# Dell EMC Secured Component Verification Reference Guide for Servers

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## Notes, cautions, and warnings

**NOTE:** A NOTE indicates important information that helps you make better use of your product.

**CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.**

**WARNING: A WARNING indicates a potential for property damage, personal injury, or death.**

# Contents

# 1

# Overview

This section provides an overview about Secured Component Verification (SCV) and the system requirements for running the application on the system.

**Topics:**



## Secured Component Verification

Secured Component Verification (SCV) is a supply chain assurance offering that enables you to verify that the PowerEdge server you have received matches what was manufactured in the factory. In order to validate components in a certificate containing the unique system component IDs is generated during factory assembly process. This certificate is signed in the Dell factory and is stored in iDRAC9, later used by the SCV application. The SCV application validates the system inventory against the SCV certificate.

The application generates a validation report detailing the inventory match and mismatches against the SCV certificate. It also verifies the certificate and Chain of Trust along with the Proof of Possession of the SCV Private key for iDRAC9. Current implementation supports direct ship customers and does not include VAR or Part Replacement scenarios.

Secure Component Verification (SCV) Application performs the following functions:

- Downloads the SCV Certificate that is stored in iDRAC via RACADM and verifies the SCV certificate and issuer.
- Validates the SCV private key that is paired to the SCV public key in SCV certificate.
- Collects the current inventory of the system including the TPM EK Certificate Serial Number.
- Compares current system inventory against the inventory in the SCV certificate, including TPM EK Serial.
- Any swapping or removal of the components that are captured in the certificate will be identified as a "Mismatch".

**NOTE:** SCV validates the virtual network ports as well. In systems with NPAR/NPAReP cards, run the SCV application before enabling them.

**NOTE:** Ensure that the TPM is enabled before running the SCV application.

**NOTE:** SCV does not support InfiniBand and Fibre Channel (FC).

**NOTE:** SCV application must be run before mapping any storage devices to the system.

**NOTE:** FlexAddress should be disabled in modular systems, before running the SCV application.

**NOTE:** If internal and iDRAC USB ports are disabled, the SCV validation will fail.

**NOTE:** Ensure that any drive which is removed from the system registers in iDRAC or any other iDRAC interface, before running the SCV validation, or it will report incorrect data in the SCV output.

## System Requirements

| Category | Requirement |
|---|---|
| Supported Operating Systems | WinPE 10.x and Red Hat Enterprise Linux 7.x |
| iDRAC Tools version | iDRAC Tools 9.5.1 and above. |

| Category | Requirement |
|---|---|
| | **NOTE:** In iDRAC Tools, SCV is an independent application apart from RACADM and IPMI tool. |
| iDRAC9 version | 4.32.10.00 and above |
| Software dependencies | Python 2.7 and OpenSSL |
| iDRAC licenses required | Secured Component Verification License |

**NOTE:** SCV support is enabled only with local RACADM interface.

| Components supported |
|---|
| Baseboard |
| Processor |
| OEM |
| Memory |
| Power supply |
| Harddrive |
| Network card |
| iDRAC |
| TPM |
| System Information |

# 2

# Secured Component Verification on WinPE

This section provides information for the following:

**Topics:**



## Creating an ISO image to run SCV using WinPE

To create an ISO image to run SCV using WinPE:

1. Download the iDRAC tools from the **Drivers & downloads** page for your system at https://www.dell.com/support.
   **NOTE:** SCV is supported on iDRAC Tools version 9.5.1 or later.
2. Ensure that Windows ADK and Windows PE add-on for ADK is installed in the system for WinPE 10.x. To download and install the files, go to https://docs.microsoft.com/en-us/windows-hardware/get-started/adk-install.
3. Run the self-extractor file for iDRAC tools and click **Unzip** to extract the files to the default location.
   **NOTE:** To extract the files to a specified location, click on **Browse** and select the folder where the files need to be extracted and click **OK** and then **Unzip**.
4. Launch command prompt and change directory to the location where the files were extracted. Run the batch file (WinPE10.x_driverinst.bat) using command prompt to create a bootable ISO image.

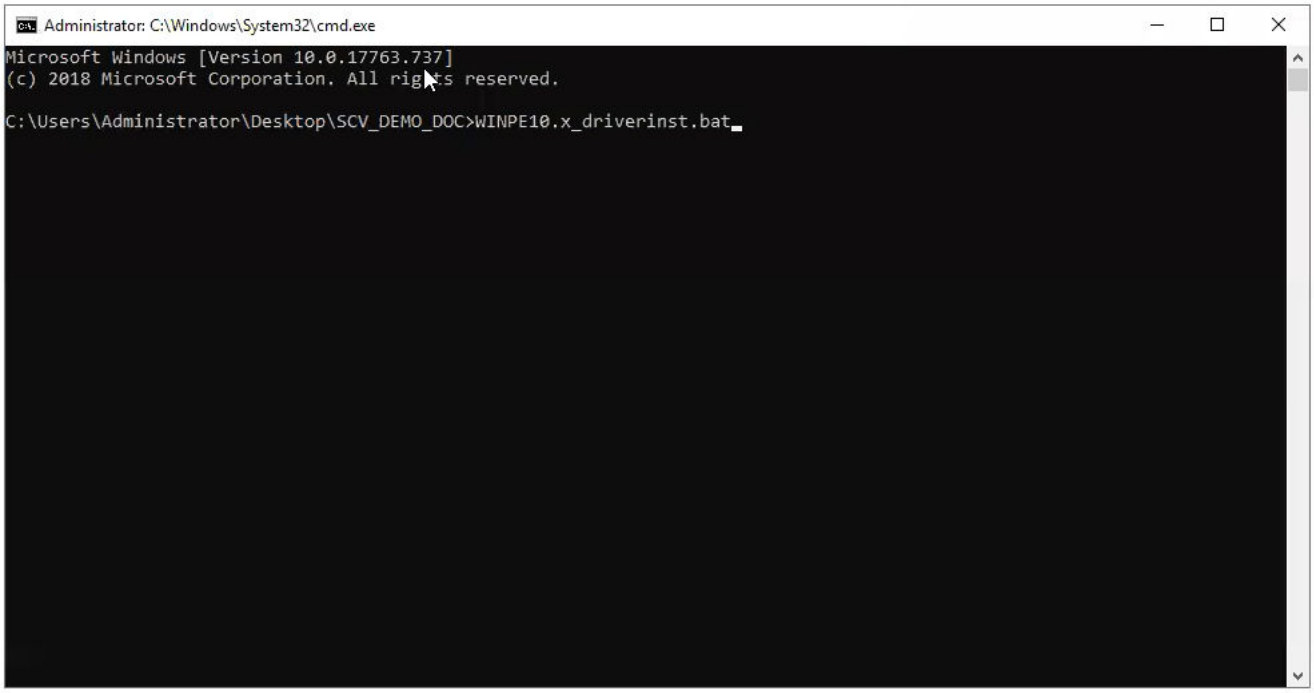


**Figure 1. Running the batch file through command prompt**

5. Once the ISO image is created successfully, open the folder created with the name "WINPE10.x-%timestamp%", to find the ISO image.

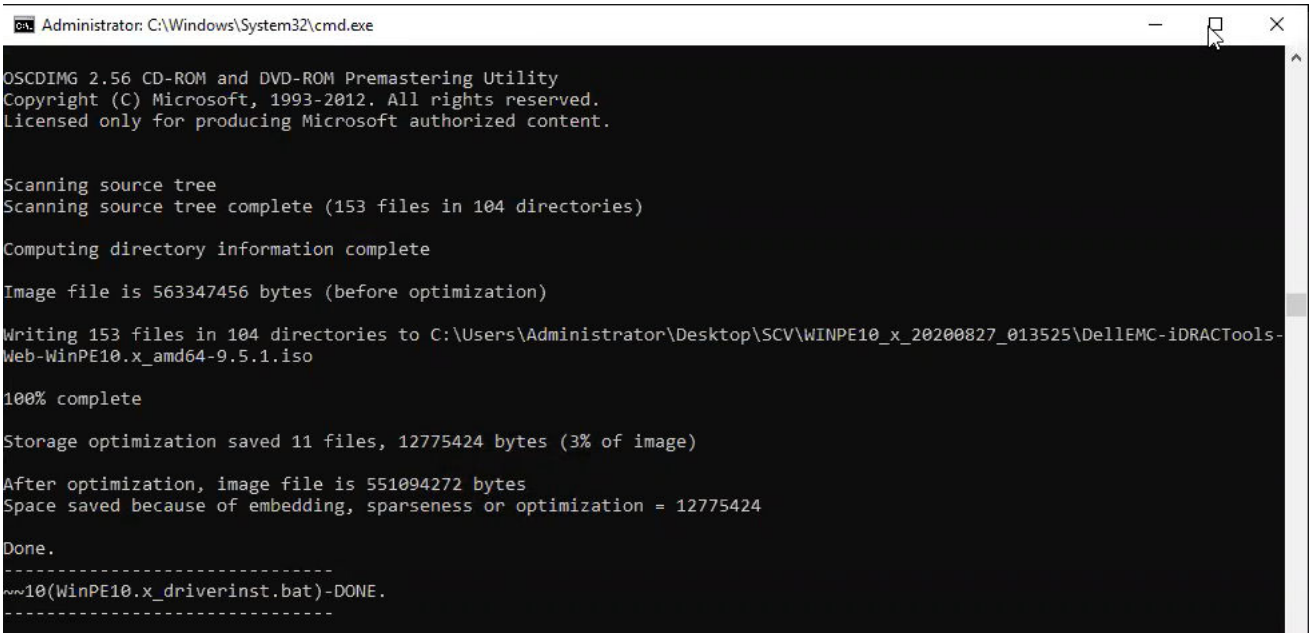


**Figure 2. Confirmation of the ISO image created successfully**

6. Use this ISO image to boot the SCV environment in the server.

# Adding SCV to Custom ISO Image

To add SCV to your custom ISO image:

1. Download the iDRAC tools from the **Drivers & downloads** page for your system at https://www.dell.com/support.
   **NOTE:** SCV is supported on iDRAC Tools version 9.5.1 or later.
2. Ensure that Windows ADK and Windows PE add-on for ADK is installed in the system for WinPE 10.x. To download and install the files, go to https://docs.microsoft.com/en-us/windows-hardware/get-started/adk-install.
3. Run the self-extractor file for iDRAC tools and click **Unzip** to extract the files to the default location.
   **NOTE:** To extract the files to a specified location, click on **Browse** and select the folder where the files need to be extracted and click **OK** and then **Unzip**.
4. Copy the following folders into the corresponding folder path in the Custom ISO image:
   a. **scv** to `X:\Dell`
   b. **Toolkit\Python27, Toolkit\TPM, Toolkit\OpenSSL** to `X:\Dell\scv`
   c. **Toolkit\DLLs** to `X:\windows\system32`
5. After copying the files, set the path for the folder using the command `set PATH=%PATH%;X:\Dell\scv;X:\Dell\scv\Python27;X:\Dell\scv\openssl;X:\Dell\scv\tpm;`
6. SCV can now be used to run validation.

# Adding RACADM to an ISO image

To copy RACADM files into an ISO image:

1. Download the iDRAC tools from the **Drivers & downloads** page for your system at https://www.dell.com/support.
   **NOTE:** SCV is supported on iDRAC Tools version 9.5.1 or later.
2. Run the self-extractor file for iDRAC tools and click **Unzip** to extract the files to the default location.
   **NOTE:** To extract the files to a specified location, click on **Browse** and select the folder where the files need to be extracted and click **OK** and then **Unzip**.
3. Copy the **Racadm** folder into directory `X:\Dell` and set the path for the folder using the command `set PATH=%PATH%;X:\Dell\Racadm`.

# Running SCV on WinPE

1. Login to iDRAC in the system where you want to run the SCV application.
2. Launch the Virtual Console and click **Connect Virtual Media**.
3. Click on **Virtual Media** and under **Map CD/DVD** click **Browse** and select the ISO image for SCV and click on **Map Device** and close the window.
4. In the Virtual Console window, click on **Boot** and select **Virtual CD/DVD/ISO** and click **Yes** on the prompt to confirm the new boot device.
5. Click on **Power** and power on the system and let it boot into the ISO image.
6. Once the system boots into the ISO image, wait for the command prompt window to load into the directory `X:\Dell>`
7. Navigate to `X:\Dell\scv` and run the command `scv validateSystemInventory` to start the validation process.

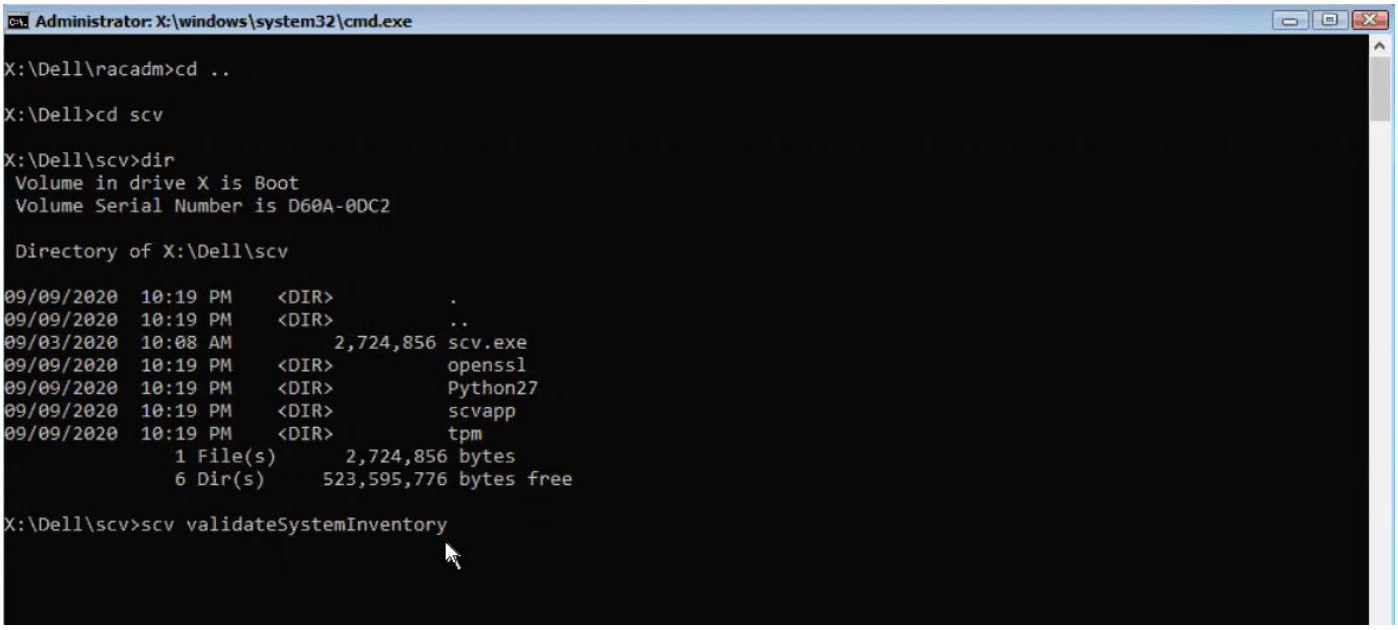


**Figure 3. Running the validation command**

8. Once the system runs the SCV application successfully, it should give the result `Validating System Inventory: Match`

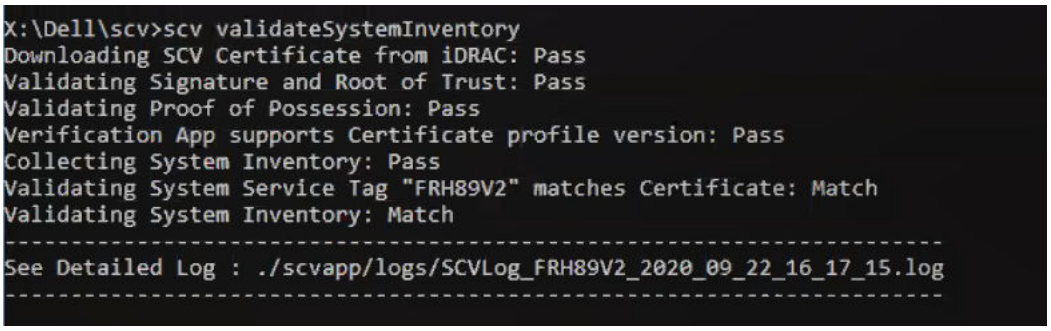


**Figure 4. Running the validation command and result is successful**

9. If the result shows as `Validating System Inventory: Mismatch` it will specify which component has mismatched under `Mismatch Inventory Summary`. For more help contact Technical Support.

```
HardDrive 2: Mismatch
Expected:
{
      "Manufacturer" : "TOSHIBA",
      "Media Type" : "HDD",
      "Model" : "AL13SXB30EN",
      "Name" : "Physical Disk 0:1:2",
      "Part Number" : "PH00RVDT7557158T0R38A00",
      "Serial" : "85T0A1UVFHSC",
      "Size" : "278.88 GB",
      "Version" : "Unknown"
}
Detected:
{
      "Manufacturer" : "Unknown",
      "Media Type" : "Unknown",
      "Model" : "Unknown",
      "Name" : "Unknown",
      "Part Number" : "Unknown",
      "Serial" : "Unknown",
      "Size" : "Unknown",
      "Version" : "Unknown"
}
-------------------------------------------------------------------
-----
Overall HardDrive check Status: Mismatch
-------------------------------------------------------------------
-----
```

**Figure 5. Mismatched component expected and detected details**

# How to check SCV logs using WinPE

1. After running SCV in WinPE, the logs created will be stored under `X:\Dell\scv\scvapp\logs`
2. To check logs, navigate to the logs folder and use the command `notepad SCVLog_%service-tag%_%timestamp%.log`

```
X:\Dell\scv>cd scvapp

X:\Dell\scv\scvapp>cd logs

X:\Dell\scv\scvapp\logs>dir
 Volume in drive X is Boot
 Volume Serial Number is D60A-0DC2

 Directory of X:\Dell\scv\scvapp\logs

09/16/2020  10:09 AM    <DIR>          .
09/16/2020  10:09 AM    <DIR>          ..
09/16/2020  10:10 AM               506 SCVLog_FRH89V2_2020_09_16_10_09_37.log
               1 File(s)            506 bytes
               2 Dir(s)     520,667,136 bytes free

X:\Dell\scv\scvapp\logs>notepad SCVLog_FRH89V2_2020_09_16_10_09_37.log
```

**Figure 6. Checking logs using WinPE**

# 3

# Secured Component Verification on Linux

This section provides information for the following:

**Topics:**



## Running SCV on Linux

1. Download the iDRAC tools from the Drivers & downloads page for your system at https://www.dell.com/support.
2. In the terminal, navigate to the directory where iDRAC Tools file is downloaded and unzip the file using the command `tar -zxvf DellEMC-iDRACTools-Web-LX-X.X.X-XXXX_XXX.tar.gz`

```
[root@localhost ~]# tar -xvf DellEMC-iDRACTools-Web-LX-9.5.1-4135.tar.gz
iDRACTools/
iDRACTools/license.txt
iDRACTools/ipmitool/
iDRACTools/ipmitool/RHEL7_x86_64/
iDRACTools/ipmitool/RHEL7_x86_64/ipmitool-1.8.18-99.dell.4135.16999.el7.x86_64.rpm
iDRACTools/readme.txt
iDRACTools/racadm/
iDRACTools/racadm/uninstall_racadm.sh
iDRACTools/racadm/install_racadm.sh
iDRACTools/racadm/RHEL7/
iDRACTools/racadm/RHEL7/x86_64/
iDRACTools/racadm/RHEL7/x86_64/srvadmin-idracadm7-9.5.1-4135.16999.el7.x86_64.rpm
iDRACTools/racadm/RHEL7/x86_64/srvadmin-argtable2-9.5.1-4135.16999.el7.x86_64.rpm
iDRACTools/racadm/RHEL7/x86_64/srvadmin-hapi-9.5.1-4135.16999.el7.x86_64.rpm
iDRACTools/scv/
iDRACTools/scv/install_scv.sh
iDRACTools/scv/RHEL7/
iDRACTools/scv/RHEL7/x86_64/
iDRACTools/scv/RHEL7/x86_64/scv-9.5.1-4135.16999.el7.x86_64.rpm
iDRACTools/scv/RHEL7/x86_64/tpm2-tss-1.4.0-3.el7.x86_64.rpm
iDRACTools/scv/RHEL7/x86_64/tpm2-abrmd-1.1.0-11.el7.x86_64.rpm
iDRACTools/scv/RHEL7/x86_64/tpm2-tools-3.0.4-3.el7.x86_64.rpm
iDRACTools/scv/uninstall_scv.sh
iDRACTools/gpl.txt
```

**Figure 7. Extracting iDRAC tools on Linux**

3. Navigate to the directory `iDRACTools/scv` after the files have been extracted and execute the **install_scv.sh** script using the command `sh install_scv.sh`.

   **NOTE:** To uninstall SCV you can use the command `sh uninstall_scv.sh` to execute the **uninstall_scv.sh** script.

```
[root@localhost iDRACTools]# cd scv/
[root@localhost scv]# ls -lrt
total 8
-rwxrwSrwx. 1 root root  130 Sep 11 01:49 uninstall_scv.sh
drwxrwxrwx. 3 root root   20 Sep 11 01:49 RHEL7
-rwxrwSrwx. 1 root root 3071 Sep 11 01:49 install_scv.sh
[root@localhost scv]# sh install_scv.sh
warning: srvadmin-argtable2-9.5.1-4135.16999.el7.x86_64.rpm: Header V4 RSA/SHA512 Signature, key ID 34d8786f: NOKEY
Preparing...                          ################################# [100%]
Updating / installing...
   1:srvadmin-hapi-9.5.1-4135.16999.el################################# [ 33%]
   2:srvadmin-argtable2-9.5.1-4135.169################################# [ 67%]
   3:srvadmin-idracadm7-9.5.1-4135.169################################# [100%]
     ***********************************************************
     After the install process completes, you may need
     to logout and then login again to reset the PATH
     variable to access the RACADM CLI utilities

     ***********************************************************
```

**Figure 8. Executing the SCV installation script**

4. Once SCV is installed, run the command `scv validateSystemInventory` to start the validation process.

   **NOTE:** Use the command `scv help` to get more information on SCV and how to run it.

5. Once the system runs the SCV application successfully, it should give the result `Validating System Inventory: Match`

```
[root@localhost scv]# scv validateSystemInventory
Downloading SCV Certificate from iDRAC: Pass
Validating Signature and Root of Trust: Pass
Validating Proof of Possession: Pass
Verification App supports Certificate profile version: Pass
Collecting System Inventory: Pass
Validating System Service Tag "RTSTC21" matches Certificate: Match
Validating System Inventory: Match
--------------------------------------------------------------------------------
See Detailed Log : ./scvapp/logs/SCVLog_RTSTC21_2020_09_15_05_55_28.log
--------------------------------------------------------------------------------
```

**Figure 9. Running the validation command and result is successful**

6. If the result shows as `Validating System Inventory: Mismatch` it will specify which component has mismatched under `Mismatch Inventory Summary`. For more help contact Technical Support.

```
[root@localhost ~]# scv validateSystemInventory
Downloading SCV Certificate from iDRAC: Passed
Validating Signature and Root of Trust: Passed
Validating Proof of Possession: Passed
Verification App supports Certificate profile version: Passed
Collecting System Inventory: Passed
Validating System Service Tag "BLSTC25" matches Certificate: Match
Validating System Inventory: Mismatch
--------------------------------------------------------------------------------
Mismatch Inventory Summary
--------------------------------------------------------------------------------
HardDrive 2: Mismatch
```

**Figure 10. Validation and result is unsuccessful**

```
HardDrive 2: Mismatch
Expected:
{
      "Manufacturer" : "TOSHIBA",
      "Media Type" : "HDD",
      "Model" : "AL13SXB30EN",
      "Name" : "Physical Disk 0:1:2",
      "Part Number" : "PH00RVDT7557158T0R38A00",
      "Serial" : "85T0A1UVFHSC",
      "Size" : "278.88 GB",
      "Version" : "Unknown"
}
Detected:
{
      "Manufacturer" : "Unknown",
      "Media Type" : "Unknown",
      "Model" : "Unknown",
      "Name" : "Unknown",
      "Part Number" : "Unknown",
      "Serial" : "Unknown",
      "Size" : "Unknown",
      "Version" : "Unknown"
}
--------------------------------------------------------------------
-----
Overall HardDrive check Status: Mismatch
--------------------------------------------------------------------
-----
```

**Figure 11. Mismatched component expected and detected details**

# How to check SCV logs using Linux

1. After running SCV in Linux, the logs created will be stored under `scvapp\logs`
2. To check logs, navigate to the logs folder and use the command `vi SCVLog_%service-tag%_%timestamp%.log`

```
[root@localhost scv]# vi ./scvapp/logs/SCVLog_RTSTC21_2020_09_15_05_55_28.log
```

**Figure 12. Checking logs in Linux**

# 4

# Getting help

**Topics:**



## Contacting Dell EMC

Dell EMC provides several online and telephone based support and service options. If you do not have an active internet connection, you can find contact information about your purchase invoice, packing slip, bill, or Dell EMC product catalog. Availability varies by country and product, and some services may not be available in your area. To contact Dell EMC for sales, technical assistance, or customer service issues:

**Steps**

1. Go to www.dell.com/support/home.
2. Select your country from the drop-down menu on the lower right corner of the page.
3. For customized support:
   a. Enter your system Service Tag in the **Enter your Service Tag** field.
   b. Click **Submit**.
   The support page that lists the various support categories is displayed.
4. For general support:
   a. Select your product category.
   b. Select your product segment.
   c. Select your product.
   The support page that lists the various support categories is displayed.
5. For contact details of Dell EMC Global Technical Support:
   a. Click Global Technical Support.
   b. Enter your system Service Tag in the **Enter your Service Tag** field on the Contact Us webpage.

## Support documents and resources

- The iDRAC support home page provides access to product documents, technical white papers, how-to videos, and more:
  - www.dell.com/support/idrac
- iDRAC User Guide and other manuals:
  - www.dell.com/idracmanuals
- Dell Technical Support:
  - www.dell.com/support

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