

ViPR SRM for Storage Administrators Lab Guide

August 2014

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Lab Exercise 1: Connecting to the ViPR SRM Application

Purpose:	Ensure that the ViPR SRM application is available and functioning correctly
Tasks:	In this lab you will: • Log into your student workstation • Connect to and log into the ViPR SRM application • Check the integrity of the application

Lab 1: Part 1 – Connecting to the ViPR SRM Application

Step	Action
1	Consult your student lab worksheet to determine your assigned Windows Server, login procedure, and credentials.
2	Once logged into your student workstation, launch the Windows Explorer browser and connect to the ViPR SRM application. Consult the student lab worksheet for details.
3	After logging into ViPR SRM, ensure that the Solution Packs identified on the student lab worksheet has been installed for ViPR SRM. NOTE: this cannot be accomplished in Centralized Management for a static database. View them in the Report Library.

End of Lab Exercise

Lab Exercise2: Global Dashboard Review

Purpose:	Reviewing global dashboards to quickly identify that storage capacities are not at critical consumption levels
Tasks:	In this lab you will: • Examine the pool free capacity of all discovered storage • Review storage consumption of service levels • Assess storage capacity levels and make recommendations

Lab 2: Part 1 – Examining Global Dashboards

Step	Action
1	Open the path to the global dashboards (All >> Dashboards) and under the Storage node answer the following questions: How much storage in the silver service level is used for file storage? _____ How did you come to your conclusion?
2	In the Enterprise Capacity Dashboard, there are charts for Usable Capacity and Usable Capacity Trend. In both of these charts, there is a metric for “Pool Free”. How does this metric differ from the “Pool Free” metric in the “Usable Capacity by Pool” table in this same dashboard view?
3	Do the graphs in the Enterprise Capacity Dashboard indicate that the discovered storage in this instance is adequate for the consumption levels placed on it, or should storage be added to the arrays as quickly as possible to avoid an out space condition?
4	Are any service levels at or near full capacity? If so, which service levels? _____ What actions should a storage administrator take? _____



End of Lab Exercise

Lab Exercise 3: Storage Resource Planning

Purpose:	To place capacity requirements based on forecasts and trends in usage
Tasks:	In this lab you will: • Review capacity usage trends • Forecasting capacity problems • Investigate storage array utilization

Lab 3: Part 1 – Capacity Trends

Step	Action
1	Open the path to the “Usable Capacity Trend” in the “Planning” node of the report tree.
2	Isolate the largest contributor to a spike in chart data by removing all other metrics displayed. Zoom in on the spike and determine the peak value. Record it here_____ What does the spike in this metric indicate?_____ Revert the view to the default report.



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Lab 3: Part 2 – Forecasting Capacity Consumption

Step	Action
1	Open the node “Forecast Capacity Problems”.
2	Are there any file systems, LUNs, or Storage Pools with usage levels near full capacity? If so, how much time does ViPR SRM predict will pass before the device reaches 90% capacity utilization? _____
3	Review the sparkline markers for the array utilization. Have any of the utilization percentages changed over the last week. Note those arrays which show change: _____ How has this affected the “Configured Usable” storage on this array?
4	Have any “Hot Spots” been detected in Interface Usage, CPU Utilization, or Memory Utilization? Which devices are displayed that will present possible issues over the next three months? _____



End of Lab Exercise

Lab Exercise 4: Examining Alerts in ViPR SRM

Purpose:	To view available alerts and understand the source of alerts
Tasks:	In this lab you will: • Navigate to Alert reports • Examine alerts to understand the sources • View compliance breaches

Lab 4: Part 1 – Examining Alerts in ViPR SRM

Step	Action
1	Navigate to Alerts Dashboard. How many alerts pertain to Array? _____ How many alerts pertain to File Server? _____ What is the total number of Alerts? _____ Hint: Go to All>>Operations>>Alerts>>Dashboard and hover the mouse over Alerts by Device Type
2	In Alerts by Category, click on Performance. Which device(s) are reporting Performance alerts? _____ What is the affected Object type? _____ What are the affected Objects? _____
3	Click on an alert from the table in step (2). What is the source of this alert? _____ Hint: Look at the Source IP address. From this and the discussion in class you should be able to determine how this alert was generated.
4	In Alerts by Category, click on Availability. Which is the device for which Critical alerts are reported? _____

Step	Action
5	Click on a Critical alert from the table in step (4). What is the source of this alert? _____ Hint: Look at the Source IP address. From this and the discussion in class you should be able to determine how this alert was generated.
6	Navigate to All>>Operations>>Compliance>>Storage Compliance>>Breach Report. Note: due to limitations of the lab environment, only the Active Breaches by Severity will be populated.
7	Click on Severity High. Examine the types of Breaches that are reported. Note: due to limitations of the lab environment, further details on these Breaches will not be available.

End of Lab Exercise

Lab Exercise 5: Service Levels and Chargeback Reporting

Purpose:	To examine service levels and chargeback reports
Tasks:	In this lab you will: • Examine Service Level consumption • Run and investigate Chargeback Reports

Lab 5: Part 1 – Service Level Consumption

Step	Action																					
1	Find the service levels whose used percentage is in the critical range for the array specified in the Student Lab Worksheet. <table><thead><tr><th>Service Level</th><th>Array</th><th>Percent used</th></tr></thead><tbody><tr><td>_____</td><td>_____</td><td>_____</td></tr><tr><td>_____</td><td>_____</td><td>_____</td></tr><tr><td>_____</td><td>_____</td><td>_____</td></tr><tr><td>_____</td><td>_____</td><td>_____</td></tr><tr><td>_____</td><td>_____</td><td>_____</td></tr><tr><td>_____</td><td>_____</td><td>_____</td></tr></tbody></table> Use the Explore node to find these values All >> Explore >> Storage >> Storage Systems >> 000192606304 >> Device Summary >> 000192606304 >> Enterprise Capacity Dashboard >> Usable Capacity by Service Level	Service Level	Array	Percent used	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Service Level	Array	Percent used																				
_____	_____	_____																				
_____	_____	_____																				
_____	_____	_____																				
_____	_____	_____																				
_____	_____	_____																				
_____	_____	_____																				
2	Are any of the service levels at 100% used? Why? _____ _____																					

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Lab 5: Part 2 – Chargeback Reporting

Step	Action
1	For Group chargeback compare the following: Primary Presented Chargeable storage to Primary Used Chargeable. Which is larger?_____ Total Presented Chargeable to Total Used Chargeable. Which is larger?_____ What influences the change in chargeable storage to each group?_____
2	Now also, compare the following in Group chargeback: Total Used Chargeable to Primary Used Chargeable. Which is larger?_____ Total Presented Chargeable to Primary Presented Chargeable. Which is larger?_____ What influences the change in chargeable storage to each group comparison?_____
3	Which host has the highest level of Primary Used Chargeable storage? Which service level does it consume the most storage from?



End of Lab Exercise

Lab Exercise 6: Performance Reporting and Analysis

Purpose:	To examine and analyze performance data collections
Tasks:	In this lab you will: • Analyze performance metrics for VMAX array • Analyze VNX Block performance metrics • Analyze VNX File performance metrics

Lab 6: Part 1 – Examine performance collections

Step	Action
1	Identify the VMAX array for which Performance data is available. Array ID: _____ What could be a reason for lack of Performance data for the other VMAX array? Hint: Follow the path shown and select VMAX – Performance Dashboard All>>Explore>>Storage>>Storage Systems>>000192606304
2	For the VMAX array identified in step (1), select VMAX – Performance Dashboard. What are the categories of Performance metrics available?
3	What is the total IOPS on the VMAX array? _____ Determine the Read/Write ratio of the workload on the VMAX array. Read% = _____ Write%= _____ Hint: Move the cursor over the IOPS graph.
4	Can you determine the approximate size of the Reads and Writes? Read size = _____ Write size = _____

Step	Action
5	Identify and record the two most active Front-end directors in the VMAX array. FA-: _____ FA-: _____
6	By examining the metrics for the two most active Front-end directors, what high level inference can you draw?
7	Explore the additional metrics available for one of the most active Front-end directors. By examining the metrics, can you arrive at a reasonable conclusion about the nature of the Read IOs? Is it: Random: _____ or Sequential: _____ Explain the metrics you examined and any calculation you performed.
8	Identify and record the most active Storage Groups in the VMAX array. SG1: _____ SG2: _____ SG3: _____
9	By examining the metrics for the most active Storage Groups, what high level inference can you draw?

Step	Action
10	Identify the most active devices in this VMAX array. How many devices are active? _____ What is/are the device type of these devices? _____
11	Based on the metrics available for the devices, what is your best estimate about the Read/Write workload distribution? Read% = _____ Write%= _____ Explain the metrics you examined to arrive at the conclusion.
12	Select the VNX array to examine Block performance details that are available. Hint: Follow the path shown and select VNX Block – Performance Details All>>Explore>>Storage>>Storage Systems>>APM00134303866
13	What are the categories of metrics available for VNX Block performance?
14	By examining the metrics available, what can you conclude about the Read/Write ratio of the workload? Read% = _____ Write% = _____ Explain the metrics you used to arrive at this conclusion.

Step	Action
15	Examine the performance of the Storage Processors for this VNX array. Are the two SPs equally utilized? _____ What is the Utilization%? SP A = _____, SP B = _____
16	Is the number of IOPS equal or nearly equal between the two SPs? Yes: _____ No: _____ What could be the cause of an imbalance in a VNX array? Hint: Select each of the Storage Processors and examine the number of active LUNs owned by them. SP A: Number of LUNs: _____, RAID Type(s): _____ SP B: Number of LUNs: _____, RAID Type(s): _____
17	Examine LUN performance and identify the most active LUNs. Number of LUNs that are most active: _____
18	From the metrics available for the LUNs what can you correlate the LUN performance with?
19	Examine the metrics available for few of the most active LUNs. From your analysis what can you conclude about the nature of the Read workload on these LUNs? Random: _____ or Sequential: _____ Explain the metrics you used to reach your conclusion.



Step	Action
20	Select the VNX array to examine File performance details that are available. Hint: Follow the path shown and select VNX File – Performance Details All>>Explore>>Storage>>Storage Systems>>APM00134401136
21	What are the categories of metrics available for VNX File performance?
22	Which is the most active File System in this Unified VNX? _____ What is the capacity of this FS? _____
23	Explore the metrics available for the FS identified in step (22). Record the Volume IOPS, Volume Throughput and Utilization. Volume IOPS: _____ Volume Throughput: _____ Utilization: _____
24	Examine the IOPS for the FS identified in step (22). What is the Read/Write ratio of the workload to this FS? Read% = _____ , Write%= _____ Explain your calculation.



Step	Action
25	Examine the Throughput for the FS identified in step (22). From metrics used for step (24) and what is available for this step, determine the average Read and Write size for this workload. Read size = _____ Write size = _____ Explain your calculations.
26	Explore the details and additional metrics available from the Report Library. All>>Report Library>>EMC VMAX All>>Report Library>>EMC VNX



End of Lab Exercise

Lab Exercise 7: Reporting

Purpose:	To create, copy, and modify reports using the Report Wizard and Edit Mode as appropriate
Tasks:	In this lab you will: • Create a custom report using the Report Wizard • Create and Copy Reports • Modify a Table • Create a personal Dashboard

Lab 7: Part 1 – Using the Report Wizard

Step	Action
1	Open the Report Wizard in the Tools utility.
2	Select Device Browser under the View Type selection box. Select FabricSwitch from the Device Types column. Select a Brocade Switch (e.g. Brocade_217) in the Hostname column. See the Student Lab Worksheet. Select Port in the Component Types column. You may choose as many of the ports as you would like in the Components column. (Ex: check the first 8 ports) In the Available Metrics column check InFrames only. Click the Add Metrics button.
3	Expand Optional Report Settings and select the stacked chart report.
4	Scroll to the bottom of the screen and click the Run button. Save in “My Reports” as “MyBrocadeChartReport#” where # is the student number assigned to you. See the Instructor if this has not been assigned yet.
5	Perform steps 1 and 2 above once again. However, this time in step 3 select the Table report option.
6	Scroll to the bottom of the screen and click the Run button. Save in “My Reports” as “MyBrocadeTableReport#” where # is the student number assigned to you.

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Lab 7: Part 2 – Create, Copy, and Modify Reports

Step	Action
1	Enter Edit Mode. Click My Reports in the tree panel. Click the Create a new Report icon in the icon tray at the top of the report list in the leftmost column. The main panel should now show the Reporting & Expansion tab of the New Report Name: Title the report – List of Virtual Machines# where # is the student number assigned to you. Click Save.
2	In the reports listing tree panel, expand as follows: VMware vCenter>> TEMPLATES >> VM Click on the report node named Virtual Machines. With the report Virtual Machines highlighted, click the Copy the Selected Report icon in the icon tray at the top of the report list. Click on the report you created in step 1. (List of Virtual Machines#) where # is the student number assigned to you. Click on the Paste as Child Report icon in the icon tray at the top of the report list. A node called Virtual Machines should appear under your report node. Click the Save button.

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Step	Action
3	In Edit Mode, click on the report MyBrocadeTableReport#. The Report Details: Table tab should be selected. Swap the last two entries by dragging and dropping the next to the last entry over the last entry.
2	Click the + Property button. Scroll to the bottom of the screen. In the input box for Column Name enter Customer. In the input box for Property click on the “Show property selection helper” and select client in the APG tab, then click apply. Click the + Property button again and scroll to the next “Property” window. In the input box for Column Name enter Business Unit. In the input box for Property click on the “Show property selection helper” and select Business Unit (bunit) in the APG tab and click apply. Move the 2 new columns after first column named “device” (device name). Click Save button. Click Save in the Report Details: Table tab. Enter Browse Mode and view the table report for the switch. NOTE: there is no customer or business unit data to populate this report.

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Lab 7: Part 3 – Create and Modify a Personal Dashboard

Step	Action
1	In Browse Mode select a report that would allow you as an Administrator to get a quick view of the resources available on a VMAX. For example: VMAX Inventory Details. All >> Explore >> Storage >> Storage Systems >> 000192606304 >> Device Summary >> 000192606304 >> VMAX - Inventory Details
2	Once you select the report you want to see in your dashboard report, hover the mouse in the right upper corner the report, locate and click the pin icon (📌). Then select the New Personal View option. Give a name to this new personal view: My Dashboard# and click on Ok. NOTE: Remember to use your student number for #. Drill down in the report to the following location: All >> My Reports >> VMAX Inventory Details >> VMAX - Inventory Details >> Inventory >> Arrays >> 000192606304 >> Disks Change the Display settings for Time Selection to the following: Display values = 1 day Time Range Quick Switch = last 1 week Did any of the values in the report change? _____ Which values changed (if any) _____ What do you conclude from the output after changing the display values? _____ Revert to the default report.



Step	Action
3	You may choose to “Favorite” (or bookmark) this new dashboard report or another report. A good choice might be a report for examining failed disks (if there are any) in any arrays. All >> Operations >> Situations to Watch >> Availability: Disks Failed As a favorite report, it may be displayed when you log in if you choose this option in the management dialog box for favorite reports when you are saving the report.



End of Lab Exercise