



NVIDIA DOCA BlueMan Service

Guide

Table of Contents

Chapter 1. Introduction.....	1
Chapter 2. Requirements.....	2
2.1. Verifying DTS Status.....	2
2.2. Verifying DPE Status.....	2
Chapter 3. Service Deployment.....	3
3.1. DOCA Service on NGC.....	3
3.2. Default Deployment – BlueField BSP.....	3
3.3. Enabling BlueMan Service.....	3
3.3.1. Using Script.....	3
3.3.2. Manual Procedure.....	3
3.4. Verifying Deployment Success.....	4
Chapter 4. Configuration.....	5
Chapter 5. Collected Data.....	6
Chapter 6. Connecting to BlueMan Web Interface.....	7
Chapter 7. Troubleshooting.....	8

Chapter 1. Introduction

DOCA BlueMan runs in the DPU as a standalone web dashboard and consolidates all the basic information, health, and telemetry counters into a single interface.

All the information that BlueMan provides is gathered from the DOCA Telemetry Service (DTS), starting from DTS version 1.11.1-doca1.5.1.

The screenshot displays the NVIDIA BlueMan web dashboard. The main content area is titled "System Services" and shows a table of system services. The table has columns for Name, Description, Active, Load, Sub, and Reason. The services listed include accounts-daemon.service, acpid.service, apparmor.service, apport.service, atd.service, autofs.service, blk-availability.service, cloud-config.service, cloud-final.service, cloud-init-local.service, cloud-init.service, console-setup.service, containerd.service, cron.service, dbus.service, docker.service, dpe.service, finalrd.service, getty@tty1.service, gitlab-runner.service, gitlab-runner.service, ifupdown-pre.service, irqbalance.service, kexec-load.service, kexec.service, and keyboard-setup.service.

On the right side of the dashboard, there are four monitoring widgets:

- CPU Cores Usage (%):** A bar chart showing CPU usage across 8 cores (core0 to core7). The usage is very low, near 0% for all cores.
- Memory Usage (KBytes):** A donut chart showing memory usage. Total: 9330356, Free: 13765000, Used: 2291060. Usage is 14%.
- Disk Usage (M):** A donut chart showing disk usage. Total: 14962, Free: 5599, Used: 7804. Usage is 57%.
- DPU Temperature (°C):** A gauge showing the DPU temperature is 58°C.

The dashboard also includes a sidebar with "Info", "Health", and "Telemetry" sections, and a top navigation bar with "System Services", "Kernel Modules", "System Log", "DOCA Services", and "Ports Status".

Chapter 2. Requirements

- ▶ BlueField image version 3.9.3.1 or higher
- ▶ DTS and the DOCA Privileged Executer (DPE) daemon must be up and running



Note: Refer to the [NVIDIA DOCA Telemetry Service Guide](#) for more.

2.1. Verifying DTS Status

All the information that BlueMan provides is gathered from DTS.

Verify that the state of the DTS pod is `ready`:

```
$ crictl pods --name doca-telemetry-service
```

Verify that the state of the DTS container is `running`:

```
$ crictl ps --name doca-telemetry-service
```

2.2. Verifying DPE Status

All the information that DTS gathers for BlueMan is from the the DPE daemon.

Verify that the DPE daemon is `active`:

```
$ systemctl is-active dpe.service
active
```

If the daemon is inactive, activate it by starting the `dpe.service`:

```
$ systemctl start dpe.service
```

Chapter 3. Service Deployment

For more information about the deployment of DOCA containers on top of the BlueField DPU, refer to the [NVIDIA DOCA Container Deployment Guide](#).

3.1. DOCA Service on NGC

BlueMan is available on NGC, NVIDIA's container catalog. Service-specific configuration steps and deployment instructions can be found under the service's [container page](#).

3.2. Default Deployment – BlueField BSP

BlueMan service is located under `/opt/mellanox/doca/services/blueman/`.

The following is a list of the files under the BlueMan directory:

```
doca_blueman_fe_service_<version>-doca<version>_arm64.tar
doca_blueman_conv_service_<version>-doca<version>_arm64.tar
doca_blueman_standalone.yaml
bring_up_doca_blueman_service.sh
```

3.3. Enabling BlueMan Service

3.3.1. Using Script

Run `bring_up_doca_blueman_service.sh`:

```
$ /opt/mellanox/doca/services/blueman/bring_up_doca_blueman_service.sh
```

3.3.2. Manual Procedure

1. Import images to crictl images:

```
$ cd /opt/mellanox/doca/services/blueman/
$ ctr --namespace k8s.io image import doca_blueman_fe_service_<version>-
doca<version>_arm64.tar
$ ctr --namespace k8s.io image import doca_blueman_conv_service_<version>-
doca<version>_arm64.tar
```

2. Verify that the DPE daemon is active:

```
$ systemctl is-active dpe.service  
active
```

If the daemon is inactive, activate it by starting the `dpe.service`:

```
$ systemctl start dpe.service
```

3. Copy `blueman_standalone.yaml` to `/etc/kubelet.d/`:

```
$ cp doca_blueman_standalone.yaml /etc/kubelet.d/
```

3.4. Verifying Deployment Success

1. Verify that the DPE daemon is active:

```
$ systemctl is-active dpe.service
```

2. Verify that the state of the DTS container is `running`:

```
$ crictl ps --name doca-telemetry-service
```

3. Verify that the state of the BlueMan service container is `running`:

```
$ crictl ps --name doca-blueman-fe  
$ crictl ps --name doca-blueman-conv
```

Chapter 4. Configuration

The configuration of the BlueMan back end is located under `/opt/mellanox/doca/services/telemetry/config/blueman_config.ini`. Users can interact with the `blueman_config.ini` file which contains the default range values of the Pass, Warning, and Failed categories which are used in the health page. Changing these values gets reflected in the BlueMan webpage within 60 seconds.

Example of `blueman_config.ini`:

```
;Health Cpu usages Pass, warning, Failed
[Health:CPU_Usages:Pass]
range = 0,80
[Health:CPU_Usages:Warning]
range = 80,90
[Health:CPU_Usages:Failed]
range = 90,100
```

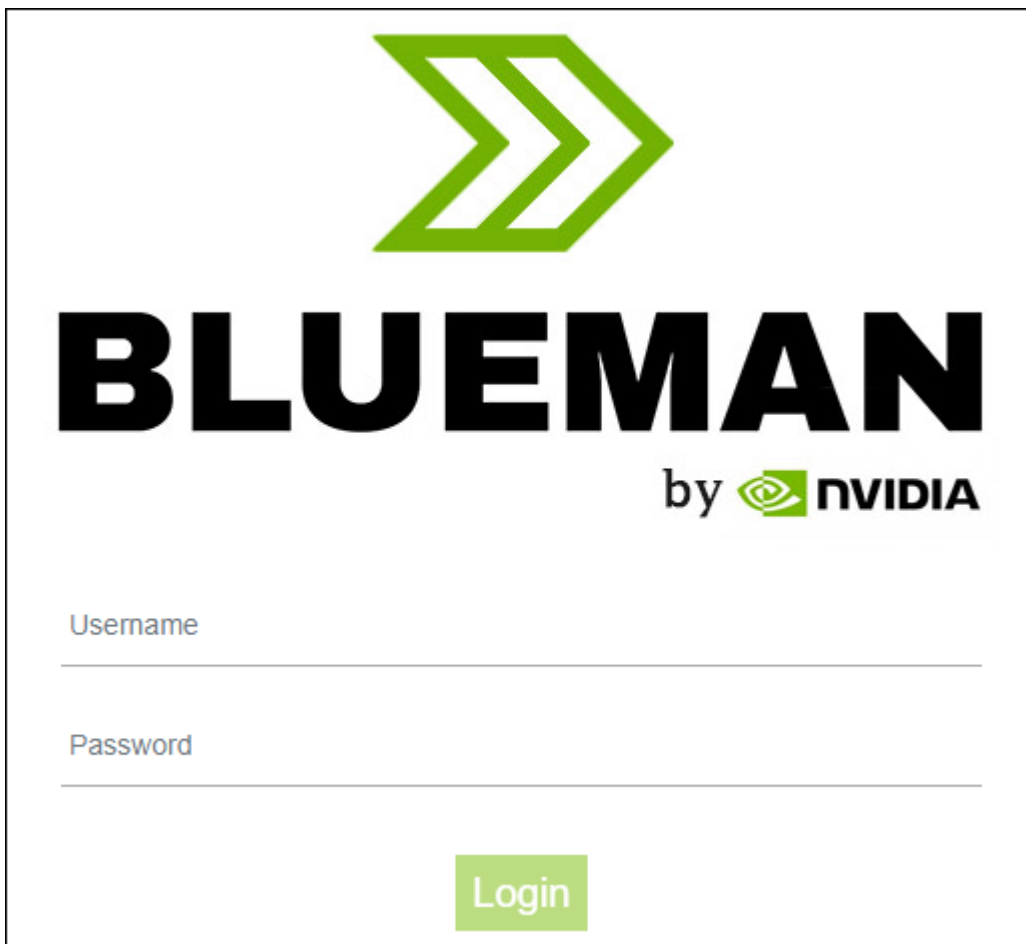
Chapter 5. Collected Data

- ▶ Info
 - ▶ General info – OS name, kernel, part number, serial number, DOCA version, driver, board ID, etc.
 - ▶ Installed packages – list of all installed packages on the DPU including their version
 - ▶ CPU info – vendor, cores, model, etc.
 - ▶ FW info – all the mlxconfig parameters with default/current/next boot data
 - ▶ DPU operation mode
- ▶ Health
 - ▶ System service
 - ▶ Kernel modules
 - ▶ Dmesg
 - ▶ DOCA services
 - ▶ Port status of the PF and OOB
 - ▶ Core usage and processes running on each core
 - ▶ Memory usage
 - ▶ Disk usage
 - ▶ Temperature
- ▶ Telemetry – all telemetry counters that come from DTS according to the enabled providers displayed on tables
 - ▶ Users have the ability to build graphs of specific counters

Chapter 6. Connecting to BlueMan Web Interface

To log into BlueMan, enter the IP address of the DPU's OOB interface (`http://<DPU_OOB_IP>`) to a web browser located in the same network as the DPU.

The login credentials to use are the same pair used for the SSH connection to the DPU.



The image shows the BlueMan login interface. At the top is a green logo consisting of three nested chevrons pointing right. Below the logo, the word "BLUEMAN" is written in large, bold, black capital letters. Underneath "BLUEMAN" is the text "by" followed by the NVIDIA logo (a green eye icon) and the word "NVIDIA" in black. Below the logo and text are two input fields: "Username" and "Password", each with a horizontal line underneath. At the bottom center is a green rectangular button with the word "Login" in white text.

Chapter 7. Troubleshooting

For general troubleshooting, refer to [NVIDIA DOCA Troubleshooting Guide](#).

For container-related troubleshooting, refer to the "Troubleshooting" section in the [NVIDIA DOCA Container Deployment Guide](#).

The following are additional troubleshooting tips for DOCA BlueMan:

- ▶ The following error message in the login page signifies a failure to connect to the DPE daemon: "The service is currently unavailable. Please check server up and running."
 1. Restart the DPE daemon:

```
$ systemctl restart dpe.service
```
 2. Verify that DTS is up and running by following the instructions in section [Verifying DTS Status](#).
- ▶ If the message "Invalid Credentials" appears in the login page, verify that the username and password are the same ones used to SSH to the DPU.
- ▶ If all of the above is configured as expected and there is still some failure to log in, it is recommended to check if there are any firewall rules that block the connection.
- ▶ For other issues, check the `/var/log/syslog` and `/var/log/doca/telemetry/blueman_service.log` log file.

Notice

This document is provided for information purposes only and shall not be regarded as a warranty of a certain functionality, condition, or quality of a product. NVIDIA Corporation nor any of its direct or indirect subsidiaries and affiliates (collectively: "NVIDIA") make no representations or warranties, expressed or implied, as to the accuracy or completeness of the information contained in this document and assume no responsibility for any errors contained herein. NVIDIA shall have no liability for the consequences or use of such information or for any infringement of patents or other rights of third parties that may result from its use. This document is not a commitment to develop, release, or deliver any Material (defined below), code, or functionality.

NVIDIA reserves the right to make corrections, modifications, enhancements, improvements, and any other changes to this document, at any time without notice.

Customer should obtain the latest relevant information before placing orders and should verify that such information is current and complete.

NVIDIA products are sold subject to the NVIDIA standard terms and conditions of sale supplied at the time of order acknowledgement, unless otherwise agreed in an individual sales agreement signed by authorized representatives of NVIDIA and customer ("Terms of Sale"). NVIDIA hereby expressly objects to applying any customer general terms and conditions with regards to the purchase of the NVIDIA product referenced in this document. No contractual obligations are formed either directly or indirectly by this document.

NVIDIA products are not designed, authorized, or warranted to be suitable for use in medical, military, aircraft, space, or life support equipment, nor in applications where failure or malfunction of the NVIDIA product can reasonably be expected to result in personal injury, death, or property or environmental damage. NVIDIA accepts no liability for inclusion and/or use of NVIDIA products in such equipment or applications and therefore such inclusion and/or use is at customer's own risk.

NVIDIA makes no representation or warranty that products based on this document will be suitable for any specified use. Testing of all parameters of each product is not necessarily performed by NVIDIA. It is customer's sole responsibility to evaluate and determine the applicability of any information contained in this document, ensure the product is suitable and fit for the application planned by customer, and perform the necessary testing for the application in order to avoid a default of the application or the product. Weaknesses in customer's product designs may affect the quality and reliability of the NVIDIA product and may result in additional or different conditions and/or requirements beyond those contained in this document. NVIDIA accepts no liability related to any default, damage, costs, or problem which may be based on or attributable to: (i) the use of the NVIDIA product in any manner that is contrary to this document or (ii) customer product designs.

No license, either expressed or implied, is granted under any NVIDIA patent right, copyright, or other NVIDIA intellectual property right under this document. Information published by NVIDIA regarding third-party products or services does not constitute a license from NVIDIA to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property rights of the third party, or a license from NVIDIA under the patents or other intellectual property rights of NVIDIA.

Reproduction of information in this document is permissible only if approved in advance by NVIDIA in writing, reproduced without alteration and in full compliance with all applicable export laws and regulations, and accompanied by all associated conditions, limitations, and notices.

THIS DOCUMENT AND ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS, AND OTHER DOCUMENTS (TOGETHER AND SEPARATELY, "MATERIALS") ARE BEING PROVIDED "AS IS." NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY, OR OTHERWISE WITH RESPECT TO THE MATERIALS, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL NVIDIA BE LIABLE FOR ANY DAMAGES, INCLUDING WITHOUT LIMITATION ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF ANY USE OF THIS DOCUMENT, EVEN IF NVIDIA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Notwithstanding any damages that customer might incur for any reason whatsoever, NVIDIA's aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms of Sale for the product.

Trademarks

NVIDIA, the NVIDIA logo, and Mellanox are trademarks and/or registered trademarks of Mellanox Technologies Ltd. and/or NVIDIA Corporation in the U.S. and in other countries. The registered trademark Linux® is used pursuant to a sublicense from the Linux Foundation, the exclusive licensee of Linus Torvalds, owner of the mark on a world-wide basis. Other company and product names may be trademarks of the respective companies with which they are associated.

Copyright

© 2023 NVIDIA Corporation & affiliates. All rights reserved.