Troubleshooting SD-AVC

This section provides several SD-AVC troubleshooting scenarios. If this information does not provide a solution, contact Cisco TAC for assistance.

Troubleshooting Overview

The following tables describe troubleshooting for issues with:

- SD-AVC network service

  (operates on a dedicated host)

- SD-AVC agent

  (operates on each participating device in the network)

- Connectivity

  (between network service and one or more devices in the network)

Table 1: Troubleshooting: SD-AVC Network Service

Problem	How it appears	Troubleshooting

SD-AVC network service: installation failure	SD-AVC not active, **sd-avc status** shows installation failure.	**Summary**
		
		Diagnose with **sd-avc status** and then **service sd-avc trace**.
		
		Possible issues:
		
		    • Not enough memory: see system requirements
		
		    • Not enough disk space: see system requirements
		
		Troubleshooting Details
		
		Troubleshooting Commands for Network Service Issues, on page 4
		
		System Requirements: SD-AVC Network Service Host

SD-AVC network service: activation failure	SD-AVC not active, **sd-avc status** shows activation failure.	**Summary** Diagnose with **sd-avc status** and then **service sd-avc trace**. Possible issue: Something may be using CPU resources. Ensure that nothing is using CPU resources. **Troubleshooting Details** Troubleshooting Commands for Network Service Issues, on page 4 Activation Failure Caused by Shared CPU Resources, on page 7
SD-AVC network service: configuration failure	SD-AVC not active, **sd-avc status** shows configuration failure.	**Summary** A VRF is attached to the interface used as the management interface on the device hosting the SD-AVC network service. Remove the VRF assignment from the management interface using: **interface** *interface* **no ip vrf forwarding** **Troubleshooting Details** Configuration Failure Caused by VRF, on page 9

Table 2: Troubleshooting: SD-AVC Agent Operating on Devices in the Network

Problem	How it appears	Troubleshooting
NBAR2 is not activated on the device	On the **Dashboard** > **Application Visibility** page, the **Timeline** graph of bandwidth shows no activity.	**Summary** NBAR2 is not active: Activate NBAR2 on the device. **Troubleshooting Details** NBAR2 Not Activated on Interfaces, on page 10

Error: More than one active session	When attempting to enable the agent, an error message indicates that there is an active session already.
	
	Example:
	
	`Device(config-sd-service)# controller`
	`%% NBAR Error: There is an active`
	`session already in`
	`sd-service-controller submode`
		Summary
		
		Close any interfering sessions.
		
		Troubleshooting Details
		
		Active Sessions Preventing Agent Configuration, on page 10

Table 3: Troubleshooting: Connectivity between SD-AVC Network Service and Devices in the Network

Problem	How it appears	Troubleshooting
UDP	Warning in: **Dashboard** > **Application Visibility** page > **Network Monitoring** pane > **Connection**	**Summary** Check UDP connectivity. **Troubleshooting Details** Problem with UDP Communication with Devices, on page 11
TCP	Warning in: **Dashboard** > **Application Visibility** page > **Network Monitoring** pane > **Update**	**Summary** Check TCP connectivity. **Troubleshooting Details** Problem with TCP Communication with Devices , on page 12

Problem	How it appears	Troubleshooting
FTP	Warning in: **Dashboard** > **Application Visibility** page > **Network Monitoring** pane > **Update**	**Summary** 1. Check FTP connectivity: **show ip nbar classification cache sync summary** 2. Verify FTP connectivity between the SD-AVC network service and the network device. This includes checking ACL, firewalls, and so on. 3. On the device, ensure that FTP connectivity is possible from the routable interface to the SD-AVC network service. To enable FTP connections from a specific interface, use: **ip ftp source-interface** *interface-name* **Troubleshooting Details** Problem with FTP Communication with Devices, on page 12

Table 4: Troubleshooting: Protocol Packs

Problem	How it appears	Troubleshooting
Failure to load Protocol Pack on a device	When deploying Protocol Packs to one or more devices, results page shows error, such as "out of sync."	**Summary** Load the Protocol Pack manually on the device to determine whether the Protocol Pack is valid. **Troubleshooting Details** Failure to Deploy Protocol Pack to Device, on page 14

Troubleshooting SD-AVC Network Service Issues

Troubleshooting Commands for Network Service Issues

The following commands are helpful for troubleshooting SD-AVC network service issues. Execute the commands on the network service host device. The output may indicate any installation or configuration problems.

Table 5: Summary

Command	Description
service sd-avc status	Status of SD-AVC network service installation, configuration, and activation
service sd-avc trace	Memory or disk problems
show virtual-service list	Activation errors
show virtual-service global	CPU and memory usage

Command Details: service sd-avc status

Execute the command on the network service host device.

Output indicates status of SD-AVC installation, configuration, and activation.

- Installation error:

  ```
  Service SDAVC is uninstalled, not configured and deactivated
  ```

- Activation error:

  ```
  Service SDAVC is installed, configured and Activate Failed
  ```

Command Details: service sd-avc trace

Execute the command on the network service host device.

Output indicates memory or disk problems.

- **Memory** problem (shown in bold below):

  ```
  service sd-avc trace
  2017/11/27 02:06:42.384 [errmsg] [3071]: UUID: 0, ra: 0, TID: 0 (noise):(2):
  %VMAN-2-MACH_PARSE_FAILURE: Virtual Service[SDAVC]::Parsing::XML parsing failure::Unable
   to parse VM machin
  e definition::Requests 3072 MB of memory which exceeds the maximum of
  1024
  2017/11/27 02:06:42.383 [errmsg] [3071]: UUID: 0, ra: 0, TID: 0 (noise):(2):
  %VMAN-2-MEMORY_LIMIT_WARN: Virtual service (SDAVC) defines 3072 MB of Memory
   exceeding the maximum 1024 MB.
  ...
  ```

- **Disk** problem (shown in bold below):

  ```
  2017/11/27 03:36:52.500 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Failed to get
  per-VM mac address binding from FDB
  2017/11/27 03:36:52.500 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Failed to get mac
   binding from persistent DB file
  2017/11/27 03:36:52.500 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Could not retrieve
   HA disk info for VM 'SDAVC'
  2017/11/27 03:36:52.500 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Unable to locate
  fdb attributes for vm(SDAVC)
  2017/11/27 03:36:52.500 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Failed to get
  per-VM storage info list from FDB
  2017/11/27 03:36:52.500 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Failed to get
  ```

```
storage pool from persistent DB file
2017/11/27 03:36:52.499 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Virtual Service
failure log[SDAVC]::Install::The installation of the virtual service failed
```

Command Details: show virtual-service list

Execute the command on the network service host device.

Output indicates activation status (**failed** in this example):

```
Virtual Service List:
Name                     Status           Package Name
-----------------------------------------------------------------------------
SDAVC                    Activate Failed  avc_iosxe_221533.ova
```

Command Details: show virtual-service global

Execute the command on the network service host device.

Output indicates virtual service CPU and memory usage:

Example showing a service using 5% of CPU:

```
show virtual-service global
Maximum VCPUs per virtual service : 1
Resource virtualization limits:
Name                                Quota    Committed    Available
----------------------------------------------------------
system CPU (%)                       75          5            70
memory (MB)                        3072        800          2272
bootflash (MB)                    20000       6764         10672
```

Installation Failure Caused by Memory or Disk

Component(s)

Device hosting the SD-AVC network service

Background

Memory or disk allocation issues can prevent successful installation of the SD-AVC network service.

Troubleshooting

1. Use **service sd-avc status** on the network service host device to check status of installation. If installation is unsuccessful, the output shows "Service SDAVC is uninstalled."

   ```
   service sd-avc status
   Service SDAVC is uninstalled, not configured and deactivated
   ```

2. Use **service sd-avc trace** on the network service host device to indicate whether the installation problem is due to **memory** or **disk**.

   • **Memory** problem:

```
service sd-avc trace
2017/11/27 02:06:42.384 [errmsg] [3071]: UUID: 0, ra: 0, TID: 0 (noise):(2):
%VMAN-2-MACH_PARSE_FAILURE: Virtual Service[SDAVC]::Parsing::XML parsing
failure::Unable to parse VM machin
e definition::Requests 3072 MB of memory which exceeds the maximum of
 1024
2017/11/27 02:06:42.383 [errmsg] [3071]: UUID: 0, ra: 0, TID: 0 (noise):(2):
%VMAN-2-MEMORY_LIMIT_WARN: Virtual service (SDAVC) defines 3072 MB of
Memory exceeding the maximum 1024 MB.
...
```

• **Disk** problem:

```
2017/11/27 03:36:52.500 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Failed to get
per-VM mac address binding from FDB
2017/11/27 03:36:52.500 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Failed to get
mac binding from persistent DB file
2017/11/27 03:36:52.500 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Could not
retrieve HA disk info for VM 'SDAVC'
2017/11/27 03:36:52.500 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Unable to locate
 fdb attributes for vm(SDAVC)
2017/11/27 03:36:52.500 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Failed to get
per-VM storage info list from FDB
2017/11/27 03:36:52.500 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Failed to get
storage pool from persistent DB file
2017/11/27 03:36:52.499 [vman] [3222]: UUID: 0, ra: 0, TID: 0 (ERR): Virtual Service
 failure log[SDAVC]::Install::The installation of the virtual service
failed
```

Solutions

Table 6: Resolving Memory or Disk Errors

Problem	Solution
Memory error	Increase the device memory to the amount specified in System Requirements: SD-AVC Network Service Host.
Disk error	Increase the size of the harddisk or bootflash (for CSR) device according to the requirements specified in System Requirements: SD-AVC Network Service Host.

Activation Failure Caused by Shared CPU Resources

Component(s)

Device hosting the SD-AVC network service

Background

The platform hosting the SD-AVC network service should not have other virtual services operating. Sharing CPU resources with other virtual services can prevent successful activation.

Use **service sd-avc status** on the network service host device to check status of installation. If installation has succeeded, but activation is unsuccessful, the output shows "Activate Failed."

```
service sd-avc status
Service SDAVC is installed, configured and Activate Failed
```

Troubleshooting

Use **service sd-avc trace** on the network service host device to troubleshoot. The following output shows a problem (shown in bold) with activation, due to shared CPU.

```
service sd-avc trace
2017/11/26 15:46:49.133 [vman] [2224]: UUID: 0, ra: 0, TID: 0 (ERR): Failed to find domain
 SDAVC - state query
2017/11/26 15:46:49.133 [vman] [2224]: UUID: 0, ra: 0, TID: 0 (ERR): Domain not found: No
domain with matching name 'SDAVC'
2017/11/26 15:46:49.133 [vman] [2224]: UUID: 0, ra: 0, TID: 0 (ERR): Error from libvirt:
code=42
2017/11/26 15:46:48.131 [vman] [2224]: UUID: 0, ra: 0, TID: 0 (note): VM (SDAVC) State
Transition: next_state: LIFECYCLE_ACTIVATE_FAILED
2017/11/26 15:46:48.131 [vman] [2224]: UUID: 0, ra: 0, TID: 0 (ERR): Virtual Service failure
 log[SDAVC]::Activate::Internal error::Machine definition customization failed
2017/11/26 15:46:48.131 [vman] [2224]: UUID: 0, ra: 0, TID: 0 (ERR): Machine definition
customization failed
2017/11/26 15:46:48.131 [vman] [2224]: UUID: 0, ra: 0, TID: 0 (ERR): Customization of common
 XML parameters failed
2017/11/26 15:46:48.131 [vman] [2224]: UUID: 0, ra: 0, TID: 0 (ERR): Customize CPU tunes:
Cannot commit CPU tunes
2017/11/26 15:46:48.131 [errmsg] [2224]: UUID: 0, ra: 0, TID: 0 (noise):(2):
%VMAN-2-CPUSHARES_LIMIT: Virtual Service[SDAVC]::CPU shares limit::The virtual
 service definition exceeds the maximum number of CPU shares::Defined:
75, available: 70
```

Use **show virtual-service global** to provide details. In this example, another process is using 5% of the CPU resources (shown in bold).

```
show virtual-service global
Maximum VCPUs per virtual service : 1
Resource virtualization limits:
Name                                      Quota    Committed    Available
----------------------------------------------------------------
system CPU (%)                              75          5           70
memory (MB)                               3072        800         2272
bootflash (MB)                           20000       6764        10672
```

Solutions

Deactivate Interface Using CPU Resources

1. Check the running configuration using **show run** on the network service host device. If an active interface is using CPU resources, deactivate the interface.

    Example

    GigabitEthernet1 is using CPU resources.

    ```
    show run | section csr_mgmt
    virtual-service csr_mgmt
    ip shared host-interface GigabitEthernet1
    ```

```
activate
```

2. Deactivate the interface.

   Example

   ```
   conf t
   virtual-service csr_mgmt
   no activate
   no ip shared host-interface GigabitEthernet1
   ```

3. Repeat the installation of the SD-AVC network service.

Configuration Failure Caused by VRF

Component(s)

Device hosting the SD-AVC network service

Background

If the host interface that is used as a gateway interface for the SD-AVC network service is attached to a VRF, the SD-AVC network service installation may be successful, but a configuration step may fail.

Troubleshooting

1. Check VRF status of the SD-AVC network service gateway interface.

   Example showing a VRF configured on the gateway interface GigabitEthernet1:

   ```
   interface GigabitEthernet1
   ip vrf forwarding Mgt
   ip address 10.56.196.177 255.255.252.0

   service sd-avc configure gateway interface gigabitEthernet 1 service-ip 10.56.196.180
   % Error: VRF 'Mgt' is configured on gateway. This type of configuration is not
    supported.
   ```

Solutions

Remove the VRF assignment from the management interface. Example:

```
interface GigabitEthernet1
no ip vrf forwarding
```

Troubleshooting SD-AVC Agent Issues

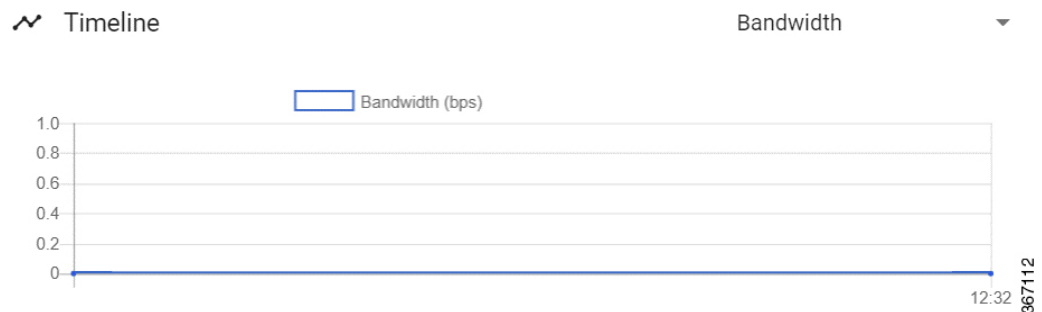## NBAR2 Not Activated on Interfaces

Component(s)

Devices in the network that are using SD-AVC

Background

The NBAR2 component must be active on any interface that processes network traffic, in order to report on traffic handled by the interface. For details, see Configuration Prerequisites: Network Devices Using SD-AVC.

If NBAR2 is not active on an interface processing network traffic:

• The device will not report on any traffic on that interface.

• On the **Dashboard** > **Application Visibility** page, the **Timeline** graph of bandwidth will show no activity.

• The device will not receive application rules packs from the SD-AVC network service.

Troubleshooting

Verify that NBAR2 is active on interfaces that process network traffic.

Solutions

If necessary, activate NBAR2 on the interface(s).

Active Sessions Preventing Agent Configuration

Component(s)

Devices in the network that are using SD-AVC

Background

The SD-AVC agent must be enabled on any device participating with SD-AVC. This requires entering sd-service-controller submode on the device.

It is possible to connect to the device through multiple sessions. An error may occur in the following conditions, with an error message indicating the problem:

- One active session is in sd-service-controller submode.

- You attempt to open sd-service-controller submode in a new session.

Example:

```
Device(config)#avc sd-service
Device(config-sd-service)# segment sdavc
Device(config-sd-service)# controller
%% NBAR Error: There is an active session already in sd-service-controller submode
```

Solutions

Close any interfering active sessions.

1. On the device, use **show users** to display active sessions.

2. In the command output, note the line number of a session to close. Use **clear line** *line-number* to close a session.

Example:

```
Device#show users
  Line     User    Host(s)   Idle    Location
*  1       vty 0   prod      idle    00:00:00
                                     dhcp-10-11-12-13-14-15.cisco.com
   3       vty 2   prod      idle    1d04h 198.51.100.10

Device#clear line 3
[confirm]
[OK]

Device#show users
    Line   User    Host(s)   Idle    Location
*  1       vty 0   prod      idle    00:00:00
                                     dhcp-10-11-12-13-14-15.cisco.com
```

Troubleshooting SD-AVC Connectivity Issues

Problem with UDP Communication with Devices

Component(s)

SD-AVC network service

Devices in the network that use SD-AVC

Background

The SD-AVC Network Service uses UDP over port 50000 to communicate with the devices that it manages.

Troubleshooting

1. If a **Connection** warning appears in the SD-AVC Dashboard, for a specific device in the network, check connectivity on UDP port 50000. Warnings appear here:

   Dashboard > **Application Visibility** page > **Network Monitoring** pane > **Connection**

2. If no problem is found, contact Cisco TAC.

Solutions

Ensure that UDP connectivity is possible on port 50000 between the affected device and the SD-AVC network service.

Problem with TCP Communication with Devices

Component(s)

SD-AVC network service

Devices in the network that use SD-AVC

Background

The SD-AVC network service uses TCP over ports 20-21 (FTP) to communicate with the devices that it manages.

Troubleshooting

1. If an **Update** warning appears in the SD-AVC Dashboard, for a specific device in the network, check connectivity on TCP ports 20-21. Warnings appear here:

   Dashboard > **Application Visibility** page > **Network Monitoring** pane > **Update**

2. If no problem is found, contact Cisco TAC.

Solutions

Ensure that TCP communication is possible over ports 20-21 (FTP) between the affected device and the SD-AVC network service.

Problem with FTP Communication with Devices

Component(s)

SD-AVC network service

Devices in the network that use SD-AVC

Background

The SD-AVC network service uses FTP to communicate with the devices that it manages.

A device with partial connectivity, but problems specific to FTP may show up as a warning in the SD-AVC Dashboard. An **Update** warning may appear while the **Connection** status is green.

Troubleshooting

1. If an **Update** warning appears in the SD-AVC Dashboard while the **Connection** status is green, for a specific device in the network, check the FTP connection status. Warnings appear here:

    Dashboard > **Application Visibility** page > **Network Monitoring** pane

2. On the device with the connectivity issue, use **show ip nbar classification cache sync summary** to check the FTP connection status. "Connection: DISCONNECTED" in the output below shows an FTP connectivity problem.

    ```
    show ip nbar classification cache sync summary

    Connection Status:
      Connection: DISCONNECTED
      Last disconnection: Never
      Mode      : Standalone
      connectivityTimeout (sec)        : 300
      connectivityCheckInterval (sec)    : 60
      connectivityCheckInterval was changed: FALSE
      Active controller:
         Type  : Primary
         IP    : 10.56.196.232
         Status: Disconnected
          Last connection: Never
         bypass    : FALSE
         force down: FALSE
    ```

Solutions

Ensure that FTP communication is possible between the affected device and the SD-AVC network service.

1. Verify that nothing is preventing FTP network connectivity between the SD-AVC network service and the network device. This includes checking ACL, firewalls, and so on.

2. On the device with the **Update** warning, ensure that FTP connectivity is possible from the routable interface to the SD-AVC network service. To enable FTP connections from a specific interface, use:

    ip ftp source-interface *interface-name*

    Example:

    ```
    ip ftp source-interface GigabitEthernet1
    ```

Troubleshooting Protocol Pack Issues

Failure to Deploy Protocol Pack to Device

Component(s)

SD-AVC network service

Cisco NBAR2 Protocol Packs

Background

Use the SD-AVC network service to deploy Protocol Packs to one or more devices. See Deploying Protocol Packs to Devices. When deploying Protocol Packs to one or more devices, if the deployment fails, the results page may show an error.

Troubleshooting

1. Load the Protocol Pack manually on the device indicated by the error to verfiy that the Protocol Pack is valid and can be loaded onto the device. This rules out any problems with the Protocol Pack file.

   ```
   (config)#ip nbar protocol-pack bootflash:pack_file_name.pack
   ```

2. If no problem is found, contact Cisco TAC.