NetIQ® CloudAccess

Installation and Configuration Guide

August 2013

Legal Notice

Contents

About this Book and the Library

The *Installation and Configuration Guide* provides conceptual information about the NetIQ CloudAccess product (CloudAccess). This book contains configuration information for the appliance and for the SaaS applications.

Intended Audience

This book provides information for individuals responsible for deploying and configuring the CloudAccess appliance and configuring the SaaS applications.

Other Information in the Library

The library provides the following information resources:

Help

Provides context-sensitive information and step-by-step guidance for common tasks, as well as definitions for each field on each window.

Conventions

The library uses consistent conventions to help you identify items throughout the documentation. The following table summarizes these conventions.

Convention	Use
Bold	◆ Window and menu items ◆ Technical terms, when introduced
Italics	◆ Book and CD-ROM titles ◆ Variable names and values ◆ Emphasized words
`Fixed Font`	◆ File and folder names ◆ Commands and code examples ◆ Text you must type ◆ Text (output) displayed in the command-line interface
Brackets, such as *[value]*	◆ Optional parameters of a command
Braces, such as *{value}*	◆ Required parameters of a command
Logical OR, such as *value1|value2*	◆ Exclusive parameters. Choose one parameter.

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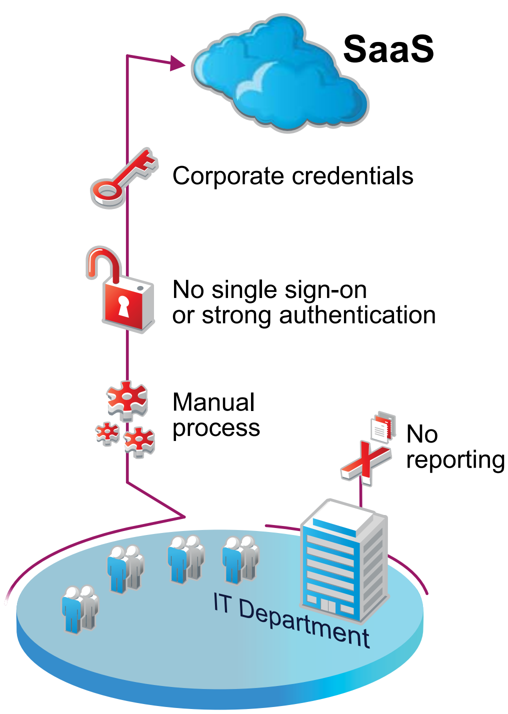
1 Overview of NetIQ CloudAccess

CloudAccess is a virtual appliance that enables you to provide secure access to Software-as-a-Service (SaaS) applications for your corporate users.

1.1 Inherent Problems Using SaaS Applications

Many corporate users want to use SaaS applications to increase business agility. If the corporation does not provide an easy way for users to obtain accounts for the SaaS applications, several problems can occur. Figure 1-1 depicts some of these problems.

Figure 1-1 *Problems with Using SaaS Applications in the Corporation*



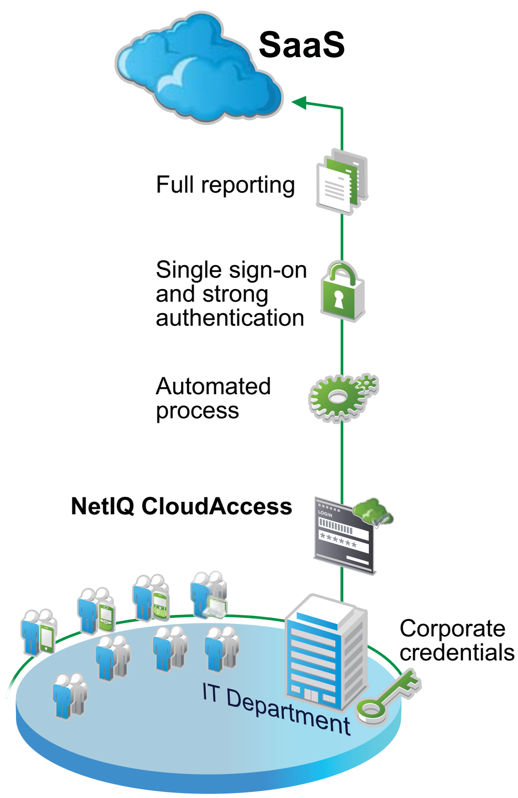
Common problems include the following:

- Users bypass the IT department and create their own accounts in the SaaS application.
- Users must wait for the IT department to create accounts in the SaaS application. It is a manual process, whether the IT department creates the account or the user creates the account.
- Users must remember separate passwords for each SaaS application, and often use their corporate credentials.
- Administrators receive no compliance reports of user activity in the SaaS application.

1.2 The Solution CloudAccess Provides

CloudAccess provides a simple, secure solution to the problems presented with using SaaS applications.

Figure 1-2 *CloudAccess Solution*



CloudAccess provides the following benefits:

- An automated process to provision user accounts to the SaaS applications
- Secure single sign-on to the SaaS applications without corporate credentials leaving the security realm
- The ability for users to securely access SaaS applications inside or outside of the corporation
- Compliance reporting of users' activities in the SaaS applications

1.3 How CloudAccess Works

CloudAccess is a virtual appliance that provides a Web service for users to access the SaaS applications securely. The appliance performs the following functions:

- **Provisioning:** CloudAccess allows you to map roles (groups) in an identity source, such as Active Directory or eDirectory, to account authorizations in the SaaS applications. After mapping the authorizations, by leveraging group management in the identity source, CloudAccess automatically creates and manages the associated user accounts in the SaaS application.
- **Secure Single Sign-on:** CloudAccess provides single sign-on to the SaaS applications and supports Integrated Windows Authentication for background authentication to the certificate authority (CA). Provisioned users automatically have access to the SaaS applications, if they are logged in to the identity source. The corporate credentials never leave the firewall.
- **Reporting:** CloudAccess provides reports of the usage of the SaaS applications to help enforce corporate policies and prove compliance.
- **Enabling Mobile Devices:** CloudAccess enables mobile devices to securely access the SaaS applications.

1.4 How to Manage CloudAccess

Before you can manage CloudAccess, you must deploy and initialize the appliance. For more information about deploying the appliance, see Section 2.3, "Deploying the Appliance," on page 22. For more information about initializing the appliance, see Section 2.5, "Initializing the Appliance," on page 24.

After you have initialized the appliance, the browser automatically redirects to the Admin page. You can also manually access the Admin page as needed. For more information, see Section 3.1, "Accessing the Administration Pages," on page 25. The Admin page allows you to configure and maintain the appliance. The Admin page also provides navigation icons to access other functions as follows:

- **Policy:** Maps roles (groups) from the identity source to authorizations from the SaaS applications. For more information, see Chapter 6, "Mapping Authorizations," on page 49.
- **Approval:** Approves or denies authorizations for the SaaS applications. This icon appears only if you have mapped roles to authorizations and selected the option to require approval for accounts, and there are accounts waiting for approval. For more information, see Chapter 7, "Approving Requests," on page 53.
- **Reports:** Reports on the user activities to the SaaS applications. For more information, see Chapter 8, "Reporting," on page 55.
- **Roles:** Configures roles for different users within CloudAccess. For more information, see Section 3.6.2, "Assigning Roles to Users," on page 30.

Proceed to Chapter 2.1, "CloudAccess Installation Worksheet," on page 19 to gather the information required to install and configure the appliance.

1.5 How CloudAccess Fits into Your Network

CloudAccess resides behind the corporate firewall in your IT network. Administration is performed using a browser on a workstation inside or outside of the firewall.

You can cluster the CloudAccess appliance. By default, it is a single node cluster, but CloudAccess supports up to a five-node cluster. For more information about clustering, see Section 3.7, "Configuring Clustering," on page 31.

CloudAccess allows you to configure two NICs for each node in the cluster. You can configure one NIC for the administrative network and a second NIC for the public network. For more information, see Section 3.3, "Configuring Network Options," on page 26.

The user accounts reside in the identity source. CloudAccess provisions those users to the SaaS application. Users can then access the SaaS application resources by logging in with their identity source accounts, whether they are inside or outside the firewall.

1.6 How CloudAccess Merges Existing Accounts

CloudAccess creates a new account or merges an existing account in the SaaS applications for users that are members of mapped groups in the identity sources. This is called *provisioning*.

Provisioning occurs in two ways:

- Automatic provisioning occurs when you map authorizations for the SaaS applications to the identity source roles.
- You can configure the SaaS connectors to allow users control of when their accounts are provisioned. A configuration option is available on the Connector for Google Apps and the Connector for Salesforce to **Prompt users for an existing account before provisioning**.

  When you select this option, users have two choices: create a new account or specify an existing SaaS application account during their initial attempt to access the SaaS application using single sign-on through CloudAccess.

When provisioning a new account, CloudAccess determines if a matching user account already exists in the SaaS application. If a match is found, CloudAccess merges the user with the existing SaaS application account. If no match is found, CloudAccess creates a new account. For more information, see the following sections:

- Section 1.6.1, "CloudAccess Matching Criteria," on page 14
- Section 1.6.2, "CloudAccess Naming Convention," on page 16
- Section 1.6.3, "Samples of Account Creations," on page 16

1.6.1 CloudAccess Matching Criteria

The following sections define the matching criteria of the connectors that provision users:

- "Matching Criteria for the Connector for Google Apps" on page 15
- "Matching Criteria for the Connector for Office 365" on page 15
- "Matching Criteria for the Connector for Salesforce" on page 15

Matching Criteria for the Connector for Google Apps

Table 1-1 contains the matching criteria for the Connector for Google Apps. CloudAccess compares the Google Apps email attribute value to the listed identity source attribute value. If there is a match, CloudAccess merges the accounts. If there is no match, CloudAccess creates a new account in Google Apps.

Table 1-1 *Google Apps Matching Criteria*

	Google Apps Attribute	Identity Source: Active Directory Attribute	Identity Source: eDirectory Attribute
Attribute Name	UserName	sAMAccountName	CN
Display Name	Email	User logon name	Common Name

Matching Criteria for the Connector for Office 365

Table 1-2 contains the matching criteria for the Connector for Office 365. CloudAccess compares the Office 365 userPrincipalName attribute value with the value in the identity source attribute plus the @ sign plus the Office 365 federated domain name. If the values match, CloudAccess merges the accounts. If there is no match, CloudAccess creates a new account in Office 365.

Table 1-2 *Office 365 Matching Criteria*

	Office 365 Attribute	Identity Source: Active Directory Attribute	Identity Source: eDirectory Attribute
Attribute Name	userPrincipalName (upn)	sAMAccountName@*Federated Domain Name*	CN@*Federated Domain Name*
Display Name	User name	User logon name@*Federated Domain Name*	Common Name@*Federated Domain Name*

Matching Criteria for the Connector for Salesforce

Table 1-3 contains the matching criteria for the Connector for Salesforce. CloudAccess matches on three different attributes in a priority order. If CloudAccess does not find a match for the value in the first attribute, it performs a search in the value of the second attribute, and if it does not find a match, it performs the search for the value in the third attribute.

Table 1-3 *Salesforce Matching Criteria*

	Salesforce Attribute	Identity Source: Active Directory Attribute	Identity Source: eDirectory Attribute
First Priority			
Attribute Name	Federation Identifier	objectGUID	GUID
Second Priority			
Attribute Name	Username	sAMAccountName@*Salesforce Domain Name*	CN@*Salesforce Domain Name*
Display Name	Username	User logon name@*Salesforce Domain Name*	Common Name@*Salesforce Domain Name*
Third Priority			
Attribute Name	Username	mail	Internet EMail Address
Display Name	Username	E-mail	E-Mail Address

1.6.2 CloudAccess Naming Convention

CloudAccess contains a defined naming convention for creating the user accounts in the SaaS applications.

Table 1-4 *CloudAccess Naming Convention*

Identity Source	Connector for Google Apps	Connector for Salesforce
Active Directory	sAMAccountName	sAMAccountName@*Salesforce Domain Name*
eDirectory	CN	CN@*Salesforce Domain Name*

As shown in Table 1-4, the user name attribute in Salesforce is in the form of an email address. CloudAccess creates a unique user name based on the sAMAccountName or CN of the user object in the identity source prepended to the domain name configured in the Company Profile at the Salesforce account.

1.6.3 Samples of Account Creations

Sample experience with the **Prompt users for an existing account before provisioning** option enabled:

1. The administrator selects the **Prompt users for an existing account before provisioning** option when configuring the connector for the SaaS application.
2. The administrator maps one or more SaaS authorizations to the identity source role and grants approval, if required.
3. Users log in to CloudAccess with their identity source credentials.
4. CloudAccess presents users with icons of the SaaS applications they are entitled to access.
5. Users click the icon for the entitled SaaS application.

6. CloudAccess presents two options to users:
   - **I do not have an existing account. Create one for me.**
   - **I already have an existing account. These are my credentials:**
7. Users select **I do not have an existing account. Create one for me.**

   or

   Users select **I already have an existing account. These are my credentials**, then specify their credentials for the existing SaaS account.
8. Regardless of the option the user selects, CloudAccess searches for an existing, matching account.
9. (Conditional) If CloudAccess finds an existing account (for example, the user's mail attribute in the identity source matches a user name in the Salesforce domain), CloudAccess merges the existing account with the new account it creates for the user.
10. (Conditional) If CloudAccess does not find an existing account, CloudAccess creates a new account for the user in the SaaS application following the naming conventions in Table 1-4 on page 16.

Whether CloudAccess merges the user account or creates a new account, the user's SaaS application password is set to a random value that CloudAccess generates. The user's authentication to the SaaS application now uses SAML single sign-on. For information about using SAML single sign-on, see Chapter 5, "Providing Access to the SaaS Applications for Users," on page 47.

Sample experience with the automatic account creation:

1. The administrator maps one or more SaaS authorizations to the identity source role and grants approval, if required.
2. (Conditional) The person with the Approval role approves or denies the account creation.
3. CloudAccess searches for an existing, matching account.
4. (Conditional) If CloudAccess finds an existing account (for example, the user's mail attribute in the identity source matches a user name in the Salesforce domain), CloudAccess merges the existing account with the new account it creates for the user.
5. (Conditional) If CloudAccess does not find an existing account, CloudAccess creates a new account for the user in the SaaS application following the naming conventions in Table 1-4 on page 16.
6. Users log in to CloudAccess with their identity source credentials.
7. CloudAccess presents users with icons of the SaaS applications they are entitled to access.
8. Users click the icon for the entitled SaaS application, then CloudAccess uses the SAML single sign-on to authenticate the users to the SaaS application.

2 Installing CloudAccess

CloudAccess is a VMware appliance that you download and deploy into your IT environment.

2.1 CloudAccess Installation Worksheet

Use the following worksheet to gather the required information to install and configure CloudAccess.

- ❒ **Networking Information:** Gather the following networking information:
  - ❒ Publicly resolvable DNS name for the appliance
  - ❒ NTP server
  - ❒ DNS server, subnet mask, and gateway
  - ❒ An SSL certificate signed by a well known certificate authority (CA)
- ❒ **Identity Sources:** Gather the following information to configure the identity sources, such as Active Directory or eDirectory, for CloudAccess:
  - ❒ IP address or DNS name of the server that contains the users
  - ❒ Context of the users
  - ❒ Name and password of a user with the proper rights to the users
- ❒ **Connector Information:** Gather the information needed to configure the Connector for Google Apps for Business, the Connector for Office 365, or the Connector for Salesforce, as applicable to your environment. For more information, see Section 4.1, "Connector for Google Apps for Business," on page 37, Section 4.2, "Connector for Office 365," on page 39, or Section 4.3, "Connector for Salesforce," on page 41.

2.2 Requirements

Use the information in the following table to verify that you meet the requirements for CloudAccess before deploying the appliance.

Table 2-1 CloudAccess Requirements

Components	Requirements
VMware	One of the following versions of VMware: ◆ vSphere Hypervisor 5.0 ◆ vSphere 5.0 ◆ ESXi 4.1 ◆ ESX 4.1
Node	Minimum hardware requirements for each appliance node in the cluster: ◆ 60 GB disk space ◆ 2 Cores ◆ 8 GB RAM
Cluster	Supported cluster configuration: ◆ Up to a five-node cluster ◆ Each node must reside in the same IP subnet
Browsers	**Administration:** Supported browsers for administration tasks: ◆ Firefox 19 and 20 on Windows 7 ◆ Google Chrome 25 and 26 on Windows 7 ◆ Internet Explorer 9 and 10 on Windows 7 **Users:** Supported browsers for users: ◆ Firefox 19 and 20 on Windows 7 ◆ Internet Explorer 9 and 10 on Windows 7 ◆ Google Chrome 25 and 26 on Windows 7 ◆ Safari 5 on Windows 7
Mobile Devices	**Administration:** Not supported on mobile devices. **Users:** Supported mobile devices for users: ◆ iPhone with iOS 6.x ◆ iPad with iOS 6.x
Email Clients	Supported email clients for the email proxy: ◆ Windows Live Mail 2011 ◆ Latest version of Apple Mail Client on iPad or iPhone with iOS 6.x
DNS	CloudAccess requires that all appliance nodes, administration workstations, end-user workstations, and identity sources be able to resolve the public DNS name of the appliance.
SaaS Application Requirements	Each SaaS application has different requirements. To see the requirements for each SaaS application, see the Chapter 4, “Configuring Connectors,” on page 37.

<table>
<tr><th>Components</th><th>Requirements</th></tr>
<tr><td>Active Directory</td><td>Verify that your Active Directory environment meets the following requirements:

Only Windows Server 2008 R2.
A unique identity for each user account, whether you have one or more domains. CloudAccess uses the sAMAccountName as the unique identifier for the users.
All of the following required Active Directory attributes populated on the Active Directory users:

First name
Last name
Full name (Display name is the field that populates this attribute.)
sAMAccountName or Logon Name (Pre-Windows 2000)
User Principal Name (UPN)
Email address

For more information, see Section 3.5.1, “Active Directory Mandatory Attributes,” on page 29.

Obtain the following required items:

The password and the fully distinguished LDAP-formatted name of a user in Active Directory that has read access to the user objects. This user makes LDAP binds to Active Directory.
The name and password of a user in Active Directory that becomes the administrator of the appliance. The user must reside in the search context of the domains.
The IP address of one or more Active Directory servers that contain the users.
The context of the users in Active Directory.
</td></tr>
</table>

<table>
<tr><th>Components</th><th>Requirements</th></tr>
<tr><td>eDirectory</td><td>
Verify that your eDirectory environment meets the following requirements:

eDirectory 8.8.7 or eDirectory 8.8.6.
All of the following required eDirectory attributes populated on the eDirectory users:

CN (Username is the field that populates this attribute.)
Given Name (First name is the field that populates this attribute.)
Internet EMail Address
Surname (Last name is the field that populates this attribute.)

For more information, see Section 3.5.2, “eDirectory Mandatory Attributes,” on page 29.

Obtain the following required items:

The password and fully distinguished LDAP-formatted name of a user in eDirectory that has the following rights:

Property Rights

CN: compare, read, inherit
Description: compare, read, inherit
Given Name: compare, read, inherit
GUID: compare, read, inherit
Internet EMail Address: compare, read, inherit
Login Disabled: compare, read, inherit
Member: compare, read, inherit
Group Membership: compare, read, inherit
Surname: compare, read, inherit

Entry Rights: browse, inherit

The name and password of a user in eDirectory that becomes the administrator of the appliance. The user must reside in the subtree of the search context for the identity source specified during the initialization of the appliance.
The IP address of one or more eDirectory servers that contain a replica of the partition holding the user objects and that run NLDAP.
The context of the users in eDirectory.

</td></tr>
</table>

2.3 Deploying the Appliance

CloudAccess is an OVF virtual appliance. For more information about virtual appliances, see What is OVF? (http://www.vmware.com/appliances/getting-started/learn/ovf.html). You must deploy the appliance to your VMware server.

To deploy the appliance:

1 If you are using Windows, extract the VMware image.

or

If you are using Linux, use the following command to extract the image:

```
tar -zxvf vmware_image.tar.gz
```

2 Deploy the CloudAccess virtual appliance.

For more information, see Deploy Virtual Appliances (http://www.vmware.com/it/appliances/getting-started/deploy/get_started.html).

3 If you do not have a DHCP server in your environment, skip to Section 2.4, “Configuring the Appliance Without a DHCP Server,” on page 23.

or

Power on the appliance, then proceed to Section 2.5, “Initializing the Appliance,” on page 24.

The initial boot configures CloudAccess. The initial boot could take between five and twenty minutes for the configuration to complete. When the appliance is ready, it displays a welcome message with the initialization URL `https://ip_address/appliance/Init.html`.

You can deploy the OVF file or convert the OVF file to a VMX file. If you use the VMX file, disable the default option of **Synchronize guest time with host** option for the image. Right-click the appliance in the VMware client, then deselect **Edit Settings** > **Options** > **VMware Tools > Synchronize guest time with host**.

2.4 Configuring the Appliance Without a DHCP Server

To configure the appliance, the appliance must obtain an IP address through DHCP or have a static IP address assigned through the VMware settings. Perform these steps *only* if there is no DHCP server in your environment. If a DCHP server exists in your environment, you can assign a static IP address after the initial boot without editing the VMware settings.

Edit the VMX file and add the following lines with the appropriate values for your environment:

```
#These settings are related to date/time/timezone and NTP server
#Configures /etc/sysconfig/clock and /etc/ntp.conf
guestinfo.prop1="CLONE_DATE="
guestinfo.prop2="CLONE_timezone="
guestinfo.prop3="CLONE_NTP_SERVER="
guestinfo.prop4="CLONE_HWCLOCK="
guestinfo.prop5="CLONE_SYSTOHC="

#
#Network related settings
#CLONE_DO_DHCP=false, only configure static settings
#CLONE_DO_DHCP=true,  tries DHCP and if it fails configure with static settings
guestinfo.prop6="CLONE_DHCP=true"
guestinfo.prop7="CLONE_DNS_NAME_SERVER1="
guestinfo.prop8="CLONE_DNS_NAME_SERVER2="
guestinfo.prop9="CLONE_DNS_NAME_SERVER3="
guestinfo.prop10="CLONE_DNS_SEARCH1="
guestinfo.prop11="CLONE_DNS_SEARCH2="
guestinfo.prop12="CLONE_DNS_SEARCH3="
guestinfo.prop13="CLONE_NETMASK="
guestinfo.prop14="CLONE_DEFAULT_GATEWAY="
guestinfo.prop15="CLONE_IP="
guestinfo.prop16="CLONE_DNS_NAME="
```

If you do not need a setting, either leave the value blank, or leave the setting out of the VMX file altogether. Power on the appliance, then proceed to Section 2.5, “Initializing the Appliance,” on page 24.

2.5 Initializing the Appliance

You must now initialize the appliance.

1 Verify that you meet the requirements listed in Section 2.2, "Requirements," on page 19.

2 From a supported browser, access the initialization Web interface at the URL displayed on the appliance screen after it is deployed.

   For example: `https://ip_address/appliance/Init.html`

3 Fill in the fields displayed to initialize the appliance.

4 Click **Finish**.

   A successfully initialized appliance automatically redirects the browser to the CloudAccess administration login page (`https://dns_of_appliance/appliance/index.html`).

5 Specify the admin user name of the appliance and password, then proceed with Chapter 3, "Configuring the Appliance," on page 25.

3 Configuring the Appliance

After you have initialized the appliance, configure the appliance to communicate with the SaaS applications.

3.1 Accessing the Administration Pages

After you properly initialize the appliance using the information in Section 2.5, "Initializing the Appliance," on page 24, the browser automatically redirects to the administration pages at `https://`*`dns_of_appliance`*`/appliance/index.html`.

If the initialization does not automatically redirect or you need access to the administration pages, use the following steps:

1. In a supported browser, enter `https://`*`dns_of_appliance`*`/appliance/index.html`.
2. Log in as the administrator of the appliance as specified during the initialization process.

   These credentials are the cluster administrator user name specified during the initialization process and its LDAP user password.

The first time you log in, the appliance displays the Admin page and activates users in the search contexts from the identity source. Ensure that this process completes before configuring any SaaS applications.

Icons at the top of the Admin page allow you to access the other administration pages. If your session times out or you log out, the next time you log in to the appliance, CloudAccess displays the page that you last accessed.

Admin sessions time out by default after 10 minutes. This setting is not currently configurable, but you can adjust the timeout setting for user sessions. For more information, see Section 10.1, "Configuring Session Timeouts," on page 61.

For a list of the different administration pages, see Section 1.4, "How to Manage CloudAccess," on page 13.

3.2 Registering CloudAccess

CloudAccess provides a 30-day trial period. If you do not register the appliance within 30 days after installation, the appliance stops working. The bomb icon on the Admin page displays how many days are left in the trial period.

For the purpose of meeting licensing requirements, when you register a single appliance, the cluster as a whole is considered to be registered. However, in order to use the Novell Customer Center (NCC) update channel to download and install software updates, you must register each node in the cluster separately. The bomb icon remains on the Admin page if there are nodes in the cluster that have not yet been registered for channel updates. For more information about the update channel, see Section 10.4, "Updating the Appliance," on page 62.

To register your appliance:

1 Log in to your Customer Center at http://www.novell.com/center (http://www.novell.com/center).

  The Customer Center is for NetIQ, Novell, and SUSE customers.

2 Under **My Products**, select **CloudAccess**.

3 Select **License Key**, then save the license key to a location where you can access it from your CloudAccess appliance.

4 Log in to your CloudAccess appliance and access the Admin page.

  For more information, see Section 3.1, "Accessing the Administration Pages," on page 25.

5 Click the appliance, then click **Register appliance**.

6 Enter the email address you used when you registered with the Customer Center.

7 Enter the license key you downloaded from the Customer Center.

8 Click **Register**.

9 Repeat Step 5 through Step 8 for each appliance in the cluster.

When you have successfully registered all nodes in the cluster, the bomb icon disappears.

3.3 Configuring Network Options

CloudAccess contains a manual routing table and supports two Network Interface Cards (NICs).

3.3.1 Configuring the Second NIC

CloudAccess allows you to configure two NICs for each node in the cluster. You can configure one NIC for the administrative network and a second NIC for the public network.

When you configure the second NIC, the CloudAccess appliance has only one global DNS name. In order for your users on the private network to access the correct network with the global DNS name for the appliance, you must do additional configuration on your network.

Two options allow users on the private network to access the CloudAccess appliance with the global DNS name:

- An entry in the local host file on each user's computer that resolves the global DNS name of the appliance to the private network
- A separate DNS server that routes all internal traffic to the global DNS name of the appliance

To configure the second NIC on a node:

1. Access the Admin page at `https://dns_name/appliance/Admin.html`, then log in with the password specified during the initialization process.
2. Click a node icon, then select **Configure**.
3. Click the **Public Interface** tab.
4. Select **Enable Separate Public Interface**.
5. Configure the network settings for your public network.
6. Click **Apply** to save the changes.
7. Click **Close**.
8. Repeat Step 2 through Step 7 for each node in the cluster.

3.3.2 Configuring the Routing Table

CloudAccess provides a routing table for your use if your network has static routes. The routing table allows you to define the next hop in your network for the node in the cluster to reach the desired destination.

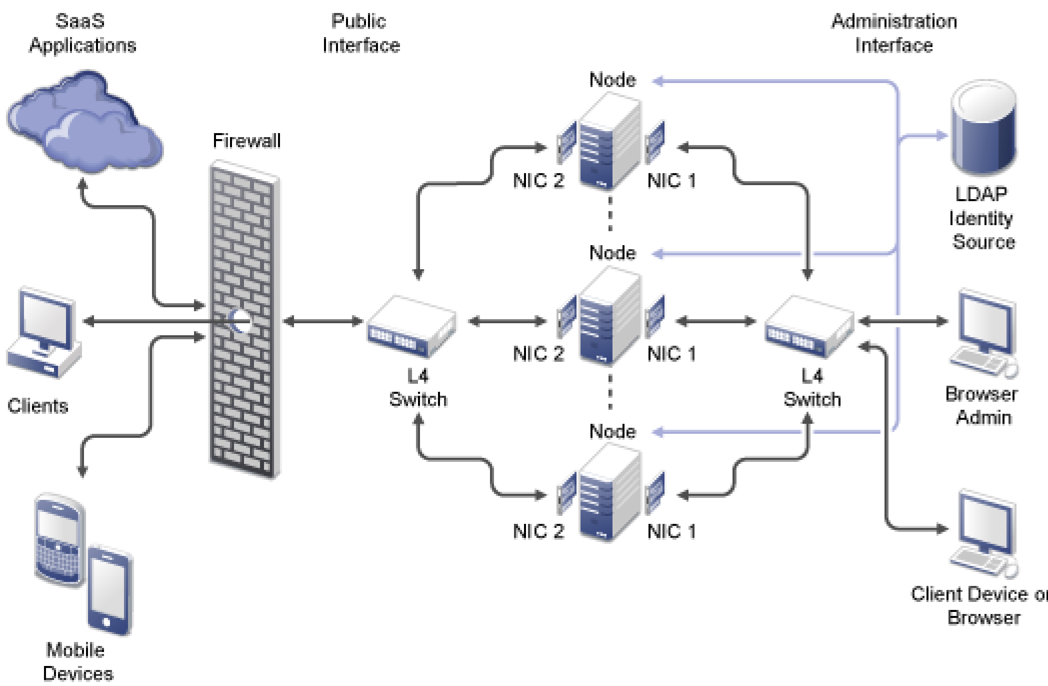
To configure the routing table for each node:

1. Access the Admin page at `https://dns_name/appliance/Admin.html`, then log in with the password specified during the initialization process.
2. Click the node icon, then select **Configure**.
3. Click the **Routing** tab.
4. Click the plus sign (+) icon to add a route.
5. Define the desired route, then click **OK**.
6. Add additional routes if desired.
7. Click **Close**.
8. Repeat Step 2 through Step 7 for each node in the cluster.

3.3.3 A Sample Network Configuration

The following graphic depicts a possible network configuration using CloudAccess with both NICs enabled on each node.

Figure 3-1 A Sample Network Diagram



The network diagram shows that each node has both NICs enabled. The first NIC is the administration interface for the node and the second NIC is the public interface of the node. All of the administration and corporate information stays on the administration interface side of the network. All user requests and application requests communicate only on the public interface. This configuration provides a layer of security for your corporate information.

3.4 Configuring Additional Identity Sources

CloudAccess supports the use of one or more identity sources to authenticate users and as a source for provisioning accounts to the SaaS applications. The initialization process configures the first identity source and adds the identity source to the Admin page.

CloudAccess currently supports two different types of identity sources: Active Directory and eDirectory. You can have one or more of each type of identity source configured in your appliance.

To change the initial identity source configuration information, on the Admin page, click the identity source, then click **Configure**.

NOTE:

- Although CloudAccess allows you to modify an existing eDirectory or Active Directory connector to point to a different tree, NetIQ does not recommend this approach because it can result in inconsistent display of user and group data. If you want to point a connector to a different tree, delete the existing connector and create a new connector that points to the correct tree.
- CloudAccess does not prevent you from configuring multiple eDirectory or Active Directory connectors that point to the same identity source. However, in order for the appliance to behave as expected and present accurate data, each identity source connector must point to a unique identity source.

To add another identity source:

1. Navigate to the CloudAccess Admin page.

   For more information, see Section 3.1, “Accessing the Administration Pages,” on page 25.
2. Click the **Admin** icon on the toolbar.
3. Drag and drop an identity source icon from the Identity Palette to the bar in the middle of the page.
4. Click the identity source icon, then click **Configure**.
5. Fill in the fields to configure the new identity source, then click **OK** to save the configuration information.
6. Click **Apply** to commit the changes to the appliance.

3.5 Verifying the Identity Source User Attributes

To successfully provision users to the SaaS applications, each user must contain certain attributes. CloudAccess uses these mandatory attributes to provision the user accounts to the SaaS applications. The attributes for each identity source are different.

For security reasons you cannot add a user to CloudAccess with a user name that is the same as a previously added user. If you attempt to do so, CloudAccess displays the user as not activated. For more information, see Section 11.4, “Provisioning Behavior,” on page 70.

3.5.1 Active Directory Mandatory Attributes

Each Active Directory user account must contain the following attributes for CloudAccess to provision the user accounts to the SaaS applications:

- First Name
- Last Name
- Full Name
- sAMAccountName or Logon Name (Pre-Windows 2000)
- User Principal Name (UPN)
- Email address

3.5.2 eDirectory Mandatory Attributes

Each eDirectory user account must contain the following attributes for CloudAccess to provision the user accounts to the SaaS applications:

- CN
- Given Name
- Internet EMail Address
- Surname

3.6 Configuring Roles Management

CloudAccess provides the ability to assign different roles to administrative users in your identity sources. The roles allow administrators to perform certain tasks and deny them access to other tasks.

- Section 3.6.1, "Defining the Role Types," on page 30
- Section 3.6.2, "Assigning Roles to Users," on page 30

3.6.1 Defining the Role Types

CloudAccess includes the following types of roles:

- **Appliance Administrator:** The appliance administrator has full rights to all appliance administration pages and role assignments. You assign the first appliance administrator during the initialization of the appliance.
- **Application Owner:** The application owner controls access to the SaaS applications. CloudAccess automatically assigns this role to the user that creates the SaaS application on the Admin page. The application owner can access the following Web pages:
  - **Approvals:** The application owner can allow or deny approvals for the users to obtain a SaaS application account.
  - **Policy:** The application owner can map authorizations between the identity source and the SaaS application and optionally require approval for authorizations.
  - **Roles:** The application owner can add or remove users from the application approver role.
- **Application Approver:** The application approver can access the Approvals page and allow or deny approvals for the users to obtain a SaaS application account. CloudAccess automatically assigns this role to the user that creates the SaaS application on the Admin page.
- **Compliance Auditor:** The compliance auditor can access the Reports page and generate, view, and download the reports for the appliance. Users assigned to the appliance administrator role have access to the Reports page automatically.

In addition to the default role assignments, you can assign each role to additional users. However, the Roles page never allows you to remove the last appliance administrator role.

3.6.2 Assigning Roles to Users

To assign roles to users:

1. Access the CloudAccess Admin page as the appliance administrator or application owner.

   For more information, see Section 3.1, "Accessing the Administration Pages," on page 25.
2. Click **Roles** on the toolbar.
3. Drag and drop the user to the role you want to assign to that user, then click **OK** to confirm the assignment.

The Roles page displays only the application owner and application approver roles of configured SaaS connectors.

3.7 Configuring Clustering

You can cluster the CloudAccess appliance. By default, it is a single node cluster, but CloudAccess supports up to a five-node cluster. You add a node to the cluster by selecting **Join Cluster** during the initialization process.

- Section 3.7.1, "Advantages of Clustering," on page 31
- Section 3.7.2, "Managing Nodes in the Cluster," on page 31
- Section 3.7.3, "Configuring an L4 Switch for Clustering," on page 33
- Section 3.7.4, "Configuring an L4 Switch for Email Proxy," on page 33

3.7.1 Advantages of Clustering

Clustering in CloudAccess offers several advantages. Most of these advantages are available only if you configure an L4 switch or Round-robin DNS. The L4 switch is the best solution.

Disaster Recovery: Adding additional nodes to the cluster provides disaster recovery for your appliance. If one node stops running or becomes corrupt, you can promote another node to master.

High Availability for Authentications: CloudAccess provides high availability for authentications and the single sign-on service, when using an L4 switch in conjunction with clustering. This solution allows users to authenticate in case of problems with the nodes within the cluster. The L4 switch sends authentication requests to the nodes with which it can communicate.

Load Balancing: You can configure the L4 switch to distribute authentications to nodes so one node does not receive all authentication requests while other nodes sit idle.

Scalability: Configuring an L4 switch with clustering increases the scalability of CloudAccess. Each node in the cluster increases the number of possible simultaneous logins.

3.7.2 Managing Nodes in the Cluster

CloudAccess supports up to five nodes in a cluster. You add nodes to the cluster through the initialization process, and perform all other initialization tasks on the Admin page.

- "Adding a Node to the Cluster" on page 31
- "Promoting a Node to Master" on page 32
- "Removing a Node from the Cluster" on page 32

Adding a Node to the Cluster

To add a node to the cluster:

1. Verify the cluster is healthy.
   - All nodes must be running and communicating.
   - All components must be in a green state.
   - All failed nodes must be removed from the cluster.

   For more information about verifying that your cluster is healthy, see Section 11.3, "Troubleshooting Different States," on page 67.
2. Download and deploy a new VM machine for the new node.

   For more information, see Section 2.3, "Deploying the Appliance," on page 22.

3. Select **Join Cluster** as the first step to initialize the new node, then follow the on-screen prompts.

   For more information, see Section 2.5, "Initializing the Appliance," on page 24.
4. Wait for the login screen for the Admin page to be displayed. A progress bar indicates how much time this will take.
5. Log in to the Admin page, and wait until all spinner icons stop processing and all components are green before performing any other tasks.

   The cluster is adding the node and there are several background processes running. This final step could take up to an hour to complete.

Promoting a Node to Master

The first node that you install is the master node of the cluster by default. The master node runs provisioning, reporting, approvals, and policy mapping services. You can promote any node to become the master node.

To promote a node to master:

1. Verify that the cluster is healthy.

   For more information, see Section 11.3, "Troubleshooting Different States," on page 67.
2. Verify that all nodes in the cluster are running the same version of CloudAccess. If any nodes need to be updated, ensure that you update the nodes *before* you switch the master node. For more information, see Section 10.4, "Updating the Appliance," on page 62.
3. Take a snapshot of the cluster.
4. Click the node to become the master node on the Admin page, then click **Promote to master**.

   An M appears on the front of the node icon indicating it is now the master node.

The services move from the old master to the new master. The old master is now just a node in the cluster.

When you switch the master node, the logs start again on the new master and reports start again on the new master. The historical logs are lost. The reporting data is also lost, unless you are using Sentinel Log Manager. For more information, see Section 8.2, "Integrating with Sentinel Log Manager," on page 55.

WARNING: If the old master node is down when you promote another node to master, remove the old master from the cluster, then delete it from the VMware server. Otherwise, the appliance sees two master nodes and becomes corrupted.

Removing a Node from the Cluster

You can remove a node from the cluster if something is wrong with the node. However, after you remove a node, you cannot add the same VM instance back into the cluster. You must delete this instance of the appliance from your VMware server, then deploy another instance to the VMware server to add a node back into the cluster.

To remove a node from the cluster:

1. (Conditional) If the node you are removing is the master node, promote another node to be master. For more information, see "Promoting a Node to Master" on page 32.
2. (Conditional) If you are using an L4 switch, delete the node from the L4 switch. For more information, see the L4 switch documentation.

3. On the Admin page, click the node you want to remove from the cluster.
4. Click **Remove from cluster**.

   The Admin page immediately shows that the node is gone, but it takes some time for the background processes to finish.
5. Delete the instance of the node from the VMware server.

3.7.3 Configuring an L4 Switch for Clustering

If you want high availability or load balancing, you must configure an L4 switch for the CloudAccess appliance. An L4 switch can be configured in many different ways. Use the following recommendations to configure the L4 switch to work with the appliance.

- **Heartbeat:** Use the following URL to define the heartbeat for the L4 switch:

  `https://`*`ip_address_of_appliance`*`/osp/h/heartbeat`

  The L4 switch uses the heartbeat to determine if the nodes in the cluster are running and working properly. The heartbeat URL returns a text message of Success and a 200 response code.
- **Persistence:** Also known as **sticky sessions**, allows all subsequent requests from a client to be sent to the same computer. To make this happen, select SSL session ID persistence when configuring the L4 switch.

Persistence increases the performance of the appliance for the end users, by removing the delay that might occur if the client sends a request to a new node instead of using the existing session to the same node.

3.7.4 Configuring an L4 Switch for Email Proxy

CloudAccess contains an email proxy for users with Google Apps that supports three protocols: SMTP, POP3S, and IMAPS. You must configure your L4 switch to handle these protocols. Use the following high level steps to configure the protocols for your L4 switch. For more information, see your specific L4 documentation.

- "Configuring the SMTP Protocol Handler" on page 33
- "Configuring the POP Protocol Handler" on page 34
- "Configuring the IMAP Protocol Handler" on page 34

Configuring the SMTP Protocol Handler

To configure an SMTP protocol handler for your L4 switch:

1. On your L4 switch, configure a new IP group (traffic group) or use an existing group for the virtual servers in the L4 switch.

   You can use this group for all of the protocols.
2. (Optional) Create a health monitor.

   2a Set the health checking for the pool to **TCP transaction monitor**.

   2b Set the timeout to 30 seconds.

   2c Set the health monitor to separately monitor each node.
3. Create a traffic pool for the SMTP virtual server to use.

   3a Add each appliance node to the pool using the IP address with the port.

For example: 192.168.1.14:25. The SMTP port is 25.

3b (Optional) Add the health monitor created in Step 2.

3c Select your load balancing settings.

For example: round robin or random

3d Set the session persistence to **SSL Session ID**.

4 Create a new virtual server.

4a Specify the protocol as SMTP and the port as 25.

4b Use the traffic group defined in Step 1 and the pool defined in Step 3 for the virtual server.

5 Start the virtual server.

Configuring the POP Protocol Handler

To configure a POP protocol handler for your L4 switch:

1 On your L4 switch, configure a new IP group (traffic group) or use an existing group for the virtual servers in the L4 switch.

You can use this group for all of the protocols.

2 (Optional) Create a health monitor.

2a Set the health checking for the pool to **TCP transaction monitor**.

2b Set the timeout to 30 seconds.

2c Set the health monitor to separately monitor each node.

3 Create a traffic pool for the POP virtual server to use.

3a Add each appliance node to the pool using the IP address with the port.

For example: 192.168.1.14:995. The POP port is 995.

3b (Optional) Add the health monitor created in Step 2.

3c Select your load balancing settings.

For example: round robin or random

3d Set the session persistence to **SSL Session ID**.

4 Create a new virtual server.

4a Specify the protocol as SSL (POP3S) and the port as 995.

4b Use the traffic group defined in Step 1 and the pool defined in Step 3 for the virtual server.

5 Start the virtual server.

Configuring the IMAP Protocol Handler

To configure an IMAP protocol handler for your L4 switch:

1 On your L4 switch, configure a new IP group (traffic group) or use an existing group for the virtual servers in the L4 switch.

You can use this group for all of the protocols.

2 (Optional) Create a health monitor.

2a Set the health checking for the pool to **Connect**.

2b Set the health monitor to separately monitor each node.

3 Create a traffic pool for the IMAP virtual server to use.

  3a Add each appliance node to the pool using the IP address with the port.

  For example: 192.168.1.14:993. The IMAP port is 993.

  3b (Optional) Add the health monitor created in Step 2.

  3c Select your load balancing settings.

  For example: round robin or random

  3d Set the session persistence to **SSL Session ID**.

4 Create a new virtual server.

  4a Specify the protocol as SSL (IMAPS) and the port as 993.

  4b Use the traffic group defined in Step 1 and the pool defined in Step 3 for the virtual server.

5 Start the virtual server.

3.8 Configuring Integrated Windows Authentication with Kerberos

CloudAccess allows user authentication with either name and password or Integrated Windows Authentication with Kerberos if your identity source is Active Directory. If you choose to use Integrated Windows Authentication, you must configure Kerberos.

CloudAccess supports the use of only one Kerberos realm. If there are multiple Active Directory domains used as the identity source, all of the domains must use the same realm.

Use the information in the following sections to enable Kerberos authentication between Active Directory and CloudAccess.

- Section 3.8.1, “Configuring the Kerberos User in Active Directory,” on page 35
- Section 3.8.2, “Configuring the Appliance to Use Integrated Windows Authentication with Kerberos,” on page 36
- Section 3.8.3, “Configuring the End User Browsers,” on page 36

3.8.1 Configuring the Kerberos User in Active Directory

To configure Kerberos on your Active Directory domain:

1 As an Administrator in Active Directory, use MMC to create a new user within the search context specified during the initialization of the appliance.

  Name the new user according to the Host and DNS name of the appliance. For example, if the public DNS of the appliance is serv1.cloudaccess.com and the context that has been enabled for cloud is ou=acme corporation,dc=cloudaccess,dc=com, use the following information to create the user:

  First name: serv1

  User login name: HTTP/serv1.cloudaccess.com

  Pre-windows logon name: serv1

  Set password: Specify the desired password.

  For example: Passw0rd

  Password never expires: Select this option.

2 Associate the new user with the service principal name.

Any domain or realm references must be uppercase.

2a On the Active Directory server, open a cmd shell.

2b At the command prompt, enter the following:

```
setspn -A HTTP/appliancepublicdns@UPN.SUFFIX newusershortname
```

For example: `setspn -A HTTP/serv1.cloudaccess.com@cloudaccess.COM serv1`

2c Verify setspn by entering `setspn -L` *`shortusername`*

For example: `setspn -L serv1`

3 Generate the `keytab` file using the ktpass utility.

Any domain or realm references must be uppercase.

3a At the command prompt, enter the following:

```
ktpass /out filename /princ servicePrincipalName /mapuser userPrincipalName /pass
userPassword
```

For example: `ktpass /out nidp.keytab /princ HTTP/serv1.cloudaccess.com@cloudaccess.COM /mapuser serv1@cloudaccess.COM /pass Passw0rd`

3b Ignore the message `Warning: pType and account type do not match.`

4 Copy the `nidp.keytab` file created in Step 3 to the browser of the client computer that you are using for administration.

3.8.2 Configuring the Appliance to Use Integrated Windows Authentication with Kerberos

The following steps enable the appliance to use Integrated Windows Authentication (IWA) with Kerberos, if your identity source is Active Directory.

1 Log in to the Admin page.

For more information, see Section 3.1, “Accessing the Administration Pages,” on page 25.

2 Click the Active Directory icon in the Identity Sources palette, then click **Configure**. (Do not drag the icon to the bar as you would when configuring the Connector for Active Directory itself. These IWA configuration options are global for all Connectors for Active Directory.)

3 Select **Integrated Windows Authentication**.

4 Next to the **Keytab** field click **Browse**, then browse to and select the `nidp.keytab` file generated in “Configuring the Kerberos User in Active Directory” on page 35.

5 Click **OK** to save the changes.

6 Click **Apply** to apply the changes to the appliance.

3.8.3 Configuring the End User Browsers

To complete the Kerberos configuration for Active Directory, configure the end user browser. For more information, see Section 9.3, “Configuring End User Browsers for Kerberos Authentication,” on page 58.

4 Configuring Connectors

CloudAccess provides multiple connectors to SaaS applications. The Connector for Google Apps for Business, the Connector for Salesforce, and the Connector for Office 365 enable account provisioning and single sign-on. The other available connectors provide only single sign-on.

- Section 4.1, “Connector for Google Apps for Business,” on page 37
- Section 4.2, “Connector for Office 365,” on page 39
- Section 4.3, “Connector for Salesforce,” on page 41
- Section 4.4, “Single Sign-On Connectors,” on page 44
- Section 4.5, “Importing and Configuring Custom Connectors,” on page 45

4.1 Connector for Google Apps for Business

Use the information in the following sections to configure a Connector for Google Apps for Business:

- Section 4.1.1, “Meeting the Requirements,” on page 37
- Section 4.1.2, “Configuring the Connector for Google Apps for Business,” on page 37
- Section 4.1.3, “Configuring Multiple Connectors for Google Apps for Business,” on page 39

4.1.1 Meeting the Requirements

Verify that you meet the following requirements before configuring the Connector for Google Apps for Business:

- ❒ A valid Google Apps for Business account
- ❒ Provisioning APIs enabled on the account
- ❒ An administrative account and password

4.1.2 Configuring the Connector for Google Apps for Business

Each cluster can support multiple instances of the Connector for Google Apps for Business. Once configured, the Connector for Google Apps for Business provides user account provisioning and single sign-on access to Google Apps for Business domains. After users log in to CloudAccess, SAML authentication is used to automatically authenticate (single sign-on) users to Google Apps for Business. Providing single sign-on to users increases the security of your company’s information stored in Google Apps for Business.

To configure the connector:

1 Access the CloudAccess Admin page.

   For more information, see Section 3.1, “Accessing the Administration Pages,” on page 25.

2 Drag and drop the Connector for Google Apps for Business from the SaaS Palette to the bar.

3 Click the Connector for Google Apps for Business, then click **Configure**.

4 Provide a unique display name for the connector to appear on the Admin and OSP Welcome pages, and also provide the administrator logon credentials and domain for the Google Apps for Business account.

5 (Conditional) Select the **Automatically configure SSO settings** option if you want CloudAccess to configure the single sign-on parameters at Google Apps for Business. Otherwise, you must manually configure the parameters at Google Apps for Business.

6 (Conditional) Select **Prompt users for an existing Google Apps account before provisioning** if you want to give users control of when their accounts are provisioned. For more information about account provisioning, see Section 1.6, "How CloudAccess Merges Existing Accounts," on page 14.

7 (Conditional) If you did not select the **Automatically configure SSO settings** option, click **Federation Instructions**. Read the instructions provided to configure the Connector for Google Apps for Business to allow single sign-on for users, then complete the following steps:

7a Copy and paste the text of the signing certificate provided in the **Federation Instructions** into a file, then save the file.

NOTE: Ensure that you use a text editor that does not introduce hard returns or additional white space. Otherwise, the certificate file may be improperly formatted and unusable. For example, use Notepad instead of Wordpad.

7b Log in to the Google Apps Dashboard with your administrator account.

7c Navigate to **Advanced Tools > Set up single sign-on (SSO)**.

7d Provide the following information:

Enable Single Sign-on: Select this option.

Sign-in page URL: Specify the value provided for the **Single Sign-on URL** in the **Federation Instructions**.

Sign-out page URL: Specify the value provided for the **Single Logout URL** in the **Federation Instructions**.

Change password URL: This is the page that the URL will redirect to when a user clicks **Change Password**. (This is not part of the federation per se, but Google requires a value for this field.)

Verification certificate: Upload the file into which you copied the signing certificate text above.

Use a domain specific issuer: Select this option. This changes the value sent in the SAML request to be `google.com/a/`*`google_apps_domain`* instead of google.com. For more information, see SSO (Single Sign-On) (http://support.google.com/a/bin/answer.py?hl=en&answer=60224) in the documentation for Google Apps for Business.

Network masks: Leave blank. This option is not applicable to SAML configuration.

7e Click **Save Changes**.

8 Click **OK**, then click **Apply** to commit the changes to the appliance.

9 (Optional) To provide users with access to Google Apps Mail from supported mobile devices, click the Connector for Google Apps for Business, then click **Enable mobile access**.

User accounts that have been provisioned to Google Apps for Business using CloudAccess must authenticate through CloudAccess. Direct logins to Google Apps for Business are not allowed. For more information, see the SAML SSO section of the Google Apps for Business Web site.

4.1.3 Configuring Multiple Connectors for Google Apps for Business

CloudAccess can support Google Apps domains by using multiple instances of the Connector for Google Apps for Business. Each connector instance must be configured with the unique credentials and domain information of the Google Apps domain that it serves.

NOTE: The **Enable mobile access** option is global across all instances of the Google Apps connector. (The option is either enabled or disabled for all instances.)

4.2 Connector for Office 365

The Connector for Office 365 provides automated provisioning of accounts from the identity sources to Office 365. The Connector for Office 365 also provides single sign-on for users from their identity source account to Office 365.

The Connector for Office 365 is included with the CloudAccess appliance. However, the Admin page displays the Connector for Office 365 only after you install the Connector for Office 365 on the Windows server.

- Section 4.2.1, "Meeting Requirements," on page 39
- Section 4.2.2, "Installing the Connector for Office 365," on page 40
- Section 4.2.3, "Validating the Connector for Office 365," on page 41
- Section 4.2.4, "Changing Configuration of the Connector for Office 365," on page 41
- Section 4.2.5, "Uninstalling the Connector for Office 365," on page 41
- Section 4.2.6, "Installing Multiple Connectors for Office 365," on page 41

4.2.1 Meeting Requirements

Complete the following steps before installing the Connector for Office 365:

- ❒ Select an existing Office 365 account to use or create a new account.
- ❒ Select a federated domain name for single sign-on with CloudAccess and Office 365.
- ❒ Ensure that the CloudAccess appliance will be able to resolve the DNS of the federated domain to the ADFS server address.
- ❒ Obtain the Windows Server 2008 R2 software.
- ❒ Download the AD FS 2.0 software from the following location: Active Directory Federation Services 2.0 RTW (http://www.microsoft.com/en-us/download/details.aspx?id=10909). Select the `RTW\W2K8R2\amd64\AdfsSetup.exe` file.
- ❒ Download the Microsoft Online Services Sign-In Assistant software from the following location: Microsoft Online Services Sign-In Assistant for IT Professionals RTW (http://www.microsoft.com/en-us/download/details.aspx?id=28177). Select the `msoidcli_64bit.msi` file.
- ❒ Download the Microsoft Online Services Module for Windows PowerShell software from the following location: Install Windows PowerShell for single sign-on (http://onlinehelp.microsoft.com/en-us/office365-enterprises/ff652560.aspx).
- ❒ Download the .NET Framework 4.x from the .NET downloads (http://www.microsoft.com/net/download) Web page.

4.2.2 Installing the Connector for Office 365

You must install the Connector for Office 365 on a Windows server.

To configure the Windows server and install the connector:

1 Obtain the credentials for an Office 365 account.

Office 365 Web site (http://office.microsoft.com/en-us/?CTT=97)

2 Add the federated domain name for single sign-on with CloudAccess and Office 365 to Office 365 and validate the ownership. Use the instructions at the following Web page: Add your domain to Office 365 (http://onlinehelp.microsoft.com/en-us/office365-enterprises/ff637620.aspx).

3 Install Windows Server 2008 R2, then install and apply all available updates.

4 As an administrator, install Active Directory on the Windows server.

If you already have an Active Directory domain that matches the domain selected in Step 2, join that domain. Otherwise, make this Active Directory server a domain controller for the domain in Step 2.

IMPORTANT: The Active Directory domain name must match the federated domain name in Office 365 or the Connector for Office 365 will not work.

5 As an administrator, complete the following additional steps on the Windows server:

5a Install a server certificate (PKCS #12 key pair). The subject of the certificate must match the DNS name of the domain in Step 2.

For more information, see Importing a Server Certificate (http://technet.microsoft.com/en-us/library/cc732785%28v=ws.10%29.aspx).

5b Install ADFS 2.0.

5c Configure ADFS using the configuration wizard. When you specify the certificate to use for ADFS, ensure that the certificate (self-signed or otherwise) you specify matches the DNS name of your Office 365 domain.

5d Install Microsoft Online Services Sign-In Assistant.

5e Install the Microsoft Online Services Module for Windows PowerShell.

5f Install the .NET Framework 4.0.

6 Verify that the subject name of the SSL certificate on the CloudAccess appliance matches the public DNS name of the CloudAccess appliance.

7 As an administrator, install the Connector for Office 365 on the Windows server using the following information:

- DNS name of the CloudAccess appliance
- Administrator name and password of the CloudAccess appliance
- Administrator name and password of the Office 365 account
- The federated domain name specified in Step 2

IMPORTANT: The Connector for Office 365 installation location is `c:\NetIQ\Office365Connector`. You cannot change this location.

4.2.3 Validating the Connector for Office 365

Once you have installed the Connector for Office 365, perform the following steps to validate the installation:

1. Verify that the Admin page displays Connector for Office 365.
2. Verify that the Policy Mapping page displays the Office 365 groups on the left side and the Connector for Office 365 on the right side.
3. Map one of your groups to the User Authorizations, then verify CloudAccess provisioned your users.
4. Log in to Office 365 at http://www.office365.com (http://www.office365.com) as a provisioned user.
5. Specify the user name of `user@domain` where the domain is the federated domain name specified in Step 2 on page 40.

4.2.4 Changing Configuration of the Connector for Office 365

If you change the federated domain name, you must reinstall the Connector for Office 365. The installation changes the configuration information in the Connector for Office 365. Delete the existing connector, then run through the installation again using the new federated domain name.

4.2.5 Uninstalling the Connector for Office 365

The Connector for Office 365 consists of multiple components.

To correctly uninstall the Connector for Office 365:

1. Log in to the Windows server as an administrator.
2. In Control Panel, uninstall the Connector for Office 365.

Using the Control Panel to uninstall the Connector for Office 365 deletes the Connector for Office 365 from the CloudAccess Admin page. If you delete the Connector for Office 365 icon from the Admin page, all of the components on the Windows server still exist and run. This causes issues in CloudAccess if you need to reinstall the Connector for Office 365.

4.2.6 Installing Multiple Connectors for Office 365

CloudAccess supports multiple Connectors for Office 365. However, each connector must connect to a unique Office 365 domain, and you must install each connector on a separate Windows server.

4.3 Connector for Salesforce

Use the information in the following sections to configure a Connector for Salesforce:

4.3.1 Meeting the Requirements

Verify that you meet the following requirements before configuring the Connector for Salesforce:

- ❒ A full or developer account with provisioning APIs enabled
- ❒ An administrative account with password
- ❒ The metadata file from Salesforce
- ❒ (Conditional) A security token from Salesforce

4.3.2 Configuring Salesforce to Trust CloudAccess

NetIQ recommends that you configure Salesforce to trust the IP address of the CloudAccess appliance.

To add the CloudAccess IP address as a trusted source to Salesforce:

1. Log in to the Salesforce Admin tools Web page.
2. Click **Administration Setup** > **Security Controls** > **Network Access**.
3. Specify the IP address of the CloudAccess appliance.

   or

   If you are in a clustered environment, specify the IP address of the L4 switch.

If you do not configure Salesforce to trust the IP address of the CloudAccess appliance, you must obtain a security token from Salesforce and append the security token to the administrator password specified when you configure the Connector for Salesforce.

For example, if your Salesforce administrator account password is `Test1234` and the Salesforce security token is `XyZ`, the **Password** field must contain `Test1234XyZ`.

4.3.3 Configuring the Connector for Salesforce

Each cluster supports multiple Connectors for Salesforce. You must configure the Connector for Salesforce to provision accounts into Salesforce.

You can configure the connector to allow users single sign-on access into Salesforce. When users log in to the identity source, CloudAccess automatically authenticates the users to Salesforce. Providing single sign-on to users increases the security of your company's information stored in Salesforce. The phone icon that CloudAccess displays on all the Salesforce connectors indicates that Delegated Authentication can be used with Salesforce. All of the configuration required for using Delegated Authentication with CloudAccess is done at Salesforce.

You must go back and forth between the CloudAccess Admin page and the Salesforce administration page to configure the connector.

1. In CloudAccess, access the Admin page.

   For more information, see Section 3.1, "Accessing the Administration Pages," on page 25.
2. Drag and drop the Connector for Salesforce from the SaaS Palette to the bar.
3. Click the Connector for Salesforce, then click **Configure**.
4. Provide a unique display name for the connector to appear on the Admin page, and administrator logon credentials for Salesforce.

5 Select **Prompt users for an existing Salesforce account before provisioning** if you want to give users control of when their accounts are provisioned. Note that if you want to use Delegated Authentication, you cannot use Prompt before Provisioning. These are mutually exclusive options. For more information about account provisioning, see Section 1.6, “How CloudAccess Merges Existing Accounts,” on page 14.

6 Click **Federation Instructions** and read the instructions provided to configure the Connector for Salesforce to allow single sign-on for users.

7 Copy and paste the text of the signing certificate provided in the **Federation Instructions** into a file, then save the file.

NOTE: Ensure that you use a text editor that does not introduce hard returns or additional white space. Otherwise, the certificate file may be improperly formatted and unusable. For example, use Notepad instead of Wordpad.

---

8 Log in to Salesforce as an administrator and complete the following steps:

8a Select **Administration Setup** from the drop-down menu.

8b Click **Security Controls** under **Administration Setup** in the left pane.

8c Click **Single Sign On Settings**.

8d Click **Edit**, then use the following information to configure single sign-on:

SAML Enabled: Check this option.

SAML Version: Specify 2.0.

Issuer: Copy and paste the value of the **Entity ID** provided in the **Federation Instructions**.

Identity Provider Certificate: Click **Browse**, then browse to and select the file to which you copied and pasted the signing certificate in Step 7.

Identity Provider Login URL: Copy and paste the value of the **Single Sign-on URL** provided in the **Federation Instructions**.

Custom Error URL: Leave this blank.

SAML User ID Type: Select **Assertion Contains the Federation ID from the User Object**. This option is not selected by default.

SAML User ID Location: Select **User ID is in the NameIdentifier element of the Subject statement**.

Identity Provider Logout URL: Copy and paste the value of the **Single Logout URL** in the **Federation Instructions**.

9 Download the Salesforce metadata file after the configuration is complete.

10 On the CloudAccess Admin page, edit the Connector for Salesforce.

11 Upload the metadata file generated in Step 9 into the Connector for Salesforce.

12 Click **OK**, then click **Apply** to commit the changes to the appliance.

4.3.4 Configuring Multiple Connectors for Salesforce

If you want to configure more than one Connector for Salesforce, each Salesforce account must be configured with a unique URL. Configuring the URL requires Salesforce assistance and it often takes at least a day to complete.

To configure the Salesforce URL:

1 Log in to the Salesforce administration Web page.

2 Click **Administration Setup** > **Company Profile** > **My Domain**.

3 Provide a unique subdomain name for your organization and click **Check Availability**.

4 If the subdomain you specified is available, select the check box to indicate that you agree to the terms and conditions, then click **Register Domain**.

5 Wait for Salesforce to register your domains. This process takes time.

After the registration is complete, Salesforce provides you with a URL that supports SP-initiated logins and is similar to the following:

`https://<custom name>.mysalesforce.com`

4.3.5 Configuring Delegated Authentication

Salesforce allows two different types of authentication methods: SAML and delegated authentication. By default, Salesforce activates only the SAML authentication. SAML is available only for browser-based authentication and does not work for applications that use the Salesforce Web Service API. For example, smart phones use the Salesforce Web Service API.

Delegated authentication must be activated on a per-Salesforce organization basis. This allows CloudAccess to support users authenticating with smart phones as well as users authenticating with browsers.

For delegated authentication to work properly with CloudAccess, the DNS name of the CloudAccess cluster must be publicly resolvable and the SSL certificate must be signed by a well known certificate authority (CA).

To configure Salesforce for delegated authentication:

1 Follow the instructions in the Salesforce documentation to enable delegated authentication single sign-on for your organization.

   For more information, see Configuring Salesforce for Delegated Authentication (https://login.salesforce.com/help/doc/en/sso_delauthentication_configuring.htm).

2 Configure a Connector for Salesforce in CloudAccess.

3 Log in to the Salesforce administration page.

4 Click **Your Name** > **Setup** > **Security Controls** > **Single Sign-On Settings** > **Edit**.

5 In the **Delegated Gateway URL** field, specify a value similar to the following: `https://`*`cloudaccess_public_dns`*`/osp/a/t1/auth/external/sfda`.

6 Do not select **Force Delegated Authentication Callout**.

   This option affects the performance of user logins.

7 Enable the **Is Single Sign-On Enabled** permission. Note that if you want to prompt users to validate their accounts, you must disable this option instead. For more information about prompt before provisioning, see Section 1.6, "How CloudAccess Merges Existing Accounts," on page 14.

Now when end users authenticate to Salesforce through their smart phones, they use their identity source user name and password to authenticate just as they do from a browser.

4.4 Single Sign-On Connectors

NetIQ provides additional connectors that you can use for single sign-on to other applications or Web services. These connectors are available for download from your Customer Center. For more information, see the Access Connector HQ Web site (https://www.netiq.com/products/accessconnectorhq/index.html).

4.5 Importing and Configuring Custom Connectors

CloudAccess allows you to import and configure custom connectors that NetIQ partners create.

To import and configure a custom connector:

1. Copy the custom connector `.zip` file to the computer where you administer CloudAccess.
2. Log in to CloudAccess as an administrator.
3. On the Admin page, click the Tools icon on the toolbar.
4. Click **Import connector definition**.
5. Browse to and select the custom connector `.zip` file, then click **Import**.
6. Drag and drop the new custom connector from the Custom palette into the middle of the page.
7. Click the connector, then click **Configure**.
8. Fill in the fields and follow the **Federation Instructions** to configure your Web server or application.
9. Click **OK**, then click **Apply** to save the changes.

5 Providing Access to the SaaS Applications for Users

After CloudAccess and the SaaS applications are configured, you must provide a way for users to access the SaaS applications.

CloudAccess includes a sample landing page that contains the links for accessing the SaaS applications. You can use this page or create your own page. Access the sample landing page through the following URL:

`https://dns_or_ip_of_appliance/osp/a/t1/auth/app`

After you enter valid credentials, the sample landing page appears. The sample landing page displays the links for the SaaS applications only after they are configured properly and if you have an entitlement for that SaaS application.

On the sample landing page, the links for SaaS applications are as follows:

- **Google Apps for Business:** `https://dns_of_appliance/osp/a/t1/auth/app/its/connectors_GOOGLEAPPS_IDXXX?target=https://mail.google.com/a/your_google_domain`
- **Salesforce:** `https://dns_or_ip_of_appliance/osp/a/t1/auth/app/its/connectors_SFORCE_IDXXX`
- **Office 365:** `https://office365_federated_domain/adfs/ls/?WHR=https%3A%2F%2Fdns_of_appliance%2Fosp%2Fa%2Ft1%2Fauth%2Fsaml2%2Fmetadata&wa=wsignin1.0&wtrealm=urn:federation:MicrosoftOnline`

If you create your own page, copy the links for the SaaS applications from the sample landing page to your landing page.

If you are creating your own landing page, there are two methods to connect to the SaaS applications. You can use either method for your own landing page.

Method 1: Service Provider (SP) Initiated Logins

1. The user clicks the link `https://mail.google.com/a/your_google_domain` for a service provider-initiated login.
2. The browser sends a request to Google Apps for Business.
3. Google Apps for Business redirects the browser session to the appliance for authentication.
4. The user enters login credentials.
5. After a successful authentication against the identity source, the appliance redirects the browser session back to Google Apps for Business with a SAML assertion for authentication.
6. Google Apps for Business receives the assertion, then allows or denies user access based on the content of the assertion.

Method 2: Identity Provider (IDP) Initiated Logins

1. The user clicks the link `https://`*`dns_of_appliance`*`/osp/a/t1/auth/app/its/connectors_GOOGLEAPPS_`*`IDXXX`*`?target=https://mail.google.com/a/`*`your_google_domain`* for an identity provider-initiated login.
2. The browser sends a request to the appliance login URL.
3. The browser displays the CloudAccess login form.
4. The user enters the identity source login credentials, then successfully authenticates to the appliance.
5. The appliance redirects the browser session back to Google Apps for Business with a SAML assertion for authentication.
6. Google Apps for Business accepts the assertion, then allows or denies access based on the content of the assertion.

Examples

The following are examples of the different logins:

IDP-Initiated Login for Google Apps for Business: `https://`*`dns_of_appliance`*`/osp/a/t1/auth/app/its/connectors_GOOGLEAPPS_a20hy?target=https://mail.google.com/a/`*`google domain`*

IDP-Initiated Login for Salesforce: `https://`*`dns_of_appliance`*`/osp/a/t1/auth/app/its/connectors_SFORCE_a18gs`

SP-Initiated Login for Google Apps for Business: There are two options:

`https://mail.google.com/a/`*`google domain`*

`https://docs.google.com/a/`*`google domain`*

SP-Initiated Login for Salesforce: The setup page for this feature at Salesforce is under **Setup** > **Company Profile** > **My Domain**. After Salesforce registers the domain, your URL is similar to the following that allows an SP-initiated login:

`https://`*`custom_name`*`.my.salesforce.com`

IDP-Initiated Login for Office 365: `https://`*`office365_federated_domain`*`/adfs/ls/?WHR=https%3A%2F%2F`*`dns_of_appliance`*`%2Fosp%2Fa%2Ft1%2Fauth%2Fsaml2%2Fmetadata&wa=wsignin1.0&wtrealm=urn:federation:MicrosoftOnline`

6 Mapping Authorizations

Most companies define their business policies through authorization assignments. Examples of authorizations are groups, roles, and profiles. These authorizations are different depending on each SaaS application. For more information, see Section 6.1, "Supported Roles and Authorizations," on page 49.

Authorizations give users access to resources. CloudAccess provides a simple solution that allows you to map your identity source roles (groups) to the SaaS application authorizations and approve or deny access to those authorizations.

Authorizations are available only to connectors that provision users. If you use connectors only for authentication, there are no authorizations. For example, the Connector for WebEx and the Connector for Accellion do not have authorizations.

The Policy Mapping page maps the authorizations from the SaaS applications to the roles (groups) in the identity sources and allows you to select whether the authorization requires an approval. The Approval page allows you to accept or deny the authorization request.

6.1 Supported Roles and Authorizations

Each identity source contains different roles that the Policy Mapping page uses.

- **Active Directory:** groups, local groups, and global groups
- **eDirectory:** group

Each SaaS application contains different authorizations that the Policy Mapping page uses.

- **Google Apps:** user and groups
- **Office 365:** account, groups, and license
- **Salesforce:** groups, roles, and profiles (account types)

6.2 Prerequisites

Verify that you meet the following prerequisites before mapping SaaS application authorizations to the identity source groups:

- ❒ Configure SaaS connectors. For more information, see Chapter 4, “Configuring Connectors,” on page 37.
- ❒ Ensure that roles (groups) in the identity source exist.
- ❒ Populate the required attributes on the users in the identity source. For more information, see Section 3.5, “Verifying the Identity Source User Attributes,” on page 29.

6.3 Loading Authorizations

In order to map an authorization, you must load the authorization into the Policy Mapping page.

1. Verify that you have configured the SaaS application connectors that provision users.

   For more information, see Chapter 4, “Configuring Connectors,” on page 37.
2. Log in to the Admin page using the application administrator credentials you specified when you created the SaaS application connector.
3. Click **Policy** to open the Policy Mapping page.
4. In the right pane, click the down arrow next to the connector, then select your SaaS application connector.

   If the Policy Mapping page does not display the SaaS application connector, you did not configure the connector properly. For more information, see Chapter 4, “Configuring Connectors,” on page 37.

Successfully completing these steps populates the Policy Mapping page with the SaaS application’s authorizations.

6.4 Reloading Authorizations

When you perform a switch master with the cluster nodes, or if authorizations change in the SaaS applications, or you add new roles in the identity sources, you must reload the authorizations on the Policy Mapping page.

1. To reload roles (groups) from the identity sources, click the **Reload table** icon at the end of the Identity Source table.
2. To reload authorizations from the SaaS applications, click the **Reload table** icon at the end of the Authorizations table.

6.5 Mapping Authorizations

After the authorizations load, map the SaaS application authorizations to the identity source roles (groups).

To map authorizations:

1. In the right pane of the Policy Mapping page, click the down arrow, then select the desired SaaS connector.
2. In the **Role Name** column on the left, select the role (group) from the identity source you want to map to an authorization from the selected SaaS connector.
3. In the right pane, drag and drop the desired authorization from the SaaS connector to the left mapping pane.

   or

   In the left pane, drag and drop the desired group from the identity source to the right mapping pane.
4. (Optional) Click the **Require Approvals** icon  if an approval is required to grant access.

   NetIQ recommends a maximum of 2,000 simultaneous approvals. For more information about approvals, see Chapter 7, “Approving Requests,” on page 53.
5. Click **OK** to map the SaaS authorization to the identity source group.

The mapping grants any users of the existing identity source roles to the SaaS application authorization. When you add new users to the mapped role (group), the users in the role (group) automatically receive the authorization for the SaaS application as long as they have a user account authorization. Or the user is prompted to verify their account information the first time they log in.

6.6 A Mapping Example

Use the following example steps to understand how mapping works.

1. In Active Directory:

   1a Create a group named GoogleAppsUsers in Active Directory.

   1b Add users to the GoogleAppsUsers group.
2. In Google Apps for Business, create a Google Apps Account group.
3. On the Policy Mapping page:

   3a Load the authorizations for the Connector for Google Apps for Business.

   3b In the **Role Name** column, select the Connector for Active Directory.

   3c In the right pane, select the Connector for Google Apps.

   3d Drag and drop the Google Apps Account into the left pane, over the Google AppsUsers group.

   3e Click **OK**.

   The appliance automatically provisions all users in the GoogleAppsUsers group to the Google Apps Account group. Or the user is prompted to verify their account information the first time they log in.
4. In Active Directory, create a new user, then add the user to the GoogleAppsUsers group.

   The user is automatically added to the Google Apps Account group and has access to Google Apps for Business.

7 Approving Requests

CloudAccess provides the ability to approve or deny requests to the SaaS applications. During the configuration of the connector, you specified an application owner. The application owner approves or denies requests for access to the SaaS applications. The application owner knows who should have access to the SaaS applications, whereas the appliance administrator might not have this knowledge.

The **Approval** icon appears only if you have mapped roles and selected the option to require approval for the account. When there are accounts waiting for approval, CloudAccess adds the **Approval** icon.

By default, CloudAccess automatically provisions users according to mapped authorizations. To enable approvals:

1. Select **Approval** when you map the roles (groups) from the identity source to the SaaS applications authorizations on the Policy Mapping page.
2. Select the desired authorization, then click **Approve** or **Deny**.

NOTE: Users that have been deleted from the identity source may still appear on the Approval page. If you know that certain users have been deleted, you can simply deny approval for those users. However, approving requests for users that have been deleted does *not* result in account provisioning for those users in the SaaS applications.

NetIQ recommends a maximum of 2,000 simultaneous approvals.

8 Reporting

CloudAccess provides reports of users' activity through the appliance.

8.1 Running a Report

CloudAccess contains predefined reports that you can run to gather information about users' activity.

To run a report:

1 In a supported browser, access the Admin page at

`https://*dns_of_appliance*/appliance/index.hmtl`

2 Log in as the administrator of CloudAccess.

3 Click **Reports**.

4 (Optional) If you want to see the description of the report before you run it, select the **Show Descriptions** option.

5 Click the desired report, then click **Run**.

6 Click the report name to download and save the report.

After the report finishes, the report name becomes a hyperlink to view or download the report.

8.2 Integrating with Sentinel Log Manager

The CloudAccess appliance can forward events to Sentinel Log Manager 1.2.x if you want more detailed reports. To integrate the appliance with Sentinel Log Manager:

1 Configure Sentinel Link in Sentinel Log Manager.

For more information, see Sentinel Link Overview Guide (http://www.novell.com/documentation/sentinel70/sentinel_link_overview/data/bookinfo.html).

2 Open TCP port 1290 on the Sentinel Log Manager server.

2a To change the port, ssh in to the Sentinel Log Manager server as `root`.

2b At the command prompt, enter `yast firewall`.

2c Select **Advanced** > **Allowed Services**, then manually add port 1290 to the list of TCP ports.

3 On the Admin page in CloudAccess, drag and drop the Sentinel icon from the Tools Palette to the bar.

4 Click the Sentinel icon, then click **Configure**.

5 Specify the IP address and port of the Sentinel Link server, then click **OK** and **Apply** to save the changes.

The CloudAccess appliance appears as another event source in Sentinel Log Manager.

9 End User Configuration

CloudAccess allows you to configure the end user's email client or mobile devices to use the single sign-on authentication to access the SaaS applications. This increases the security of your company's information stored in the SaaS applications because users authenticate with their corporate credentials, but these credentials are never stored in the SaaS applications.

Configure each user's email client or mobile device to point to the appliance. The appliance acts as a proxy, so when users access the SaaS applications, the appliance automatically logs the users in to the SaaS application.

9.1 Configuring Email Clients

You can configure any supported email client to point to CloudAccess. The email clients allow you to receive email from multiple sources in one location. For a list of supported clients, see "Email Clients" on page 20.

1 Access your email client.

2 Create a new email account using the following information to configure CloudAccess as your email source:

   Incoming email server (IMAP/POP): Specify the IP address or hostname of your appliance.

   Incoming email server username: Specify your identity source enterprise logon name for the account name.

   Incoming email server password: Specify your identity source password.

   If your password changes, you must change the password in the email account.

   Outgoing email server (SMTP): Specify the IP address or hostname of your appliance.

   SSL: You must select **SSL** for IMAP (port 993), POP (port 995), and SMTP (port 25).

   The SMTP server requires authentication.

   For more information, see the appropriate documentation for the email client you are using.

9.2 Configuring Mobile Devices

You can also configure your mobile device to receive email from the SaaS applications through CloudAccess. For a list of supported mobile devices, see Table 2-1 on page 20.

On your mobile device:

1 Set up a new email account using the following information:

Incoming Mail Server (IMAP/POP): Specify the IP address or hostname of your appliance.

Incoming Mail User Name: Specify your identity source enterprise logon name for the account name.

Incoming Mail Password: Specify your identity source password.

Incoming Mail > Advanced Options: Select **Use SSL**, then specify 993 as the IMAP port or 995 as the POP port.

Outgoing Mail Server (SMTP): Specify the IP address or hostname of your appliance.

Outgoing Mail User Name: Specify your identity source enterprise logon name for the account name.

Outgoing Mail Password: Specify your identity source password.

Outgoing Mail > Advanced Options: Select **Use SSL**, then specify 25 as the SMTP port.

For more information, see the following Apple knowledge base article: iOS: Setting up an email account (http://support.apple.com/kb/HT4810).

9.3 Configuring End User Browsers for Kerberos Authentication

If you are using Windows Integrated Authentication for Kerberos authentication to CloudAccess, each end user browser must be configured to use Kerberos authentication.

1 Add the computers of the users to the Active Directory domain.

For instructions, see your Active Directory documentation.

2 Log in to the Active Directory domain, rather than the computer.

3 (Conditional) If you are using Internet Explorer, configure the Web browser to trust the appliance:

3a Click **Tools** > **Internet Options** > **Security** > **Local intranet** > **Sites** > **Advanced**.

3b In the **Add this website to the zone** field, enter the Base URL for the appliance, then click **Add**.

In the configuration example, this URL is `serv1.cloudaccess.com`.

3c Click **Close**, then click **OK**.

3d Click **Tools** > **Internet Options** > **Advanced**.

3e Verify in the Security section that **Enable Integrated Windows Authentication** is selected, then click **OK**.

3f Restart the browser.

4 (Conditional) If you are using Firefox, configure the Web browser to trust the appliance:

4a In the URL field, specify `about:config`.

4b In the **Filter** field, specify **network.n**.

4c Double click `network.negotiate-auth.trusted-uris`.

This preference lists the sites that are permitted to engage in SPNEGO Authentication with the browser. Specify a comma-delimited list of trusted domains or URLs.

For this example configuration, add `serv1.cloudaccess.com` to the list.

4d Click **OK**, then restart your Firefox browser.

9.4 Customizing Login, Logout, and Welcome Pages

CloudAccess allows you to customize user-facing pages, such as the login, logout, and welcome pages, so users see your company branding instead of the default NetIQ branding. After you have customized those pages, you can modify them as needed to meet new company requirements. Customizing the user pages does not affect any pages that administrators see in the appliance console.

IMPORTANT: Customizing the login, logout, and welcome pages requires advanced JavaServer knowledge. Modifying these pages incorrectly could render the appliance unusable, so before you make any changes, ensure that you have a good snapshot of your appliance that you can revert to if necessary.

To customize the login, logout, and welcome pages:

1. Take a snapshot of the appliance.
2. Access the Admin page at `https://`*`dns_of_appliance`*`/appliance/Admin.html`, then log in with the password specified during the initialization process.
3. On the toolbar, click the Tools icon, then click **End user branding**.
4. Click **Download Default Login Pages**.
5. Save the file to your local computer.
6. Save a backup copy of the file.
7. Unzip the downloaded file and locate the `.jsp` files in the `osp\jsp` subdirectory.
8. Modify the desired `.jsp` pages. The default text for the login page is located in the `osp/resources/oidp_custom_resources_en_US.properties` file.
9. Zip up the files again, but include only the `images` and `jsp` directories.
10. Log in to the Admin page again.
11. On the toolbar, click the Tools icon, then click **End user branding**.
12. (Conditional) If you are customizing pages for the first time, click **Browse**, then browse to and select the modified file.
13. (Conditional) If you are updating previously customized pages, delete the name of the existing file that appears in the **Branding zip file** field. Click **Browse**, then browse to and select the `.zip` file that contains the newly modified `.jsp` files.
14. Wait until the file name changes to a hexadecimal value, then click **OK**.
15. Click **Apply**.

The pages now display the branding you customized in the `.jsp` files.

10 Maintenance Tasks

CloudAccess allows you to change various appliance configuration settings as needed. For example, moving your appliance from a staging configuration to a production environment requires changes to the networking components.

10.1 Configuring Session Timeouts

Admin and user sessions time out by default after 10 minutes. The admin session timeout is not currently configurable. However, you can adjust the timeout setting for user sessions.

1. Log in to the Admin page.
2. Click the cluster icon, then click **Configure**.
3. Adjust the setting in the **User session timeout** field as needed, then click **OK**.

10.2 Changing the IP Address

You can change whether a node uses DHCP or a static IP address on the Admin page.

1. Log in to the Admin page.

   For more information, see Section 3.1, "Accessing the Administration Pages," on page 25.
2. Click the node icon, then click **Configure**.
3. Select whether the appliance uses DHCP or a static IP address.

   If you select to use a static IP address, you can change the required values for the subnet mask, default gateway, and the DNS server.
4. Click **OK** to save the changes, then click **Apply** to apply the changes to the appliance.

10.3 Changing Public DNS Name or NTP Server Settings, or Uploading New Certificates

The appliance contains self-generated certificates. You can upload custom certificates through this interface.

1. Log in to the Admin page.

   For more information, see Section 3.1, "Accessing the Administration Pages," on page 25.
2. Click the cluster icon, then click **Configure**.
3. Change the key pairs, NTP server, or public DNS name, then click **OK**.
4. Click **Apply** to apply the changes to the appliance.

Expired key pair certificates prohibit changes from being made to this page and make the key pair field red.

10.4 Updating the Appliance

CloudAccess provides an update channel for keeping your appliances current with the latest security fixes, bug fixes, and feature updates. Updates work only if you have registered each node in the cluster. For more information, see Section 3.2, "Registering CloudAccess," on page 26.

When an update is available for one or more nodes in the cluster, the CloudAccess Admin page displays a flag icon in the upper right corner of the window. You can also configure the appliance to send an email notification when an update is available. When you click the flag icon, you can see the version of the pending update, instructions on how to apply the update, and the Release Notes associated with the update patch.

The flag icon for the update channel appears only if you are logged in to the Admin page with an administrator account. Other consoles do not display the flag icon.

CloudAccess automatically checks the NCC channel for updates once daily at 11:23:23 p.m. and downloads any available update. You can also manually check for updates any time by clicking **Tools > Check for updates** on the Admin page. You can download and install an update as soon as the flag appears on the Admin page, or you can wait for CloudAccess to download the update that night, to minimize network impact due to possible size of an update. NetIQ recommends always keeping your appliance up to date. However, updates are cumulative, so if you miss an update you can just install the next one when it is available.

IMPORTANT: If you apply an update to one node, you must apply the update to all the other nodes in the cluster. Update one node at a time. Ensure that the update was successful and the node is still working properly before you begin updating the next node. Do not perform any other administrative tasks requiring an **Apply** command, and do not switch the master node, until all nodes have been successfully updated to the same version of CloudAccess.

This process allows you to run in a mixed environment while updating each node. Once you have applied all available channel updates, the flag icon goes away.

To apply an update:

1. Take a snapshot of each node in the cluster to create a backup.
2. Click the desired node, then click **Apply update**.

   CloudAccess displays status messages during the installation of the update and the rebooting of the node.

3 After the update completes and the node restarts, click **About** on the node to verify the updated version.

4 Verify the health of the updated node and all of the nodes in the cluster. Make sure all icons are green.

   For more information, see Section 11.1, "Displaying Health," on page 65.

5 Repeat Step 2 through Step 4 for each node in the cluster.

6 When you are sure all of the nodes in the cluster are working as expected, delete the snapshot.

10.5 Recovering from a Disaster

Use snapshots of the nodes to recover from a disaster. It is important to take snapshots of each node in the cluster regularly so you do not lose information.

To recover from a disaster:

1 On a regular basis, take snapshots of the nodes in the cluster.

   1a Power off the working node, then take a snapshot. NetIQ recommends this method, but it requires that you shut down and restart the node in order to take the snapshot.

      or

      Take a snapshot of the running node, ensuring that you include the virtual machine's memory. Including the memory in the snapshot requires more time and space to store the snapshot, but taking a snapshot of a running node without the memory can result in corruption.

   1b Repeat Step 1a for each node in the cluster, within a short time.

2 When a failure happens, restore the master node snapshot first.

3 Restore the other nodes in the cluster.

Use these steps only for disaster recovery. Never restore one snapshot. CloudAccess contains a database that is time-sensitive. Restoring one node only and not the others causes corruption in the appliance.

11 Troubleshooting CloudAccess

Use the information in the following sections to troubleshoot any issues you might encounter.

11.1 Displaying Health

CloudAccess displays health for each node and for the cluster on the Admin page. Hover the mouse over each node to display the health status of the node. If you want more details, click the node, then select **Show Health.**

When you click **Show Health**, CloudAccess displays the status for each component of the appliance. If the status is anything other than green (healthy), use the troubleshooting tools to determine what is wrong.

11.2 Troubleshooting Tools

CloudAccess provides troubleshooting tools to help you resolve problems. To access these tools:

1. Access the Admin page.

   For more information, see Section 3.1, "Accessing the Administration Pages," on page 25.
2. Under **Appliances**, click the node icon, then click **Enter troubleshooting mode**.
3. Click the node icon again, then click **Troubleshooting tools**.
4. Select one or more of the troubleshooting scenarios listed.
5. Duplicate the error or condition.
6. Click **Download CloudAccess Log Files** to download the logs.

After you obtain the logs, turn off troubleshooting mode by clicking the node icon again and then clicking **Exit troubleshooting mode**. Leaving the logs running affects the performance of your appliance.

All of the log files in Table 11-1 are included in the download, no matter what scenario you select. The scenario you select determines the amount of data displayed in the log files. Search the appropriate log file for errors while troubleshooting issues.

Table 11-1 *Troubleshooting Log Files*

Feature	Logs
Initialization or commands	ConfigurationReplicator.log
	ConfigurationReplicator_RL.log
	messages
	boot*
	packageoperations.log
	dserv.log
	firewall
Admin.html UI	adminui.log
Registration	register.log
Updates	zypper.log
	downloadUpdate.log
	afterUpdate.log
	beforeUpdate.log
	rpmsAfterUpdate.log
	rpmsBeforeUpdate.log
	rpmsUpdateDiff.log
	300_appliance_SnapshotUconPackages.sh.log
Identity Source Provisioning	bis_AD_*<xxxxx>*.log
	bis_AD_*<xxxxx>*_RL.log
	ConnectorLogs.txt
	bis_EDIR_h2q3p.log
	bis_EDIR_h2q3p_RL.log
Provisioning to the SaaS Applications	connectors_SFORCE_*<xxxxx>*_RL.log
	connectors_GOOGLEAPPS_*<xxxxx>*.log
	connectors_GOOGLEAPPS_*<xxxxx>*_RL.log
	connectors_O365_*<xxxxx>*.log
	connectors_O365_*<xxxxx>*_RL.log
	ConnectorLogs.txt

Feature	Logs
Mapping	`RolesandResourceServiceDriver.log`
	`UserApplicationDriver.log`
Approvals	`jboss.log`
Reporting	`ManagedSystemGatewayDriver.log`
	`DataCollectionServiceDriver.log`
Mobile Devices	`mail`
	`mail.err`
	`mail.info`
Custom Connectors	`catalina.out`

11.3 Troubleshooting Different States

CloudAccess displays indicators for the current state of the different appliance components. The display refreshes every five minutes. CloudAccess might not immediately display the change.

The following sections list the different components, the possible states, and troubleshooting steps you can take when the state changes.

- Section 11.3.1, "Master Node Health," on page 67
- Section 11.3.2, "Front Panel of the Node," on page 67
- Section 11.3.3, "Top of the Node," on page 68
- Section 11.3.4, "Identity Source," on page 68
- Section 11.3.5, "SaaS Applications," on page 69

11.3.1 Master Node Health

The master node is responsible for all administration functions in CloudAccess. If the master node is not running, the following functions do not work: provisioning or deleting user accounts, mapping authorizations, system roles, approvals, and reporting. Other nodes in the cluster continue to capture and cache events, but do not send those events to the master node until it is running again. Similarly, event forwarding to Sentinel does not work as long as the master node is down.

11.3.2 Front Panel of the Node

The indicator on the front panel of the node displays the health state of the node.

Figure 11-1 *Front Panel*

The states are:

Green: The node is healthy.

Yellow: The node cannot communicate with the other nodes within the five minute refresh.

Red: The node cannot communicate with the other nodes within two of the five minute refresh cycles.

Clear: The node is initializing or the state of the node is unknown.

Perform the following troubleshooting steps in the order listed if the state is anything but green.

1. Wait at least five minutes for the display to refresh and display the current state.
2. Click the node, then select **Show health**.

   Show Health displays which part of the appliance is having issues.
3. If Show Health displays a problem, use the troubleshooting tools to gather logs.

   For more information, see Section 11.2, "Troubleshooting Tools," on page 65.
4. Restart the appliance, then wait at least another five minute cycle for all nodes to display the current state.

11.3.3 Top of the Node

The indicator on the top of the node shows whether the **Apply** commands completed successfully.

Figure 11-2 *Top of the Node*

The states are:

Green: All **Apply** commands completed successfully.

Red: The **Apply** commands did not complete successfully.

Perform the following troubleshooting steps in the order listed if the state is red.

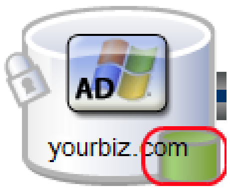
1. Mouse over the top of the node to see the status of the last **Apply** command made on the node.
2. If there is not enough information in the summary, click **Enter troubleshooting mode** on the node, then mouse over the node again.

   The troubleshooting mode displays a details summary of the last **Apply** command made on the node.
3. Restart the appliance, then wait at least another five minute cycle for all nodes to display the current state.

11.3.4 Identity Source

The health indicator for the identity source is the small identity source icon.

Figure 11-3 *Identity Source Indicator*



The states are:

Green: The connector to the identity source is healthy.

Yellow: The connector has communication problems with the identity source.

Red: The connector to the identity source is unhealthy or contains errors.

Clear: The state of the connector to the identity source is unknown.

Perform the following troubleshooting steps in the order listed:

1. If the connector is green, but the CloudAccess interface is not displaying users, verify that the identity source servers are running and communicating properly.
2. Use the troubleshooting tools to gather logs, then look at the identity source provisioning logs listed in Table 11-1 on page 66 for errors. The `ConnectorLogs.txt` file maps the display name of the connector with the log name of the connector, if there is more than one identity source connector.
3. Click **Show health** on the master node, then expand **Operational**.

   If these items are yellow or red, the interface displays helpful information to help troubleshoot the issue.
4. If you are using LDAPS to communicate with the identity source, verify the LDAP certificates are not expired. You refresh the certificates as follows:
   a. Log in to the Admin page, then click **Configure** on the identity source.
   b. Click the **Refresh** icon next to the identity source server.

11.3.5 SaaS Applications

The health indicator is the small cloud icon on each SaaS application connector.

Figure 11-4 *SaaS Application Indicator*

The states are:

Green: The connectors to the SaaS applications are healthy.

Yellow: The connectors to the SaaS applications contain warnings.

Red: The connectors to the SaaS applications contain errors or cannot communicate with the SaaS applications.

Clear: The connectors to the SaaS applications are in an unknown state.

Perform the following troubleshooting steps in the order listed.

1. Click **Show health** on the master node, then expand **Operational**, and check the status of **Provisioning**.

   If **Provisioning** is yellow or red, CloudAccess displays helpful information to help troubleshoot the issue.
2. Use the troubleshooting tools to gather logs, then look at the provisioning logs listed in Table 11-1 on page 66 for errors.
3. Make a cosmetic change to the SaaS application connector configuration, then click **Apply**.

   By forcing an **Apply**, the appliance refreshes the SaaS application connector state and this can resolve the issue.

11.4 Provisioning Behavior

Actions taken on users and groups in the identity source might not be reflected in the SaaS applications. The following table lists the actions in the identity sources and the corresponding action in the SaaS applications.

Table 11-2 *Provisioning Actions*

Identity Sources	SaaS Applications
Delete a user.	Disables the SaaS account.
Remove a user from the authorized group.	Disables the SaaS account.
Create a user.	◆ Creates an account for the user in the SaaS applications, if the user is a member of a group with mapped SaaS authorizations. or ◆ Users are prompted to validate their information when they log in the first time.
Move a user from out of the search context into the search context.	Creates an account for the user in the SaaS applications, if the user is a member of a group with mapped SaaS authorizations.
Move a user out of the search context.	Disables the SaaS account.

CloudAccess establishes identity based on an internal unique ID in the identity source, not based on the user name, and does not support recreating users with the same name unless they also have the same internal unique ID. Once a user has been mapped and provisioned, if you delete the user from the identity source and then recreate that user with the same name, you will not be able to cache and activate the user in CloudAccess or provision the user to SaaS applications. When CloudAccess is unable to cache users properly, the Cached User Status Bar indicates this status with a lower number of active users than cached users.

11.5 Troubleshooting Authentications or Single Sign-On Issues

There can be multiple reasons why authentications to the SaaS applications fail.

Time Synchronization: CloudAccess depends on timestamps to function correctly. Synchronize time between the VMware host, the appliance, and the workstations. Download the authentication or single sign-on logs. In the `catalina.out` file, search for the error `clock skew`.

SAML Authentications: Firefox contains a SAML debug add-on you can use to view the SAML authentication between CloudAccess and the SaaS applications. Download the add-on SAML tracer (https://addons.mozilla.org/en-US/firefox/addon/saml-tracer/) to view the SAML request.

Master Node Down: If the master node is not running, users who already have accounts can log in to SaaS applications, but CloudAccess cannot provision new users. So, if new users attempt to log in to SaaS applications and receive an error indicating they should contact their system administrator, verify that the master node is running.

11.6 Valid Salesforce Credentials Fail

Configuring the Connector for Salesforce may fail with valid credentials. One possible reason is that the Salesforce password expired. Log in to the Salesforce site and reset your password. You receive a new password and a new security token. Use these credentials when creating the Connector for Salesforce.

Even if your credentials are correct, you may occasionally be unable to log in to Salesforce and the Connector for Salesforce in CloudAccess may show an intermittent red status. Salesforce has API metering that limits the number of calls during a 24-hour period. For more information, see the following Salesforce resources:

- http://www.salesforce.com/us/developer/docs/api/Content/implementation_considerations.htm#sforce_api_rate_metering (http://www.salesforce.com/us/developer/docs/api/Content/implementation_considerations.htm#sforce_api_rate_metering)
- http://boards.developerforce.com/t5/General-Development/REQUEST-LIMIT-EXCEEDED/td-p/24901 (http://boards.developerforce.com/t5/General-Development/REQUEST-LIMIT-EXCEEDED/td-p/24901)

11.7 Troubleshooting the Connector for Office 365

There are two different types of logs for the Connector for Office 365. Follow the instructions below to obtain the different types of logs.

- Section 11.7.1, "Obtaining the Installation Logs," on page 71
- Section 11.7.2, "Obtaining the Provisioning Logs," on page 72

11.7.1 Obtaining the Installation Logs

By default, CloudAccess does not generate an installation log when you install the Connector for Office 365. If you want a log of the installation, you must launch the installer from the command line using the following commands:

```
msiexec /i netiq-office365-connector-1.0.msi /L*V "C:\log\example.log"
```

11.7.2 Obtaining the Provisioning Logs

The Connector for Office 365 integrates with the Windows Event Log. The Windows Event Log displays the Connector for Office 365 events as O365ConnectorEventLog. For more information about the Windows Event Log, see Windows Event Log (http://msdn.microsoft.com/en-us/library/windows/desktop/aa385780%28v=vs.85%29.aspx).

11.8 Troubleshooting Custom Connectors

Custom connectors allow for authentication into other systems, but they do not provide provisioning of user accounts. Unlike the Connector for Salesforce, CloudAccess does not create a specific log for each custom connector.

CloudAccess captures all information about custom connectors in the `catalina.out` file. To troubleshoot issues with custom connectors and capture the information in the `catalina.out` file, perform the following steps:

1. Access the Admin page.

   For more information, see Section 3.1, "Accessing the Administration Pages," on page 25.
2. Under **Appliances**, click the node icon, then click **Enter troubleshooting mode**.
3. Click the node icon again, then click **Troubleshooting tools**.
4. Select **Authentication / Single Sign-on** to increase the logging levels.
5. Duplicate the error or condition.
6. Click **Download CloudAccess Log Files** to download the logs.
7. Extract the download file and search for `catalina.out`.
8. Open `catalina.out` in a text editor, then search for errors in association with your custom connector.

A Open Source Licenses Release Notes

A.1 Documentation

The following sources provide information about CloudAccess:

- **Installation:** *NetIQ CloudAccess Installation and Configuration Guide*
- **Online product documentation:** NetIQ CloudAccess documentation Web site (http://www.netiq.com/documentation/cloudaccess/install_config/data/bookinfo.html).

A.2 Open Source Components

A.2.1 Apache 2.2.17

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A.2.2 Apache Commons Logging 1.1.1

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A.2.3 Apache Portable Runtime 1.4.2

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A.2.4 Argo 2.21

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A.2.5 Bouncy Castle 1.5.140

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A.2.6 dom4j 1.6.1

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A.2.7 dovecot20-backend-pgsql-2.0.20-31.1

See Section A.3.4, “MIT,” on page 85 Dovcot - MIT.

See Section A.3.5, “LGPL V2.1,” on page 86 Dovecot - LGPL V2.1.

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Current exceptions are: src/lib/md5.c : Public Domain

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Andrey Panin <pazke@donpac.ru> (src/auth/mech-apop.c, src/auth/mech-login.c,   src/lib-ntlm/*, src/auth/mech-ntlm.c, src/auth/mech-rpa.c)

Joshua Goodall <joshua@roughtrade.net> (src/auth/mech-cram-md5.c, src/doveadm/doveadm-pw.c)

Jelmer Vernooij <jelmer@samba.org> (src/auth/mech-gssapi.c)

Vaclav Haisman <v.haisman@sh.cvut.cz> (src/lib/ioloop-kqueue.c,   src/lib/ioloop-notify-kqueue.c)

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Grepping 'Patch by' from ChangeLog shows up more people.

src/lib/sha1.c and sha2.c:

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src/lib/UnicodeData.txt:

A.2.8 dovecot20-backend-mysql-2.0.20-31.1

See Section A.3.4, “MIT,” on page 85 Dovcot - MIT.

See Section A.3.5, “LGPL V2.1,” on page 86 Dovecot - LGPL V2.1.

See Section A.2.7, “dovecot20-backend-pgsql-2.0.20-31.1,” on page 75.

A.2.9 dovecot20-backend-sqlite-2.0.20-31.1

See Section A.3.4, “MIT,” on page 85 Dovcot - MIT.

See Section A.3.5, “LGPL V2.1,” on page 86 Dovecot - LGPL V2.1.

See Section A.2.7, “dovecot20-backend-pgsql-2.0.20-31.1,” on page 75.

A.2.10 dovecot20-2.0.20-31.1

See Section A.3.4, “MIT,” on page 85 Dovcot - MIT.

See Section A.3.5, “LGPL V2.1,” on page 86 Dovecot - LGPL V2.1.

See Section A.2.7, “dovecot20-backend-pgsql-2.0.20-31.1,” on page 75.

A.2.11 dovecot20-devel-2.0.20-31.1

See Section A.3.4, “MIT,” on page 85 Dovcot - Mit.

See Section A.3.5, “LGPL V2.1,” on page 86 Dovecot - Lgpl V2.1.

See Section A.2.7, “dovecot20-backend-pgsql-2.0.20-31.1,” on page 75.

A.2.12 GWT 2.4.0

See Section A.3.1, “Apache 2.0 License,” on page 81.

A.2.13 GWT Mosaic 0.4.0-rc4

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A.2.14 gwtupload 0.6

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A.2.15 Hibernate 3

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A.2.16 httpclient 4.1.2

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A.2.17 JavaMail 1.4.3

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A.2.18 JavaService 2.0.10

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A.2.19 Jaxb 2.2

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A.2.21 jgroups 2.10.0 GA

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A.2.23 log4j 1.2.15

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A.2.24 NTLM Library (TCP implementation) 1

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A.2.25 OpenSSL 0.98j

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A.2.26 Open-vm-tools 9.0.0-9.1

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See Section A.2.26, "Open-vm-tools 9.0.0-9.1," on page 79.

A.2.28 Recaptcha4j 0.0.8

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