



DOCKER MONITORING

BETA POWERPACK FEATURES AND INSTALLATION INSTRUCTIONS

Version: 7.5.6.7
Pack: Docker_Base Pack 0.5
Date: August 15, 2016
Author: JMcLean/TKaza

ScienceLogic, Inc.
10700 Parkridge Blvd. Reston VA 20191

LIMITATION OF LIABILITY AND GENERAL DISCLAIMER

ALL INFORMATION AVAILABLE IN THIS GUIDE IS PROVIDED "AS IS," WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED. SCIENCELOGIC™ AND ITS SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT.

Although ScienceLogic™ has attempted to provide accurate information on this Site, information on this Site may contain inadvertent technical inaccuracies or typographical errors, and ScienceLogic™ assumes no responsibility for the accuracy of the information. Information may be changed or updated without notice. ScienceLogic™ may also make improvements and / or changes in the products or services described in this Site at any time without notice.

Copyrights and Trademarks

ScienceLogic, the ScienceLogic logo, and EM7 are trademarks of ScienceLogic, Inc. in the United States, other countries, or both.

Below is a list of trademarks and service marks that should be credited to ScienceLogic, Inc. The ® and ™ symbols reflect the trademark registration status in the U.S. Patent and Trademark Office and may not be appropriate for materials to be distributed outside the United States.

ScienceLogic™

EM7™ and em7™

Simplify IT™

Dynamic Application™

Relational Infrastructure Management™

PowerPack™

Dynamic Component Mapping™

The absence of a product or service name, slogan or logo from this list does not constitute a waiver of ScienceLogic's trademark or other intellectual property rights concerning that name, slogan, or logo.

Please note that laws concerning use of trademarks or product names vary by country. Always consult a local attorney for additional guidance.

Other

If any provision of this agreement shall be unlawful, void, or for any reason unenforceable, then that provision shall be deemed severable from this agreement and shall not affect the validity and enforceability of any remaining provisions. This is the entire agreement between the parties relating to the matters contained herein.

In the U.S. and other jurisdictions, trademark owners have a duty to police the use of their marks. Therefore, if you become aware of any improper use of ScienceLogic Trademarks, including infringement or counterfeiting by third parties, report them to Science Logic's legal department immediately. Report as much detail as possible about the misuse, including the name of the party, contact information, and copies or photographs of the potential misuse to: legal@sciencelogic.com

TABLE OF CONTENTS

Introduction	1
What is Docker?	1
Docker Architecture	2
Docker Monitoring Capabilities.....	3
Monitoring Docker.....	3
Installing the PowerPack	4
Overview	4
Installation	4
Credential	6
Discovering Docker	7
Create a Discovery Scope	7
Config & Performance Data	9
Performance Metrics	9
PERFORMANCE DATA	9

CHAPTER 1

INTRODUCTION

WHAT IS DOCKER?

Docker allows you to package an application with all of its dependencies into a standardized unit for software development. Docker containers wrap up a piece of software in a complete filesystem that contains everything it needs to run: code, runtime, system tools, system libraries – anything you can install on a server.

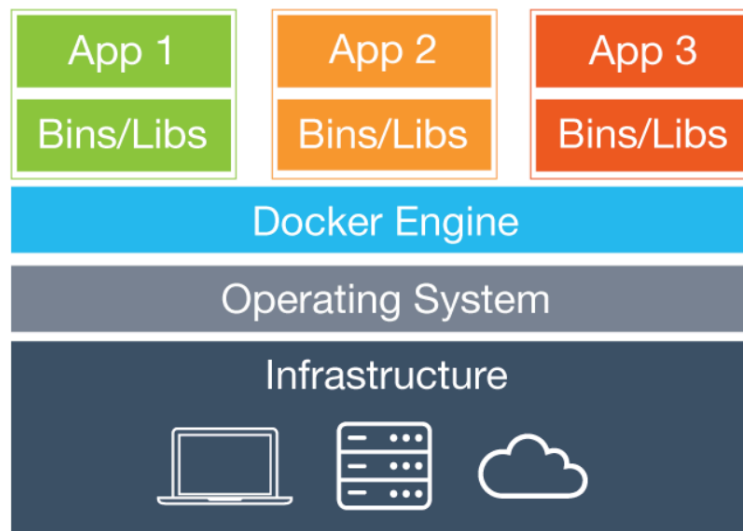


Figure 1

DOCKER ARCHITECTURE

To get started with Docker, first you need to setup a Docker Engine. Docker Machine automatically sets up Docker on your computer, on cloud providers, and inside your data center. Docker Machine provisions the hosts, installs Docker Engine on them, and then configures the Docker client to talk to the Docker Engines.

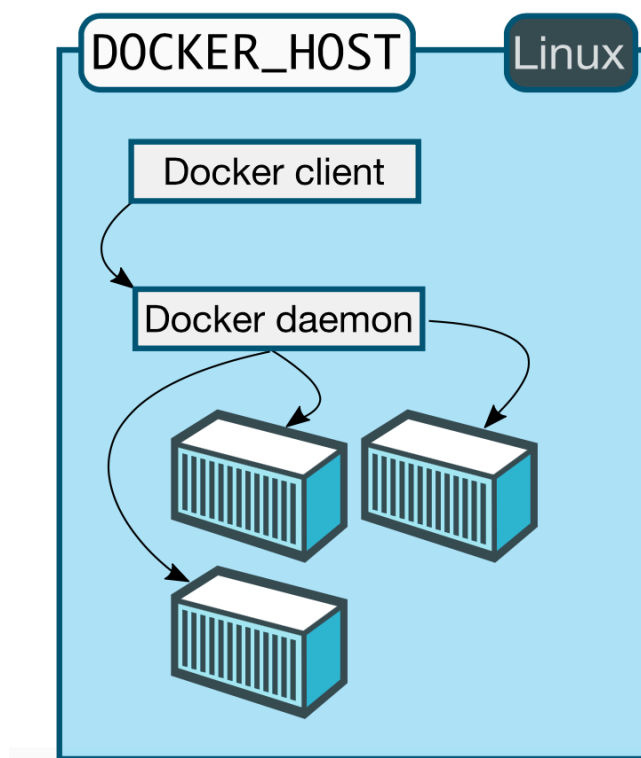


Figure 2

CHAPTER 2

DOCKER MONITORING CAPABILITIES

MONITORING DOCKER

This PowerPack utilizes SSH connections to execute remote Docker commands on hosts to collect data for configuration elements, performance metrics and status checking for all Docker components. Contained within the pack is a ready-to-use credential that contains the default username and password for Docker Hosts.

The packs help you monitor the following Docker Host/Container statistics:

- Docker Host Configuration
 - CPU
 - Docker Root Directory
 - Docker Version
 - HTTP Proxy
 - Index Server Address
 - Kernel Version
 - Operating System
 - Total Containers
- Docker Host Performance
 - Total Memory
- Docker Container Configuration
- Docker Container Block IO
- Docker Container CPU
- Docker Container Memory
- Docker Container Network

CHAPTER 3

INSTALLING THE POWERPACK

OVERVIEW

In this chapter, we will install the Docker PowerPack and then configure the credential for manual alignment of data collection.

Requirements

A valid Docker credential to access the Docker Host

A valid admin user name and password for ScienceLogic

INSTALLATION

Obtain the latest copy of the Docker dependency tar (docker_dep_installer.tar). Follow the instruction below to setup the library dependencies for the Docker Powerpack.

Install directions:

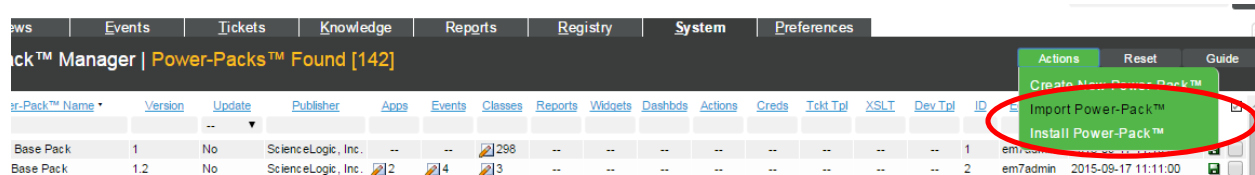
1. Install dependencies
 - a. Transfer docker_dep_installer.tar.gz to the collector
 - b. Unpack .tar file
 - i. `tar -xvf docker_dep_installer.tar.gz`
 - c. Change directory to docker_dep_installer/
 - i. `cd docker_dep_installer`
 - d. Execute the installer
 - i. `sh docker_dep_installer.sh -i`
 - ii. OR `sh docker_dep_installer.sh --install`

You can follow the Uninstall directions to revert the libraries if required:

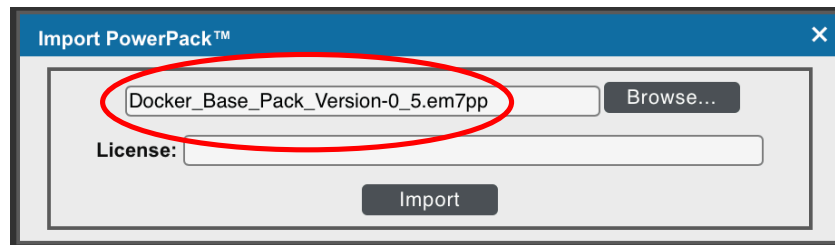
1. Navigate to unpacked docker installer location from Install directions - 1 - c
2. Execute installer revert
 - a. `sh docker_dep_installer.sh -r`
 - b. OR `sh docker_dep_installer.sh --revert`

2. Install Docker PowerPack

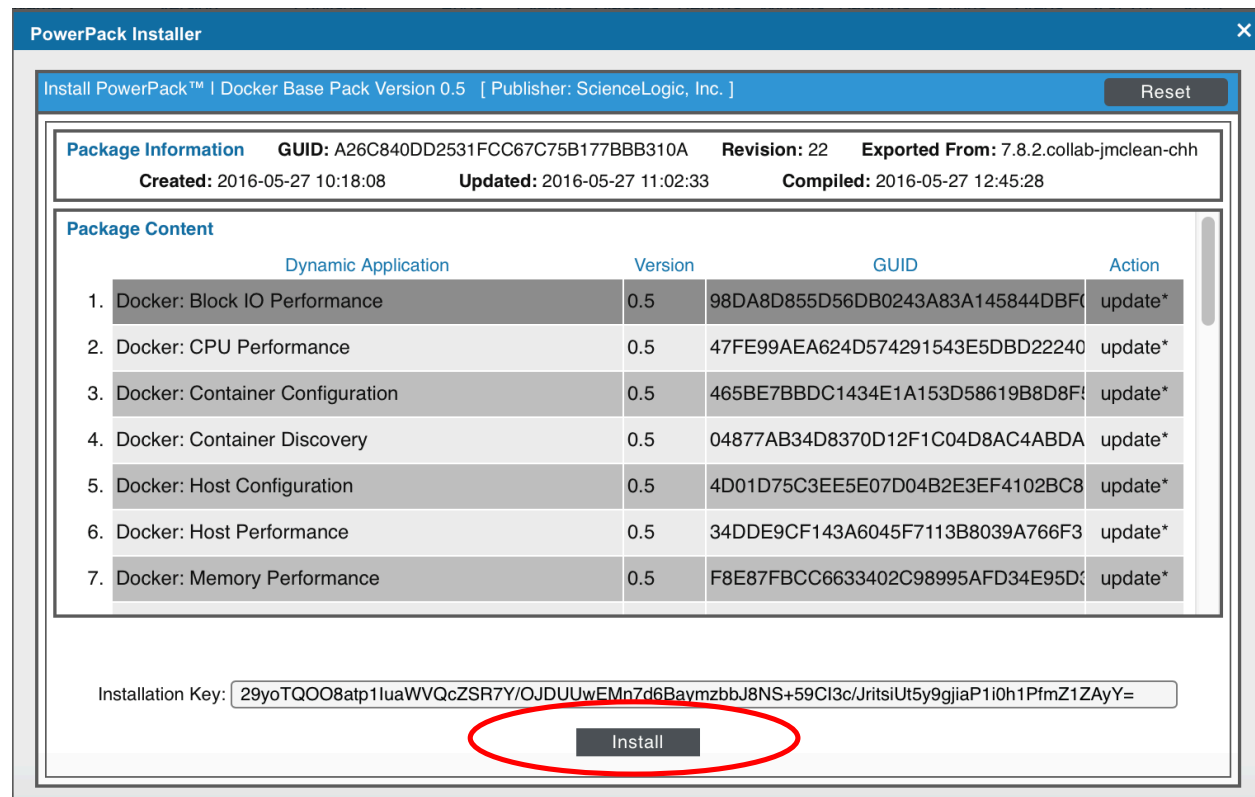
Obtain the latest copy of the Docker Integration PowerPack. In this document, we will be using version 0.8.3.2 of the PowerPack. Using normal PowerPack installation procedures, go to the System tab, select Manage\PowerPacks, and then select the Action button, and select "Import PowerPack".



Locate the PowerPack file, and then select the Import button.



Click "Install" to begin the import process.



Once the PowerPack is installed proceed to the next section to configure the credential.

CREDENTIAL

With the PowerPack installed, we can now configure the credential. Navigate to the System tab, select Manage\Credentials. Locate the "**Docker Credential**" credential and then click on the wrench to edit it.

The screenshot shows the 'Credential Editor [65]' window. The title bar is blue with a close button. Below the title bar is a blue header bar with the text 'Edit SSH/Key Credential #65' and two buttons: 'New' and 'Reset'. The main content area is titled 'Basic Settings' and contains several input fields: 'Credential Name' (containing 'Docker Credential'), 'Hostname/IP' (containing '127.0.0.1'), 'Port' (containing '22'), 'Timeout(ms)' (containing '2000'), 'Username' (containing '[DOCKER_SSH_USERNAME]'), and 'Password' (containing a series of dots). The 'Hostname/IP' field is highlighted with a blue border, and the 'Username' field is circled in red. Below these fields is a large text area labeled 'Private Key (PEM Format)'. At the bottom of the window are two buttons: 'Save' and 'Save As'.

- Set the Hostname/IP to match that of the IP Address of the Docker Host.
- Timeout should be ≥ 2000 .
- Add the Docker user account to "Username" and set the Password to match that of your Docker system
- Click "Save As" to create a new copy of this credential.

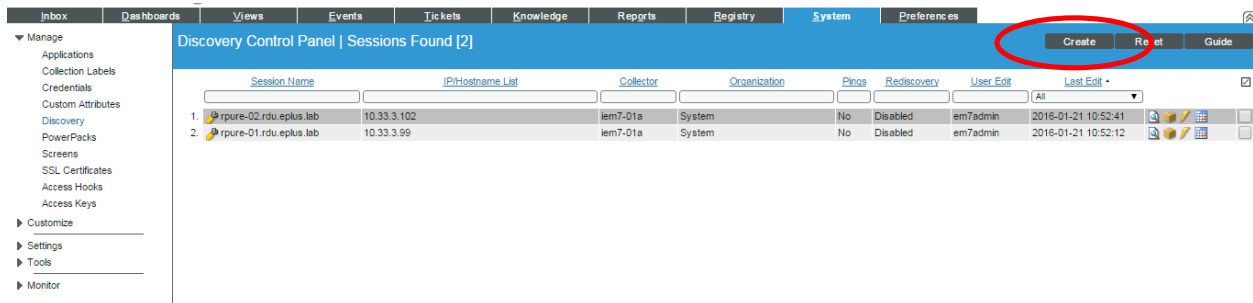
CHAPTER 4

DISCOVERING DOCKER

CREATE A DISCOVERY SCOPE

In order to discover a Docker system, you will need to first create a Discovery scope. ScienceLogic requires only an IP Address for the Docker API interface and a valid Docker credential in order to complete discovery.

To create a new Docker Discovery, navigate to **Systems > Discovery** page then select the **"Create"** button.



On the Discovery Session Editor, ensure the **"Docker API | Example"** is selected. (If you created your own account in Docker and in the credentials of ScienceLogic, use that instead.)

- Assign a Unique Name to the Discovery Scope
- Make sure "Discover Non-SNMP" is checked
- Add the IP address of the Docker system
- Click **"Save As"**

Note: The Discovery session will only model a basic "pingable" device; you will need to manually add the "Docker Discovery" application to the device.

10.2.2.5

Discovery Session Editor | Editing Session [1] New Reset

Identification Information

Name Description

IP and Credentials

IP Address/Hostname Discovery List

10.2.2.6,10.2.2.7,10.2.2.8

Upload File

Browse for file... Browse...

SNMP Credentials

Cisco SNMPv3 - Example

EM7 Default V2

EM7 Default V3

IPSLA Example

LifeSize: Endpoint SNMP

Nexus snmp

SNMP Public V1

SNMP Public V2

Other Credentials

VMware: AMQP Broker

VMware: vCloud

SSH/Key

Azure Credential SSH/Key

Docker Credential

DockerTest

Video Performance SSH

Detection and Scanning

Initial Scan Level

[System Default (recommended)]

Scan Throttle

[System Default (recommended)]

Port Scan All IPs

[System Default (recommended)]

Port Scan Timeout

[System Default (recommended)]

Detection Method & Port

[Default Method]

UDP: 161 SNMP

TCP: 1 - tcpmux

TCP: 2 - compressnet

TCP: 3 - compressnet

TCP: 5 - rje

TCP: 7 - echo

TCP: 9 - discard

TCP: 11 - systat

Interface Inventory Timeout (ms)

600000

Maximum Allowed Interfaces

10000

Bypass Interface Inventory

☐

Basic Settings

Discover Non-SNMP ☒

Model Devices ☒

DHCP ☐

Duplication Protection ☒

Collection Server PID: 1

[em7_ao]

Organization

[System]

Add Devices to Device Group(s)

Please create a device group first

Apply Device Template

Docker Template

Save Save As Log All ☐

Run the Discovery in the Discovery Control Panel by clicking the lightning bolt icon next to your Docker Discovery Scope

Session Name	IP/Hostname List	Collector	Organization	Pings	Rediscovery	User Edit	Last Edit	
Docker Discovery	10.2.2.6,10.2.2.7,10.2.2.8	em7_ao	System	Yes	Disabled	em7admin	2016-08-15 07:15:39	

When complete, navigate to Registry > Device and select the Docker device.

CHAPTER 5

CONFIGURATION & PERFORMANCE DATA

PERFORMANCE METRICS

The Docker PowerPack includes support for the following metrics:

- Docker Host Configuration
 - CPU
 - Docker Root Directory
 - Docker Version
 - HTTP Proxy
 - Index Server Address
 - Kernel Version
 - Operating System
 - Total Containers
- Docker Host Performance
 - Total Memory
- Docker Container Configuration
- Docker Container Block IO
- Docker Container CPU
- Docker Container Memory
- Docker Container Network

PERFORMANCE DATA

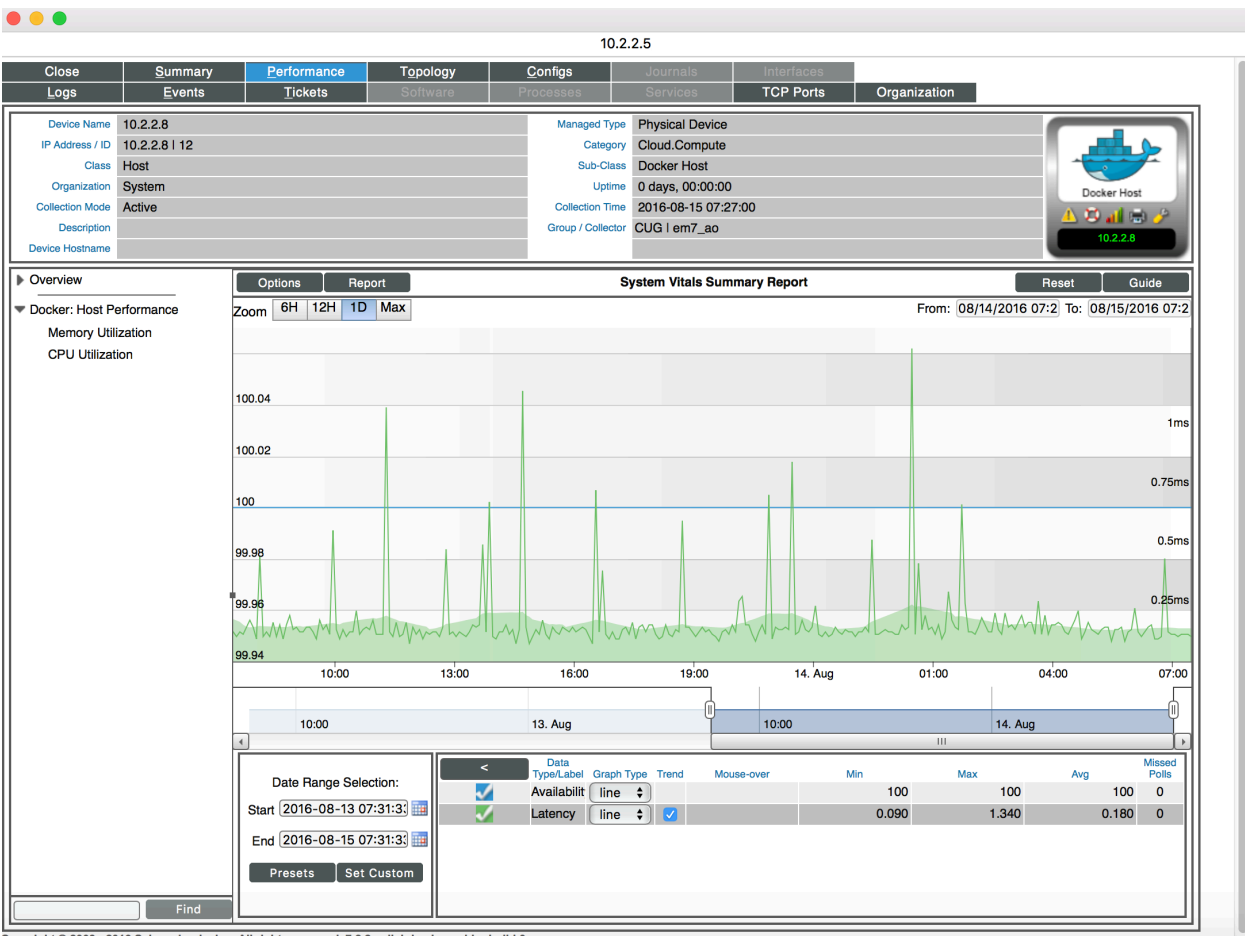
The Docker PowerPack includes both the Docker Host and Docker Container Statistics

Docker Host Configuration Data

The screenshot displays the 'Configuration Report | Docker: Host Configuration' page. The report is titled 'Snap-Shot Date [2016-08-15 07:30:00]'. It lists various configuration items and their values:

Installed Memory	1040748544
Installed Memory	—
Total Containers	6
Total Containers	—
Docker Root Directory	/var/lib/docker
Docker Root Directory	—
CPU Count	1
CPU Count	—
HTTP Proxy	—
HTTP Proxy	—
Docker Version	1.11.1
Docker Version	—
Operating System	Ubuntu 16.04 LTS
Operating System	—
Index Server Address	https://index.docker.io/v1/
Index Server Address	—
Kernel Version	4.4.0-21-generic

Docker Host Performance



Copyright © 2003 - 2016 Sciencelab, Inc. All rights reserved. 7 8 2 collab-imclean-ehh - build 0

Docker Container Configuration Data

Close	Summary	Performance	Topology	Configs	Journals	Interfaces
Logs	Events	Tickets	Software	Processes	Services	TCP Ports
						Organization

Device Name	cassandra-test
ID	51
Class	Container
Organization	System
Root Device	10.2.2.8
Parent Device	10.2.2.8
Device Hostname	

Managed Type	Component Device
Category	Cloud.Service
Sub-Class	Docker Container
Uptime	0 days, 00:00:00
Group / Collector	CUG em7_a0

Docker Container
cassandra-test

Docker: Container Configuration

Configuration Report Docker: Container Configuration		Actions	Reset	Guide
Snap-Shot Date [2016-08-15 07:30:00]				
Snap-Shots				
	Container ID	f31908eaad00d97a2ee6b5c387a6a5463c783019bdb9cb09d372ac9cbddb1372		
	Name	/cassandra-test		
	Image ID	sha256:77d2bd38e2e5ffae1d76af9b99ae478c198218d9708cbebf1932819a95db2bb		
	Created	2016-05-19T16:45:54.84788393Z		
	Image Name	cassandra:latest		
	Path-ResolveConf	/var/lib/docker/containers/f31908eaad00d97a2ee6b5c387a6a5463c783019bdb9cb09d372ac9cbddb1372/resolv.conf		
	Path-Hostname	/var/lib/docker/containers/f31908eaad00d97a2ee6b5c387a6a5463c783019bdb9cb09d372ac9cbddb1372/hostname		
	Path-Hosts	/var/lib/docker/containers/f31908eaad00d97a2ee6b5c387a6a5463c783019bdb9cb09d372ac9cbddb1372/hosts		
	Path-Log	/var/lib/docker/containers/f31908eaad00d97a2ee6b5c387a6a5463c783019bdb9cb09d372ac9cbddb1372/f31908eaad00d97a2ee6b5c387a6a54		

Container State

Date Time Started	Process ID	Status
1. 2016-05-19T16:45:55.507718229Z	3380	running

Graphics Driver Group

Driver Device ID	Driver Device Name	Driver Device Size	Driver Name
1. --	--	--	aufs

Network Settings

Network Gateway	Network IP Address	Network MAC Address
1. 172.17.0.1	172.17.0.3	02:4c:a1:10:00:03

Docker Container Performance

