Monitoring Docker

Beta Version

Docker PowerPack version 100

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Overview

Introduction

This manual describes how to monitor the Docker platform in the ScienceLogic platform using the *Docker* PowerPack.

The following sections provide an overview of the Docker platform and the *Docker* PowerPack:

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What is Docker?

Docker is a platform that automates the process of deploying applications using software containers. These containers include individual deployment components (e.g., software code, system libraries, etc.) that, when combined, contain everything needed to run the application.

What Does the Docker PowerPack Monitor?

The *Docker* PowerPack includes:

- An example Basic/Snippet credential for discovering Docker devices
- Dynamic Applications and Run Book Actions to discover, model, and monitor the following Docker component devices:
    - Hosts
    - Containers
    - Swarms
    - Stacks
    - Services
- Device Classes for each type of Docker component device the ScienceLogic platform monitors
- Event Policies that are triggered when Docker component devices meet certain status criteria

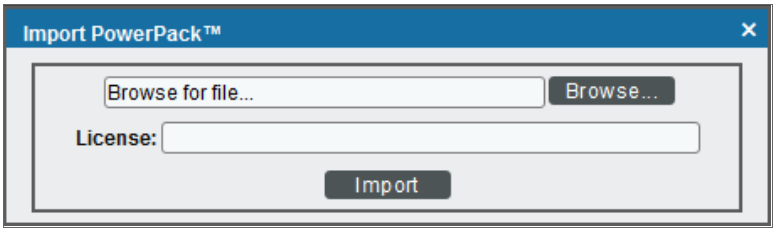
Installing the Docker PowerPack

Before completing the steps in this manual, you must import and install the latest version of the *Docker* PowerPack.

To download and install a PowerPack:

TIP: By default, installing a new version of a PowerPack overwrites all content in that PowerPack that has already been installed on the target system. You can use the ***Enable Selective PowerPack Field Protection*** setting in the **Behavior Settings** page (System > Settings > Behavior) to prevent new PowerPacks from overwriting local changes for some commonly customized fields. (For more information, see the ***System Administration*** manual.)

1. Download the PowerPack from the ScienceLogic Customer Portal.
2. Go to the **PowerPack Manager** page (System > Manage > PowerPacks).
3. In the **PowerPack Manager** page, click the **[Actions]** button, then select *Import PowerPack*.
4. The **Import PowerPack** dialog box appears:



5. Click the **[Browse]** button and navigate to the PowerPack file.
6. When the **PowerPack Installer** modal page appears, click the **[Install]** button to install the PowerPack.

> **NOTE:** If you exit the **PowerPack Installer** modal page without installing the imported PowerPack, the imported PowerPack will not appear in the **PowerPack Manager** page. However, the imported PowerPack will appear in the **Imported PowerPacks** modal page. This page appears when you click the **[Actions]** menu and select *Install PowerPack*.

Chapter 2

Configuring Docker Monitoring

Overview

The following sections describe the steps required to configure the Docker platform and discover Docker component devices in the ScienceLogic platform using the *Docker* PowerPack:

Prerequisites

Before you discover Docker components using the *Docker* PowerPack, you must first enable the Docker API.

To enable the Docker API:

1. Log in to the command-line interface of the server running Docker and type the following to edit the docker.service file:

```
$ sudo vi /lib/systemd/system/docker.service
```

2. Find the line that starts with "`ExecStart=/usr/`" and add "`-H tcp://0.0.0.0:4243`" so that the updated line looks like this:

```
ExecStart=/usr/bin/dockerd -H fd:// -H tcp://0.0.0.0:4243
```

3. Reload systemd, restart Docker, and test that the Docker API is accessible by typing the following:

```
$ systemctl daemon-reload
$ sudo service docker restart
$ curl http://localhost:4243/version
```

If the Docker API is successfully enabled, the version returns something similar to the following:

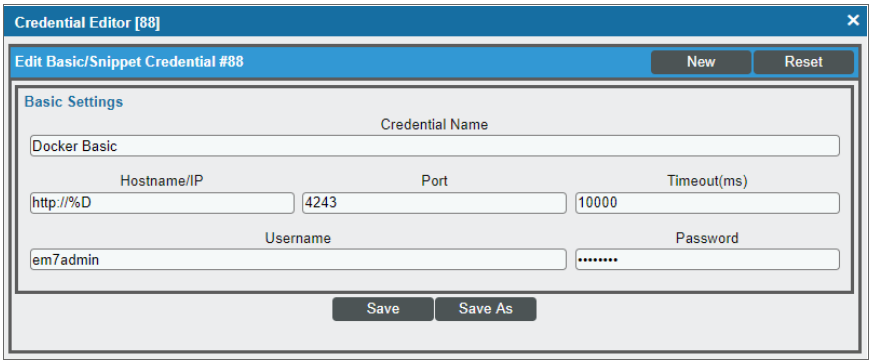
```
{"Version":"17.03.2-ee-4","ApiVersion":"1.27","MinAPIVersion":"1.12","GitCommit":
"1e6d71e","GoVersion":"go1.7.5","Os":"linux","Arch":"amd64","KernelVersion":"4.4.0-
83-generic","BuildTime":"2017-05-19T20:27:23.534992262+00:00"}
```

Configuring a Docker Credential

To configure the ScienceLogic platform to monitor the Docker platform, you must first create a Basic/Snippet credential that allows the Dynamic Applications in the *Docker* PowerPack to connect with Docker hosts and swarms. An example Basic/Snippet credential that you can edit for your own use is included in the *Docker* PowerPack.

To create a Basic/Snippet credential to access Docker hosts and swarms:

1. Go to the **Credential Management** page (System > Manage > Credentials).
2. Locate the example **Docker Basic** credential, and then click its wrench icon (). The **Edit Basic/Snippet Credential** modal page appears.
3. Complete the following fields:



- ***Credential Name***. Type a new name for the Docker credential.
- ***Hostname/IP***. Type "%D".
- ***Port***. Type "4243".
- ***Timeout(ms)***. Type "10000".

- ***Username***. Type a value for the username.
- ***Password***. Type a value for the password.

NOTE: The Docker platform does not require a specific username and password to access the platform, but the ScienceLogic platform does require the ***Username*** and ***Password*** fields to have values when using Basic/Snippet credentials to monitor Docker. Therefore, those fields must have entries, but the values themselves do not matter.

4. Click the **[Save As]** button.
5. When the confirmation message appears, click **[OK]**.

Discovering Docker Components

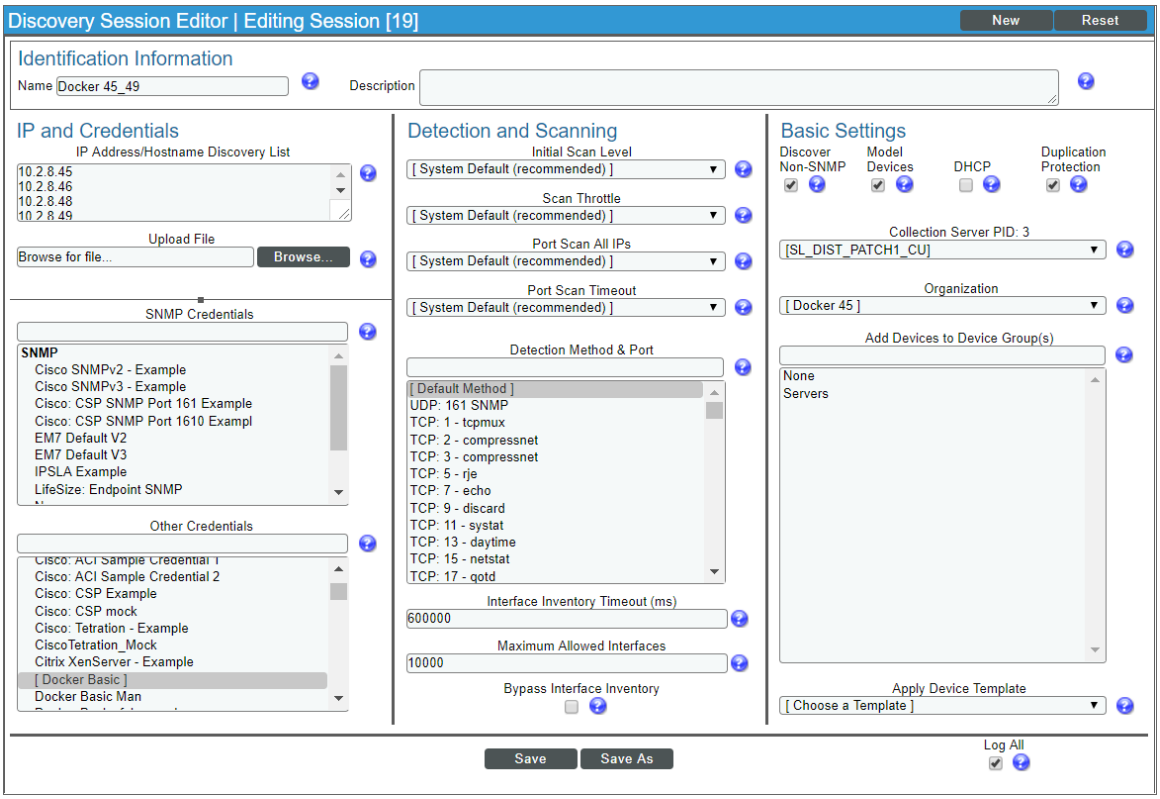
To discover and model your Docker component devices for monitoring, you must run a discovery session. The discovery session will discover the Docker hosts and swarms that the platform will use as the root devices for monitoring the Docker components.

Several minutes after the discovery session has completed, the Dynamic Applications in the *Docker* PowerPack will automatically align to the Docker root devices. These Dynamic Applications will discover, model, and monitor the remaining components in your Docker system.

To discover Docker components, perform the following steps:

1. Go to the **Discovery Control Panel** page (System > Manage > Discovery), and then click the **[Create]** button. The **Discovery Session Editor** page appears.

2. In the **Discovery Session Editor** page, complete the following fields:



- ***Name***. Type a name for your discovery session.
- ***IP Address/Hostname Discovery List***. Type the IP addresses for all of the Docker hosts in the swarm that you want to discover.

NOTE: Swarms are created only when the swarm leader is discovered.

- ***Other Credentials***. Select the *Basic/Snippet credential* you created for Docker.
- ***Discover Non-SNMP***. Select this checkbox.
- ***Model Devices***. Select this checkbox.

3. Optionally, you can enter values in the other fields on this page. For more information about the other fields on this page, see the ***Discovery & Credentials*** manual.
4. Click the **[Save]** button to save the discovery session, and then close the **Discovery Session Editor** window.
5. The discovery session you created displays at the top of the **Discovery Control Panel** page. Click its lightning-bolt icon ( ) to run the discovery session.
6. The **Discovery Session** window appears. When a root device is discovered, click its device icon ( ) to view the **Device Properties** page for that device.

Manually Aligning Dynamic Applications

To verify that the ScienceLogic platform has automatically aligned the correct Dynamic Applications during discovery:

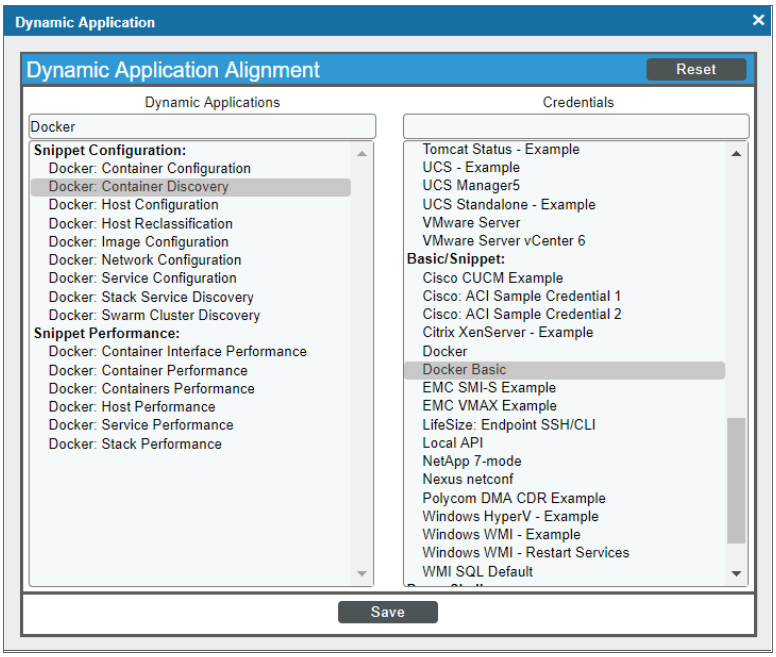
1. From the **Device Properties** page (Registry > Devices > wrench icon ()) for the Docker root device, click the **[Collections]** tab. The **Dynamic Application Collections** page appears.
2. The following Dynamic Applications should appear in the list of aligned Dynamic Applications:

    - For Docker Hosts:
        - Docker: Container Discovery
        - Docker: Containers Performance
        - Docker: Host Configuration
        - Docker: Host Performance
        - Docker: Host Reclassification
        - Docker: Image Configuration
        - Docker: Network Configuration
        - Docker: Swarm Cluster Discovery
    - For Docker Swarms:
        - Docker: Stack Discovery
        - Docker: Swarm Configuration
        - Docker: Swarm Performance
        - Docker: Swarm Service Discovery

NOTE: It can take several minutes after discovery for Dynamic Applications to display on the **Dynamic Application Collections** page. If the listed Dynamic Applications do not display on this page, try clicking the **[Reset]** button.

If the Dynamic Applications have not been automatically aligned, you can align them manually. To do so, perform the following steps:

1. Go to the **Device Properties** page (Registry > Devices > wrench icon( )) for the Docker root device and click the **[Collections]** tab. The **Dynamic Application Collections** page appears.
2. On the **Dynamic Application Collections** page, click the **[Action]** button and then select *Add Dynamic Application* from the menu. The **Dynamic Application Alignment** page appears.

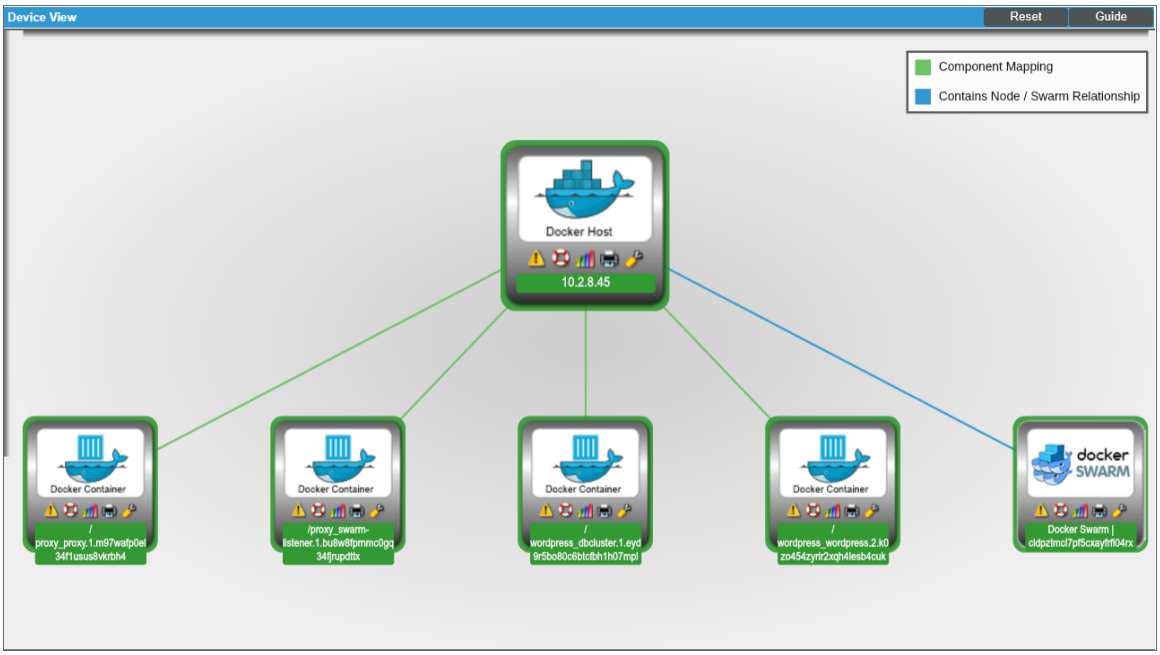


3. In the ***Dynamic Applications*** field, select a Dynamic Application to align.
4. In the ***Credentials*** field, select the *Basic/Snippet credential* you created for Docker.
5. Click the **[Save]** button.
6. Repeat steps 2-5 as needed to align any additional Dynamic Applications.

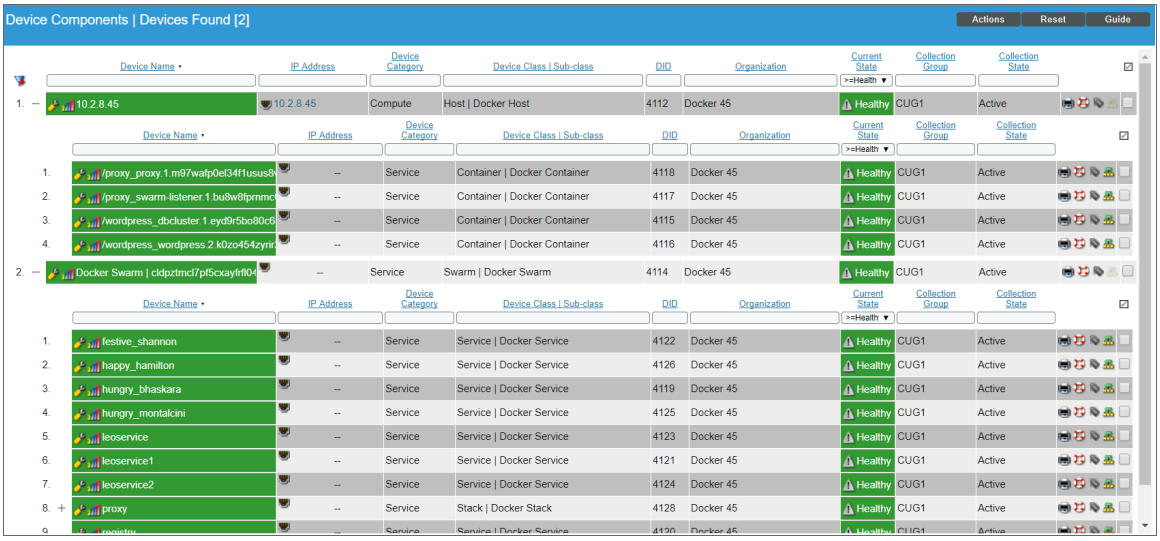
Viewing Docker Component Devices

In addition to the **Device Manager** page (Registry > Devices > Device Manager), you can view the Docker platform and all of its component devices in the following places in the user interface:

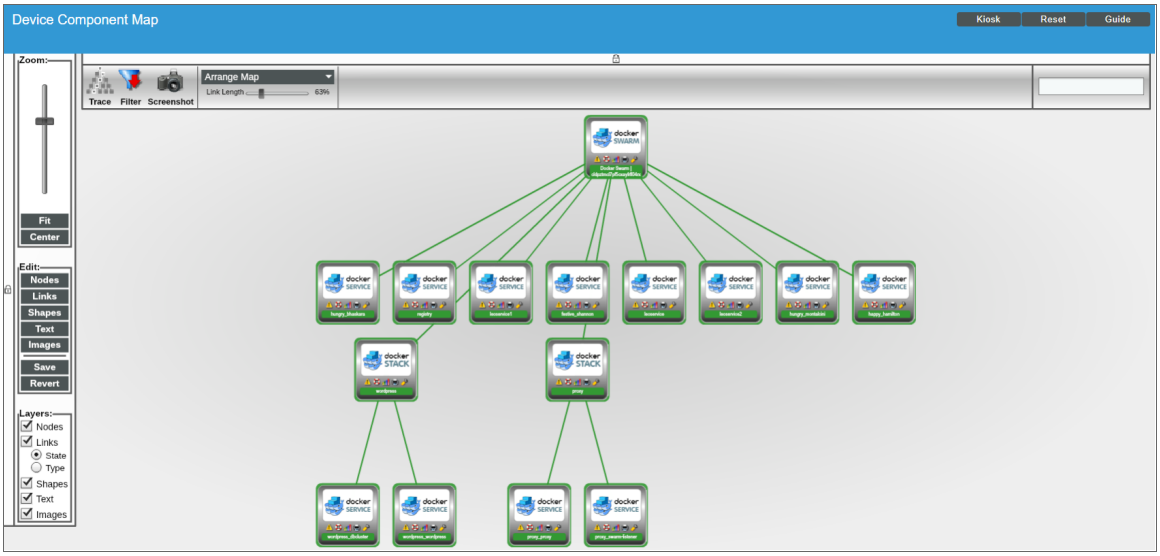
- The **Device View** modal page (Registry > Devices > Device Manager > graph icon > Topology) displays a map of a particular device and all of the devices with which it has parent-child relationships. Double-clicking any of the devices listed reloads the page to make the selected device the primary device:



- The **Device Components** page (Registry > Devices > Device Components) displays a list of all root devices and component devices discovered by the ScienceLogic platform in an indented view, so you can easily view the hierarchy and relationships between child devices, parent devices, and root devices. To view the component devices associated with Docker, find the Docker Host or Docker Swarm device and click its plus icon (+):



- The **Component Map** page (Views > Device Maps > Components) allows you to view devices by root node and view the relationships between root nodes, parent components, and child components in a map. This makes it easy to visualize and manage root nodes and their components. The ScienceLogic platform automatically updates the **Device Component Map** as new component devices are discovered. The platform also updates each map with the latest status and event information. To view the map for Docker, go to the **Device Component Map** page (Views > Device Maps > Components) and select the map from the list in the left NavBar. To learn more about the **Device Component Map** page, see the ***Views*** manual.



Relationships Between Component Devices

In addition to parent/child relationships between component devices, the ScienceLogic platform also creates relationships between the following component devices:

- Swarms and Nodes
- Services and Containers

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