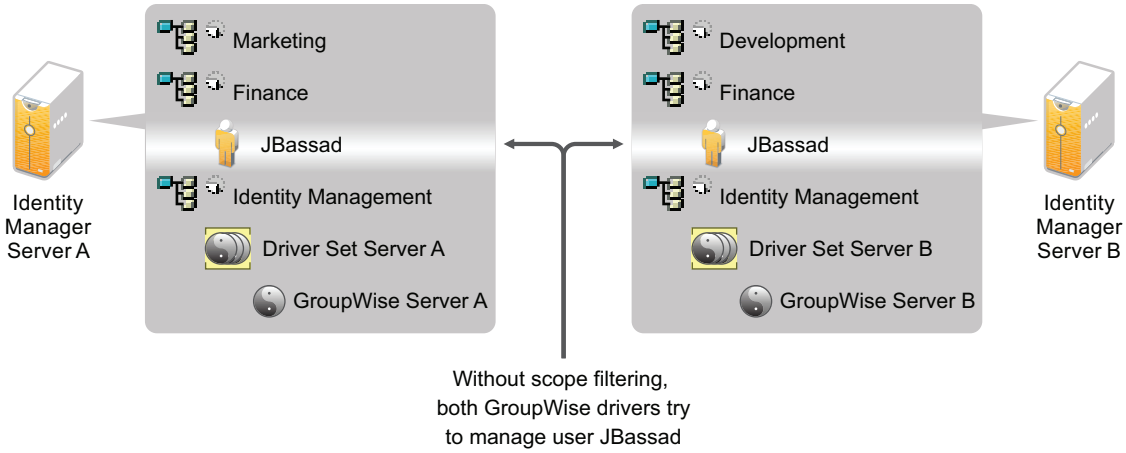
The administrator wants all the users in the tree to be synchronized by the GroupWise® driver, but does not want to aggregate replicas of the users onto a single server. He chooses instead to use two instances of the GroupWise driver, one on each server. He installs Identity Manager and sets up the GroupWise driver on each Identity Manager server.

Server A holds replicas of the Marketing and Finance containers. Also on the server is a replica of the Identity Management container, which holds the driver set for Server A and the GroupWise Driver object for Server A.

Server B holds replicas of the Development and Finance containers, and the Identity Management container holding the driver set for Server B and the GroupWise Driver object for Server B.

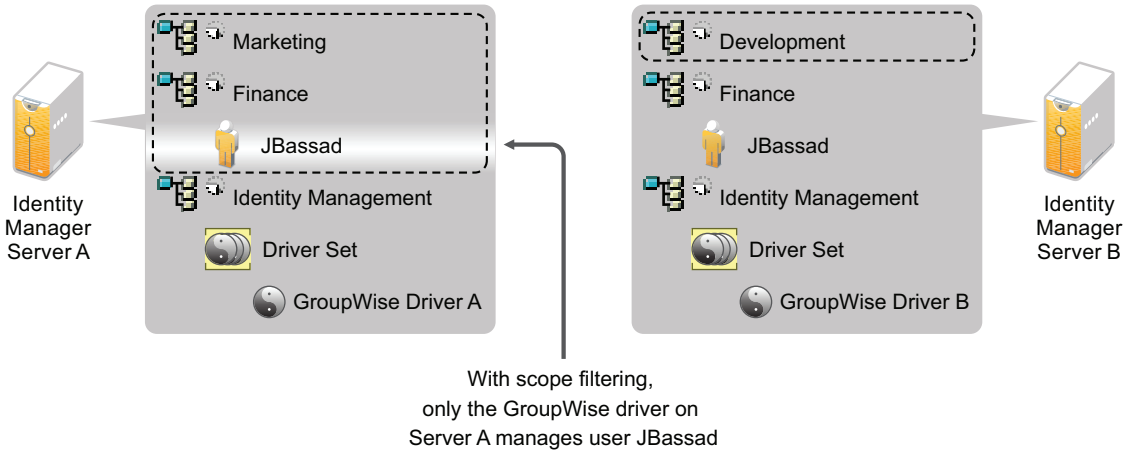
Because Server A and Server B both hold a replica of the Finance container, both servers hold the user JBassad, who is in the Finance container. Without scope filtering, both GroupWise Driver A and GroupWise Driver B would synchronize JBassad.

Figure 3-5 *Two Servers with Overlapping Replicas, without Scope Filtering*



The next illustration shows that scope filtering prevents the two instances of the driver from managing the same user, because it defines which drivers synchronize each container.

Figure 3-6 *Scope Filtering Defines Which Drivers Synchronize Each Container*



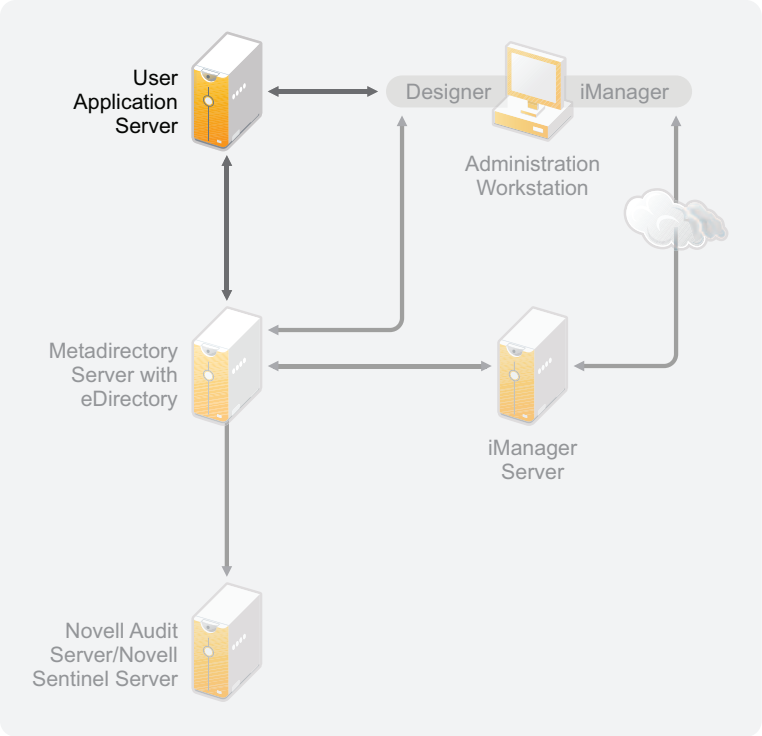
Identity Manager 3.6 comes with predefined rules. There are two rules that help with scope filtering. “Event Transformation - Scope Filtering - Include Subtrees” and “Event Transformation - Scope Filtering - Exclude Subtrees” are documented in *Understanding Policies for Identity Manager 3.6*.

For this example, you would use the Include Subtrees predefined rule for Server A and Server B. You would define the scope for each driver differently so that they would only synchronize the users in the specified containers. Server A would synchronize Marketing and Finance. Server B would synchronize Development.

3.4 User Application

The User Application should run on its own server, as shown in Figure 3-7. You might need more than one User Application server.

Figure 3-7 *User Application*



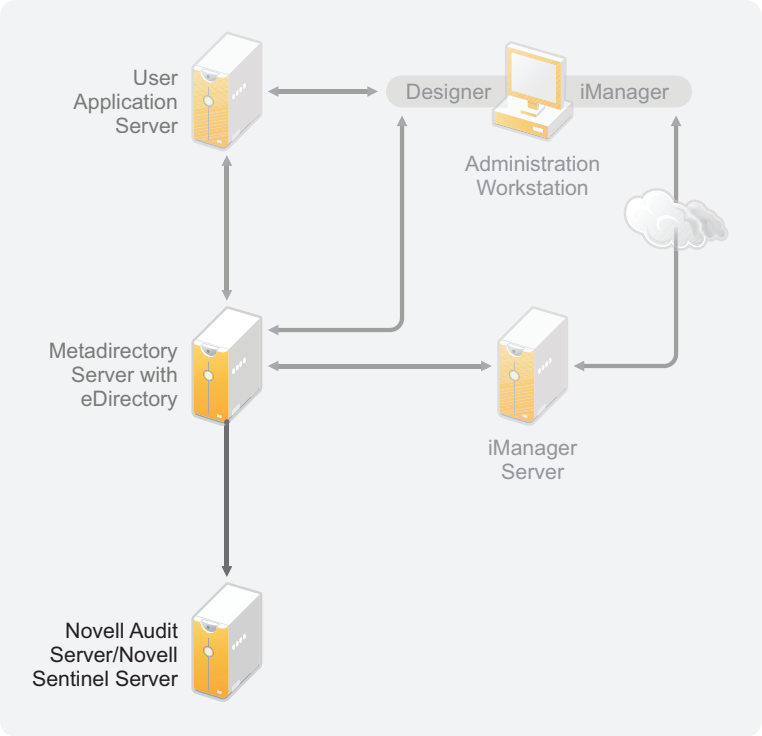
Use the information in the "Performance Tuning" (http://www.novell.com/documentation/idmrbpm361/agpro/data/b2gx735.html) section of the *User Application Administration Guide* to determine how best to configure the User Application server.

If the User Application server will be busy, you might need to consider using clustering for the User Application server. Clustering helps with high availability, scalability, and load balancing. For more information, see "Clustering" (http://www.novell.com/documentation/idmrbpm361/agpro/data/b2gx73a.html) in the *User Application Administration Guide*.

3.5 Auditing and Reporting Guidelines

If you need auditing and reporting as part of the Identity Manager solution, you need to implementing Novell Audit or Novell Sentinel™. It is recommended that you run Novell Audit or Sentinel on its own server, as shown in Figure 3-8. The number of servers that are required for your solution depends on how many drivers you have in your environment and how many events you have defined to audit.

Figure 3-8 *Novell Audit or Sentinel*



Installation

The following sections contain the information required to install an Identity Manager system.

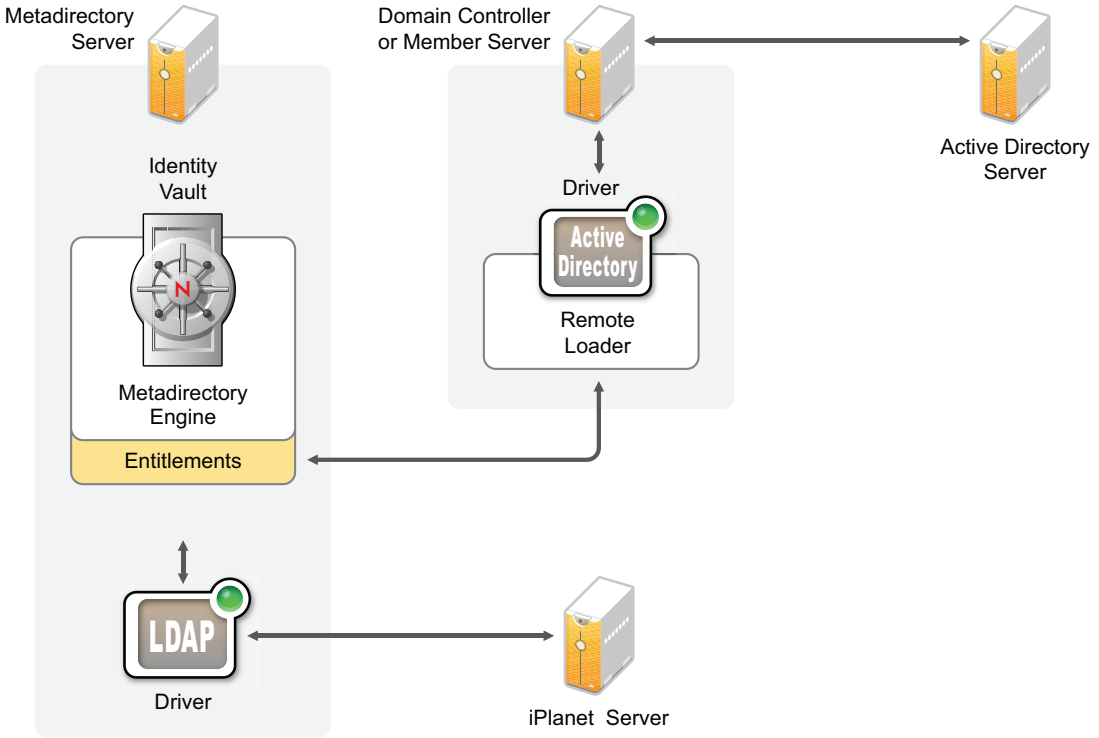
Basic Identity Manager System Checklist

4

The are many different ways to configure Identity Manager to take advantage of all of its features. Figure 4-1 represents a basic configuration of Identity Manager, which provisions users by synchronizing data. No matter how Identity Manager is configured, you always start with a basic system.

As you configure your Identity Manager system, use this checklist to make sure all steps are completed.

Figure 4-1 *Basic Identity Manager System*



4.1 Prerequisites

- Install Novell® eDirectory™ 8.8.3 or later on the server where you want to run Identity Manager. Make sure NMAS™ is installed during the installation of eDirectory. For more information, see the eDirectory 8.8 documentation Web site (http://www.novell.com/documentation/edir88/index.html).
- Install Novell iManager 2.7 on the same server. For more information, see the iManager documentation Web site (http://www.novell.com/documentation/imanager27/index.html).
- Download the Identity Manager product. For instructions on how to access the Identity Manager software, see Chapter 5, "Where to Get Identity Manager," on page 43.
- Install Designer 3.0 on a workstation. For more information, see Section 7.1, "Installing Designer," on page 55.

4.2 Planning

Planning is the key to having a successful implementation and deployment of Identity Manager.

- Create a development environment. It is important to have access to an Identity Manager system to validate your Identity Manager solution. You want to do all testing and development in the development environment before changing the production environment. For more information, see Chapter 1, "Setting Up a Development Environment," on page 13.
- Create a project plan for deploying Identity Manager. The project plan includes defining you key business processes, creating an Identity Manager solution that automates those processes, and an technical implementation plan. To have a successful deployment of Identity Manager, you must have a project plan. For more information, see Chapter 2, "Creating a Project Plan," on page 15.

4.3 Installation

- Install the Metadirectory server and drivers. For more information, see Chapter 7, "Installing Identity Manager," on page 55.
- Activate Identity Manager. For more information, see Chapter 8, "Activating Novell Identity Manager Products," on page 65.
- (Optional) Design and create entitlements for your Identity Manager system.

  Entitlements are a set of defined criteria for a person or group that can be applied to multiple drivers. After the criteria are met, the entitlements initiate an event to grant or revoke access to business resources. Entitlements add an additional level of control and automation for granting and revoking resources.

  The key benefit of entitlements is to create and define business logic in the entitlements, and then have that logic applied to multiple drivers. If you need to make a change, you change it in the entitlement instead of in each driver.

  Entitlements are implemented through three agents:

  - Role-Based Entitlements using the Entitlements service driver
  - Workflow
  - Roles Based Provisioning Module

  For more information about entitlements, see the *Identity Manager 3.6 Entitlements Guide*.

4.4 Driver Configuration with the Remote Loader

The Remote Loader allows you to synchronize information to a connected system without having eDirectory installed on the connected system. The Remote Loader synchronizes the information to the Metadirectory server, which stores the data in the Identity Vault. Identity Manager uses eDirectory as the Identity Vault.

- ❑ Install the Remote Loader on a machine that communicates with the connected system. The Remote Loader communicates between the connected system and the Metadirectory engine, and makes it possible for Identity Manager to communicate with a machine that does not have eDirectory installed. For more information, see "Installing the Remote Loader" in the *Identity Manager 3.6 Remote Loader Guide*.
- ❑ Configure the Remote Loader for a driver. You define a specific instance of the Remote Loader to communicate with a specific driver. For more information, see "Configuring the Remote Loader" in the *Identity Manager 3.6 Remote Loader Guide*.
- ❑ Configure the driver to communicate with the Remote Loader. There is a driver guide for each driver. For specific information about your driver, see the Identity Manager 3.6 Drivers Documentation Web site (http://www.novell.com/documentation/idm36drivers/).
- ❑ (Optional) Enable entitlements on the driver. Verify that you have the correct policies in place to execute the entitlement. For more information, see *Identity Manager 3.6 Entitlements Guide*.
- ❑ Repeat these steps for each driver you have in your environment.

4.5 Driver Configuration without the Remote Loader

- ❑ Create and configure your driver. There is a driver guide for each driver. For specific information about your driver, see the Identity Manager 3.6 Drivers Documentation Web site (http://www.novell.com/documentation/idm36drivers/).
- ❑ (Optional) Enable entitlements on the driver. Verify that you have the correct policies in place to execute the entitlement. For more information, see the *Identity Manager 3.6 Entitlements Guide*.
- ❑ Repeat these steps for each driver you have in your environment.

4.6 Additional Configuration

With the basic Identity Manager system installed and configured, you can add the following features:

- ❑ **Password Management:** If you want to manage passwords with Identity Manager, there is additional configuration that is required. Use the "Password Management Checklist" in the *Identity Manager 3.6 Password Management Guide* to verify all configuration steps are completed.

- **Roles Based Provisioning:** If you want to add Roles Based Provisioning to your Identity Manager solution, use the checklist in the *User Application Installation Guide* (http://www.novell.com/documentation/idmrbpm361/install/data/bookinfo.html) to verify all configuration steps are completed.
- **Auditing and Reporting:** Adding auditing and reporting to your Identity Manager solution, provides a means that you can show your business policies comply with the company's policies. You can add Novell Audit or Novell Sentinel to your Identity Manager solution for auditing and reporting. For more information about Novell Audit, see the *Identity Manager 3.6 Integration Guide for Novell Audit*. For more information about Novell Sentinel, see the *Identity Manager 3.6 Reporting Guide for Novell Sentinel*.

Where to Get Identity Manager

5

To download Identity Manager and its services:

1. Go to the Novell Downloads Web site (http://download.novell.com).
2. In the *Product or Technology* menu, select *Novell Identity Manager*, then click *Search*.
3. On the Novell Identity Manager Downloads page, click the Download button next to a file you want.
4. Follow the on-screen prompts to download the file to a directory on your computer.
5. Repeat from Step 2 until you have downloaded all the files you need. Most installations require multiple ISO images.

Table 5-1 *How the ISO Images Work*

Identity Manager Components	Platforms	ISO
Identity Manager DVD	Identity Manager: Linux, Windows*, and UNIX Designer: Linux and Windows	`Identity_Manager_3_6_DVD.iso`
Identity Manager and Drivers CD	Windows	`Identity_Manager_3_6_Win.iso`
Identity Manager and Drivers CD	Linux	`Identity_Manager_3_6_Linux.iso`
Identity Manager and Drivers CD	Solaris	`Identity_Manager_3_6_Solaris.iso`
Identity Manager and Drivers	AIX	`Identity_Manager_3_6_AIX.iso`
Designer for Identity Manager CD	Windows	`Identity_Manager_3_6_Designer_Win.iso`
Designer for Identity Manager CD	Linux	`Identity_Manager_3_6_Designer_Linux.iso`
User Application		See the *User Application Installation Guide* (http://www.novell.com/documentation/idmrbpm361/index.html) for this information.

Your Identity Manager purchase includes integration modules for several common systems that you might already have licenses for: Novell® eDirectory™, Microsoft* Active Directory, LDAP v3 Directories, Novell GroupWise®, and Lotus* Notes*. All other Identity Manager Integration Modules must be purchased separately.

The User Application ISO image is the standard version included with your Identity Manager 3.6 purchase. The User Application Roles Based Provisioning Module is an add-on product that adds a powerful roles based approval workflow to managing your users' identities. The Roles Based

Provisioning Module comes on a separate ISO image and is purchased separately. See the *User Application Installation Guide* (http://www.novell.com/documentation/idmrbpm361/index.html) for more information.

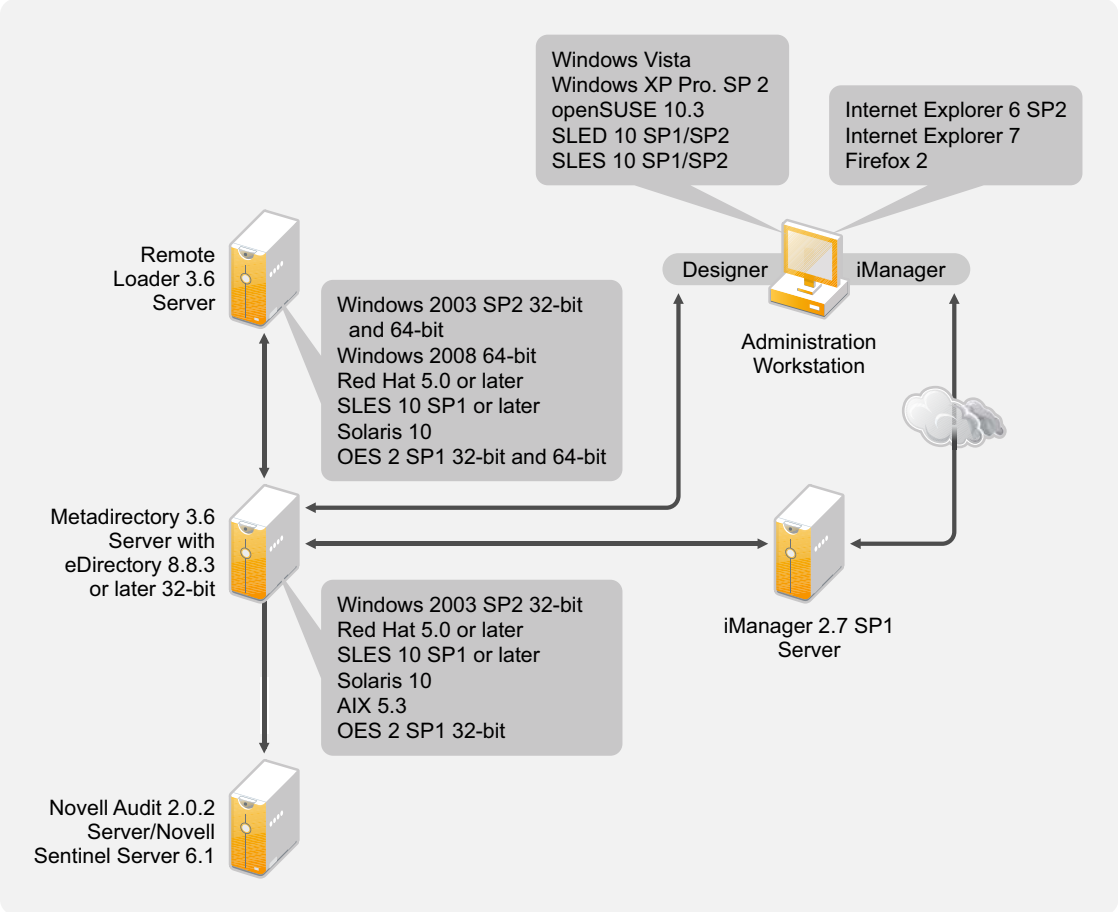
Your Identity Manager purchase also includes Designer for Identity Manager, a powerful and flexible administration tool that dramatically simplifies configuration and deployment.

System Requirements

6

The components of Novell® Identity Manager can be installed on multiple systems and platforms. Figure 6-1 shows which platforms and systems are supported.

Figure 6-1 *System Requirements for the Identity Manager Components*

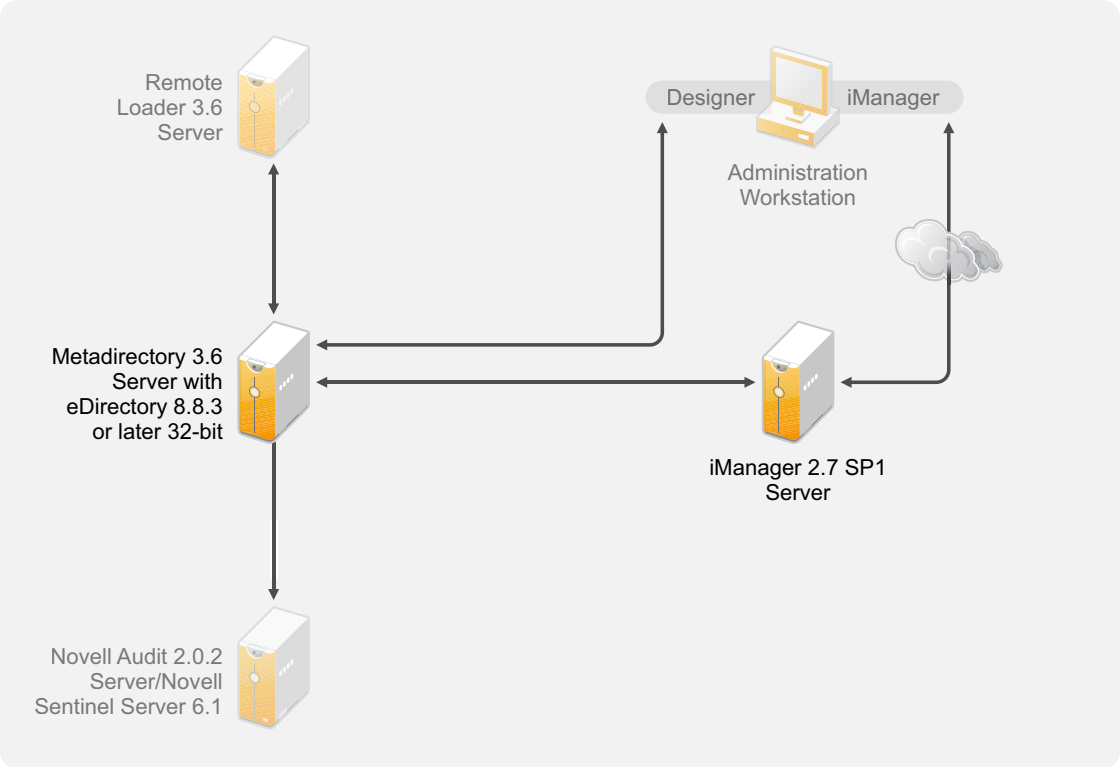


Depending on your system configuration, you might need to run the Identity Manager installation program several times to install Identity Manager components on the appropriate systems.

6.1 eDirectory and iManager

Identity Manager requires eDirectory™ and iManager to be installed. These products provide a base for Identity Manager. Figure 6-2 illustrates these components.

Figure 6-2 *Base Products for Identity Manager*



The following list indicates the required versions of these products:

- eDirectory 8.8.3 or later 32-bit only

  IMPORTANT: eDirectory 8.8.3 or later 64-bit is not supported on the Metadirectory server with Identity Manager 3.6.

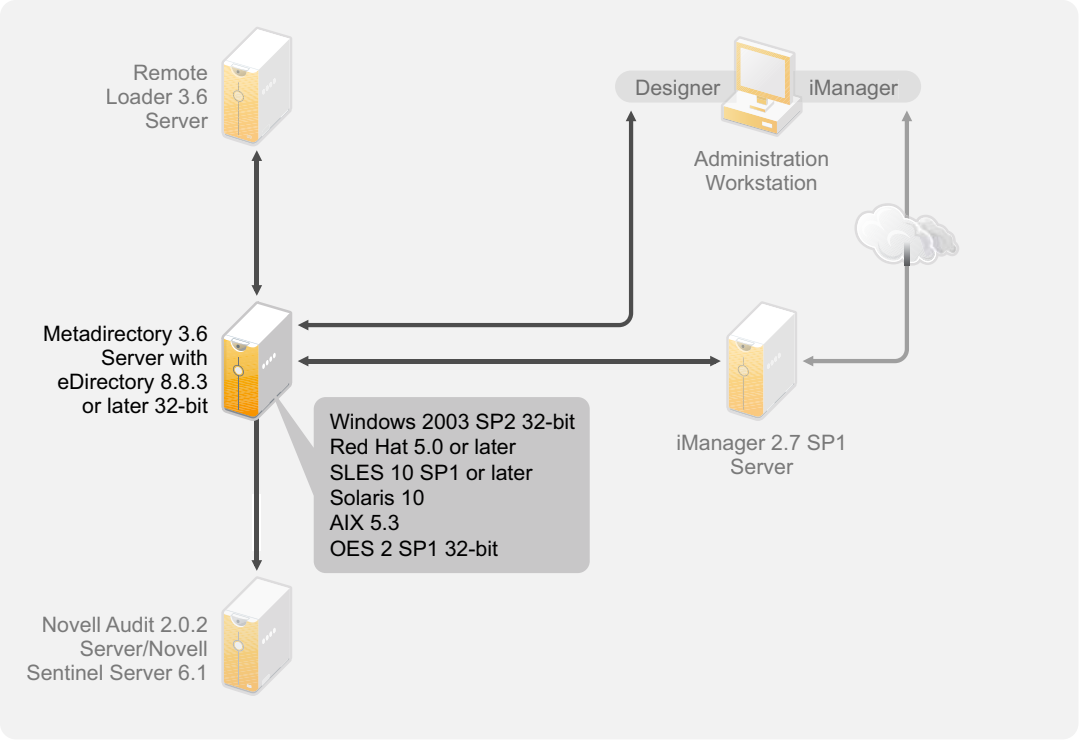
- iManager 2.7 SP1

For system requirements for eDirectory, see the *Novell eDirectory 8.8 SP3 Installation Guide* (http://www.novell.com/documentation/edir88/index.html). For system requirements for iManager, see the *iManager Installation Guide* (http://www.novell.com/documentation/imanager27/index.html).

6.2 Metadirectory Server

The Metadirectory server processes the events from the drivers, whether they are configured using the Remote Loader or not. For a list of the supported operating systems, see Figure 6-3.

Figure 6-3 *Supported Operating Systems for the Metadirectory Server*



During the installation of the Metadirectory server, the installation program detects what version of eDirectory is installed.

NOTE: You must have eDirectory 8.8.3 or later installed, or the installation program does not continue with the installation.

- Section 6.2.1, “Supported Processors,” on page 47
- Section 6.2.2, “Server Operating Systems,” on page 48

6.2.1 Supported Processors

The processors listed here are used during the testing of Identity Manager. The SPARC* processor is used for Solaris* testing.

The supported 32-bit processors for Linux (Red Hat* and SUSE® Linux Enterprise Server) and Windows operating systems are:

- Intel* x86-32
- AMD* x86-32

The supported 64-bit processors for Linux (Red Hat and SUES Linux Enterprise Server) and Windows operating systems are:

- Intel EM64T
- AMD Athlon64
- AMD Opteron*

6.2.2 Server Operating Systems

You can install the Metadirectory engine as a 32-bit application on a 64-bit operating system. Table 6-1 contains a list of the supported server operating systems that the Metadirectory server can run on.

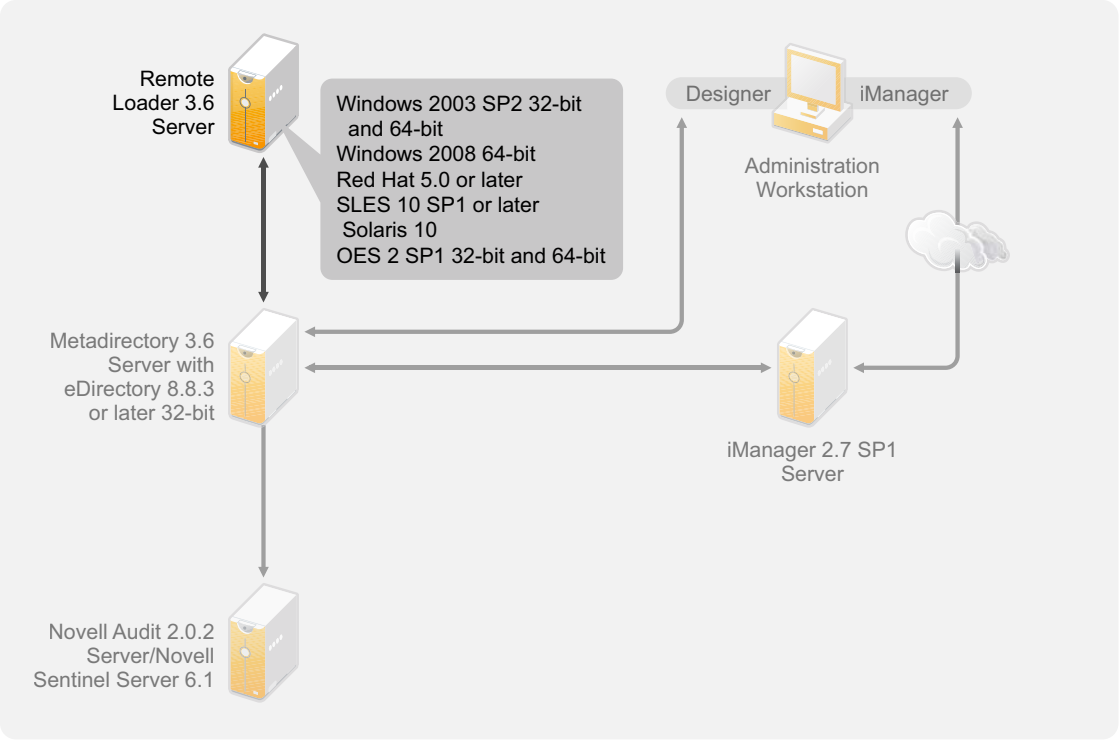
Table 6-1 *Supported Server Operating Systems*

Server Operating System Version	Notes
Windows Server* 2003 SP2 32-bit	The Password Sync feature is the only feature of Identity Manager that is supported on a 64-bit processor for Windows Server 2003.
Red Hat 5.0 or later	The Metadirectory server runs in 32-bit mode. Novell recommends that you apply the latest OS patches via the manufacturer's automated update facility before you install Identity Manager.
SUSE Linux Enterprise Server 10 SP1 or later	The Metadirectory server runs in 32-bit mode. Novell recommends that you apply the latest OS patches via the manufacturer's automated update facility before you install Identity Manager.
Solaris 10	The Metadirectory server runs in 32-bit mode.
AIX* 5L v5.3	The Metadirectory server runs in 32-bit mode.
Xen*	Xen is supported when the Xen Virtual Machine is running SLES 10 as the guest operating system in paravirtualized mode.
VMware*	
Open Enterprise Server 2 SP1 32-bit	

6.3 Remote Loader

The Remote Loader gives you flexibility in your Identity Manager solution configuration. It provides 32-bit or 64-bit support. The installation program detects the version of the operating system and then installs the corresponding version of the Remote Loader. Figure 6-4 lists the supported operating systems for the Remote Loader

Figure 6-4 *Supported Operating Systems for the Remote Loader*



If you have installed the Metadirectory engine as a 32-bit application on a 64-bit operating system, you cannot install the 64-bit Remote Loader on the same machine. The libraries for the 32-bit Metadirectory engine and the 64-bit Remote Loader have the same names. If they are both installed on the same machine it causes conflicts.

Table 6-2 lists the supported operating systems for the Remote Loader.

Table 6-2 *Supported Operating Systems for the Remote Loader*

Server Operating System Version	Notes
Windows Server* 2003 SP2 32-bit	The Remote Loader runs in 32-bit mode.
Windows Server 2003 SP2 64-bit	The Remote Loader runs in 64-bit mode only. The 32-bit Remote Loader is not supported.
Windows Server 2008	The Remote Loader runs in 64-bit mode only. The 32-bit Remote Loader is not supported.
Red Hat 5.0 or later	The Remote Loader runs in either 32-bit or 64-bit mode. Novell recommends that you apply the latest OS patches via the manufacturer's automated update facility before you install Identity Manager.

Server Operating System Version	Notes
SUSE Linux Enterprise Server 10 SP1 or later	The Remote Loader runs in either 32-bit or 64-bit mode. Novell recommends that you apply the latest OS patches via the manufacturer's automated update facility before you install Identity Manager.
Solaris 10	The Remote Loader runs in 32-bit mode.
AIX* 5L v5.3	The Remote Loader run in 32-bit mode only. The 64-bit Remote Loader is not supported.
Xen*	Xen is supported when the Xen Virtual Machine is running SLES 10 as the guest operating system in paravirtualized mode.
VMware*	
Open Enterprise Server 2 SP1 32-bit and 64-bit	

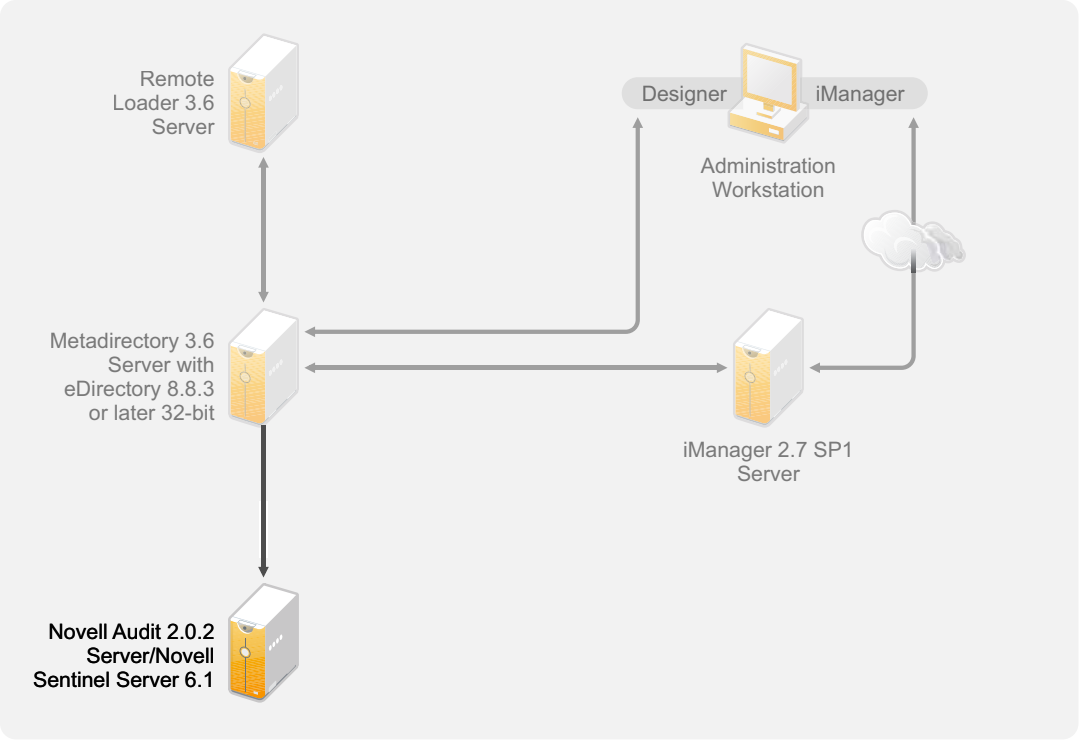
6.4 User Application

See the *User Application Installation Guide* (http://www.novell.com/documentation/idmrbpm361/index.html) for a list of the User Application system requirements.

6.5 Auditing and Reporting

Novell Audit and Novell Sentinel™ are two different tools used to gather auditing and reporting information about Identity Manager. Figure 6-5 lists the supported version of Novell Audit and Sentinel with Identity Manager 3.6.

Figure 6-5 *Novell Audit and Sentinel*



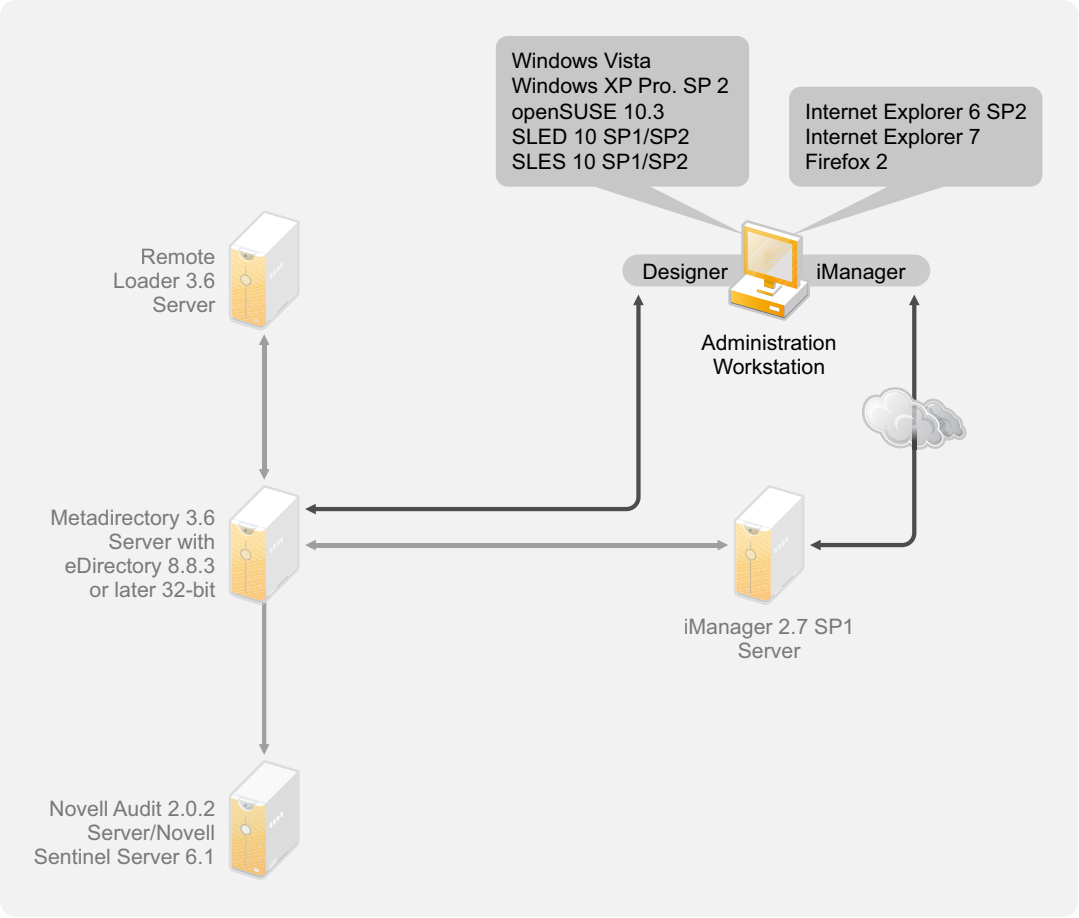
This is an optional addition to the Identity Manager solution. By adding auditing and reporting, you can meet compliance standards that many companies must abide by. It creates audit trails for any events you need to track, and it can generate reports to meet audit standards for your company.

For configuration information about Novell Audit with Identity Manager, see the *Identity Manager 3.6 Integration Guide for Novell Audit*. For configuration uniformitarian about Sentinel with Identity Manager, see the *Identity Manager 3.6 Reporting Guide for Novell Sentinel*. For system requirement information about Novell Audit, see the *Novell Audit Installation Guide* (http://www.novell.com/documentation/novellaudit20/index.html). For system requirement information about Novell Sentinel, see the *Novell Sentinel Installation Guide* (http://www.novell.com/documentation/sentinel6/index.html).

6.6 Workstations

The workstations are used for Designer, iManager, or the User Application administration Web page. Figure 6-6 lists the different components for workstations that are supported with Identity Manager 3.6.

Figure 6-6 *Supported Components for Workstations*



There are three different items that affect workstations:

- Section 6.6.1, “Java Runtime Environment (JRE),” on page 52
- Section 6.6.2, “Workstation Platforms,” on page 52
- Section 6.6.3, “iManager and Web Browsers,” on page 53

6.6.1 Java Runtime Environment (JRE)

Verify that the Java* Runtime Environment* (JRE*) version is 1.5 for workstations running Designer.

6.6.2 Workstation Platforms

Table 6-3 contains a list of the supported workstation platforms for Designer and iManager.

Table 6-3 *Supported Workstation Platforms*

Platforms	Details
Windows Vista*	The Ultimate and Business Editions are supported.
Windows XP Professional SP2	
openSUSE® 10.3	Apply the latest patches via the automated update facility.
SUSE Linux Enterprise Desktop 10 SP1/SP2	Apply the latest patches via the automated update facility.
SUSE Linux Enterprise Server 10 SP1/SP2	Apply the latest patches via the automated update facility.

6.6.3 iManager and Web Browsers

The supported version of iManager for Identity Manager 3.6 is iManager 2.7. It runs all of the plug-ins required to configure and administer Identity Manager.

The supported Web browsers for managing Identity Manager are:

- Internet Explorer* 6 SP2
- Internet Explorer 7
- Firefox* 2

Installing Identity Manager 7

Identity Manager has separate installations for the different components. It is important to install and use Designer during the planning phase of the Identity Manager implementation. For more information, see Chapter 2, “Creating a Project Plan,” on page 15.

You can install the Metadirectory Server or the Remote Loader next, in whatever order you want. The rest of the components need to be installed in the order listed. For an explanation of the different components, see the *Identity Manager 3.6 Overview* guide.

7.1 Installing Designer

Designer 3.0 is a workstation-based tool that allows you to design your Identity Manager solution. Install Designer first and use it throughout the planning part of your Identity Manager implementation. For more information about planning, see Part I, “Planning,” on page 11.

1. Verify that your workstation’s operating system is supported. For more information, see Section 6.6, “Workstations,” on page 51.
2. Start the installation by executing the correct program for your workstation’s platform.
   - **Windows:** `IDM3.6_Designer_Win:/windows/designer/install.exe`
   - **Linux:** `IDM3.6_Designer_Linux:/linux/designer/install`

     To execute the binary file, enter `./install`.
3. Use the following information to complete the installation:
   - **Install Folder:** Specify a location on the workstation where Designer should be installed.
   - **Create Shortcuts:** Select whether the shortcuts are placed on your desktop and in your Desktop Menu.
4. Refer to the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide* for further information.

7.2 Installing the Metadirectory Server

For Linux\UNIX platforms you can install the Metadirectory Server as `root` or a nonroot user. You install Identity Manager as a nonroot user to increase the security on the server. eDirectory must be installed by a nonroot user for the nonroot installation to work. The installation procedure is different if you are using the nonroot installation. See Section 7.2.1, “Nonroot Installation of the Metadirectory Server,” on page 57 for the installation instructions.

This procedure covers the installation of the Metadirectory server, web components, and utilities for the different platforms that Identity Manager supports.

1. Verify that you have met the system requirement list in Chapter 6, "System Requirements," on page 45.
2. (Linux\UNIX only) To verify that the environment variables for eDirectory are exported before starting the installation on Linux/UNIX, go to a command prompt and enter:

   ```
   set | grep PATH
   ```

   The environment variables set the path for the eDirectory installation. The eDirectory installation path is listed if the environment variables are set. If the environment variables are not set, the installation of Identity Manager fails.

   To set the environment variables for your current shell:

   ```
   . /opt/novell/eDirectory/bin/ndspath
   ```

   You must have the space between the . and the / for the command to work. For more information, see "Using the nds-install Utility to Install eDirectory Components" (http://www.novell.com/documentation/edir88/edirin88/index.html?page=/documentation/edir88/edirin88/data/a79kg0w.html#ai39feq).
3. Start the installation, using the correct program for your platform.
   - **Windows:** `IDM3.6_Win:windows\setup\idm_install.exe`
   - **Linux - GUI Install:** `IDM3_6_Lin/install.bin [-i gui]`
   - **Linux - Command Line Install:** `IDM3_6_Lin/linux/setup/install.bin -i console`
   - **UNIX - GUI Install:** `IDM3_6_Unix/install.bin [-i gui]`
   - **UNIX - Command Line Install:** `IDM_3_6_Unix/install.bin -i console`

   To execute the binary files on Linux\UNIX, enter `./install.bin [-i {gui | console}]`.
4. Use the following information to complete the installation:
   - **Select Components:** Select the Metadirectory server, iManager plug-ins, and utilities to install the Metadirectory server.
     - **Novell Identity Manager Metadirectory Server:** This option requires the Identity Vault to be installed on this server. It extends the schema for Identity Manager, installs the Metadirectory engine, the Identity Manager drivers, and the Novell® Audit Agent.
     - **Novell Identity Manager Connected System Server:** This option does not require the Identity Vault to be installed on this server. Select this option only if you are installing the Remote Loader. For more information, see Section 7.3, "Installing the Remote Loader," on page 59.
     - **None:** Select this option if you want to install the iManager plug-ins or the utilities without installing the Metadirectory server or the connected system server on this server.
     - **Novell Identity Manager Web-based Administration Server:** Select this option if you have iManager installed on this server. It installs the iManager plug-ins for Identity Manager.

- **Utilities:** Installs utilities used to help configure the drivers for the connected systems. Not all drivers have utilities. If you are not sure if you need this, select it. It does not use much disk space.
- **Customize the selected components:** Select this option to customize the selected features that to be installed.

  Other options must be select when you select the customize for the installation to proceed.

- **Authentication:** Specify a user and password that has sufficient rights in eDirectory to extend the schema. Specify the username in the LDAP format. For example, cn=idmadmin,o=company.

5 Activate Identity Manager. For more information, see Chapter 8, "Activating Novell Identity Manager Products," on page 65.

6 Create and configure your driver objects. This information is contained in each driver guide. For more information, see Identity Manager Drivers documentation (http://www.novell.com/documentation/idm36drivers/).

7.2.1 Nonroot Installation of the Metadirectory Server

You can install Identity Manager as a nonroot user to enhance the security of your UNIX/Linux server. You cannot install Identity Manager as a nonroot user if eDirectory is installed by `root`.

The nonroot installation does not install the following items:

- **Remote Loader:** Use the Java Remote Loader if you need to install the Remote Loader as a nonroot user. For more information, see Section 7.3.5, "Installing the Java Remote Loader on UNIX, Linux, or AIX," on page 62.
- **UNIX/Linux Account Driver:** Requires root privileges to function.
- **Novell Audit Platform Agent:** Requires root privileges to function.

  If the Novell Audit platform agent is installed by `root` on the system, the lcache process must be manually started by `root` for the nonroot Identity Manager installation to use the lcache process. If the lcache process is not running as `root`, Identity Manager experiences significant performance degradation.

  Identity Manager tries to start the lcache process every time an auditable event occurs. For instructions on how to automatically start lcache at system startup, see TID 3115818 "Script to stop and start lcache on Linux and Solaris" (http://www.novell.com/support/viewContent.do?externalId=3115818&sliceId=1)).

Use the following procedure to run the nonroot installation of the Metadirectory server:

1 Install eDirectory 8.8.3 or later as a nonroot user. For more information, see "Nonroot User Installing eDirectory 8.8" (http://www.novell.com/documentation/edir88/edirin88/index.html?page=/documentation/edir88/edirin88/data/a79kg0w.html#bs6a3gs).

2 Log in as the nonroot user used to install eDirectory.

  You should install Identity Manager as the same user you used to install the nonroot version of eDirectory. The user that installs Identity Manager must have write access to the directories and files of the nonroot eDirectory installation.

3 Execute the installation program for your platform.

- **Linux:** `IDM3.6_Lin/linux/setup/idm-nonroot-install`

- **AIX:** `IDM3.6_Unix/aix/setup/idm-nonroot-install`
- **Solaris:** `IDM3.6_solaris/setup/idm-nonroot-install`

  To execute the script files, enter `./idm-nonroot-install`

4 Use the following information to complete the installation:

- **Base Directory for the nonroot eDirectory Installation:** Specify the directory where the nonroot eDirectory installation is. For example, `/home/user/install/eDirecorty`.
- **Extend eDirectory Schema:** If this is the first Identity Manager server installed into this instance of eDirectory, enter `Y` to extend the schema. If the schema is not extended, Identity Manager cannot function.

  You are prompted to extend the schema for each instance of eDirectory owned by the nonroot user that is hosted by the nonroot eDirectory installation.

  If you do select to extend the schema, specify the full distinguished name (DN) of the eDirectory user that has rights to extend the schema. The user must have the Supervisor right to the entire tree to extend the schema. For more information about extending the schema as a nonroot user, see the `schema.log` file that is placed in the `data` directory for each instance of eDirectory.

  Run the `/opt/novell/eDirectory/idm-install-schema` program to extend the schema on additional eDirectory instances after the installation is complete.
- **Utilities:** (Optional) If you need an Identity Manager driver utility, you must copy the utilities from the Identity Manager installation media to the Identity Manager server. All utilities are found under the `IDM3.6_`*`platform`*`/setup/utilities` directory.

5 Activate Identity Manager. For more information, see Chapter 8, “Activating Novell Identity Manager Products,” on page 65.

6 Create and configure the driver objects. This information is contained in each driver guide. For more information, see the Identity Manager Drivers documentation (http://www.novell.com/documentation/idm36drivers/).

7.2.2 Silent Installation of the Metadirectory Server

Start the silent installation by using the correct program for your platform:

- **Linux:** `IDM3_6_Lin/linux/setup/install.bin -i silent -f <filename>.properties`
- **Unix:** `IDM3_6_Lin/unix/install.bin -i silent -f <filename>.properties`

Create a property file `<filename>.properties` with the following attributes:

```
EDIR_USER_NAME=cn=admin,o=test
EDIR_USER_PASSWORD=test
METADIRECTORY_SERVER_SELECTED=true
CONNECTED_SYSTEM_SELECTED=false
WEB_ADMIN_SELECTED=true
UTILITIES_SELECTED=true
```

For default installed locations, see `/tmp/idmInstall.log`.

7.3 Installing the Remote Loader

The Remote Loader extends the functionality of Identity Manager by allowing the driver to access the connected system without having the Identity Vault and Metadirectory engine installed on the same server as the connected system. As part of the planning process, you need to decide if you are going to use the Remote Loader or not. For more information about the planning process, see Chapter 3, "Technical Guidelines," on page 27.

If you want to install the Remote Loader using a nonroot user, use the Java Remote Loader. It can also be used when customizing your environment and installing it on a unsupported platform such as HP-UX*. For more information, see Section 7.3.5, "Installing the Java Remote Loader on UNIX, Linux, or AIX," on page 62.

7.3.1 Requirements

The Remote Loader requires that each driver's connected system is available and the relevant APIs are provided. Refer to the Identity Manager Driver documentation (http://www.novell.com/documentation/idm36drivers) for operating system and connected system requirements that are specific to each driver.

7.3.2 Supported Drivers

Not all Identity Manager drivers are supported by the Remote Loader. Table 7-1 lists the drivers that are Remote Loader capable.

Table 7-1 *Remote Loader Capable Drivers*

Active Directory	Avaya* PBX
Delimited Text	GroupWise®
JDBC*	JMS
LDAP	Driver for Linux and UNIX
Lotus Notes*	PeopleSoft* 5.2
Remedy* ARS	SAP* HR
SAP User Management	Scripting
SOAP	WorkOrder
Manual Task Services	Null Services
LoopBack	

The drivers listed in Table 7-2 are not capable of using the Remote Loader.

Table 7-2 No Remote Loader Capabilities

eDirectory	Entitlements Service
Role Service	User Application

7.3.3 Installation Procedure

The Remote Loader has different programs for the different platforms that allow it to communicate with the Metadirectory engine.

- **Windows:** The Remote Loader Console uses `rlconsole.exe` to interface with `dirxml_remote.exe`, which is an executable that enables the Metadirectory engine to communicate with the Identity Manager drivers running on Windows.
- **Linux/UNIX:** `rdxml` is an executable that enables the Metadirectory engine to communicate with the Identity Manager drivers running in Solaris, Linux, or AIX environments.

To install the Remote Loader:

1. Verify you have met the system requirements listed in Chapter 6, "System Requirements," on page 45.
2. Start the installation, using the correct program for your platform.
   - **Windows:** `IDM3.6_Win:windows\setup\idm_install.exe`
   - **Linux - GUI Install:** `IDM3_6_Lin/install.bin [-i gui]`
   - **Linux - Command Line Install:** `IDM3_6_Lin/install.bin -i console`
   - **UNIX - GUI Install:** `IDM3_6_Unix/install.bin [-i gui]`
   - **UNIX - Command Line Install:** `IDM_3_6_Unix/install.bin -i console`

   To execute the binary files on Linux\UNIX, enter `./install.bin [-i {gui | console}]`.
3. Use the following information provided to complete the installation:
   - **Select Components:** Select the connected system server and utilities to install the Remote Loader.
     - **Novell Identity Manager Metadirectory Server:** Select this option only if you are installing the Metadirectory server. This option requires the Identity Vault to be installed on this server. For more information, see Section 7.2, "Installing the Metadirectory Server," on page 55.
     - **Novell Identity Manager Connected System Server:** This option does not require the Identity Vault to be installed on this server. It installs the Remote Loader Service on your application server.
     - **None:** Select this option if you want to install the iManager plug-ins or the utilities without installing the Metadirectory server or the connected system server on this server.
     - **Novell Identity Manager Web-based Administration Server:** Select this option if you have iManager installed on this server. It installs the iManager plug-ins for Identity Manager.

- **Utilities:** Installs utilities used to help configure the drivers for the connected systems. Not all drivers have utilities. If you are not sure if you need this, select it. It does not use much disk space.
- **Custom:** Select this option if you want to customize the features that are installed. It allows you to select the following options:
  - **Remote Loader Service:** The service that communicates with the Metadirectory engine.
  - **Drivers:** Select which driver files to install. You should install all of the driver files. If you need to add another Remote Loader instance, you do not need to run the installation again.
  - **Register the Novell Audit System Components for Identity Manager:**

    Select this option if you have Novell Audit or Novell Sentinel installed.

  Other options must be select when you select the customize for the installation to proceed.
- **(Windows Only) Install Location for Connected System Server:** Specify the directory where the Connected System Server is installed.
- **(Windows Only) Install Location for Utilities:** Specify the directory where the utilities are installed.

4 Create and configure your driver objects to use the Remote Loader. This information is contained in each driver guide. For more information, see the Identity Manager Drivers documentation (http://www.novell.com/documentation/idm36drivers/).

5 Create a Remote Loader configuration file to work with your connected system. For more information, see "Configuring the Remote Loader for Linux\UNIX by Creating a Configuration File" in the *Identity Manager 3.6 Remote Loader Guide*.

7.3.4 Silent Installation of the Remote Loader

Start the silent installation by using the correct program for your platform:

- **Linux:** `IDM3_6_Lin/linux/setup/install.bin -i silent -f <filename>.properties`
- **Unix:** `IDM3_6_Lin/unix/install.bin -i silent -f <filename>.properties`

Create a property file `<filename>.properties` with the following attributes:

```
EDIR_USER_NAME=cn=admin,o=test
EDIR_USER_PASSWORD=test
METADIRECTORY_SERVER_SELECTED=false
CONNECTED_SYSTEM_SELECTED=true
WEB_ADMIN_SELECTED=true
UTILITIES_SELECTED=true
```

For default installed locations, see `/tmp/idmInstall.log`.

7.3.5 Installing the Java Remote Loader on UNIX, Linux, or AIX

`dirxml_jremote` is a pure Java Remote Loader. It is used to exchange data between the Metadirectory engine running on one server and the Identity Manager drivers running in another location, where `rdxml` doesn't run. It should be able to run on any system with a compatible JRE (1.5.0 minimum) and Java Sockets. It is supported on the Linux/UNIX platforms the Identity Manager supports.

1. Verify that the Java 1.5.x JDK*/JRE is available on the host system.
2. Copy the `dirxml_jremote_dev.tar.gz` file to the desired location on the remote server.
3. Copy the `dirxml_jremote.tar.gz` or the `dirxml_jremote_mvs.tar` file to the desired location on the remote server.

   For example: `/usr/idm`

   The file is located in the same location on the Linux or UNIX ISO images. The files are located in the `java_remoteloader` folder off the root of the ISO image. For information on mvs, untar the `dirxml_jremote_mvs.tar` file, then refer to the `usage.html` document.
4. Unzip and extract the `dirxml_jremote.tar.gz` file and the `dirxml_jremote_dev.tar.gz` file.

   For example: `gunzip dirxml_jremote.tar.gz` or `tar -xvf dirxml_jremote_dev.tar`
5. Copy the application shim `.jar` files to the `lib` subdirectory that was created when the `dirxml_jremote.tar` file was extracted.

   Because the tar file doesn't contain drivers, you must manually copy the drivers into the `lib` directory. The `lib` directory is under the directory where the untarring occurred.
6. Customize the `dirxml_jremote` script by doing either of the following:
   - Verify that the Java executable is reachable through the PATH environment variable by setting the environment variable RDXML_PATH. Enter the following commands to set the environment variable:
     1. `set RDXML_PATH=path`
     2. `export RDXML_PATH`
   - Edit the `dirxml_jremote` script and prepend the path to the Java executable on the script line that executes Java.
7. Configure the sample `config8000.txt` file for use with your application shim. For more information, see "Configuring the Remote Loader for Linux\UNIX by Creating a Configuration File" in the *Identity Manager 3.6 Remote Loader Guide*.

7.4 Installing the Roles Based Provisioning Module

To install the Roles Based Provisioning Module, see the *Installation Guide* (http://www.novell.com/documentation/idmrbpm361/index.html) for the Roles Based Provisioning Module.

7.5 Installing a Custom Driver

You can create a custom driver to use in your environment For more information on creating a custom driver or installing one, see the Novell Developer Kit (http://developer.novell.com/wiki/index.php/Dirxml).

7.6 Installing Novell Audit or Sentinel

This is an optional addition to the Identity Manager solution. By adding auditing and reporting, you can meet compliance standards that many companies must abide by. It creates audit trails for any events you need to track, and it can generate reports to make sure you meet any audits standards for your company.

For configuration information about Novell Audit with Identity Manager, see *Identity Manager 3.6 Integration Guide for Novell Audit*. For configuration information about Sentinel with Identity Manager, see the *Identity Manager 3.6 Reporting Guide for Novell Sentinel*. For system requirement information about Novell Audit, see the *Novell Audit Installation Guide* (http://www.novell.com/documentation/novellaudit20/index.html). For system requirement information about Sentinel, see the *Novell Sentinel Installation Guide* (http://www.novell.com/documentation/sentinel6/index.html).

7.7 Installing Identity Manager in Clustering Environment

If you deploy Identity Manager in a clustered environment, Novell supports Identity Manager running in the cluster, although in most situations, the cluster itself is not supported. The following two scenarios describe the extent of support given:

- If you run the Identity Manager engine or remote loader on SUSE Linux Enterprise Server (SLES), and use Heartbeat to manage High Availability, everything is supported.
- If you run the Identity Manager engine or Remote Loader in a clustered environment on any other supported platform, support is extended for everything except the cluster management system.

NOTE: SLES is the only platform that is fully supported in a clustered environment.

For more information on how to configure a cluster with Identity Manager, refer to these resources:

- “Configuring a Linux High Availability Cluster for IDM 3 and eDirectory 8.8” AppNote, at the Novell Cool Solutions Web site (http://www.novell.com/coolsolutions/appnote/18591.html).
- “Clustering eDirectory and IDM on Windows 2003” AppNote, at the Novell Cool Solutions Web site (http://www.novell.com/coolsolutions/appnote/14856.html).
- “High Availability on PolyServe Clusters” AppNote, at the Novell Cool Solutions Web site (http://www.novell.com/coolsolutions/appnote/16131.html).
- “Setting Up an Identity Manager Cluster on Windows”, at the Novell Support Web site (http://www.novell.com/support/search.do?cmd=displayKC&docType=kc&externalId=3575742&sliceId=SAL_Public&dialogID=310596&stateId=1%200%20308676). The document number is 3575742.

Activating Novell Identity Manager Products

8

The following information explains how activation works for products based on Novell® Identity Manager. Identity Manager, Integration Modules, and the Provisioning Module must be activated within 90 days of installation, or they will shut down. At any time during the 90 days, or afterward, you can choose to activate Identity Manager products.

You can activate Identity Manager and the drivers by completing the following tasks:

8.1 Purchasing an Identity Manager Product License

To purchase an Identity Manager product license, see the Novell Identity Manager How to Buy Web page (http://www.novell.com/products/identitymanager/howtobuy.html)

After you purchase a product license, Novell sends you a Customer ID via e-mail. The e-mail also contains a URL to the Novell site where you can obtain a credential. If you do not remember or do not receive your Customer ID, call the Novell Activation Center at 1-800-418-8373 in the U.S. In all other locations, call 1-801-861-8373. (You will be charged for calls made using the 801 area code.)

8.2 Installing a Product Activation Credential

You should install the Product Activation Credential via iManager.

1. After you purchase a license, Novell sends you an e-mail with your Customer ID. The e-mail also contains a link under the Order Detail section to the site where you can obtain your credential. Click the link to go to the site.
2. Click the license download link and do one of the following:
   - Save the Product Activation Credential file.

     or
   - Open the Product Activation Credential file, then copy the contents of the Product Activation Credential to your clipboard.

     Carefully copy the contents, and make sure that no extra lines or spaces are included. You should begin copying from the first dash (-) of the credential (----BEGIN PRODUCT ACTIVATION CREDENTIAL) through the last dash (-) of the credential (END PRODUCT ACTIVATION CREDENTIAL-----).
3. Open iManager.
4. Select *Identity Manager* > *Identity Manager Overview*.
5. Click  to browse for and select a driver set in the tree structure.

6 On the Identity Manager Overview page, click the driver set that contains the driver to activate.

7 On the Driver Set Overview page, click *Activation* > *Installation*.

8 Select the driver set where you want to activate an Identity Manager component, then click *Next*.

9 Do one of the following:

- Specify where you saved the Identity Manager Activation Credential, then click *Next*.

  or

- Paste the contents of the Identity Manager Activation Credential into the text area, then click *Next*.

10 Click *Finish*.

NOTE: You need to activate each driver set that has a driver. You can activate any tree with the credential.

8.3 Viewing Product Activations for Identity Manager and for Drivers

For each of your driver sets, you can view the Product Activation Credentials you have installed for the Metadirectory engine and Identity Manager drivers:

1 Open iManager.

2 Click *Identity Manager* > *Identity Manager Overview.*

3 Click  to browse for and select a driver set in the tree structure, then click  . to perform the search.

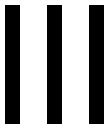
4 On the Identity Manager Overview page, click the driver set you want to view the activation information for.

5 On the Driver Set Overview page, click *Activation* > *Information*.

You can view the text of the activation credential or, if an error is reported, you can remove an activation credential.

NOTE: After installing a valid Product Activation Credential for a driver set, you might still see "Activation Required" next to the driver name. If this is the case, restart the driver and the message should then disappear.

Upgrading



The following sections contain information about upgrading your existing Identity Manager solution:

What's New

9

9.1 Support for 64-Bit Operating Systems

Identity Manager supports certain 64-bit operating systems through the use of the Remote Loader. For a list of supported operating systems, see Section 6.3, "Remote Loader," on page 48.

9.2 New Installation Program

The installation program is new. It is consistent across each platform. There are no differences between the installers. For more information about the installation process, see Part II, "Installation," on page 37.

9.3 New Driver Configuration Files

The following is a list of the major changes that have occurred to the driver configuration files:

- Many driver parameters are now GCVs on the driver or the driver set. If a GCVs applies to two or more drivers, the GVC is located on the driver set instead of the driver. This simplifies the configuration by allowing you to change information in one location instead of on each driver and in multiple policies. For more information, see "When and How to Use Global Configuration Values" in the *Identity Manager 3.6 Common Driver Administration Guide*.
- Prompting for minimal information during the import of the driver. If there is additional configuration required for the driver to function, you can change the driver parameter or GCV settings for the driver.

  For more information, refer to the "Creating and Configuring a New Driver" sections in the individual driver guides on the Identity Manager 3.6 Drivers documentation Web site (http://www.novell.com/documentation/idm36drivers).

- Subscriber Placement policies place object in the application based on a driver level GCV. For more information, see "When and How to Use Global Configuration Values" in the *Identity Manager 3.6 Common Driver Administration Guide*.
- Publisher Placement policies place objects in the Identity Vault based on the driver set level GCV. For more information, see "When and How to Use Global Configuration Values" in the *Identity Manager 3.6 Common Driver Administration Guide*.
- Policies are renamed using a common naming practice. For more information, see "Naming Conventions for Policies" in the *Understanding Policies for Identity Manager 3.6*.

9.4 Driver Health Monitoring

You can monitor the health of the drivers in your system. As part of the driver health configuration process, you not only define the criteria that determine each health state (green, yellow, or red), but you also define the actions to perform whenever the driver's health changes from one state to another.

For more information, see "Monitoring Driver Health" in the *Identity Manager 3.6 Common Driver Administration Guide*.

9.5 New ID Provider Driver

The ID Provider driver is a new services driver that is included with Identity Manager 3.6.

The ID Provider driver enables you to create and maintain a central source of unique IDs that can be consumed by client applications or systems. For more information, see the *Identity Manager 3.6 ID Provider Driver Implementation Guide*.

9.6 What's New in Existing Drivers

The following drivers have new features or functionality added to them:

- Active Directory Driver
- JDBC Driver
- JMS Driver
- Lotus Notes Driver
- SOAP Driver

The changes for each driver are documented in the individual driver guides at the Identity Manager 3.6 Drivers documentation Web site (http://www.novell.com/documentation/idm36drivers).

The following drivers are no longer shipping with Identity Manager.

- NT Driver
- SIF Driver
- PeopleSoft 3.7 and 4.x Drivers
- Exchange 5.5 Driver

9.7 Reciprocal Attribute Mapping

Reciprocal attribute mappings let you manage the backlinks, or references, between objects. Correct mappings can ensure that when the Metadirectory engine updates an object's attribute (for example, a User object's Group Membership attribute) it also updates the corresponding, or reciprocal, attributes (such as a Group object's Members attribute).

9.8 Additional DirXML Script Elements

The following changes have been made to DirXML® Script elements for use in Identity Manager policies:

- Added the Add Role (`do-add-role`) action to request a Role assignment through the User Application Roles Based Provisioning Module.
- Added the Remove Role (`do-remove-role`) action to request that a Role assignment be revoked.
- Changed the Send Email from Template (`do-send-email-from-template`) action to allow sending HTML content.
- Changed the Find Matching Object (`do-find-matching-object`) action to set a local variable and provide additional information in the server log if an error occurs.
- Changed the Generate Password (`token-generate-password`) noun token to make the policy-dn attribute optional.
- Changed the Convert Time (`token-convert-time`) verb token to include an optional offset time.
- Changed the Map (`token-map`) verb token to include an optional default value.

For more information, see the *Policies in iManager for Identity Manager 3.6* and *Policies in Designer 3.0* guides.

9.9 Nested Group Support

The Metadirectory engine has been changed to better handle the use of nested groups in eDirectory™. Now, when the engine is reading or searching the Member and Group Member attributes of Identity Vault objects, it returns only those values that are "static" values. Static values are objects that received group membership by direct assignment to the group rather than by inherited assignment through a nested group.

In previous releases, the Metadirectory engine's search of the Member and Group Member attributes retrieved all "calculated" values. Calculated values include objects that are either 1) statically assigned membership or 2) dynamically assigned membership by virtue of the nested group hierarchy calculations used by eDirectory. If you want the engine to continue to use this search method, you can change the default setting for the *Revert to Calculated Membership Value Behavior* engine control value. Or, you can use the `[pseudo].Member` and `[pseudo].Group Membership` attributes in your policies and style sheets rather than the `Member` and `Group Membership` attributes.

For more information, see "Nested Groups" in "Understanding Policy Components" in *Understanding Policies for Identity Manager 3.6*.

9.10 User Application

For a list of the new features for the User Application, see the *Migration Guide* (http://www.novell.com/documentation/idmrbpm361/index.html) for the Roles Based Provisioning Module.

9.11 Designer 3.0

For a list of the new features for Designer 3.0, see the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.

9.12 iManager Plug-Ins for Identity Manager

The iManager plug-ins for Identity Manager 3.6 include the following enhancements:

- Driver Set Dashboard: View the statistics for all drivers in a driver set at one time.
- Driver Set Overview: View a single driver set at one time, and easily switch between driver sets. Access more driver options through menus.
- Object Inspector: View the entitlements for an object.
- Driver Cache Inspector: Clear all cached events.
- Migrate from Identity Vault: Includes a progress bar.

9.13 Java Environment Parameters

Each driver set includes settings to let you configure the environment parameters for the Java virtual machine (JVM) on the Metadirectory server associated with the driver set. For more information, see "Configuring Java Environment Parameters" in the *Identity Manager 3.6 Common Driver Administration Guide*.

Supported Versions for Upgrades and System Requirements

10

10.1 Supported Versions for Upgrades

The table indicates the supported upgrades for the previous versions of Identity Manager.

Table 10-1 *Supported Versions for Upgrades*

Installed Versions	Newest Version	Upgrade Supported
DirXML® 1.1a	Identity Manager 3.6	No
Identity Manager 2.*x*	Identity Manager 3.6	No
Identity Manager 3.0*x*	Identity Manager 3.6	Yes
Identity Manager 3.5*x*	Identity Manager 3.6	Yes

10.2 System Requirements

In order to upgrade to Identity Manager 3.6, the servers running the Identity Manager services need to meet the minimum requirements. See Chapter 6, “System Requirements,” on page 45 for the list of minimum requirements for each platform.

In-place Upgrade Versus Migration 11

There are two different ways to upgrade: in-place upgrade or migration. Each method has advantages and disadvantages, and there are scenarios where only one method can be used.

11.1 In-place Upgrade

An in-place upgrade is installing the new version of Identity Manager on the existing server. To install Identity Manager, you must upgrade the current versions of the OS and eDirectory™ to the supported versions for Identity Manager 3.6. See Chapter 6, “System Requirements,” on page 45 for a list of the supported platforms.

The advantages are:

- No new hardware
- No migration of data

The disadvantages are:

- Downtime when the OS is updated and the server is rebooted
- Downtime when eDirectory is updated and is restarted

There are certain scenarios that occur when an in-place upgrade is not feasible, or multiple in-place upgrades must be performed. Because Identity Manager 3.0*x* and above are the only supported migration paths, these are the only versions that are contained in the following scenarios:

- **Unsupported OS:** If the current version of the OS is not supported by Identity Manager 3.6, the only supported upgrade path is to perform a migration to a new server.
- **Identity Manager 3.0*x*:** If the current version of Identity Manager is 3.0*x*, you cannot perform a direct in-place upgrade. The two options are:
  - Perform an in-place upgrade to Identity Manager 3.51, upgrade to eDirectory 8.8.3, then perform an in-place upgrade to Identity Manager 3.6.
  - Perform a migration to a new server.

If you are performing an in-place upgrade, proceed to Chapter 12, “Performing an In-place Upgrade,” on page 77.

11.2 Migration

A migration is installing Identity Manager 3.6 on a new server, then migrating the existing data to this new server. Follow the Chapter 4, “Basic Identity Manager System Checklist,” on page 39 to verify that the installation is complete.

The advantages are:

- There is minimal downtime for the drivers

The disadvantages are:

- Requires new hardware

If you are performing a migration, proceed to Chapter 13, “Performing a Migration,” on page 89.

11.3 Multiple Servers Associated with a Single Driver Set

If you have multiple servers associated with a driver set, you can perform an in-place upgrade or a migration on one server at a time. If you don’t have time to upgrade the servers at the same time, the drivers continue to work with the different versions of Identity Manager until the upgrades for each server can be completed.

The Identity Manager engine is backward compatible, so the Identity Manager 3.6 engine can run Identity Manager 3.0*x* and Identity Manager 3.5*x* drivers without problems.

WARNING: If you enable features for drivers that are supported only on Identity Manager 3.6, the drivers stop working on the servers with mixed versions. The older engines cannot handle the new functionality. This breaks the drivers until all servers are upgraded to Identity Manager 3.6.

Performing an In-place Upgrade

12

Before beginning, make sure you have reviewed the differences between an in-place upgrade and a migration. See Chapter 11, "In-place Upgrade Versus Migration," on page 75.

Use the following checklist to verify that all of the steps are completed in the correct order for a successful in-place upgrade of the Identity Manager system. Follow these steps for each Identity Manager server in your environment.

- ❑ Create a backup of the current configuration of your Identity Manager solution. This is done by creating exports of your drivers or creating a Designer project of your Identity Manager solution. For more information, see Section 12.1, "Creating a Backup of the Current Configuration," on page 79.
- ❑ Verify that the operating system on the servers running Identity Manager is a supported version. See Chapter 6, "System Requirements," on page 45 for a list of supported operating systems. If the operating system requires only a service pack to meet the system requirements, then proceed with the in-place upgrade. If it requires more, you must perform a migration to instead of an in-place upgrade. Continue with Chapter 13, "Performing a Migration," on page 89 if your operating system is:
  - NetWare®
  - Windows NT
  - Windows 2000
  - Red Hat Linux 3
  - SLES 8
  - Solaris 8 or 9
- ❑ Upgrade your iManager server to iManager 2.7 SP1. For more information, see the *iManager Installation Guide* (http://www.novell.com/documentation/imanager27/imanager_install_27/data/hk42s9ot.html).
- ❑ Stop the drivers associated with the server you are upgrading. For more information, see Section 12.2, "Stopping the Drivers," on page 81.
- ❑ Upgrade eDirectory™ to 8.8.3 on the server running Identity Manager. For more information, see the *eDirectory Installation Guide* (http://www.novell.com/documentation/edir88/pdfdoc/edirin88/edirin88.pdf). If you cannot upgrade eDirectory and Identity Manager 3.6 in the same day, Identity Manager 3.5.1 is supported with eDirectory 8.8.3.
- ❑ (Conditional) If your platform is Linux, UNIX, or Solaris, there are additional steps the must be completed to add files to the correct location. For more information, see Section 12.3, "Adding Files to the Correct Location on Linux/UNIX Platforms," on page 82.
- ❑ Start the drivers and verify that the drivers start. This also verifies that the upgrade to eDirectory 8.8.3 is successful. For more information, see Section 12.10, "Starting the Drivers," on page 86.
- ❑ Upgrade to Designer 3.0. For more information, see "Updating Designer" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.
- ❑ Convert the Designer project. For more information, see "Converting Earlier Projects" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.

- ❑ Stop the drivers associated with the server you are upgrading. For more information, see Section 12.2, "Stopping the Drivers," on page 81.
- ❑ Upgrade the Metadirectory server. For more information, see Section 12.5, "Upgrading the Metadirectory Engine and Driver Configuration Files," on page 82.
- ❑ (Conditional) If any of the drivers in the driver set for this server are Remote Loader drivers, upgrade the Remote Loader servers for each driver. For more information, see Section 12.6, "Upgrading the Remote Loader," on page 83
- ❑ (Conditional) If this server is your User Application server, perform the following additional steps:
  - ❑ The User Application driver must be migrated in Designer. For more information, see the *Roles Based Provisioning Module Migration Guide* (http://www.novell.com/documentation/idmrbpm361/index.html).
  - ❑ Create a new Roles Services driver. The Roles Service drivers are not migrated. If you have an existing Role Service driver for version 3.6, you must create a new driver for version 3.6. For more information, see the *Roles Based Provisioning Module Migration Guide* (http://www.novell.com/documentation/idmrbpm361/index.html).
  - ❑ Deploy the migrated User Application driver into the Identity Vault. For more information, see the *Roles Based Provisioning Module Migration Guide* (http://www.novell.com/documentation/idmrbpm361/index.html).
  - ❑ Upgrade the User Application. For more information, see the *Roles Based Provisioning Module Migration Guide* (http://www.novell.com/documentation/idmrbpm361/index.html).
- ❑ (Optional) Overlay the new driver configuration files over the existing drivers to get new policies. This is required only if there is new functionality included in the policies for a driver that you want to add to your existing driver. For more information, see Section 12.7, "Overlaying the New Driver Configuration File over the Existing Driver," on page 83.
- ❑ (Optional) Restore custom policies and rules to the drivers. When you overlay the new driver configuration files, the policies are overwritten, so restoring policies is required only if you did an overlay of the new driver configuration file. For more information, see Section 12.8, "Restoring Custom Policies and Rules to the Driver," on page 85.
- ❑ Deploy the converted Designer project into the Identity Vault. For more information, see "Deploying and Exporting" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.
- ❑ Start the drivers associated with this server. For more information, see Section 12.10, "Starting the Drivers," on page 86
- ❑ If you are using Novell® Audit or Novell Sentinel™, you must update to Novell Audit 2.0.2 or Novell Sentinel 6.1. For more information about upgrading Novell Audit, see the Novell Audit 2.0 Installation Guide (http://www.novell.com/documentation/novellaudit20/index.html?page=/documentation/novellaudit20/install/data/bktitle.html). For more information about upgrading Sentinel, see the *Sentinel Installation Guide* (http://www.novell.com/documentation/sentinel6/pdfdoc/sentinel60_installationguide.pdf).
- ❑ Activate the Metadirectory engine and any upgraded driver. For more information, see Chapter 8, "Activating Novell Identity Manager Products," on page 65.

12.1 Creating a Backup of the Current Configuration

Before upgrading, it is important to create a backup of the current configuration of your Identity Manager system. There are no additional steps required if you are using the User Application. All User Application configuration is stored in the User Application driver. There are two ways to create a backup:

- Section 12.1.1, "Ensuring that Your Designer Project is Current," on page 79
- Section 12.1.2, "Creating an Export of the Drivers," on page 80

12.1.1 Ensuring that Your Designer Project is Current

A Designer project contains the schema, and all driver configuration information, except for the Roles Based Entitlements driver. Creating a project of your Identity Manager solution allows you to create an export of all of the driver in one step instead of creating a separate export file for each driver.

- "Exporting the Current Project" on page 79
- "Creating a New Project from the Identity Vault" on page 79

Exporting the Current Project

If you already have a Designer project, verify that the information in the project is synchronized with what is in the Identity Vault:

1. In Designer, open your project.
2. In the Modeler, right-click the Identity Vault, then select *Live* > *Compare*.
3. Evaluate the project and reconcile any differences, then click *OK*.

   For more information, see "Using the Compare Feature When Deploying" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.
4. On the toolbar, select *Project* > *Export*.
5. Click *Select All* to select all resources to export.
6. Select where to save the project and in what format, then click *Finish*.

   Save the project in any location, except for the current workspace. When you upgrade to Designer 3.0, you must create a new workspace location. For more information, see "Exporting a Project" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.

Creating a New Project from the Identity Vault

If you don't have a Designer project of your Identity Manager solution, use the following procedure:

1. Download and install Designer 3.0.

   You can create an Identity Manager 3.0*x* project with Designer 3.0. For more information, see Section 7.1, "Installing Designer," on page 55.
2. Launch Designer, then specify a location for your workspace.
3. Select whether you want to check for online updates, then click *OK*.
4. On the Welcome page, click *Run Designer*.

5 On the toolbar, select *Project* > *Import Project* > *Identity Vault*.

6 Specify a name for the project, then either use the default location for your project or select a different location.

7 Click *Next*.

8 Specify the Identity Vault connection information:

- **Host Name:** Specify the IP address or DNS name of the Identity Vault server.
- **User name:** Specify the DN of the user used to authenticate to the Identity Vault.
- **Password:** Specify the password of the authentication user.

9 Click *Next*.

10 Leave the Identity Vault Schema and the Default Notification Collection selected.

11 Expand the Default Notification Collection, then deselect the languages you don't need.

The Default Notification Collections are translated into many different languages. You can import all languages or select only the languages that you use.

12 Click *Browse*, then browse to and select a driver set to import.

13 Repeat Step 12 for each driver set in this Identity Vault, then click *Finish*.

14 Click *OK* after the project is imported.

15 If you only have one Identity Vault, you are finished. If you have multiple Identity Vaults proceed with Step 16.

16 Click *Live* > *Import* on the toolbar.

17 Repeat Step 8 through Step 14 for each additional Identity Vault.

12.1.2 Creating an Export of the Drivers

Creating an export of the drivers makes a backup of your current configuration. However, Designer currently does not create a backup of the Roles Based Entitlements driver and policies. Use iManager to verify that you have an export of the Roles Based Entitlement driver.

- "Using Designer to Create an Export of the Driver" on page 80
- "Using iManager to Create an Export of the Driver" on page 80

Using Designer to Create an Export of the Driver

1 Verify that your project in Designer has the most current version of your driver. For instructions, see "Importing a Library, a Driver Set, or Driver from the Identity Vault" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.

2 In the Modeler, right-click the driver line of the driver you are upgrading.

3 Select *Export to a Configuration File*.

4 Browse to a location to save the configuration file, then click *Save*.

5 Click *OK* on the results page.

6 Repeat Step 1 through Step 5 for each driver.

Using iManager to Create an Export of the Driver

1 In iManager, select *Identity Manager* > *Identity Manager Overview*.

2 Browse to and select the location in the tree to search for Driver Set objects, then click the search icon .

3 Click the Driver Set object that holds the driver you want to upgrade.

4 Click the driver you want to upgrade, then click *Export*.

5 Click *Next*, then select *Export all contained policies, linked to the configuration or not*.

6 Click *Next*, then click *Save As*.

7 Select *Save to Disk*, then click *OK*.

8 Click *Finish*.

9 Repeat Step 1 through Step 8 for each driver.

12.2 Stopping the Drivers

Before you upgrade any files, it is important to stop the drivers.

- Section 12.2.1, "Using Designer to Stop the Drivers," on page 81
- Section 12.2.2, "Using iManager to Stop the Drivers," on page 81

12.2.1 Using Designer to Stop the Drivers

1 Select the Identity Vault object in the *Outline* tab.

2 In the Modeler toolbar, click the *Stop All Drivers* icon .

This stops all drivers that are part of the project.

3 Set the drivers to manual start to ensure that the drivers do not start until the upgrade process is complete.

3a Double-click the driver icon in the *Outline* tab.

3b Select *Driver Configuration* > *Startup Options*.

3c Select *Manual*, then click *OK*.

3d Repeat Step 3a through Step 3c for each driver.

12.2.2 Using iManager to Stop the Drivers

1 In iManager, select *Identity Manager* > *Identity Manager Overview*.

2 Browse to and select the location in the tree to search for Driver Set objects, then click the search icon .

3 Click the Driver Set object.

4 Click *Drivers* > *Stop all drivers*.

5 Repeat Step 2 through Step 4 for each Driver Set object.

6 Set the drivers to manual start to ensure that the drivers do not start until the upgrade process is complete.

6a In iManager, select *Identity Manager* > *Identity Manager Overview*.

6b Browse to and select the location in the tree to search for Driver Set objects, then click the search icon .

6c Click the Driver Set object.

6d In the upper right corner of the driver icon, click *Edit properties*.

6e On the Driver Configuration page under *Startup Options*, select *Manual*, then click *OK*.

6f Repeat Step 6a through Step 6e for each driver in your tree.

12.3 Adding Files to the Correct Location on Linux/UNIX Platforms

When you do an in-place upgrade from eDirectory 8.7.3 to eDirectory 8.8.3 the installation places the eDirectory files in different locations. Because you have Identity Manager installed, eDirectory will not start unless specific Identity Manager files are in-place. Complete the following steps to add the files to the correct location:

1. After eDirectory is upgraded to 8.8.3, run the Identity Manager installation with the following command:

   ```
   ./install.bin -i console -DCLUSTER_INSTALL=true
   ```

   This adds the correct files without authenticating to eDirectory.
2. Enter `ndsconfig upgrade` to upgrade the eDirectory files.
3. Verify the following entry exists in the `nds.conf` file:

   `n4u.server.interfaces=<ipaddress>@<port>`

   For example:`n4u.server.interfaces=123.456.789.12@524`
4. Proceed to Section 12.5, "Upgrading the Metadirectory Engine and Driver Configuration Files," on page 82.

12.4 Upgrading Designer

Before upgrading Designer, make sure you export your projects to create a backup of them. For instructions on how to export your project, see "Exporting a Project"in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*. For upgrade information, see "Converting Earlier Projects" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.

12.5 Upgrading the Metadirectory Engine and Driver Configuration Files

After the supporting components have been upgraded, the Metadirectory engine is upgraded. During the upgrade process, the driver configuration files that are stored in the file system are updated.

1. Verify that the drivers are stopped. For instructions, see Section 12.2, "Stopping the Drivers," on page 81.
2. Install Identity Manager 3.6.

   The steps to upgrade to Identity Manager 3.6 are the same as the ones for installing Identity Manager 3.6. See Chapter 7, "Installing Identity Manager," on page 55 for the instructions on how to install Identity Manager.

   Installing Identity Manager 3.6 overwrites the previous versions of Identity Manager, updating the binaries, extending the schema, and updating the driver configuration files.

12.6 Upgrading the Remote Loader

If you are running the Remote Loader, you also need to upgrade the Remote Loader files.

1. Create a backup of the Remote Loader configuration files. The default location of the files is as follows:
   - **Windows:** `C:\Novell\RemoteLoader\`*`remoteloadername`*`-config.txt`
   - **Linux:** Create your own configuration file in the path of rdxml.
2. Verify that the drivers are stopped. For instructions, see Section 12.2, "Stopping the Drivers," on page 81.
3. Stop the Remote Loader service or daemon for each driver.
   - **Windows:** In the Remote Loader Console, select the Remote Loader instance, then click *Stop*.
   - **Linux:** `rdxml -config` *`path_to_configfile`* `-u`
   - **Java Remote Loader:** `dirxml_jremote -config` *`path_to_configfile`* `-u`
4. Run the installation programs for the Remote Loader.

   The installation process updates the files and binaries to the current version. For more information, see Section 7.3, "Installing the Remote Loader," on page 59.
5. After the installation completes, verify that your configuration files contain your environment's information.
6. (Conditional) If there is a problem with the configuration file, copy the backup file created in Step 1. Otherwise, continue with Step 7.
7. Start the Remote Loader service or daemon for each driver.
   - **Windows:** In the Remote Loader Console, select the Remote Loader instance, then click *Start*.
   - **Linux:** `rdxml -config` *`path_to_config_file`* `-sp` *`password password`*
   - **Java Remote Loader:** `dirxml_jremote -config` *`path_to_config_file`* `-sp` *`password password`*

12.7 Overlaying the New Driver Configuration File over the Existing Driver

Before you begin, make sure that any customized policies have different policy names than the default policies. When a driver configuration is overlaid with a new driver file, the existing policies are overwritten. If your custom policies do not have a unique name, you lose those custom policies.

You overlay the new driver configuration file over your existing driver to update the driver with any new policies or functionality that are in the driver configuration file.

- Section 12.7.1, "Using Designer to Overlay the New Driver Configuration File over the Existing Driver," on page 84
- Section 12.7.2, "Using iManager to Overlay the New Driver Configuration File over the Existing Driver," on page 84

12.7.1 Using Designer to Overlay the New Driver Configuration File over the Existing Driver

1. In the Modeler, right-click the driver line of the driver you are upgrading.
2. Select *Run Configuration Wizard*.
3. Click *Yes* on the warning page.

   The warning informs you that all of the driver settings and policies are reset.

   IMPORTANT: Make sure that your customized policies have different names than the default policies, so you do not lose any data.

   ---
4. Browse to and select the driver configuration for the driver you are upgrading, then click *Run*.
5. Specify the information for the driver, then click *Next*.

   There might be more than one page of information to specify.
6. Click *OK* on the results page.
7. Look at the driver parameters and policies to make sure everything is set how you want it.
8. If you have custom policies, proceed to Section 12.8, “Restoring Custom Policies and Rules to the Driver,” on page 85. Otherwise, proceed to Section 12.10, “Starting the Drivers,” on page 86.

12.7.2 Using iManager to Overlay the New Driver Configuration File over the Existing Driver

1. In iManager, select *Identity Manager* > *Identity Manager Overview*.
2. Browse to and select the location in the tree to search for Driver Set objects, then click the search icon  .
3. Click the Driver Set object.
4. Click *Drivers* > *Add driver*, then click *Next* on the New Driver Wizard page.
5. Select the driver configuration you want to overlay, then click *Next*.
6. In the *Existing drivers* field, browse to and select the driver you want to upgrade.
7. Specify the information for the driver, the click *Next*.
8. On the summary page, select *Update everything about that driver and policy libraries*.

   IMPORTANT: Make sure that any customized policies have a different name than the default, so you do not lose any data.

   ---
9. Click *Next*, then click *Finish* on the Summary page.
10. Look at the driver parameters and policies to make sure everything is set how you want it.
11. If you have custom policies, proceed to Section 12.8, “Restoring Custom Policies and Rules to the Driver,” on page 85. Otherwise, proceed to Section 12.10, “Starting the Drivers,” on page 86.

12.8 Restoring Custom Policies and Rules to the Driver

If you have custom policies or rules, they must be restored to the driver after you have overlaid the new driver configuration file. If these policies have different names, they are still stored in the driver, but the links are broken and need to be reestablished.

- Section 12.8.1, "Using Designer to Restore Custom Policies and Rules to the Driver," on page 85
- Section 12.8.2, "Using iManager to Restore Custom Policies and Rules to the Driver," on page 86

12.8.1 Using Designer to Restore Custom Policies and Rules to the Driver

You can add policies into the policy set in two different ways:

- "Adding a Customized Policy through the Outline View" on page 85
- "Adding a Customized Policy through the Show Policy Flow View" on page 85

Adding a Customized Policy through the Outline View

1. In the *Outline* view, select the upgraded driver to display the *Policy Set* view.
2. Right-click the policy set  icon where you need to restore the customized policy to the driver, then select *New* > *From Copy*.
3. Browse to and select the customized policy, then click *OK*.
4. Specify the name of the customized policy, then click *OK*.
5. Click *Yes* in the file conflict message to save your project.
6. After the Policy Builder opens the policy, verify that the information is correct in the copied policy.
7. Repeat Step 2 through Step 6 for each customized policy you need to restore to the driver.
8. Start the driver and test the driver.

   For more information on starting the driver, see Section 12.10, "Starting the Drivers," on page 86. For more information on testing the driver, see "Testing Policies with the Policy Simulator" in *Policies in Designer 3.0*.
9. After you verify that the policies work, move the driver to the production environment.

Adding a Customized Policy through the Show Policy Flow View

1. In the *Outline* view, select the upgraded driver, then click the *Show Policy Flow* icon  .
2. Right-click the policy set where you need to restore the customized policy to the driver, then select *Add Policy* > *Copy Existing*.
3. Browse to and select the customized policy, then click *OK*.
4. Specify the name of the customized policy, then click *OK*.
5. Click *Yes* in the file conflict message to save your project.

6 After the Policy Builder opens the policy, verify that the information is correct in the copied policy.

7 Repeat Step 2 through Step 6 for each customized policy you need to restore to the driver.

8 Start the driver and test the driver.

For more information on starting the driver, see Section 12.10, "Starting the Drivers," on page 86. For more information on testing the driver, see "Testing Policies with the Policy Simulator" in *Policies in Designer 3.0*.

9 After you verify that the policies work, move the driver to the production environment.

12.8.2 Using iManager to Restore Custom Policies and Rules to the Driver

1 In iManager, select *Identity Manager* > *Identity Manager Overview*.

2 Browse to and select the location in the tree to search for Driver Set objects, then click the search icon  .

3 Click the Driver Set object that contains the upgraded driver.

4 Click the driver icon, then select the policy set where you need to restore the customized policy.

5 Click *Insert*.

6 Select *Use an existing policy*, then browse to and select the custom policy.

7 Click *OK*, then click *Close*.

8 Repeat Step 3 through Step 7 for each custom policy you need to restore to the driver.

9 Start the driver and test the driver.

For information on starting the driver, see Section 12.10, "Starting the Drivers," on page 86. There is no policy simulator in iManager. To test the policies, cause events to happen that make the policies execute. For example, create a user, modify a user, or delete a user.

10 After you verify that the policies work, move the driver to the production environment.

12.9 Deploying the Converted Project

Deploy the converted Designer project into the Identity Vault. For more information, see "Deploying and Exporting" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.

12.10 Starting the Drivers

After all of the Identity Manager components are upgraded, the drivers must be restarted. It is important to test the drivers after they are running to verify that all of the policies still work.

- Section 12.10.1, "Using Designer to Start the Drivers," on page 86
- Section 12.10.2, "Using iManager to Start the Drivers," on page 87

12.10.1 Using Designer to Start the Drivers

1 Select the Identity Vault  object in the *Outline* tab.

2 Click the *Start All Drivers* icon in the Modeler toolbar. This starts all of the drivers in the project.

3 Set the driver startup options.

3a Double-click the driver icon in the *Outline* tab.

3b Select *Driver Configuration* > *Startup Option*.

3c Select *Auto start* or select your preferred method of starting the driver, then click *OK*.

3d Repeat Step 3a through Step 3c for each driver.

4 Test the drivers to verify the policies are working as designed. For information on how to test your policies, see "Testing Policies with the Policy Simulator" in *Policies in Designer 3.0*.

12.10.2 Using iManager to Start the Drivers

1 In iManager, select *Identity Manager* > *Identity Manager Overview*.

2 Browse to and select the location in the tree to search for Driver Set objects, then click the search icon .

3 Click the Driver Set object.

4 Click *Drivers* > *Start all drivers* to start all of the drivers at the same time.

or

In the upper right corner of the driver icon, click *Start driver* to start each driver individually.

5 If you have multiple drivers, repeat Step 2 through Step 4.

6 Set the driver startup options:

6a In iManager, select *Identity Manager* > *Identity Manager Overview*.

6b Browse to and select the location in the tree to search for Driver Set objects, then click the search icon .

6c Click the Driver Set object.

6d In the upper right corner of the driver icon, click *Edit properties*.

6e On the Driver Configuration page, under *Startup Options*, select *Auto start* or select your preferred method of starting the driver, then click *OK*.

6f Repeat Step 6b through Step 6e for each driver.

7 Test the drivers to verify the policies are working as designed.

There is no policy simulator in iManager. To test the policies, cause events to happen that make the policies execute. For example, create a user, modify a user, or delete a user.

Performing a Migration

13

Before beginning, make sure you have reviewed the differences between an in-place upgrade and a migration. See Chapter 11, "In-place Upgrade Versus Migration," on page 75.

Use the following checklist to verify that all of the steps are completed in the correct order for a successful migration of the Identity Manager system. Follow these steps for each Identity Manager server in your environment.

- ❑ Create a backup of the current configuration of your Identity Manager solution. This is done by creating exports of your drivers or creating a Designer project of your Identity Manager solution. For more information, see Section 12.1, "Creating a Backup of the Current Configuration," on page 79.
- ❑ Install the desired operating system. For a list of supported platforms, see Chapter 6, "System Requirements," on page 45.
- ❑ Install eDirectory™ 8.8.3 on the server. For more information, see the *eDirectory Installation Guide* (http://www.novell.com/documentation/edir88/pdfdoc/edirin88/edirin88.pdf).
- ❑ Add the same eDirectory replicas that are on the current Identity Manager server to this new server. For more information, see "Administering Replicas" (http://www.novell.com/documentation/edir88/edir88/data/fbgciaad.html) in the *eDirectory Administration Guide* (http://www.novell.com/documentation/edir88/pdfdoc/edir88/edir88.pdf).
- ❑ Install Identity Manager 3.6. Use the Chapter 4, "Basic Identity Manager System Checklist," on page 39 to verify that all steps are completed.
- ❑ If any of the drivers in the driver set are Remote Loader drivers, upgrade the Remote Loader server for each driver. For more information, see Section 12.6, "Upgrading the Remote Loader," on page 83.
- ❑ (Conditional) If the old server is your User Application server, perform the following additional steps:
  - ❑ The User Application driver must be migrated in Designer. For more information, see the *Roles Based Provisioning Module Migration Guide* (http://www.novell.com/documentation/idmrbpm361/index.html).
  - ❑ Create a new Roles Service driver. The Roles Service driver is not migrated. If you have an existing Role Service driver for version 3.6, you must create a new driver for version 3.6.1. For more information, see the *Roles Based Provisioning Module Migration Guide* (http://www.novell.com/documentation/idmrbpm361/index.html).
  - ❑ Deploy the migrated User Application driver into the Identity Vault. For more information, see the *Roles Based Provisioning Module Migration Guide* (http://www.novell.com/documentation/idmrbpm361/index.html).
  - ❑ Install the User Application on this new server. For more information, see the *Roles Based Provisioning Module Installation Guide* (http://www.novell.com/documentation/idmrbpm361/install/data/bookinfo.html).
- ❑ Add the new server to the driver set. For more information, see Section 13.1, "Adding the New Server to the Driver Set," on page 90.

- ❑ (Conditional) If you are migrating from Identity Manager 3.0*x*, you must upgrade the architecture for the policies, because Identity Manager 3.5 and above contain a new architecture for the policies. For more information, see Section 13.2, "Upgrading the Architecture for Policies," on page 91.
- ❑ Change the server-specific information for each driver. For more information, see Section 13.3, "Changing Server-Specific Information," on page 91.
- ❑ (Conditional) Run `configupdate.sh` or `configupdate.bat` to change server-specific information from the old server to the new server for the User Application configuration. For more information, see "User Application Configuration Reference" (http://www.novell.com/documentation/idmrbpm361/install/data/bb1zmw0.html) in the *Roles Based Provisioning Module Installation Guide* (http://www.novell.com/documentation/idmrbpm361/install/data/bookinfo.html).
- ❑ (Optional) Overlay the new driver configuration files over the existing drivers to get new policies. This is required only if there is new functionality included in the policies for a driver that you want to add to your existing driver. For more information, see Section 12.7, "Overlaying the New Driver Configuration File over the Existing Driver," on page 83.
- ❑ (Optional) Restore custom policies and rules to the drivers. When you overlay the new driver configuration files, the policies are overwritten, so restoring policies is required only if you did an overlay of the new driver configuration file. For more information, see Section 12.8, "Restoring Custom Policies and Rules to the Driver," on page 85.
- ❑ Remove the old server from the driver set. For more information, see Section 13.4, "Removing the Old Server from the Driver Set," on page 92.
- ❑ If you are using Novell® Audit or Novell Sentinel™, you must update to Novell Audit 2.0.2 or Novell Sentinel 6.1. For more information about upgrading Novell Audit, see the Novell Audit 2.0 Installation Guide (http://www.novell.com/documentation/novellaudit20/index.html?page=/documentation/novellaudit20/install/data/bktitle.html). For more information about upgrading Sentinel, see the *Sentinel Installation Guide* (http://www.novell.com/documentation/sentinel6/pdfdoc/sentinel60_installationguide.pdf).
- ❑ Activate the Metadirectory engine and any upgraded driver. For more information, see Chapter 8, "Activating Novell Identity Manager Products," on page 65.

13.1 Adding the New Server to the Driver Set

If you are using iManager, you must add the new server to the driver set. Designer contains a migration wizard for the server that does this step for you. If you are using Designer, skip to Section 13.3, "Changing Server-Specific Information," on page 91. If you are using iManager, complete the following procedure:

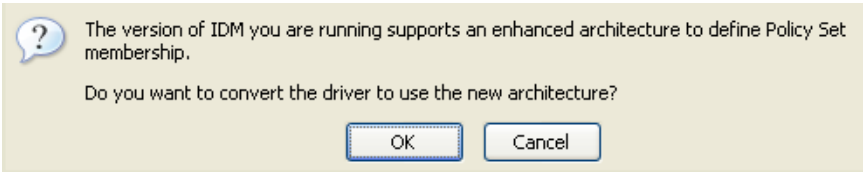
1. In iManager, click  to display the Identity Manager Administration page.
2. Click *Identity Manager Overview*.
3. Browse to and select the container that holds the driver set.
4. Click the driver set name to access the Driver Set Overview page.
5. Click *Servers* > *Add Server*.
6. Browse to and select the new Identity Manager 3.6 server, then click *OK*.

13.2 Upgrading the Architecture for Policies

The section applies only if you are migrating from Identity Manager 3.0*x*. Identity Manager 3.5 and above contains a different architecture for how policies reference one another. To take advantage of this architecture, the driver objects must be upgraded as well as the Metadirectory engine.

If you have converted your existing Designer project, the architecture is already upgraded. The project converter in Designer upgrades the architecture for the policies in the driver object.

1. In iManager, click *Identity Manager* > *Identity Manager Overview*.
2. Browse to and select the location in the tree to search for the driver set, then click the search icon .
3. Click the driver set.
4. Click the driver you want to upgrade.
5. Read the message that is displayed, then click *OK*.



   The policies are upgraded to the new architecture.
6. Repeat Step 4 and Step 5 for each driver.

13.3 Changing Server-Specific Information

You must change all server-specific information that is stored in each driver to the new server's information. The server-specific information is contained in:

- Global configuration values
- Engine control values
- Named passwords
- Driver authentication information
- Driver startup options
- Driver parameters

You can do this in Designer or iManager. If you use Designer, it is an automated process. If you use iManager, it is manual process.

- Section 13.3.1, "Changing the Server-Specific Information in Designer," on page 91
- Section 13.3.2, "Changing the Server-Specific Information in iManager," on page 92

13.3.1 Changing the Server-Specific Information in Designer

The procedure affects all drivers stored in the driver set.

1. In Designer, open your project.

2 In the *Outline* tab, right-click the server, then select *Migrate*.

3 Read the overview to see what items are migrated to the new server, then click *Next*.

4 Select the target server from the list available servers, then click *Next*.

The only servers listed are servers that are not currently associated with a driver set and are equal to or newer than the source server's Identity Manager version.

5 Select *Make the target server active*.

There are three options, but *Make the target server active* is recommended.

- **Make the target server active:** Copies the settings from the source server to the target server and disables the drivers on the source server.
- **Keep the source server active:** Does not copy the settings and disables all drivers on the target server.
- **Makes both target and source servers active:** Copies settings from the source server to the target server without disabling the drivers on the source or target servers. This option is not recommended. If both drivers started, the same information is written to two different queues and this can cause corruption.

6 Click *Migrate*.

After server-specific information is migrated, you must deploy the changed drivers to the Identity Vault. For more information, see "Deploying a Driver to an Identity Vault" in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.

The last step is to start the drivers. For more information, see Section 12.10, "Starting the Drivers," on page 86.

13.3.2 Changing the Server-Specific Information in iManager

1 In iManager, click  to display the Identity Manager Administration page.

2 Click *Identity Manager Overview*.

3 Browse to and select the contain that holds the driver set.

4 Click the driver set name to access the Driver Set Overview page.

5 Click the upper right corner of the driver, then click *Stop driver*.

6 Click the upper right corner of the driver, then click *Edit properties*.

7 You must change each driver parameter, global configuration value, engine control values, named password, driver authentication information, and driver startup options that contain the old server's information to the new server's information.

8 Click *OK* to save all changes.

9 Click the upper right corner of the driver to start the driver.

10 Repeat Step 5 through Step 9 for each driver in the driver set.

13.4 Removing the Old Server from the Driver Set

After the new server is running all of the drivers, the old server must be removed from the driver set.

- Section 13.4.2, “Using iManager to Remove the Old Server from the Driver Set,” on page 93
- Section 13.4.3, “Decommissioning the Old Server,” on page 93

13.4.1 Using Designer to Remove the Old Server from the Driver Set

1. In Designer, open your project.
2. In the Modeler, right-click the driver set, then select *Properties*.
3. Select *Server List*.
4. Select the old Identity Manager server in the *Selected Servers* list, then click the < to remove the server from the *Selected Servers* list.
5. Click *OK* to save the changes.

This change must be deployed to the Identity Vault. For more information, see “Deploying a Driver Set to an Identity Vault” in the *Designer 3.0.1 for Identity Manager 3.6 Administration Guide*.

13.4.2 Using iManager to Remove the Old Server from the Driver Set

1. In iManager, click  to display the Identity Manager Administration page.
2. Click *Identity Manager Overview*.
3. Browse to and select the container that holds the driver set.
4. Click the driver set name to access the Driver Set Overview page.
5. Click *Servers* > *Remove Server*.
6. Select the old Identity Manager server, then click *OK*.

13.4.3 Decommissioning the Old Server

At this point, the old server is not hosting any drivers. If you no longer need this server, you must do additional steps to decommission this server:

1. Remove the eDirectory replicas from this server. For more information, see “Deleting Replicas” (http://www.novell.com/documentation/edir88/edir88/data/fbgciaad.html) in the *eDirectory Administration Guide* (http://www.novell.com/documentation/edir88/pdfdoc/edir88/edir88.pdf).
2. Remove eDirectory from this server. For more information, see TID 10056593, “Removing a Server From an NDS Tree Permanently” (http://www.novell.com/support/php/search.do?cmd=displayKC&docType=kc&externalId=10056593&sliceId=&docTypeID=DT_TID_1_1&dialogID=35218849&stateId=0%200%2035214815).

Uninstalling Identity Manager

IV

If you need to uninstall Identity Manager, use the procedures in the following sections in order.

Removing Objects from eDirectory

14

The first step in uninstalling Identity Manager is to delete all Identity Manager objects from the Identity Vault. If any driver set objects are partition root objects in eDirectory™, the partition must be merged into the parent partition before the driver set object can be deleted. When the driver set is created, the wizard prompts you to make the driver set a partition.

Delete the Identity Manager objects:

1. Perform a health check on the eDirectory database. If any errors occur, fix the errors before proceeding. For more information, see Keeping eDirectory Healthy (http://www.novell.com/documentation/edir88/edir88/data/a5ziqam.html) in the *Novell eDirectory 8.8 Administration Guide*.
2. Log in to iManager as an administrator user with full rights to the eDirectory tree.
3. Select *Partitions and Replica* > *Merge Partition*.
4. Browse to and select the driver set object that is the partition root object, then click *OK*.
5. Wait for the merge process to complete, then click *OK*.
6. Delete the driver set object.

   When you delete the driver set object, it deletes all of the driver objects associated with that driver set.
7. Repeat Step 3 through Step 6 for each driver set object that is in the eDirectory database, until they are all deleted.
8. Repeat Step 1 to make sure all merges completed and all of the objects have been deleted.

Proceed to Chapter 15, “Uninstalling the Metadirectory Server and Drivers,” on page 99.

Uninstalling the Metadirectory Server and Drivers

15

When Identity Manager is installed, there is an uninstall script that is placed on the Identity Manager server. It allows you to remove all services, packages, and directories that were created when Identity Manager was installed.

15.1 Uninstalling on Windows

There are two different ways you can uninstall Identity Manager on windows.

- Access the Control Panel on the Windows server, then click *Add or Remove Programs*.
- Execute the uninstall script located at `c:\Program Files\Novell\Identity Manager\Uninstall_Identity_Manager\Uninstall Identity Manager.exe`.

15.2 Uninstalling on Linux/UNIX

To uninstall Identity Manager on Linux/UNIX run the uninstall script located at `~/idm/Uninstall_Identity_Manager/Uninstall_Identity_Manager`. To execute the script, enter `./Uninstall_Identity_Manager`.

Uninstalling Designer

16

Uninstalling Designer is very similar to uninstalling the Metadirectory server and driver.

- For Windows, select *Add or Remove Programs* in the control panel.
- For Linux/UNIX, execute the uninstall script located at `~/designer/UninstallDesigner/Uninstall_Designer_for_Identity_Manager`.

Documentation Updates

A

The documentation was updated on the following dates:

A.1 September 9, 2008

Updates were made to the following sections. The changes are explained below.

A.1.1 Performing an In-place Upgrade

The following update was made in this section:

Location	Change
Chapter 12, “Performing an In-place Upgrade,” on page 77	Changed the statement of support for Identity Manager 3.5.1 on eDirectory™ 8.8.3. Identity Manager 3.5.1 is supported on eDirectory 8.8.3 whether you are performing an in-place upgrade or not.