HDP Installing Ranger 3

Installing Apache Ranger

Date of Publish: 2019-08-26

https://docs.hortonworks.com

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Installing Ranger Using Ambari Overview

Apache Ranger can be installed either manually using the Hortonworks Data Platform (HDP) or the Ambari User Interface (UI). The Ranger service option will be made available through the Add Service wizard after the HDP cluster is installed using the installation wizard.

Once Ambari has been installed and configured, you can use the Add Service wizard to install the following components:

- Ranger Admin
- Ranger UserSync
- Ranger Key Management Service

After these components are installed and started, you can enable Ranger plugins by navigating to each individual Ranger service (HDFS, HBase, Hiveserver2, Storm, Knox, YARN, and Kafka) and modifying the configuration under advanced ranger-<service>-plugin-properties.

Note that when you enable a Ranger plugin, you will need to restart the component.

Note:

Enabling Apache Storm or Apace Kafka requires you to enable Kerberos. To enable Kerberos on your cluster, see “Configuring Authentication with Kerberos”.

Related Information

Installing the Ranger Key Management Service

Set Up Hadoop Group Mapping for LDAP/AD

To ensure that LDAP/AD group level authorization is enforced in Hadoop, you should set up Hadoop group mapping for LDAP/AD.

Before you begin

You must have access to LDAP and the connection details. Note that LDAP settings can vary depending on what LDAP implementation you are using

About this task

There are three ways to set up Hadoop group mapping:

- Using SSSD (Recommended)
- Manually create users and groups in the Linux environment
- In core-site.xml

Procedure

- Using SSSD (Recommended)

  The recommended method for group mapping is to use SSSD or one of the following services to connect the Linux OS with LDAP:

  - Centrify
  - NSLCD
  - Winbind
  - SAMBA

Note that most of these services allow you to not only look up a user and enumerate their groups, but also allow you to perform other actions on the host. None of these features are required for LDAP group mapping on Hadoop -- all that is required is the ability to lookup (or "validate") a user within LDAP and enumerate their groups. Therefore, when evaluating these services, take the time to understand the difference between the NSS module (which performs user/group resolution) and the PAM module (which performs user authentication). NSS is required. PAM is not required, and may represent a security risk.

- Manually create users and groups in the Linux environment: Manually create users and groups (see link below) in your Linux environment.
- In core-site.xml, configure Hadoop to use LDAP-based group mapping:

  a) Add the properties shown in the example below to the core-site.xml file.

     You will need to provide the value for the bind user, the bind password, and other properties specific to you LDAP instance, and make sure that object class, user, and group filters match the values specified in your LDAP instance.

```
<property>
<name>hadoop.security.group.mapping</name>
<value>org.apache.hadoop.security.LdapGroupsMapping</value>
</property>

<property>
<name>hadoop.security.group.mapping.ldap.bind.user</name>
<value>cn=Manager,dc=hadoop,dc=apache,dc=org</value>
</property>

<!–
<property>
<name>hadoop.security.group.mapping.ldap.bind.password.file</name>
<value>/etc/hadoop/conf/ldap-conn-pass.txt</value>
</property>
–>

<property>
<name>hadoop.security.group.mapping.ldap.bind.password</name>
<value>hadoop</value>
</property>

<property>
<name>hadoop.security.group.mapping.ldap.url</name>
<value>ldap://localhost:389/</value>
</property>

<property>
<name>hadoop.security.group.mapping.ldap.base</name>
<value></value>
</property>

<property>
<name>hadoop.security.group.mapping.ldap.search.filter.user</name>
<value>(&amp;(|(objectclass=person)(objectclass=applicationProcess))
(cn={0}))</value>
</property>

<property>
<name>hadoop.security.group.mapping.ldap.search.filter.group</name>
<value>(objectclass=groupOfNames)</value>
</property>

<property>
<name>hadoop.security.group.mapping.ldap.search.attr.member</name>
<value>member</value>
```

```
</property>

<property>
<name>hadoop.security.group.mapping.ldap.search.attr.group.name</name>
<value>cn</value>
</property>
```

b) Depending on your configuration, you may be able to refresh user and group mappings using the following HDFS and YARN commands:

```
hdfs dfsadmin -refreshUserToGroupsMappings
yarn rmadmin -refreshUserToGroupsMappings
```

c) Verify LDAP group mapping by running the hdfs groups command. This command will fetch groups from LDAP for the current user. Note that with LDAP group mapping configured, the HDFS permissions can leverage groups defined in LDAP for access control.

Related Information

Manually create users and groups

SSSD

Ranger Password Requirements

This topic lists password requirements for Ranger and Ranger KMS.

Ranger user password requirements:

- Minimum of 8 characters
- Must include at least one alphabetical and one numerical character
- Must not include the following unsupported special characters: " ' \ `

Ranger and Ranger KMS DB user password requirements:

- Must not include the following unsupported special characters: " ' \ `

Ranger database instance password requirements:

- Refer to the password requirements for the applicable database type (MySQL, PostgreSQL, Oracle, etc.)

Configuring a Database Instance for Ranger

A database instance must be running and available to be used by Ranger. You can configure MySQL, Oracle, PostgreSQL, or Amazon RDS for this purpose.

- A MySQL, Oracle, PostgreSQL, or Amazon RDS database instance must be running and available to be used by Ranger.

  The Ranger installation will create two new users (default names: rangeradmin and rangerlogger) and two new databases (default names: ranger and ranger_audit).
- Configuration of the database instance for Ranger is described in the following sections for some of the databases supported by Ranger.
  - MySQL
  - PostgreSQL
  - Oracle
  - AmazonRDS
- If you choose not to provide system Database Administrator (DBA) account details to the Ambari Ranger installer, you can use the dba_script.py Python script to create Ranger DB database users without exposing DBA

account information to the Ambari Ranger installer. You can then run the normal Ambari Ranger installation without specifying a DBA user name and password. For more information see “Set up Database Users Without Sharing DBA Credentials”.

Configure a Ranger DB: MySQL/MariaDB

How to configure your MySQL database instance for Ranger.

Before you begin

A MySQL/Oracle/PostgreSQL/Amazon RDS database instance must be running and available to be used by Ranger.

When using MySQL, the storage engine used for the Ranger admin policy store tables MUST support transactions. InnoDB is an example of engine that supports transactions. A storage engine that does not support transactions is not suitable as a policy store.

If you are using Amazon RDS, see “Configure an Amazon RDS Database Instance for Ranger: Prerequisites”.

Procedure

1. The MySQL database administrator should be used to create the Ranger databases. The following series of commands could be used to create the rangerdba user with password rangerdba.
   a) Log in as the root user, then use the following commands to create the rangerdba user and grant it adequate privileges.

```
CREATE USER 'rangerdba'@'localhost' IDENTIFIED BY 'rangerdba';

GRANT ALL PRIVILEGES ON *.* TO 'rangerdba'@'localhost';

CREATE USER 'rangerdba'@'%' IDENTIFIED BY 'rangerdba';

GRANT ALL PRIVILEGES ON *.* TO 'rangerdba'@'%';

GRANT ALL PRIVILEGES ON *.* TO 'rangerdba'@'localhost' WITH GRANT
 OPTION;

GRANT ALL PRIVILEGES ON *.* TO 'rangerdba'@'%' WITH GRANT OPTION;

FLUSH PRIVILEGES;
```

2. Use the exit command to exit MySQL.
3. You should now be able to reconnect to the database as rangerdba using the following command: mysql -u rangerdba -prangerdba.
4. After testing the rangerdba login, use the exit command to exit MySQL.
5. Confirm that the mysql-connector-java.jar file is in the Java share directory. This command must be run on the server where Ambari server is installed: ls /usr/share/java/mysql-connector-java.jar.

   If the file is not in the Java share directory, use the following command to install the MySQL connector .jar file:

   - RHEL/CentOS/Oracle Linux: yum install mysql-connector-java*
   - SLES: zypper install mysql-connector-java*
6. Set the jdbc/driver/path based on the location of the MySQL JDBC driver .jar file. This command must be run on the server where Ambari server is installed: ambari-server setup --jdbc-db={database-type} --jdbc-driver={/jdbc/driver/path}.

```
ambari-server setup --jdbc-db=mysql --jdbc-driver=/usr/share/java/mysql-
connector-java.jar
```

What to do next

"Start the Ranger Installation"

Configure a Ranger DB: PostgreSQL

How to configure your PostgreSQL database instance for Ranger.

Before you begin

A MySQL/Oracle/PostgreSQL/Amazon RDS database instance must be running and available to be used by Ranger.

If you are using Amazon RDS, see "Configure an Amazon RDS Database Instance for Ranger: Prerequisites".

Procedure

1. On the PostgreSQL host, install the applicable PostgreSQL connector:

Option	
RHEL/CentOS/Oracle Linux	yum install postgresql-jdbc*
SLES	zypper install -y postgresql-jdbc

2. Confirm that the .jar file is in the Java share directory. ls /usr/share/java/postgresql-jdbc.jar.
3. Change the access mode of the .jar file to 644: chmod 644 /usr/share/java/postgresql-jdbc.jar.
4. The PostgreSQL database administrator should be used to create the Ranger databases. The following series of commands could be used to create the rangerdba user and grant it adequate privileges:

```
echo "CREATE DATABASE $dbname;" | sudo -u $postgres psql -U postgres
echo "CREATE USER $rangerdba WITH PASSWORD '$passwd';" | sudo -u $postgres
 psql -U postgres
echo "GRANT ALL PRIVILEGES ON DATABASE $dbname TO $rangerdba;" | sudo -u
 $postgres psql -U postgres
```

Where:

- $postgres is the Postgres user.
- $dbname is the name of your PostgreSQL database.

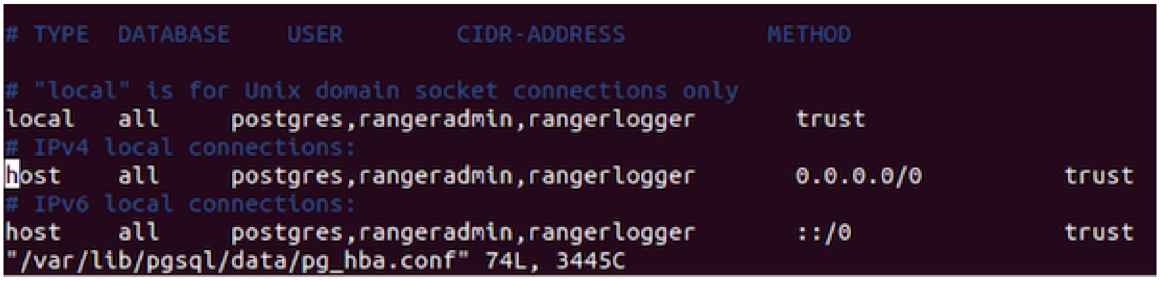
5. Set the jdbc/driver/path based on the location of the PostgreSQL JDBC driver .jar file. This command must be run on the server where Ambari server is installed. ambari-server setup --jdbc-db={database-type} --jdbc-driver={/jdbc/driver/path}.

```
ambari-server setup --jdbc-db=postgres --jdbc-driver=/usr/share/java/
postgresql-jdbc.jar
```

6. Run the following command: export HADOOP_CLASSPATH=${HADOOP_CLASSPATH}:${JAVA_JDBC_LIBS}:/connector jar path.
7. Add Allow Access details for Ranger users:

a) Change listen_addresses='localhost' to listen_addresses='*' ('*' = any) to listen from all IPs in postgresql.conf.

b) Make the following changes to the Ranger db user and Ranger audit db user in the pg_hba.conf file.



```
# TYPE  DATABASE    USER        CIDR-ADDRESS          METHOD

# "local" is for Unix domain socket connections only
local   all     postgres,rangeradmin,rangerlogger       trust
# IPv4 local connections:
host    all     postgres,rangeradmin,rangerlogger       0.0.0.0/0          trust
# IPv6 local connections:
host    all     postgres,rangeradmin,rangerlogger       ::/0               trust
"/var/lib/pgsql/data/pg_hba.conf" 74L, 3445C
```

8. After editing the pg_hba.conf file, run the following command to refresh the PostgreSQL database configuration: sudo -u postgres /usr/bin/pg_ctl -D $PGDATA reload.
If the pg_hba.conf file is located in the /var/lib/pgsql/data directory, the value of $PGDATA is /var/lib/pgsql/data.

What to do next

"Start the Ranger Installation"

Configure a Ranger DB: Oracle

How to configure your Oracle database instance for Ranger.

Before you begin

A MySQL/Oracle/PostgreSQL/Amazon RDS database instance must be running and available to be used by Ranger.

If you are using Amazon RDS, see "Configure an Amazon RDS Database Instance for Ranger: Prerequisites".

Procedure

1. On the Oracle host, install the appropriate JDBC .jar file.
   a) Download the Oracle JDBC (OJDBC) driver from http://www.oracle.com/technetwork/database/features/jdbc/index-091264.html.
      - For Oracle Database 11g: select Oracle Database 11g Release 2 drivers > ojdbc6.jar.
      - For Oracle Database 12c: select Oracle Database 12c Release 1 driver > ojdbc7.jar.

   b) Copy the .jar file to the Java share directory.
      cp ojdbc7.jar /usr/share/java/

      Make sure the .jar file has the appropriate permissions. For example: chmod 644 /usr/share/java/ojdbc7.jar
2. The Oracle database administrator should be used to create the Ranger databases. The following series of commands could be used to create the RANGERDBA user and grant it permissions using SQL*Plus, the Oracle database administration utility:

```
# sqlplus sys/root as sysdba
CREATE USER $RANGERDBA IDENTIFIED BY $RANGERDBAPASSWORD;
GRANT SELECT_CATALOG_ROLE TO $RANGERDBA;
GRANT CONNECT, RESOURCE TO $RANGERDBA;
QUIT;
```

3. Set the jdbc/driver/path based on the location of the Oracle JDBC driver .jar file. This command must be run on the server where Ambari server is installed: ambari-server setup --jdbc-db={database-type} --jdbc-driver={/jdbc/driver/path}.

```
ambari-server setup --jdbc-db=oracle --jdbc-driver=/usr/share/java/
ojdbc6.jar
```

What to do next

"Start the Ranger Installation"

Configure a Ranger DB: Amazon RDS

Ranger requires a relational database as its policy store. There are additional prerequisites for Amazon RDS-based databases due to how Amazon RDS is set up and managed.

About this task

Depending on your DB flavor, there are prerequisite steps to perform when using Amazon RDS. There are three ways to set up Hadoop group mapping:

- MySQL/MariaDB
- PostgreSQL
- Oracle

Procedure

- For MySQL/MariaDB, you must change the variable log_bin_trust_function_creators to 1 during Ranger installation. From RDS Dashboard>Parameter group (on the left side of the page):

  a) Set the MySQL Server variable log_bin_trust_function_creators to 1.

  b) (Optional) After Ranger installation is complete, reset log_bin_trust_function_creators to its original setting. The variable is only required to be set to 1 during Ranger installation.

- For PostgreSQL, complete the prerequisites:

  The Ranger database user in Amazon RDS PostgreSQL Server should be created before installing Ranger and should be granted an existing role which must have the role CREATEDB.

  a) Using the master user account, log in to the Amazon RDS PostgreSQL Server from master user account (created during RDS PostgreSQL instance creation) and execute following commands:

  ```
  CREATE USER $rangerdbuser WITH LOGIN PASSWORD 'password'
  GRANT $rangerdbuser to $postgresroot
  ```

  Where $postgresroot is the RDS PostgreSQL master user account (for example: postgresroot) and $rangerdbuser is the Ranger database user name (for example: rangeradmin).

  b) If you are using Ranger KMS, execute the following commands:

  ```
  CREATE USER $rangerkmsuser WITH LOGIN PASSWORD 'password'
  GRANT $rangerkmsuser to $postgresroot
  ```

  Where $postgresroot is the RDS PostgreSQL master user account (for example: postgresroot) and $rangerkmsuser is the Ranger KMS user name (for example: rangerkms).

- For Oracle, due to limitations in Amazon RDS, the Ranger database user and tablespace must be created manually and the required privileges must be manually granted to the Ranger database user:

  a) Log in to the RDS Oracle Server from the master user account (created during RDS Oracle instance creation) and execute following commands:

  ```
  create user $rangerdbuser identified by “password”;
  GRANT CREATE SESSION,CREATE PROCEDURE,CREATE TABLE,CREATE
   VIEW,CREATE SEQUENCE,CREATE PUBLIC SYNONYM,CREATE ANY SYNONYM,CREATE
   TRIGGER,UNLIMITED Tablespace TO $rangerdbuser;
  create tablespace $rangerdb datafile size 10M autoextend on;
  alter user $rangerdbuser DEFAULT Tablespace $rangerdb;
  ```

  Where $rangerdb is a actual Ranger database name (for example: ranger) and $rangerdbuser is Ranger database username (for example: rangeradmin).

  b) If you are using Ranger KMS, execute the following commands:

  ```
  create user $rangerdbuser identified by “password”;
  GRANT CREATE SESSION,CREATE PROCEDURE,CREATE TABLE,CREATE
   VIEW,CREATE SEQUENCE,CREATE PUBLIC SYNONYM,CREATE ANY SYNONYM,CREATE
   TRIGGER,UNLIMITED Tablespace TO $rangerkmsuser;
  create tablespace $rangerkmsdb datafile size 10M autoextend on;
  alter user $rangerkmsuser DEFAULT Tablespace $rangerkmsdb;
  ```

Where $rangerkmsdb is a actual Ranger database name (for example: rangerkms) and $rangerkmsuser is Ranger database username (for example: rangerkms).

What to do next

"Start the Ranger Installation"

Start the Ranger Installation

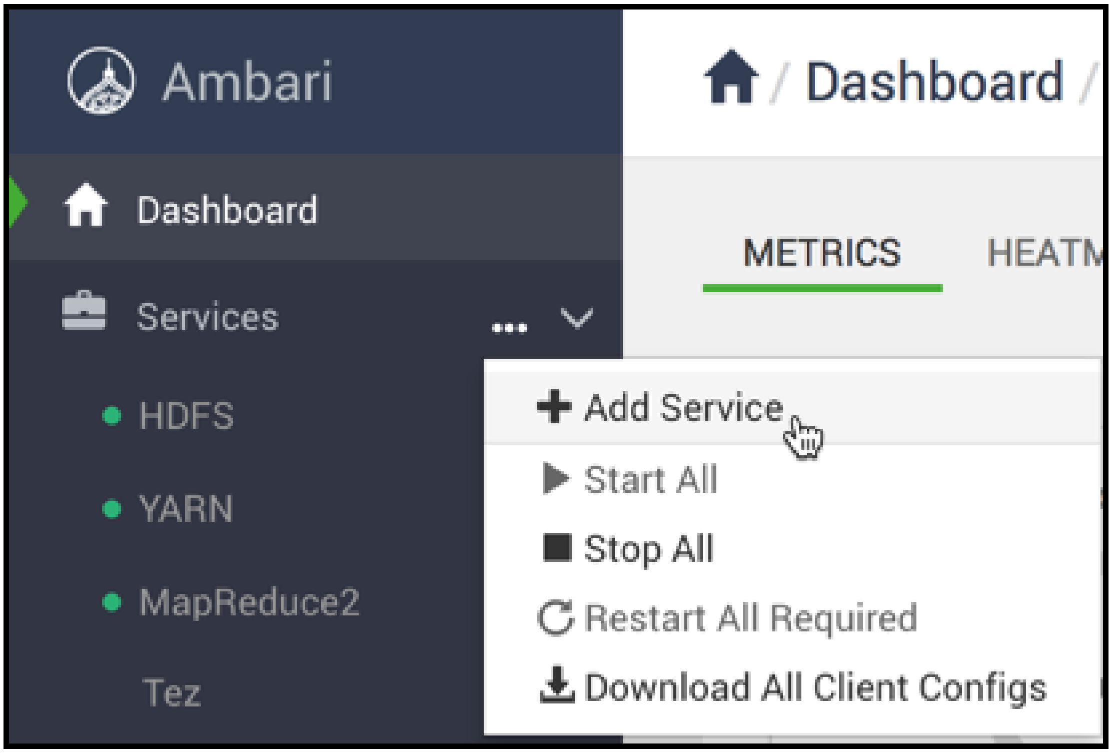
How to begin installing Ranger via Ambari.

Before you begin

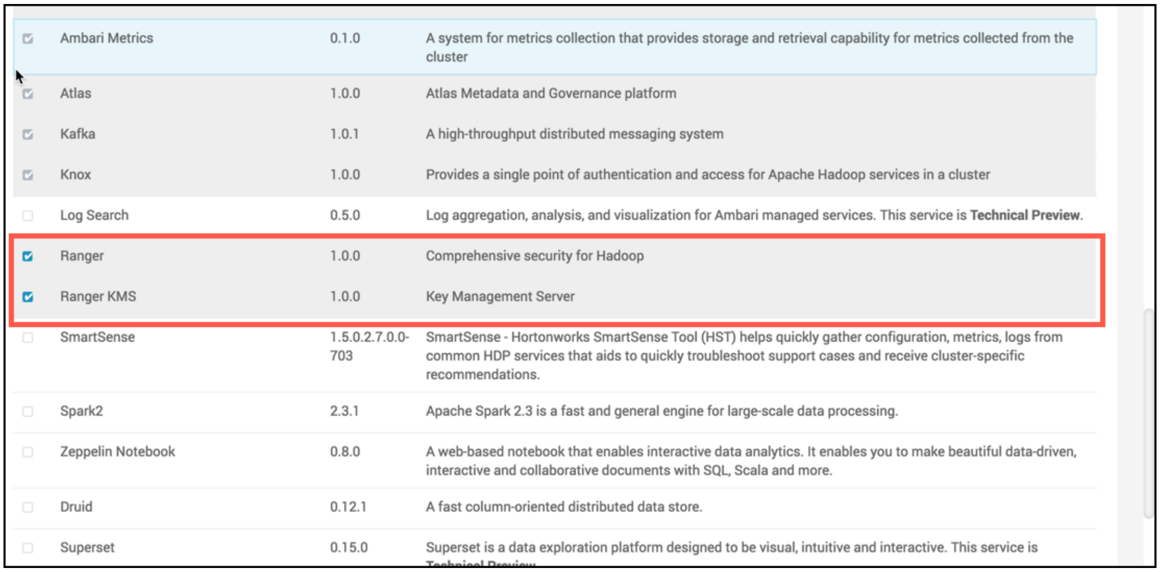
You must have configured a database instance for Ranger.

Procedure

1. Log into your Ambari cluster with your designated user credentials.
   The main Ambari Dashboard page will be displayed.
2. In the left navigation menu, click Actions, then select Add Service.



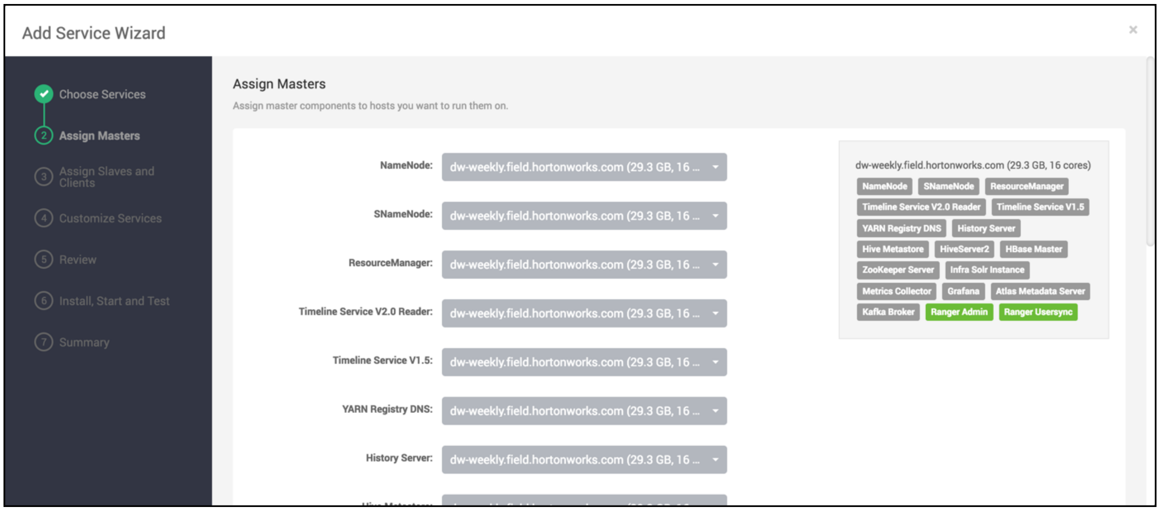
3. On the Choose Services page, select Ranger, then click Next.



☑	Ambari Metrics	0.1.0	A system for metrics collection that provides storage and retrieval capability for metrics collected from the cluster
☑	Atlas	1.0.0	Atlas Metadata and Governance platform
☑	Kafka	1.0.1	A high-throughput distributed messaging system
☑	Knox	1.0.0	Provides a single point of authentication and access for Apache Hadoop services in a cluster
□	Log Search	0.5.0	Log aggregation, analysis, and visualization for Ambari managed services. This service is **Technical Preview**.
☑	Ranger	1.0.0	Comprehensive security for Hadoop
☑	Ranger KMS	1.0.0	Key Management Server
□	SmartSense	1.5.0.2.7.0.0-703	SmartSense - Hortonworks SmartSense Tool (HST) helps quickly gather configuration, metrics, logs from common HDP services that aids to quickly troubleshoot support cases and receive cluster-specific recommendations.
□	Spark2	2.3.1	Apache Spark 2.3 is a fast and general engine for large-scale data processing.
□	Zeppelin Notebook	0.8.0	A web-based notebook that enables interactive data analytics. It enables you to make beautiful data-driven, interactive and collaborative documents with SQL, Scala and more.
□	Druid	0.12.1	A fast column-oriented distributed data store.
□	Superset	0.15.0	Superset is a data exploration platform designed to be visual, intuitive and interactive. This service is **Technical Preview**.

The Ranger Requirements page appears.

4. If you have not already done so, run ambari-server setup --jdbc-db=$database-type --jdbc-driver=$/jdbc/driver/path.
   ambari-server setup --jdbc-db=mysql --jdbc-driver=/usr/share/java/mysql-connector-java.jar
5. You are prompted to Assign Masters. Make a note of the Ranger Admin host for use in subsequent installation steps. Click Next when finished to continue with the installation.



Assign Masters

Assign master components to hosts you want to run them on.

NameNode: dw-weekly.field.hortonworks.com (29.3 GB, 16 ...

SNameNode: dw-weekly.field.hortonworks.com (29.3 GB, 16 ...

ResourceManager: dw-weekly.field.hortonworks.com (29.3 GB, 16 ...

Timeline Service V2.0 Reader: dw-weekly.field.hortonworks.com (29.3 GB, 16 ...

Timeline Service V1.5: dw-weekly.field.hortonworks.com (29.3 GB, 16 ...

YARN Registry DNS: dw-weekly.field.hortonworks.com (29.3 GB, 16 ...

History Server: dw-weekly.field.hortonworks.com (29.3 GB, 16 ...

dw-weekly.field.hortonworks.com (29.3 GB, 16 cores)

The Customize Services page appears. These settings are described in the Ranger Installation: Customize Services section.

6. On the **Assign Slaves and Clients** page, click **Next**.

What to do next

"Customize Services: Admin"

Related Information

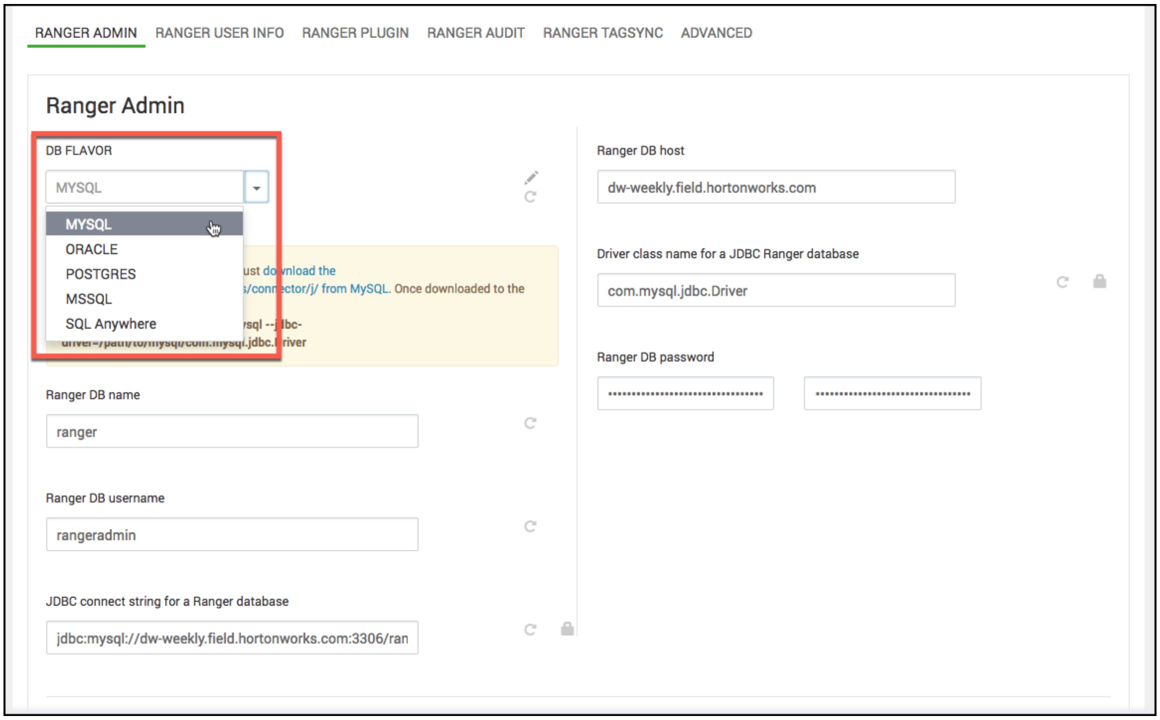
Configuring a Database Instance for Ranger

Customize Services: Admin

How to customize the Ranger Admin service when installing Ranger via Ambari.

Procedure

1. On the Customize Services page, select the Ranger Admin tab, then use the DB Flavor drop-down to select the database type that you are using with Ranger.



DB FLAVOR: MYSQL

Ranger DB host: dw-weekly.field.hortonworks.com

Driver class name for a JDBC Ranger database: com.mysql.jdbc.Driver

Ranger DB password: •••••••••••••••••••••••••••••••• ••••••••••••••••••••••••••••••••

Ranger DB name: ranger

Ranger DB username: rangeradmin

JDBC connect string for a Ranger database: jdbc:mysql://dw-weekly.field.hortonworks.com:3306/ran

2. Enter the database server address in the Ranger DB Host box:

Table 1: Ranger DB Host

DB Flavor	Host	Example
MySQL	<HOST[:PORT]>	c6401.ambari.apache.org or c6401.ambari.apache.org:3306
Oracle	<HOST:PORT:SID>	c6401.ambari.apache.org:1521:ORCL
	<HOST:PORT/Service>	c6401.ambari.apache.org:1521/XE
PostgreSQL	<HOST[:PORT]>	c6401.ambari.apache.org or c6401.ambari.apache.org:5432
MS SQL	<HOST[:PORT]>	c6401.ambari.apache.org or c6401.ambari.apache.org:1433
SQLA	<HOST[:PORT]>	c6401.ambari.apache.org or c6401.ambari.apache.org:2638

3. Ranger DB name -- The name of the Ranger Policy database, e.g. ranger_db or ranger. Please note that if you are using Oracle, you must specify the Oracle tablespace name here.
4. Driver class name for a JDBC Ranger database -- the driver class name is automatically generated based on the selected DB Flavor. The table below lists the default driver class settings. Currently Ranger does not support any third party JDBC driver.

Table 2: Driver Class Name

DB Flavor	Driver class name for a JDBC Ranger database
MySQL	com.mysql.jdbc.Driver
Oracle	oracle.jdbc.driver.OracleDriver
PostgreSQL	org.postgresql.Driver
MS SQL	com.microsoft.sqlserver.jdbc.SQLServerDriver
SQLA	sap.jdbc4.sqlanywhere.IDriver

5. Ranger DB username and Ranger DB Password -- Enter the user name and passwords for your Ranger database server. The following table describes these settings in more detail. You can use the MySQL database that was installed with Ambari, or an external MySQL, Oracle, PostgreSQL, MS SQL or SQL Anywhere database.

Table 3: Ranger DB Username Settings

Property	Description	Default Value	Example Value	Required?
Ranger DB username	The username for the Policy database.	rangeradmin	rangeradmin	Yes
Ranger DB password	The password for the Ranger Policy database user.		PassWORd!	Yes

6. JDBC connect string

Note:

Currently the Ambari installer generates the JDBC connect string using the jdbc:oracle:thin:@//host:port/db_name format. You must replace the connection string as described in the following table:

Table 4: JDBC Connect String

DB Flavor	Syntax	Example Value
MySQL	jdbc:mysql://DB_HOST:PORT/db_name	jdbc:mysql://c6401.ambari.apache.org:3306/ranger_db
Oracle	For Oracle SID: jdbc:oracle:thin:@DB_HOST:PORT:SID	jdbc:oracle:thin:@c6401.ambari.apache.org:1521:ORCL
	For Oracle Service Name: jdbc:oracle:thin:@//DB_HOST[:PORT][/ServiceName]	jdbc:oracle:thin:@//c6401.ambari.apache.org:1521/XE
PostgreSQL	jdbc:postgresql://DB_HOST/db_name	jdbc:postgresql://c6401.ambari.apache.org:5432/ranger_db
MS SQL	jdbc:sqlserver://DB_HOST;databaseName=db_name	jdbc:sqlserver://c6401.ambari.apache.org:1433;databaseName=ranger_db
SQLA	jdbc:sqlanywhere:host=DB_HOST;database=db_name	jdbc:sqlanywhere:host=c6401.ambari.apache.org:2638;database=

7. Setup Database and Database User:

Option	
Yes	If set to Yes -- The Database Administrator (DBA) user name and password will need to be provided as described in the next step. **Note:**

Option	
	Ranger does not store the DBA user name and password after setup. Therefore, you can clear these values in the Ambari UI after the Ranger setup is complete.
No	If set to No -- A No indicates that you do not wish to provide Database Administrator (DBA) account details to the Ambari Ranger installer. Setting this to No continues the Ranger installation process without providing DBA account details. In this case, you must perform the system database user setup as described in “Set up Database Users Without Sharing DBA Credentials”, and then proceed with the installation. **Note:** If No is selected and the UI still requires you to enter a user name and password in order to proceed, you can enter any value -- the values do not need to be the actual DBA user name and password.

8. Database Administrator (DBA) username and Database Administrator (DBA) password -- The DBA username and password are set when the database server is installed. If you do not have this information, contact the database administrator who installed the database server.

Table 5: DBA Credential Settings

Property	Description	Default Value	Example Value	Required?
Database Administrator (DBA) username	The Ranger database user that has administrative privileges to create database schemas and users.	root	root	Yes
Database Administrator (DBA) password	The root password for the Ranger database user.		root	Yes

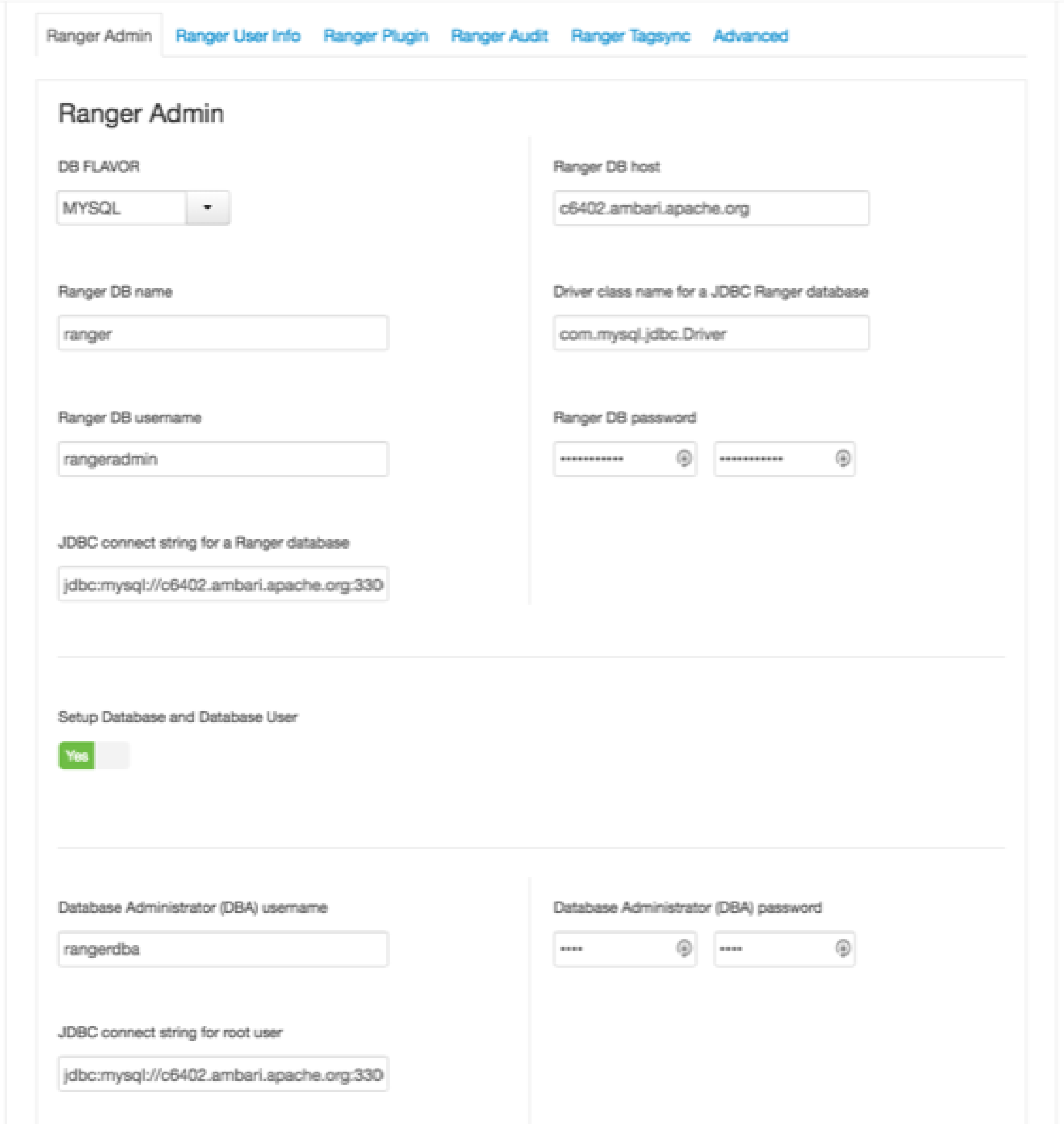
If the Oracle DB root user Role is SYSDBA, you must also specify that in the Database Administrator (DBA) username parameter. For example, if the DBA user name is orcl_root you must specify orcl_root AS SYSDBA.

Note:

As mentioned in the note in the previous step, if Setup Database and Database User is set to No, a placeholder DBA username and password may still be required in order to continue with the Ranger installation.

The following images show examples of the DB settings for each Ranger database type.

MySQL



Ranger Admin

DB FLAVOR: MYSQL

Ranger DB host: c6402.ambari.apache.org

Ranger DB name: ranger

Driver class name for a JDBC Ranger database: com.mysql.jdbc.Driver

Ranger DB username: rangeradmin

Ranger DB password: ************ ************

JDBC connect string for a Ranger database: jdbc:mysql://c6402.ambari.apache.org:330

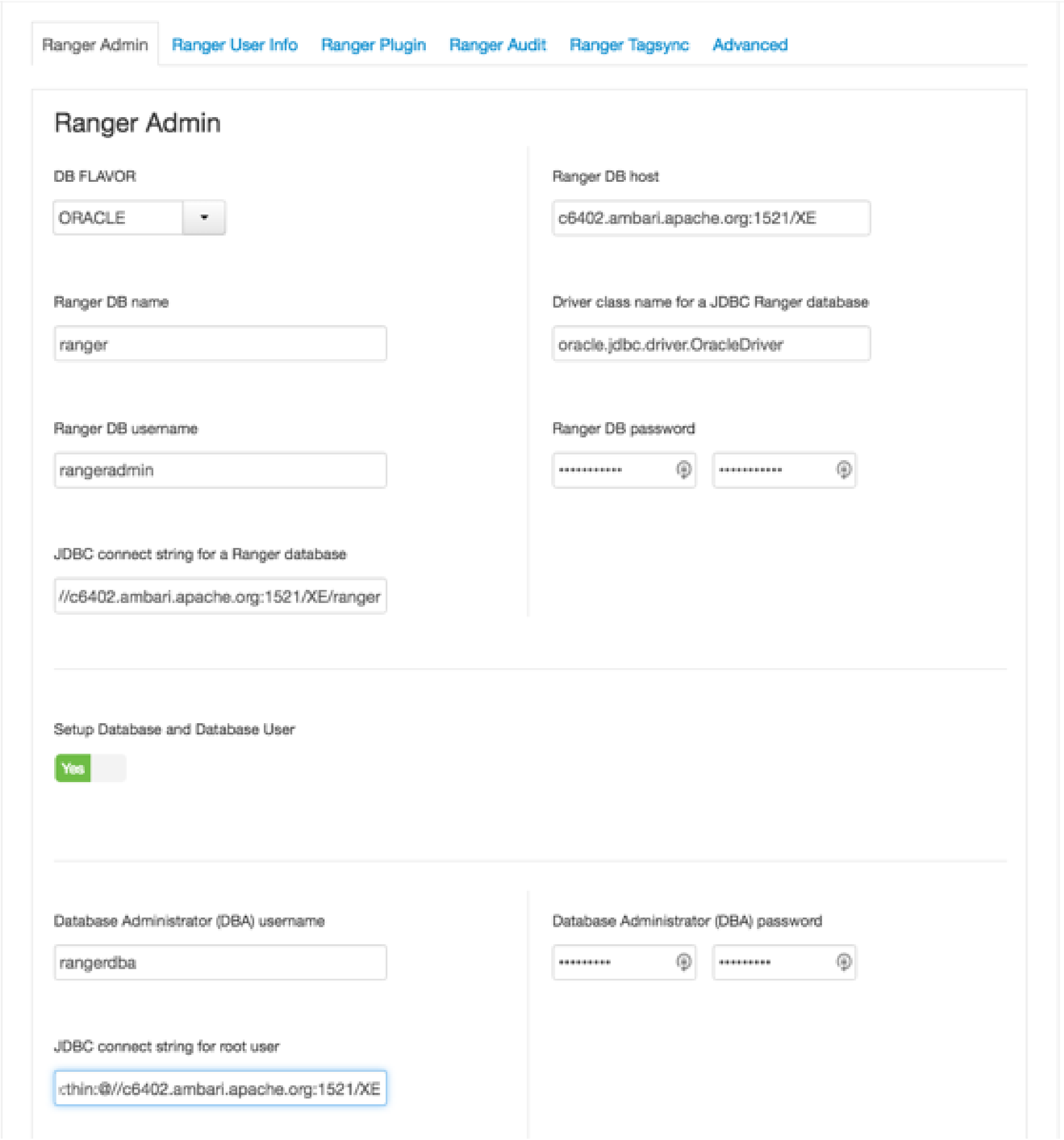
Setup Database and Database User: Yes

Database Administrator (DBA) username: rangerdba

Database Administrator (DBA) password: **** ****

JDBC connect string for root user: jdbc:mysql://c6402.ambari.apache.org:330

Oracle -- if the Oracle instance is running with a Service name.



Ranger Admin

DB FLAVOR: ORACLE

Ranger DB host: c6402.ambari.apache.org:1521/XE

Ranger DB name: ranger

Driver class name for a JDBC Ranger database: oracle.jdbc.driver.OracleDriver

Ranger DB username: rangeradmin

Ranger DB password: ············ ············

JDBC connect string for a Ranger database: //c6402.ambari.apache.org:1521/XE/ranger

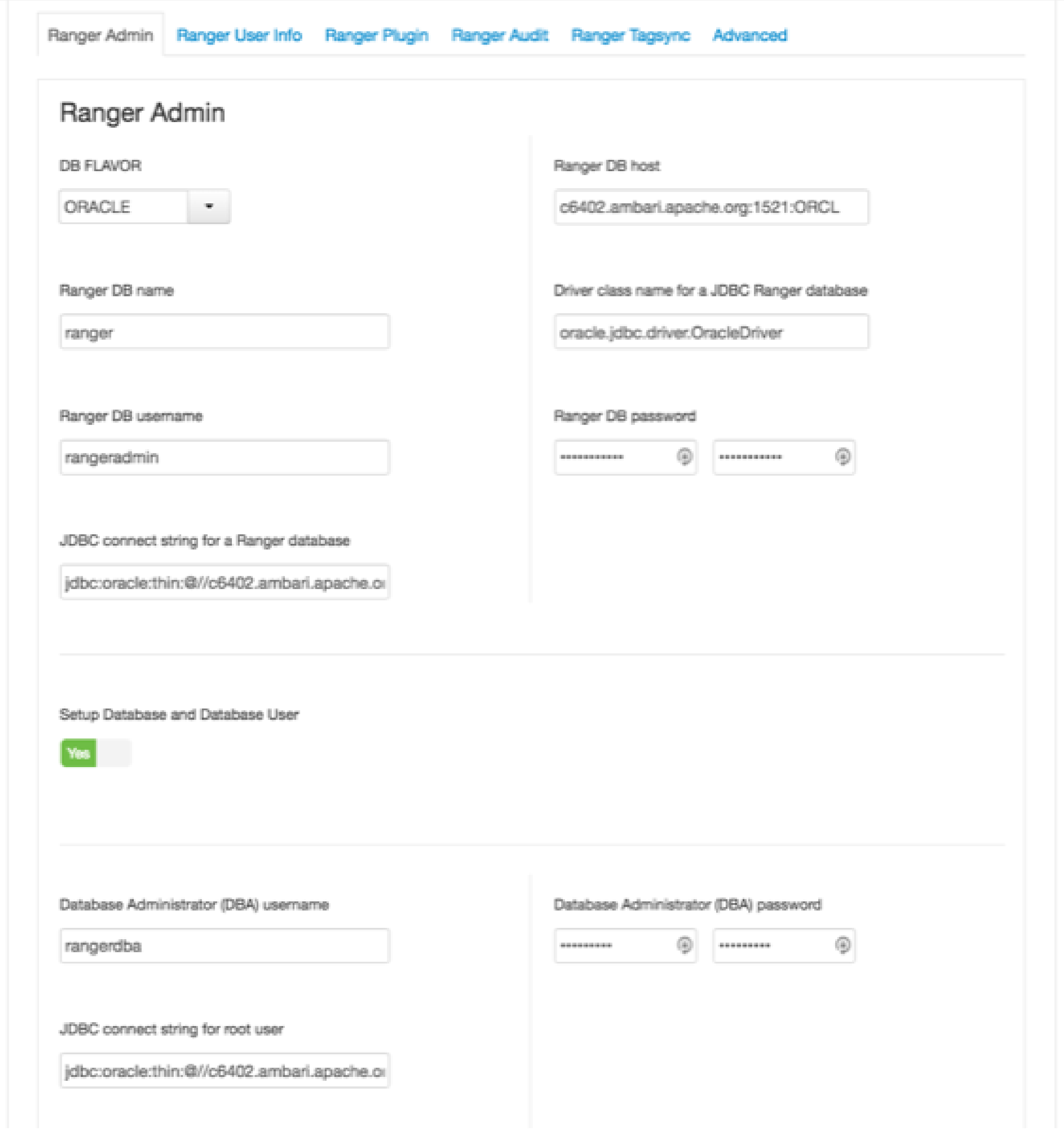
Setup Database and Database User: Yes

Database Administrator (DBA) username: rangerdba

Database Administrator (DBA) password: ·········· ··········

JDBC connect string for root user: :thin:@//c6402.ambari.apache.org:1521/XE

Oracle -- if the Oracle instance is running with a SID.



Ranger Admin

DB FLAVOR: ORACLE

Ranger DB host: c6402.ambari.apache.org:1521:ORCL

Ranger DB name: ranger

Driver class name for a JDBC Ranger database: oracle.jdbc.driver.OracleDriver

Ranger DB username: rangeradmin

Ranger DB password: ************ ************

JDBC connect string for a Ranger database: jdbc:oracle:thin:@//c6402.ambari.apache.o

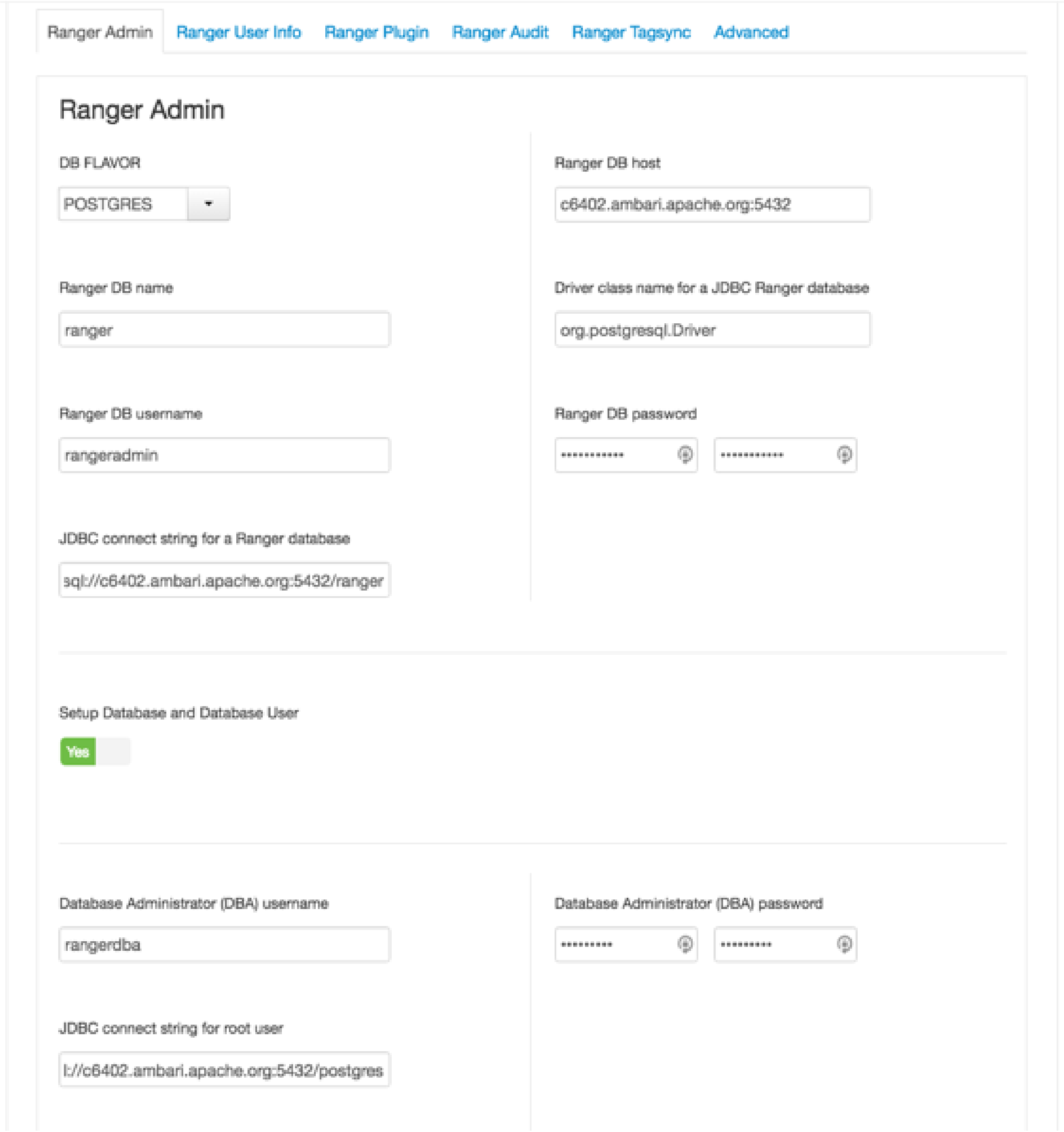
Setup Database and Database User: Yes

Database Administrator (DBA) username: rangerdba

Database Administrator (DBA) password: ********** **********

JDBC connect string for root user: jdbc:oracle:thin:@//c6402.ambari.apache.o

PostgreSQL



Ranger Admin

DB FLAVOR: POSTGRES

Ranger DB host: c6402.ambari.apache.org:5432

Ranger DB name: ranger

Driver class name for a JDBC Ranger database: org.postgresql.Driver

Ranger DB username: rangeradmin

Ranger DB password: •••••••••••• ••••••••••••

JDBC connect string for a Ranger database: sql://c6402.ambari.apache.org:5432/ranger

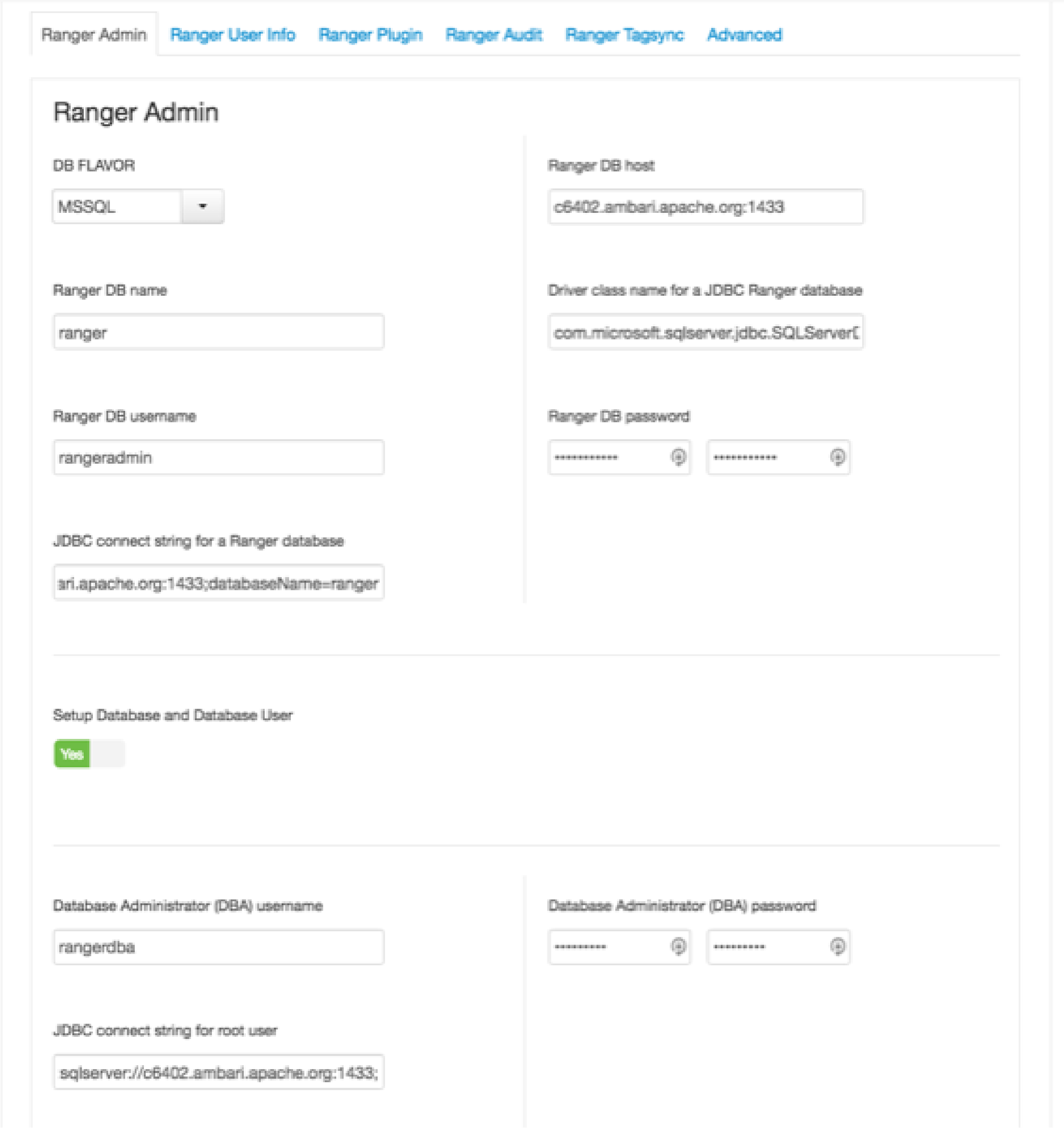
Setup Database and Database User: Yes

Database Administrator (DBA) username: rangerdba

Database Administrator (DBA) password: ••••••••• •••••••••

JDBC connect string for root user: l://c6402.ambari.apache.org:5432/postgres

MS SQL



Ranger Admin

DB FLAVOR: MSSQL

Ranger DB host: c6402.ambari.apache.org:1433

Ranger DB name: ranger

Driver class name for a JDBC Ranger database: com.microsoft.sqlserver.jdbc.SQLServerD

Ranger DB username: rangeradmin

Ranger DB password: ************ ************

JDBC connect string for a Ranger database: ari.apache.org:1433;databaseName=ranger

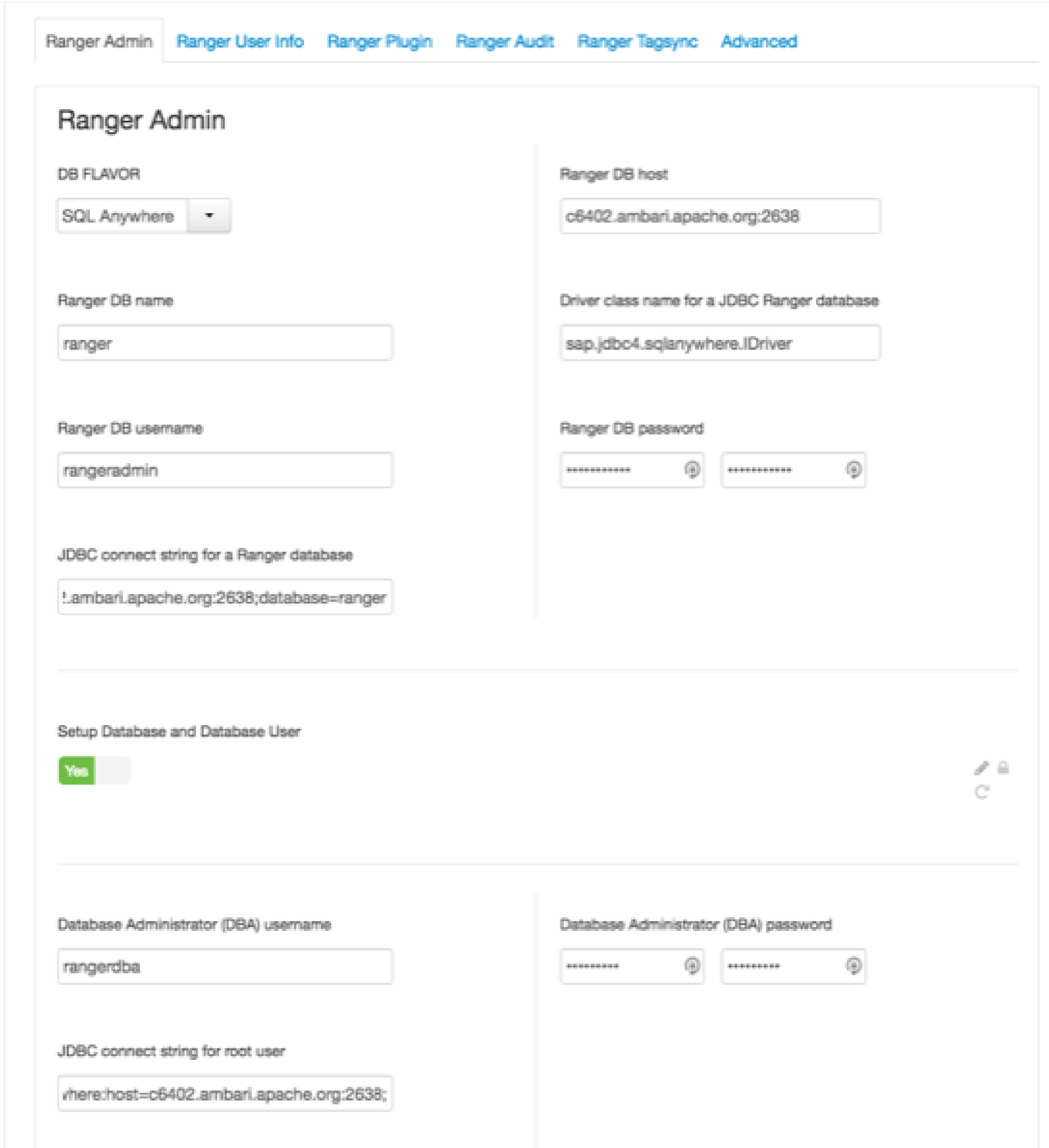
Setup Database and Database User: Yes

Database Administrator (DBA) username: rangerdba

Database Administrator (DBA) password: ********** **********

JDBC connect string for root user: sqlserver://c6402.ambari.apache.org:1433;

SQL Anywhere



Ranger Admin

DB FLAVOR: SQL Anywhere

Ranger DB host: c6402.ambari.apache.org:2638

Ranger DB name: ranger

Driver class name for a JDBC Ranger database: sap.jdbc4.sqlanywhere.IDriver

Ranger DB username: rangeradmin

Ranger DB password: ••••••••••• •••••••••••

JDBC connect string for a Ranger database: !.ambari.apache.org:2638;database=ranger

Setup Database and Database User: Yes

Database Administrator (DBA) username: rangerdba

Database Administrator (DBA) password: ••••••••• •••••••••

JDBC connect string for root user: vhere:host=c6402.ambari.apache.org:2638;

9. To test the DB settings, click Test Connection. If a Ranger database has not been pre-installed, Test Connection will fail even for a valid configuration.

What to do next

"Customize Services: Audit"

Related Information

Set up Database Users Without Sharing DBA Credentials

Customize Services: Audit

How to customize the Ranger Audit service when installing Ranger via Ambari.

About this task

Apache Ranger uses Apache Solr to store audit logs and provides UI searching through the audit logs. Solr must be installed and configured before installing Ranger Admin or any of the Ranger component plugins. The default configuration for Ranger Audits to Solr uses the shared Solr instance provided under the Ambari Infra service. Solr is both memory and CPU intensive. If your production system has high volume of access requests, make sure that the Solr host has adequate memory, CPU, and disk space.

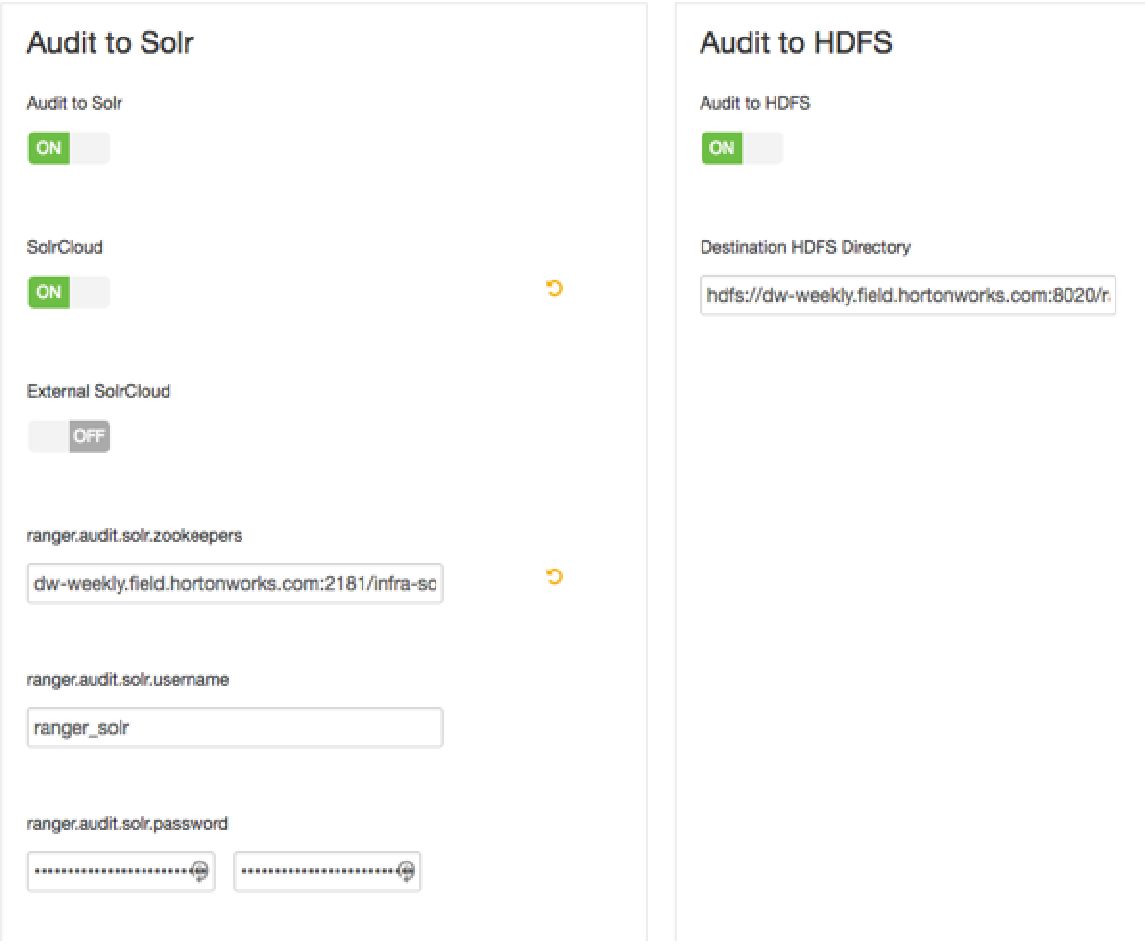
SolrCloud is the preferred setup for production usage of Ranger. SolrCloud, which is deployed with the Ambari Infra service, is a scalable architecture that can run as a single node or multi-node cluster. It has additional features such as replication and sharding, which is useful for high availability (HA) and scalability. You should plan your deployment based on your cluster size. Because audit records can grow dramatically, plan to have at least 1 TB of free space in the volume on which Solr will store the index data. Solr works well with a minimum of 32 GB of RAM. You should provide as much memory as possible to the Solr process. It is highly recommended to use SolrCloud with at least two Solr nodes running on different servers with replication (CCDR) enabled. SolrCloud also requires Apache ZooKeeper.

It is recommended that you store audits in both HDFS and Solr. The default configuration for Ranger Audits to Solr uses the shared Solr instance provided under the Ambari Infra service. For more information about Audits to Solr, see and Using Apache Solr for Ranger Audits.

Procedure

1. On the Customize Services page, select the Ranger Audit tab.

   It is recommended that you store audits in Solr and HDFS. Both of these options are set to ON by default. Solr provides the capability to index and search on the most recent logs while HDFS is used as the more permanent or longer term store. By default, Solr is used to index the preceding 30 days of audit logs.
2. Under Audit to Solr, turn ON SolrCloud.
   The SolrCloud configuration settings will be loaded automatically.



Audit to Solr

Audit to Solr

ON

SolrCloud

ON

External SolrCloud

OFF

ranger.audit.solr.zookeepers

dw-weekly.field.hortonworks.com:2181/infra-sc

ranger.audit.solr.username

ranger_solr

ranger.audit.solr.password

Audit to HDFS

Audit to HDFS

ON

Destination HDFS Directory

hdfs://dw-weekly.field.hortonworks.com:8020/r

What to do next

"Customize Services: Plugins"

Related Information

Using Ambari Core Services>Ambari Infra

SolrCloud

Cross Data Center Replication (CDCR)

Customize Services: Plugins

How to enable Ranger Plugins when installing Ranger via Ambari.

About this task

If you are using a Kerberos-enabled cluster, there are a number of additional steps you must follow to ensure that you can use the Ranger plugins on a Kerberos cluster.

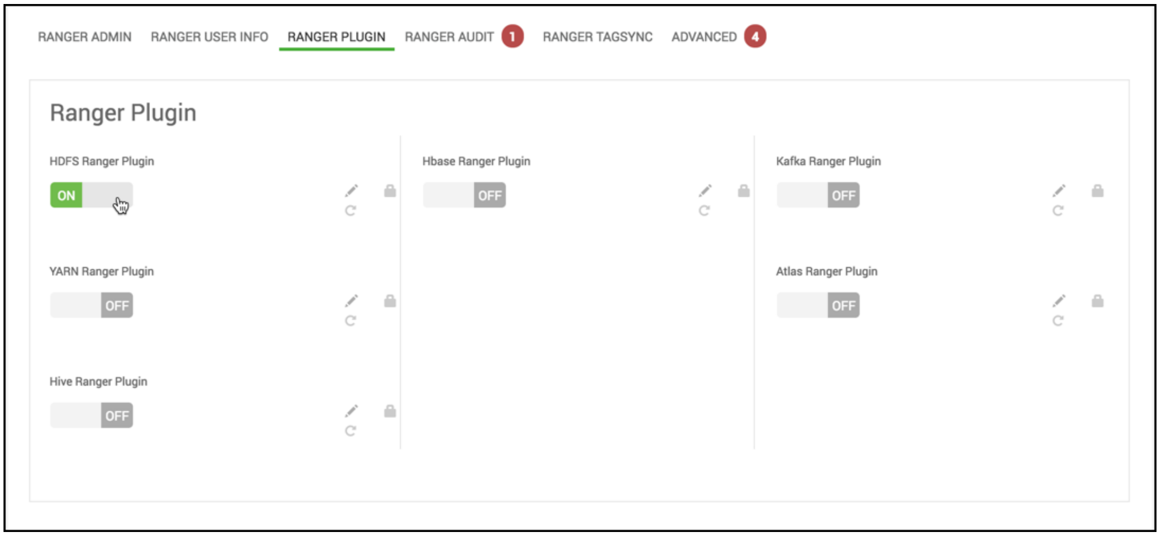
The following Ranger plugins are available:

- HDFS
- Hive
- HBase
- Kafka

- Knox
- YARN
- Storm
- Atlas
- Solr

Procedure

1. From the **Ranger Plugin** tab, turn **On** the plugins you want.

   For every plugin you enable, you will have to restart the associated component. E.G., if you enable the HDFS Ranger plugin, you will have to restart HDFS.
2. Click **Next**.

What to do next

"Customize Services: User Sync"

Customize Services: User Sync

How to customize Ranger User Sync for either UNIX or LDAP/AD when installing Ranger via Ambari.

About this task

You can customize User Sync for either Unix or LDAP/AD.

Before you begin

Test Run User Sync

Before committing to usersync changes, it is recommended that you test-run that users and groups are being retrieved as intended.

To test-run loading User and Group data into Ranger before committing to the changes:

1. Set ranger.usersync.policymanager.mockrun=true. This parameter can be found in Ambari> Ranger> Configs> Advanced> Advanced ranger-ugsync-site.
2. View the Users and Groups that will be loaded into Ranger: tail -f /var/log/ranger/usersync/usersync.log.
3. After confirming that the users and groups are retrieved as intended, set ranger.usersync.policymanager.mockrun=false and restart Ranger Usersync.

This will sync the users shown in the usersync log to the Ranger database.

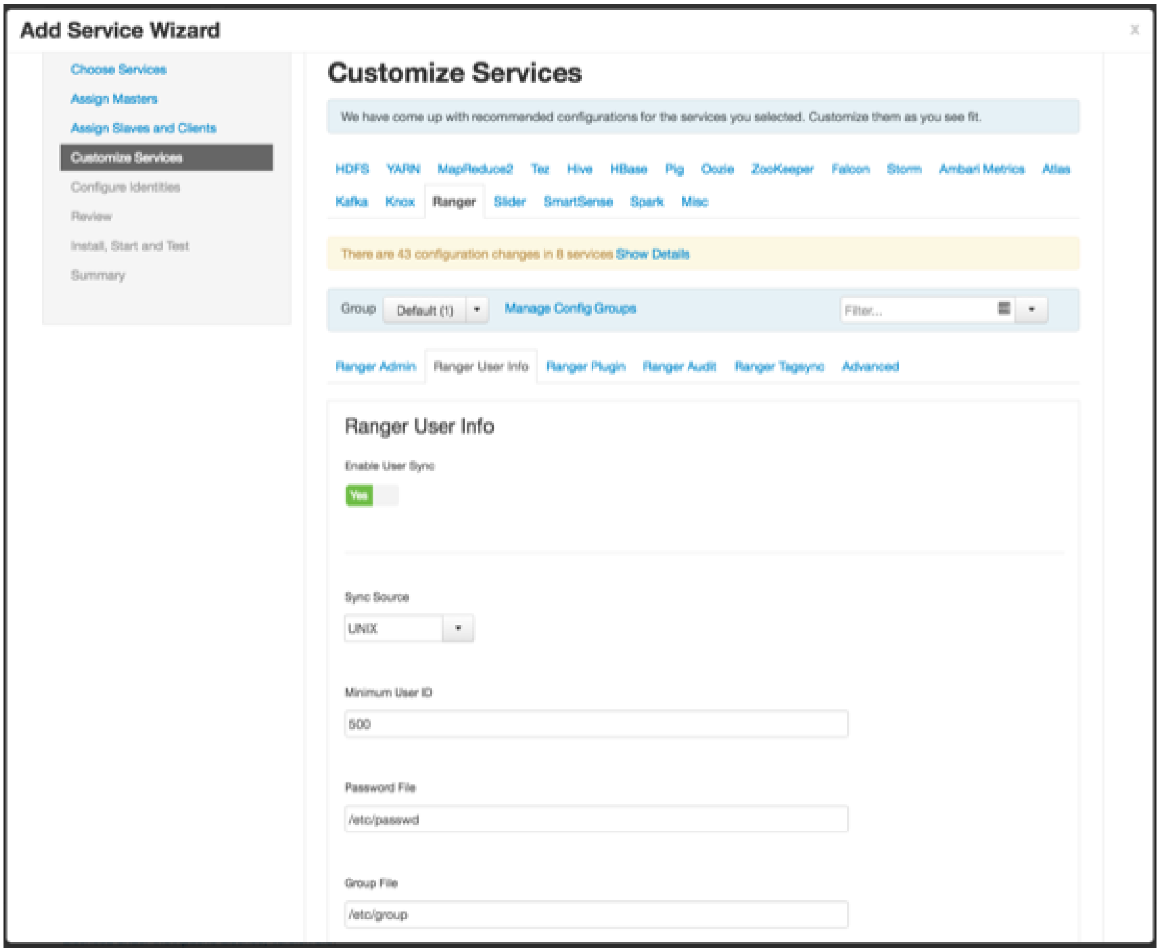
Procedure

- Customize User Sync for UNIX:

a) On the Customize Services page, select the Ranger User Info tab.
b) Click Yes under Enable User Sync.
c) Use the Sync Source drop-down to select UNIX, then set the following properties.

Table 6: UNIX User Sync Properties

Property	Description	Default Value
Sync Source	Only sync users above this user ID.	500
Password File	The location of the password file on the Linux server.	/etc/passwd
Group File	The location of the groups file on the Linux server.	/etc/group



Customize Services

We have come up with recommended configurations for the services you selected. Customize them as you see fit.

There are 43 configuration changes in 8 services Show Details

Ranger User Info

Enable User Sync: Yes

Sync Source: UNIX

Minimum User ID: 500

Password File: /etc/passwd

Group File: /etc/group

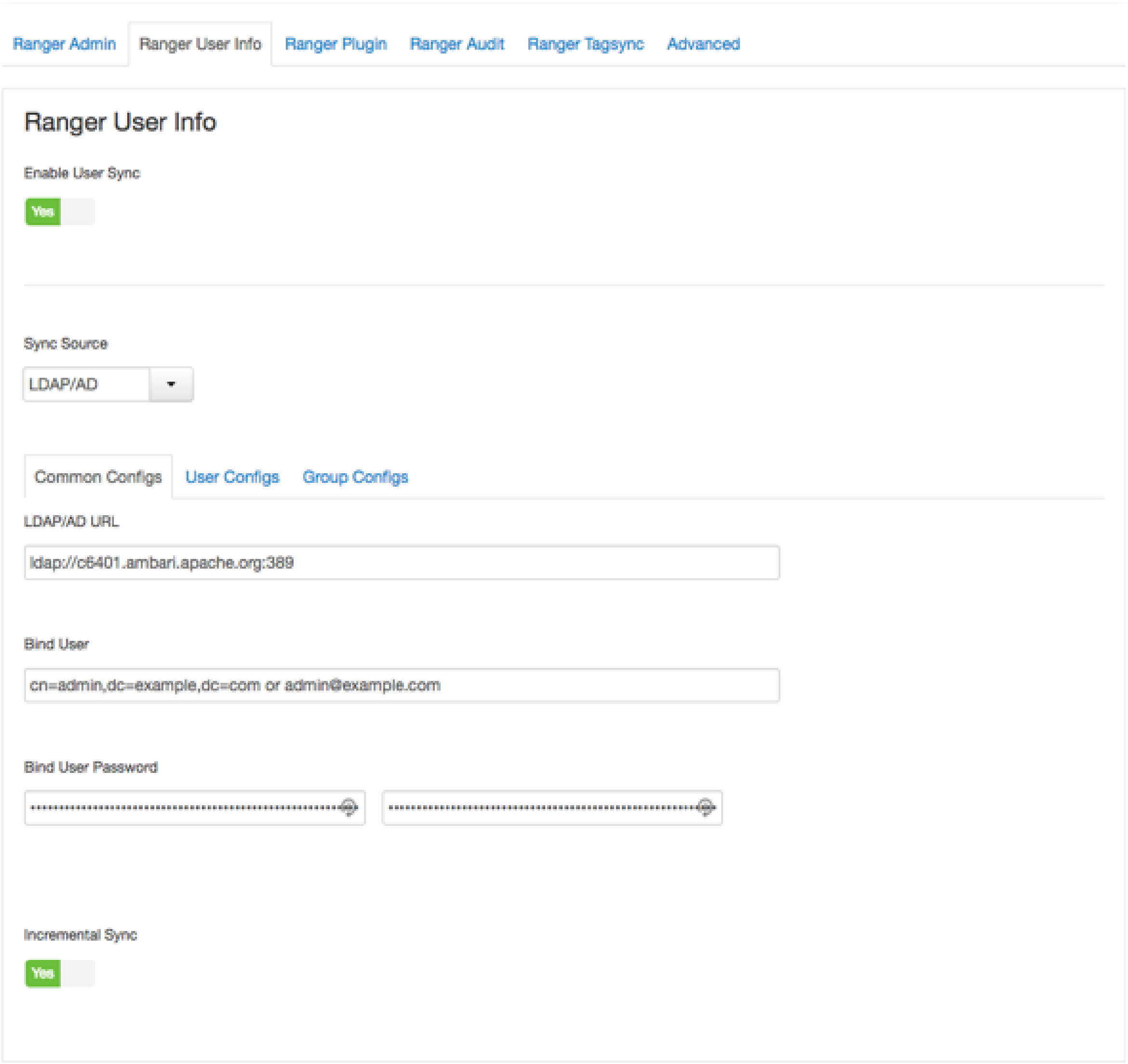
d) Permission to /etc/shadow must be set to 444.

- Customize User Sync for LDAP/AD:

a) On the Customize Services page, select the Ranger User Info tab.
b) Click Yes under Enable User Sync.
c) Use the Sync Source drop-down to select LDAP/AD.
d) Set the following properties on the Common Configs tab.

Table 7: LDAP/AD Common Configs

Property	**Description**	**Default Value**	**Sample Values**
LDAP/AD URL	Add URL depending upon LDAP/AD sync source	ldap://{host}:{port}	ldap://ldap.example.com:389 or ldaps://ldap.example.com:636
Bind Anonymous	If Yes is selected, the Bind User and Bind User Password are not required.	NO	
Bind User	The location of the groups file on the Linux server.	The full distinguished name (DN), including common name (CN), of an LDAP/AD user account that has privileges to search for users. The LDAP bind DN is used to connect to LDAP and query for users and groups.	cn=admin,dc=example,dc=com or admin@example.com
Bind User Password	The password of the Bind User.		
Incremental Sync	If Yes is selected, Ranger Usersync saves the latest timestamp of all the objects that are synced previously and uses that timestamp to perform the next sync. Usersync then uses a polling mechanism to perform incremental sync by using LDAP attributes uSNChanged (for AD) or modifytimestamp (for LDAP). Enabling Incremental Sync for the first time will initiate a full sync; subsequent sync operations will be incremental. When Incremental Sync is enabled, Group Sync (under the Group Configs tab) is mandatory. Recommended for large deployments.	For upgrade installations: No For new installations: Yes	Yes



Ranger User Info

Enable User Sync: Yes

Sync Source: LDAP/AD

LDAP/AD URL: ldap://c6401.ambari.apache.org:389

Bind User: cn=admin,dc=example,dc=com or admin@example.com

Bind User Password: ••• •••

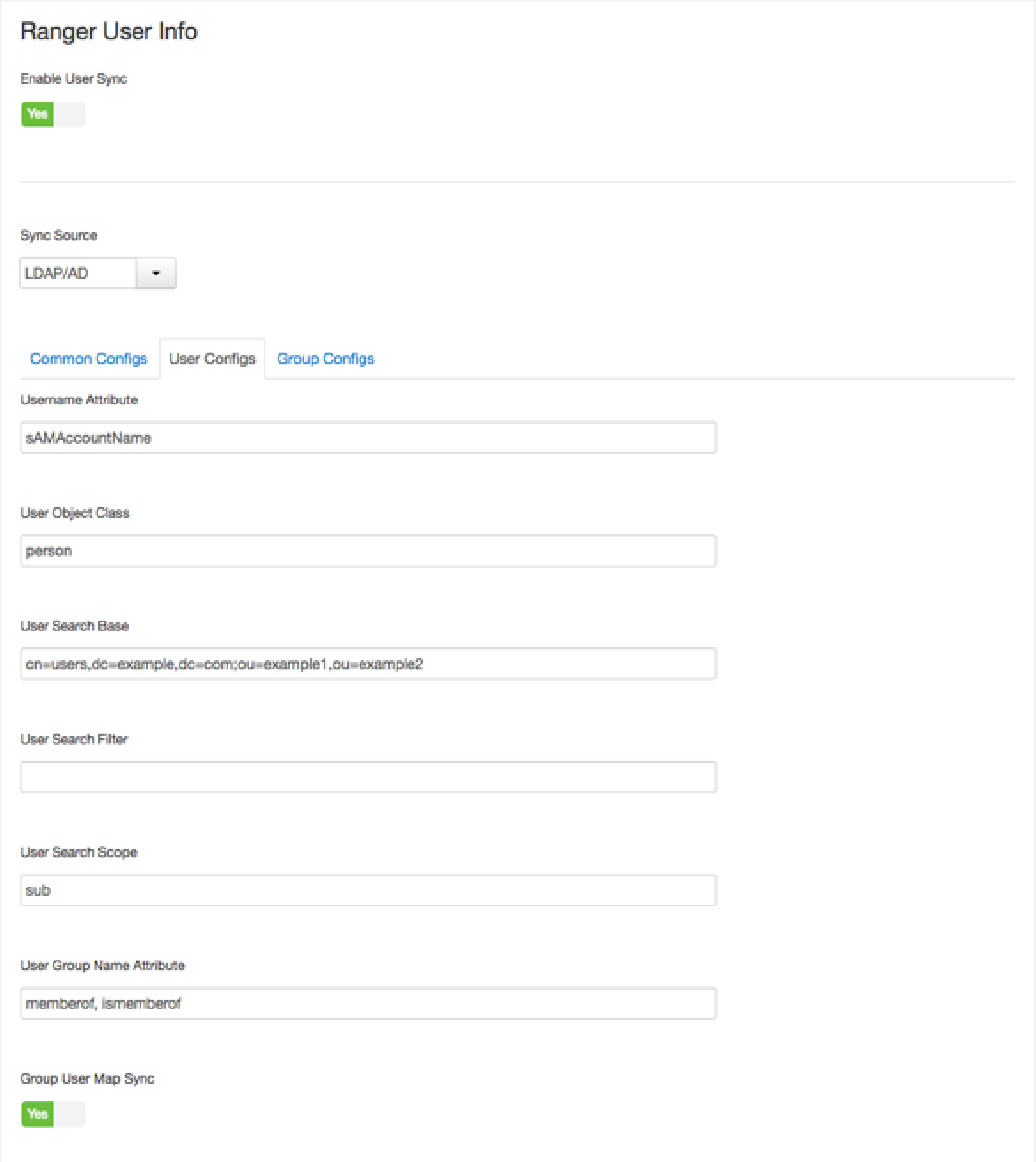
Incremental Sync: Yes

e) Set the following properties on the User Configs tab.

Table 8: LDAP/AD User Configs

Property	**Description**	**Default Value**	**Sample Values**
Group User Map Sync	Sync specific groups for users.	Yes	Yes
Username Attribute	The LDAP user name attribute.		sAMAccountName for AD, uid or cn for OpenLDAP
User Object Class	Object class to identify user entries.	person	top, person, organizationalPerson, user, or posixAccount

Property	Description	Default Value	Sample Values
User Search Base	Search base for users. Ranger can search multiple OUs in AD. Ranger UserSync module performs a user search on each configured OU and adds all the users into single list. Once all the OUs are processed, a user’s group membership is computed based on the group search.		cn=users,dc=example,dc=com;ou=example1,ou=ex
User Search Filter	Optional additional filter constraining the users selected for syncing.		Sample filter to retrieve all the users: cn=* Sample filter to retrieve all the users who are members of groupA or groupB: (| (memberof=CN=GroupA,OU=groups,DC=example (memberof=CN=GroupB,OU=groups,DC=example
User Search Scope	This value is used to limit user search to the depth from search base.	sub	base, one, or sub
User Group Name Attribute	Attribute from user entry whose values would be treated as group values to be pushed into the Access Manager database. You can provide multiple attribute names separated by commas.	memberof,ismemberof	memberof, ismemberof, or gidNumber
Enable User Search	This option is available only when the "Enable Group Search First" option is selected.	No	Yes



Ranger User Info

Enable User Sync

Yes

Sync Source

LDAP/AD

Username Attribute

sAMAccountName

User Object Class

person

User Search Base

cn=users,dc=example,dc=com;ou=example1,ou=example2

User Search Filter

User Search Scope

sub

User Group Name Attribute

memberof, ismemberof

Group User Map Sync

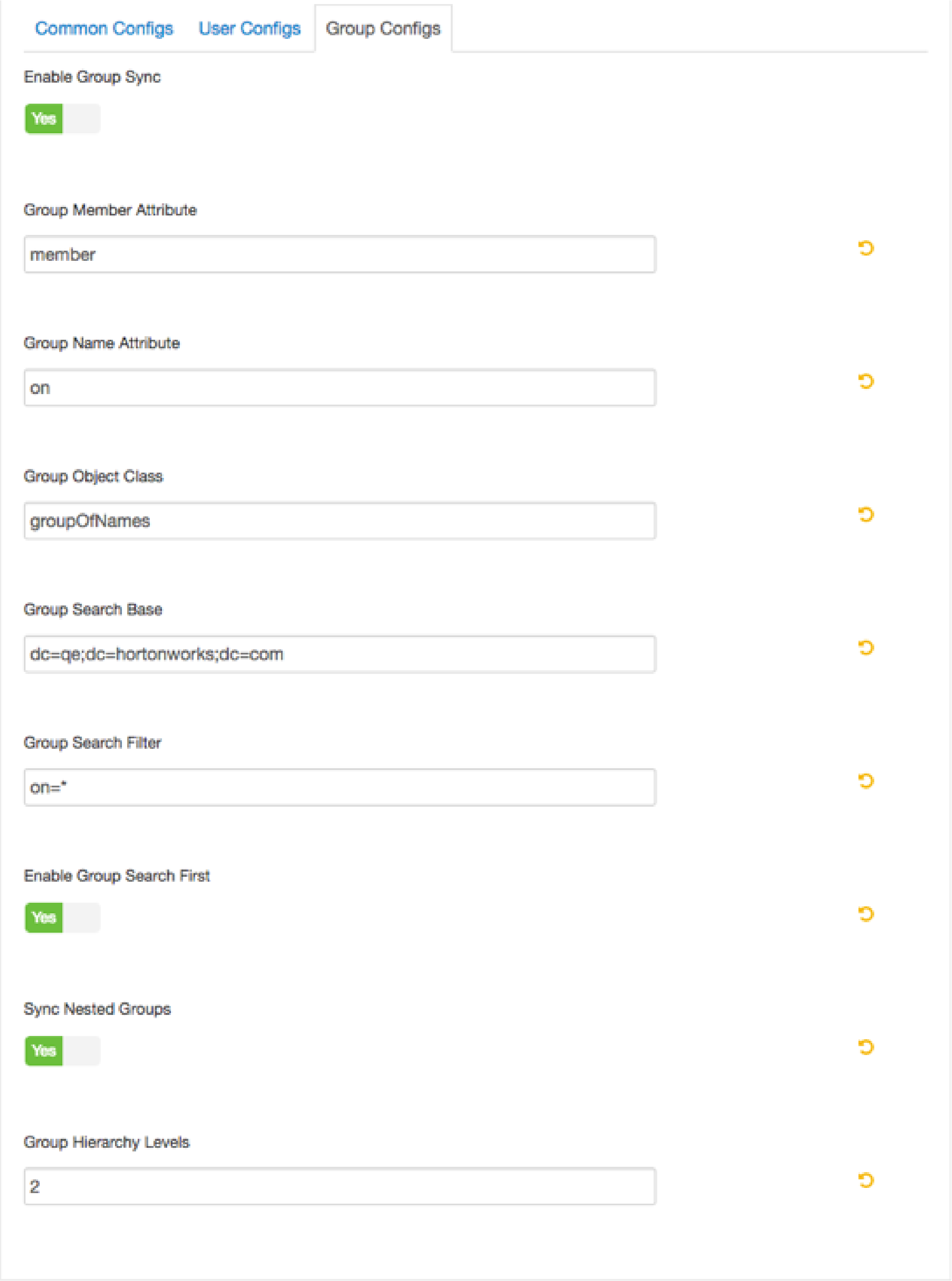
Yes

f) Set the following properties on the Group Configs tab.

Table 9: LDAP/AD Group Configs

Property	**Description**	**Default Value**	**Sample Values**
Enable Group Sync	If Enable Group Sync is set to No, the group names the users belong to are derived from “User Group Name Attribute”. In this case no additional group filters are applied. If Enable Group Sync is set to Yes, the groups the users belong to are retrieved from LDAP/ AD using the following group-related attributes. Enabled by default if "Incremental Sync" is enabled under the Common Configs tab.	No	Yes
Group Member Attribute	The LDAP group member attribute name.		member
Group Name Attribute	The LDAP group name attribute.		distinguishedName for AD, cn for OpenLdap
Group Object Class	LDAP Group object class.		group, groupofnames, or posixGroup
Group Search Base	Search base for groups. Ranger can search multiple OUs in AD. Ranger UserSync module performs a user search on each configured OU and adds all the users into single list. Once all the OUs are processed, a user’s group membership is computed based on the group search configuration. Each OU segment needs to be separated by a ; (semi-colon).		ou=groups,DC=example,DC=com;ou=group1;ou=g
Group Search Filter	Optional additional filter constraining the groups selected for syncing.		Sample filter to retrieve all groups: cn=* Sample filter to retrieve only the groups whose cn is Engineering or Sales: (|(cn=Engineering)(cn=Sales))
Enable Group Search First	When **Enable Group Search First** is selected, there are two possible ways of retrieving users: • If **Enable User Search** is not selected: users are retrieved from the “member” attribute of the group. • If **Enable User Search** is selected: user membership is computed by performing an LDAP search based on the user configuration.	No	Yes

Property	Description	Default Value	Sample Values
state: anchor=nested_ldapad_syncSync Nested Groups	Enables nested group memberships in Ranger so that the policies configured for parent groups are applied for all the members in the subgroups. If a group itself is a member of another group, the users belonging to the member group are part of the parent group as well. **Group Hierarchy Levels** determines evaluated nested group depth. If you do not see the Sync Nested Groups flag, upgrade to Ambari 2.6.0+.	No	Yes, No
Group Hierarchy Levels	Determines how many nested groups to evaluate in support of **Sync Nested Groups**. If Group Hierarchy Levels is greyed out, enable **Sync Nested Groups**. Set to any integer >0.	0	2



Enable Group Sync

Yes

Group Member Attribute

member

Group Name Attribute

cn

Group Object Class

groupOfNames

Group Search Base

dc=qe;dc=hortonworks;dc=com

Group Search Filter

cn=*

Enable Group Search First

Yes

Sync Nested Groups

Yes

Group Hierarchy Levels

2

What to do next

"Customize Services: Tagsync"

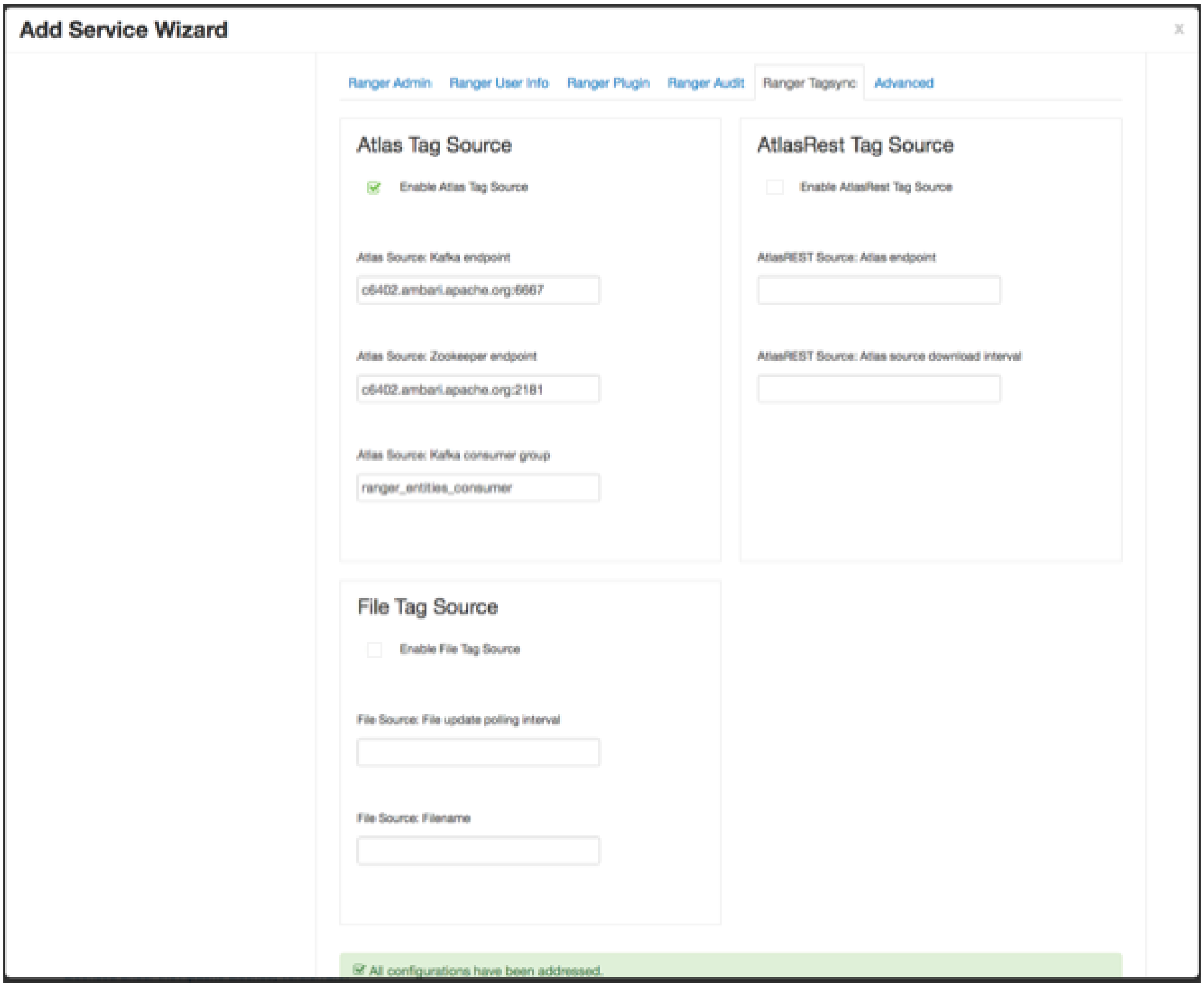
Related Information

Set Up Hadoop Group Mapping for LDAP/AD

Customize Services: Tagsync

How to customize the Ranger Tagsync service when installing Ranger via Ambari.

About this task



Add Service Wizard

Ranger Admin | Ranger User Info | Ranger Plugin | Ranger Audit | Ranger Tagsync | Advanced

Atlas Tag Source

☑ Enable Atlas Tag Source

Atlas Source: Kafka endpoint: c6402.ambari.apache.org:6667

Atlas Source: Zookeeper endpoint: c6402.ambari.apache.org:2181

Atlas Source: Kafka consumer group: ranger_entities_consumer

AtlasRest Tag Source

□ Enable AtlasRest Tag Source

AtlasREST Source: Atlas endpoint:

AtlasREST Source: Atlas source download interval:

File Tag Source

□ Enable File Tag Source

File Source: File update polling interval:

File Source: Filename:

☑ All configurations have been addressed.

Procedure

1. To configure Ranger Tagsync, select Ranger Tagsync on the Customize Services page, then specify a Tagsync source.

   It is recommended that you only configure Atlas Tag Source. Configuring File Tag Source or Atlas REST Tag Source is generally not required, and should only be attempted by advanced users.
2. Configure Atlas Tag Source Properties:

   Table 10: Atlas Tag Source Properties

Property	Description
Atlas Source: Kafka endpoint	The Kafka endpoint: <kafka_server_url>:6667
Atlas Source: ZooKeeper endpoint	The ZooKeeper endpoint: <zookeeper_server_url>:2181

Property	Description
Atlas Source: Kafka consumer group	The Ranger entities consumer.

What to do next

"Customize Services: Authentication"

Customize Services: Authentication

This section describes how to configure Ranger authentication for UNIX, LDAP, and AD.

Customize Authentication: UNIX

How to customize the Ranger UNIX Authentication service when installing Ranger via Ambari.

Procedure

1. Select the Advanced tab on the Customize Services page.
2. Under Ranger Settings, specify the Ranger Access Manager/Service Manager host address in the External URL box in the format http://<your_ranger_host>:6080.
3. Under Ranger Settings, select UNIX.

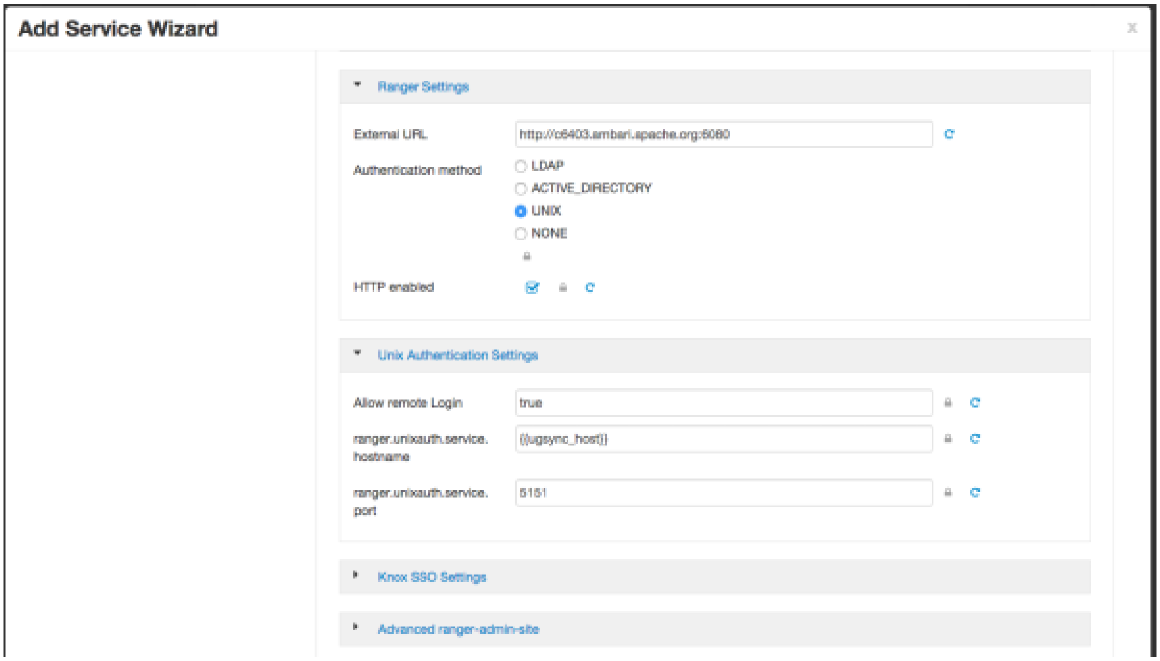
   HTTP is enabled by default -- if you disable HTTP, only HTTPS is allowed.
4. Under UNIX Authentication Settings, set the following properties.

Table 11: UNIX Authentication Settings

Property	Description	Default Value	Example Value
Allow remote Login	Flag to enable/disable remote login. Only applies to UNIX authentication.	true	true
ranger.unixauth.service.hostname	The address of the host where the UNIX authentication service is running.	{{ugsync_host}}	{{ugsync_host}}
ranger.unixauth.service.port	The port number on which the UNIX authentication service is running.	5151	5151

Note:

Properties with value {{xyz}} are macro variables that are derived from other specified values in order to streamline the configuration process. Macro variables can be edited if required -- if you need to restore the original value, click the Set Recommended symbol at the right of the property box.



Add Service Wizard

Ranger Settings

External URL: http://c6403.ambari.apache.org:6080

Authentication method:
○ LDAP
○ ACTIVE_DIRECTORY
● UNIX
○ NONE

HTTP enabled: ☑

Unix Authentication Settings

Allow remote Login: true

ranger.unixauth.service.hostname: {{ugsync_host}}

ranger.unixauth.service.port: 5151

Knox SSO Settings

Advanced ranger-admin-site

What to do next

"Complete the Ranger Installation"

Customize Authentication: LDAP

How to customize the Ranger LDAP Authentication service when installing Ranger via Ambari.

Procedure

1. Select the Advanced tab on the Customize Services page.
2. Under Ranger Settings, specify the Ranger Access Manager/Service Manager host address in the External URL box in the format http://<your_ranger_host>:6080.
3. Under Ranger Settings, select LDAP.
4. Under LDAP Settings, set the following properties.

Table 12: LDAP Authentication Settings

Property	Description	Default Value	Example Value
ranger.ldap.base.dn	The Distinguished Name (DN) of the starting point for directory server searches.	dc=example,dc=com	dc=example,dc=com

Property	**Description**	**Default Value**	**Example Value**
Bind User	The full Distinguished Name (DN), including Common Name (CN) of an LDAP user account that has privileges to search for users. This is a macro variable value that is derived from the Bind User value from Ranger User Info > Common Configs.	{{ranger_ug_ldap_bind_dn}}	{{ranger_ug_ldap_bind_dn}}
Bind User Password	Password for the Bind User. This is a macro variable value that is derived from the Bind User Password value from Ranger User Info > Common Configs.		
ranger.ldap.group. roleattribute	The LDAP group role attribute.	cn	cn
ranger.ldap.referral	See description below.	ignore	follow | ignore | throw
LDAP URL	The LDAP server URL. This is a macro variable value that is derived from the LDAP/AD URL value from Ranger User Info > Common Configs.	{{ranger_ug_ldap_url}}	{{ranger_ug_ldap_url}}
ranger.ldap.user. dnpattern	The user DN pattern is expanded when a user is being logged in. For example, if the user "ldapadmin" attempted to log in, the LDAP Server would attempt to bind against the DN "uid=ldapadmin,ou=users,dc=example,dc=com" using the password the user provided>	uid={0},ou=users, dc=xasecure,dc=net	cn=ldapadmin,ou=Users, dc=example,dc=com
User Search Filter	The search filter used for Bind Authentication. This is a macro variable value that is derived from the User Search Filter value from Ranger User Info > User Configs.	{{ranger_ug_ldap_user_searchfilter}}	{{ranger_ug_ldap_user_searchfilter}}

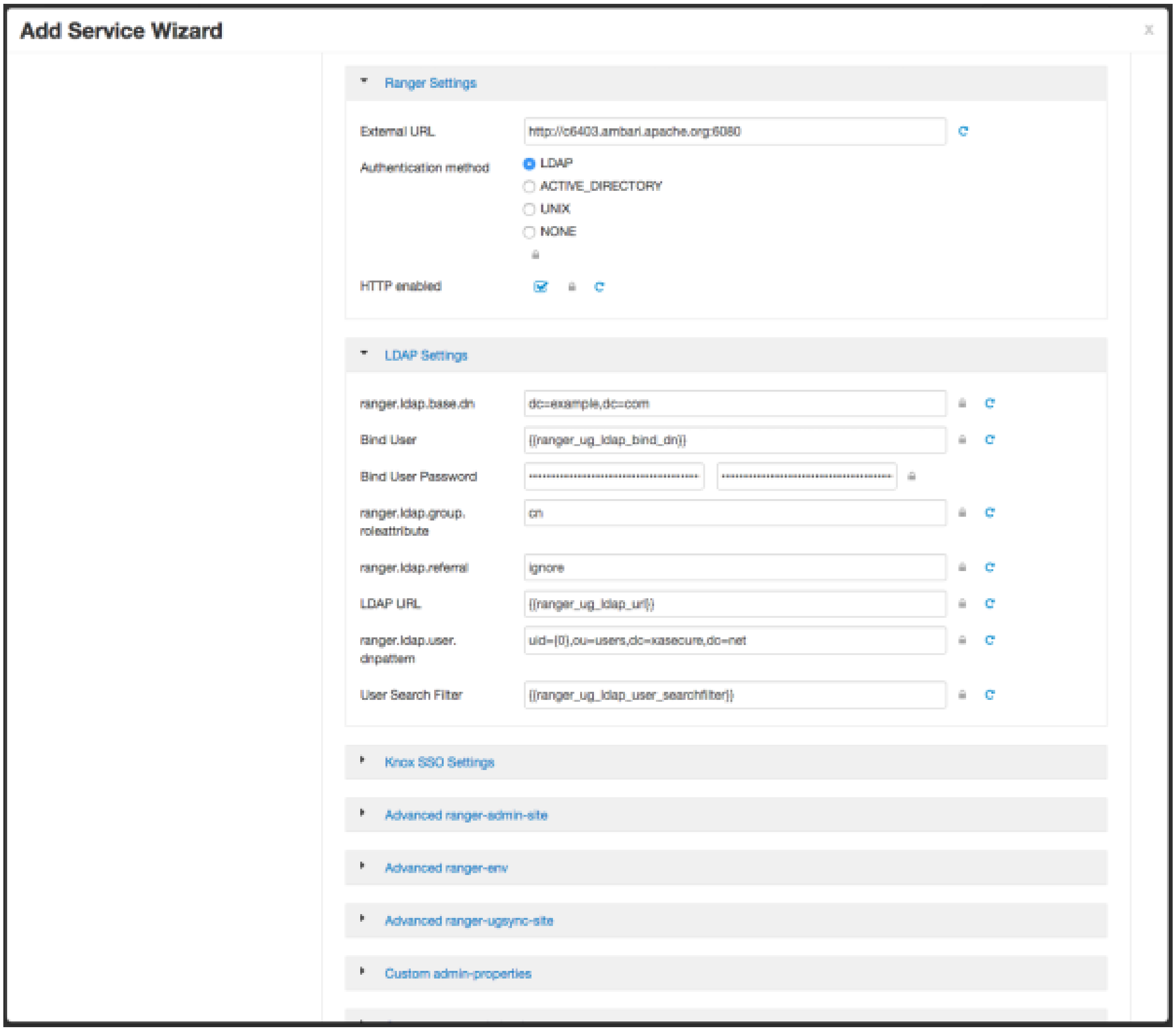
Note:

Properties with value {{xyz}} are macro variables that are derived from other specified values in order to streamline the configuration process. Macro variables can be edited if required -- if you need to restore the original value, click the Set Recommended symbol at the right of the property box.

There are three possible values for ranger.ldap.referral: follow, throw, and ignore. The recommended setting is follow.

When searching a directory, the server might return several search results, along with a few continuation references that show where to obtain further results. These results and references might be interleaved at the protocol level.

- When this property is set to follow, the LDAP service provider processes all of the normal entries first, and then follows the continuation references.
- When this property is set to throw, all of the normal entries are returned in the enumeration first, before the ReferralException is thrown. By contrast, a "referral" error response is processed immediately when this property is set to follow or throw.
- When this property is set to ignore, it indicates that the server should return referral entries as ordinary entries (or plain text). This might return partial results for the search.



External URL: http://c6403.ambari.apache.org:6080

Authentication method: ● LDAP ○ ACTIVE_DIRECTORY ○ UNIX ○ NONE

HTTP enabled: ☑

ranger.ldap.base.dn: dc=example,dc=com

Bind User: {{ranger_ug_ldap_bind_dn}}

Bind User Password: •••••••••••••••••••••••••••••••••••• ••••••••••••••••••••••••••••••••••••

ranger.ldap.group.roleattribute: cn

ranger.ldap.referral: ignore

LDAP URL: {{ranger_ug_ldap_url}}

ranger.ldap.user.dnpattern: uid={0},ou=users,dc=xasecure,dc=net

User Search Filter: {{ranger_ug_ldap_user_searchfilter}}

What to do next

“Complete the Ranger Installation”

Customize Authentication: AD

How to customize the Ranger AD Authentication service when installing Ranger via Ambari.

Procedure

1. Select the Advanced tab on the Customize Services page.
2. Under Ranger Settings, specify the Ranger Access Manager/Service Manager host address in the External URL box in the format http://<your_ranger_host>:6080.
3. Under Ranger Settings, select ACTIVE_DIRECTORY.
4. Under AD Settings, set the following properties.

Table 13: AD Settings

Property	Description	Default Value	Example Value
ranger.ldap.ad.base.dn	The Distinguished Name (DN) of the starting point for directory server searches.	dc=example,dc=com	dc=example,dc=com
ranger.ldap.ad.bind.dn	The full Distinguished Name (DN), including Common Name (CN) of an LDAP user account that has privileges to search for users. This is a macro variable value that is derived from the Bind User value from Ranger User Info > Common Configs.	{{ranger_ug_ldap_bind_dn}}	{{ranger_ug_ldap_bind_dn}}
ranger.ldap.ad.bind.password	Password for the bind.dn. This is a macro variable value that is derived from the Bind User Password value from Ranger User Info > Common Configs.		
Domain Name (Only for AD)	The domain name of the AD Authentication service.		dc=example,dc=com
ranger.ldap.ad.referral	See description below.	ignore	follow | ignore | throw
ranger.ldap.ad.url	The AD server URL. This is a macro variable value that is derived from the LDAP/AD URL value from Ranger User Info > Common Configs.	{{ranger_ug_ldap_url}}	{{ranger_ug_ldap_url}}
ranger.ldap.ad.user.searchfilter	The search filter used for Bind Authentication. This is a macro variable value that is derived from the User Search Filter value from Ranger User Info > User Configs.	{{ranger_ug_ldap_user_searchfilter}}	{{ranger_ug_ldap_user_searchfilter}}

Note:

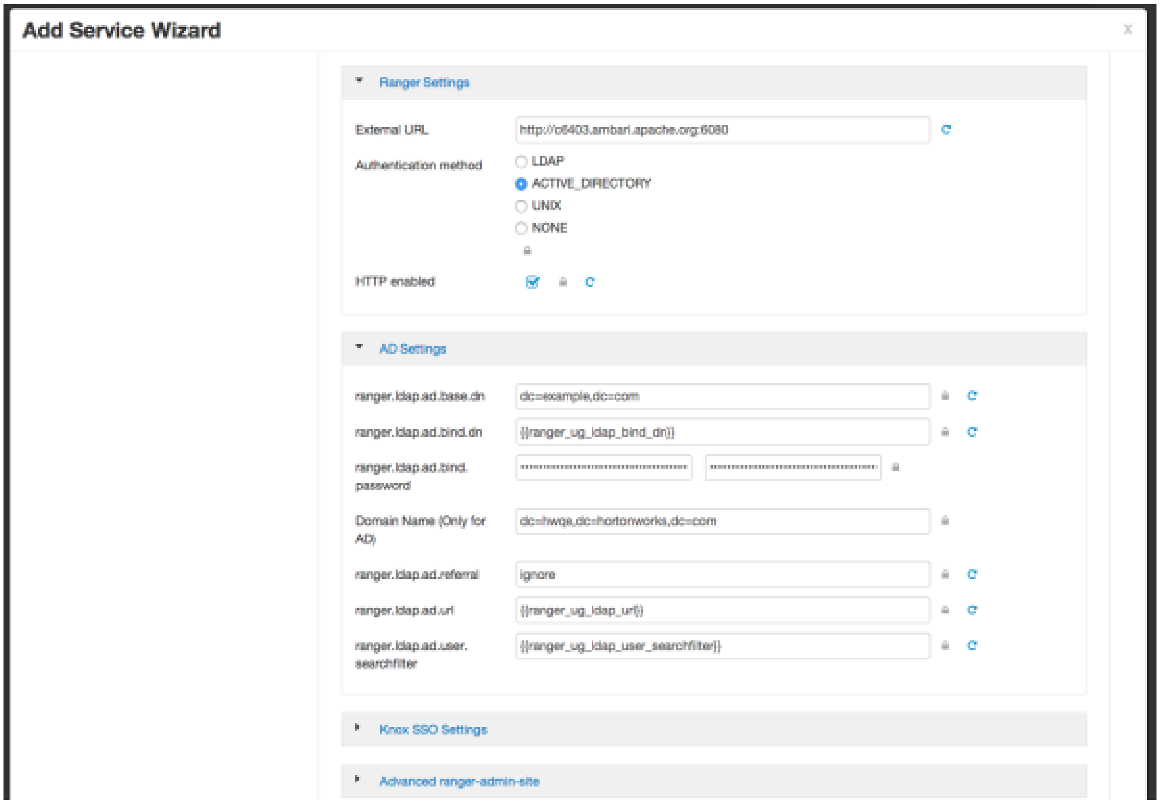
Properties with value {{xyz}} are macro variables that are derived from other specified values in order to streamline the configuration process. Macro variables can be edited if required -- if you need to restore the original value, click the Set Recommended symbol at the right of the property box.

There are three possible values for ranger.ldap.ad.referral: follow, throw, and ignore. The recommended setting is follow.

When searching a directory, the server might return several search results, along with a few continuation references that show where to obtain further results. These results and references might be interleaved at the protocol level.

- When this property is set to follow, the AD service provider processes all of the normal entries first, and then follows the continuation references.
- When this property is set to throw, all of the normal entries are returned in the enumeration first, before the ReferralException is thrown. By contrast, a "referral" error response is processed immediately when this property is set to follow or throw.

- When this property is set to ignore, it indicates that the server should return referral entries as ordinary entries (or plain text). This might return partial results for the search. In the case of AD, a PartialResultException is returned when referrals are encountered while search results are processed.



Add Service Wizard

▾ Ranger Settings

External URL: http://c6403.ambari.apache.org:6080

Authentication method: ○ LDAP ● ACTIVE_DIRECTORY ○ UNIX ○ NONE

HTTP enabled: ☑

▾ AD Settings

ranger.ldap.ad.base.dn: dc=example,dc=com

ranger.ldap.ad.bind.dn: {{ranger_ug_ldap_bind_dn}}

ranger.ldap.ad.bind.password: •••••••••••••••••••••••••••••• ••••••••••••••••••••••••••••••

Domain Name (Only for AD): dc=hwqe,dc=hortonworks,dc=com

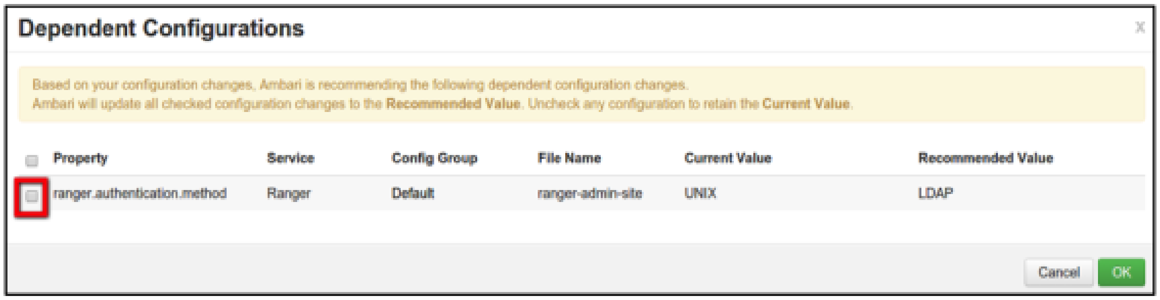
ranger.ldap.ad.referral: ignore

ranger.ldap.ad.url: {{ranger_ug_ldap_url}}

ranger.ldap.ad.user.searchfilter: {{ranger_ug_ldap_user_searchfilter}}

When you have finished configuring all of the Customize Services Settings, click Next at the bottom of the page to continue with the installation.

5. When you save the authentication method as Active Directory, a Dependent Configurations pop-up may appear recommending that you set the authentication method as LDAP. This recommended configuration should not be applied for AD, so you should clear (un-check) the ranger.authentication.method check box, then click OK.



Dependent Configurations

Based on your configuration changes, Ambari is recommending the following dependent configuration changes.
Ambari will update all checked configuration changes to the **Recommended Value**. Uncheck any configuration to retain the **Current Value**.

□	Property	Service	Config Group	File Name	Current Value	Recommended Value
□	ranger.authentication.method	Ranger	Default	ranger-admin-site	UNIX	LDAP

6. Update the Ranger admin truststore configuration:

   a) In **Ambari** > **Ranger** > **Configs** > **Advanced** > **Advanced ranger-admin-site**, add the following parameters:

```
ranger.truststore.file=/etc/ranger/admin/truststore

ranger.truststore.password=password
```

   b) Restart Ranger.

What to do next

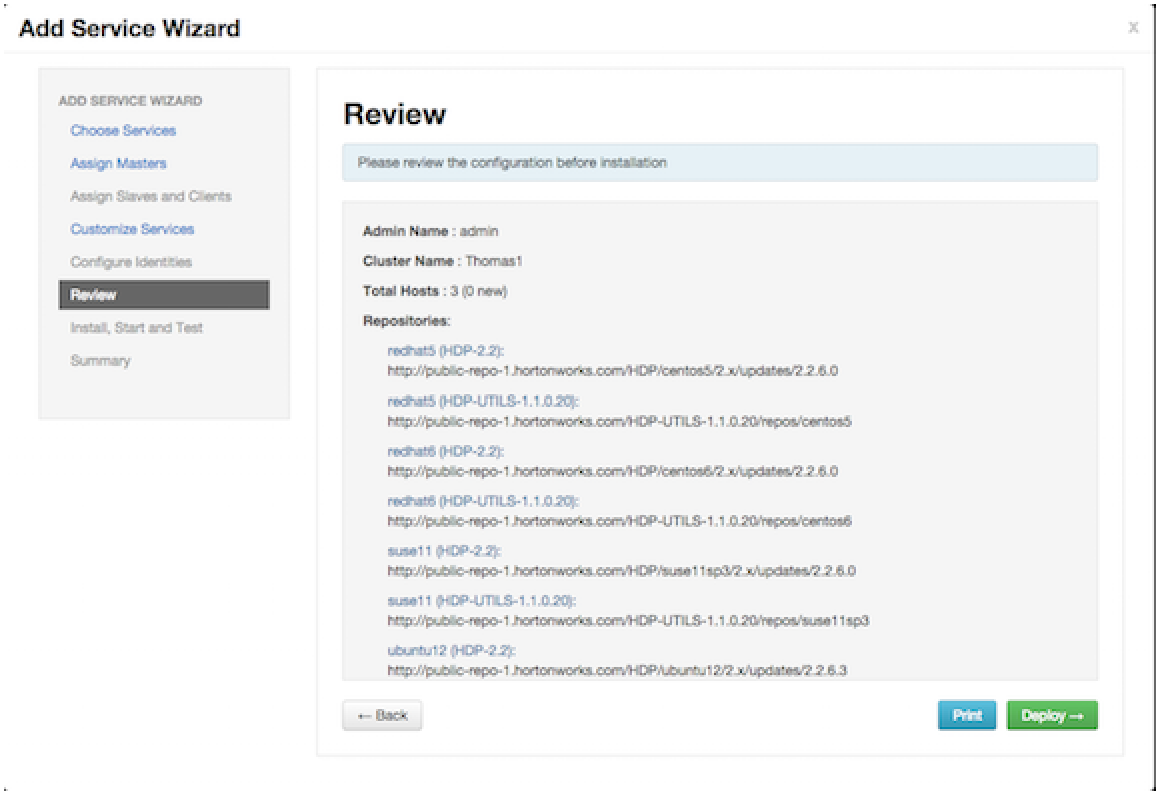
"Complete Ranger Installation"

Complete the Ranger Installation

How to finish installing Ranger via Ambari, after customizing services.

Procedure

1. On the Review page, carefully review all of your settings and configurations. If everything looks good, click Deploy to install Ranger on the Ambari server.



Review

Please review the configuration before installation

Admin Name : admin

Cluster Name : Thomas1

Total Hosts : 3 (0 new)

Repositories:

redhat5 (HDP-2.2):
http://public-repo-1.hortonworks.com/HDP/centos5/2.x/updates/2.2.6.0

redhat5 (HDP-UTILS-1.1.0.20):
http://public-repo-1.hortonworks.com/HDP-UTILS-1.1.0.20/repos/centos5

redhat6 (HDP-2.2):
http://public-repo-1.hortonworks.com/HDP/centos6/2.x/updates/2.2.6.0

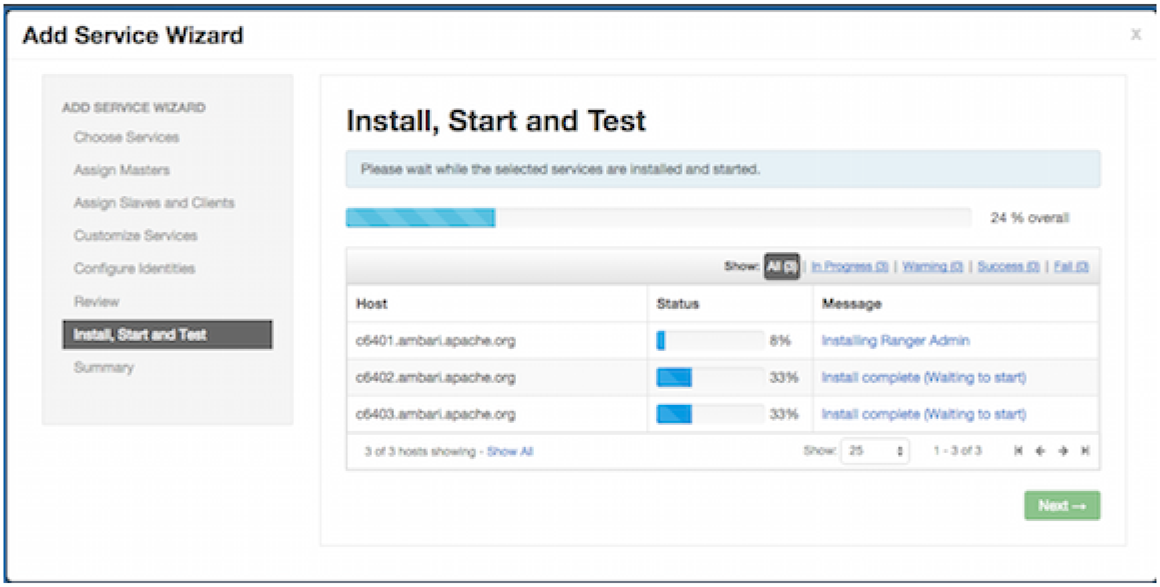
redhat6 (HDP-UTILS-1.1.0.20):
http://public-repo-1.hortonworks.com/HDP-UTILS-1.1.0.20/repos/centos6

suse11 (HDP-2.2):
http://public-repo-1.hortonworks.com/HDP/suse11sp3/2.x/updates/2.2.6.0

suse11 (HDP-UTILS-1.1.0.20):
http://public-repo-1.hortonworks.com/HDP-UTILS-1.1.0.20/repos/suse11sp3

ubuntu12 (HDP-2.2):
http://public-repo-1.hortonworks.com/HDP/ubuntu12/2.x/updates/2.2.6.3

2. When you click Deploy, Ranger is installed on the specified host on your Ambari server. A progress bar displays the installation progress.



Install, Start and Test

Please wait while the selected services are installed and started.

24 % overall

Host	Status	Message
c6401.ambari.apache.org	8%	Installing Ranger Admin
c6402.ambari.apache.org	33%	Install complete (Waiting to start)
c6403.ambari.apache.org	33%	Install complete (Waiting to start)

3 of 3 hosts showing - Show All

3. When the installation is complete, a Summary page displays the installation details. You may need to restart services for cluster components after installing Ranger.

   If the installation fails, you should complete the installation process, then reconfigure and reinstall Ranger.

Additional Ranger Plugin Configuration Steps for Kerberos Clusters

If you are using a Kerberos-enabled cluster, there are a number of steps you need to follow in order use the following Ranger plugins on a Kerberos cluster

If you are using a Kerberos-enabled cluster, there are a number of steps you need to follow in order use the following Ranger plugins on a Kerberos cluster.

Note:

These procedures assume that you have already enabled the component Ranger plugins.

Additional Ranger Plugin Steps for Kerberos: HDFS

How to enable the Ranger HDFS plugin on a Kerberos cluster.

Before you begin

This procedure assumes that you have already completed “Customize Services: Plugins”.

Procedure

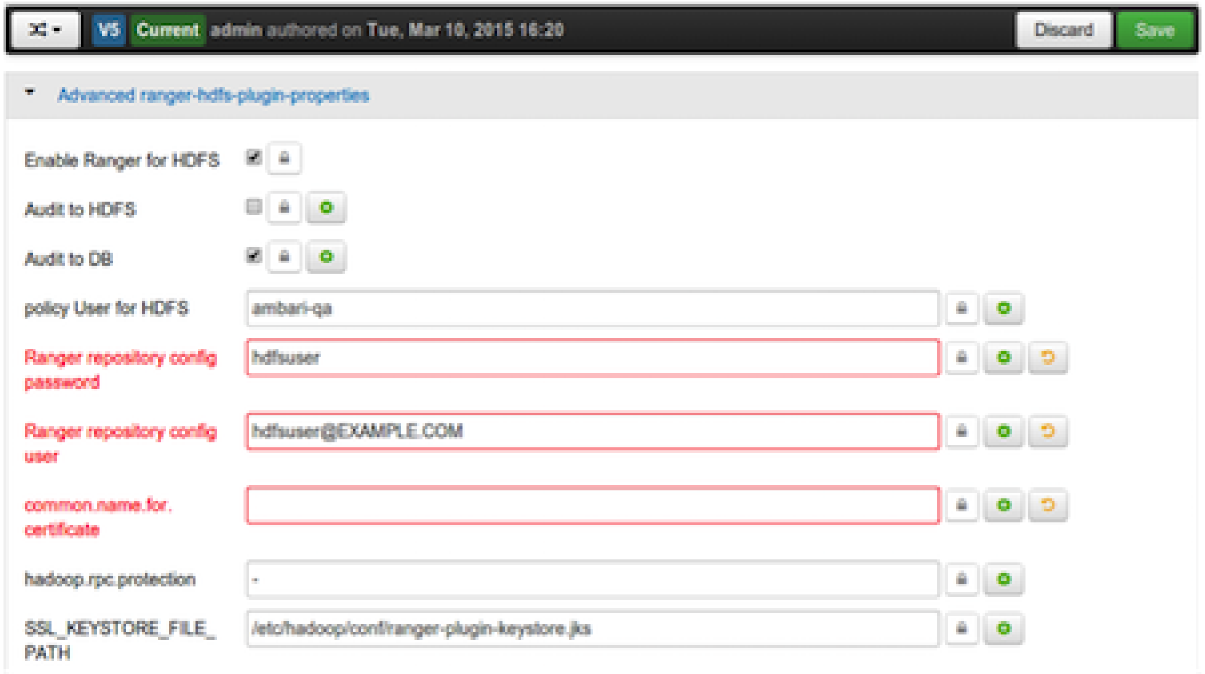
1. Create the system (OS) user rangerhdfslookup. Make sure this user is synced to Ranger Admin (under Settings>Users/Groups tab in the Ranger Admin User Interface).
2. Create a Kerberos principal for rangerhdfslookup: kadmin.local -q 'addprinc -pw rangerhdfslookup rangerhdfslookup@example.com.

   Note:

   A single user/principal (e.g., rangerrepouser) can also be created and used across services.
3. Navigate to the HDFS service.
4. Click the Config tab.
5. Navigate to advanced ranger-hdfs-plugin-properties and update the properties listed in the table shown below.

   Table 14: HDFS Plugin Properties

Configuration Property Name	Value
Ranger repository config user	rangerhdfslookup@example.com
Ranger repository config password	rangerhdfslookup
common.name.for.certificate	blank



Advanced ranger-hdfs-plugin-properties

Enable Ranger for HDFS ☑

Audit to HDFS □

Audit to DB ☑

policy User for HDFS: ambari-qa

Ranger repository config password: hdfsuser

Ranger repository config user: hdfsuser@EXAMPLE.COM

common.name.for.certificate:

hadoop.rpc.protection: -

SSL_KEYSTORE_FILE_PATH: /etc/hadoop/conf/ranger-plugin-keystore.jks

6. After updating these properties, click Save and restart the HDFS service.

Additional Ranger Plugin Steps for Kerberos: Hive

How to enable the Ranger Hive plugin on a Kerberos cluster.

Before you begin

This procedure assumes that you have already completed “Customize Services: Plugins”.

Procedure

1. Create the system (OS) user rangerhivelookup. Make sure this user is synced to Ranger Admin (under Settings>Users/Groups tab in the Ranger Admin UI).
2. Create a Kerberos principal for rangerhivelookup: kadmin.local -q 'addprinc -pw rangerhivelookup rangerhivelookup@example.com.
3. Navigate to the Hive service.
4. Click the Config tab and navigate to advanced ranger-hive-plugin-properties.
5. Update the following properties with the values listed in the table below.

Table 15: Hive Plugin Properties

Configuration Property Name	Value
Ranger service config user	rangerhivelookup@example.com
Ranger service config password	rangerhivelookup
common.name.for.certificate	blank

6. After updating these properties, click Save and then restart the Hive service.

Additional Ranger Plugin Steps for Kerberos: HBase

How to enable the Ranger HBase plugin on a Kerberos cluster.

Before you begin

This procedure assumes that you have already completed “Customize Services: Plugins”.

Procedure

1. Create the system (OS) user rangerhbaselookup. Make sure this user is synced to Ranger Admin (under users/ groups tab in the Ranger Admin UI).
2. Create a Kerberos principal for rangerhbaselookup: kadmin.local -q 'addprinc -pw rangerhbaselookup rangerhbaselookup@example.com.
3. Navigate to the HBase service.
4. Click the Config tab and go to advanced ranger-hbase-plugin-properties.
5. Update the following properties with the values listed in the table below.

   Table 16: HBase Plugin Properties

Configuration Property Name	Value
Ranger service config user	rangerhbaselookup@example.com
Ranger service config password	rangerhbaselookup
common.name.for.certificate	blank

6. After updating these properties, click Save and then restart the HBase service.

Additional Ranger Plugin Steps for Kerberos: Knox

How to enable the Ranger Knox plugin on a Kerberos cluster.

Before you begin

This procedure assumes that you have already completed “Customize Services: Plugins”.

Procedure

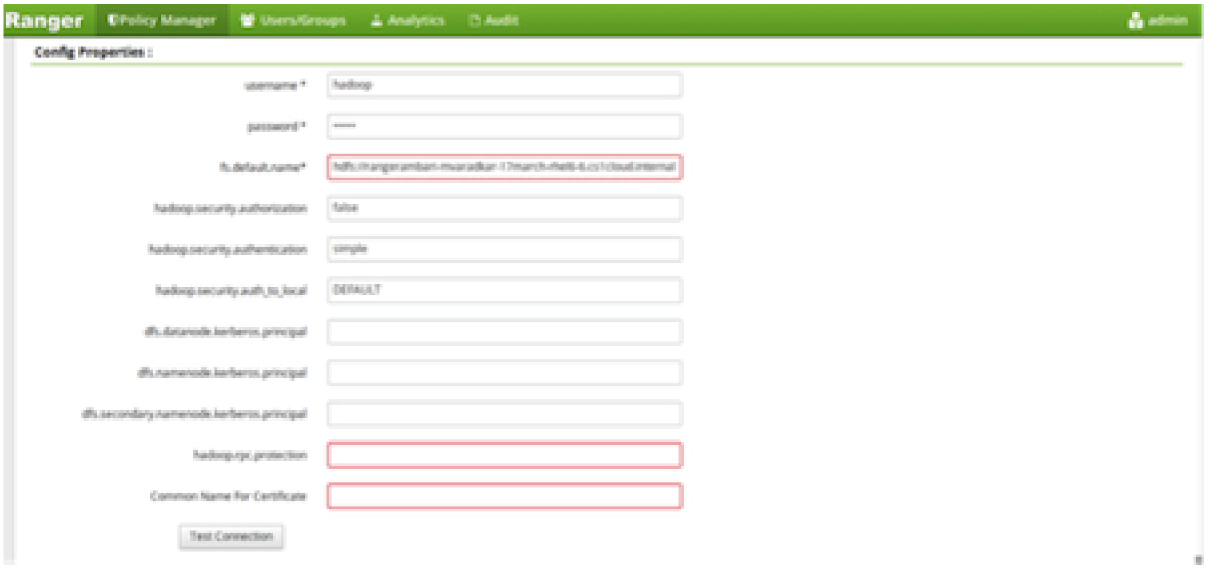
1. Create the system (OS) user rangerknoxlookup. Make sure this user is synced to Ranger Admin (under Settings>Users/Groups tab in the Ranger Admin UI).
2. Create a Kerberos principal for rangerknoxlookup: kadmin.local -q 'addprinc -pw rangerknoxlookup rangerknoxlookup@example.com.
3. Navigate to the Knox service.
4. Click the Config tab and navigate to advanced ranger-knox-plugin-properties.
5. Update the following properties with the values listed in the table below.

   Table 17: Knox Plugin Properties

Configuration Property Name	Value
Ranger service config user	rangerknoxlookup@example.com
Ranger service config password	rangerknoxlookup
common.name.for.certificate	blank

6. After updating these properties, click Save and then restart the Knox service.

7. Open the Ranger Admin UI by entering the following information:
    - http://ranger-host>:6080
    - username/password - admin/admin. or use username as shown in advanced ranger-env under the Config tab of the Ranger service, and password as shown in Admin Settings.
8. After you have successfully logged into the system, you will be redirected to the Access Manager page.
9. Click the repository (clusterName_hadoop) Edit option under the HDFS box.



Config Properties :

username *	hadoop
password *	******
fs.default.name*	hdfs://rangerambari-mvaradkar-17march-rhel6-6.cs1cloud.internal
hadoop.security.authorization	false
hadoop.security.authentication	simple
hadoop.security.auth_to_local	DEFAULT
dfs.datanode.kerberos.principal	
dfs.namenode.kerberos.principal	
dfs.secondary.namenode.kerberos.principal	
hadoop.rpc.protection	
Common Name For Certificate	

10. Update the following properties listed in the table below under the Config Properties section:

Table 18: Knox Configuration Properties

Configuration Property Name	Value
fs.default.name	hdfs
hadoop.rpc.protection	blank
common.name.for.certificate	blank

11. Click Named Test Connection. You should see a Connected Successfully dialog box appears.
12. Click Save.