Scalability Tuning

vCenter Operations Manager for View 1.0

Scalability Overview

The scalability of vCenter Operations Manager for View 1.0 was tested and verified to support 4000 concurrent View remote sessions. For details about the environment used for testing 4000 concurrent View sessions see Scalability Test Reference.

Scalability depends on the physical servers and data storage that host the vCenter Operations Manager vApp and the View Adapter. CPU and memory resource contention might affect the performance of vCenter Operations Manager for View, so use reservations or shares to manage those resources. Total IOPS throughput of the datastore used by the vCenter Operations Manager vApp is also critical to good performance.

Scalability Considerations

The scalability capacity of the vCenter Operations Manager vApp and the scalability capacity of the View adapter affect the scalability of vCenter Operations Manager for View.

vCenter Operations Manager vApp Scalability

The vCenter Operation Manager vApp collects information from one or more vCenter Servers. When you size the vCenter Operations Manager vApp, consider metrics from every virtual machine that these vCenter Servers manage, not just metrics from View-related virtual machines. When installing the vCenter Operations Manager vApp, you can use the following sizing options.

- 1,500 virtual machines
- 3,000 virtual machines
- 6,000 virtual machines

These virtual machine recommendations are based on the total number of metrics collected for each virtual machine.

NOTE vCenter Operations Manager for View might add up to 100 additional metrics per View desktop session.

View Adapter Scalability

The vCenter Operations Manager for View View Adapter collects data for all remote View desktop sessions. Remote sessions include only those View desktops that have a currently logged-on user session, either connected or disconnected. Typically, there are fewer remote sessions than the total number of View desktop virtual machines. For a View desktop VDI environment with 6000 sessions no more than 4000 concurrent remote sessions might be active at any given time.

NOTE View Adapter scalability tests of up to 4000 sessions apply only to concurrent remote sessions, not to the total number of desktop virtual machines managed by a View pod.

View Adapter Tuning

Closely monitor VDI environments that are nearing 4000 sessions. If you are installing View Adapter in a View VDI environment that manages 4000 or more remote sessions, you can modify a number of configuration settings. You can also monitor performance metrics to ensure proper functioning of the View Adapter. Ensure that data collection times are within an acceptable time range and are not exceeding collection intervals.

Data collection is divided into View topology collection, desktop metric collection, and View event collection. Each of these collection components runs on its own schedule independently of the others, and you can adjust their collection intervals separately.

Monitoring collection performance is crucial when analyzing the scalability of a vCenter Operations Manager for View installation to ensure collection times for each component do not exceed collection intervals. Metrics built into the View Adapter can be displayed in the vCenter Operations Manager console to monitor collection times and results. Refer to these collection times when you configure collection intervals.

Collection Intervals

By default, data is collected at five-minute intervals. This interval is the standard for most vCenter Operations Manager metric adapters and should be the minimum configuration for all collection intervals. To improve scalability, you can increase collection intervals to accommodate the time required to collect data from more remote desktop sessions.

Desktop Metric Collection

In most cases, desktop metric collection is the limiting factor to vCenter Operations Manager for View scalability. Collection starts at the beginning of each interval and continues until metrics from each remote desktop session are collected and sent to vCenter Operations Manager. If collection is not finished before the start of the next interval, then collection is skipped for the next interval.

The desktop metric collection interval in the `ViewTopoSvc.exe.config` View Adapter configuration file located in the installation folder at c:\Program Files\VMware\vCenter Operations\View Adapter. To change the collection interval, find and update the value corresponding to the UpdateMetricInterval key. The unit of value is seconds, for example, 300 = 5 minutes.

```
<add key="UpdateMetricInterval" value="300" />
```

After you save changes, you must restart the vCenter Operations View Adapter service to apply the update.

For large scale View environments, you might need to increase the desktop collection interval to 10 or 15 minutes. Increasing the interval decreases the resolution of the data stored and analyzed by vCenter Operations Manager. Use the `Desktop Metrics: Collection|Collection Time (sec)` metric to monitor how long collection is taking.

View Topology Collection

View topology is collected remotely from the View Connection Server. For large environments, collection times might exceed five minute. Tests have shown that times rarely surpass five minutes even for VDI environments with up to 6000 total desktop virtual machines, with and without user sessions.

This collection interval is measured from the end of one collection to the start of the next. By default, the interval is set to five minutes.

You can set the topology collection interval on the Advanced tab of the View Adapter Configuration utility.

You can also set this interval in the View Adapter configuration file `ViewTopoSvc.exe.config` located in the installation folder at c:\Program Files\VMware\vCenter Operations\View Adapter. To change the interval, find and update the value corresponding to the UpdateInterval key. The unit of value is seconds, for example, 300 = 5 minutes.

```
<add key="UpdateInterval" value="300" />
```

After you save the changes you must restart the vCenter Operations View Adapter services to apply the update.

For large scale View environments, you might need to increase the View topology interval to 10 or even 15 minutes. Increasing this value decreases the frequency of topology updates sent to vCenter Operations Manager. Use the **View Topology: Collection Time|Total (sec)** metric to monitor how long collection is taking.

View Events Collection

View events are read and collected directly from the View Events Database. The interval used to collect View events is the same as that used to collect desktop metrics.

Event collection times are typically fast, and you should not need to change the collection interval even in large scale environments. Use the `View Events: Collection Time|Total (sec)` metric to monitor how long collection is taking.

Monitoring View Adapter Performance

The View adapter creates an application in vCenter Operations Manager for monitoring performance and behavior. This application contains View Collector resources that correspond to the desktop metrics, View topology, and View Events collection components. Each View Collector resource has a number of metrics that you can use to monitor collection times, collection results, and other adapter behavior.

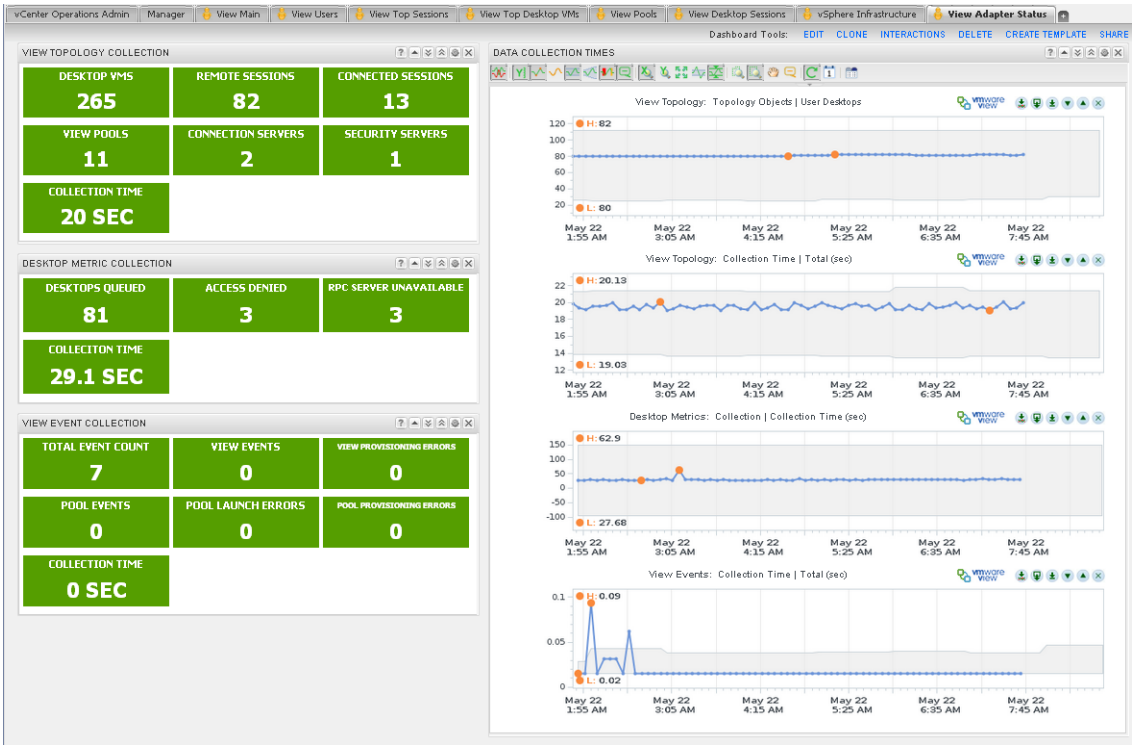
Monitoring collection times is the best way to judge the performance and scalability of vCenter Operations Manager for View. An additional PAK file is available that creates a dashboard that you can use to monitor adapter status and performance. Alternately, you can view adapter performance by navigating to the View Adapter application listed on the **Manager** tab in the vCenter Operations Manager console.

View Adapter Status Dashboard

This dashboard is part of the standard View dashboards deployed with vCenter Operations Manager for View beginning in version 1.0.1.

You can use the View Adapter Status dashboard to monitor the performance of the View Adapter. The `VMware-vcops-viewadapter-supporttools.pak` file creates the dashboard. The PAK file is deployed through the vCenter Operations Manager Admin console following the same instructions as those for the standard vCenter Operations Manager for View dashboards. See the *vCenter Operations Manager for View Integration Guide*.

Deploy this PAK file after vCenter Operations Manager for View is installed and is running.



View Topology Collection Metrics

Table 1. View Topology Collection Metrics

Name	Metric Path	Description
Desktop VMs	View Topology:Topology Objects:Desktop VMs	Total number of View desktop VMs in the environment.
Remote Sessions	View Topology:Topology Objects:User Desktops	Current number of remote desktop sessions.
Connected Sessions	View Topology:Topology Objects:Connected Desktops	Number of currently connected desktop sessions.
View Pools	View Topology:Topology Objects:View Pools	Number of View desktop pools in the environment.
Connection Servers	View Topology:Topology Objects:View Servers	Number of View Connection Servers in the environment.
Security Servers	View Topology:Topology Objects:View Security Servers	Number of View Security Servers in the environment.
Collection Time	View Topology:Collection Time|Total (sec)	Total time to collect View topology data last interval.

Desktop Metric Collection Metrics

Table 2. Desktop Metric Collection Metrics

Name	Metric Path	Description
Desktops Queued	Desktop Metrics:Collection|Desktops Queued for Collection	Number of desktops queued from which to collect metrics. Should match the number of remote sessions.
Access Denied	Desktop Metrics:Collection|Access Denied Desktops	Number of desktops that failed to collect due to Access Denied errors. Typically a desktop credential problem.
RPC Server Unavailable	View Topology:Topology Objects:RPC Server Unavailable Desktops	Number of desktops that failed to collect due to RPC Server Unavailable errors. Typically a desktop firewall or service problem.
Collection Time	Desktop Metrics:Collection|Collection Time (sec)	Total time taken to collect metrics from all remote desktop sessions.

View Events Collection Metrics

Table 3. View Events Collection Metrics

Name	Metric Path	Description
Total Event Count	View Events:DB Query Results|Total Record Count	Total number of records over the last interval returned from the View Event DB .
View Events	View Events:DB Query Results|View Events	Number of View related events sent to vCenter Operations Manager.
View Provisioning Errors	View Events:DB Query Results|View Provisioning Errors	Number of View provisioning error events sent to vCenter Operations Manager.
Pool Events	View Events:DB Query Results|Pool Events	Number of pool related events sent to vCenter Operations Manager.
Pool Launch Errors	View Events:DB Query Results|Pool Launch Errors	Number of pool launch errors sent to vCenter Operations Manager.
Pool Provisioning Errors	View Events:DB Query Results|Pool Provisioning Errors	Number of pool provisioning errors sent to vCenter Operations Manager.
Collection Time	View Events:Collection Time|Total (sec)	Total time taken to collect events from the View Events DB.

Scalability Test Example

vCenter Operations Manager for View uses a specific configuration for internal scalability testing. vCenter Operations Manager vApp virtual machines and the View adapter server virtual machine were hosted on the same ESXi host.

- ESXi host
  - ESXi: Version 5.0.0
  - CPU Cores: 12 CPUs x 2.2 GHz
  - Processor Type: 6-core AMD Patroon Processor 2427

- Memory: 65 GB
- Model: ProLiant DL385 G6

- vCenter Operations Manager vApp
  - Analytical virtual machine: 8 vCPU, 20 GB memory
  - UI VM: 8 vCPU, 12 GB memory
- View Adapter virtual machine
  - Windows 2008 R2 VM: 4vCPU, 8 GB memory

This screenshot shows the View Adapter Status dashboard as seen during scalability tests.