Red Hat Update Infrastructure 4

Installing Red Hat Update Infrastructure

List of requirements, setting up nodes, configuring storage, and installing Red Hat Update Infrastructure 4
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Abstract

This document lists the installation requirements and provides detailed instructions to help cloud providers install Red Hat Update Infrastructure 4 (RHUI 4).
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MAKING OPEN SOURCE MORE INCLUSIVE

Red Hat is committed to replacing problematic language in our code, documentation, and web properties. We are beginning with these four terms: master, slave, blacklist, and whitelist. Because of the enormity of this endeavor, these changes will be implemented gradually over several upcoming releases. For more details, see our CTO Chris Wright’s message.
CHAPTER 1. INSTALLATION OPTIONS

The following table presents the various Red Hat Update Infrastructure 4 components.

Table 1.1. Red Hat Update Infrastructure components and functions

<table>
<thead>
<tr>
<th>Component</th>
<th>Acronym</th>
<th>Function</th>
<th>Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Hat Update Appliance</td>
<td>RHUA</td>
<td>Downloads new packages from the Red Hat content delivery network and copies new packages to each CDS node</td>
<td>None</td>
</tr>
<tr>
<td>Content Delivery Server</td>
<td>CDS</td>
<td>Provides the <code>yum</code> repositories that clients connect to for the updated packages</td>
<td>None</td>
</tr>
<tr>
<td>HAProxy</td>
<td>None</td>
<td>Provides load balancing across CDS nodes</td>
<td>Existing load balancing solution</td>
</tr>
<tr>
<td>Shared storage</td>
<td>None</td>
<td>Provides shared storage</td>
<td>Existing storage solution</td>
</tr>
</tbody>
</table>

The following table describes how to perform installation tasks.

Table 1.2. Red Hat Update Infrastructure installation tasks

<table>
<thead>
<tr>
<th>Installation Task</th>
<th>Performed on</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install RHEL 8</td>
<td>RHUA, CDS, and HAProxy</td>
</tr>
<tr>
<td>Subscribe the system</td>
<td>RHUA, CDS, and HAProxy</td>
</tr>
<tr>
<td>Attach a RHUI subscription</td>
<td>RHUA, CDS, and HAProxy</td>
</tr>
<tr>
<td>Apply updates</td>
<td>RHUA, CDS and HAProxy</td>
</tr>
<tr>
<td>Install <code>rhui-installer</code></td>
<td>RHUA</td>
</tr>
<tr>
<td>Run <code>rhui-installer</code></td>
<td>RHUA</td>
</tr>
</tbody>
</table>

1.1. OPTION 1: FULL INSTALLATION

- A RHUA
- Two or more CDS nodes with shared storage
- One or more HAProxy load-balancers
1.2. **OPTION 2: INSTALLATION WITH AN EXISTING STORAGE SOLUTION**

- A RHUA
- Two or more CDS nodes with an existing storage solution
- One or more HAProxy load-balancers

1.3. **OPTION 3: INSTALLATION WITH AN EXISTING LOAD-BALANCER SOLUTION**

- A RHUA
- Two or more CDS nodes with shared storage
- An existing load-balancer

1.4. **OPTION 4: INSTALLATION WITH EXISTING STORAGE AND LOAD-BALANCER SOLUTIONS**

- A RHUA
- Two or more CDS nodes with existing shared storage
- An existing load-balancer

The following figure depicts a high-level view of how the various Red Hat Update Infrastructure 4 components interact.
NOTE

You need to subscribe the RHUA as `--type rhui` and have a Red Hat Certified Cloud and Service Provider subscription to install RHUI. You also need an appropriate content certificate.

Install the RHUA and CDS nodes on separate `x86_64` servers (bare metal or virtual machines). Ensure all the servers and networks that connect to RHUI can access the Red Hat Subscription Management service.
Before you begin installing Red Hat Update Infrastructure (RHUI), refer to the following checklist to ensure that you have all the necessary components and information required for installation.

### Table 2.1. List of components required for installing RHUI

<table>
<thead>
<tr>
<th>Required Information</th>
<th>Information Usage</th>
<th>Resources and Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Hat Credentials</td>
<td>Red Hat credentials to manage subscription and access to Red Hat repositories.</td>
<td>Red Hat Customer Portal</td>
</tr>
<tr>
<td>Network and Firewall access</td>
<td>Network and firewall requirements for the Red Hat Update Appliance (RHUA) and Content Delivery Server (CDS) nodes.</td>
<td>It is possible for a CDS to have a client-facing host name that differs from the host name used for intra-Red Hat Update Infrastructure communication. If you are using client-facing host names, note each CDS’s client-facing FQDN and the corresponding IP address.</td>
</tr>
<tr>
<td>Proxy settings</td>
<td>Proxy for access to the Red Hat content delivery network.</td>
<td>Proxy settings for RHUI are set automatically during the installation. They are set on the CDS nodes in the <code>/etc/yum.conf</code> files, where you configure the repositories.</td>
</tr>
<tr>
<td>Content Repository Size</td>
<td>Storage space for the RPM packages required by Red Hat Update Infrastructure.</td>
<td>See <a href="#">Preparing your Environment for Installation</a> for specific storage requirements, or use the <code>du</code> command from the command line interface to determine its size. Also, all repositories are placed in the <code>/var/lib/rhui/remote_share</code> directory which the system creates by default during the installation process. However, if you need to create a new mount point for it, you can manually create this directory.</td>
</tr>
<tr>
<td>Client Profiles</td>
<td>RHUI content available to the client</td>
<td>A client profile determines the RHUI content that is available to the client and the CDS from which the client downloads that content.</td>
</tr>
</tbody>
</table>
**IMPORTANT**

Use a separate storage volume for the installation if you expect to store a large amount of data.

In addition, each RHUI server (RHUA node or CDS node) requires a separate file system of the required size. It is important to use technologies such as LVM, SAN, or NAS storage that allow you to increase the size of the content repository if needed.
Before you install Red Hat Update Infrastructure (RHUI), you must configure your system and components as follows.

- Complete the initial stages of the Red Hat Certified Cloud and Service Provider (CCSP) certification:
  - Virtualization, image creation, and instance provisioning technologies, tools, and processes.
  - Proposed process for measuring and reporting consumption of Red Hat software.
  - Proposed process for notifying customers of errata updates to Red Hat software.
  - Proposed process for making images that include Red Hat software available to customers, including image life cycle management and retiring outdated images.

For more information, see Product Documentation for Red Hat Certified Cloud and Service Provider Certification Browse Knowledgebase.

- Self-signed certificates are typically used for RHUI deployment. However, if you wish to use SSL certificates signed by a third-party certificate authority, you must ensure that they are obtained by the client and reviewed by Red Hat.

  **NOTE**
  
  You can use the Red Hat consultant to assist with the development of self-signed certificates. This will not affect the user experience of the client’s customers.

- Ensure that the client will provide systems, virtual machines, or tenant instances for installation of all Red Hat Update Appliances (RHUAs), external load balancers, and content delivery servers (CDSs).

- Make sure you have the latest version of Red Hat Enterprise Linux (RHEL) 8 available, either as an ISO or as a subscription.

- Ensure that you have one RHUA node with the following configuration:
  - Latest version of RHEL 8 with **Minimal Installation**
  - SELinux is enabled
  - An x86_64 processor with cores equivalent to or greater than 4 cores of Intel Xeon 2 GHz

  **NOTE**
  
  You must increase the number of cores to 8 if you wish to provide more than 100 repositories with multiple major RHEL releases.

  - 8 GB memory
NOTE
You must increase the minimum memory to 16 GB if you wish to provide more than 100 repositories with multiple major RHEL releases.

- A 20 GB disk for the operating system
- A 50 GB disk dedicated for PostgreSQL and mounted to /var/lib/pgsql.

NOTE
You must increase the disk capacity to at least 100 GB if you wish to provide more than 100 repositories with multiple major RHEL releases.

- Ensure that you have one HAProxy node with the following configuration:
  - Latest version of RHEL 8 with **Minimal Installation**
  - SELinux is enabled
  - An x86_64 processor with cores equivalent to or greater than 2 cores of Intel Xeon 2 GHz

NOTE
You must increase the number of cores to 4 if you wish to provide more than 100 repositories with multiple major RHEL releases.

- 4 GB memory

NOTE
You must increase the minimum memory to 8 GB if you wish to provide more than 100 repositories with multiple major RHEL releases.

- A 20 GB disk for the operating system

- Ensure that you have at least two CDS nodes (physical or virtual) with the following recommended configuration:
  - Latest version of RHEL 8 with **Minimal Installation**
  - SELinux is enabled
  - An x86_64 processor with cores equivalent to or greater than 4 cores of Intel Xeon 2 GHz

NOTE
You must increase the number of cores to 8 if you wish to provide more than 100 repositories with multiple major RHEL releases.

- 8 GB memory
- A 50 GB disk with default Nginx log rotation
Ensure that image certification is performed on RHEL guest templates as provided:

- A minimum 10 GB disk for the operating system
- **iptables** is enabled
- SELinux is enabled
- If password authentication is enabled, you must use the strongest possible hash
- Default logging is enabled

Ensure that the client’s network is properly configured as follows:

- IP addresses must be allocated for all RHUAs, CDSs, and external load balancers (if any).
- DNS records (forward and reverse) have been created for all IP addresses. For example, rhua.example.com, cds1.example.com, cds2.example.com, and rhui-lb.example.com.
- If your server has multiple network interface cards (NICs), the fully qualified domain name (FQDN) of the RHUA and the CDSs must be resolved to the IP of the NIC that is used to communicate between the RHUA and the CDSs.
- RHUI uses DNS to reach the CDN. In most cases, your instance should be preconfigured to talk to the proper DNS servers hosted as part of the cloud’s infrastructure. If you run your own DNS servers or update your client DNS configuration, there is a chance you will see errors similar to **yum Could not contact any CDS load balancers**. In these cases, check that your DNS server is forwarding to the cloud’s DNS servers for the request or that your DNS client is configured to fall back to the cloud’s DNS server for name resolution.
- Using more than one HAProxy node requires a round-robin DNS entry for the host name used as the value of the **--cds-lb-hostname** parameter when rhui-installer is run (cds.example.com in this guide) that resolves to the IP addresses of all HAProxy nodes. How to Configure DNS Round Robin presents one way to configure a round-robin DNS. In the context of RHUI, these will be the IP addresses of the HAProxy nodes, and they are to be mapped to the host name specified as **--cds-lb-hostname** while calling rhui-installer. See HAProxy Configuration for more information.

Ensure that all required network ports are open and that network access is restricted to only the nodes that you plan to use.

### Table 3.1. List of ports and their usage

<table>
<thead>
<tr>
<th>Connection</th>
<th>Port</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHUA to CDS</td>
<td>22/TCP</td>
<td>SSH configuration and access</td>
</tr>
<tr>
<td>RHUA to HAProxy servers</td>
<td>22/TCP</td>
<td>SSH configuration and access</td>
</tr>
<tr>
<td>Clients to HAProxy</td>
<td>443/TCP</td>
<td>Access to content</td>
</tr>
<tr>
<td>HAProxy to CDS</td>
<td>443/TCP</td>
<td>Load balancing</td>
</tr>
<tr>
<td>NFS ports open for CDS and RHUA</td>
<td>2049/TCP</td>
<td>File system</td>
</tr>
</tbody>
</table>
- Ensure that the network proxy settings between RHUA and the Red Hat CDN are configured appropriately.

- Ensure that the network proxy settings between the CDSs and the clients via `yum.conf` are configured appropriately.

- Ensure a round-robin DNS entry is used if more than one HAProxy node is used.

<table>
<thead>
<tr>
<th>Connection</th>
<th>Port</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS to RHUA</td>
<td>443/TCP</td>
<td>Retrieve content that has not been symlinked</td>
</tr>
</tbody>
</table>
CHAPTER 4. INSTALLING RED HAT ENTERPRISE LINUX

To use RHUI efficiently and to access Red Hat repositories and support, you must first install Red Hat Enterprise Linux (RHEL) on each of your RHUA, CDS, and HAProxy nodes.

Prerequisite

- Make sure you have the latest version of RHEL 8 available, either as an ISO or as a subscription.

Procedure

1. Navigate to the node on which you wish to install RHEL.

2. Install RHEL.
   - For detailed instructions on how to install RHEL, see Performing a standard RHEL installation.
CHAPTER 5. SETTING UP RHUA NODES

To access the RHUI interface and manage various RHUI functionalities, you must first set up the RHUA node.

The following process explains how to:

- Register the RHUA node
- Attach a subscription to the RHUA node
- Enable the required repositories on the RHUA node

5.1. REGISTERING THE RHUA NODE

The following instructions explain how to register your Red Hat Update Appliance (RHUA) node.

Prerequisites

- Latest version of RHEL 8 is installed.
- Ensure you have root access to the RHUA node.

Procedure

1. On the RHUA node, enter the following command to register the system:

```
# subscription-manager register --type=rhui --username <admin-example> --password <secret>
Registering to: subscription.rhsm.redhat.com:443/subscription
The system has been registered with ID: <a12b34c5-6d78-9ef1-2345-ghi678jk91l2m>
```

2. Optional: If your system is already registered, you can override the subscription using the `--force` option.

```
# subscription-manager register --type=rhui --force
```

The new system will be available on the Red Hat Customer Portal, and the new RHUA instance will not have any subscriptions attached to it.

Verification


2. Verify that your system is available by locating it within the Customer Portal.

5.2. ATTACHING A SUBSCRIPTION TO THE RHUA NODE

The following instructions explain how to attach a subscription to your Red Hat Update Appliance (RHUA) node.
Prerequisites

- Ensure you have root access to the RHUA node.

Procedure

1. On the RHUA node, check for available subscriptions that you can attach.

```bash
# subscription-manager list --available
```

<table>
<thead>
<tr>
<th>Available Subscriptions</th>
</tr>
</thead>
</table>

Subscription Name: Red Hat Enterprise Linux Atomic Host for Certified Cloud and Service Providers (via Red Hat Update Infrastructure)

Provides: Red Hat Enterprise Linux Atomic Host Beta from RHUI

Red Hat Enterprise Linux Atomic Host from RHUI

SKU: RH00731

Contract: 11312089

Pool ID: 8a85f15a71f0bd015a72445adf0223

Provides Management: No

Available: 19

Suggested: 1

Service Level: Premium

Service Type: L1-L3

Subscription Type: Standard

Ends: 02/22/2018

System Type: Physical

Subscription Name: Red Hat Update Infrastructure and RHEL Add-Ons for Providers

Provides: dotNET on RHEL (for RHEL Server) from RHUI

Red Hat Enterprise Linux Server from RHUI

Red Hat Software Collections (for RHEL Server) from RHUI

Red Hat Enterprise Linux for SAP from RHUI

Red Hat Enterprise Linux Resilient Storage (for RHEL Server) from RHUI

Red Hat Enterprise Linux Scalable File System (for RHEL Server) from RHUI

Red Hat Enterprise Linux Server - Extended Update Support from RHUI

dotNET on RHEL Beta (for RHEL Server) from RHUI

Red Hat Enterprise Linux for SAP Hana from RHUI

RHEL Software Test Suite (for RHEL Server) from RHUI

Red Hat Enterprise Linux High Availability (for RHEL Server) from RHUI

Red Hat Update Infrastructure

Red Hat Enterprise Linux Load Balancer (for RHEL Server) from RHUI

SKU: RC1116415

Contract: 1134314

Pool ID: 8a85f15a71f0bd015a72445adf0223

Provides Management: No
2. Attach a subscription using its **pool ID**.
   For example, the following command attaches the Red Hat Update Infrastructure and RHEL Add-Ons for Providers subscription.

   ```bash
   # subscription-manager attach --pool=8a85f9815a71f0bd015a72445adf0223
   Successfully attached a subscription for: Red Hat Update Infrastructure and RHEL Add-Ons for Providers
   ```

## 5.3. ENABLING THE REQUIRED REPOSITORIES ON THE RHUA NODE

To install RHUI on your system, you must first enable certain repositories on your nodes which contain the required packages. The following instructions explain how to enable the `rhel-8-for-x86_64-baseos-rhui-rpms`, `rhel-8-for-x86_64-appstream-rhui-rpms`, and `ansible-2-for-rhel-8-x86_64-rhui-rpms` repositories on the RHUA node.

If you are planning to use Ceph File System (CephFS) as your shared storage, you must also enable the `rhceph-5-tools-for-rhel-8-x86_64-rhui-rpms` repository.

**NOTE**

RHUA nodes require RHEL installations with base packages, and with all repositories disabled except for the `rhel-8-for-x86_64-baseos-rhui-rpms`, `rhel-8-for-x86_64-appstream-rhui-rpms`, `ansible-2-for-rhel-8-x86_64-rhui-rpms` and, optionally, `rhceph-5-tools-for-rhel-8-x86_64-rhui-rpms` repositories. This requirement means that you cannot install any third-party configurations or software that are not necessary for the direct operation of the server. This restriction includes hardening or other non-Red Hat security software.

### Prerequisites

- Ensure you have root access to the RHUA node.

### Procedure

1. Navigate to the RHUA node, list the enabled repositories, and verify that your system is correctly subscribed.

   - If not using Simple Content Access (SCA):

     ```bash
     # subscription-manager list --consumed
     +-------------------------------------------+
     | Consumed Subscriptions                    |
     +-------------------------------------------+
     Subscription Name: Red Hat Update Infrastructure and RHEL Add-Ons for Providers
     Provides: JBoss Enterprise Application Platform from RHUI
              JBoss Enterprise Web Server from RHUI
     ```
CHAPTER 5. SETTING UP RHUA NODES

JBoss Operations Network from RHUI
RHEL for SAP - Update Services for SAP Solutions from RHUI
Red Hat Developer Tools from RHUI (for RHEL Server)
Red Hat Enterprise Linux Server - Extended Update Support from RHUI
RHEL for SAP HANA - Update Services for SAP Solutions from RHUI
Red Hat Developer Tools Beta from RHUI (for RHEL Server)
Red Hat Enterprise Linux High Availability (for RHEL Server) from RHUI
Red Hat JBoss Core Services from RHUI
Red Hat Enterprise Linux for x86_64 from RHUI
Red Hat Enterprise Linux for x86_64 Beta from RHUI
Red Hat Enterprise Linux Load Balancer (for RHEL Server) from RHUI
Red Hat Enterprise Linux Resilient Storage (for RHEL Server) from RHUI
Red Hat Enterprise Linux Scalable File System (for RHEL Server) from RHUI

Update Support from RHUI
Red Hat Enterprise Linux for SAP from RHUI
Red Hat CodeReady Linux Builder for x86_64 from RHUI
Red Hat Enterprise Linux for SAP Hana from RHUI
Red Hat CodeReady Linux Builder for ARM 64 from RHUI
RHEL Software Test Suite (for RHEL Server) from RHUI
Red Hat Gluster Storage Server for On-premise from RHUI
Red Hat Single Sign-On from RHUI
Red Hat Enterprise Linux High Availability for x86_64 from RHUI
Red Hat Enterprise Linux Resilient Storage for x86_64 from RHUI
Red Hat Enterprise Linux High Availability (for RHEL Server) - Extended

RHUI

Update Support from RHUI
Red Hat Enterprise Linux Server - Extended Life Cycle Support (from RHUI)
Red Hat Enterprise Linux Load Balancer (for RHEL Server) - Extended

Update Support from RHUI
RHEL for SAP HANA - Extended Update Support (from RHUI)
RHEL for SAP - Extended Update Support (from RHUI)
Red Hat Enterprise Linux Resilient Storage (for RHEL Server) - Extended

Update Support from RHUI
Red Hat Enterprise Linux High Performance Networking (for RHEL Server) - Extended

Extended Update Support from RHUI
Red Hat Enterprise Linux for ARM 64 from RHUI
Red Hat Enterprise Linux Server - Update Services for SAP Solutions from RHUI

RHUI

Red Hat Software Collections (for RHEL Server) from RHUI
Red Hat Enterprise Linux Server for ARM from RHUI
Red Hat Enterprise Linux High Availability - Update Services for SAP Solutions from RHUI

Red Hat CodeReady Linux Builder for x86_64 - Extended Update Support from RHUI

Red Hat Software Collections (for RHEL Server for ARM) from RHUI
Red Hat Ansible Engine from RHUI
Red Hat Software Collections Beta (for RHEL Server for ARM) from RHUI
Red Hat Enterprise Linux for ARM 64 Beta from RHUI
Red Hat Developer Tools (for RHEL Server for ARM) from RHUI
Red Hat Developer Tools Beta (for RHEL Server for ARM) from RHUI
dotNET on RHEL (for RHEL Server) from RHUI
dotNET on RHEL Beta (for RHEL Server) from RHUI
Red Hat Update Infrastructure
Red Hat Enterprise Linux Server from RHUI

SKU: RC11164
- If using Simple Content Access (SCA):

```bash
# subscription-manager status
```

```
+-------------------------------------------+
| System Status Details                    |
+-------------------------------------------+
| Overall Status: Disabled                 |
| Content Access Mode is set to Simple Content Access. This host has access to content, regardless of subscription status. |
```

```
System Purpose Status: Disabled
```

2. Disable all repositories.

```bash
# subscription-manager repos --disable=*  
```

3. Enable the relevant repositories.

```bash
# subscription-manager repos --enable=rhel-8-for-x86_64-baseos-rhui-rpms --enable=rhel-8-for-x86_64-appstream-rhui-rpms
```

4. Optional: If you are planning to use CephFS, enable the Ceph tools repository.

```bash
# subscription-manager repos --enable=ceph-5-tools-for-rhel-8-x86_64-rhui-rpms
```

5. Enable the Ansible repository.

```bash
# subscription-manager repos --enable=ansible-2-for-rhel-8-x86_64-rhui-rpms
```

6. Enable the RHUI 4 repository.

```bash
# subscription-manager repos --enable=rhui-4-for-rhel-8-x86_64-rpms
```
CHAPTER 6. SETTING UP CDS NODES

To provide repositories that clients can connect to and access the updated packages, you must first set up the CDS nodes.

The following process explains how to:

- Register the CDS node
- Attach a subscription to the CDS node
- Enable the required repositories on the CDS node

6.1. REGISTERING THE CDS NODE

The following instructions explain how to register your Content Delivery Server (CDS) nodes.

**Prerequisites**

- Latest version of RHEL 8 is installed.
- Ensure you have root access to each of the CDS nodes.

**Procedure**

1. On the CDS nodes, enter the following command:

   ```
   # subscription-manager register --username <admin-example> --password <secret>
   Registering to: subscription.rhsm.redhat.com:443/subscription
   The system has been registered with ID: <a1b2c3-d4e5-f6g7-2345-hij890klm123>
   ```

2. **Optional:** If your system is already registered, you can override the subscription using the `--force` option.

   ```
   # subscription-manager register --force
   ```

   The new system will be available on the Red Hat Customer Portal, and the new CDS instance will not have any subscriptions attached to it.

**Verification**


2. Verify that your system is available by locating it within the Customer Portal.

6.2. ATTACHING A SUBSCRIPTION TO THE CDS NODE

The following instructions explain how to attach a subscription to your content delivery server (CDS) node.

**NOTE**

You do not need to perform the following steps if you are using Simple Content Access.
**Prerequisites**

- Ensure you have root access to the CDS node.

**Procedure**

1. On the CDS node, check for available subscriptions that you can attach.

   ```bash
   # subscription-manager list --available
   +-------------------------------------------+
     Available Subscriptions
   +-------------------------------------------+
     Subscription Name: <Subscription-Name>
     Pool ID: <pool-ID>
   ...```

2. Attach a subscription using its pool ID.

   ```bash
   # subscription-manager attach --pool=<pool-ID>
   Successfully attached a subscription for: <Subscription-Name>```

**6.3. ENABLING THE REQUIRED REPOSITORIES ON THE CDS NODE**

To install RHUI on your system, you must first enable certain repositories on your nodes which contain the required packages. The following instructions explain how to enable the **rhel-8-for-x86_64-baseos-rpms** and **rhel-8-for-x86_64-appstream-rpms** repositories on the CDS node.

If you are planning to use Ceph File System (CephFS) as your shared storage, then you must also enable the **rhceph-5-tools-for-rhel-8-x86_64-rpms** repository.

**NOTE**

CDS nodes require RHEL installations with base packages and with all repositories disabled except for the **rhel-8-for-x86_64-baseos-rpms**, **rhel-8-for-x86_64-appstream-rpms**, and, optionally, **rhceph-5-tools-for-rhel-8-x86_64-rpms** repositories. This requirement means that you cannot install any third-party configurations or softwares that are not necessary for the direct operation of the server. This restriction includes hardening or other non-Red Hat security software.

**Prerequisites**

- Ensure that you have root access to all the CDS nodes you plan to use.

**Procedure**

1. Navigate to a CDS node, list the enabled repositories, and verify that your system is correctly subscribed.

   - If not using Simple Content Access (SCA):

     ```bash
     # subscription-manager list --consumed
     +-------------------------------------------+
       Consumed Subscriptions
     ...```
Subscription Name: Red Hat Update Infrastructure and RHEL Add-Ons for Providers
Provides: JBoss Enterprise Application Platform from RHUI
          JBoss Enterprise Web Server from RHUI
          JBoss Operations Network from RHUI
          RHEL for SAP - Update Services for SAP Solutions from RHUI
          Red Hat Developer Tools from RHUI (for RHEL Server)
          Red Hat Enterprise Linux Server - Extended Update Support from RHUI
          RHEL for SAP HANA - Update Services for SAP Solutions from RHUI
          Red Hat Developer Tools Beta from RHUI (for RHEL Server)
          Red Hat Enterprise Linux High Availability (for RHEL Server) from RHUI
          Red Hat JBoss Core Services from RHUI
          Red Hat Enterprise Linux for x86_64 from RHUI
          Red Hat Enterprise Linux for x86_64 Beta from RHUI
          Red Hat Enterprise Linux Load Balancer (for RHEL Server) from RHUI
          Red Hat Enterprise Linux Resilient Storage (for RHEL Server) from RHUI
          Red Hat Enterprise Linux Scalable File System (for RHEL Server) from RHUI
          Red Hat Enterprise Linux High Performance Networking (for RHEL Server) from RHUI
          Red Hat CodeReady Linux Builder for x86_64 from RHUI
          Red Hat CodeReady Linux Builder for ARM 64 from RHUI
          RHEL Software Test Suite (for RHEL Server) from RHUI
          Red Hat Gluster Storage Server for On-premise from RHUI
          Red Hat Single Sign-On from RHUI
          Red Hat Enterprise Linux High Availability for x86_64 from RHUI
          Red Hat Enterprise Linux Resilient Storage for x86_64 from RHUI
          Red Hat Enterprise Linux High Availability (for RHEL Server) - Extended Update Support from RHUI
          Red Hat Enterprise Linux Server - Extended Life Cycle Support (from RHUI)
          Red Hat Enterprise Linux Load Balancer (for RHEL Server) - Extended Update Support from RHUI
          RHEL for SAP HANA - Extended Update Support (from RHUI)
          RHEL for SAP - Extended Update Support (from RHUI)
          Red Hat Enterprise Linux Resilient Storage (for RHEL Server) - Extended Update Support from RHUI
          Red Hat Enterprise Linux High Performance Networking (for RHEL Server) - Extended Update Support from RHUI
          Red Hat Enterprise Linux for ARM 64 from RHUI
          Red Hat Enterprise Linux Server - Update Services for SAP Solutions from RHUI
          Red Hat Software Collections (for RHEL Server) from RHUI
          Red Hat Enterprise Linux Server for ARM from RHUI
          Red Hat Enterprise Linux High Availability - Update Services for SAP Solutions from RHUI
          Red Hat CodeReady Linux Builder for x86_64 - Extended Update Support from RHUI
          Red Hat Software Collections (for RHEL Server for ARM) from RHUI
          Red Hat Ansible Engine from RHUI
          Red Hat Software Collections Beta (for RHEL Server for ARM) from RHUI
          Red Hat Enterprise Linux for ARM 64 Beta from RHUI
          Red Hat Developer Tools (for RHEL Server for ARM) from RHUI
          Red Hat Developer Tools Beta (for RHEL Server for ARM) from RHUI
          dotNET on RHEL (for RHEL Server) from RHUI
dotNET on RHEL Beta (for RHEL Server) from RHUI
Red Hat Update Infrastructure
Red Hat Enterprise Linux Server from RHUI
SKU:                  RC11164
Contract:            126839
Account:             5401
Serial:              5744492009337488
Pool ID:             8a85f9a1790fb0ed017961af515b7
Provides Management: No
Active:              True
Quantity Used:       1
Service Type:        L1-L3
Roles:               
Service Level:       Premium
Usage:               
Add-ons:
Status Details:      Subscription is current
Subscription Type:   Standard
Starts:              05/12/2021
Ends:                05/11/2022
Entitlement Type:    Physical
------------------------------------------------------------------------------------------------------------------

If using Simple Content Access (SCA):

```
# subscription-manager status
+-------------------------------------------+
| System Status Details                     |
+-------------------------------------------+
| Overall Status: Disabled                  |
| Content Access Mode is set to Simple Content Access. This host has access to content, regardless of subscription status. |
| System Purpose Status: Disabled           |
+-------------------------------------------+
```

2. Disable all repositories.

```
# subscription-manager repos --disable=*  
```

3. Enable the relevant repositories.

```
# subscription-manager repos --enable rhel-8-for-x86_64-appstream-rpms --enable rhel-8-for-x86_64-baseos-rpms
```

4. Optional: If you are planning to use CephFS, enable the Ceph tools repository.

```
# subscription-manager repos --enable rhceph-5-tools-for-rhel-8-x86_64-rpms
```

5. Repeat the steps on all the CDS nodes you plan to use.

Verification

• List the enabled repositories and verify whether the relevant repositories appear on the list.
# yum repolist enabled
<table>
<thead>
<tr>
<th>repo id</th>
<th>repo name</th>
</tr>
</thead>
<tbody>
<tr>
<td>rhel-8-for-x86_64-appstream-rpms</td>
<td>Red Hat Enterprise Linux 8 for x86_64 - AppStream (RPMs)</td>
</tr>
<tr>
<td>rhel-8-for-x86_64-baseos-rpms</td>
<td>Red Hat Enterprise Linux 8 for x86_64 - BaseOS (RPMs)</td>
</tr>
</tbody>
</table>
CHAPTER 7. SETTING UP HAPROXY NODES

To provide load balancing capabilities across the CDS nodes, you must first set up the HAPr oxy nodes.

The following process explains how to:

- Register the HAPr oxy node
- Attach a subscription to the HAPr oxy node
- Enable the required repositories on the HAPr oxy node

7.1. REGISTERING THE HAPROXY NODE

The following instructions explain how to register your HAPr oxy nodes.

Prerequisites

- Latest version of RHEL 8 is installed.
- Ensure you have root access to the HAPr oxy nodes.

Procedure

1. On the HAPr oxy node, enter the following command:

```
# subscription-manager register --username <admin-example> --password <secret>
Registering to: subscription.rhsm.redhat.com:443/subscription
The system has been registered with ID: <a1b2c3-d4e5-f6g7-2345-hij890klm123>
```

2. Optional: If your system is already registered, you can override the subscription using the `--force` option.

```
# subscription-manager register --force
```

The new system will be available on the Red Hat Customer Portal, and the new HAPr oxy instance will not have any subscriptions attached to it.

Verification

2. Verify that your system is available by locating it within the Customer Portal.

7.2. ATTACHING A SUBSCRIPTION TO THE HAPROXY NODE

The following instructions explain how to attach a subscription to your HAPr oxy node.

NOTE

You do not need to perform the following steps if you are using Simple Content Access.

Prerequisites
• Ensure you have root access to the HAProxy node.

Procedure

1. On the HAProxy node, check for available subscriptions that you can attach.

   ```bash
   # subscription-manager list --available
   +-------------------------------------------+
   | Available Subscriptions                   |
   | Subscription Name: <Subscription-Name>    |
   | Pool ID: <pool-ID>                        |
   | ...                                       |
   +-------------------------------------------+
   ```

2. Attach a subscription using its pool ID.

   ```bash
   # subscription-manager attach --pool=<pool-ID>
   Successfully attached a subscription for: <Subscription-Name>
   ```

7.3. ENABLING THE REQUIRED REPOSITORIES ON THE HAProxy NODE

To install RHUI on your system, you must first enable certain repositories on your nodes which contain the required packages. The following instructions explain how to enable the `rhel-8-for-x86_64-baseos-rpms` and `rhel-8-for-x86_64-appstream-rpms` repositories on the HAProxy node.

Prerequisites

• Ensure you have root access to the HAProxy node.

Procedure

1. Navigate to a HAProxy node, list the enabled repositories, and verify that your system is correctly subscribed.

   • If not using Simple Content Access (SCA):

   ```bash
   # subscription-manager list --consumed
   +-------------------------------------------+
   | Consumed Subscriptions                    |
   | Subscription Name: Red Hat Update Infrastructure and RHEL Add-Ons for Providers |
   | Provides:                                 |
   |   JBoss Enterprise Application Platform from RHUI |
   |   JBoss Enterprise Web Server from RHUI   |
   |   JBoss Operations Network from RHUI      |
   |   RHEL for SAP - Update Services for SAP Solutions from RHUI |
   |   Red Hat Developer Tools from RHUI (for RHEL Server) |
   |   Red Hat Enterprise Linux Server - Extended Update Support from RHUI |
   |   RHEL for SAP HANA - Update Services for SAP Solutions from RHUI |
   |   Red Hat Developer Tools Beta from RHUI (for RHEL Server) |
   |   Red Hat Enterprise Linux High Availability (for RHEL Server) from RHUI |
   |   Red Hat JBoss Core Services from RHUI   |
   |   Red Hat Enterprise Linux for x86_64 from RHUI |
   +-------------------------------------------+
   ```
Red Hat Enterprise Linux for x86_64 Beta from RHUI
Red Hat Enterprise Linux Load Balancer (for RHEL Server) from RHUI
Red Hat Enterprise Linux Resilient Storage (for RHEL Server) from RHUI
Red Hat Enterprise Linux Scalable File System (for RHEL Server) from RHUI
Red Hat Enterprise Linux High Performance Networking (for RHEL Server) from RHUI
Red Hat CodeReady Linux Builder for x86_64 from RHUI
Red Hat CodeReady Linux Builder for ARM 64 from RHUI
RHEL Software Test Suite (for RHEL Server) from RHUI
Red Hat Gluster Storage Server for On-premise from RHUI
Red Hat Single Sign-On from RHUI
Red Hat Enterprise Linux High Availability for x86_64 from RHUI
Red Hat Enterprise Linux Resilient Storage for x86_64 from RHUI
Red Hat Enterprise Linux High Availability (for RHEL Server) - Extended Update Support from RHUI
Red Hat Enterprise Linux Server - Extended Life Cycle Support (from RHUI)
Red Hat Enterprise Linux Load Balancer (for RHEL Server) - Extended
RHEL for SAP HANA - Extended Update Support (from RHUI)
RHEL for SAP - Extended Update Support (from RHUI)
Red Hat Enterprise Linux Resilient Storage (for RHEL Server) - Extended
Red Hat Enterprise Linux High Performance Networking (for RHEL Server) - Extended Update Support from RHUI
Red Hat Enterprise Linux Server - Update Services for SAP Solutions from RHUI
Red Hat CodeReady Linux Builder for x86_64 - Extended Update Support from RHUI
Red Hat Software Collections (for RHEL Server for ARM) from RHUI
Red Hat Ansible Engine from RHUI
Red Hat Developer Tools (for RHEL Server for ARM) from RHUI
dotNET on RHEL (for RHEL Server) from RHUI
dotNET on RHEL Beta (for RHEL Server) from RHUI
Red Hat Update Infrastructure from RHUI
SKU:                RC11164
Contract:            126839
Account:             5401
Serial:              5744492009337488
Pool ID:             8a85f9a1790fb0ed017961af515b7
Provides Management: No
Active:              True
Quantity Used:       1
Service Type:        L1-L3
Roles:
If using Simple Content Access (SCA):

```bash
# subscription-manager status
```

```
+-------------------------------------------+
| System Status Details                    |
| +-----------------------------------------|
| Overall Status: Disabled                 |
| Content Access Mode is set to Simple Content Access. This host has access to content, regardless of subscription status. |
| System Purpose Status: Disabled         |
+-----------------------------------------+
```

2. Disable all repositories.

```bash
# subscription-manager repos --disable=* 
```

3. Enable the relevant repositories.

```bash
# subscription-manager repos --enable rhel-8-for-x86_64-appstream-rpms --enable rhel-8-for-x86_64-baseos-rpms
```

Verification

- List the enabled repositories and verify whether the relevant repositories appear on the list.

```bash
# yum repolist enabled
```

```
<table>
<thead>
<tr>
<th>repo id</th>
<th>repo name</th>
</tr>
</thead>
<tbody>
<tr>
<td>rhel-8-for-x86_64-appstream-rpms</td>
<td>Red Hat Enterprise Linux 8 for x86_64 - AppStream (RPMs)</td>
</tr>
<tr>
<td>rhel-8-for-x86_64-baseos-rpms</td>
<td>Red Hat Enterprise Linux 8 for x86_64 - BaseOS (RPMs)</td>
</tr>
</tbody>
</table>
```
CHAPTER 8. GENERATING A CRYPTOGRAPHIC KEY PAIR

To ensure secure data transmission between the Red Hat Update Appliance (RHUA), content delivery system (CDS), and HAProxy nodes, and to use rhui-manager to set up those nodes, you must generate a key pair on the RHUA node and copy the public key to CDS and HAProxy nodes.

You can generate either an RSA or an ECDSA key, depending on your use case.

8.1. GENERATING AN RSA KEY PAIR

The following steps explain how to generate an RSA key pair for version 2 of the SSH protocol.

Procedure

1. On the RHUA node, run the `ssh-keygen` command with the RSA argument, and save the key in the default location.

   ```bash
   ssh-keygen -t rsa
   Generating public/private rsa key pair.
   Enter file in which to save the key (/home/USER/.ssh/id_rsa):
   Created directory '/home/USER/.ssh'.
   Enter passphrase (empty for no passphrase):
   Enter same passphrase again:
   Your identification has been saved in /home/USER/.ssh/id_rsa.
   Your public key has been saved in /home/USER/.ssh/id_rsa.pub.
   The key fingerprint is:
   The key's randomart image is:
   +---[ RSA 2048]----+
   |             E.  |
   |            . .  |
   |             o . |
   |              . .|
   |        S .    . |
   |         + o o ..|
   |          * * +oo|
   |           O +..=|
   |           o*  o.|
   +-----------------+
   ```

2. Confirm that the permissions for the `~/.ssh` directory are set to `rwx------`, or 700 in octal notation.
$ ls -ld ~/.ssh
  drwx------. 2 USER USER 54 Nov 25 16:56 /home/USER/.ssh/

3. Copy the public key to the CDS and HAProxy nodes.

$ ssh-copy-id user@<haproxy1>
$ ssh-copy-id user@<cds1>
$ ssh-copy-id user@<cds2>

8.2. GENERATING AN ECDSA KEY PAIR

The following steps explain how to generate an ECDSA key pair for version 2 of the SSH protocol.

Procedure

1. On the RHUA node, run the `ssh-keygen` command with the ECDSA argument, and save the key in the default location.

   $ ssh-keygen -t ecdsa
   Generating public/private ecdsa key pair.
   Enter file in which to save the key (/home/USER/.ssh/id_ecdsa):
   Created directory '/home/USER/.ssh'.
   Enter passphrase (empty for no passphrase):
   Enter same passphrase again:
   Your identification has been saved in /home/USER/.ssh/id_ecdsa.
   Your public key has been saved in /home/USER/.ssh/id_ecdsa.pub.
   The key fingerprint is:
   The key's randomart image is:
   +--[ECDSA  256]---+
<p>|       .+ +o     |
|       . =.o     |
|        o o +  ..|
|         + + o  +|
|        S o o oE.|
|           + oo+.|
|            + o  |
|                 |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
</table>

   WARNING
   Leave the passphrase field blank. CDS installation and registration fails if you provide a passphrase while generating the key pair.

2. Confirm that the permissions for the ~/.ssh directory are set to `rwx------`, or 700 in octal notation.
$ ls -ld ~/.ssh
    drwx------. 2 USER USER 54 Nov 25 16:56 /home/USER/.ssh/

3. Copy the public key to the CDS and HAProxy nodes.

    $ ssh-copy-id user@<haproxy1>
    $ ssh-copy-id user@<cds1>
    $ ssh-copy-id user@<cds2>
CHAPTER 9. CONFIGURING SHARED STORAGE

The RHUA and CDS nodes require a shared storage volume, which can be accessed by both, to store content managed by RHUI.

Currently, RHUI supports the following storage solutions:

- Network File System (NFS)
- Ceph File System (CephFS)

9.1. CONFIGURING SHARED STORAGE USING NFS

When using Network File System (NFS) as your shared storage, you must set up an NFS server either on the RHUA node or on a dedicated machine.

The following instructions explain how to create, configure, and verify NFS to work with RHUI.

**NOTE**

Setting up your NFS server on a dedicated machine allows the CDS nodes and your RHUI clients to continue working even if something happens to the RHUA node.

**Prerequisites**

- Ensure you have root access to the NFS server
- Ensure you have root access to the RHUA node
- Ensure you have root access to all the CDS nodes you plan to use.

**Procedure**

1. Install the `nfs-utils` package on the node hosting the NFS server, the RHUA node (if it differs from the NFS node), and all the CDS nodes.

   ```
   # dnf install nfs-utils
   ```

2. Create a suitable directory to hold all the RHUI content.

   ```
   # mkdir /export
   ```

3. Allow your RHUA and CDS nodes access to the directory by editing the `/etc/exports` file and adding the following line:

   ```
   /export rhua.example.com(rw,no_root_squash)
   cds01.example.com(rw,no_root_squash) cds02.example.com(rw,no_root_squash)
   ```

4. Start and enable the NFS service.

   ```
   # systemctl start nfs-server
   # systemctl start rpcbind
   # systemctl enable nfs-server
   ```
# systemctl enable rpcbind

**NOTE**
If the NFS service is already running use the `restart` command instead of the `start` command.

**Verification**

- To test whether an NFS server is set up on a machine named `filer.example.com`, run the following commands on a CDS node:

```bash
# mkdir /mnt/nfstest
# mount filer.example.com:/export /mnt/nfstest
# touch /mnt/nfstest/test
```

Your setup is working properly if you do not get any error messages.

### 9.2. CONFIGURING SHARED STORAGE USING CEPHFSS

When using Ceph File System (CephFS) as your shared storage, you must set up a file system and share it over the network. RHUI treats the shared file system as a simple mount point, which you can mount on the file systems of the RHUA and CDS nodes.

**IMPORTANT**

Do not set up the Ceph shared file storage on the RHUI nodes. You must configure CephFS on independent dedicated machines.

The following instructions explain how to verify whether an existing Ceph file system can work with RHUI.

**NOTE**

This document does not provide instructions to set up Ceph shared file storage. For instructions on how to do so, consult your system administrator.

**Prerequisites**

- Ensure you have the following identification information:
  - The IP Address and port of the host where the cluster monitor daemon for the Ceph distributed file system is running.
    - As a CephFS system administrator, run the command `ceph mon dump` on the Ceph master node. You can find the IP address and port listed as `<ceph_monip>`:
      ```bash
      <ceph_monip>:<ceph_port>
      ```
  - The Ceph username, usually `admin`.
  - The Ceph file system name.
    - As a CephFS system administrator, run the command `ceph fs ls` on the Ceph master node. You can find the file system name listed as `<cephfs_name>`.
• The Ceph secret key.
  ■ As a CephFS system administrator, run the command `ceph auth get client.admin` on the Ceph master node. You can find the secret key listed as `<ceph_secretkey>`.

• Ensure you have root access to the RHUA node and all the CDS nodes you plan to use.

• Enable the Ceph Tools repository on the RHUA and CDS nodes. For more information, see:
  ■ Section 5.3, “Enabling the required repositories on the RHUA node”
  ■ Section 6.3, “Enabling the required repositories on the CDS node”

Procedure

• On the RHUA and CDS nodes install the `ceph-common` package:

  ```bash
  # dnf install ceph-common
  ```

Verification

1. To test whether a Ceph File Share is available and whether RHUI can use it, run the following commands on the RHUA node or on one of the CDS nodes:

  ```bash
  # mkdir /mnt/mycephfs_test
  # mount -t ceph <ceph_monip>:<ceph_port>:/ /mnt/mycephfs_test -o name=admin,secret=<ceph_secretkey>,fs=<cephfs_name>
  # touch /mnt/cephfs_test/testfile
  # ls /mnt/cephfs_test/testfile
  # umount /mnt/mycephfs_test
  ```

   Your setup is working properly if you do not get any error messages.

2. Clean up the test mount point.

  ```bash
  # rm /mnt/cephfs_test/testfile
  # umount /mnt/mycephfs_test
  ```
CHAPTER 10. UPDATING YOUR SYSTEM

Before you install RHUI, it is a good practice to secure your system by installing all the latest available updates.

Prerequisites

- Ensure that the system is registered to Red Hat.
- All the relevant repositories are enabled.

Procedure

1. Navigate to each of your nodes and apply any available operating system updates. For detailed information about updating your system, see the Securing your system.
2. Reboot the nodes.
3. Verify that all configuration changes have persisted.

WARNING

Make sure the host name of the RHUA is set correctly. If the host name is not set and its value is reported as localhost.localdomain or localhost, you will not be able to proceed.
CHAPTER 11. INSTALLING RED HAT UPDATE INFRASTRUCTURE

Once you have completed the prerequisites, you can install RHUI on your system using repositories and a network connection to resolve dependencies.

You can install RHUI using the following shared storage solutions:

- Network File System (NFS)
- Ceph File System (CephFS)

11.1. INSTALLING RED HAT UPDATE INFRASTRUCTURE USING NFS

Perform the following steps to install Red Hat Update Infrastructure (RHUI) on your system using repositories along with network file system (NFS).

Prerequisites

- Ensure that your system can access the internet.
- Ensure you have root access to the RHUA node.
- Optional: Ensure you have configured your proxy server if you plan to use one with RHUI.

Procedure

1. Navigate to the RHUA node and install the `rhui-installer` package.
   
   ```bash
   # dnf install rhui-installer
   ```

2. Run `rhui-installer` and specify the arguments based on your use case.

   a. To set up RHUI without a proxy server:

   ```bash
   # rhui-installer --remote-fs-server <nfs_server>:/ --rhua-hostname <public-hostname-of-your-rhua> --cds-lb-hostname <public-hostname-of-your-cds-or-lb>
   ```

   The following arguments are mandatory when using NFS.

   - `--remote-fs-server`: The remote mountpoint for the shared file system.
   - `--cds-lb-hostname`: The name of the load balancer that clients use to access the CDS. You must specify the name as a fully qualified domain name (FQDN).
   - `--rhua-hostname`: The hostname of the RHUA node. You must specify the name as a fully qualified domain name (FQDN).

   b. To set up RHUI with a proxy server:

   ```bash
   ```
The following arguments are mandatory when using NFS and a proxy server.

- **--remote-fs-server**: The remote mountpoint for the shared file system.

- **--cds-lb-hostname**: The name of the load balancer that clients use to access the CDS. You must specify the name as a fully qualified domain name (FQDN).

- **--rhua-hostname**: The hostname of the RHUA node. You must specify the name as a fully qualified domain name (FQDN).

- **--proxy-hostname**: The hostname of the proxy server that the RHUA node will use to communicate with the Red Hat CDN (cdn.redhat.com:443).

- **--proxy-port**: The TCP port on the proxy server. Note that the Squid proxy server normally uses port 3128.

- **--proxy-protocol**: The application layer protocol that the proxy server is configured to support, either HTTP or HTTPS.

- **--proxy-username**: The user name associated with the proxy server. Specify the user name only if your proxy server requires authentication.

- **--proxy-password**: The password to access the proxy server. Specify the password only if your proxy server requires authentication.

**IMPORTANT**

The `rhui-installer` command sets the initial RHUI login password by default and stores it in the `/etc/rhui/rhui-subscription-sync.conf` file.

If you wish to set your own password, you can override the initial password with the `--rhui-manager-password` argument.

**Verification**

- On the RHUA node, verify if you can access the RHUI Terminal User Interface (TUI).

  ```
  # rhui-manager
  ```

**11.2. INSTALLING RED HAT UPDATE INFRASTRUCTURE USING CEPHFS**

Perform the following steps to install Red Hat Update Infrastructure (RHUI) on your system using repositories along with the Ceph file system (CephFS).

**Prerequisites**

- Ensure that your system can access the internet.

- Ensure you have root access to the RHUA node.

- Enable the Ceph Tools repository on the RHUA and CDS nodes. For more information, see:
Section 5.3, “Enabling the required repositories on the RHUA node”

Section 6.3, “Enabling the required repositories on the CDS node”

- Ensure you have configured your shared storage using CephFS, see Section 9.2, “Configuring shared storage using CephFS”.

- Optional: Ensure you have configured your proxy server if you plan to use one with RHUI.

**Procedure**

1. Navigate to the RHUA node and install the `rhui-installer` package.

   ```
   # dnf install rhui-installer
   ```

2. Create a file containing the CephFS secret key.

   ```
   # echo "cephfs secretkey" > <path to file containing the CephFS secret key>
   # chmod 400 <path to file containing the CephFS secretkey>
   ```

3. Run `rhui-installer` and specify the arguments based on your use case.

   a. To set up RHUI without a proxy server:

      ```
      ```

      The following arguments are mandatory when using CephFS.

      - `--remote-fs-server`: The remote mountpoint for the shared file system. The format is `<ceph_monip>:<ceph_port>`.
      - `--cds-lb-hostname`: The name of the load balancer that clients use to access the CDS. You must specify the name as a fully qualified domain name (FQDN).
      - `--rhua-hostname`: The hostname of the RHUA node. You must specify the name as a fully qualified domain name (FQDN).
      - `--remote-fs-type`: The type of file system to use. You must set this to Ceph.
      - `--cephfs-secretkey-file`: The path to the file containing the CephFS secret key.
      - `--cephfs-name`: The name of the Ceph file system.
      - `--cephfs-username`: The username associated with the Ceph file system.

   b. To set up RHUI with a proxy server:

      ```
      # rhui-installer --remote-fs-server <ceph_monip>:<ceph_port>:/ --remote-fs-type ceph --cephfs-secretkey-file <ceph_secretkey_file> --cephfs-name <cephfs_name> --cephfs-username <ceph-fs-username> --rhua-hostname <public-hostname-of-your-rhua> --cds-lb-hostname <public-hostname-of-your-cds-or-lb> --proxy-
hostname <public-hostname-of-your-proxy-server> --proxy-port <TCP-port> --proxy-protocol <supported-protocol> --proxy-username <proxy-username> --proxy-password <proxy-password>

The following arguments are mandatory when using CephFS and a proxy server.

- **--remote-fs-server:** The remote mountpoint for the shared file system. The format is `<ceph_monip>:<ceph_port>`.
- **--cds-lb-hostname:** The name of the load balancer that clients use to access the CDS. You must specify the name as a fully qualified domain name (FQDN).
- **--rhua-hostname:** The hostname of the RHUA node. You must specify the name as a fully qualified domain name (FQDN).
- **--remote-fs-type:** The type of file system to use. You must set this to Ceph.
- **--cephfs-secretkey-file:** The path to the file containing the CephFS secret key.
- **--cephfs-name:** The name of the Ceph file system.
- **--cephfs-username:** The username associated with the Ceph file system.
- **--proxy-hostname:** The hostname of the proxy server that the RHUA node will use to communicate with the Red Hat CDN (cdn.redhat.com:443).
- **--proxy-port:** The TCP port on the proxy server. Note that the Squid proxy server normally uses port 3128.
- **--proxy-protocol:** The application layer protocol that the proxy server is configured to support, either HTTP or HTTPS.
- **--proxy-username:** The user name associated with the proxy server. Specify the user name only if your proxy server requires authentication.
- **--proxy-password:** The password to access the proxy server. Specify the password only if your proxy server requires authentication.

**IMPORTANT**

The `rhui-installer` command sets the initial RHUI login password by default and stores it in the `/etc/rhui/rhui-subscription-sync.conf` file.

If you wish to set your own password, you can override the initial password with the `--rhui-manager-password` argument.

**Verification**

- On the RHUA node, verify if you can access the RHUI Terminal User Interface (TUI).

  ```bash
  # rhui-manager
  ```