Red Hat Service Interconnect 1.4

Installation

Installing the CLI, or the controller, or the Operator
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Abstract

This guide describes how to install Red Hat Service Interconnect 1.4. Red Hat Service Interconnect is a Red Hat build of the open source Skupper project.
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CHAPTER 1. INSTALLING THE SKUPPER CLI

The Skupper CLI provides a method to create both Kubernetes and Podman sites.

NOTE

Podman sites are a Technology Preview feature as described in Release Notes

Prerequisites

- Your subscription has been activated and your system is registered. For more information about using the Customer Portal to activate your Red Hat subscription and register your system for packages, see Chapter 6, Using your subscription.

Procedure

1. Subscribe to the required repositories:

   Red Hat Enterprise Linux 8
   
   $ sudo subscription-manager repos --enable=service-interconnect-1-for-rhel-8-x86_64-rpms

   Red Hat Enterprise Linux 9
   
   $ sudo subscription-manager repos --enable=service-interconnect-1-for-rhel-9-x86_64-rpms

2. Use the yum or dnf command to install the skupper command:

   $ sudo dnf install skupper-cli

3. If you want to run skupper to create a podman site on RHEL 8, you need to configure podman to use netavark if it is not already configured:

   a. Check if netavark is configured as the podman network backend:

      $ podman info | grep networkBackend

   b. If netavark is not listed as the backend, install it:

      $ sudo dnf install netavark

   c. Configure podman to use netavark by making sure the following lines exist in the /etc/containers/containers.conf file:

      [network]
      network_backend = "netavark"

   d. Verify the new configuration by repeating step a.

Additional information

- See Getting Started for instructions about creating a site.
• Use `man containers.conf` to view more information about podman configuration.
CHAPTER 2. INSTALLING THE OPERATOR

The Red Hat Service Interconnect Operator creates and manages sites in OpenShift.

**NOTE**

The Red Hat Service Interconnect Operator is supported only on OpenShift 4. Installing an Operator requires administrator-level privileges for your cluster.

2.1. INSTALLING THE OPERATOR FOR ALL NAMESPACES USING THE CLI

The steps in this section show how to use the `oc` command to install and deploy the latest version of the Red Hat Service Interconnect Operator in a given OpenShift cluster. Installing the operator for all namespaces allows you create a site in any namespace. See **Getting started with the OpenShift CLI** for more information about the `oc` command.

**Prerequisites**

- Access to an OpenShift cluster using a `cluster-admin` account. See **Release Notes** for supported OpenShift versions.

**Procedure**

1. Log in to OpenShift as a cluster administrator. For example:

   ```bash
   $ oc login -u system:admin
   ```

2. Complete the steps described in **Red Hat Container Registry Authentication**.

3. Create a file named `subscription-all.yaml` with the following:

   ```yaml
   apiVersion: operators.coreos.com/v1alpha1
   kind: Subscription
   metadata:
     name: skupper-operator
     namespace: openshift-operators
   spec:
     channel: alpha
     installPlanApproval: Automatic
     name: skupper-operator
     source: redhat-operators
     sourceNamespace: openshift-marketplace
     startingCSV: skupper-operator.v1.4.2-rh-2
   ```
NOTE

If you do not specify `startingCSV`, the subscription defaults to the latest operator version.

If you specify `installPlanApproval` as `Manual`, sites are not automatically upgraded to the latest version of Service Interconnect. See Chapter 4, Upgrading the Red Hat Service Interconnect Operator and sites for information on manually upgrading sites.

4. Apply the subscription YAML:

   $ oc apply -f subscription-all.yaml

Additional information

- See Getting Started for instructions about creating a site.

2.2. INSTALLING THE OPERATOR FOR A SINGLE NAMESPACE USING THE CLI

The steps in this section show how to use the `oc` command to install and deploy the latest version of the Red Hat Service Interconnect Operator in a given OpenShift cluster. Installing the operator for a single namespaces allows you create a site in the specified namespace. See Getting started with the OpenShift CLI for more information about the `oc` command.

Prerequisites

- Access to an OpenShift cluster using a `cluster-admin` account. See Release Notes for supported OpenShift versions.

Procedure

1. Log in to OpenShift as a cluster administrator. For example:

   $ oc login -u system:admin

2. Complete the steps described in Red Hat Container Registry Authentication.

3. Create an Operator group in the namespace where you want to create a site:

   a. Create a file named `operator-group.yaml` with the following:

   ```yaml
   kind: OperatorGroup
   apiVersion: operators.coreos.com/v1
   metadata:
     name: skupper-operator
     namespace: my-namespace
   spec:
     targetNamespaces:
     - my-namespace
   
   where **my-namespace** is the name of the namespace you want to create the site.
b. Apply the Operator group YAML:

```bash
$ oc apply -f operator-group.yaml
```

4. Create a file named `subscription-myns.yaml` with the following:

```yaml
apiVersion: operators.coreos.com/v1alpha1
kind: Subscription
metadata:
  name: skupper-operator
  namespace: my-namespace
spec:
  channel: alpha
  installPlanApproval: Automatic
  name: skupper-operator
  source: redhat-operators
  sourceNamespace: openshift-marketplace
  startingCSV: skupper-operator.v1.4.2-rh-2
```

where `my-namespace` is the name of the namespace you want to create the site.

**NOTE**

If you do not specify `startingCSV`, the subscription defaults to the latest operator version.

If you specify `installPlanApproval` as `Manual`, sites are not automatically upgraded to the latest version of Service Interconnect. See Chapter 4, *Upgrading the Red Hat Service Interconnect Operator and sites* for information on manually upgrading sites.

5. Apply the subscription YAML:

```bash
$ oc apply -f subscription-myns.yaml
```

Additional information

- See *Getting Started* for instructions about creating a site.

## 2.3. INSTALLING THE OPERATOR USING THE OPENSHIFT CONSOLE

The procedures in this section show how to use the OperatorHub from the OpenShift console to install and deploy the latest version of the Red Hat Service Interconnect Operator in a given OpenShift namespace.

**Prerequisites**

- Access to an OpenShift cluster using a `cluster-admin` account. See *Release Notes* for supported OpenShift versions.

**Procedure**

1. In the OpenShift web console, navigate to **Operators → OperatorHub**.
2. Choose Red Hat Service Interconnect Operator from the list of available Operators, and then click Install.

3. On the Operator Installation page, two Installation mode options are available:
   - All namespaces on the cluster
   - A specific namespace on the cluster
     For this example, choose A specific namespace on the cluster

4. Choose an Update approval option.
   By default, Automatic approval is selected, and sites will upgrade to the latest version of Service Interconnect. If you choose Manual approval, sites will not be automatically upgraded to the latest version of Service Interconnect. See Chapter 4, Upgrading the Red Hat Service Interconnect Operator and sites for information on manually upgrading sites.

5. Select the namespace into which you want to install the Operator, and then click Install.
   The Installed Operators page appears displaying the status of the Operator installation.

6. Verify that the Red Hat Service Interconnect Operator is displayed and wait until the Status changes to Succeeded.

7. If the installation is not successful, troubleshoot the error:
   b. Select the Subscription tab and view any failures or errors.

For more information about installing Operators, see the OpenShift Documentation

Additional information
   - See Getting Started for instructions about creating a site.
CHAPTER 3. UPGRADING THE SKUPPER CLI AND SITES

Upgrading sites requires the latest version of the Skupper CLI.

NOTE

Update all sites to ensure the same version of Service Interconnect is running across your service network. You can expect some minimal downtime during the update process.

Procedure

1. Upgrade the **skupper** CLI:

   ```bash
   $ dnf upgrade service-interconnect-1-for-rhel-8-x86_64-rpms
   ```

2. Upgrade each site:
   a. Set the context to the site you want to upgrade.
   b. Run the upgrade command:

   ```bash
   $ skupper update
   ```
CHAPTER 4. UPGRADING THE RED HAT SERVICE INTERCONNECT OPERATOR AND SITES

If you chose automatic updates when installing the Red Hat Service Interconnect Operator, sites are upgraded when a new version of Service Interconnect is available. If you choose manual updates, complete this procedure to upgrade your sites.

Procedure

1. Log into the OpenShift console.

2. Navigate to the Installed Operators page.

3. If Upgrade available is displayed as the Status for the Red Hat Service Interconnect Operator, click that text.


5. Click Approve to upgrade sites.
CHAPTER 5. INSTALLING THE POLICY SYSTEM

Installing the Skupper policy system on a cluster allows you control how Skupper is used on the cluster.

NOTE

Applying the policy system in a cluster without specific policy rules prohibits site linking and service exposure. If you are installing the policy system on a cluster where there are existing sites, you must create policies before installing the policy system to avoid disruption.

Prerequisites

- Access to a Kubernetes cluster with **cluster-admin** privileges.
- The Red Hat Service Interconnect Operator is installed

Procedure

1. Log into your cluster.
2. Deploy the policy CRD:

   ```
   $ kubectl apply -f skupper_cluster_policy_crd.yaml
   customresourcedefinition.apiextensions.k8s.io/skupperclusterpolicies.skupper.io created
   clusterrole.rbac.authorization.k8s.io/skupper-service-controller created
   ```

   where the contents of **skupper_cluster_policy_crd.yaml** is specified in the [Appendix A, YAML for the Skupper policy CRD](#) appendix.

Additional information

See [Securing a service network using policies](#) for more information about using policies.
CHAPTER 6. USING YOUR SUBSCRIPTION

Red Hat Service Interconnect is provided through a software subscription. To manage your subscriptions, access your account at the Red Hat Customer Portal.

6.1. ACCESSING YOUR ACCOUNT

Procedure
1. Go to access.redhat.com.
2. If you do not already have an account, create one.
3. Log in to your account.

6.2. ACTIVATING A SUBSCRIPTION

Procedure
1. Go to access.redhat.com.
2. Navigate to My Subscriptions.
3. Navigate to Activate a subscription and enter your 16-digit activation number.

6.3. REGISTERING YOUR SYSTEM FOR PACKAGES

To install RPM packages for this product on Red Hat Enterprise Linux, your system must be registered. If you are using downloaded release files, this step is not required.

Procedure
1. Go to access.redhat.com.
2. Navigate to Registration Assistant.
3. Select your OS version and continue to the next page.
4. Use the listed command in your system terminal to complete the registration.

For more information about registering your system, see one of the following resources:

- Red Hat Enterprise Linux 8 - Registering the system and managing subscriptions
- Red Hat Enterprise Linux 9 - Registering the system and managing subscriptions
APPENDIX A. YAML FOR THE SKUPPER POLICY CRD

The policy system allows a cluster administrator restrict Skupper usage on a cluster. It is not required for typical Skupper usage.

The following YAML applies the Skupper policy CRD to a cluster.

```yaml
---
apiVersion: apiextensions.k8s.io/v1
kind: CustomResourceDefinition
metadata:
  name: skupperclusterpolicies.skupper.io
spec:
group: skupper.io
versions:
- name: v1alpha1
  served: true
  storage: true
  schema:
    openAPIV3Schema:
      type: object
      properties:
        spec:
          type: object
          properties:
            namespaces:
              type: array
              items:
                type: string
            allowIncomingLinks:
              type: boolean
            allowedOutgoingLinksHostnames:
              type: array
              items:
                type: string
            allowedExposedResources:
              type: array
              items:
                type: string
            allowedServices:
              type: array
              items:
                type: string
            scope: Cluster
          names:
            plural: skupperclusterpolicies
            singular: skupperclusterpolicy
            kind: SkupperClusterPolicy

---
apiVersion: rbac.authorization.k8s.io/v1
kind: ClusterRole
metadata:
  labels:
    application: skupper-service-controller
  name: skupper-service-controller
rules:
```
- apiGroups:
  - skupper.io
resources:
- skupperclusterpolicies
verbs:
- get
- list
- watch
- apiGroups:
  - ""
resources:
- namespaces
verbs:
- get
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.

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