Driver for Sentinel

Implementation Guide

June 2012

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About This Guide

This guide introduces a Sentinel or Identity Manager Administrator to the process of integrating identity information stored in Identity Manager with Sentinel's event collection.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation.

Documentation Updates

For the most recent version of this documentation, visit the *Identity Manager 4.0.1 Drivers documentation Web site*.

Additional Documentation

- *Identity Manager Common Driver Administration Guide*
- *Identity Manager Remote Loader Guide*
- *Identity Manager 4.0.1 Documentation*
- *Sentinel 7.0.1 Documentation*

Contacting Novell and NetIQ

Sentinel is now a NetIQ product, but Novell still handles many support functions.

- Novell Web site
- NetIQ Web site
- Technical Support
- Self Support
- Patch download site
- Identity Manager Support Forum
- Sentinel Support Forum
- Identity Manager TIDs
- Sentinel TIDs

Contacting Sales Support

For questions about products, pricing, and capabilities, please contact your local partner. If you cannot contact your partner, please contact our Sales Support team.

Worldwide: NetIQ Office Locations (http://www.netiq.com/about_netiq/officelocations.asp)

United States and Canada: 888-323-6768

Email: info@netiq.com

Web site: www.netiq.com

1 Introduction

Users in an IT environment have accounts with multiple applications and sometimes have multiple account identifiers with a single application. For example, if a user has accounts with both Active Directory and an LDAP directory, the user can log in to either of the application or both applications.

Sentinel tracks events related to user activities in applications but, without additional data, Sentinel cannot correlate account activity in different applications with the single user who initiated the actions.

The Driver for Sentinel provides the additional data required to correlate actions in disparate applications with the initiating use. The driver integrates Sentinel with Novell Identity Manager to track the user identity associated with each user account and which events those identities have performed. This allows you to rapidly solve a variety of complex business problems. For example, the account tracking solution helps you monitor rogue administration and define what action is taken if this occurs.

1.1 Components for Identity Tracking

This section provides information about the components required to integrate Sentinel with Identity Manager.

1.1.1 DirXML-Accounts Attribute

The DirXML-Accounts attribute on an Identity Vault User object tracks information about accounts that a user has in different applications. Identity Manager drivers that manage the account information for a user in an application, create and maintain the DirXML-Accounts attribute values. For example, the Active Directory driver maintains the DirXML-Accounts values for the account identifiers that a user has in Active Directory.

The Driver for Sentinel uses the DirXML-Accounts values to create and manage account records in Sentinel. If the application has multiple ways of identifying a single application account, there might be multiple account records in Sentinel for a single account. For example, Active Directory has five different identifiers for the same account. The Active Directory driver provides information about four of these identifiers in the DirXML-Accounts attribute. The driver synthesizes the fifth value from one of the identifiers provided by the Active Directory driver.

Table 1-1 shows that the DirXML-Accounts attribute stores the different identifiers for John's account. Active Directory has four different account identifiers for the same account and the LDAP directory has one.

Table 1-1 *Contents of the DirXML-Accounts Attribute*

Driver/Application	Account Identifier Type	Account Identifier Sample Data
Active Directory	sAMAccountName	jsmith
Active Directory	userPrincipalName	jsmith@company.com
Active Directory	LDAPDN	cn=John Smith,cn=users,dc=company,dc=com
Active Directory	association	5d377f84f3ab534babbf12edd6540d77
LDAP	LDAPDN	cn=jsmith,cn=users,dc=company,dc=com

This allows for correlation between all of the account identities in the systems managed by Identity Manager. You can also validate business policies with this information.

1.1.2 Driver for Sentinel

The driver is an Identity Manager driver that sends the account identifier and the account status from the Identity Vault to the Sentinel REST API interface. The account identifier data is used to track the accounts, the status of the identities, and the account access information.

The driver implements data sharing policies with Sentinel. You can control the actions by using iManager to define filters and policies.

1.1.3 Sentinel REST API Interface

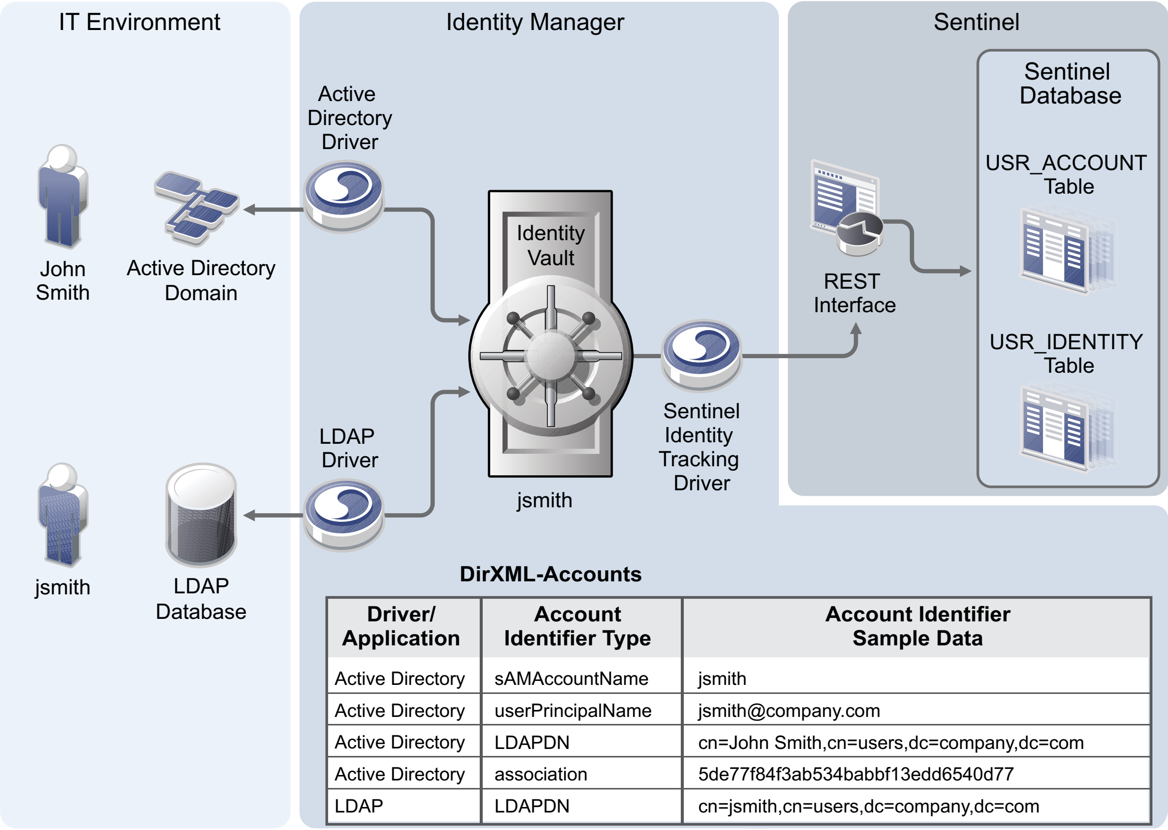
The Sentinel REST API interface integrates the data from the driver to Sentinel. The interface performs functions, such as remote protocol connections and data mapping.

1.2 How the Driver Works

Sentinel receives information from various Identity Collectors and then stores the data in the database. If the same user has multiple identifiers for a single account in an application, Sentinel treats each identifier as a unique account.

The driver enables you to track all account identifiers for each user and to track the status of those accounts, so you have a complete picture of user activities. Figure 1-1 illustrates how the driver works to capture this information.

***Figure 1-1** Synchronizing Account Data*



DirXML-Accounts

Driver/ Application	Account Identifier Type	Account Identifier Sample Data
Active Directory	sAMAccountName	jsmith
Active Directory	userPrincipalName	jsmith@company.com
Active Directory	LDAPDN	cn=John Smith,cn=users,dc=company,dc=com
Active Directory	association	5de77f84f3ab534babbf13edd6540d77
LDAP	LDAPDN	cn=jsmith,cn=users,dc=company,dc=com

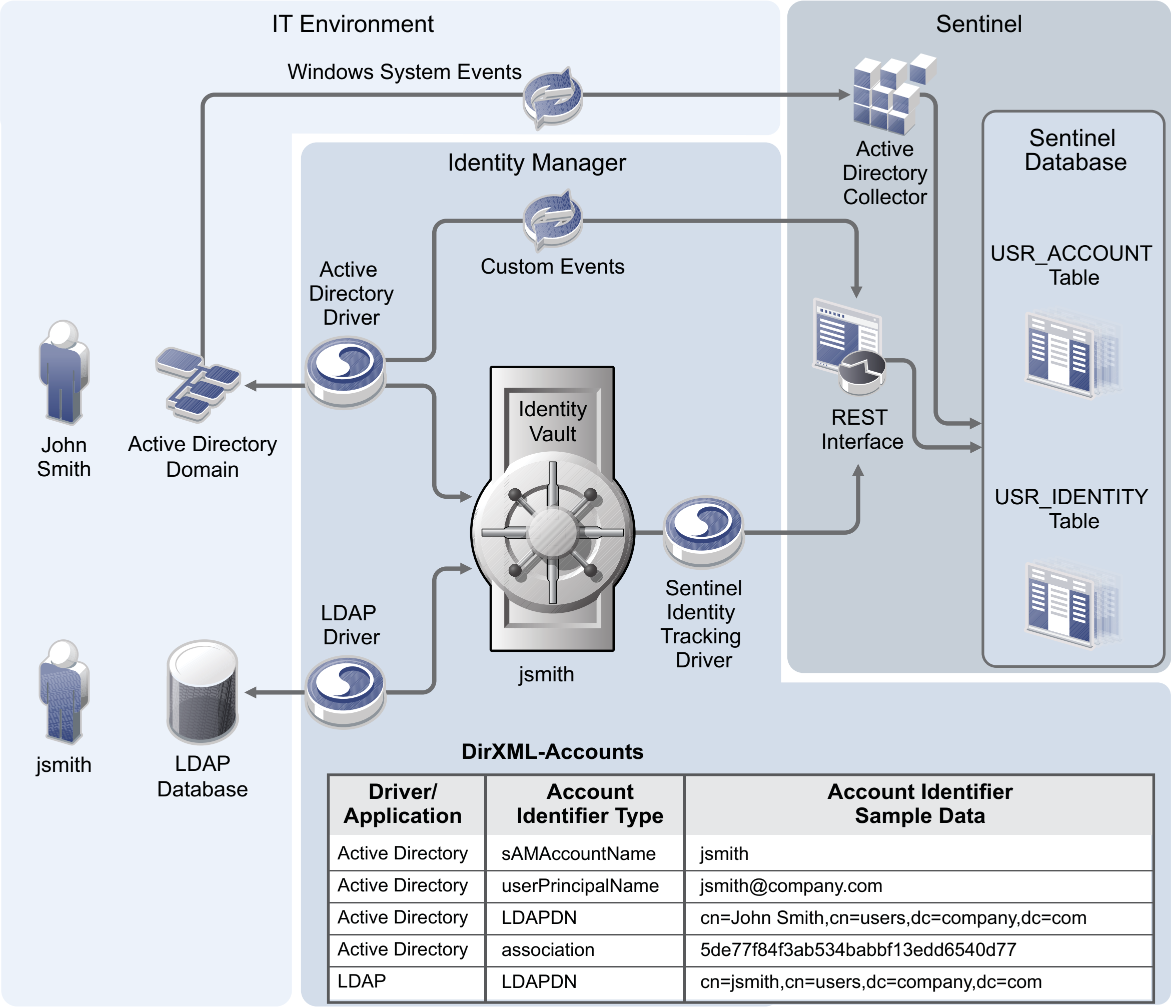
1. The Active Directory driver creates an account for John Smith in Active Directory and synchronizes the information to the Identity Vault.
2. The Identity Vault, which contains the DirXML-Accounts attribute, creates an account for John Smith. The DirXML-Accounts attribute stores the different account identifiers from Active Directory.
3. The driver detects that the DirXML-Accounts attribute is added and sends this information to the Sentinel REST Interface.
4. The LDAP driver detects the new account created in the Identity Vault, then synchronizes this information to the LDAP database.
5. The LDAP driver creates a new account for John Smith in the LDAP database as follows:

   ```
   cn=jsmith,cn=users,dc=company,dc=com
   ```

6. The LDAP driver synchronizes the new account information back to the Identity Vault. The Identity Vault adds a new entry to the DirXML-Accounts attribute.
7. The Sentinel driver detects the change to the DirXML-Accounts attribute, then sends this information to the Sentinel REST Interface.
8. The Sentinel REST Interface stores the account data in the USR_IDENTITY table in the Sentinel database.
9. The Sentinel correlation engine uses the information in the USR_IDENTITY table to generate reports of account activity per identity across all the systems provisioned by Identity Manager.

The second half of this solution allows other Sentinel Collectors to use the account information to track whether your organization enforces business policies. Figure 1-2 shows how Sentinel uses the custom events and the events from other Collectors to provide a complete record of John Smith's accounts.

***Figure 1-2** Synchronizing Events*



Driver/ Application	Account Identifier Type	Account Identifier Sample Data
Active Directory	sAMAccountName	jsmith
Active Directory	userPrincipalName	jsmith@company.com
Active Directory	LDAPDN	cn=John Smith,cn=users,dc=company,dc=com
Active Directory	association	5de77f84f3ab534babbf13edd6540d77
LDAP	LDAPDN	cn=jsmith,cn=users,dc=company,dc=com

1. The Active Directory driver creates an account for John Smith in the Identity Vault.
2. The Sentinel driver detects this new account and sends the account information to the Sentinel REST Interface, which stores the information in the USR_IDENTITY table.
3. John Smith logs in to Active Directory, and that information is sent to Sentinel through the Active Directory Collector.
4. The Active Directory Collector receives the login event directly from Windows without going through the Identity Vault. Sentinel records this information in the USR_ACCOUNT table indicating that `cn=John Smith,cn=users,dc=company,dc=com` logged in at a specific time.
5. If John Smith's CN in Active Directory is renamed to John D. Smith, the Active Directory driver synchronizes the information to the Identity Vault.
6. The DirXML-Accounts attribute is updated with the new information, and the Sentinel driver detects this change.
7. The Sentinel driver synchronizes the new account information to the Sentinel REST interface.

8. The Sentinel REST interface reads the new account information and writes it to the USR_IDENTITY table.
9. When John Smith logs in again to Active Directory, the Active Directory Collector records the login information.
10. Sentinel performs a lookup on the USR_IDENTITY table and detects that John Smith and John D. Smith are the same user account. Sentinel can keep a complete record of user actions.
11. The driver policies define and add custom audit events to each Identity Manager driver. The policies add a layer of intelligence to Identity Manager and Sentinel by defining the business logic. These policies are part of each driver that ships with Identity Manager.
12. You can generate useful reports about user accounts from Sentinel.

The Sentinel Identity Tracking driver provides the infrastructure to allow Sentinel to track each user account. This awareness allows you to enforce business policies.

1.3 Data Transfer Between Systems

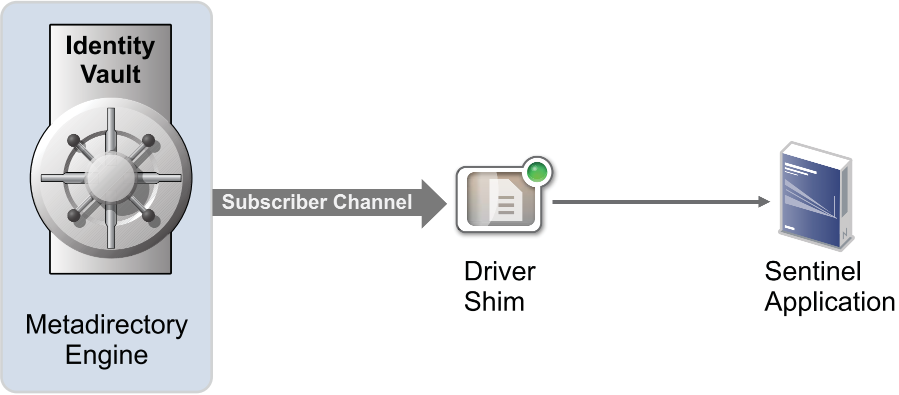
There are two data transfer channels between the Identity Vault and the connected application:

- **Publisher Channel:** Transfers data and events from the connected application to the Identity Vault. The Sentinel Identity Tracking driver does not support this channel.
- **Subscriber Channel:** Transfers data and events from the Identity Vault to the connected application. The Sentinel Identity Tracking driver supports only data transfers from the Identity Vault to Sentinel. Communication is one-way only.

  The Subscriber channel does the following:

  - Watches for additions and modifications to the Identity Vault objects.
  - Makes changes to Sentinel's internal representation of Identities and Accounts that reflect those changes.

Figure 1-3 Data Transfer Between Systems



2 What’s New?

The Driver for Sentinel, formerly known as the Sentinel Driver, removes the dependency on the Collector for Identity Manager and Sentinel integration.

This driver now facilitates simplified configuration. The previous version of the driver used a JMS bus and sent information to a Sentinel Collector, which then sent the information to the Sentinel database. This driver uses the native Sentinel 7.0.1 REST APIs to perform the integration, which sends the account information directly to the Sentinel database.

3 Checklist for Enabling Identity Tracking

Use the following checklist to verify that you complete the following tasks in order to have a complete solution with the driver.

- ☐ Ensure that you have installed the software mentioned in Section 4.1, “System Requirements,” on page 17.
- ☐ Determine where you want to install the driver shim. For more information, see Chapter 4, “Planning the Driver Shim Installation,” on page 17.
- ☐ Install the driver shim. For more information, see Chapter 5, “Installing the Driver Shim,” on page 21.
- ☐ Create and configure the driver. For more information, see Chapter 6, “Creating and Configuring the Driver,” on page 23.
- ☐ Migrate the identity data to Sentinel For more information, see Chapter 9, “Migrating Data,” on page 33.

4 Planning the Driver Shim Installation

4.1 System Requirements

You need the following software to integrate Identity Manager with Sentinel:

- Identity Manager 4.0.1 or later.

  For information about installing Identity Manager 4.0.1, see the *Integrated Installation Guide*.
- Designer for Identity Manager 4.0.1 or later.

  For information about installing Designer, see the *Designer Installation Guide*.
- Sentinel 7.0.1 or later.

  For information about installing Sentinel 7.0.1, see the *Sentinel 7.0.1 Installation Guide.*

4.2 Planning the Installation

You can install the driver shim on either the Identity Manager system or a remote host. Figure 4-1 illustrates the two installation options. The installation includes the following components:

- **Identity Vault:** Used by Novell Identity Manager to store data for synchronization with Sentinel. The Identity Vault is a persistent database powered by Novell eDirectory. The vault can be viewed as a private data store for Identity Manager or as a metadirectory that holds enterprise-wide data. Data in the vault is available to any protocol supported by eDirectory, including NCP (the traditional protocol used by utilities, such as ConsoleOne and iManager), LDAP, and DSML.

  Since the Identity Vault is powered by eDirectory, you can easily integrate Identity Manager into your corporate directory infrastructure by using your existing directory tree as the vault. The Identity Vault runs on any platform supported by Identity Manager and communicates with the module on the connected system over a secure network link. For information on the supported platforms, see “Supported Platforms ”in the *Identity Manager Installation Guide.*
- **Driver Shim (Integration Module for Sentinel):** Converts the XML based Identity Manager command and event language (XDS) to the protocols and API calls required to interact with Sentinel. This driver uses a Java based driver shim (`SentinelRESTShim.jar`.) The driver shim is an executable code and is available on the Novell download Web site.

- **Remote Loader:** Enables a driver shim to execute outside of the metadirectory engine. The Remote Loader is typically used when a requirement of the driver shim is not met by the Identity Manager server. For example, if the metadirectory engine is running on Linux but you want to integrate with Active Directory, the remote loader is used to execute the Active Directory driver shim on a Windows server.

  The remote loader is a service that executes the driver shim and passes information between the shim and the metadirectory engine. You can install the driver shim on the server where the remote loader is running. You can choose to use SSL to encrypt the connection between the metadirectory engine and the Remote Loader.

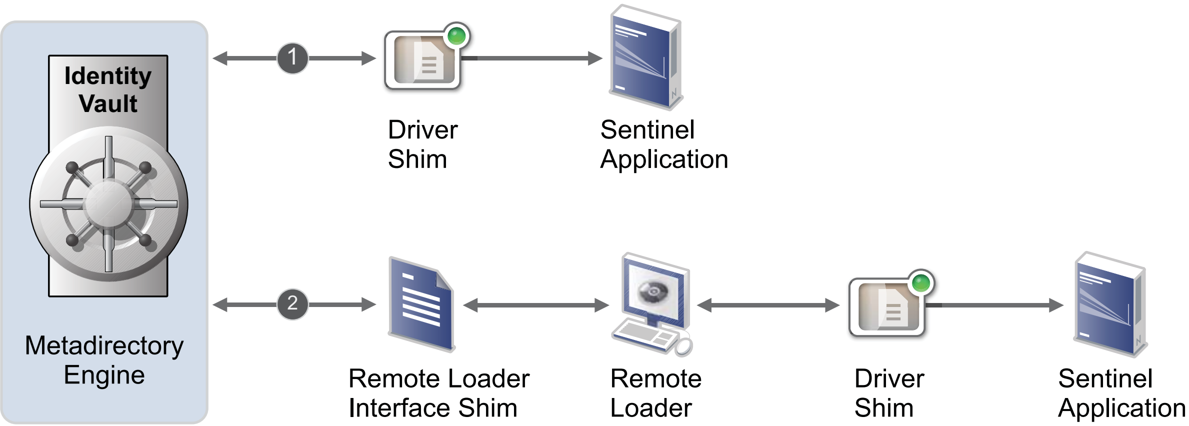
  When you use the remote loader with the driver shim, two network connections are established:

  - Between Identity Manager and Remote Loader
  - Between Sentinel and the driver shim

  For more information on remote loader, see the *Remote Loader Services Guide*.

The following figure illustrates the two options for installing the driver shim:

Figure 4-1 *Installing the Driver Shim*



4.2.1 Installing the Driver Shim on the Identity Manager System

The most common hosting for Identity Manager integration is in the Identity Vault metadirectory engine.

Advantages:

- The Integration module logs the trace messages in the metadirectory server trace log. Therefore, troubleshooting might be easier.
- No need to configure a remote loader instance.
- No extra TCP/IP traffic between the metadirectory and the remote loader.

Disadvantages:

- Resource consumption on the metadirectory server (memory, processor time).
- The requirement to restart the metadirectory server each time the integration module is installed or updated.

4.2.2 Installing the Driver Shim on a Remote System

The following are the advantages and disadvantages of the installing the driver shim on a remote system:

Advantages:

- Resource consumption (memory, processor time) is in a different process, or on another host.
- You need to restart only the remote loader process when the integration module is updated.

Disadvantages:

- Multiple trace files. Therefore, when troubleshooting, you might need to examine trace files from both the metadirectory process and the remote loader process.
- The need to configure a remote loader instance.
- Extra TCP/IP traffic between the metadirectory and the remote loader.

5 Installing the Driver Shim

Before you create and configure the driver, you need to install the driver shim in order to be able to create and configure the driver.

- Section 5.1, "Installing on Windows," on page 21
- Section 5.2, "Installing on Linux," on page 21

5.1 Installing on Windows

1. Download the Integration Module for Sentinel (driver shim), `sentinel_driver_install.exe`, from the Novell download Web site.
2. Execute the `sentinel_driver_install.exe` file on the Windows system, which is either the Identity Manger server or the Remote Loader, depending on where you want to install the driver shim.
3. Follow the installer prompts. If you install onto the metadirectory host, but want the integration module to be hosted by the remote loader, you need to manually select the appropriate install location, which is usually `C:\Novell\RemoteLoader\lib`.

5.2 Installing on Linux

You need to install the integration module as the root user.

1. Download the Integration Module (driver shim) for Sentinel,`sentinel_driver_install_linux.bin`, from the Novell download Web site.
2. Execute the `sentinel_driver_install_linux.bin` file on the Linux machine, which is either the metadirectory server or the Remote Loader, depending on where you want to install the driver shim.
   - If the Linux machine has a windowing system, execute the installer in GUI mode by using the following command:

     ```
     <path>/sentinel_driver_install.bin
     ```

   - If the Linux machine does not have a windowing system, execute the installer in console mode by using the following command line:

     ```
     <path>/sentinel_driver_install_linux.bin -i console
     ```

3. Follow the installer prompts. On a Linux system the integration module files install in the same location regardless of whether or not the metadirectory process or a remote loader process is to host the integration module.

6 Creating and Configuring the Driver

After you install the driver shim on the server where you want to run the driver, you must create the driver in the Identity Vault by using Designer.

6.1 Gathering Required Information

Before you start the driver configuration, gather the information that you need to configure the driver.

6.1.1 Sentinel User Account

To create and maintain Identity data, the driver must have administrator privileges. NetIQ recommends that you create a Sentinel user account with administrator privileges specifically for use with the driver. This allows you to use audit events to track the changes made by the driver in the Sentinel system.

You need to configure the driver with the name and password of a Sentinel user account so that the driver can authenticate to the Sentinel server and make changes to the Sentinel database.

6.1.2 Sentinel Server Address and Port

You need the following information to connect the driver to the Sentinel server:

- Sentinel server host DNS name or IP address
- Sentinel server web server port number. The default port number is 8443

6.1.3 Sentinel TLS/SSL Certificate

The driver uses TLS/SSL to communicate with the Sentinel server. Therefore, you must obtain either the Sentinel server self-signed public key certificate or the trusted root certificate of the certificate authority used to sign the Sentinel server public key certificate. The type of certificate depends on the Sentinel server configuration.

Self-signed Certificate

If your organization has not replaced the default Web server certificate, which is created when the Sentinel server is installed, you must get the self-signed certificate from the Sentinel server.

You can obtain this certificate either by extracting it from the certificate's containing file on the Sentinel server or by using the supplied `getcert` utility.

Using the getcert Utility

1. Run the `getcert` utility on the system where you are running IDM Designer. If the `getcert.jar` file is not located on the IDM Designer system, you can either copy the `getcert.jar` file from the system on which you ran the Integration Module installer or install the getcert.jar file directly on the system using the Integration Module installer:

   Windows: Locate the `getcert.jar` file in Windows Explorer and double-click the file.

   Linux: Execute the `/opt/novell/eDirectory/lib/dirxml/util/sentinel_rest/getcert.jar` file by using the following command:

   ```
   java -jar getcert.jar
   ```

2. Specify the address and port of the Sentinel server and click *Get Certificate*.

   The certificate data is displayed.

3. Verify the certificate data and if the certificate is correct, click *Yes*.

4. Use this certificate data when prompted for the Sentinel TLS/SSL certificate while creating the driver.

   For more information, see Step 5 in Section 6.3, “Creating the Driver,” on page 26.

Obtaining the certificate from the certificate's containing file:

Extract the `Webserver` certificate as the `root` user, from the following Java keystore file:

```
/etc/opt/novell/sentinel/config/.webserverkeystore.jks
```

The keystore password is `password`.

Certificate Authority Trusted Root Certificate

If your organization has replaced the Sentinel server default Web server certificate with a public key certificate signed by a certificate authority, such as Verisign or Entrust, you must obtain the appropriate trusted root certificate that corresponds to the certificate authority. You can obtain the trusted root certificate from your organization or the certificate authority your organization uses.

User Object Attributes and Structure

The driver uses a default model for mapping Identity Vault structure, objects, and object attributes to the associated structures in Sentinel. In some cases, you might need to customize to meet the needs of the local enterprise environment. You should understand how user objects are stored in the Identity Vault, what the directory structure is, and what attributes are used to track user object information. You need the following information:

- Information about Identity Vault structure
- User object attribute names for Vault identities

6.2 Understanding the Configuration

You need to implement the driver by using two Designer packages: `Sentinel REST API BASE` and `Sentinel Identity Tracking`. When you import these packages, they create a driver with a set of rules and policies suitable for synchronizing identities and their associated account information with Sentinel. If your requirements for the driver are different from the default policies, you need to change them to effect the policies you want. Pay close attention to the default matching policies. The data that you trust to match users usually is different from the default. The policies themselves are commented and you can gain a greater understanding of what they do by creating a test driver and reviewing the policies with Designer.

When Identity Manager determines that a Sentinel Identity must be created from an Identity Vault User object, the driver first checks the existing Sentinel Identity objects to determine if it should use an existing Identity object should be used. The need for this arises when you install or reinstall the driver into a system that has previously tracked identity information, or when resynchronizing identity data for any purpose.

The driver performs up to three searches to find an existing Sentinel Identity object. If one of the searches finds an existing Sentinel Identity object, the driver uses the found Identity object rather than creating a new Identity object and does not perform subsequent searches.

The driver performs the searches in the following order:

- **Match by Distinguished Name:** The DN and source Identity Vault name of the originating Identity Vault User object are stored as part of the Sentinel Identity object. The first search attempts to find an existing Sentinel Identity object with the same Identity Vault name and DN as the originating Identity Vault User object.
- **Match by GUID:** The driver stores the GUID value of the originating Identity Vault User object in the Sentinel Identity object *Source Identity Id* field. The second search attempts to find a Sentinel Identity object with a *Source Identity Id* value that matches the Identity Vault User object GUID value.
- **Match by User Attribute Values:** The optional third search attempts to find a matching Sentinel Identity object attribute values with the corresponding Identity Vault User object values. The attribute names are specified by you based on your organization data. Specifying the attributes for your organization takes place when configuring the driver in Designer for Identity Manager.

  The default Identity Vault attribute names for the third search are “Full Name” and “Internet EMail Address”. The standard mapping of these two Identity Vault attributes to Sentinel Identity attributes are “name” and “email”, respectively.

You can change the default attributes to any attribute or attributes that your organization finds useful. To be useful for matching, each Identity Vault object must have values for the attributes you choose.

If your organization does not require matching beyond the first two searches, you can eliminate the third search at configuration time.

6.3 Creating the Driver

Before you create the driver, import the latest packages to Designer.

To import the packages:

1. Launch Designer.
2. Create a new project for the driver.

   For more information, see "Creating a Project "in the *Designer Administration Guide*.
3. Import the `NIQSENRESTB_<version>.jar` and `NIQSENIDTRK_<version>.jar` files to the *Package Catalog*.

   For more information, see "Importing Packages "in the *Designer Administration Guide*.
4. Switch to *Outline* view and go to *Enterprise* > *Sentinel*.
5. Verify whether `Sentinel REST API BASE` and `Sentinel Identity Tracking` packages are available.

To create the driver:

1. Drag the Sentinel application icon from the *Designer* palette > *Enterprise* > *Sentinel* folder to the Designer modeler.
2. From the *Available Packages* list, select *Sentinel REST API Base* and click *Next*.
3. From the *Select Optional Features* list, select *Sentinel Identity Tracking* and click *Next*.
4. Specify a name for the application and click *Next*.
5. Specify the following information, and then click *Next*:
   - Sentinel account name and password
   - Sentinel server host address/port number
   - Sentinel TLS/SSL certificate

   Click *Next*.
6. If you want to connect the driver to a remote loader, select *yes* and specify the remote loader connection data.
7. If you want the driver to perform up to three searches to find an existing Sentinel Identity object in the Identity Vault, specify the attribute names in the *Matching Attributes* field. If you do not want the third search or if the data is insufficient in the Identity Vault, delete the attribute names in the *Matching Attributes* item.
8. If you are configuring the driver for a managed security customer or if the driver is synchronized to a Sentinel server that contains data for multiple managed security customers, select *yes* and specify the numeric *Tenant Id* of the managed security customer.

   TIP: The Tenant ID is available in the CUST table in the Sentinel database.
9. Click *Next*. Review the configuration settings and click *Finish*.

6.4 Deploying the Driver

After you create the driver in Designer, you must deploy the driver into the Identity Vault, because Designer is an offline tool.

1 In Designer, open your project.

2 In the Modeler, right-click the driver icon or the driver line, then select *Live* > *Deploy*.

3 If you are authenticated to the Identity Vault, skip to Step 5 ; otherwise, specify the following information to authenticate:

- **Host:** Specify the IP address or DNS name of the server hosting the Identity Vault.
- **Username:** Specify the DN of the user object used to authenticate to the Identity Vault.
- **Password:** Specify the user's password.

4 Click *OK*.

5 Read through the deployment summary, then click *Deploy*.

6 Click *OK*.

7 Click *Define Security Equivalence* to assign rights to the driver.

The driver requires rights to objects within the Identity Vault that are involved in synchronization. The Admin user object is most often used to supply these rights. However, you might want to create an object, for example, DriversUser and assign security equivalence to that user. The DriversUser object must have the same security rights on the server as the driver. The driver needs read rights for the following attributes: Full Name, mail, Given Name, Surname, OU, Title, photo, mailstop, Telephone Number, workforceID, manager, GUID, DirXML-Accounts, and Login Disabled.

7a Click *Add*, then browse to and select the object with the correct rights.

7b Click *OK*.

8 Click *Exclude Administrative Roles* to exclude users that should not be synchronized.

You should exclude any administrative User objects, such as Admin and DriversUser from synchronization.

8a Click *Add*, then browse to and select the user object you want to exclude.

8b Click *OK*.

8c Repeat Step 8a and Step 8b for each object you want to exclude.

8d Click *OK*.

9 Click *OK*.

6.5 Starting the Driver

After you create and deploy the driver, you need to start the driver. Identity Manager is an event-driven system, so after the driver is started, it waits for events to occur.

1 In Designer, open your project.

2 In the Modeler, right-click the driver icon or the driver line, then select *Live* > *Start Driver*.

6.6 Verifying the Functionality

After you deploy and configure the driver, you need to verify that the driver correctly creates and updates Sentinel Identity and Account data.

1. Ensure that you have started the driver.
2. Create a test user in the Identity Vault with all attributes required by the matching attributes you configured.
3. Verify that a corresponding Sentinel Identity is found in Sentinel > *People* browser.

   For more information, see “Integrating Identity Information with Sentinel Events” in the *Sentinel User Guide*.
4. In the People browser, verify that a Sentinel account corresponding to the Identity Vault account appears under the Identity's *Profile* tab.
5. If your Identity Vault already contains objects with Identity Tracking data from other systems, such as Active Directory with the Identity Tracking package, you can use *Migrate from Identity Vault* in iManager to validate the configuration.

7 Activating the Driver

The Sentinel driver contains its own activation that you receive from the customer center. The Sentinel driver requires this new activation within 90 days of creating the driver. Otherwise, the driver stops working.

If you create the driver in a driver set where you have activated the Sentinel driver, the driver inherits the activation.

For more information about activation, see "Activating Identity Manager Drivers" in the *Identity Manager Integrated Installation Guide.*

8 Understanding the Schema Mapping

The default Sentinel Identity Tracking packages apply a schema mapping between Identity Vault attributes and the corresponding Sentinel attributes. At a high level, information about each user identity in the Identity Vault is mapped to the USR_IDENTITY table in the Sentinel database and information from each identity's multi-value DirXML-Accounts attribute is mapped to the USR_ACCOUNT table. The driver maps each account to the incoming event stream, retrieves the associated Identity information from the Identity Vault, and sends the information about the user identity to the Sentinel database.

The following table describes how the Identity Vault attributes are mapped to the Sentinel USR_IDENTITY table and where the associated value is placed for events that match any associated accounts:

Table 8-1 *Mapping in USR_IDENTITY Table*

Identity Vault Attribute/ Metadata	Sentinel Column	Event Field and Comments
Not applicable (NA)	IDENTITY_GUID	InitiatorUserIdentityID TargetUserIdentityID Sentinel generates these fields internally.
srcDN	DN	
NA	CUST_ID	This field is set based on the tenant ID assigned to each Identity Tracking Integration Module for Sentinel, when Sentinel is receiving data for multiple tenants.
NA	VAULT_NAME	This is field is set to the eDirectory tree name.
GUID	SRC_IDENTITY_ID	Stores the Identity Vault GUID.
workforceID	WFID	pInitiatorUserWorkforceID TargetUserWorkforceID
Given Name	FIRST_NAME	
Surname	LAST_NAME	
Full Name	FULL_NAME	InitiatorUserFullName TargetUserFullName
Title	JOB_TITLE	
OU	DEPARTMENT_NAME	InitiatorUserDepartment TargetUserDepartment

Identity Vault Attribute/ Metadata	Sentinel Column	Event Field and Comments
mailstop	OFFICE_LOC_CD	
Internet Email Address	PRIMARY_EMAIL	InitiatorEmail TargetEmail
Telephone Number	PRIMARY_PHONE	
manager	MGR_GUID	Stores the Sentinel GUID that represents the identity of this person's manager. The mapping is not direct. Sentinel uses the object referenced by the Identity Vault “manager” attribute to determine the manager's Sentinel Identity object and thereby obtains the actual GUID value that forms the reference in Sentinel.
photo	PHOTO	

In addition to the Identity information, Sentinel stores information about accounts associated with this Identity. The Identity Manager drivers that are provisioning accounts to connected systems store information about those accounts in a multi-valued attribute on the DirXML-Accounts source User object. The format of each value in DirXML-Accounts is as follows:

```
<driver guid>#<account id type>#<account id>#<idv account status>#<app account
status>#<app Name>
```

The following table describes how these fields are mapped to the internal USR_ACCOUNTS table in Sentinel:

Table 8-2 *Mapping in USR_ACCOUNTS Table*

Identity Vault Value	Sentinel Column	Event Field and Comments
<account id>	USR_NAME	This field and USR_NAME are parsed out from the account information.
(calculated)	AUTHORITY	This field and USR_NAME are parsed out from the account information. This field and AUTHORITY are parsed out from the account information.
<idv account status>	BEGIN_EFFECTIVE_DATE	This value is set based on the settings of this field and the <app account status> field, plus Sentinel records a temporal record of when the account status was changed.
<app account status>	END_EFFECTIVE_DATECURRENT_F	This value is set based on the settings of this field and the <idv account status> field, plus Sentinel records a temporal record of when the account status was changed.

NOTE: If the default schema mapping does not meet your requirements, you can customize most of the schema mappings between the Identity Vault and Sentinel to suit your requirements. The framework is fully extensible to store arbitrary Identity attributes in Sentinel by using the Extended Attributes table (USR_IDENTITY_EXT_ATTR).

9 Migrating Data

If you are adding the Integration module to an Identity Vault with existing user objects and data, you need to perform an initial migration of the Identity Vault data into Sentinel.

If the Sentinel system to which you are migrating the Identity Vault data has no existing identity data, you can disable the Subscriber channel matching policies to speed up the migration process.

- Section 9.1, "Disabling the Subscriber Channel," on page 33
- Section 9.2, "Migrating the Data from Identity Vault to Sentinel," on page 33

9.1 Disabling the Subscriber Channel

You can temporarily disable the Subscriber channel matching policies to speed up the migration process. You can do so by setting the Global Configuration Value (GCV) in Designer.

1. Go to the Driver Properties page > GCV > Sentinel Identity Tracking Configuration.
2. Set the *Initial Synchronization Mode* value to `true`.
3. Deploy and restart the driver.

   For more information, see Section 6.4, "Deploying the Driver," on page 27 and Section 6.5, "Starting the Driver," on page 27.

9.2 Migrating the Data from Identity Vault to Sentinel

You can migrate the user data with or without manager references.

9.2.1 Migrating Data Without Manager References

If your Identity Vault user data has manager references between user objects, the migration is a one-step process.

You can either manually select the objects to be migrated by using the *Migrate from Identity Vault* option in iManager, or allow the Identity Vault to automatically submit all objects by using the *Synchronize* option in iManager.

After the migration is complete, enable the Subscriber channel by setting the *Initial Synchronization Mode* to `false`.

9.2.2 Migrating Data with Manager References

If your Identity Vault user data has manager references between user objects the migration is a two-step process.

First, perform the steps mentioned in Section 9.2.1, “Migrating Data Without Manager References,” on page 33.

After the migration is complete, repeat the procedure. Repeating the procedure ensures that manager references that could not be established in the first step are resolved.

If an employee's Identity Vault object is synchronized before the employee's manager's Identity Vault object, the manager reference in Sentinel cannot be established because the manager's object does not exist in Sentinel yet. When you repeat the process, migration occurs after all objects are created in Sentinel so that all manager references can be established in Sentinel.