Data Governance 3

Installing Apache Atlas

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Migrating Atlas metadata when upgrading to HDP-3.0+

When upgrading to HDP-3.0 and higher versions, you must perform additional steps to migrate the Atlas metadata from Titan to JanusGraph.

Overview

In HDP-3.0+, Apache Atlas uses the JanusGraph graph database to store metadata objects. In earlier versions, Atlas used the Titan graph database for metadata storage. When upgrading to HDP-3.0 and higher versions, you must use a command-line migration tool to migrate the Atlas metadata from Titan to JanusGraph.

1. Estimate the size of the existing Atlas repository and the time it will take to export the metadata from HDP 2.x Titan database to the HDP 3.x JanusGraph database.
2. Use the Atlas metadata migration tool to export the Atlas metadata from HDP 2.x.
3. Import the Atlas metadata into HDP 3.x.

Migrate Atlas metadata when upgrading to HDP-3.0+

Perform the following steps to migrate the Atlas metadata from Titan to JanusGraph when upgrading from HDP-2.x to HDP-3.0 and higher versions.

Procedure

1. Before upgrading HDP and Atlas, use one of the following methods to determine the size of the Atlas metadata on the HDP-2.x cluster.

   - Click SEARCH on the Atlas web UI, then slide the green toggle button from Basic to Advanced. Enter the following query in the Search by Query box, then click Search.

     ```
     Asset select count()
     ```

   - Run the following Atlas metrics REST API query:

     ```
     curl -g -X GET -u admin:admin -H "Content-Type: application/json" /
     -H "Cache-Control: no-cache" "http://<atlas_server>:21000/api/atlas/
     admin/metrics"
     ```

   Either of these methods returns the number of Atlas entities, which can be used to estimate the time required to export the Atlas metadata from HDP-2.x and import it into HDP-3.x. This time varies depending on the cluster configuration. The following estimates are for a node with a 4 GB RAM quad-core processor with both the Atlas and Solr servers on the same node:

   - Estimated duration for export from HDP-2.x: 2 million entities per hour.
   - Estimated duration for import into HDP-3.x: 0.75 million entities per hour.

   The Atlas' migration exporter utility is used for migrating Atlas from HDP 2.x to HDP 3.x and beyond. Download from the location: https://archive.cloudera.com/am2cm/hdp2/atlas-migration-exporter-0.8.0.2.6.6.0-332.tar.gz

2. Before upgrading HDP and Atlas, perform the following steps on the HDP-2.x cluster.

   a. Replace contents of /usr/hdp/2.6.<current version>/atlas/tools/migration-exporter/
   b. Modify the permissions using chown -R atlas:atlas <directory above>
   c. Execute the tool from location above. atlas_migration.py -d <output directory>
   d. On the Ambari dashboard, click Atlas, then select Actions > Stop.

e. Use the HDP-2.6. exporter tool to run the export. Typically the tool is located at /usr/hdp/2.6.<current version>/atlas/tools/migration-exporter/. Use the following command format to start the exporting the Atlas metadata:

```
python /usr/hdp/2.6.<current version>/atlas/tools/migration-exporter/
atlas_migration.py -d <output directory>
```

While running, the Atlas migration tool prevents Atlas use, and blocks all REST APIs and Atlas hook notification processing.

As described previously, the time it takes to export the Atlas metadata depends on the number of entities and your cluster configuration. You can use the following command to display the export status:

```
tail -f /var/log/atlas/atlas-migration-exporter.log
```

When the export is complete, the data is placed in the specified output directory.

f. On the Ambari dashboard, Select Atlas > Configs > Advanced > Custom application-properties. Click Add Property, then add an atlas.migration.data.filename property and set its value to point to the full path to the atlas-migration-data.json file in the output folder you specified when you exported the HDP-2.x data.

3. Upgrade HDP and Atlas.
4. The upgrade starts Atlas automatically, which initiates the migration of the uploaded HDP-2.x Atlas metadata into HDP-3.x. During the migration import process, Atlas blocks all REST API calls and Atlas hook notification processing.

   You can use the following Atlas API URL to display the migration status:

   ```
   http://<atlas_server>:21000/api/atlas/admin/status
   ```

   The migration status is displayed in the browser window:

   ```
   {"Status":"Migration","currentIndex":139,"percent":67,"startTimeUTC":"2018-04-06T00:5
   ```

5. When the migration is complete, select Atlas > Configs > Advanced > Custom application-properties, then click the red Remove button to remove the atlas.migration.data.filename property.

Installing Atlas

You can use Apache Atlas to effectively and efficiently address your compliance requirements through a scalable set of core data governance services.

Before you begin

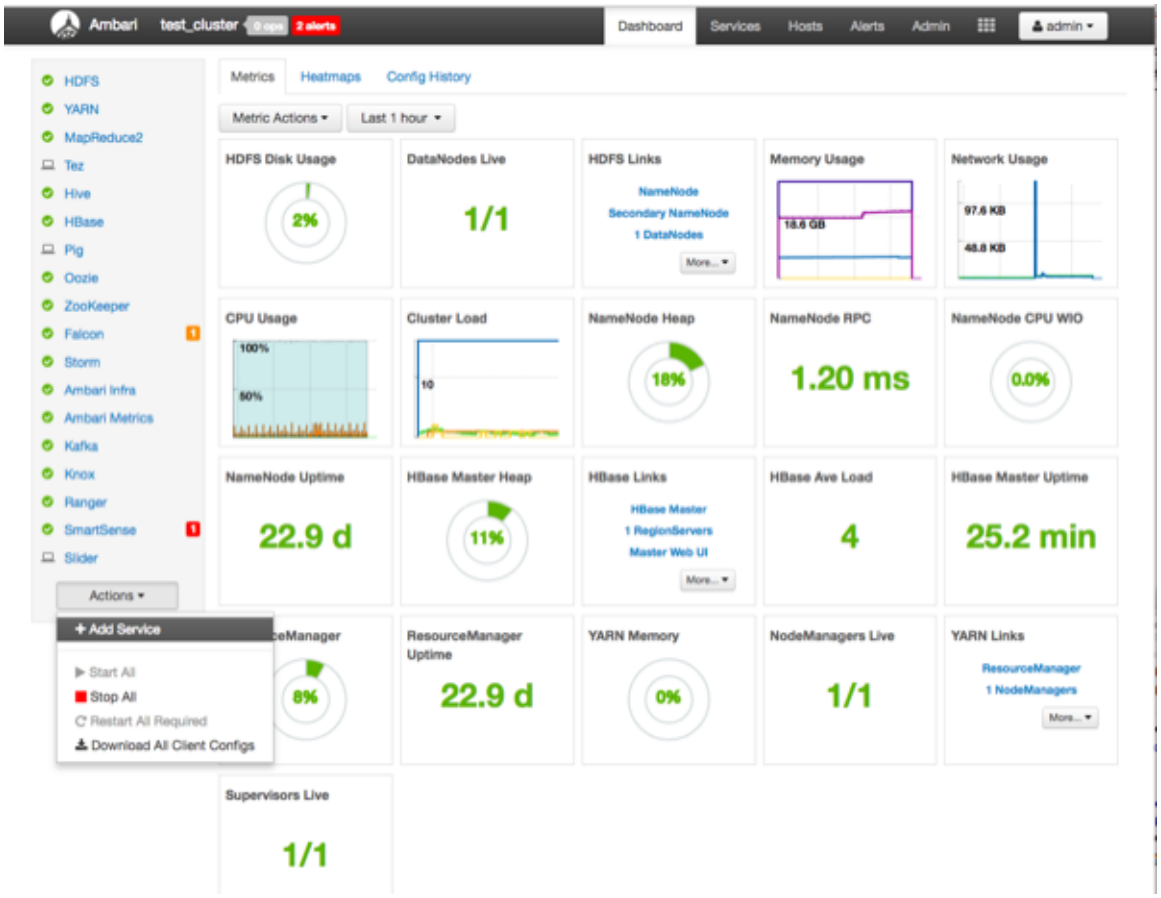
- Ambari Infra (which includes an internal HDP Solr Cloud instance) or an externally managed Solr Cloud instance
- Apache HBase (used as the Atlas metastore)
- Apache Kafka (provides a durable messaging bus)

Start the installation

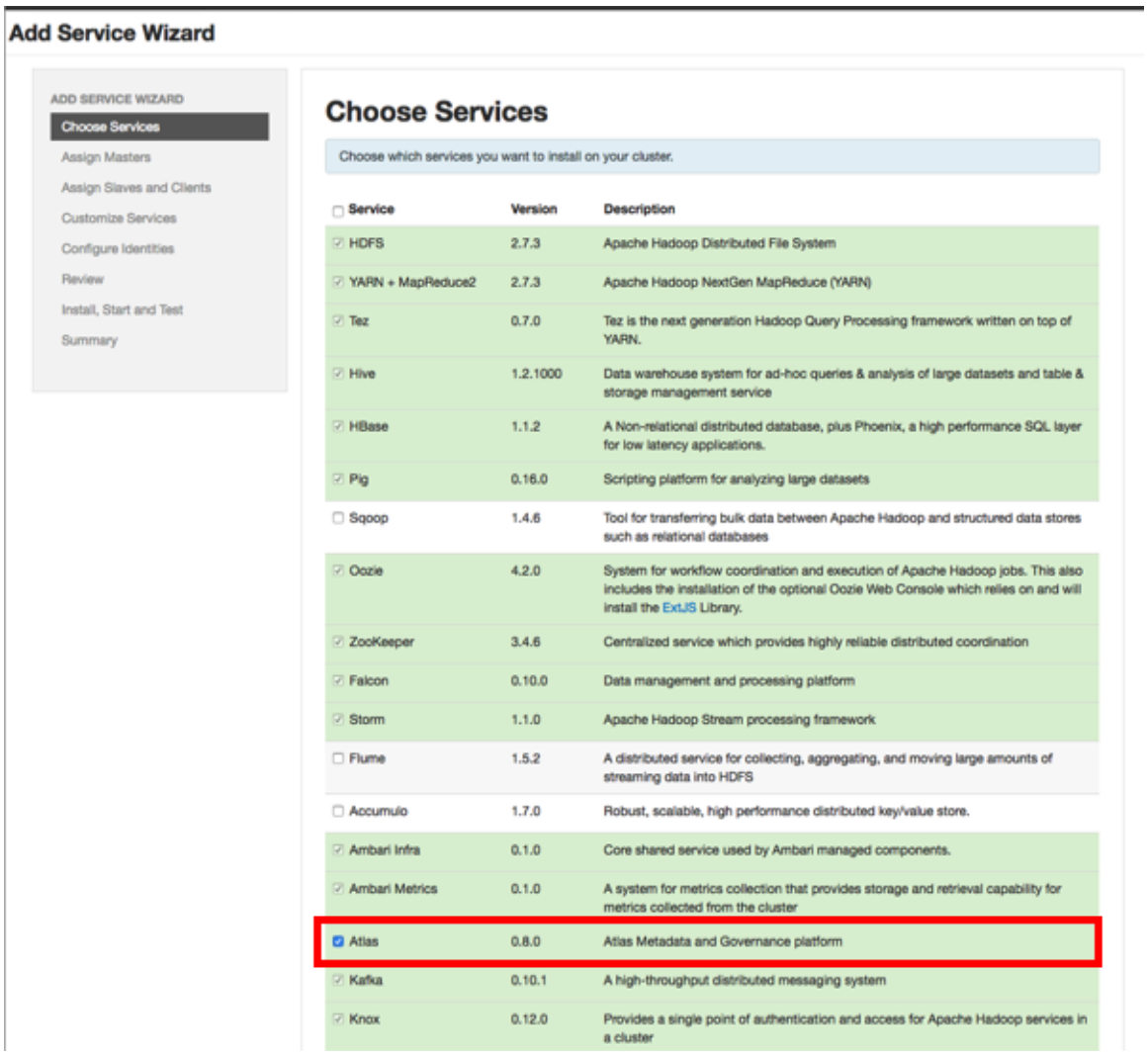
Use the following steps to start the Apache Atlas installation.

Procedure

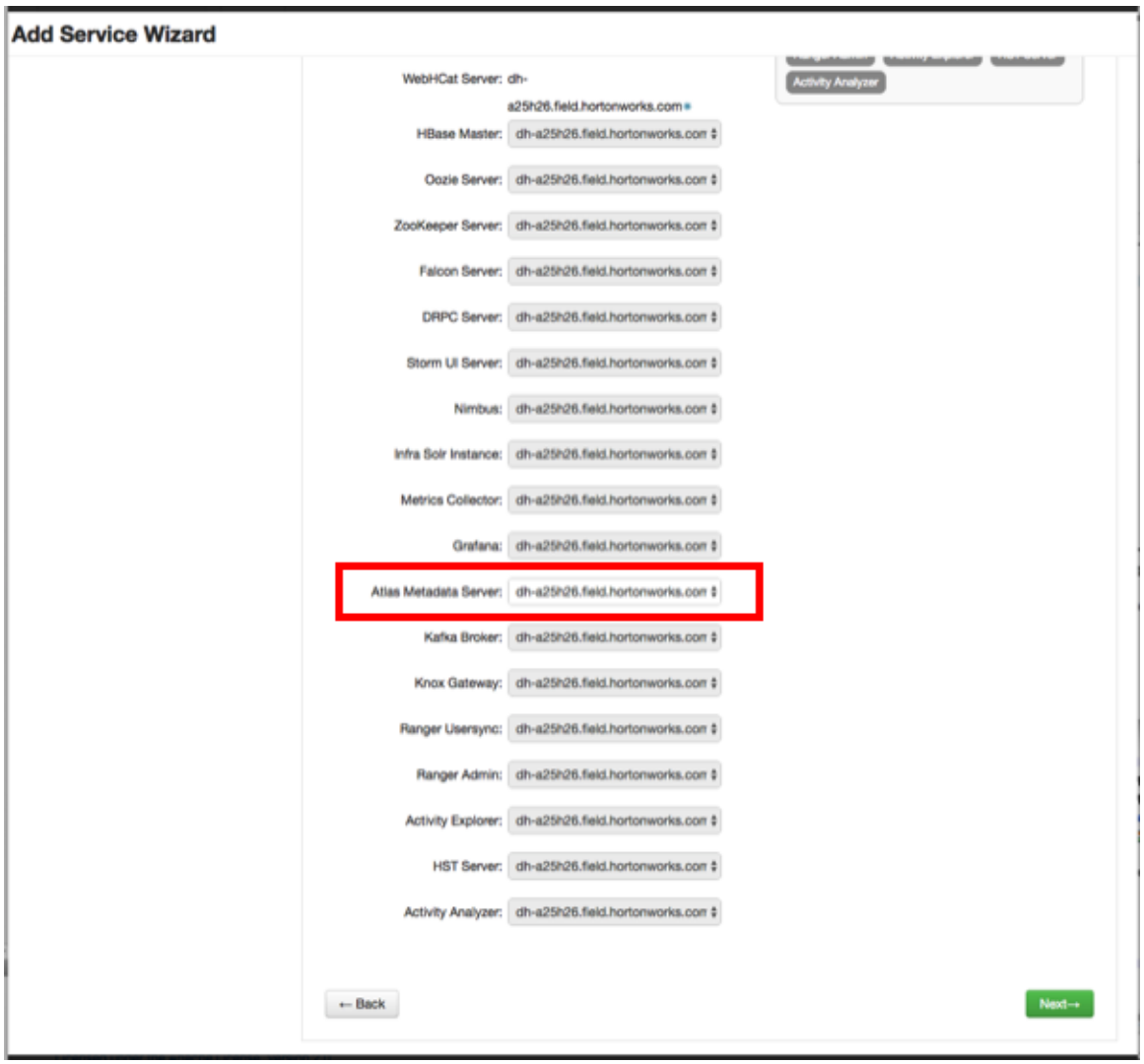
1. On the Ambari Dashboard, click Actions, then select Add Service.



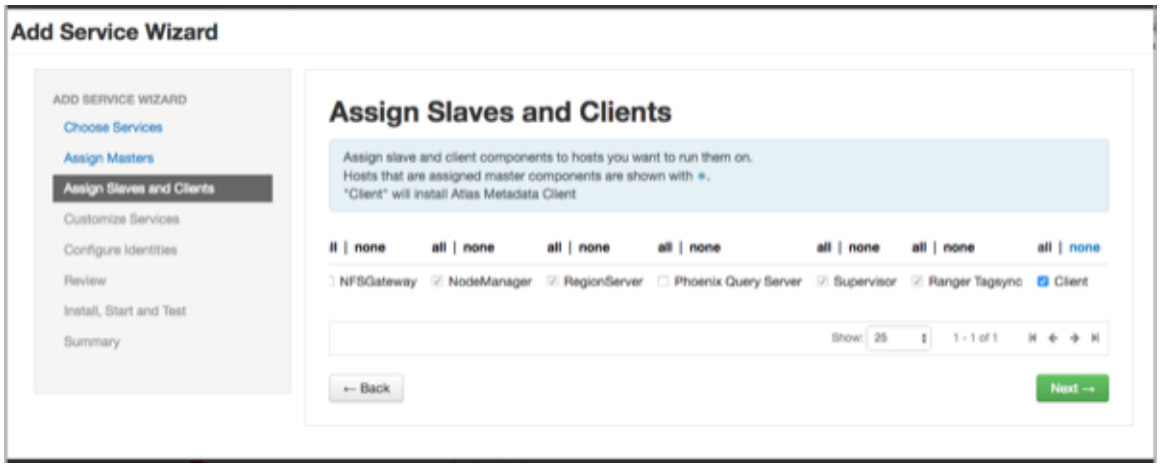
2. On the Choose Services page, select Atlas, then click Next.



3. The Assign Master page appears. Specify a host for the Atlas Metadata Server, then click Next.



4. The Assign Slaves and Clients page appears with Client (the Atlas Metadata Client) selected. Click Next to continue.



5. The Customize Services page appears. These settings are described in the next section.

Customize services

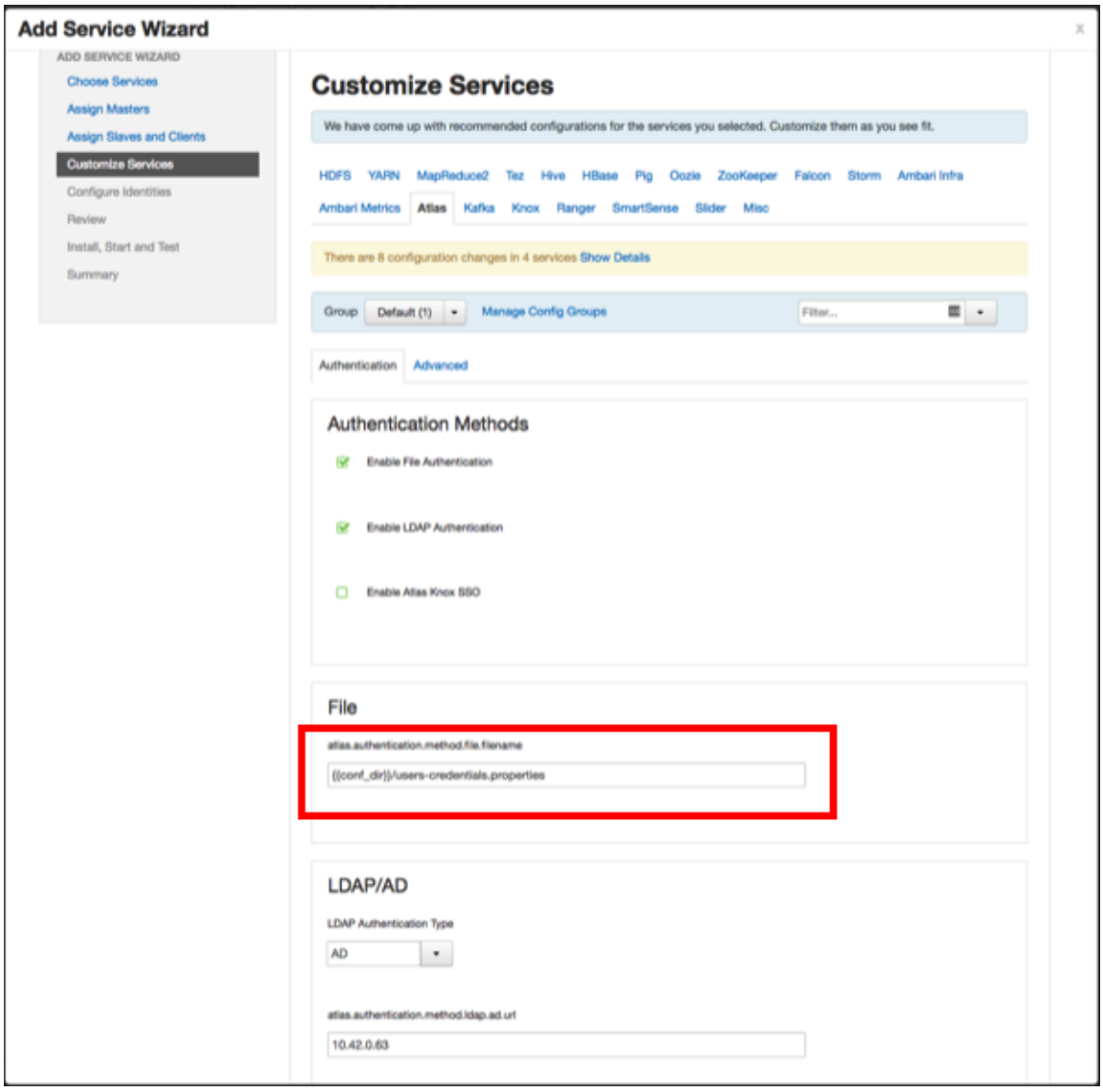
The next step in the installation process is to specify Atlas authentication and authorization settings on the Customize Services page.

Authentication settings

You can set the Authentication Type to File, LDAP, or AD.

File-based Authentication

When file-based authentication is selected, the atlas.authentication.method.file.filename property is automatically set to {{conf_dir}}/users-credentials.properties.



The users-credentials.properties file should have the following format:

```
username=group::sha256password
admin=ADMIN::e7cf3ef4f17c3999a94f2c6f612e8a888e5b1026878e4e19398b23bd38ec221a
```

The user group can be ADMIN, DATA_STEWARD, or DATA_SCIENTIST.

The password is encoded with the sha256 encoding method and can be generated using the UNIX tool:

```
echo -n "Password" | sha256sum
e7cf3ef4f17c3999a94f2c6f612e8a888e5b1026878e4e19398b23bd38ec221a -
```

Note:

You can also set the Admin password using the Ambari UI: Select Advanced > Advanced atlas-env, then use the Admin password and Admin username boxes to set the Admin user name and password.

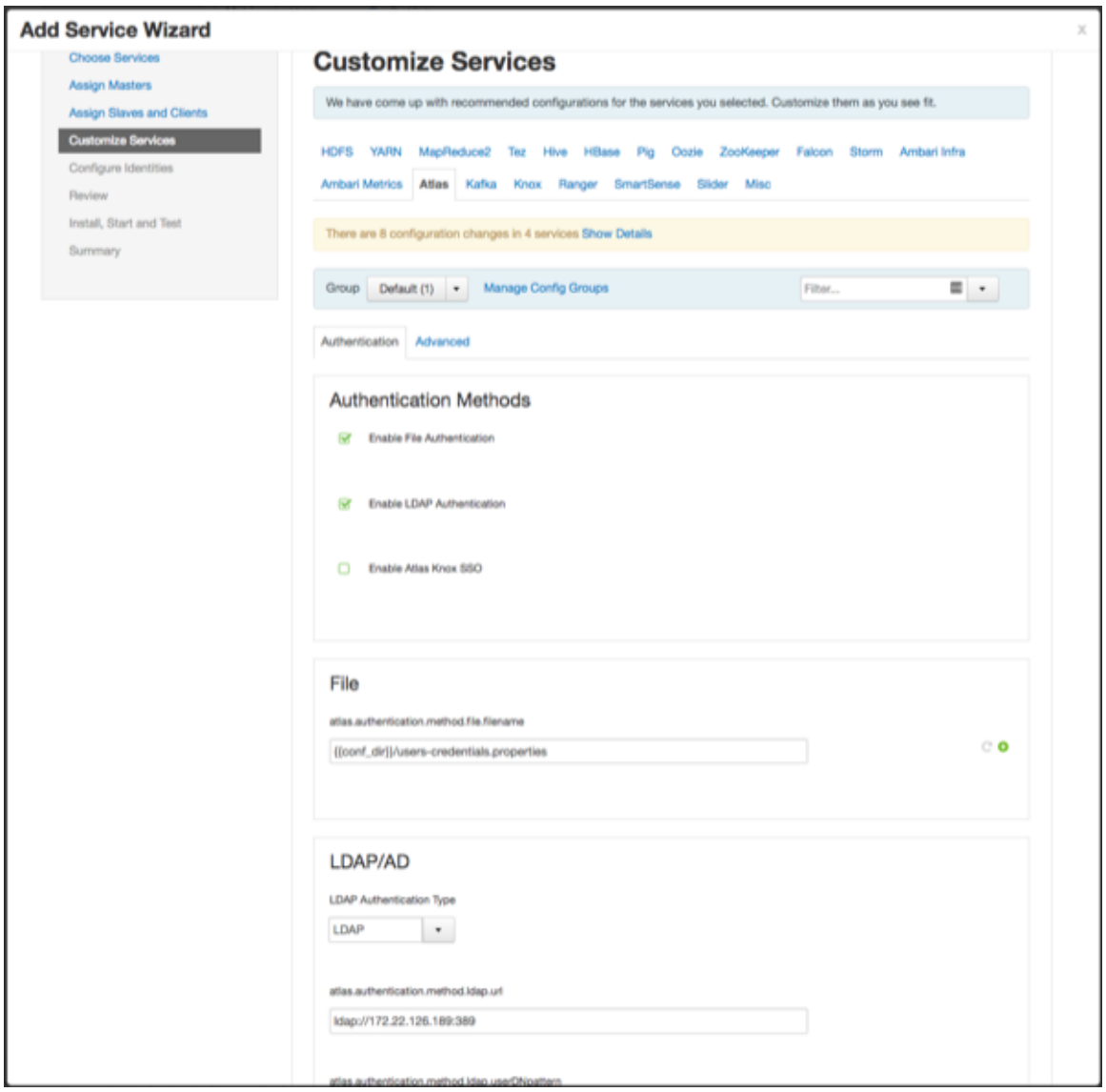
When updating these settings post-installation, click Save, then restart Atlas and all other components that require a restart.

LDAP Authentication

To enable LDAP authentication, select LDAP, then set the following configuration properties.

Table 1: Apache Atlas LDAP Configuration Settings

Property	Sample Values
atlas.authentication.method.ldap.url	ldap://127.0.0.1:389
atlas.authentication.method.ldap.userDNpattern	uid={0},ou=users,dc=example,dc=com
atlas.authentication.method.ldap.groupSearchBase	dc=example,dc=com
atlas.authentication.method.ldap.groupSearchFilter	(member=cn={0},ou=users,dc=example,dc=com)
atlas.authentication.method.ldap.groupRoleAttribute	cn
atlas.authentication.method.ldap.base.dn	dc=example,dc=com
atlas.authentication.method.ldap.bind.dn	cn=Manager,dc=example,dc=com
atlas.authentication.method.ldap.bind.password	PassW0rd
atlas.authentication.method.ldap.referral	ignore
atlas.authentication.method.ldap.user.searchfilter	(uid={0})
atlas.authentication.method.ldap.default.role	ROLE_USER

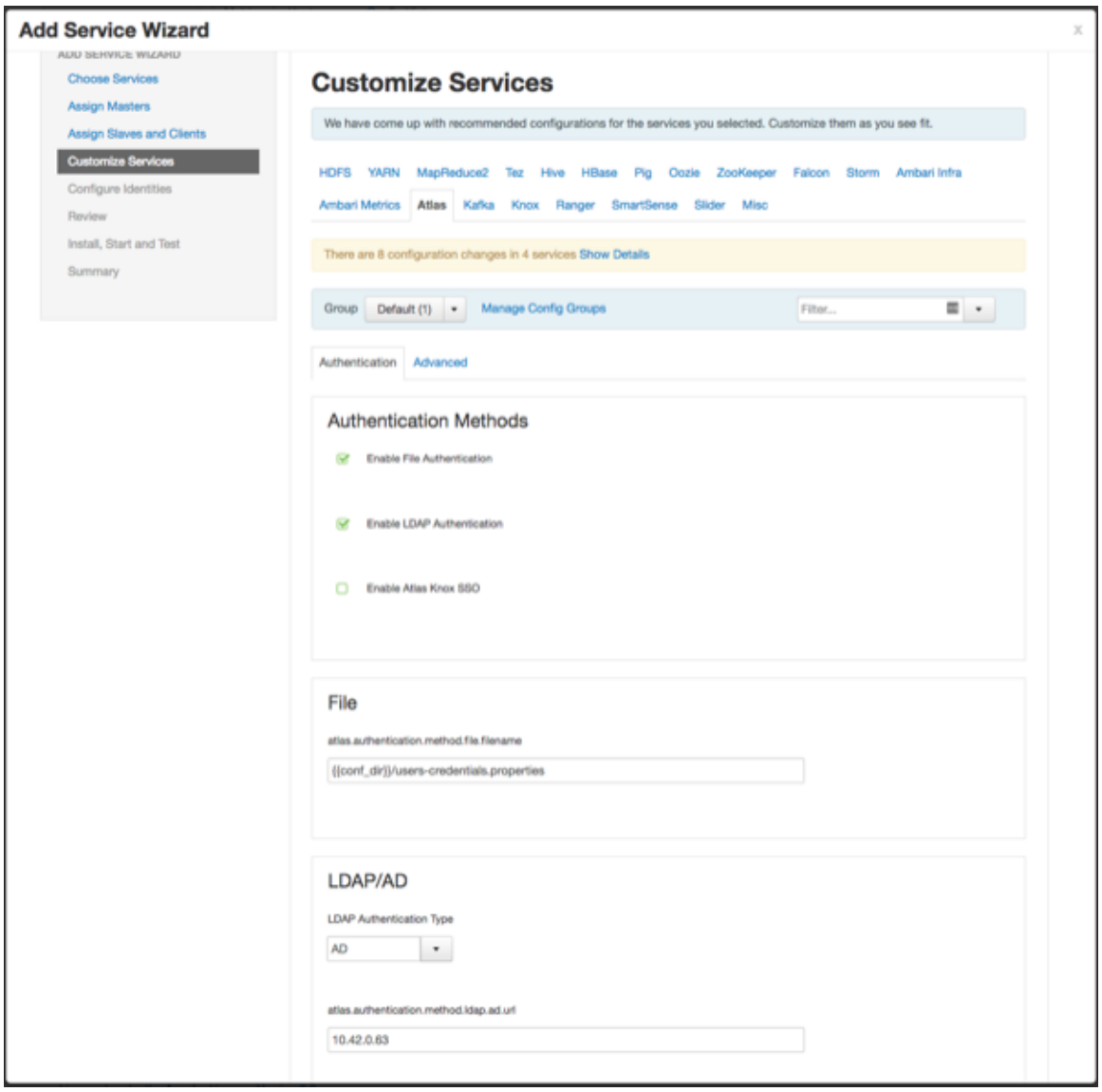


AD Authentication

To enable AD authentication, select AD, then set the following configuration properties.

Table 2: Apache Atlas AD Configuration Settings

Property	Sample Values
atlas.authentication.method.ldap.ad.url	ldap://127.0.0.1:389
Domain Name (Only for AD)	example.com
atlas.authentication.method.ldap.ad.base.dn	DC=example,DC=com
atlas.authentication.method.ldap.ad.bind.dn	CN=Administrator,CN=Users,DC=example,DC=com
atlas.authentication.method.ldap.ad.bind.password	PassW0rd
atlas.authentication.method.ldap.ad.referral	ignore
atlas.authentication.method.ldap.ad.user.searchfilter	(sAMAccountName={0})
atlas.authentication.method.ldap.ad.default.role	ROLE_USER



Authorization settings

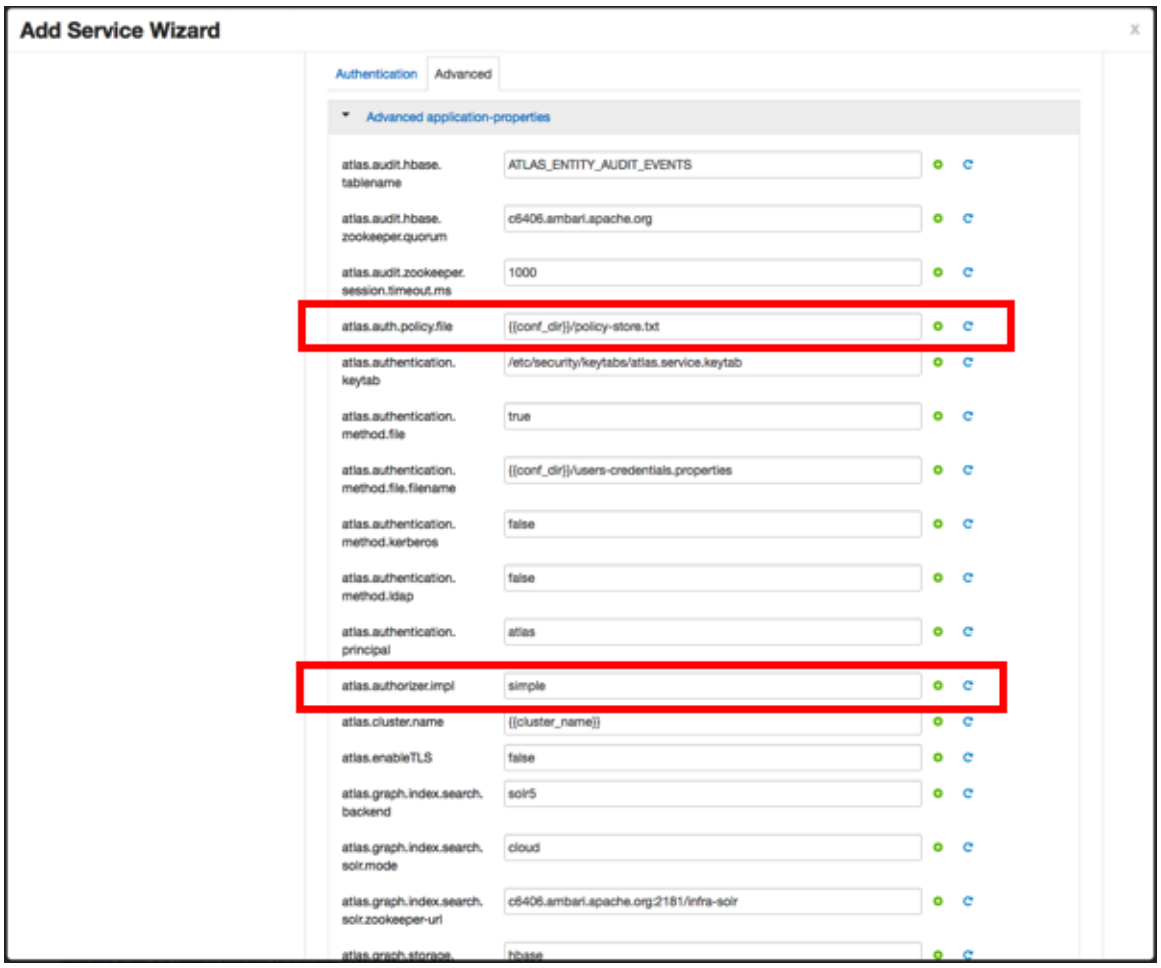
Two authorization methods are available for Atlas: Simple and Ranger.

Simple Authorization

The default setting is Simple, and the following properties are automatically set under **Advanced application-properties** on the **Advanced** tab.

Table 3: Apache Atlas Simple Authorization

Property	Value
atlas.authorizer.impl	simple
atlas.auth.policy.file	{{conf_dir}}/policy-store.txt



The policy-store.txt file has the following format:

```
Policy_Name;;User_Name:Operations_Allowed;;Group_Name:Operations_Allowed;;Resource_Type
```

For example:

```
adminPolicy;;admin:rwud;;ROLE_ADMIN:rwud;;type:*,entity:*,operation:*,taxonomy:*,term:*
userReadPolicy;;readUser1:r,readUser2:r;;DATA_SCIENTIST:r;;type:*,entity:*,operation:*,t
userWritePolicy;;writeUser1:rwu,writeUser2:rwu;;BUSINESS_GROUP:rwu,DATA_STEWARD:rwud;;ty
```

In this example readUser1, readUser2, writeUser1 and writeUser2 are the user IDs, each with its corresponding access rights. The User_Name, Group_Name and Operations_Allowed are comma-separated lists.

Authorizer Resource Types:

- Operation
- Type
- Entity
- Taxonomy
- Term
- Unknown

Operations_Allowed are r = read, w = write, u = update, d = delete

Ranger Authorization

Ranger Authorization is activated by enabling the Ranger Atlas plug-in in Ambari.

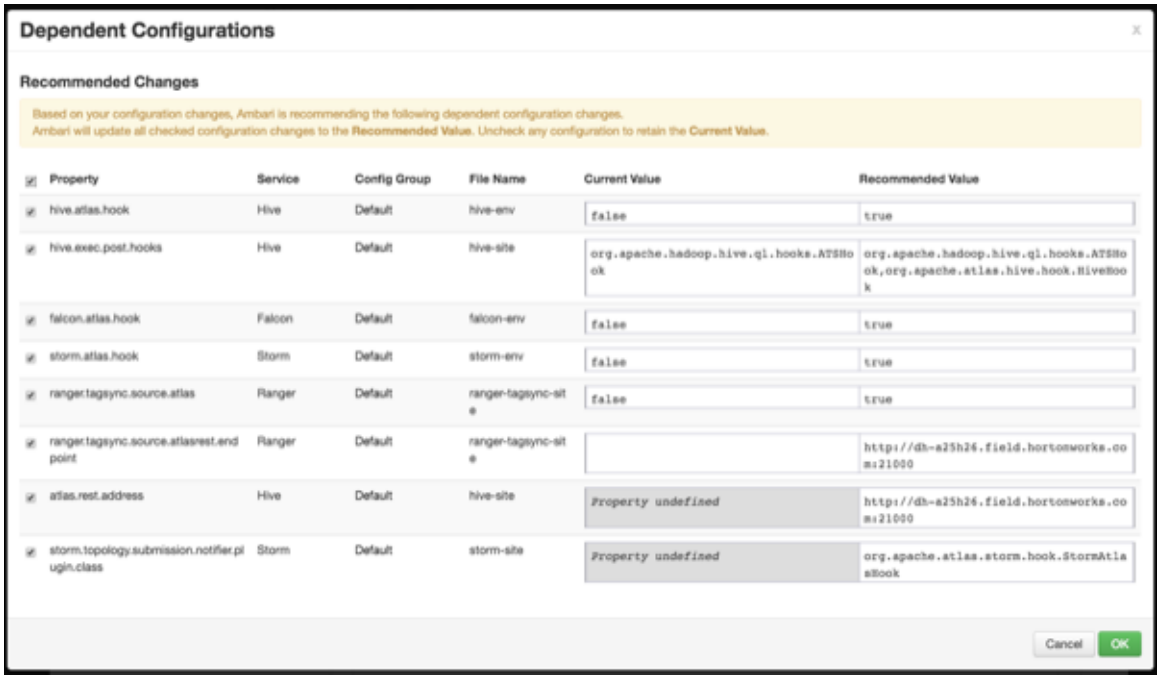
Related Information

Enable the Atlas Ranger Plugin

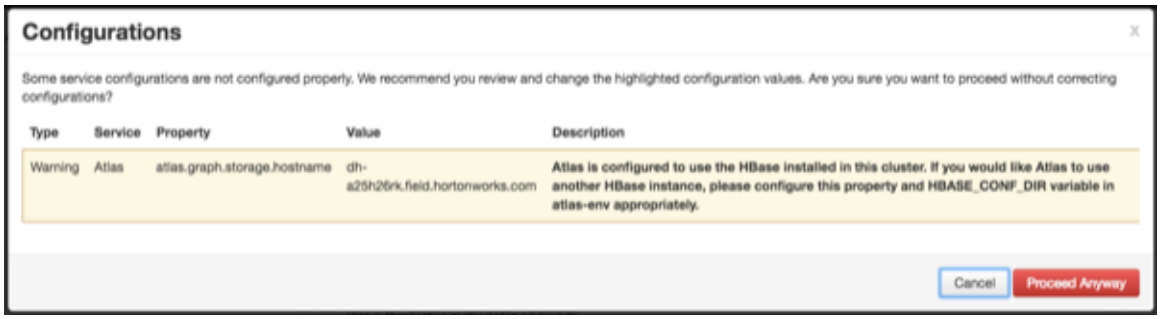
Dependent configurations

After you customize Atlas services and click Next, the Dependent Configurations page displays recommended settings for dependent configurations.

Clear the checkbox next to a property to retain the current value. Click OK to set the selected recommended property values.



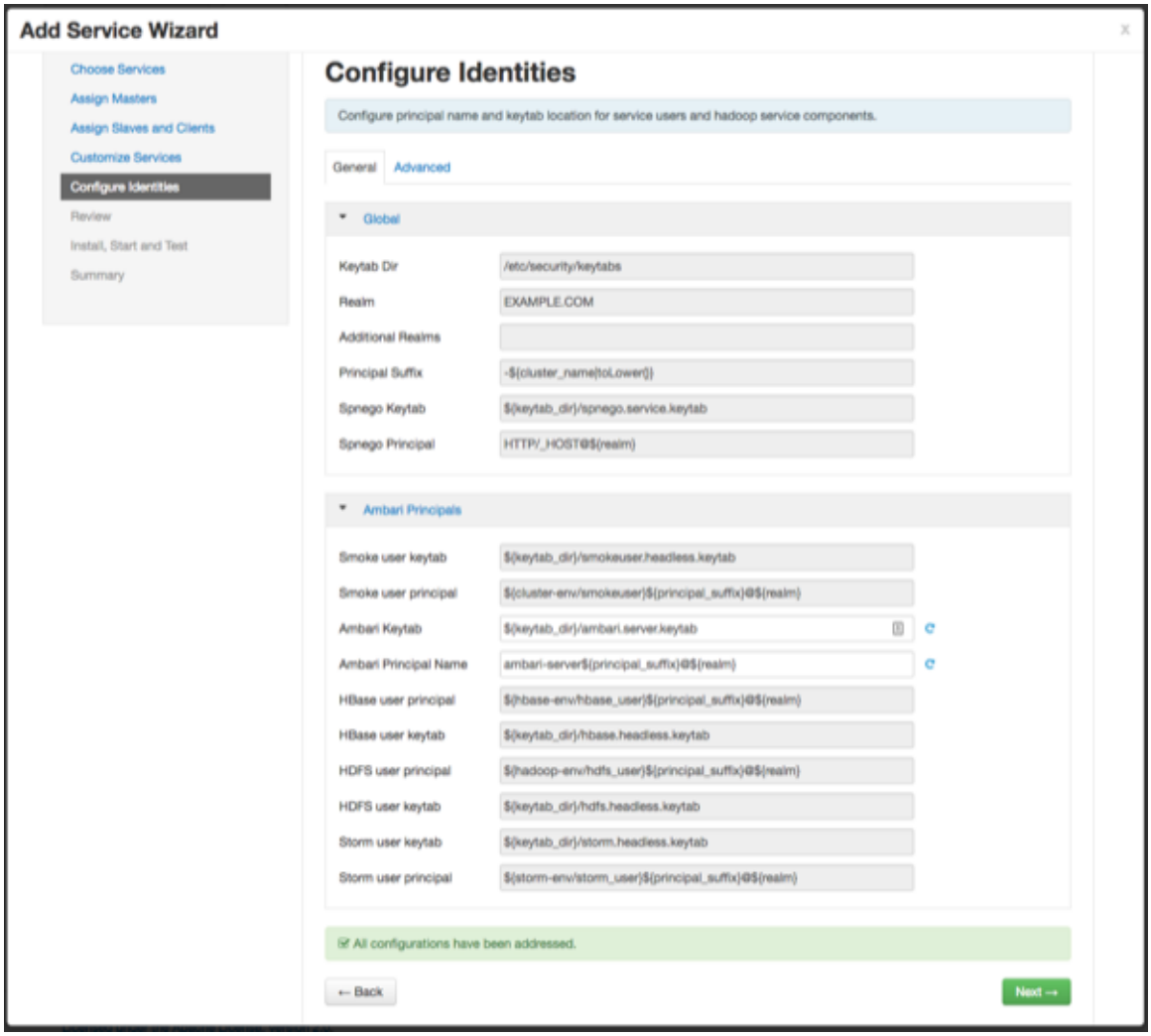
If Ambari detects other configuration issues, they will be displayed on a Configurations pop-up. Click Cancel to go back and change these settings, or click Proceed Anyway to continue the installation without changing the configurations.



Configure identities

If Kerberos is enabled, the Configure Identities page appears.

Click Next to continue with the installation.

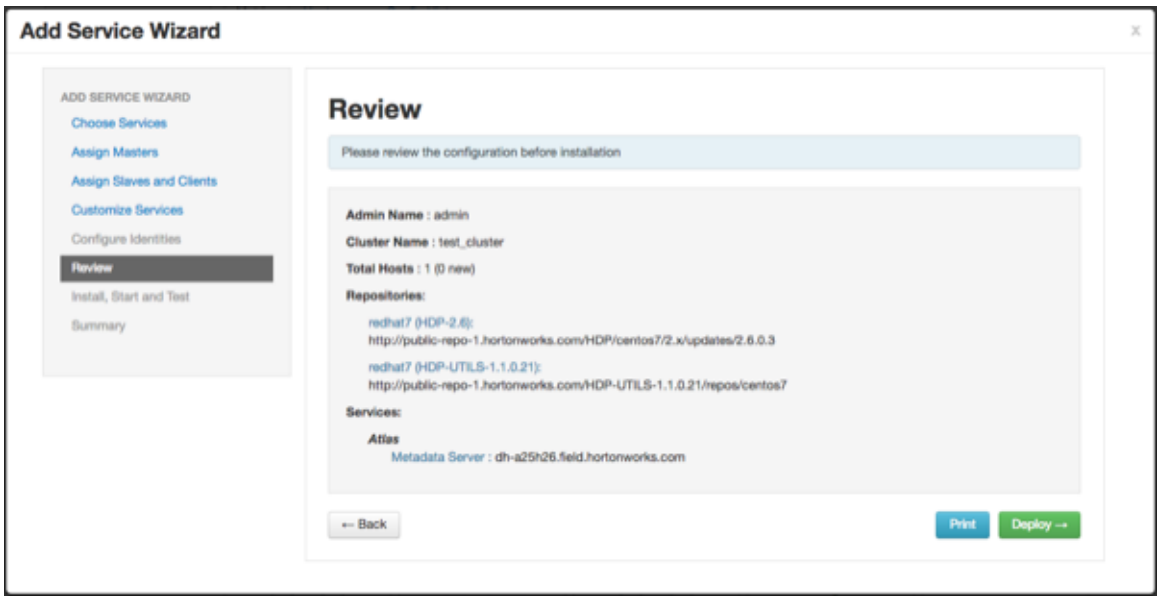


Complete the Atlas installation

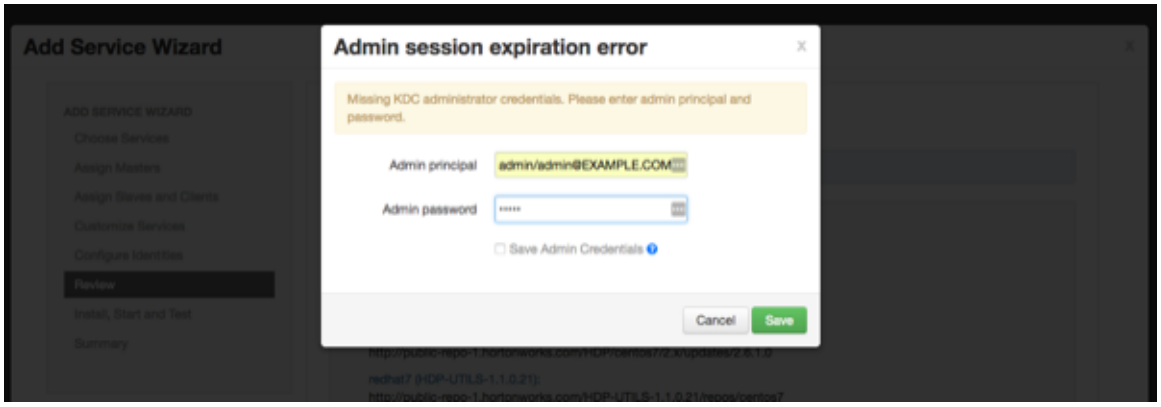
Review the Atlas configuration and complete the installation.

Procedure

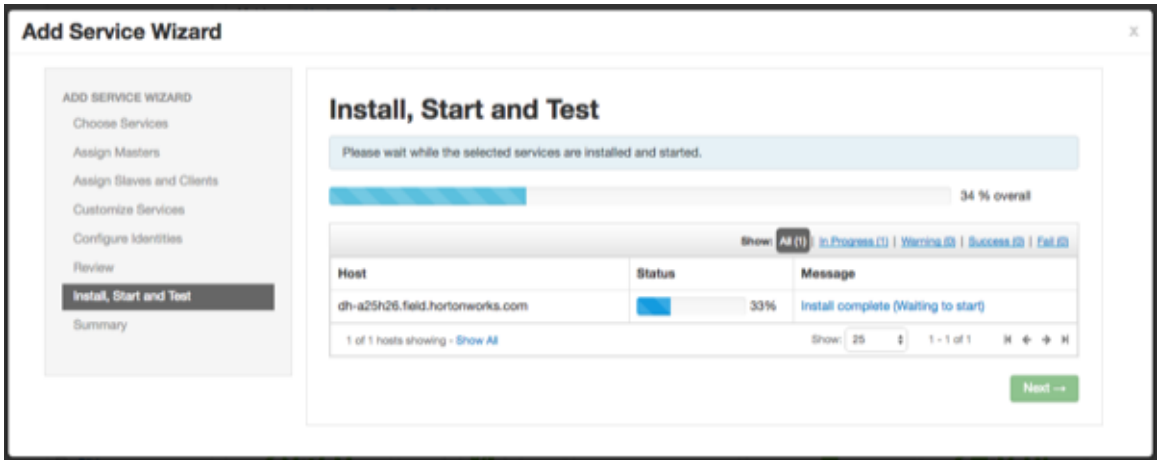
1. On the Review page, carefully review the configuration. If everything looks good, click Deploy to install Atlas on the Ambari server.



If Kerberos is enabled, you are prompted to enter your KDC administrator credentials. Type in your KDC Admin principal and password, then click Save.



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

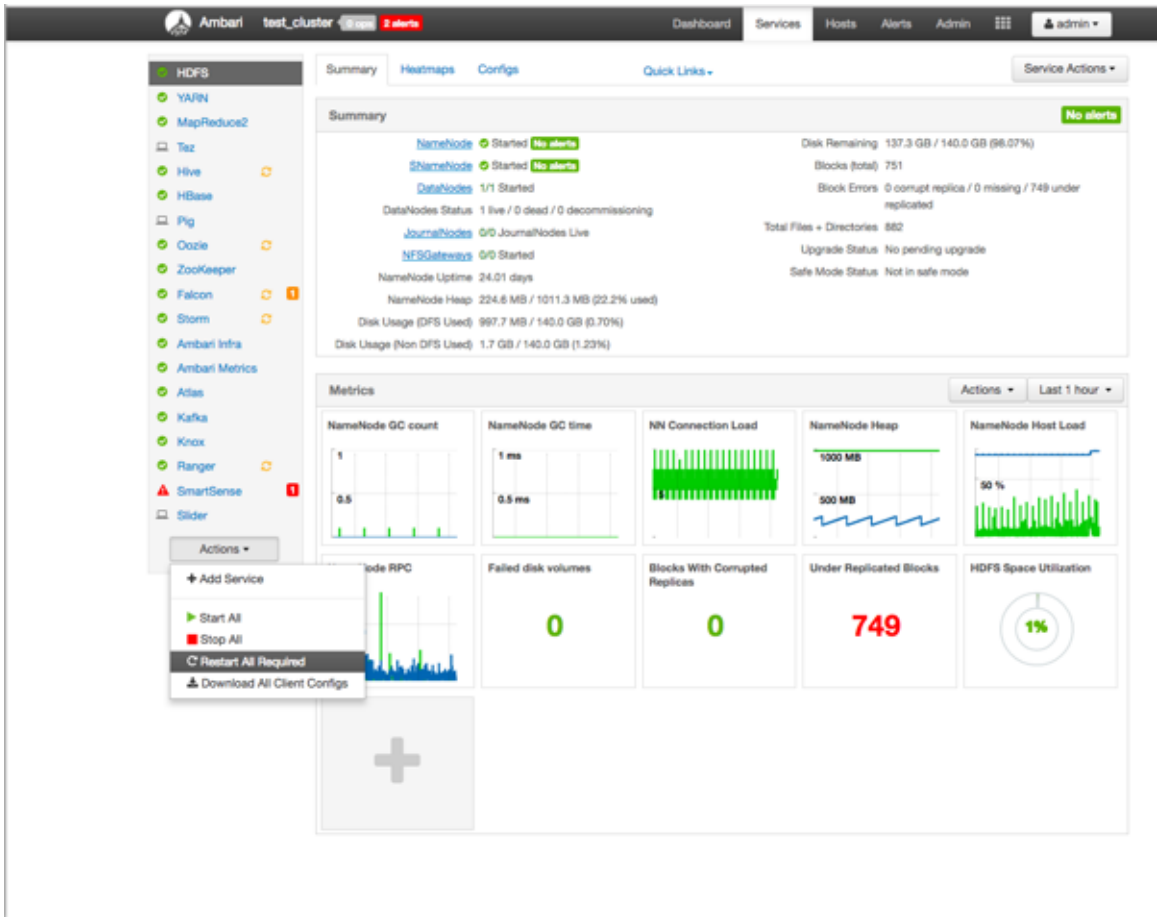


3. When the installation is complete, a Summary page displays the installation details. Click Complete to finish the installation.

Note:

The Atlas user name and password are set to admin/admin by default.

4. Select Actions > Restart All Required to restart all cluster components that require a restart.



Install sample Atlas metadata

You can use the quick_start.py Python script to install sample metadata to view in the Atlas web UI.

Procedure

1. Log in to the Atlas host server using a command prompt.
2. Run the following command as the Atlas user:

```
su atlas -c '/usr/hdp/current/atlas-server/bin/quick_start.py'
```

Note:

In an SSL-enabled environment, run this command as:

```
su atlas -c '/usr/hdp/current/atlas-server/bin/quick_start.py
 https://<fqdn_atlas_host>:21443'
```

When prompted, type in the Atlas user name and password. When the script finishes running, the following confirmation message appears:

```
Example data added to Apache Atlas Server!!!
```

If Kerberos is enabled, kinit is required to execute the quick_start.py script

After you have installed the sample metadata, you can explore the Atlas web UI.

Note:

If you are using the HDP Sandbox, you do not need to run the Python script to populate Atlas with sample metadata.