

EMC ViPR SRM Data Collection: Impact on Datacenter Elements

Abstract

The resource consumption data outlined here have been captured while EMC ViPR SRM 3.5.1 monitored, collected and reported various metrics related to performance, topology and capacity from the configuration items.

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Purpose

This document provides data which helps assess the impact of data collection by EMC ViPR SRM 3.5.1 on the target datacenter elements.

It helps analyze:

- Average Load on the elements during collection
- Stability of elements during collection

The following target elements are addressed in this document:

- EMC VMAX
- EMC VNX (Block & File)
- EMC XtremIO
- EMC Isilon
- EMC Centera
- Cisco MDS
- HDS Device Manager
- NetApp (C-mode & 7-mode)
- VMware
- IBM AIX Host
- Red Hat Enterprise Linux Host
- Windows Host
- Microsoft SQL Server

The test bed had all possible collections enabled from SRM.

Target element: VMAX

Device	Collection Interface	Default Polling Cycles (seconds)		Average CPU Usage (%)	Estimated Memory Usage (%)
EMC VMAX	Unisphere	Performance	900	1.7	3.31
EMC VMAX	Solutions Enabler	Topology Performance	1200 3600	0.42	0.07
EMC VMAX	SMI-S Provider	Topology Performance	1200 3600	0.42	0.07

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

The test environment included the following hardware/software:

- Unisphere 1.6.2 running on a server with 10 GHz CPU and 16 GB of memory.
- Solutions Enabler 7.6.2.0 running on a server with 10 GHz CPU and 256 GB of memory.
- SMI-S Provider 7.6.2.0 running on a server with 10 GHz CPU and 256 GB of memory.
- Three (3) VMAX 40K arrays were being monitored, and LUN-level metrics were enabled for collection.

The data was collected over a period of 50 minutes.

Target element: VNX (Block & File)

Device	Collection Interface	Default Polling Cycles (seconds)		Average CPU Usage (%)	Estimated Memory Usage (%)
EMC VNX Block	Storage Processor	Topology	900	1	N/A
		Capacity Performance	300		
EMC VNX File	Control Station	Topology	900	0.01	0.05
		Capacity Performance	300		

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

**N/A: No interfaces available to collect data.*

The test environment included the following hardware/software:

- Storage Processor on a VNX5800
- Control Station on a VNX800

The data was collected over a period of 300 minutes (VNX Block) and 210 minutes (VNX File).

Target element: EMC XtremIO

Device	Collection Interface	Default Polling Cycles (seconds)		Average CPU Usage (%)	Estimated Memory Usage (%)
EMC XtremIO	XtremIO Management Server	Topology Capacity Performance	1800	N/A	N/A

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

**N/A: No interfaces available to collect data.*

The test environment included the following hardware/software:

- EMC XtremIO 1Brick Cluster
- XtremIO Management Server 3.0.0

The data was collected over a period of 30 minutes.

ViPR SRM load on XtremIO has been measured in terms of IOPS:

- Baseline: 10250 (Before Collection)
- Collection: 10400 (During Collection)
- Delta: 150

The delta of 150 indicates that IOPS load introduced by SRM is minimal.

Target element: EMC Isilon

Device	Collection Interface	Default Polling Cycles (seconds)		Average CPU Usage (%)	Estimated Memory Usage (%)
EMC Isilon	Isilon Array	Inventory Performance Capacity	300	0.3	N/A

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

**N/A: No interfaces available to collect data.*

The test environment included the following hardware/software:

- Isilon X200, with OneFS Version 7.1.0.1

The data was collected over a period of 180 minutes.

Target element: EMC Centera

Device	Collection Interface	Default Polling Cycles (seconds)		Average CPU Usage (%)	Estimated Memory Usage (%)
EMC Centera	Centera Array	Capacity Performance	600	0.09 (User) 0.04 (System)	0.3

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

The test environment included the following hardware/software:

- EMC Centera g4, with software version 4.1.0-3343-0-0

The data was collected over a period of 50 minutes.

Target element: Cisco MDS

Device	Collection Interface	Default Polling Cycles (seconds)		Average CPU Usage (%)	Estimated Memory Usage (%)
Cisco MDS	Cisco Switch	Inventory Performance	300	2.32(User) 0.82(Kernel)	0.73

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

The test environment included the following hardware/software:

- Cisco MDS 9509 with Firmware 5.2(8c)

The test data was collected over a period of 150 minutes.

Target element: Hitachi Device Manager

Device	Collection Interface	Default Polling Cycles (seconds)		Average CPU Usage (%)	Estimated Memory Usage (%)
Hitachi Device Manager	HiCommand Device Manager	Topology	900	1.42	0.001
		Capacity	900		
		Performance	300		

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

The test environment included the following hardware/software:

- HDS AMS200, AMS2100, USP_V
- Hitachi Command Suite 7 running on a server with 4.26 GHz CPU and 4 GB of memory.

The data was collected over a period of 120 minutes.

Target element: NetApp (C-Mode & 7-Mode)

Device	Collection Interface	Default Polling Cycles (seconds)		Average CPU Usage (%)	Estimated Memory Usage (%)
NetApp C-Mode	OnCommand	Topology	900	0.5	N/A
		Capacity	3600		
		Performance	300		
NetApp 7-Mode	OnCommand	Topology	900	0.1	N/A
		Capacity	3600		
		Performance	300		

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

**N/A: No interfaces available to collect data.*

The test environment included the following hardware/software:

- NetApp C-Mode FAS3220, with Firmware 8.1.3
- NetApp 7-Mode FAS3050, with Firmware 7.3.3
- OnCommand 3.0 running on a server with 3.06 GHz CPU and 4 GB of memory.

The data was collected over a period of 1440 minutes (both C-Mode and 7-Mode).

Target element: VMware vCenter

Device	Collection Interface	Default Polling Cycles (seconds)		Average CPU Usage (%)	Estimated Memory Usage (%)
VMWare vCenter	VMWare vCenter	Inventory Performance Capacity	300	0.275	0.01

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

The test environment included the following hardware/software:

- vCenter 5.5 running on a server with 39 GHz CPU and 512 GB of memory.
- Approximately 60 entities are managed by this vCenter server (2 ESX servers, 48 VMs and 10 datastores), which is considered heavily loaded as it manages most of the test VMs in the lab.

The test data was collected over a period of 240 minutes.

Target element: IBM AIX Host

Device	Collection Interface	Default Polling Cycles (seconds)		CPU Usage Spikes (%)	Estimated Memory Usage (%)
IBM AIX Host	AIX Host	Topology Performance	900	11.2	0.53

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

Note: Spikes in CPU usages are observed for only 2-3 sec until the discovery completes.

The test environment included the following hardware/software:

- IBM AIX 8231-E1C running on a server with 6 GHz CPU and 2 GB of memory.

The data was collected over a period of 30 minutes.

Target element: Linux Host

Device	Collection Interface	Default Polling Cycles (seconds)		CPU Usage Spikes (%)	Estimated Memory Usage (%)
Linux Host	Linux Host	Topology Performance	900	19	16

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

Note: Spikes in CPU usages are observed for only 2-3 sec until the discovery completes.

The test environment included the following hardware/software:

- SUSE 3.0.13-0.27 running on a server with 8 GHz CPU and 4 GB of memory.

The data was collected over a period of 60 minutes.

Target element: Windows Host

Device	Collection Interface	Default Polling Cycles (seconds)		CPU Usage Spikes (%)	Estimated Memory Usage (%)
Windows Host	Windows Host	Topology Capacity Performance	900	18	0.1

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

Note: Spikes in CPU usages are observed for only 2-3 sec until the discovery completes.

The test environment included the following hardware/software:

- Windows Server 2012 R2 Datacenter, running on a server with 5 GHz CPU and 256 GB of memory.

The data was collected over a period of 45 minutes.

Target element: Microsoft SQL Server

Device	Collection Interface	Default Polling Cycles (seconds)		Average CPU Usage (%)	Estimated Memory Usage (%)
MS SQL Server	SQL Server	Capacity Performance	900 300	0.26	3.5

**Estimated Memory Usage: Most of the utilities provide memory in terms of % of total memory in the system.*

The test environment included the following hardware/software:

- MS SQL Server 2008 R2 - 10.50.1600.1 running on a server with 4.52 GHz CPU and 4 GB of memory.

The data was collected over a period of 60 minutes.