



# **Monitor and troubleshoot connectivity issues**

**ONTAP 9**

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# Monitor and troubleshoot connectivity issues

## Potential connectivity issues involving the scan-mandatory option

You can use the `vserver vscan connection-status show` commands to view information about Vscan server connections that you might find helpful in troubleshooting connectivity issues.

By default, the `scan-mandatory` option for on-access scanning denies file access when a Vscan server connection is not available for scanning. Although this option offers important safety features, it can lead to problems in a few situations.

- Before enabling client access, you must ensure that at least one Vscan server is connected to an SVM on each node that has a LIF. If you need to connect servers to SVMs after enabling client access, you must turn off the `scan-mandatory` option on the SVM to ensure that file access is not denied because a Vscan server connection is not available. You can turn the option back on after the server has been connected.
- If a target LIF hosts all the Vscan server connections for an SVM, the connection between the server and the SVM will be lost if the LIF is migrated. To ensure that file access is not denied because a Vscan server connection is not available, you must turn off the `scan-mandatory` option before migrating the LIF. You can turn the option back on after the LIF has been migrated.

Each SVM should have at least two Vscan servers assigned to it. It is a best practice to connect Vscan servers to the storage system over a different network from the one used for client access.

## Commands for viewing Vscan server connection status

You can use the `vserver vscan connection-status show` commands to view summary and detailed information about Vscan server connection status.

If you want to...	Enter the following command...
View a summary of Vscan server connections	<code>vserver vscan connection-status show</code>
View details for Vscan server connections	<code>vserver vscan connection-status show-all</code>
View details for connected Vscan servers	<code>vserver vscan connection-status show-connected</code>
View details for available Vscan servers that are not connected	<code>vserver vscan connection-status show-not-connected</code>

For more information about these commands, see the [ONTAP man pages](#).

# Troubleshoot virus scanning

For common virus scanning issues, there are possible causes and ways to resolve them. Virus scanning is also known as Vscan.

Issue	How to resolve it
The Vscan servers are not able to connect to the clustered ONTAP storage system.	Check whether the scanner pool configuration specifies the Vscan server IP address. Check also if the allowed privileged users in the scanner pool list are active. To check the scanner pool, run the <code>vserver vscan scanner-pool show</code> command on the storage system command prompt. If the Vscan servers still cannot connect, there might be an issue with the network.
Clients observe high latency.	It is probably time to add more Vscan servers to the scanner pool.
Too many scans are triggered.	Modify the value of the <code>vscan-fileop-profile</code> parameter to restrict the number of file operations monitored for virus scanning.
Some files are not being scanned.	Check the on-access policy. It is possible that the path for these files has been added to the path-exclusion list or that their size exceeds the configured value for exclusions. To check the on-access policy, run the <code>vserver vscan on-access-policy show</code> command on the storage system command prompt.
File access is denied.	Check whether the <code>scan-mandatory</code> setting is specified in the policy configuration. This setting denies data access if no Vscan servers are connected. Modify the setting as needed.

## Monitor status and performance activities

You can monitor the critical aspects of the Vscan module, such as the Vscan server connection status, the health of the Vscan servers, and the number of files that have been scanned. This information helps you diagnose issues related to the Vscan server.

### View Vscan server connection information

You can view the connection status of Vscan servers to manage the connections that are already in use and the connections that are available for use. Various commands display information about the connection status of Vscan servers.

Command...	Information displayed...
------------	--------------------------

<code>vserver vscan connection-status show</code>	Summary of the connection status
<code>vserver vscan connection-status show-all</code>	Detailed information about the connection status
<code>vserver vscan connection-status show-not-connected</code>	Status of the connections that are available but not connected
<code>vserver vscan connection-status show-connected</code>	Information about the connected Vscan server

For more information about these commands, see the [man pages](#).

## View Vscan server statistics

You can view Vscan server-specific statistics to monitor performance and diagnose issues related to virus scanning. You must collect a data sample before you can use the `statistics show` command to display the Vscan server statistics. To complete a data sample, complete the following step:

### Step

1. Run the `statistics start` command and the optional `statistics stop` command.

## View statistics for Vscan server requests and latencies

You can use ONTAP `offbox_vscan` counters on a per-SVM basis to monitor the rate of Vscan server requests that are dispatched and received per second and the server latencies across all Vscan servers. To view these statistics, complete the following step:

### Step

1. Run the `statistics show object offbox_vscan -instance SVM` command with the following counters:

Counter...	Information displayed...
<code>scan_request_dispatched_rate</code>	Number of virus-scanning requests sent from ONTAP to the Vscan servers per second
<code>scan_noti_received_rate</code>	Number of virus-scanning requests received back by ONTAP from the Vscan servers per second
<code>dispatch_latency</code>	Latency within ONTAP to identify an available Vscan server and send the request to that Vscan server
<code>scan_latency</code>	Round-trip latency from ONTAP to the Vscan server, including the time for the scan to run

Example of statistics generated from an ONTAP offbox\_vscan counter

```
Object: offbox_vscan
Instance: SVM
Start-time: 10/16/2013 10:13:25
End-time: 10/16/2013 10:25:11
Cluster: cluster01
Number of Constituents: 2 (complete_aggregation)
Counter Value
-----
scan_request_dispatched_rate 291
scan_noti_received_rate 292
dispatch_latency 43986us
scan_latency 3433501us
-----
```

View statistics for individual Vscan server requests and latencies

You can use ONTAP offbox\_vscan\_server counters on a per-SVM, per-off-box Vscan server, and per-node basis to monitor the rate of dispatched Vscan server requests and the server latency on each Vscan server individually. To collect this information, complete the following step:

Step

- 1. Run the statistics show -object offbox\_vscan -instance SVM:servername:nodename command with the following counters:

Counter...	Information displayed...
scan_request_dispatched_rate	Number of virus-scanning requests sent from ONTAP
scan_latency	Round-trip latency from ONTAP to the Vscan server, including the time for the scan to run to the Vscan servers per second

Example of statistics generated from an ONTAP offbox\_vscan\_server counter

```
Object: offbox_vscan_server
Instance: SVM:vscan_server:node
Start-time: 10/16/2013 10:13:25
End-time: 10/16/2013 10:25:11
Cluster: cluster01
Number of Constituents: 1 (complete_aggregation)
Counter Value
```

```
-----
scan_request_dispatched_rate 291
scan_latency 3433830us
-----
```

## View statistics for Vscan server utilization

You can also use ONTAP `offbox_vscan_server` counters to collect Vscan server-side utilization statistics. These statistics are tracked on a per-SVM, per-off-box Vscan server, and per-node basis. They include CPU utilization on the Vscan server, queue depth for scanning operations on the Vscan server (both current and maximum), used memory and used network. These statistics are forwarded by the Antivirus Connector to the statistics counters within ONTAP. They are based on data that is polled every 20 seconds and must be collected multiple times for accuracy; otherwise, the values seen in the statistics reflect only the last polling. CPU utilization and queues are particularly important to monitor and analyze. A high value for an average queue can indicate that the Vscan server has a bottleneck. To collect utilization statistics for the Vscan server on a per-SVM, per-off-box Vscan server, and per-node basis, complete the following step:

### Step

1. Collect utilization statistics for the Vscan server

Run the `statistics show -object offbox_vscan_server -instance SVM:servername:nodename` command with the following `offbox_vscan_server` counters:

Counter...	Information displayed...
<code>scanner_stats_pct_cpu_used</code>	CPU utilization on the Vscan server
<code>scanner_stats_pct_input_queue_avg</code>	Average queue of scan requests on the Vscan server
<code>scanner_stats_pct_input_queue_hiwatermark</code>	Peak queue of scan requests on the Vscan server
<code>scanner_stats_pct_mem_used</code>	Memory used on the Vscan server
<code>scanner_stats_pct_network_used</code>	Network used on the Vscan server

### Example of utilization statistics for the Vscan server

Object: offbox\_vscan\_server  
Instance: SVM:vscan\_server:node  
Start-time: 10/16/2013 10:13:25  
End-time: 10/16/2013 10:25:11  
Cluster: cluster01  
Number of Constituents: 1 (complete\_aggregation)  
Counter Value

```
-----  
scanner_stats_pct_cpu_used 51  
scanner_stats_pct_dropped_requests 0  
scanner_stats_pct_input_queue_avg 91  
scanner_stats_pct_input_queue_hiwatermark 100  
scanner_stats_pct_mem_used 95  
scanner_stats_pct_network_used 4  
-----
```



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