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Apache Ranger User Management

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Administering Ranger Users, Groups, Roles, and Permissions

Ranger Admin users can manage users, group, roles and permissions using Ranger Admin Web UI.

Overview: Ranger User/Groups/Roles

Ranger Admin Web UI allows users with Administrator role (permissions) to create new users, groups and roles that define fine-grained access control in CDP. This topic presents an overview of the user, group, role, permission management options you can find under Settings. This functionality is supported by CDP runtime base code in both public and private runtime form factors.

To list the users, groups, and roles for which Ranger manages access to CDP services, select Ranger Admin Web UI Settings Users/Groups/Roles .

Users lists:

- Internal users - created by a Ranger admin user who can log in to the Ranger Admin Web UI.
- External users - created at other systems such as Active Directory, LDAP, or UNIX.
- Admin users - who are the only users with permission to create users and services, run reports, and perform other administrative tasks using Ranger Admin Web UI.
- Visible users - those users created in Ranger Admin Web UI, or in other systems who are "active", in other words, not marked for deletion.
- Hidden users - those users that have been marked for deletion for any reason (for example invalid characters, duplicates, or obsolescence).

Users also shows the Groups to which each user belongs.

The following example shows internal, external, and Admin users listed on Service Manager Users :

Users/Groups/Roles								Last Response Time
								10/02/2023 02:17:15 PM
<div> <div>Users</div> <div>Groups</div> <div>Roles</div> </div> <div> <div>Q</div> <div>Search for your users...</div> <div>+</div> </div> <div> <div>Add New User</div> <div>Set Visibility ▾</div> <div>🗑️</div> </div>								
<input type="checkbox"/>	User Name	Email Address	Role	User Source	Sync Source	Groups	Visibility	Sync Details
<input type="checkbox"/>	admin	--	Admin	Internal	--	--	Visible	--
<input type="checkbox"/>	rangerusersync	--	Admin	Internal	--	--	Visible	--
<input type="checkbox"/>	rangertagsync	--	Admin	External	Unix	rangertagsync	Visible	👁️
<input type="checkbox"/>	hdfs	--	User	External	Unix	hadoop hdfs	Visible	👁️
<input type="checkbox"/>	hive	--	User	External	Unix	hive	Visible	👁️

Groups lists:

- Internal groups - created by a Ranger admin.
- External groups - created by other systems.
- On Groups, you can click Users to view the members of a specific group.

The following figure shows internal and external groups listed on Groups:

Users/Groups/Roles						Last Response Time 10/02/2023 02:21:59 PM
<div> <div>Users</div> <div>Groups</div> <div>Roles</div> </div> <div> <div>Q</div> <div>Search for your groups...</div> <div> <div>Add New Group</div> <div>Set Visibility ▾</div> <div>✖</div> </div> </div>						
<input type="checkbox"/>	Group Name	Group Source	Sync Source	Visibility	Users	Sync Details
<input type="checkbox"/>	public	Internal	--	Visible		--
<input type="checkbox"/>	lp	External	Unix	Visible		
<input type="checkbox"/>	mail	External	Unix	Visible		
<input type="checkbox"/>	shadow	External	Unix	Visible		
<input type="checkbox"/>	bin	External	Unix	Visible		
<input type="checkbox"/>	atlas	External	Unix	Visible		
<input type="checkbox"/>	systemd-network	External	Unix	Visible		
<input type="checkbox"/>	screen	External	Unix	Visible		
<input type="checkbox"/>	systemd-journal	External	Unix	Visible		
<input type="checkbox"/>	nifi	External	Unix	Visible		
<input type="checkbox"/>	apache	External	Unix	Visible		

The Users and Groups pages also lists a Sync Source for each user and group. To filter Users and Groups by sync source type, select Sync Source as a search filter, then enter a sync source type, such as Unix or LDAP/AD. To view more information about the sync source, click Sync Details for a user or group.

The following example shows the sync details for the rangertagsync user.

Sync Details		✕
Name	Value	
sync_source	Unix	
full_name	rangertagsync	
original_name	rangertagsync	
		OK

Roles lists:

- Role names, and related mappings to:
- User names
- Group names
- Other role names

Adding a user

How a Ranger Admin user can add new Ranger users.

About this task

Only a Ranger Admin user can create other Admin users, service users, or Auditor users, based on the full permissions to configure Ranger Admin Web UI.

Admin users can create the following user types:

admin
auditor
keyadmin
user

A Ranger Admin user can also import/ export policies for services (for example hdfs, hive, atlas, etc.) other than kms.

KeyAdmin users cannot create users, but can:

Import kms policies
Export kms policies
access Key Manager module functionality with full permissions.

Auditor users cannot create users. but can:

access Audit Manager module functionality with full permissions.

This topic presents the example of logging in to Ranger Admin Web UI, using admin credentials and then creating a new user with Auditor role.

Procedure

1. Log in to Ranger Admin Web UI, using administrator credentials.
2. In the Ranger Admin Web UI, select Settings Users .

Users/Groups/Roles displays the Users tab active.



Note: Users displays the Add New Users option only to users logged in with admin permissions.

Users/Groups/Roles								Last Response Time
								10/02/2023 02:17:15 PM
<div> <div>Users</div> <div>Groups</div> <div>Roles</div> </div>								
<div> <div>Q</div> <div>Search for your users...</div> <div></div> </div>								<div>Add New User</div> <div>Set Visibility ▾</div> <div></div>
<input type="checkbox"/>	User Name	Email Address	Role	User Source	Sync Source	Groups	Visibility	Sync Details
<input type="checkbox"/>	admin	--	Admin	Internal	--	--	Visible	--
<input type="checkbox"/>	rangerusersync	--	Admin	Internal	--	--	Visible	--
<input type="checkbox"/>	rangertagsync	--	Admin	External	Unix	rangertagsync	Visible	
<input type="checkbox"/>	hdfs	--	User	External	Unix	hadoop hdfs	Visible	
<input type="checkbox"/>	hive	--	User	External	Unix	hive	Visible	

3. Click Add New User .
User Detail displays User Create options.

User Detail

Last Response Time
10/02/2023 02:25:55 PM

Users/Groups/Roles > User Create

User Name *

auditor1

New Password *

.....

Password Confirm *

.....

First Name *

Audrey

Last Name

Last Name

Email Address

Email Address

Select Role *

Auditor

Group

Select...

Sync Details :

Name	Value
No Sync Details Found!!	

Save

Cancel

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4. On User Create, enter information in ALL REQUIRED (*) fields, then click Save.

In this example, Auditor has been selected in Select Role. No group has been selected, nor has the password been confirmed.

After completing all required fields, clicking Save immediately creates the user and adds the user to any selected groups.

Editing a user

How to edit a user in Ranger.

Procedure

1. In the Ranger Admin Web UI, select **Settings Users** .
Users/Groups/Roles displays the Users tab active.

Users/Groups/Roles								Last Response Time
								10/02/2023 02:17:15 PM
<div> <div>Users</div> <div>Groups</div> <div>Roles</div> </div>								
<div> <div>Q</div> <div>Search for your users...</div> <div></div> </div>								<div>Add New User</div> <div>Set Visibility ▾</div> <div></div>
<input type="checkbox"/>	User Name	Email Address	Role	User Source	Sync Source	Groups	Visibility	Sync Details
<input type="checkbox"/>	admin	--	Admin	Internal	--	--	Visible	--
<input type="checkbox"/>	rangerusersync	--	Admin	Internal	--	--	Visible	--
<input type="checkbox"/>	rangertagsync	--	Admin	External	Unix	rangertagsync	Visible	
<input type="checkbox"/>	hdfs	--	User	External	Unix	hadoop hdfs	Visible	
<input type="checkbox"/>	hive	--	User	External	Unix	hive	Visible	

2. Select a user profile to edit. To edit your own profile, select your user name, then click Profile.

The screenshot shows the Ranger Users/Groups/Roles interface. The 'Users' tab is selected. A search bar is at the top. Below it is a table of users. The 'rangerusersync' user is highlighted. A callout points to the 'Profile' link in the left sidebar. Another callout points to the 'Edit your own profile' link in the user's row.

	User Name	Role	User Source	Sync Source	Groups	Visibility	Sync Details
<input type="checkbox"/>	admin	Admin	Internal	--	--	Visible	--
<input type="checkbox"/>	rangerusersync	Admin	Internal	--	--	Visible	--
<input type="checkbox"/>	rangertagsync	Admin	External	Unix	rangertagsync	Visible	
<input type="checkbox"/>	hdfs	User	External	Unix	hadoop hdfs	Visible	
		User	External	Unix	hive	Visible	
		User	External	Unix	cloudera-scm wheel	Visible	
		User	External	Unix	https	Visible	

The User Detail page appears.

The screenshot shows the Ranger User Detail page for 'rangerusersync'. The 'Basic Info' tab is selected. The form shows fields for User Name, First Name, Last Name, Email Address, Select Role, and Group. The 'Sync Details' section is empty.

User Detail Last Response Time
10/02/2023 02:38:18 PM

Users/Groups/Roles > User Edit

☒ Basic Info ☐ Change Password

User Name *

First Name *

Last Name

Email Address

Select Role *

Group

Sync Details :

Name	Value
No Sync Details Found!!	

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Note:

You can only fully edit internal users. For external users, you can only edit the user role.

3. Edit the user details, then click Save.

Related Tasks

[Deleting a group](#)

Deleting a user

How to delete a user in Ranger.

Before you begin

Only users with the "admin" role can delete a user.

Procedure

1. In the Ranger Admin Web UI, select Settings Users . Users/Groups/Roles displays the Users tab active.

Users/Groups/Roles								Last Response Time
								10/02/2023 02:17:15 PM
<div>Users Groups Roles</div> <div>Q Search for your users...</div> <div>Add New User Set Visibility </div>								
<input type="checkbox"/>	User Name	Email Address	Role	User Source	Sync Source	Groups	Visibility	Sync Details
<input type="checkbox"/>	admin	--	Admin	Internal	--	--	Visible	--
<input type="checkbox"/>	rangerusersync	--	Admin	Internal	--	--	Visible	--
<input type="checkbox"/>	rangertagsync	--	Admin	External	Unix	rangertagsync	Visible	
<input type="checkbox"/>	hdfs	--	User	External	Unix	hadoop hdfs	Visible	
<input type="checkbox"/>	hive	--	User	External	Unix	hive	Visible	

2. Select the check box of the user you want to delete, then click Delete.

Users/Groups/Roles								Last Response Time
								10/02/2023 02:43:05 PM
<div>Users Groups Roles</div> <div>Q Search for your users...</div> <div>Add New User Set Visibility </div>								
<input type="checkbox"/>	User Name	Email Address	Role	User Source	Sync Source	Groups	Visibility	Sync Details
<input type="checkbox"/>	admin	--	Admin	Internal	--	--	Visible	--
<input type="checkbox"/>	rangerusersync	--	Admin	Internal	--	--	Visible	--
<input checked="" type="checkbox"/>	rangertagsync	--	Admin	External	Unix	rangertagsync	Visible	

3. Click OK on the confirmation pop-up.

Adding a group

How to add a group in Ranger.

Procedure

1. In the Ranger Admin Web UI, select Settings Groups .
Users/Groups/Roles displays the Groups tab active.

Users/Groups/Roles						Last Response Time 10/02/2023 02:21:59 PM
<div>Users Groups Roles</div> <div> <input type="text" value="Search for your groups..."/> Add New Group Set Visibility ▾ ✕ </div>						
<input type="checkbox"/>	Group Name	Group Source	Sync Source	Visibility	Users	Sync Details
<input type="checkbox"/>	public	Internal	--	Visible		--
<input type="checkbox"/>	lp	External	Unix	Visible		
<input type="checkbox"/>	mail	External	Unix	Visible		
<input type="checkbox"/>	shadow	External	Unix	Visible		
<input type="checkbox"/>	bin	External	Unix	Visible		
<input type="checkbox"/>	atlas	External	Unix	Visible		
<input type="checkbox"/>	systemd-network	External	Unix	Visible		
<input type="checkbox"/>	screen	External	Unix	Visible		
<input type="checkbox"/>	systemd-journal	External	Unix	Visible		
<input type="checkbox"/>	nifi	External	Unix	Visible		
<input type="checkbox"/>	apache	External	Unix	Visible		

2. Click Add New Group.
The Group Create page appears.

Group Detail		Last Response Time 10/02/2023 02:47:23 PM				
Users/Groups/Roles > Group Create						
Group Name *	<input type="text" value="Group Name"/> ?					
Description	<input type="text" value="Description"/>					
Sync Details :						
<table> <tr> <th>Name</th><th>Value</th></tr> <tr> <td colspan="2">No Sync Details Found!!</td></tr> </table>			Name	Value	No Sync Details Found!!	
Name	Value					
No Sync Details Found!!						
<div> Save Cancel </div>						
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3. Enter a unique name for the group (required) and description (optional), then click Save.

Editing a group

How to edit a group in Ranger.

Procedure

1. In the Ranger Admin Web UI, select Settings Groups .
Users/Groups/Roles displays the Groups tab active.

Users/Groups/Roles						Last Response Time
						10/02/2023 02:21:59 PM
<div> <div>Users</div> <div>Groups</div> <div>Roles</div> </div>						
<div> <div>Q</div> <div>Search for your groups...</div> <div></div> </div>						<div>Add New Group</div> <div>Set Visibility ▾</div> <div></div>
<input type="checkbox"/>	Group Name	Group Source	Sync Source	Visibility	Users	Sync Details
<input type="checkbox"/>	public	Internal	--	Visible		--
<input type="checkbox"/>	lp	External	Unix	Visible		
<input type="checkbox"/>	mail	External	Unix	Visible		
<input type="checkbox"/>	shadow	External	Unix	Visible		
<input type="checkbox"/>	bin	External	Unix	Visible		
<input type="checkbox"/>	atlas	External	Unix	Visible		
<input type="checkbox"/>	systemd-network	External	Unix	Visible		
<input type="checkbox"/>	screen	External	Unix	Visible		
<input type="checkbox"/>	systemd-journal	External	Unix	Visible		
<input type="checkbox"/>	nifi	External	Unix	Visible		
<input type="checkbox"/>	apache	External	Unix	Visible		

2. Select a group name to edit, then double-click the group name.

Users/Groups/Roles						Last Response Time
						10/02/2023 02:52:28 PM
<div> <div>Users</div> <div>Groups</div> <div>Roles</div> </div>						
<div> <div>Q</div> <div>Search for your groups...</div> <div></div> </div>						<div>Add New Group</div> <div>Set Visibility ▾</div> <div></div>
<input type="checkbox"/>	Group Name	Group Source	Sync Source	Visibility	Users	Sync Details
<input checked="" type="checkbox"/>	public	Internal	--	Visible		--
<input type="checkbox"/>	lp	External	Unix	Visible		
<input type="checkbox"/>	mail	External	Unix	Visible		
<input type="checkbox"/>	shadow	External	Unix	Visible		
<input type="checkbox"/>	bin	External	Unix	Visible		
<input type="checkbox"/>	atlas	External	Unix	Visible		

3. The Group Edit page appears.

Group Detail

Last Response Time
10/02/2023 02:54:49 PM

[Users/Groups/Roles](#) > Group Edit

Group Name *

public

Description

public group

Sync Details :

Name	Value
No Sync Details Found!!	

Save

Cancel

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4. Edit the group details, then click Save.

Deleting a group

How to delete a group in Ranger.

Before you begin

Only users with the "admin" role can delete a group.

Procedure

1. In the Ranger Admin Web UI, select Settings Groups .
Users/Groups/Roles displays the Groups tab active.

Users/Groups/Roles Last Response Time 10/02/2023 02:21:59 PM

Users Groups Roles

Q Search for your groups... Add New Group Set Visibility ▾ 🗑️

<input type="checkbox"/>	Group Name	Group Source	Sync Source	Visibility	Users	Sync Details
<input type="checkbox"/>	public	Internal	--	Visible	👤	--
<input type="checkbox"/>	lp	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	mail	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	shadow	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	bin	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	atlas	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	systemd-network	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	screen	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	systemd-journal	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	nifi	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	apache	External	Unix	Visible	👤	👁️

2. Select the check box of the group you want to delete, then click Delete.

Users/Groups/Roles Last Response Time 10/02/2023 02:58:43 PM

Users Groups Roles

Q Search for your groups... Add New Group Set Visibility ▾ 🗑️

<input type="checkbox"/>	Group Name	Group Source	Sync Source	Visibility	Users	Sync Details
<input type="checkbox"/>	public	Internal	--	Visible	👤	--
<input type="checkbox"/>	lp	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	mail	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	shadow	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	bin	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	atlas	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	systemd-network	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	screen	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	systemd-journal	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	nifi	External	Unix	Visible	👤	👁️
<input type="checkbox"/>	apache	External	Unix	Visible	👤	👁️
<input checked="" type="checkbox"/>	tape	External	Unix	Visible	👤	👁️

3. Click OK on the confirmation pop-up.

What to do next

Users in a deleted group will be reassigned to no group. You can edit these users and reassign them to other groups.

Related Tasks

[Editing a user](#)

Adding a role through Ranger

How to add a role in Ranger.

About this task

What is a Role ? A role contains a set of users, groups, or other roles. You assign a role by adding a user, group or role to it. By adding multiple roles, you create a role hierarchy in which you manage permission sets at the role level.

Benefits that roles provide in a large environment:

- A role may include many users or groups, all of which may be updated using a single command.
- Adding or revoking a single permission to or from a role requires a single command, which also applies to all users and groups with that role.
- Roles allow for some documentation about why a permission is granted or revoked.

Conceptually, a role functions as a collection. A group is a collection of users. You create a role and add users to it. Then, you grant that role to a group. Roles present an easier way to manage users and groups, based on specific access criteria.

A simple example of a role hierarchy follows:

- FinReadOnly role, which gives read permission on all tables in the Finance database and is defined by a Ranger policy that grants read on database:Finance, table:* to the FinReadOnly role.
- FinWrite role, which gives write permission on all tables in the Finance database and is defined by a Ranger policy that grants write on database:Finance, table:* to the FinWrite role.
- FinReadWrite role, which role is granted both the FinRead and FinWrite roles and thereby inherits read and write permission to all tables in the Finance database.
- FinReporting group whose users require only read permission to the Finance tables. FinReporting group is added to FinReadOnly role in Ranger.
- FinDataPrep group whose users require only write permission to the Finance tables. FinDataPrep group is added to the FinWrite role in Ranger.
- FinPowerUser group whose users require read and write permission to all Finance tables. FinPowerUsers group is added to the FinReadWrite role in Ranger.

You can create a role either through Ranger, or through Hive.

Before you begin

To add a role, the user must have Admin_Role privilege in Ranger.

Procedure

To create a role through Ranger, using Ranger Admin Web UI:

1. Select Settings Roles .

Users/Groups/Roles displays the Roles tab active.

Users/Groups/Roles

Last Response Time

10/02/2023 03:04:21 PM

Users

Groups

Roles

Q

Search for your roles...

Add New Role

	Role Name	Users	Groups	Roles
"No data to show!!"				

2. Click Add New Role.

The Role Detail page displays Role Create options.

Role Detail

Last Response Time

10/02/2023 03:06:01 PM

[Users/Groups/Roles](#) > Role Create

Role Name *

Role Name

Description

Description

Users:

User Name	Is Role Admin	Action
No users found		

Select...

Add Users

Groups:

Group Name	Is Role Admin	Action
No groups found		

Select...

Add Groups

Roles:

Role Name	Is Role Admin	Action
No roles found		

Select...

Add Roles

Save

Cancel

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3. Enter a unique name for the role. Optionally, add users, groups and/or roles to be associated with the role, then click Save.

Adding a role through Hive

How to add a role in Hive.

About this task

You can create a role either through Ranger, or through Hive.

Before you begin

To add a role through Hive, the user must have Admin_Role privilege in Ranger.

Procedure

In Hive:

1. Log in as a user with Admin_Role privilege.

2. Type the following command:

```
CREATE ROLE external_hr_role_01;
```

Any user with Is_Role_Admin privilege has the ability to assign the role to other users in Hive.

For example, to grant this new role to the user hr_user01, type:

```
GRANT ROLE external_hr_role_01 TO USER hr_user01;
```

hr_user01 appears in Ranger having the external_hr_role_01 role.

You can also grant Is_Role_Admin privilege to a specific user by typing:

```
GRANT ROLE external_hr_role_01 TO USER hr_user02 WITH ADMIN OPTION;
```

The role you create appears in Ranger and is recognized by Hive. The user that creates the role adds automatically to the list of users having that role. The added user has the Is_Role_Admin privilege, as shown in Ranger:

Role Detail

Last Response Time
10/02/2023 03:16:34 PM

[Users/Groups/Roles](#) > Role Edit

Role Name *

external_hr_role_1

Description

Description

Users:

User Name	Is Role Admin	Action
rangeradmin	<input checked="" type="checkbox"/>	

Select...

Add Users

Groups:

Group Name	Is Role Admin	Action
------------	---------------	--------

Select...

Add Groups

Roles:

Role Name	Is Role Admin	Action
-----------	---------------	--------

Select...

Add Roles

Save

Cancel

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Editing a role


How to edit a role in Ranger.

Procedure

1. Select Settings Roles .

2. Click the Roles tab.

Users/Groups/Roles displays the Roles tab active.

Users/Groups/Roles				Last Response Time
				10/02/2023 03:25:42 PM
Users	Groups	Roles		
<input type="text" value="Search for your roles..."/>				Add New Role 
<input type="checkbox"/>	Role Name	Users	Groups	Roles
<input type="checkbox"/>	external_hr_role_1	rangeradmin	--	--
<input type="checkbox"/>	internal_hr_role1	rangeradmin	--	--

- Click the role name to edit.
The selected role opens for editing in Role Detail.

Role Detail

Last Response Time
10/02/2023 03:27:21 PM

[Users/Groups/Roles](#) > Role Edit

Role Name *

external_hr_role_1

Description

Description

Users:

User Name	Is Role Admin	Action
rangeradmin	<input checked="" type="checkbox"/>	

Select...

Add Users

Groups:

Group Name	Is Role Admin	Action
------------	---------------	--------

Select...

Add Groups

Roles:

Role Name	Is Role Admin	Action
-----------	---------------	--------

Select...

Add Roles

Save

Cancel

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- Add users, groups and roles to the existing role, then click Save.
If the role was created in Hive, you can add other users in Hive using the GRANT command:

```
GRANT ROLE external_hr_role_01 TO USER hr_user02;
```

Deleting a role

How to delete a role in Ranger.

Procedure

- Select Settings Roles .

2. Click the Roles tab.

Users/Groups/Roles displays the Roles tab active.

Users/Groups/Roles

Last Response Time
10/02/2023 03:32:25 PM

Users

Groups

Roles

Q

Search for your roles...

Add New Role

<div></div>	Role Name	Users	Groups	Roles
<div></div>	external_hr_role_1	rangeradmin	--	--
<div></div>	internal_hr_role1	rangeradmin	--	--
<div></div>	internal_hr_role2	--	--	--
<div><div></div></div>	external_hr_role2	--	--	--

3. Select the role you want to delete, then click Delete.

4. After deleting any roles, click Save .

If the role was created in Hive, you can delete the role through Hive using the Drop command:

```
DROP ROLE internal_hr_role_02;
```

Adding or editing module permissions

How to add or edit users and groups permission to access Ranger modules.

About this task

Permissions defines the users and groups that can access Ranger modules using Ranger Admin Web UI. Access to a module determines whether the user can see and use options within that module using Ranger Admin Web UI. For example, a user with access to Resource Based Policies module can see Resource Policies option under Service Manager in Ranger Admin Web UI. An admin user can add, import, and export services policies, as well as view, edit and delete permissions for policies, as shown in the following example:

Figure 1: Ranger Admin User View of Resource-based Policies

The screenshot displays the Ranger Service Manager interface. On the left is a dark blue sidebar with navigation icons for Resource Policies, Tag Policies, Reports, Audits, Security Zone, Settings, and a user profile icon labeled 'admin'. The main content area is titled 'Service Manager' and includes a 'Last Response Time' of '10/02/2023 03:44:09 PM'. Below the title bar, there are tabs for 'Resource' (selected) and 'Tag'. A 'Security Zone' dropdown menu is set to 'Select Zone Name', with 'Import' and 'Export' buttons. The interface shows a grid of service categories, each with a folder icon, a plus icon, and a list of policies. Each policy entry includes a name, an eye icon, a pencil icon, and a red trash icon.

Service Category	Policy Name	Actions
HDFS	cm_hdfs	View, Edit, Delete
HBASE	cm_hbase	View, Edit, Delete
HADOOP SQL	Hadoop SQL	View, Edit, Delete
YARN	cm_yarn	View, Edit, Delete
KNOX	cm_knox	View, Edit, Delete
SOLR	cm_solr	View, Edit, Delete
KAFKA	cm_kafka	View, Edit, Delete
NIFI	NiFi	View, Edit, Delete
NIFI-REGISTRY	NiFi Registry	View, Edit, Delete
ATLAS	cm_atlas	View, Edit, Delete
ADLS		
KUDU	cm_kudu	View, Edit, Delete
OZONE	cm_ozone	View, Edit, Delete
SCHEMA-REGISTRY	cm_schema-registry	View, Edit, Delete
KAFKA-CONNECT	cm_kafka_connect	View, Edit, Delete
S3		
GS		

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A Ranger user (without admin permissions) can only view the resource-based policies, as shown in the following example:

Figure 2: Ranger User View of Resource-based Policies

Resource Policies
Reports
Security Zone

user1

Service Manager

Last Response Time
10/02/2023 03:41:03 PM

Resource

Security Zone : Select Zone Name

HDFS
cm_hdfs

HBASE
cm_hbase

HADOOP SQL
Hadoop SQL

YARN
cm_yarn

KNOX
cm_knox

SOLR
cm_solr

KAFKA
cm_kafka

NIFI
NiFi

NIFI-REGISTRY
NiFi Registry

ATLAS
cm_atlas

ADLS

KUDU
cm_kudu

OZONE
cm_ozone

SCHEMA-REGISTRY
cm_schema-registry

KAFKA-CONNECT
cm_kafka_connect

S3

GS

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Procedure

1. Select Settings Permissions .

Permissions displays the Ranger Admin Web UI modules and users that have access permissions to each module.

Resource Policies
Tag Policies
Reports
Audits
Security Zone
Settings

admin

Permissions


Last Response Time
10/02/2023 03:48:26 PM

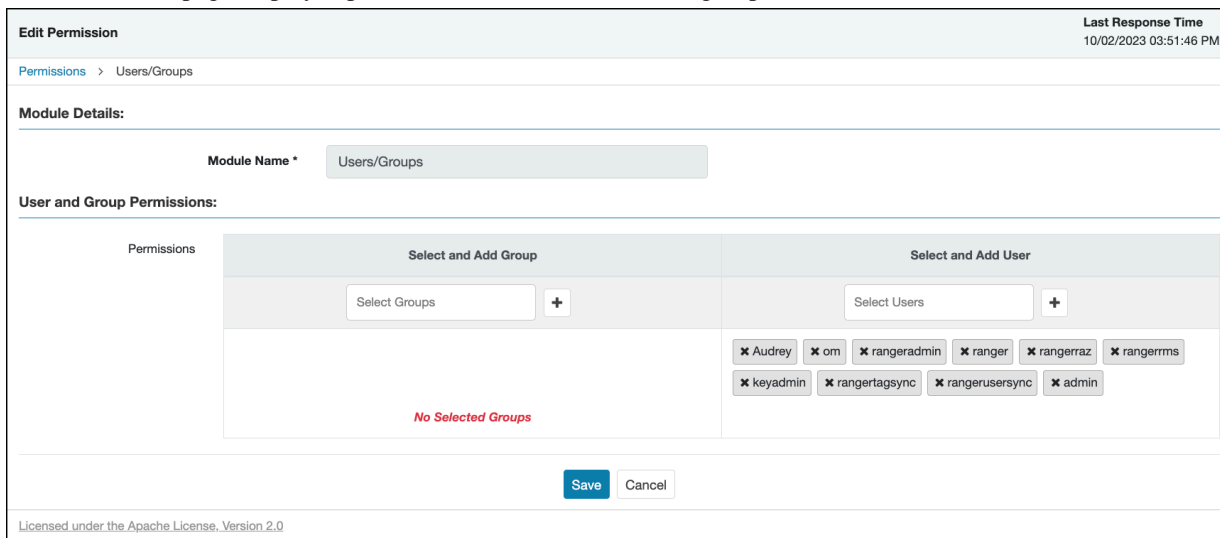
Search for permissions...

Modules	Groups	Users	Action
Resource Based Policies	--	admin rangerusersync keyadmin rangertagsync + More..	
Users/Groups	--	admin rangerusersync rangertagsync keyadmin + More..	
Reports	--	admin rangerusersync keyadmin rangertagsync + More..	
Audit	--	admin rangerusersync rangertagsync keyadmin + More..	
Key Manager	--	keyadmin	
Tag Based Policies	--	admin rangerusersync rangertagsync rangerms + More..	
Security Zone	--	admin rangerusersync rangertagsync hdfs + More..	

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2.

Click the Edit icon () for the module you would like to edit.
 Edit Permission page displays options to select and add user and groups to modules.



3. Edit the users and groups that get permission to access a module, then click Save.

You can select multiple users and groups using + .

Ranger Usersync

How to configure Ranger Usersync to sync users and groups from AD/LDAP

Overview

The Ranger usersync service syncs users, groups, and group memberships from various sources, such as Unix, File, or AD/LDAP into Ranger. Ranger usersync provides a set of rich and flexible configuration properties to sync users, groups, and group memberships from AD/LDAP supporting a wide variety of use cases.

As a Ranger administrator, you will work with users and groups to configure policies in Ranger and administer access to the Ranger UI. You will use group memberships only to administer access to the Ranger UI.



Note: Group memberships stored in Ranger are not used during authorization. Instead, individual components compute the group memberships for a given user on-demand, using utilities like `id` or group mappings, during authorization. The authority on this is the output of the `id` or `groups` command on the Linux OS, which is populated by SSSD from AD (or whichever LDAP provider is used).

For example:

```
# idsp_test1
uid=40002(sp_test1) gid=40006(sp_test1)
groups=40006(sp_test1),40003(cdf_puas),40005(cdf_policy_admins)
# id sp_auditor
uid=40003(sp_auditor) gid=40007(sp_auditor)groups=40007(sp_auditor),40003(cdf_puas)
```

uses `id` to show that users `sp_test 1` and user `sp_auditor` each belong to three groups, also

```
#groups sp_test1
sp_test1 : sp_test1 cdf_puas cdf_policy_admins
# groups sp_auditor
sp_auditor : sp_auditor cdf_puas
```

uses `groups` to show the groups that users `sp_test1` and `sp_auditor` belong to.

You must first understand the specific use-case before syncing users, groups, and group memberships from AD/LDAP. For example, if you want to configure only group-level policies, then you must sync groups to Ranger, but syncing users and group memberships to Ranger is not required.

Determining the users and groups to sync to Ranger:

Typically, you must complete a three-step process to define the complete set of users and groups that you will sync to Ranger:

1. Define the customer use-case.

3 common use cases:

- A customer Admin or Data Admin wants to configure only group-level policies and restrict access to the Ranger UI to only a few users.
- A customer's Admin or Data Admin wants to configure only group-level policies and restrict access to the Ranger UI to only members of a group.
- A customer's Admin or Data Admin wants to configure mostly group-level policies and a few user-level policies.

2. Define all relevant sync source details. For every use-case, at least four key questions must be answered:

- What groups will sync to Ranger?
- Which organizational units (OUs) in AD/LDAP contain these groups?
- What users will sync to Ranger?
- Which organizational units (OUs) in AD/LDAP contain these users?

3. Configure Usersync properties.

This topic describes an example set of Usersync configuration properties and values, based on a simple use-case and example AD source repository.

Example Use Case:

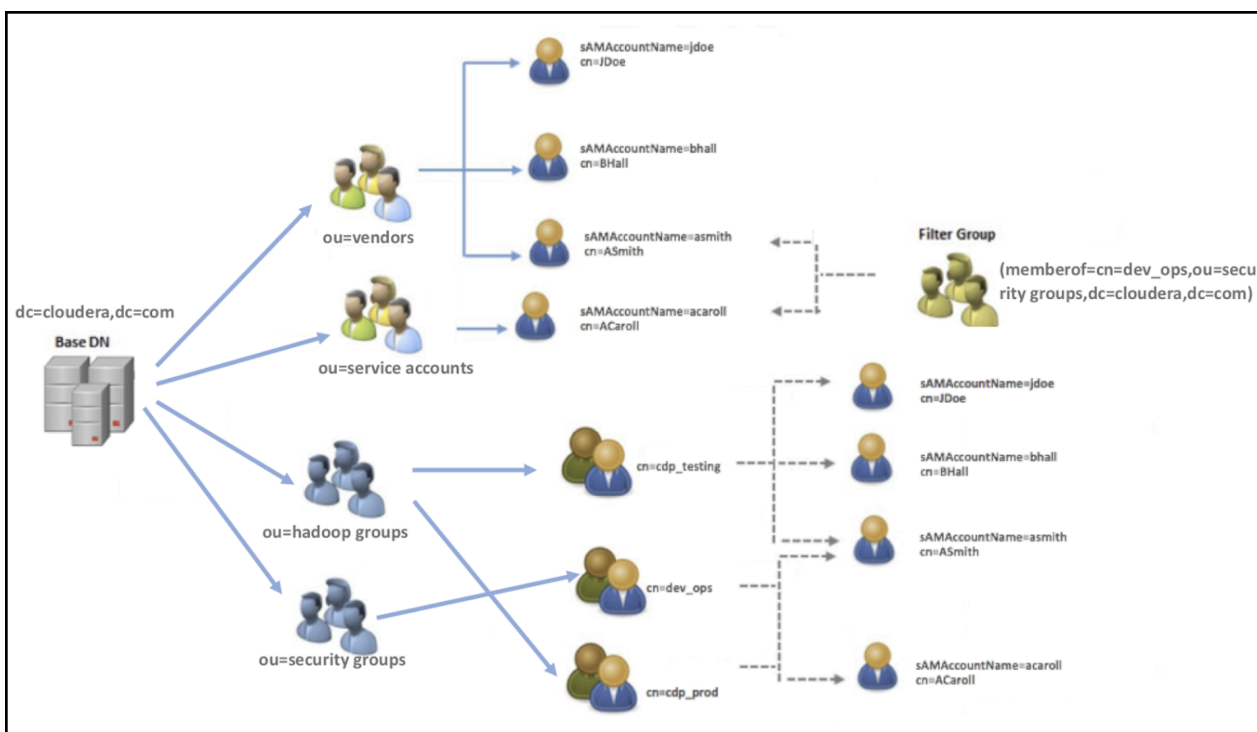
First, consider the following use-case, in order to better understand how to configure Usersync properties:

A customer's Admin or Data Admin wants to configure only group-level policies and restrict access to the Ranger UI to only members of a group.

Example AD environment:

Configuring Ranger Usersync with AD/LDAP depends highly on the customer environment. You must understand the organization of users and groups in the customer environment. This illustration shows users and groups organized in an Active Directory environment.

Figure 3: Example Active Directory Structure



Answering the key user and group questions, based on the example AD structure:

In this example, the customer wants to configure group-level policies for groups `cdp_testing` and `cdp_prod` and wants to provide admin access to the Ranger UI only for users in the `dev_ops` group.

Based on the example Active Directory structure, answers to the four key user/group questions are:

Q1: What groups will be synced to Ranger?

A1: `cdp_testing`, `cdp_prod`, and `dev_ops`

Q2: What OUs contain these groups in AD?

A2: `hadoop groups` and `security groups`

Q3: What users will be synced to Ranger?

A3: `asmith` and `acaroll` (these users are `dev_ops` group members)

Q4: What OUs contain these users in AD?

A4: `vendors` and `service accounts`

To find the specific answers to these questions in a particular environment, use a tool such as `Ldapsearch`, as shown in the following examples.

- Example: Ldapsearch command to search a particular group cdp_testing and determine what attributes are available for the group.

Figure 4: Using Ldapsearch to find a specific group

```
ldapsearch -x -LLL -h 10.10.10.10:389 -D 'cn=admin,ou=Users,dc=cloudera,dc=com' -W
-b 'ou=Hadoop Groups,dc=cloudera,dc=com' 'cn=cdp_testing'
Enter LDAP Password:
dn: CN=cdp_testing,ou=Hadoop Groups,dc=cloudera,dc=com
objectClass: top
objectClass: group
cn: cdp_testing
member: CN=ASmith,ou=Hadoop Users,dc=cloudera,dc=com
member: CN=BHall,ou=Hadoop Users,dc=cloudera,dc=com
member: CN=JDoe,ou=Hadoop Users,dc=cloudera,dc=com
distinguishedName: CN=cdp_testing,ou=Hadoop Groups,dc=cloudera,dc=com
instanceType: 4
name: cdp_testing
sAMAccountName: cdp_testing
```

Above output shows all the available attributes for cn=cdp_testing. The highlighted attributes are those of interest for usersync configuration. In this case, cdp_testing has three “member” attributes: ASmith, BHall, and JDoe.

- Example: Ldapsearch command to search a particular user ASmith and determine what attributes are available for the user.

Figure 5: Using Ldapsearch to find a specific user

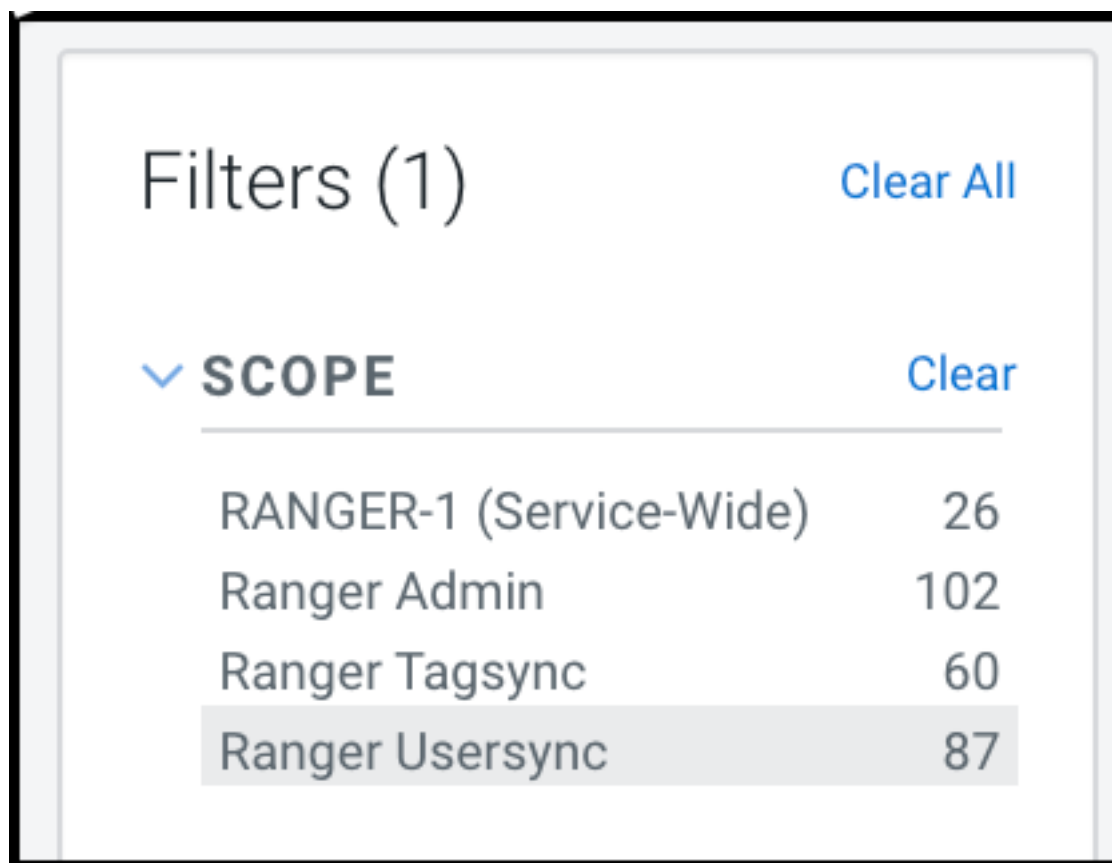
```
ldapsearch -x -LLL -h 10.10.10.10:389 -D 'cn=admin,ou=Users,dc=cloudera,dc=com'
-W -b 'ou=Hadoop Users,dc=cloudera,dc=com' 'samaccountname=ASmith'
Enter LDAP Password:
dn: CN=ASmith,ou=Hadoop Users,dc=cloudera,dc=com
objectClass: top
objectClass: person
objectClass: organizationalPerson
objectClass: user
cn: ASmith
sn: Smith
givenName: Andy
distinguishedName: CN=ASmith,ou=Hadoop Users,dc=cloudera,dc=com
instanceType: 4
memberOf: CN=cdp_testing,ou=Hadoop Groups,dc=cloudera,dc=com
memberOf: CN=dev_ops,ou=Hadoop Groups,dc=cloudera,dc=com
memberOf: CN=cdp_prod,ou=Hadoop Groups,dc=cloudera,dc=com
primaryGroupID: 513
logonCount: 0
sAMAccountName: ASmith
```

Above output shows all the available attributes for a user. The highlighted attributes are those of interest for usersync configuration. In this case, ASmith is a “memberof” 3 groups - cdp_testing, dev_ops, and cdp_prod.

How to configure Usersync, based on the illustrated AD environment example:

In Cloudera Manager Ranger Configuration select the Ranger Usersync filter scope.

Figure 6: Filtering the Ranger Configuration Properties for Usersync



Filtering narrows the list to 87 configuration properties specific to Usersync.

1. To define the common configuration properties that control LDAP URL and bind credentials, scroll to Source for Syncing Users and Groups, then define the configurations properties appropriate for the environment. Configurations shown here match the Example AD environment.

Figure 7: Ranger Usersync common configuration settings

Source for Syncing User and Groups ranger.usersync.source.impl.class ranger.usersync.source.impl.class	Ranger Usersync Default Group Undo ⓘ <input type="radio"/> org.apache.ranger.unixusersync.process.UnixUserGroupBuilder <input type="radio"/> org.apache.ranger.unixusersync.process.FileSourceUserGroupBuilder <input checked="" type="radio"/> org.apache.ranger.ldapusersync.process.LdapUserGroupBuilder
Usersync LDAP/AD URL ranger.usersync.ldap.url ranger.usersync.ldap.url	Ranger Usersync Default Group Undo ⓘ <input type="text" value="ldap://ad01.cloudera.com:389"/>
Usersync Bind User ranger.usersync.ldap.binddn ranger.usersync.ldap.binddn	Ranger Usersync Default Group Undo ⓘ <input type="text" value="cn=administrator,ou=service accounts,dc=cloudera,dc=com"/>
Usersync Bind User Password ranger.usersync.ldap.ldapbindpassword ranger_usersync_ldap_ldapbindpassword	Ranger Usersync Default Group Undo ⓘ <input type="password" value="....."/>
Usersync Incremental Sync ranger.usersync.ldap.deltasync ranger.usersync.ldap.deltasync	<input checked="" type="checkbox"/> Ranger Usersync Default Group ⓘ

Bind credentials are for the user to query Ldap service for users and groups. Bind credentials contain two configuration properties:

- Usersync Bind User (or bind dn) - specify the username as complete DN (Distinguished Name)
- Usersync Bind User Password

- To define the required configuration properties that control group synchronization from AD, scroll to Usersync Enable User Search, then define the configurations properties appropriate for the environment. Configurations shown here match the Example AD environment.

Figure 8: Ranger Usersync group configuration settings

Usersync Groupname Case Conversion ranger.usersync.ldap.groupname.caseconversion ranger.usersync.ldap.groupname.caseconversion	Ranger Usersync Default Group Undo <input type="radio"/> none <input checked="" type="radio"/> lower <input type="radio"/> upper
Usersync Enable User Search ranger.usersync.user.searchenabled ranger.usersync.user.searchenabled	<input checked="" type="checkbox"/> Ranger Usersync Default Group
Usersync Group Search Base ranger.usersync.group.searchbase ranger.usersync.group.searchbase	Ranger Usersync Default Group Undo ou=hadoop groups,dc=cloudera,dc=com,ou=security groups,dc=cloudera,dc=com
Usersync Group Search Scope ranger.usersync.group.searchscope ranger.usersync.group.searchscope	Ranger Usersync Default Group <input checked="" type="radio"/> sub <input type="radio"/> base <input type="radio"/> one
Usersync Group Object Class ranger.usersync.group.objectclass ranger.usersync.group.objectclass	Ranger Usersync Default Group Undo group
Usersync Group Search Filter ranger.usersync.group.searchfilter ranger.usersync.group.searchfilter	Ranger Usersync Default Group Undo ((cn=cdp*)(cn=dev_ops))
Usersync Group Name Attribute ranger.usersync.group.nameattribute ranger.usersync.group.nameattribute	Ranger Usersync Default Group Undo cn
Usersync Group Member Attribute ranger.usersync.group.memberattributename ranger.usersync.group.memberattributename	Ranger Usersync Default Group Undo member

A few specific points to consider about group config settings:

- ranger.usersync.ldap.groupname.caseconversion - Used for converting the case of the groupname. Three possible options are:
 - None - Group names are synced to ranger as is from AD/LDAP. This is the default setting.
 - Lower - All the group names are converted to lowercase while syncing to ranger. This is the recommended setting.
 - Upper - All the group names are converted to uppercase while syncing to ranger



Note: Policy authorization is case sensitive. Therefore, usernames and groups names synced to ranger must match the exact case of the users and groups resolved by the services such as hdfs, hive, hbase, etc. For example, consider dev_ops (all in lower case). Ranger does not treat this as the same value as Dev_Ops which may have been synced from AD and applied to some policies.

ranger.usersync.group.searchbase - Used to search a particular OU in AD for groups. Multiple OUs can be specified with ; separated. For example, the example AD shows two OUs that must be searched for groups:

- ou=hadoop groups,dc=cloudera,dc=com (complete DN for ou=hadoop groups)
- ou=security groups,dc=cloudera,dc=com (complete DN for ou=security groups)

- `ranger.usersync.group.searchfilter` - In this example, since only 3 groups exist in hadoop groups OU and security groups OU and since all 3 require sync to Ranger, you can specify the filter as `cn=*` . The value for this property follows standard ldap search query filter format.



Note: Later, if a new group is added in AD under these OUs and if the customer wants those groups to be sync'd to ranger, no configuration change to usersync is required.

- `ranger.usersync.user.searchenabled` - In this example, since the customer wants to sync users from dev_ops groups to provide admin access to Ranger UI, this property is set to true .

- To define the required configuration properties that control user synchronization from AD, scroll to Usersync User Search Base, then define the configurations properties appropriate for the environment. Configurations shown here match the Example AD environment.

Figure 9: Ranger Usersync user configuration settings

Usersync User Search Base ranger.usersync ldap.user.searchbase ranger.usersync ldap.user.searchbase	Ranger Usersync Default Group Undo <input type="text" value="ou=vendors,dc=cloudera,dc=com,ou=service accounts,dc=cloudera,dc=com"/>	?
Usersync User Search Scope ranger.usersync ldap.user.searchscope ranger.usersync ldap.user.searchscope	Ranger Usersync Default Group <input checked="" type="radio"/> sub <input type="radio"/> base <input type="radio"/> one	?
Usersync User Object Class ranger.usersync ldap.user.objectclass ranger.usersync ldap.user.objectclass	Ranger Usersync Default Group Undo <input type="text" value="user"/>	?
Usersync User Search Filter ranger.usersync ldap.user.searchfilter ranger.usersync ldap.user.searchfilter	Ranger Usersync Default Group Undo <input type="text" value="(memberof=cn=dev_ops,ou=security groups,dc=cloudera,dc=com)"/>	?
Usersync User Name Attribute ranger.usersync ldap.user.nameattribute ranger.usersync ldap.user.nameattribute	Ranger Usersync Default Group Undo <input type="text" value="sameaccountname"/>	?
Usersync Referral ranger.usersync ldap.referral ranger.usersync ldap.referral	Ranger Usersync Default Group <input checked="" type="radio"/> ignore <input type="radio"/> follow <input type="radio"/> throw	?
Usersync Username Case Conversion ranger.usersync ldap.username.caseconversion ranger.usersync ldap.username.caseconversion	Ranger Usersync Default Group Undo <input type="radio"/> none <input checked="" type="radio"/> lower <input type="radio"/> upper	?

A few specific points to consider about user config settings:

- ranger.usersync.ldap.user.searchbase - This configuration is used to search a particular location in AD for users. Specify multiple OUs with ; separated.



Note: If users are distributed across several OUs, specifying a base directory, for example, dc=cloudera,dc=com might be convenient and is highly recommended to restrict the search with proper filters.

- ranger.usersync.ldap.user.searchfilter - In this example, since the customer wants to sync only the users that belong to dev_ops, the value for this property is (memberof=cn=dev_ops,ou=security groups,dc=cloudera,dc=com) .



Note: Wildcards are not supported only when the memberof attribute is used for searching. If you use attributes such as cn or samaccountname for filtering, you can specify wildcards. For example, (&(cn=asm*)(samaccountname=acar*))

- ranger.usersync.ldap.username.caseconversion - Used for converting the case of the username. Three possible options are:
 - None - Usernames are synced to ranger as is from AD/LDAP. This is the default setting.
 - Lower - All the usernames are converted to lowercase while syncing to ranger. This is the recommended setting.
 - Upper - All the usernames are converted to uppercase while syncing to ranger



Note: Policy authorization is case sensitive. Therefore, usernames and groups names synced to ranger must match the exact case of the users and groups resolved by the services such as hdfs, hive, hbase, etc. For example, consider asmith (all in lower case). Ranger does not treat this as the same value as ASmith which may have been synced from AD and applied to some policies.

Adding default service users and roles for Ranger

Cloudera Manager adds a property and default values that define roles for the minimum set of service users by default.

Runtime releases 7.1.8 and 7.2.16 introduce a new configuration property:

Name

`ranger.usersync.whitelist.users.role.assignment.rules`

Default Value

`&ROLE_SYS_ADMIN:u:admin,rangerusersync,rangertagsync,ranger,rangeradmin,rangerraz,rangerrms&ROLE_KEY_`

Go to Cloudera Manager Ranger Configuration, then type whitelist in Search to see the property and assigned values. Ranger Usersync creates roles for each service user during synchronization.

`ranger.usersync.whitelist.users.role.assignment.rules` uses same format as `ranger.usersync.group.based.role.assignment.rules`.

If you add any custom principals, you must update the list of values for `ranger.usersync.whitelist.users.role.assignment.rules` accordingly so that Ranger usersync applies role assignments rules appropriately. Any change to these configuration values requires a restart of Ranger usersync. Ranger usersync applies these rules during restart and every sync cycle, if changed.

If the same service user exists in:

- `ranger.usersync.whitelist.users.role.assignment.rules`, and
- `ranger.usersync.group.based.role.assignment.rules`

with different role assignments, then the role assignment from `ranger.usersync.whitelist.users.role.assignment.rules` takes priority. This is true even if `ranger.usersync.group.based.role.assignment.rules` has role assignment rules for a group that has service users as members. Any changes to the role assignments made to these service users from Ranger UI or rest API are temporary. The next Ranger usersync sync cycle resets them.

Configuring Usersync assignment of Admin users

How to automatically assign Admin and Key Admin roles for external users

About this task

Ranger provides configuration for defining roles for external users.

Usersync pulls in users/groups from your external user repository, such as LDAP/AD, and populates the Ranger database with these users/groups. Use this procedure to automatically assign roles to specific users/groups. The example properties shown in this topic automatically assign the ADMIN/KEYADMIN role to external users.

Currently, Ranger supports various roles (or privileges) to be assigned to a user:

ROLE_SYS_ADMIN

Has permission to create users, group, roles, services, and policies, run reports, and perform other administrative tasks. Admin users can also create child policies based on the original policy.

ROLE_KEY_ADMIN

Has permission to manage (create, update, or delete) access policies and keys for Ranger KMS.

ROLE_USER

Has least privilege (and default role) assigned to a user. All users are assigned this default role.

ROLE_ADMIN_AUDITOR

An Admin user with read-only permission.

ROLE_KEY_ADMIN_AUDITOR

An Admin user with read-only permission for Ranger KMS.

Auditor and KMS Auditor roles have been introduced in Ranger Admin. Users with these roles have read-only access to all the services, policies, user/groups, audits and reports.

- The Auditor role allows a user with Auditor role to view all information that a user with Admin role can see. A user with Auditor role will have a read-only view of a user with Admin role. In other words, a user with Auditor role user will be blocked from the create/update/delete/import/exportJson of all API in the Ranger UI and curl command.
- The KMS Auditor role allows a user with KMS Auditor role to view all information that a user with Keyadmin role can see on the Ranger UI. A user with KMS Auditor role will have a read-only view of a user with Keyadmin role. In other words, a user with KMS Auditor role will be blocked from create/update/delete/import/exportJson of all API in the Ranger UI and curl command.
- Users with the Auditor or KMS Auditor role, even if delegated as admin in any policies of any services, will be restricted from create/update/delete/import/exportJson. In other words, users with Auditor or KMS Auditor role have view-only access based on their role.
- A user with KMS Auditor role cannot get keys, even if that user is added in policy.
- Users with Auditor or KMS Auditor role can change their password.
- No user has Auditor or KMS Auditor role by default.
- Users with Auditor or KMS Auditor role can export policies to excel and csv file formats.

A user can have only one role, and that role is determined by the last role assigned, depending in part on group membership.

For example, if the role assignment rules are configured as follows:

ROLE_SYS_ADMIN:u:User1, User2&ROLE_SYS_ADMIN:g:Group1, Group2&ROLE_AUDITOR:g:Group3, Group4&ROLE_USER:g:Group5

and if a user belongs to Group1 & Group5, then the role assigned to that user is ROLE_USER.

Similarly, if a user belongs to Group2 & Group3, then the role assigned to that user is ROLE_AUDITOR.

If the user does not belong to any of these groups (Group1, Group2, Group3, Group4, or Group5), then the default role assigned to the user is ROLE_USER.

If the user belongs to only Group1, then the role assigned to the user is ROLE_SYS_ADMIN.

To automatically assign the ADMIN/KEYADMIN role to external users:

Procedure

1. In Ranger Configuration Search , type role.assignment.
2. In Ranger Usersync Default Group: verify that the following default delimiter values appear for each property:

Property Name	Delimiter Value
ranger.usersync.role.assignment.list.delimiter	&
ranger.usersync.users.groups.assignment.list.delimiter	:
ranger.usersync.username.groupname.assignment.list.delimiter	,
ranger.usersync.group.based.role.assignment.rules	

3. In Ranger UserSync Group Based Role Assignment Rules, type the following value as one string:
 ROLE_SYS_ADMIN:u:User1,User2&ROLE_SYS_ADMIN:g:Group1,Group2&
 ROLE_KEY_ADMIN:u:kmsUser&ROLE_KEY_ADMIN:g:kmsGroup&
 ROLE_USER:u:User3,User4&ROLE_USER:g:Group3,Group4&
 ROLE_ADMIN_AUDITOR:u:auditorUsers,auditors&
 ROLE_ADMIN_AUDITOR:g:adminAuditorGroup,rangerAuditors&
 ROLE_KEY_ADMIN_AUDITOR:u:kmsAuditors&ROLE_KEY_ADMIN_AUDITOR:g:kmsAuditorGroup
 where "u" indicates user and "g" indicates group
4. Click Save Changes (CTRL+S).
5. If Usersync requires no other changes, choose Actions Restart Usersync .

Configuring nested group hierarchies

You must enable non-zero group hierarchy levels in Ranger before adding a group as a member to another group.

About this task

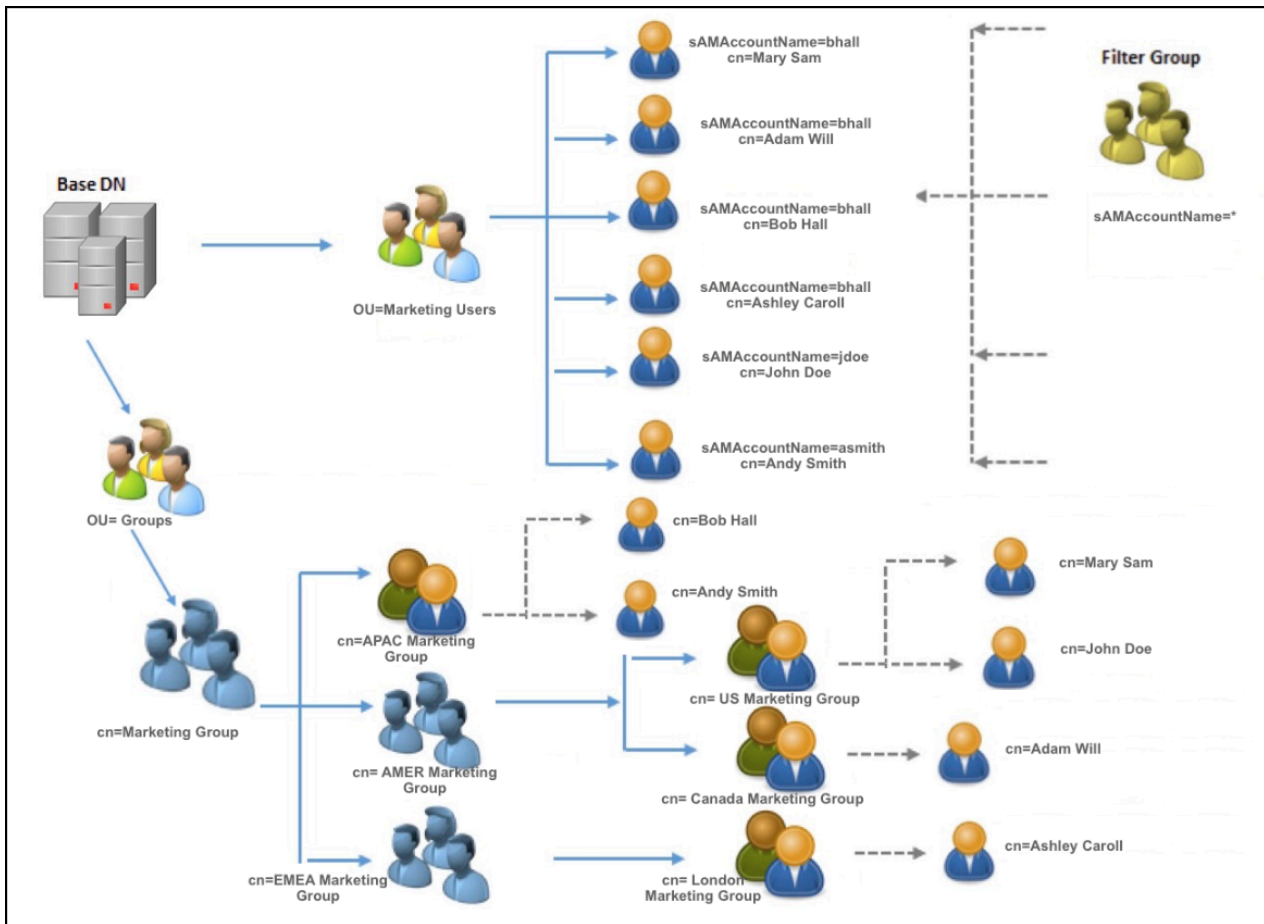
"Nesting" groups means adding a group as a member to another group. If a group (groupA) is a member of another group (groupB), then the users belonging to the member group (groupA) are part of the parent group (groupB) as well. Nesting can be very useful when delegating access through inheritance. Many large enterprises have their groups in LDAP/AD nested within other groups. Security admins want the users in those nested groups to be associated in Ranger so that they are available for policy authoring in Ranger Admin. CDP Ranger Usersync supports nested group membership representation for policy authoring.



Note: In order to utilize nested group mapping, a Ranger Admin user must set the Usersync Group Hierarchy Levels to a non-zero value.

In the following example directory structure, all the marketing users are under one OU "Marketing Users". All these users are members of different groups based on the location like US, Canada, London, etc... For example, user "Adam Will" from "Marketing Users" OU is a member of "Canada Marketing Group". The example directory structure also contains multiple, nested group levels; for example, "US Marketing Group" is a member of "AMER Marketing Group" which again is a member of "Marketing Group".

Figure 10: Example Active Directory structure with Nested Groups



Ranger Usersync, by default, computes only the immediate groups for the users. For example, user "Adam Will" is part of "Canada Marketing Group" and only this information is available in ranger without nested group sync configuration. With this information, if an admin wants to provide access to all the users under "AMER Marketing Group", then all the sub groups - "US Marketing Group" and "Canada Marketing Group" must be added to the policy, using Ranger.

In order to simplify the policy configuration at parent-level groups, Ranger supports evaluating nested group memberships by configuring "ranger.usersync.ldap.grouphierarchylevels". If ranger.usersync.ldap.grouphierarchylevels is set to "3", Ranger Usersync computes the group memberships for user "Adam Will" as "Canada Marketing Group", "AMER Marketing Group", "Marketing Group". This way, admin can configure ranger policy at the parent group level ("AMER Marketing Group") which will be applied for all the users (Mary Sam, John Doe, and Adam Will) under each sub group (US Marketing Group and Canada Marketing Group).

Procedure

1. In Cloudera Manager Ranger Configuration, type hierarchy in Search.
2. In Usersync Group Hierarchy Levels (ranger.usersync.ldap.grouphierarchylevels) configuration, set:
 - In Ranger Usersync Default Group, type: 3
3. Click Save Changes.
4. Restart Ranger.



Note: ranger.usersync.ldap.grouphierarchylevels property is set to 0 by default.

Configuring Ranger Usersync for Deleted Users and Groups

How to configure Ranger Usersync for users and groups that have been deleted from the sync source.

About this task

You can configure Ranger Usersync to update Ranger when users and groups have been deleted from the sync source (UNIX, LDAP, AD or PAM). This ensures that users and groups – and their associated access permissions – do not remain in Ranger when they are deleted from sync source.

Procedure

1. In Cloudera Manager, select Ranger > Configuration, then use the Search box to search for Ranger Usersync Advanced Configuration Snippet (Safety Valve) for conf/ranger-ugsync-site.xml. Use the Add (+) icons to add the following properties, then click Save Changes.

Name	Value	Description
ranger.usersync.deletes.enabled	true	Enables deleted users and groups synchronization. The default setting is false (disabled).
ranger.usersync.deletes.frequency	10	Sets the frequency of delete synchronization. The default setting is 10, or once every 10 Usersync cycles. Delete synchronization consumes cluster resources, so a lower (more frequent) setting may affect performance.

Cluster 1

RANGER-1

Status Instances Configuration Commands Charts Library Audits Ranger Admin Web UI Quick Links

Search ranger-ugsync-site.xml

Filters (1) Clear All

SCOPE

- RANGER-1 (Service-Wide) 0
- Ranger Admin 0
- Ranger Tagsync 0
- Ranger Usersync 1

CATEGORY

- Advanced 1
- Database 0
- Logs 0
- Main 0
- Monitoring 0
- Performance 0
- Ports and Addresses 0
- Resource Management 0
- Security 0
- Stacks Collection 0

STATUS

- Error 0
- Warning 0
- Edited 1
- Non-Default 1
- Include Overrides 0

Ranger Usersync Advanced Configuration Snippet (Safety Valve) for conf/ranger-ugsync-site.xml

Ranger Usersync Default Group Undo

Show All Descriptions

Name ranger.usersync.deletes.enabled

Value true

Description

Final

Name ranger.usersync.deletes.frequency

Value 10

Description

Final

1 - 1 of 1

1 Edited Value Reason for change: Modified Ranger Usersync Advanced Configuration Snippet (Safety Valve) for c Save Changes(CTRL+S)

2. Click the Ranger Restart icon.

Cluster 1

CDLP Deployment from 2021-May-10 12:37

Jun 4, 8:58 PM UTC

Stale Configuration: Restart Command needed

Search ranger-ugsync-site.xml

Filters (1) Clear All

SCOPE

SCOPE	Count
RANGER-1 (Service-Wide)	0
Ranger Admin	0
Ranger Tagsync	0
Ranger Usersync	1

CATEGORY

CATEGORY	Count
Advanced	1
Database	0
Logs	0
Main	0
Monitoring	0
Performance	0
Ports and Addresses	0
Resource Management	0
Security	0
Stacks Collection	0

STATUS

STATUS	Count
Error	0
Warning	0
Edited	0
Non-Default	1

Ranger Usersync Advanced Configuration Snippet (Safety Valve) for conf/ranger-ugsync-site.xml

Ranger Usersync Default Group

Name: ranger.usersync.deletes.enabled

Value: true

Description:

Final

Name: ranger.usersync.deletes.freq

Value: 10

Description:

Final

3. On the Stale Configurations page, click Restart Stale Services.

Cluster 1

Stale Configurations

File: conf/ranger-ugsync-site.xml RANGER-1(1) [Show](#)

```
... .. @@ -197,6 +197,14 @@
197 197 <property>
198 198 <name>ranger.usersync.kerberos.principal</name>
199 199 <value>rangerusersync/_HOST@ROOT.HWX.SITE</value>
200 200 </property>
201 201 + <property>
202 202 + <name>ranger.usersync.deletes.enabled</name>
203 203 + <value>true</value>
204 204 + </property>
205 205 + <property>
206 206 + <name>ranger.usersync.deletes.frequency</name>
207 207 + <value>10</value>
208 208 + </property>
209 209 </configuration>
210 210
```

File: conf/rangeradmin.properties RANGER-1(1) [Show](#)

```
... .. @@ -1,5 +1,9 @@
1 1 dhoyle717-1.dhoyle717.root.hwx.site:ranger.externalurl=
2 2 dhoyle717-1.dhoyle717.root.hwx.site:ranger.service.http.port=6080
3 3 dhoyle717-1.dhoyle717.root.hwx.site:ranger.service.https.attrib.ssl.enabled=fa
4 4 dhoyle717-1.dhoyle717.root.hwx.site:ranger.service.https.port=6182
5 5 +dhoyle717-2.dhoyle717.root.hwx.site:ranger.externalurl=
6 6 +dhoyle717-2.dhoyle717.root.hwx.site:ranger.service.http.port=6080
7 7 +dhoyle717-2.dhoyle717.root.hwx.site:ranger.service.https.attrib.ssl.enabled=fa
8 8 +dhoyle717-2.dhoyle717.root.hwx.site:ranger.service.https.port=6182
9 9
```

File: conf/rangeradmin.properties RANGER-1(2) [Show](#)

```
... .. @@ -2,5 +2,10 @@
2 2 dhoyle717-1.dhoyle717.root.hwx.site:ranger.externalurl=
3 3 dhoyle717-1.dhoyle717.root.hwx.site:ranger.service.http.port=6080
4 4 dhoyle717-1.dhoyle717.root.hwx.site:ranger.service.https.attrib.ssl.enabled=fa
5 5 dhoyle717-1.dhoyle717.root.hwx.site:ranger.service.https.port=6182
6 6 +dhoyle717-2.dhoyle717.root.hwx.site:ranger.authentication.method=PAM
7 7 +dhoyle717-2.dhoyle717.root.hwx.site:ranger.externalurl=
8 8 +dhoyle717-2.dhoyle717.root.hwx.site:ranger.service.http.port=6080
9 9 +dhoyle717-2.dhoyle717.root.hwx.site:ranger.service.https.attrib.ssl.enabled=fa
10 10 +dhoyle717-2.dhoyle717.root.hwx.site:ranger.service.https.port=6182
11 11
```

Filters [Clear All](#)

FILE

- Environment 0
- File: conf/ranger-atlas-security... 0
- File: conf/ranger-knox-security... 0
- File: conf/ranger-ugsync-site.x... 1
- File: conf/rangeradmin.propert... 2
- File: hadoop-conf/ranger-hive... 0
- File: ranger-hbase-security.xml 0
- File: ranger-hdfs-security.xml 0
- File: ranger-hive-security.xml 0
- File: ranger-kafka-security.xml 0
- File: ranger-kudu-security.xml 0
- File: ranger-schema-registry-se... 0
- File: ranger-yarn-security.xml 0

SERVICE [Clear](#)

- ATLAS-1 1
- HBASE-1 1
- HDFS-1 1
- HIVE-1 1
- HIVE_ON_TEZ-1 1
- IMPALA-1 1
- KAFKA-1 2
- KNOX-1 1
- KUDU-1 2
- RANGER-1 3**
- SCHEMAREGISTRY-1 2
- STREAMS_MESSAGING_M... 2
- YARN-1 1

ROLE TYPE

- Atlas Server 0

[Restart Stale Services](#)

4. On the Restart Stale Services page, select the Re-deploy client configuration check box, then click Restart Now.

Restart Stale Services

1 Review Changes

2 Command Details

Review Changes

All services running with outdated configurations in the cluster and their dependencies will be restarted.

☒ Re-deploy client configuration

[Back](#) [Restart Now](#)

5. A progress indicator page appears while the services are being restarted. When the services have restarted, click Continue.

6. Users that have been deleted in sync source are not automatically deleted in Ranger – they are marked as Hidden and must be manually deleted by the Ranger Admin user, and then Ranger Usersync must be restarted.
- In the Ranger Admin Web UI, select Settings > Users/Groups/Roles. Click in the User List text box, then select Visibility > Hidden.

The screenshot shows the Ranger Admin Web UI. The top navigation bar includes 'Ranger', 'Access Manager', 'Audit', 'Security Zone', and 'Settings'. The user 'admin' is logged in. The 'Users/Groups/Roles' section is active, with 'Users' selected. The 'User List' is displayed, showing a search bar with 'VISIBILITY:' and a dropdown menu with 'Hidden' and 'Visible' options. The table below lists users with columns for checkboxes, User Name, Email Address, Role, User Source, Groups, and Visibility.

	User Name	Email Address	Role	User Source	Groups	Visibility
<input type="checkbox"/>	admin		Admin	Internal	hueDefaultUsers	Visible
<input type="checkbox"/>	rangerusersync		Admin	Internal	rangerusersync	Visible
<input type="checkbox"/>	rangertagsync		Admin	Internal	rangertagsync	Visible
<input type="checkbox"/>	hdfs		User	External	hadoop hdfs	Visible
<input type="checkbox"/>	hive		User	External	hive	Visible
<input type="checkbox"/>	cloudera-scm		User	External	cloudera-scm wheel	Visible
<input type="checkbox"/>	httpfs		User	External	httpfs	Visible

7. To delete a hidden user or group manually, select the applicable check boxes, then click the red Delete icon, as shown in the following example.

The screenshot shows the Ranger Admin Web UI. The top navigation bar is the same. The 'Users/Groups/Roles' section is active, with 'Users' selected. The 'User List' is displayed, showing a search bar with 'VISIBILITY: Hidden'. The table below lists users with columns for checkboxes, User Name, Email Address, Role, User Source, Groups, and Visibility. A red box highlights the Delete icon (a trash can) in the top right corner of the table.

<input checked="" type="checkbox"/>	User Name	Email Address	Role	User Source	Groups	Visibility
<input checked="" type="checkbox"/>	acapone		Admin	Internal	admin	Hidden

You can delete multiple users or groups by running a "delete" script on the command line interface.

For example:

```
Sample command to delete users:
python deleteUserGroupUtil.py -users <user file path> -admin <ranger admin user> -url <rangerhosturl> [-force] [-sslCertPath <cert path>] [-debug]

Sample command to delete groups:
python deleteUserGroupUtil.py -groups <group file path> -admin <ranger admin user> -url <rangerhosturl> [-force] [-sslCertPath <cert path>] [-debug]
```



Note: The deleteUserGroupUtil.py script installs as part of the Ranger installation on the node where Ranger Admin runs, in the following location: /opt/cloudera/parcels/CDH/lib/ranger-admin/.

8. In Cloudera Manager, select Ranger > Ranger Usersync, then select Actions > Restart this Ranger Usersync.



Note:

- Sync source is tracked when processing Ranger users and groups for deletion. If the same user name for a separate sync source already exists in Ranger DB, that user will not be updated or marked as hidden.
- For AD/LDAP sync:
 - After marking a user or group as deleted/hidden in Ranger, the user or group status does not change automatically. The user or group must be manually deleted (or deleted using the cli "delete" script). Usersync must be restarted to reflect any changes to the same user name in the source.
 - For example, a user (Bob) from one OU (say Engineering) is deleted from the source and is marked as deleted in Ranger admin. If the same user name (Bob) is subsequently added back to the same OU, the user status will not be automatically enabled. The user must be manually deleted and Usersync must be restarted to implement the changes.
 - If an identical user name (say Bob) is deleted from one OU (say Engineering) and added to a different OU (say Finance) between the sync cycles, user Bob is marked as hidden/deleted only when the delete cycle is triggered. Until then there is a security risk that user Bob from Finance will be granted the permissions for Bob from Engineering.

Configuring Ranger Usersync for invalid usernames


How to configure Ranger Usersync to manage usernames containing invalid characters.

About this task

Ranger Usersync pulls in users/groups from your external user repository, such as LDAP/AD, and populates the Ranger database with these users/groups.

An invalid username contains at least one invalid character. Ranger fails to create a set of users if an invalid username exists within that set of users. Usersync perpetually tries to recreate this user set without creating Ranger or Cloudera Manager alerts. This error appears in both Usersync and admin logs, but the log output lacks necessary details such as the invalid username. By adding the following configuration, you cause Usersync to recognize invalid characters in a user/group name and then skip synchronization for any names that contain invalid characters.

Procedure

1. In Cloudera Manager Ranger Configuration, type Ranger Usersync Advanced Configuration Snippet (Safety Valve) in Search.
2. In the Ranger Usersync Advanced Configuration Snippet (Safety Valve) for conf/ranger-ugsync-site.xml configuration, select  to include the following property:
 - In Name, type: ranger.usersync.name.validation.enabled
 - In Value, type: true
3. Click Save Changes.
4. Restart Ranger.



Note: This configuration property is set to false by default.

Results

Ranger Usersync now successfully synchronizes all valid usernames from the external user repository and skips any usernames containing invalid characters.

Setting credentials for Ranger Usersync custom keystore

How to set the custom keystore file location and password for a Ranger Usersync custom keystore.

About this task

Ranger Usersync role creates a default keystore file, ranger.usersync.keystore.file during restart. UNIX authentication in Ranger Admin requires this keystore file. The keystore file takes a password from the ranger.usersync.keystore.password configuration, exposed in Cloudera Manager supporting CDP 7.1.6 and higher.

Setting custom keystore credentials for Ranger Usersync overrides the default credentials.



Note: Setting custom keystore credentials addresses the issue of using the default, self-signed certificate created for usersync for port 5151. After performing this procedure, you can use your custom, CA-signed certificate.

To set Ranger Usersync custom keystore credentials:

Procedure

1. In Cloudera Manager Ranger Configuration, type Ranger Usersync Advanced Configuration Snippet in the search field.
2. In Ranger Usersync Advanced Configuration Snippet (Safety Valve) for conf/ranger-ugsync-site.xml, enter the following:
 - a) In Name, type: ranger.usersync.keystore.file
 - b) In Value, type: <keystore_file_path>
3. In Cloudera Manager Ranger Configuration, type Usersync Keystore Password in the search field.
4. In ranger.usersync.keystore.password, type a new password.
5. Click Save Changes.
6. Restart Ranger Usersync.

Results

Ranger uses the custom keystore file location and password values instead of the default values.

Enabling Ranger Usersync search to generate internally

You can configure Ranger Usersync to generate a search filter internally when Search includes a list of group names or group names with a wildcard character.

About this task

When you want to filter users who are members of “cdp_prod”, “cdp_testing”, or “dev_ops” groups, you can add a configuration, `ranger.usersync.ldap.groupnames`, that accepts each group name, as a domain name, a short name, or as a group name that contains a wildcard character. Usersync only reads `ranger.usersync.ldap.groupnames` when the sync source is AD/LDAP and `ranger.usersync.ldap.user.searchfilter` is empty. This also requires that `ranger.usersync.group.searchbase` is not empty and the configured value for `ranger.usersync.group.searchbase` must be part of the group searchbase in AD/LDAP. When `ranger.usersync.ldap.user.searchfilter` is not empty, Usersync ignores the value of `ranger.usersync.ldap.groupnames`. Values can be either DN of the groups, short name of the groups, or the group names with wildcard character. For example:

- Domain names of the groups
 - `memberof=CN=dev_ops,ou=Hadoop Groups,dc=cloudera,dc=com`
 - `memberof=CN=cdp_prod,ou=Hadoop Groups,dc=cloudera,dc=com`
 - `memberof=CN=cdp_testing,ou=Hadoop Groups,dc=cloudera,dc=com`
- Short names of the groups
 - `CN=dev_ops`
 - `CN=cdp_prod`
 - `CN=cdp_testing`
- Group names with wildcard character
 - `CN=cdp*`
 - `CN=dev_ops`

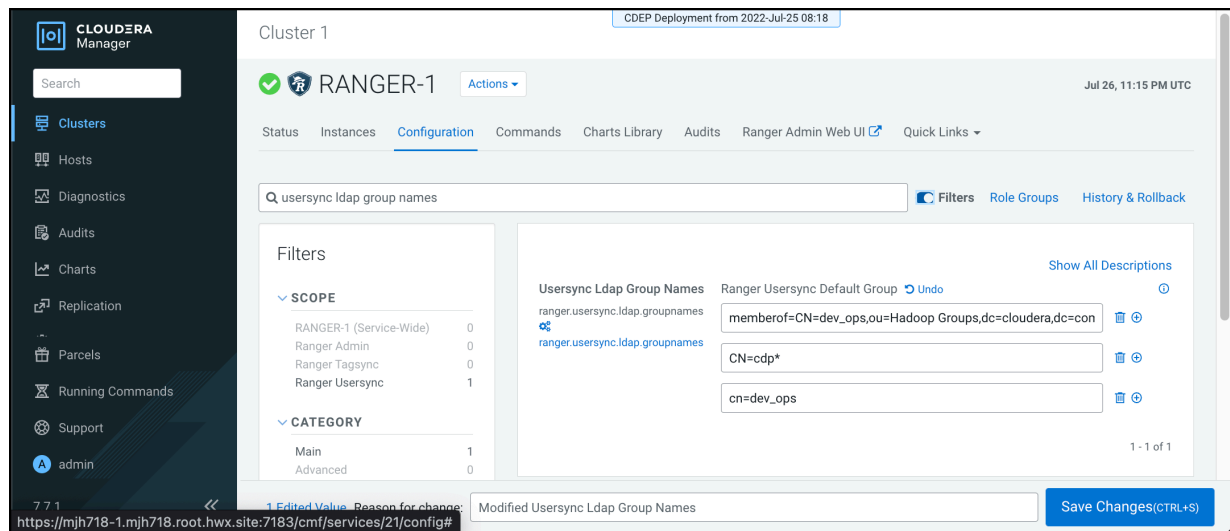
To enable Usersync search to generate an internal search filter for multiple groups names that include wildcard characters:

Procedure

1. In Cloudera Manager Ranger Configuration Search , type `ranger.usersync.ldap.usergroups`.
2. In Ranger Usersync Default Group, click +1.
3. Type `<group_name>`.

- Repeat steps 2 and 3 for each group name.

Figure 11: Example supported group name formats for Usersync LDAP



- Click Save Changes.
- In Actions, choose Restart Usersync.

Results

The search filter now includes all group names that you saved.

What to do next

To confirm, log in to Ranger Admin Web UI. In Settings Users/Group/Roles Groups, in Groups List, select Group Name. You should see group names that you configured available as search filter values.

Configuring Usersync to sync directly with LDAP/AD

Ranger Usersync can be manually configured to sync directly with LDAP/AD.

About this task

By default, Ranger Usersync uses sssd to sync users and groups from a Unix source. This can affect performance and limit scale. This runtime release supports LDAP/AD as a default sync source. Additionally, Ranger Usersync can be manually configured to:

- update users and groups from multiple (LDAP/AD, Unix and file) sync sources
- customize the default sync interval

Procedure

- Go to Cloudera Manager Ranger Configuration Filters Ranger Usersync.
- In Search, type safety valve.
This filters all Ranger configs to expose only the Usersync safety valves.
- In Ranger Usersync Advanced Configuration Snippet (Safety Valve) for conf/ranger-ugsync-site.xml, press +.
 - In Name, type ranger.usersync.syncsource.validation.enabled
 - In Value, type false
 - Click Save Changes(CTRL+S)
Allows sync from multiple source types.

4. In Ranger Usersync Advanced Configuration Snippet (Safety Valve) for `conf/ranger-ugsync-extra-attrs.xml`, press +.
 - a) In Name, type `<cloud user.cloud.id.mapping>`
 - b) In Value, type `clouduser1,clouduser2,....`
 - c) Click Save Changes(CTRL+S)

Cloud ids for these users and groups are synced to ranger admin.



Note: This will be populated by default. The above can also be manually overridden.

Force deletion of external users and groups from the Ranger database

You can force delete external users and groups from a Ranger database using either REST endpoints or python client APIs.

If Ranger Usersync operates without proper configuration, a Ranger database may be (over)-populated with user and group records. Huge user/group and mapping tables may cause Ranger administration issues. To aid in removal of unnecessary users/groups, customers may use this feature to delete specific external user/groups or even all external users/groups if required.



Note: Deleting users and groups manually is not an optimal solution for all customers.

The following 2 REST endpoints are available:

- `service/xusers/delete/external/groups`
- `service/xusers/delete/external/users`

The following 2 python client APIs are available:

- `force_delete_external_users`
- `force_delete_external_groups`

Invoking REST endpoints (via cURL):

```
# to delete a group named 'group_1'
service/xusers/delete/external/groups?name=group_1
# to delete all hidden groups
service/xusers/delete/external/groups?isVisible=0
# to delete all visible groups
service/xusers/delete/external/groups?isVisible=1
# to delete all groups with sync source as Unix
service/xusers/delete/external/groups?syncSource=Unix
# to delete a user named 'user_1'
service/xusers/delete/external/users?name=user_1
# to delete all hidden users
service/xusers/delete/external/users?isVisible=0
# to delete a user with a particular email id
service/xusers/delete/external/users?emailAddress=xyz5@gmail.com
```

To use the python client APIs:



Note: `apache_ranger` python package version should be `>= 0.0.11`

```
$ pip3 install apache_ranger
$ python3
>>> from apache_ranger.client.ranger_client import *
```

```
>>> ranger = RangerClientPrivate('<ranger_url>', ('<ranger_user>', '<ranger_pass>'))
```

Specific use-case examples using the python client APIs:

```
# to delete user_1
>>> ranger.force_delete_external_users("name=user_1")
# to delete group_1
>>> ranger.force_delete_external_groups("name=group_1")
# to delete all users with sync source as Unix
>>> ranger.force_delete_external_users("syncSource=Unix")
# to delete all users with Auditor Role
>>> ranger.force_delete_external_users("userRole=ROLE_ADMIN_AUDITOR")
# to delete all external users
>>> ranger.force_delete_external_users()
# to delete all external groups
>>> ranger.force_delete_external_groups()
```