

Advanced
Technology
Group



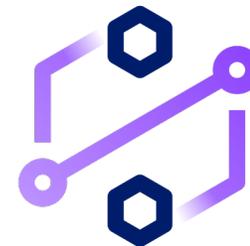
IBM Storage Monitoring Options for the IBM FlashSystem 9200

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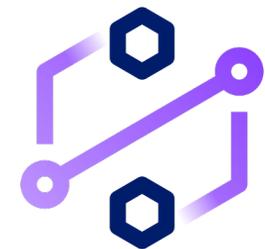
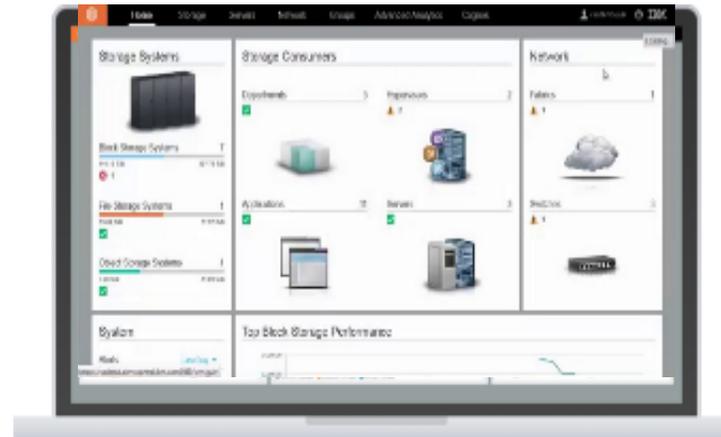
Agenda

- IBM Storage Insights
- IBM Storage Insights Pro
- IBM Storage Insights for Spectrum Control
- *IBM Storage Insights Device Support Portal (the IBM internal support view)*
- IBM Spectrum Control
- IBM Spectrum Control Select Edition

Software as a Service vs On Premise

- Software as a Service (SaaS)
 - IBM Storage Insights
 - IBM Storage Insights Pro
 - IBM Storage Insights for Spectrum Control

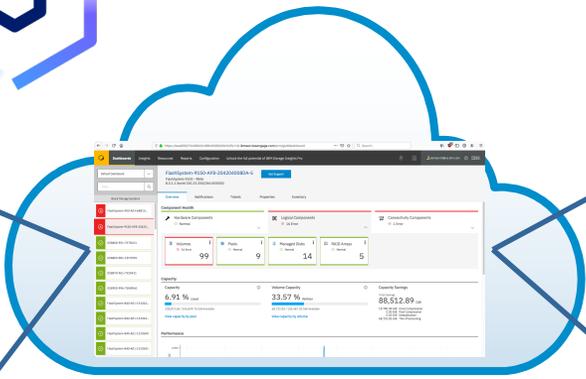
- On Premise
 - IBM Spectrum Control
 - IBM Spectrum Control Select Edition



IBM Storage Insights Architecture

IBM Support Team

- Configuration best practices
- Environment analytics
- Predictive analytics
- Remote diagnostics
- Faster time-to-resolution



IBM Cloud



Customer Infrastructure Team

IBM Customer Client Technical Specialist (Optional)



Customer Business Partner (Optional)

Multiple IBM Systems Supported (Data Collector)



IBM FlashSystem 5200



IBM FlashSystem 7200



IBM FlashSystem 9200



IBM FlashSystem 9200R



SAN Volume Controller



DS8000

IBM Storage Insights



IBM Storage Monitoring – SaaS – Storage Insights (free)

- IBM Storage Insights (free / entitled)
 - Free of charge to customers who own IBM block storage systems under maintenance
 - It is an IBM Cloud storage service that monitors only IBM block storage
 - It provides single-pane views of IBM block storage systems
 - Operations Dashboard
 - Notification Dashboard
 - Diagnostic event information
 - Key capacity and performance information (limited view of all metadata collected)
 - Streamlined support experience
 - Quickly assess the health of your storage environment
 - Get help with resolving issues
 - Advisor page provides recommendations on the remedial steps
 - Manage risks
 - Resolve storage issues
 - Storage Data Collector(s) need to be deployed on premise

IBM Storage Monitoring – SaaS – Storage Insights (free)

Browser address bar: <https://eea85927448640c386c626920b1b25c1.ibm.serviceengage.com/srm/gui#dashboard>

Navigation: **Dashboards** | Insights | Resources | Reports | Configuration | Unlock the full potential of IBM Storage Insights Pro

User: dompruitt@us.ibm.com

Default Dashboard

Filter...

Block Storage Systems

- ✖ FlashSystem-900-AE3-68B10...
- ✖ FlashSystem-9150-AF8-20420...
- ✔ DS8800-951-75TN211
- ✔ DS8800-981-13FCM01
- ✔ DS8870-961-75ZA411
- ✔ DS8900-996-75KWK61
- ✔ FlashSystem-840-AE1-131024...
- ✔ FlashSystem-840-AE1-131024...
- ✔ FlashSystem-840-AE1-1310540
- ✔ FlashSystem-840-AE1-1310541

FlashSystem-9150-AF8-204204008DA-5 Get Support

FlashSystem 9100 - 9846
8.3.1.1 (build 150.23.2002261453000)

Overview | Notifications | Tickets | Properties | Inventory

Component Health

Hardware Components
✔ Normal

Logical Components
✖ 16 Error

Connectivity Components
✖ 1 Error

Volumes ✖ 16 Error

99

Pools ✔ Normal

9

Managed Disks ✔ Normal

14

RAID Arrays ✔ Normal

5

Capacity

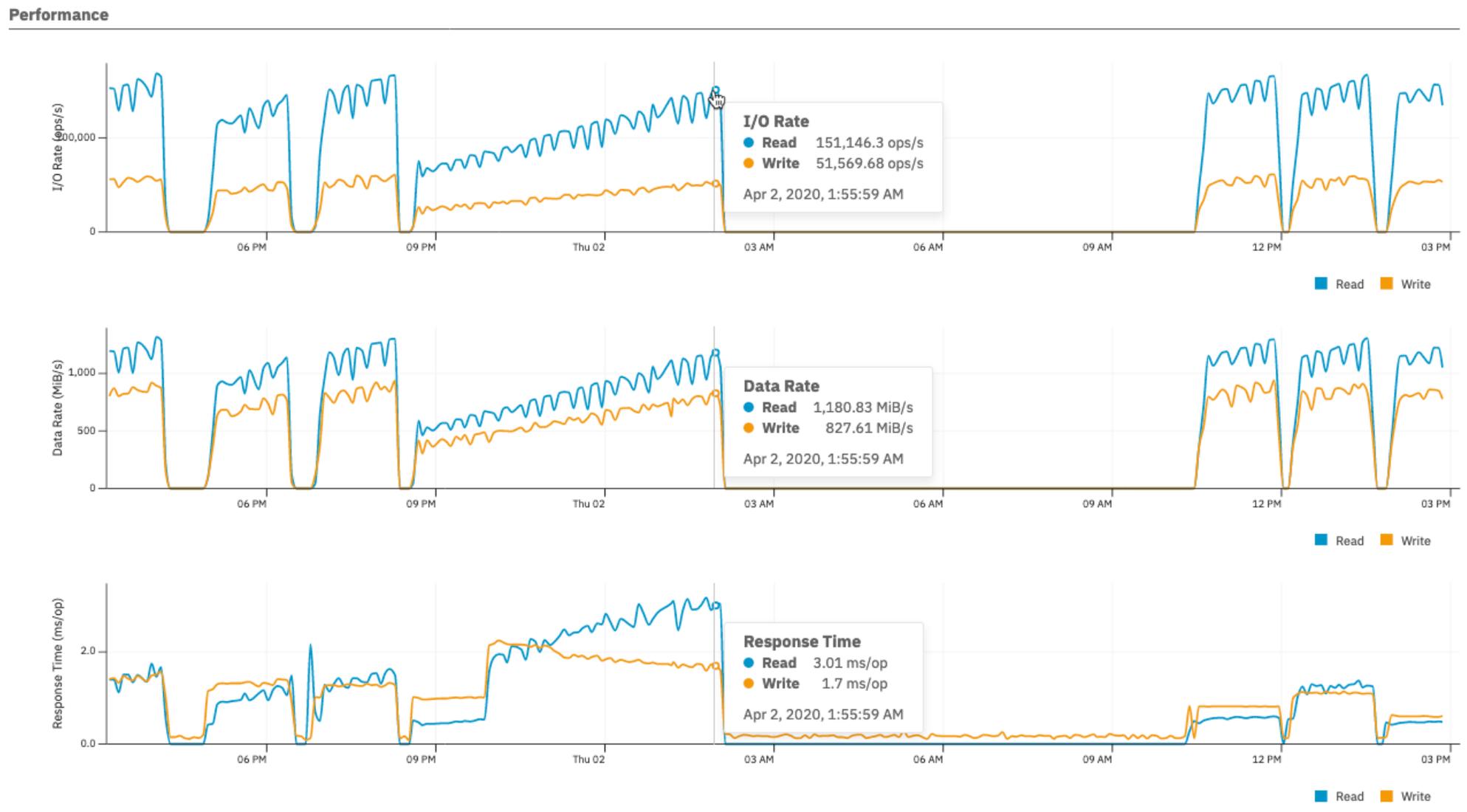
Capacity	Volume Capacity	Capacity Savings
<p>6.91 % Used</p> <p>228,873.68 / 245,849.75 GiB Available</p> <p>View capacity by pool</p>	<p>33.57 % Written</p> <p>68,732.85 / 103,467.00 GiB Available</p> <p>View capacity by volume</p>	<p>Total Savings</p> <p style="font-size: 1.5em; font-weight: bold;">88,512.89 GiB</p> <p>19,780.04 GiB Drive Compression 0.00 GiB Pool Compression 0.00 GiB Deduplication 68,732.85 GiB Thin-Provisioning</p>

Performance

2,000

IBM Storage Monitoring – SaaS – Storage Insights (free)

- ✓ FlashSystem-840-AE1-131062...
- ✓ FlashSystem-900-AE2-900-13...
- ✓ FlashSystem-9110-AF7-20420...
- ✓ FlashSystem-9110-AF7-20420...
- ✓ FlashSystem-9110-AF7-20422...
- ✓ FlashSystem-9150-AF8-20420...
- ✓ FlashSystem-A9000-415-1322...
- ✓ FlashSystem-A9000-415-1322...



IBM Storage Monitoring – SaaS – Storage Insights (free)

Browser address bar: <https://eea85927448640c386c626920b1b25c1.ibm-serviceengage.com/srm/gui#dashboard>

Navigation bar: Dashboards, Insights, Resources, Reports, Configuration, Unlock the full potential of IBM Storage Insights Pro

Default Dashboard
Filter...

FlashSystem-9150-AF8-204204008DA-5 [Get Support](#)
FlashSystem 9100 - 9846
8.3.1.1 (build 150.23.2002261453000)

Overview | Notifications | Tickets | Properties | Inventory

Component Health

Hardware Components
Normal

Logical Components
16 Error

Connectivity Components
1 Error

Volumes
16 Error
99

Pools
Normal
9

Managed Disks
Normal
14

RAID Arrays
Normal
5

Capacity

Capacity
6.91 % Used
228,873.68 / 245,849.75 GiB Available
[View capacity by pool](#)

Volume Capacity
33.57 % Written
68,732.85 / 103,467.00 GiB Available
[View capacity by volume](#)

Capacity Savings
Total Savings
88,512.89 GiB
19,780.04 GiB Drive Compression
0.00 GiB Pool Compression
0.00 GiB Deduplication
68,732.85 GiB Thin-Provisioning

Performance



- FlashSystem-900-AE3-68B10...
- FlashSystem-9150-AF8-20420...
- DS8800-951-75TN211
- DS8800-981-13FCM01
- DS8870-961-75ZA411
- DS8900-996-75KWK61
- FlashSystem-840-AE1-131024...
- FlashSystem-840-AE1-131024...
- FlashSystem-840-AE1-1310540
- FlashSystem-840-AE1-1310541

IBM Storage Monitoring – SaaS – Storage Insights (free)

FlashSystem-9150-AF8-204204008DA-5 Get Support

FlashSystem 9100 - 9846
8.3.1.1 (build 150.23.2002261453000)

Get Support for FlashSystem-9150-AF8-204204008DA-5

What do you need help with?



Create Ticket
Report a problem to IBM



Update Ticket
Add log package to existing ticket

Did you know?
Log packages are automatically generated and sent to IBM for you.
[Learn more about monitoring resources with a data collector](#)

FlashSystem-9150-AF8-204204008DA-5 Get Support

FlashSystem 9100 - 9846
8.3.1.1 (build 150.23.2002261453000)

Create Ticket for FlashSystem-9150-AF8-204204008DA-5

Collecting information for ticket



A log package will be automatically added to your ticket.
The following information for IBM is being added to the ticket:

Customer number:	4603954	✓
Storage system:	FlashSystem-9150-A...	✓
Type:	FlashSystem 9100 - ...	✓
Serial number:	00000204204008DA	✓
Version:	8.3.1.1 (build 150.23...	✓

✓
○
○
○
○

Back Next

IBM Storage Monitoring – SaaS – Storage Insights (free)

FlashSystem-9150-AF8-204204008DA-5 Get Support

FlashSystem 9100 - 9846
8.3.1.1 (build 150.23.2002261453000)

Create Ticket for FlashSystem-9150-AF8-204204008DA-5

Add a note or attachment

This is a test ticket for this storage system, please delete. 11

Hint: Include what happened and the error code, if any.

This is a test ticket for this storage system, please delete. 2939

Hint: Include the time the problem or error occurred, the affected resources, and details of any maintenance or other activities that occurred before the problem.

Attach Image or File: Browse OR Drag file here

Back Next

FlashSystem-9150-AF8-204204008DA-5 Get Support

FlashSystem 9100 - 9846
8.3.1.1 (build 150.23.2002261453000)

Create Ticket for FlashSystem-9150-AF8-204204008DA-5

Select a severity level

Least critical 4 3 2 1 Most critical

Minimal business impact - inquiry or non-technical request

Back Next

IBM Storage Monitoring – SaaS – Storage Insights (free)

FlashSystem-9150-AF8-204204008DA-5 Get Support

FlashSystem 9100 - 9846
8.3.1.1 (build 150.23.2002261453000)

Create Ticket for FlashSystem-9150-AF8-204204008DA-5

Select problem type

- Software / I don't know
- Hardware

Overview

Component Health

Hardware Normal

Volumes 20 Errors

Capacity

Capacity **6.97 %**
228,719.03 / 245,819.58

View capacity by ✓ ✓ ✓ ✓ ○

Back Next

FlashSystem-9150-AF8-204204008DA-5 Get Support

FlashSystem 9100 - 9846
8.3.1.1 (build 150.23.2002261453000)

Create Ticket for FlashSystem-9150-AF8-204204008DA-5

Review the ticket

Problem summary: This is a test ticket for this storage system, please delete.
Description: This is a test ticket for this storage system, please delete.
Severity level: **4** Minimal business impact - inquiry or non-technical request
Type of problem: Software

Contact name:
Contact email:
Contact phone:
Customer number:
Storage system: FlashSystem-9150-AF8-204204008DA-5
Type: FlashSystem 9100 - 9846
Serial number: 00000204204008DA
Version: 8.3.1.1 (build 150.23.2002261453000)
Log package:

Overview

Component Health

Hardware Normal

Volumes 20 Errors

Capacity

Capacity **6.97 %**
228,719.03 / 245,819.58

View capacity by ✓ ✓ ✓ ✓ ✓

Back Create Ticket

IBM Storage Monitoring – SaaS – Storage Insights (free)

FlashSystem-9150-AF8-204204008DA-5 Get Support

FlashSystem 9100 - 9846
8.3.1.1 (build 150.23.2002261453000)

Overview

Component Health

Hardware Normal

Volumes 20 Errors

Capacity 6.97 %

228,719.03 / 245,819.91

View capacity by

Create Ticket for FlashSystem-9150-AF8-204204008DA-5

Done



A log package is being created to add to the ticket
Estimated time to add log package to ticket: **20 minutes**

You can close this window to continue your work.

Close

dompruitt@us.ibm.com

1 Tasks Running	Start Time
Creating ticket for FlashSystem-9150-AF8-204204008DA-5. Uploading log package for ticket 27896,082,000.	Apr 2, 2020, 14:53

FlashSystem-9150-AF8-204204008DA-5 Get Support

FlashSystem 9100 - 9846
8.3.1.1 (build 150.23.2002261453000)

Overview Notifications **Tickets 1** Properties Inventory

Ticket updates are displayed here within 24 hours.

Open Tickets (1)

4 This is a test ticket for this storage system, please delete.

27896,082,000 *Opened on Apr 2, 2020*

Closed Tickets (25)

4 Test HW ticket, please delete

44774,082,000 *Closed on Mar 3, 2020*

This is a test ticket for this storage system, please delete.

Severity 4 Ticket 27896,082,000

APAR: -

Add Log Package to Ticket

IBM Storage Monitoring – SaaS – Storage Insights (free)

Permissions for IBM Support ✕

You can allow IBM support to collect and upload packages from your storage systems without requiring permission from your organization. If you give this permission, it can help IBM Support resolve your support tickets faster.

I give permission to IBM Support to collect and upload log packages from the selected storage systems.

	Name	
<input checked="" type="checkbox"/>	FlashSystem-900-AE3-68B101...	
<input checked="" type="checkbox"/>	FlashSystem-9110-AF7-20420...	
<input checked="" type="checkbox"/>	FlashSystem-9110-AF7-20420...	
<input checked="" type="checkbox"/>	FlashSystem-9110-AF7-20422...	
<input checked="" type="checkbox"/>	FlashSystem-9150-AF8-20420...	

Showing **52** items | Selected **50** items

IBM Storage Monitoring – SaaS – Storage Insights (free)

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Navigation: Dashboards | Insights | Resources | Reports | Configuration | Unlock the full potential of IBM Storage Insights Pro

Page Title: All Storage Systems

System ID	Read ops/s	Write ops/s	Read MiB/s	Write MiB/s	Read ms/op	Write ms/op	Available GiB	Total GiB
FlashSystem-9150-AF8-204204008DA-5	1.00	103.36	0.01	5.26	2.94	0.21	228,873.68	245,849.75
FlashSystem-900-AE3-68B101X-Mav	0.03	0.00	0.00	0.00	0.00	0.00	98,061.88	100,540.73
FlashSystem-900-AE2-900-135111...	6,641.73	7,654.55	221.03	347.73	0.43	0.20	1,635.74	53,245.35
DS8900-996-75KWK61	9,528.34	1,061.37	37.22	4.15	0.03	0.07	894.00	14,272.00
FlashSystem-840-AE1-1310241-1	2.14	13.17	0.28	0.13	0.22	0.09	2,735.97	19,199.97
FlashSystem-840-AE1-1310540	17.52	35.39	0.78	0.47	0.21	0.10	3,071.98	15,359.98
Storwize-V7000-524-10020601022...	0.04	0.00	0.04	0.00	0.08	0.00	5,048.91	19,339.00
FlashSystem-840-AE1-1310541	1,265.47	1,058.35	72.35	13.67	0.32	0.16	3,477.98	11,519.98
FlashSystem-840-AE1-1310548	1,472.40	1,175.73	78.32	13.75	0.33	0.16	3,477.98	11,519.98
FlashSystem-840-AE1-1310621-Sc...	1,239.75	1,133.00	71.32	13.55	0.31	0.16	3,677.98	11,519.98
Storwize-V7000-124-200A0618664...	No data available	?	No data available	?	No data available	?		
DS8870-961-75ZA411	23.01	18.12	0.22	0.08	0.13	0.14		
SVC-DH8-2006021D5D4-ATS5Stretch	0.00	0.00	0.00	0.00	0.00	0.00		
FlashSystem-V9000-AC1-10020609...	No data available	?	No data available	?	No data available	?		
FlashSystem-9150-AF8-20420E027...	0.00	0.15	1,057.70	709.68	0.00	0.18		

© Cop

IBM Storage Monitoring – SaaS – Storage Insights (free)

Browser address bar: <https://eea85927448640c386c626920b1b25c1.ibm.serviceengage.com/srm/gui#noc>

Navigation: Dashboards | Insights | Resources | Reports | Configuration | Unlock the full potential of IBM Storage Insights Pro

User: dompruit@us.ibm.com

All Storage Systems

Actions: Export, Select All, Deselect All, Add Storage System

Name	Condition	Used Capacity (%)	Available Capacity (GiB)	Capacity (GiB)	Provisioned Capacity (%)	Recent Growth (GiB)	Total Capacity Savings (%)
FlashSystem-V...	Normal	14 %	9,145.00	10,649.00	288.85	1.00	97.13 % (29,256.00 GiB)
SVC-DH8-200616006F8-Sandbox	Normal	14 %	35,984.58	41,996.00	124.32	-33.85	88.49 % (46,199.58 GiB)
FlashSystem-V9000-AC1-10020609530-VSCShow	Normal	28 %	36,785.18	29,920.00	107.05	56.98	75.08 % (23,518.18 GiB)
DS8900-996-75KWK61	Normal	94 %	894.00	14,272.00	93.34	-2.00	0.00 % (0.00 GiB)
Storwize-V7000-524-10020601022-Petro	Normal	74 %	5,048.91	19,339.00	78.95	0.00	6.54 % (977.91 GiB)
Storwize-V7000-524-1002340014E-G2-3	Normal	13 %	35,170.79	40,404.00	64.63	-0.50	81.96 % (20,878.79 GiB)
Storwize-V7000-124-200A0618664-Flex3B	Normal	64 %	2,640.98	7,253.00	63.59	Unavailable	
Storwize-V7000-524-1002080014C-VS1	Normal	20 %	29,267.94	36,815.00	60.61	192.50	67.69 % (14,766.70 GiB)
FlashSystem-9150-AF8-20420E02796-6	Normal	27 %	261,585.84	357,246.42	57.33	95,660.58	53.29 % (217,411.53 GiB)
FlashSystem-A9000-415-1322136	Normal	10 %	35,522.02	52,849.83	46.61	0.00	91.47 % (55,615.06 GiB)
DS8870-961-75ZA411	Normal	44 %	27,626.00	49,442.00	45.43	24.00	2.88 % (647.00 GiB)
SVC-DH8-2006021D5D4-ATS5Stretch	Normal	30 %	696.00	999.00	42.54	0.00	28.95 % (122.00 GiB)
FlashSystem-9150-AF8-204204008DA-5	Error	7 %	228,162.24	245,849.75	42.03	931.01	82.88 % (105,696.79 GiB)
Storwize-V7000-724-2042060269E-G3-3	Normal	18 %	46,541.67	56,485.69	40.79	-1,273.11	56.84 % (14,431.50 GiB)
Storwize-V7000F-AF6-10020609530-VS2	Normal	17 %	26,443.73	31,928.00	37.47	264.13	55.19 % (6,480.73 GiB)
XIV-214-1340004	Normal	10 %	23,382.47	26,106.95	37.11	0.00	76.27 % (7,389.46 GiB)
DS8800-981-13FCM01	Normal	25 %	17,731.00	23,498.00	30.71	1,193.00	23.88 % (1,723.31 GiB)
XIV-114-1310115	Normal	12 %	47,261.76	53,992.83	27.53	16.03	58.99 % (8,769.08 GiB)
FlashSystem-A9000R-415-1320926-Site C	Normal	8 %	186,755.31	52,753.56	26.74	0.00	94.62 % (78,437.77 GiB)
SVC-DH8-2006020A07A-SHOWSVC	Normal	6 %	144.00	154.00	23.41	-4,458.66	87.25 % (26.05 GiB)
FlashSystem-A9000-415-1322101-Site B	Normal	5 %	190,028.34	26,280.52	19.09	0.00	97.60 % (56,208.30 GiB)
DS8800-951-75TN211	Normal		13,674.00	16,384.00	16.54	Unavailable	
SVC-SV2-20420603B48	Normal	6 %	5,783.91	6,132.00	16.31	348.09	71.35 % (651.91 GiB)

Showing 54 items | Selected 0 items

Dashboard → Notifications - Call Home and PMR's

Dashboards
Insights
Resources
Groups
Reports
Configuration
🔔 1
📄
mcpeek@us.ibm.com
IBM

Notifications

🔍 Filter...
📄
📄
⌵ Actions
Create Report
Acknowledge

Event	Severity	Time	Device Name
Remote nodes visible in the SAN, but no partnership exists	⚠️ Warning	May 21, 2019, 17:08:10	FlashSystem-AF7-9110-1
Node canisters in a control enclosure do not have Fibre Channel connectivity to each other	ℹ️ Informational	May 21, 2019, 17:08:10	FlashSystem-AF7-9110-1
Volume protection feature available	ℹ️ Informational	May 21, 2019, 17:08:10	FlashSystem-AF7-9110-1
Equivalent Fibre Channel ports on each node are connected to a different fabric	✔️ Informational - Ackn...	May 21, 2019, 17:08:10	FlashSystem-AF7-9110-1
Preferred node optimization for FlashCopies	ℹ️ Informational	May 21, 2019, 12:21:57	SVC-DH8-Demo
Volume protection feature available	ℹ️ Informational	May 21, 2019, 12:21:57	SVC-DH8-Demo
Unused volumes identified in the system	ℹ️ Informational	May 21, 2019, 12:21:57	SVC-DH8-Demo
Thin-provisioned or compressed volumes with a small contingency capacity may impact p...	ℹ️ Informational	May 21, 2019, 12:21:57	SVC-DH8-Demo
Site properties are not configured on all objects	ℹ️ Informational	May 21, 2019, 06:07:21	SVC-DH8-ATSSSretch
There are fc attached hosts connected to i/o groups that do not have npiv enabled.	ℹ️ Informational	May 21, 2019, 06:07:21	SVC-DH8-ATSSSretch
Defined hosts show as offline status.	ℹ️ Informational	May 21, 2019, 06:07:21	SVC-DH8-ATSSSretch
Thin-provisioned or compressed volumes with a small contingency capacity may impact p...	ℹ️ Informational	May 21, 2019, 06:07:21	SVC-DH8-ATSSSretch
Volumes without a copy in each site of the stretched cluster have no redundancy	⚠️ Warning	May 21, 2019, 06:07:21	SVC-DH8-ATSSSretch
Unused volumes identified in the system	ℹ️ Informational	May 21, 2019, 06:07:21	SVC-DH8-ATSSSretch
Volume protection feature available	ℹ️ Informational	May 21, 2019, 06:07:21	SVC-DH8-ATSSSretch
There are fc attached hosts connected to i/o groups that do not have npiv enabled.	ℹ️ Informational	May 21, 2019, 05:46:25	SVC-SV1-Beta
Volume protection feature available	ℹ️ Informational	May 21, 2019, 05:46:25	SVC-SV1-Beta
Volume protection feature available	ℹ️ Informational	May 19, 2019, 14:57:24	Storwize-S24-V7000-VSCSho
There are fc attached hosts connected to i/o groups that do not have npiv enabled.	ℹ️ Informational	May 19, 2019, 14:57:24	Storwize-S24-V7000-VSCSho
Compressed volumes with low compression ratio can impact performance	ℹ️ Informational	May 19, 2019, 14:57:24	Storwize-S24-V7000-VSCSho
Insufficient Fibre Channel connectivity between nodes	✔️ Warning - Acknowle...	May 17, 2019, 17:08:07	FlashSystem-AF7-9110-1
Node canisters in a control enclosure do not have Fibre Channel connectivity to each other	✔️ Informational - Ackn...	May 17, 2019, 17:08:07	FlashSystem-AF7-9110-1
Remote nodes visible in the SAN, but no partnership exists	✔️ Warning - Acknowle...	May 17, 2019, 17:08:07	FlashSystem-AF7-9110-1
Running out of space (5% or less remaining)	⚠️ Warning	May 15, 2019, 20:27:41	c277f6-n15
Running out of space (10% or less remaining)	✔️ Warning - Acknowle...	May 15, 2019, 20:27:41	c277f6-n15
Running out of space (5% or less remaining)	⚠️ Warning	May 15, 2019, 20:24:59	c277f6-n9
Running out of space (10% or less remaining)	✔️ Warning - Acknowle...	May 15, 2019, 20:24:59	c277f6-n9
Ticket 40398,082,000 was reported for the storage system.	ℹ️ Informational	May 4, 2019, 09:32:23	DS8870-961-75ZA411
Ticket 40381,082,000 was reported for the storage system.	ℹ️ Informational	May 4, 2019, 07:32:22	DS8870-961-75ZA411
Ticket 40375,082,000 was reported for the storage system.	ℹ️ Informational	May 4, 2019, 06:02:51	DS8870-961-75ZA411
Ticket 47051,L6Q,000 was reported for the storage system.	ℹ️ Informational	Apr 19, 2019, 04:54:08	c277f6-n9
The managed disk has bad blocks	❌ Error	Apr 19, 2019, 04:53:49	c277f6-n9
Software Update Recommendation	ℹ️ Informational	Apr 18, 2019, 09:59:35	c277f6-n9
Ticket 46962,L6Q,000 was reported for the storage system.	ℹ️ Informational	Apr 18, 2019, 03:54:42	c277f6-n9

Remote nodes visible in the SAN, but no partnership exists
May 21, 2019, 17:08:10

Device: FlashSystem-AF7-9110-1
Reporting Hardware: 78E002V 9848-AF7

[Learn more](#)

There are Spectrum Virtualize or Storwize nodes visible in the Fibre Channel SAN, but those nodes are not part of a remote system with an existing partnership on this system. Unless two separate SAN Volume Controller/Storwize systems participate in a mirroring relationship, configure all zoning so that the two systems do not share a zone. If a single host requires access to two different clustered systems, create two zones with each zone to a separate system. The back-end storage zones must also be separate, even if the two clustered systems share a storage subsystem. For more information, refer to chapter "Storage area network" in the Redbook "IBM System Storage SAN Volume Controller and Storwize V7000 Best Practices and Performance Guidelines".

Cluster Name	Name	Wwpn
Beta-624	node1	500507680B238115
Beta-624	node1	500507680B238114
Beta-624	node2	500507680B248114
Beta-624	node2	500507680B248115

Review the zoning configuration and consider configuring separate zones for each system, unless they should be part of a mirroring partnership.

Either Right Click
 or Double Click for
 more detail

Dashboard → Notifications - More Notifications

Ticket 40398,082,000 was reported for the storage system.

May 4, 2019, 09:32:23

[Acknowledge](#) [Unacknowledge](#)

Device: DS8870-961-75ZA411

A problem was detected on the storage system and a ticket was opened. Details: The server partition Dual Hard Drive has failed Problem type: hardware

For more information, check out the Tickets tab. In some cases, it might take up to 24 hours for the ticket to be displayed.

Thin-provisioned or compressed volumes with a small contingency capacity may impact performance

May 15, 2019, 20:49:46

[Acknowledge](#) [Unacknowledge](#)

Device: Storwize-AF6-V7000F-VS2 [Learn more](#)

Reporting Hardware: 7824AKG 2076-AF6

There are some thin-provisioned or compressed volumes with a very small contingency capacity (also called emergency buffer). This is the amount of free space available on the volume for write operations before it has to be expanded. It can be calculated by comparing the real capacity with the used capacity of the volume copy. Depending on the workload pattern, a small contingency capacity may mean that write operations have to wait for the volume to be expanded before they can complete. For optimal performance, the contingency capacity should be at least 1-2GB.

Contingency Capacity (MiB)	Copy Id	Vdisk Id	Vdis
423.66	1	0	VS2
422.41	1	1	VS2
424.41	1	2	VS2
54.46	1	4	VS2
719.89	0	6	vdis
130.13			

There are fc attached hosts connected to i/o groups that do not have npiv enabled.

May 15, 2019, 20:49:57

[Acknowledge](#) [Unacknowledge](#)

Consider expansion between real and virtual

Device: Storwize-AF6-V7000F-VS2 [Learn more](#)

Reporting Hardware: 7824AKG 2076-AF6

N-Port ID Virtualization (NPIV) on IBM Spectrum Virtualize is a feature that was released in V7.7. The NPIV feature aims to provide an availability improvement for the hosts that are connected to the IBM Spectrum Virtualize nodes. It creates a virtual WWPN that is available only for host connection. During a node restart, failure, or service activity, the virtual WWPN from that node is transferred to the other node in the IO group, to the same port. By doing this, the host will not suffer any path failures. This will help avoid host failures during upgrades where the multipathing drivers are unable to failover successfully. It is considered best practice to enable this feature when there are fibre channel connected hosts in the cluster.

Enable the N-PORT if virtualization feature on any i/o groups to which fibre channel attached hosts are attached. Full details can be found in the "Enabling NPIV on an existing system" section of the Knowledge Center. A link to the 8.1.3 KC for the SAN Volume Controller has been included below.

Insufficient Fibre Channel connectivity between nodes

May 6, 2019, 15:59:28

[Acknowledge](#) [Unacknowledge](#)

Device: FlashSystem-AF7-9110-Class-3

Reporting Hardware: 78E0050 9846-AF7

Each node in the system must have at least two ports with paths to all other nodes in the system. Some of the nodes in this cluster use fewer ports than this. For further information, refer to the SAN configuration guidelines in the Knowledge Center. Details of the nodes that do not have sufficient connectivity can be seen in the table below.

Fc Ports With Logins	Node Id	Node Name	Other
0			
0			

Unused volumes identified in the system

May 15, 2019, 20:50:04

[Acknowledge](#) [Unacknowledge](#)

Review the SAN system.

Device: Storwize-AF6-V7000F-VS2

Reporting Hardware: 7824AKG 2076-AF6

Volumes were found in storage pools that appear to be unused. These may have been forgotten about and are using capacity that could be released. The table below shows a list of all unused volumes that have been identified.

Pool Name	Vdisk ID	Vdisk Name
V7KF2_SSD_NONDRP_POOL1	6	vdisk0-VVol
v7k-vvol	7	rfa4122.4ada3aad-e76e-4708-...

If the volumes are no longer required, then delete them from the system. Be aware that there is no way to recover a volume after it has been deleted.

Dashboard → Notifications - More Notifications

Storage pool with no capacity warning threshold enabled ✕
 May 15, 2019, 20:50:10

[Acknowledge](#) [Unacknowledge](#)

Device: Storwize-AF6-V7000F-VS2
Reporting Hardware: 7824AKG 2076-AF6

One or more storage pools are using overallocation technologies and do not have a capacity threshold warning configured. The lack of a warning threshold may mean that the pool will run out of space and go offline without any warning if used capacity continues to grow. The table below shows the list of storage pools that don't have a capacity warning threshold configured.

Pool Name	Warning Threshold Status
V7KF2_SSD_DRP_POOL1	disabled

Consider setting a warning threshold for this pool.

IBM Support collected a log package for ticket TS002295876. ✕
 Jun 6, 2019, 05:29:59

[Acknowledge](#) [Unacknowledge](#)

Device: FlashSystem-AF8-9150-5

HSM Alert: Reclaimable Capacity ✕
 Jun 7, 2019, 06:41:08

[Acknowledge](#) [Unacknowledge](#)

Device: FlashSystem-415-A9000-Site B [Learn more](#)

31.16 TB isn't used and can be reclaimed

See the Network and host connectivity requirements>Host network connectivity and multipathing configurations in the IBM Deployment guide on Knowledge Center.

Ticket 46672,082,000 was reported for the storage system. ✕
 May 23, 2019, 13:10:55

[Acknowledge](#) [Unacknowledge](#)

Device: FlashSystem-AC1-V9000-20320800940-ClassV9000

A problem was detected on the storage system and a ticket was opened. Details: System 9846-AE1-1331016 received 50963 events Problem type: hardware

For more information, che

Volume protection feature available ✕
 Jun 5, 2019, 16:44:19

[Acknowledge](#) [Unacknowledge](#)

Device: SVC-DH8-ATS5Stretch [Learn more](#)

To prevent an active volume from being deleted unintentionally, administrators can use a global system setting to enable volume protection and specify a time period that the volume must be idle before it can be deleted. If volume protection is enabled and the time period has not expired, then the volume deletion fails even if the -force parameter is used. For more information refer to the Knowledge Center or chapter "Volumes" of the Redbook "IBM System Storage SAN Volume Controller and Storwize V7000 Best Practices and Performance Guidelines".

Consider enabling volume protection to prevent unintentional deletion of active volumes. Please be aware that enabling volume protection could have an impact on any automation which automatically deletes volumes or host mappings.

Node canisters in a control enclosure do not have Fibre Channel connectivity to each other ✕
 Sep 12, 2019, 16:00:46

[Acknowledge](#) [Unacknowledge](#)

Device: FlashSystem-AF7-9110-Class-3
Reporting Hardware: 78E0050 9846-AF7

The two node canisters in control enclosures perform inter-node communication primarily through the inter-canister link within the enclosure. However, for optimal redundancy, enabling a backup communication path through the Fibre Channel (FC) SAN is recommended. The table below shows the node canisters which do not have this FC communication enabled.

Number Of FC Logins To Partner N...	Node Canister Id	Node Canister Name
0	1	node1
0	2	node2

Consider changing the Fibre Channel zoning so that all node canisters in the system can perform inter-node communication through the Fibre Channel SAN. More details on zoning can be found in the Knowledge Center

Dashboard → Notifications - More Notifications

Consistency Protection can be configured for Global Mirror and Metro Mirror relationships
 Jul 18, 2019, 11:05:44

[Acknowledge](#) [Unacknowledge](#)

Device: FlashSystem-AF7-9110-Class-2 [Learn more](#)
Reporting Hardware: 78E005K 9846-AF7

IBM Spectrum Virtualize V7.8.1 introduced the Remote Copy Consistency Protection feature for Global Mirror and Metro Mirror relationships. When Consistency Protection is configured, the relationship between the primary and secondary volumes does not stop if the link goes down or the secondary volume is offline. Instead, the system uses the secondary change volume to automatically copy the previous consistent state of the secondary volume. The relationship automatically resumes replication after the temporary loss of connectivity and during resynchronization the Consistency Protection feature keeps a consistent copy of the data on a secondary in a change volume. Consistency protection also preserves a consistent point in time copy at the DR site when a relationship is manually restarted - for example after a 1920 error. Consistency Protection is described in more detail in the "Advanced Copy Services" chapter of the Redbook "Implementing the IBM System Storage SAN Volume Controller with IBM Spectrum Virtualize V8.1".

Rc Relationships Without Consiste...
4

Consider configuring Consistency Protection on Global Mirror and Metro Mirror relationships.

HSM Alert: System Temperature Low
 Jul 6, 2019, 17:53:42

[Acknowledge](#) [Unacknowledge](#)

Device: FlashSystem-415-A9000-Site B [Learn more](#)

Site B A9000-1322101: System temperature is too low 10 °C / 50 °F

Component Id
1:System:

See Physical installation site requirement Deployment guide on Knowledge Center.

The serial-attached SCSI (SAS) drive has error counts that exceed the warning thresholds.
 Apr 25, 2019, 17:10:14

[Acknowledge](#) [Unacknowledge](#)

Device: Storwize-24C-V5000-ATS2
Reporting Hardware: 7806524 2078-24C

Reseat the drive. If the problem persists, replace the drive.

Equivalent Fibre Channel ports on each node are connected to a different fabric
 Oct 20, 2019, 06:48:00

[Acknowledge](#) [Unacknowledge](#)

Device: FlashSystem-AF8-9150-4
Reporting Hardware: 78E00BM 9846-AF8

The best practice is to connect equivalent Fibre Channel ports on all nodes to the same fabric. This simplifies the configuration and allows for efficient troubleshooting of SAN related issues. In such a configuration changes to the SAN layout become easier as well. This is also a requirement when implementing NPIV on the system. For Fibre Channel port failover to work seamlessly, equivalent ports on IO group partner nodes need to be on the same fabric.

Adapter Location	Adapter Port Id	Port Id
2	1	5
2	2	6

Review the Fibre Channel port configuration and consider connecting equivalent ports on each node to the same fabric.

This product warranty will expire in 24 days.
 Oct 5, 2019, 10:25:16

[Acknowledge](#) [Unacknowledge](#)

Number of volumes on storwize system being used as backend storage
 Oct 20, 2019, 16:56:38

[Acknowledge](#) [Unacknowledge](#)

Device: Storwize-524-V7000-VSCShow [Learn more](#)

The number of volumes being presented from a Storwize system to another Spectrum Virtualize system does not follow the best practice guidelines. The best practice points to one volume to be created for each group of 8 drives in the pool for optimal performance. If the storage pool is entirely flash storage, then 16 volumes should be created per pool and presented to the Spectrum Virtualize system. More information can be found on URL provided. Having too few volumes has the potential to cause an unnecessary performance bottleneck in the system. However there is not likely to be any significant impact in having too many volumes, unless the number of volumes is significantly greater than the recommendation. The table below shows any storage pools which do not follow this best practice.

Pool ID	Pool Name	Recommended Number Of Volumes	Volume Count
1	SAS	3	8
0	NLSAS	3	7

In many cases it will be too complex to modify the existing configuration, but consider this when creating new arrays for use by a Spectrum Virtualize system. If the configuration can not be easily fixed, then it is safe to acknowledge this alert without any further action.

Insights → Advisor - Best Practice

Advisor

Keep your infrastructure healthy with these recommendations.

Actions Create Report Acknowledge Filter...

Event	Severity	Time	Device Name
Software Update Recommendation	Informational	Apr 6, 2019, 09:56:28	c27716-n15
Software Update Recommendation	Informational	Apr 5, 2019, 22:17:32	c27716-n9
Software Update Recommendation	Informational	Apr 2, 2019, 23:23:15	c27716-n15
Software Update Recommendation	Informational	Apr 2, 2019, 13:03:57	c27716-n9
Hosts have more than the recommended number of paths to volum...	Informational - Acknowledged	Mar 26, 2019, 16:38:45	SVC-SV1-Beta
Insufficient Fibre Channel connectivity between nodes	Warning - Acknowledged	Feb 27, 2019, 13:38:53	FlashSystem-AF7-9110-1
Node exists in a control enclosure but does not have Fibre Channel c...	Informational - Acknowledged	Feb 27, 2019, 13:38:53	FlashSystem-AF7-9110-1
Remote nodes visible in the SAN, but no partnership exists	Warning - Acknowledged	Feb 27, 2019, 13:38:53	FlashSystem-AF7-9110-1
Service IP addresses are not configured on all nodes or node canl...	Informational	Feb 18, 2019, 14:29:06	FlashSystem-AF7-9110-Class-2
Performance statistics configuration outside of recommended para...	Informational	Feb 18, 2019, 14:29:06	FlashSystem-AF7-9110-Class-2
The system is not configured for the recommended number of...	Informational	Feb 18, 2019, 14:29:06	FlashSystem-AF7-9110-Class-2
Consistent naming is not used for all volumes	Informational - Acknowledged	Feb 15, 2019, 10:58:16	SVC-DH8-Demo
Unused volumes identified in the system	Informational - Acknowledged	Feb 13, 2019, 13:36:32	FlashSystem-AF7-9110-1
Volume protection feature available	Informational - Acknowledged	Feb 13, 2019, 13:36:32	FlashSystem-AF7-9110-1
Volume protection feature available	Informational - Acknowledged	Feb 6, 2019, 13:15:47	FlashSystem-AF7-9110-1
There are fc attached hosts connected to i/o groups that do not ha...	Informational - Acknowledged	Jan 29, 2019, 12:33:20	Storwize-524-V7000-VSCShow
Volume protection feature available	Informational - Acknowledged	Jan 29, 2019, 12:33:20	Storwize-524-V7000-VSCShow
Compressed volumes with low compression ratio can impact perfor...	Informational - Acknowledged	Jan 29, 2019, 12:33:20	Storwize-524-V7000-VSCShow
Software Update Recommendation	Informational	Jan 29, 2019, 12:32:25	Storwize-524-V7000-VSCShow
Software Update Recommendation	Informational	Jan 23, 2019, 02:47:00	SVC-SV1-Beta
Software Update Recommendation	Informational	Jan 21, 2019, 19:04:36	SVC-SV1-Beta
Software Update Recommendation	Informational	Jan 21, 2019, 19:04:34	Storwize-324-V7000-SDI
Software Update Recommendation	Informational	Jan 21, 2019, 19:04:26	Storwize-524-V7000-VSCShow
Software Update Recommendation	Informational	Jan 20, 2019, 08:10:45	Storwize-524-V7000-VSCShow
Software Update Recommendation	Informational	Jan 19, 2019, 14:51:09	FlashSystem-AC2-V9000-HyperS...
Software Update Recommendation	Informational	Jan 19, 2019, 14:51:07	FlashSystem-AC2-V9000-HyperS...
Software Update Recommendation	Informational	Jan 19, 2019, 14:51:02	FlashSystem-AC3-V9000-2
Software Update Recommendation	Informational	Jan 19, 2019, 14:36:22	FlashSystem-AE2-900-VSCShow
Software Update Recommendation	Informational	Jan 17, 2019, 04:27:48	FlashSystem-AC2-V9000-HyperS...
Software Update Recommendation	Informational	Jan 17, 2019, 04:27:40	FlashSystem-AC2-V9000-HyperS...
Software Update Recommendation	Informational	Jan 16, 2019, 21:31:38	FlashSystem-AC2-V9000-HyperS...
Software Update Recommendation	Informational	Jan 16, 2019, 21:31:28	FlashSystem-AC2-V9000-HyperS...

Showing 62 items | Selected 1 item Refreshed a few moments ago

Either Right Click
or Double Click for
more detail

Software Update Recommendation
Jan 23, 2019, 02:47:00

Device: SVC-SV1-Beta [Learn more](#)

Current Level	Minimum Level	Recommended Level
8.1.3.0	8.1.3.2	8.1.3.2

A software warning has been detected. The software level 8.1.3.0 of this asset 2145-SV1 SN 78-2A015 is below minimum level. IBM recommends you update to at least the minimum level 8.1.3.2, but strongly suggests moving to the recommended level 8.1.3.2

Insights → Advisor - More advice

System contains drives running faulty firmware ✕
 Sep 28, 2019, 18:10:00

[Acknowledge](#) [Unacknowledge](#)

Device: **Storwize-724-V7000-G3-1**

The system contains one or more drives with known firmware issues that can cause either a loss of access to data or a data integrity issue. The table below shows the set of affected drives in your system. The document number listed in the table is a reference to the Flash Alert that provides more details about the specific issue which is relevant to that drive. To find more information, then please search ibm.com for that document number.

Firmware	Flash Document Number	Impact	Num
1_1_0	ibm10869158	Improved handling of error con...	7

Upgrade the drive firmware as soon as possible.

Preferred node optimization for FlashCopies ✕
 Jul 4, 2019, 18:30:45

[Acknowledge](#) [Unacknowledge](#)

Device: **Storwize-724-V7000-G3-1** [Learn more](#)
 Reporting Hardware: 78E002V 9848-AF7

FlashCopy mappings were identified that have source and target volumes in the same IO group but have different preferred nodes. If both volumes in the FlashCopy map have the same preferred node, then certain operations are more efficient. Aligning the preferred nodes can lead to performance improvements - especially when starting FlashCopy snapshots on very busy source volumes. This performance improvement only exists if the FlashCopy target volume is thin provisioned or compressed. The table below shows the first 15 FlashCopy mappings that have source and target volumes in the same IO group and have different preferred nodes.

Fc Map Name	Source Vdisk Id	Target Vdisk Id
fcmap1	17	22

Remote nodes visible in the SAN, but no partnership exists ✕
 Jul 4, 2019, 18:30:45

[Acknowledge](#) [Unacknowledge](#)

Device: **Storwize-724-V7000-G3-1** [Learn more](#)
 Reporting Hardware: 78E002V 9848-AF7

There are Spectrum Virtualize or Storwize nodes visible in the Fibre Channel SAN, but those nodes are not part of a remote system with an existing partnership on this system. Unless two separate SAN Volume Controller/Storwize systems participate in a mirroring relationship, configure all zoning so that the two systems do not share a zone. If a single host requires access to two different clustered systems, create two zones with each zone to a separate system. The back-end storage zones must also be separate, even if the two clustered systems share a storage subsystem. For more information, refer to chapter "Storage area network" in the Redbook "IBM System Storage SAN Volume Controller and Storwize V7000 Best Practices and Performance Guidelines".

Cluster Name	Name	Wwpn
Beta-624	node2	500507680B238115
Beta-624	node1	500507680B238114
Beta-624	node1	500507680B248114
Beta-624	node2	500507680B248115

Review the zoning configuration and consider configuring separate zones for each system, unless they should be part of a mirroring partnership.

Storage pool with no capacity warning threshold enabled ✕
 Jul 18, 2019, 13:36:37

[Acknowledge](#) [Unacknowledge](#)

Device: **Storwize-AF6-V7000F-VS2**
 Reporting Hardware: 7824AKG 2076-AF6

One or more storage pools are using overallocation technologies and do not have a capacity threshold warning configured. The lack of a warning threshold may mean that the pool will run out of space and go offline without any warning if used capacity continues to grow. The table below shows the list of storage pools that don't have a capacity warning threshold configured.

Pool Name	Warning Threshold Status
V7KF2_SSD_DRP_POOL1	disabled

Consider setting a warning threshold for this pool.

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Reports

Create Report Actions ▾		Name	Used Capacity (%)	Available Capacity (GiB)	Capacity (GiB)	Recent Fill Rate (%)
Capacity Report		FlashSystem-900-AE2-90...	97 %	1,635.74	53,245.35	0.00
DP Block Storage Capacity Report Edit Recipients: dompruitt@us.ibm.com Delivery: Every day at 06:00		DS8900-996-75KWK61	94 %	894.00	14,272.00	0.00
		FlashSystem-840-AE1-13...	86 %	2,735.97	19,199.97	0.00
		FlashSystem-840-AE1-13...	80 %	3,071.98	15,359.98	0.00
		Storwize-V7000-524-100...	74 %	5,048.91	19,339.00	0.00
		FlashSystem-840-AE1-13...	70 %	3,477.98	11,519.98	0.00
		FlashSystem-840-AE1-13...	70 %	3,477.98	11,519.98	0.00
		FlashSystem-840-AE1-13...	68 %	3,677.98	11,519.98	0.00
DP Pool Capacity Report Edit Recipients: dompruitt@us.ibm.com Delivery: Every day at 06:00		Storwize-V7000-124-200...	64 %	2,640.98	7,253.00	Unavailable
		DS8870-961-75ZA411	44 %	27,626.00	49,442.00	0.05
		SVC-DH8-2006021D5D4-...	30 %	696.00	999.00	0.00
Inventory Report		FlashSystem-V9000-AC1-...	28 %	36,796.16	29,920.00	0.26
DP Block Storage Inventory Report Edit Recipients: dompruitt@us.ibm.com Delivery: Every day at 06:00		FlashSystem-9150-AF8-2...	27 %	261,578.21	357,246.42	26.78
		DS8800-981-13FCM01	25 %	17,731.00	23,498.00	5.07
		Storwize-V7000-524-100...	20 %	29,289.24	36,815.00	0.52
		Storwize-V7000-724-204...	18 %	46,541.77	56,485.69	0.00
		FlashSystem-840-AE1-13...	17 %	32,015.94	38,399.94	0.00
		Storwize-V7000F-AF6-10...	17 %	26,453.06	31,928.00	0.83
		FlashSystem-V9000-AC2-...	14 %	9,145.00	10,649.00	0.01
		SVC-DH8-200616006F8-...	14 %	35,957.03	41,996.00	0.04
		Storwize-V7000-524-100...	13 %	35,170.99	40,404.00	0.01
		XIV-114-1310115	12 %	47,261.76	53,992.83	0.00
		FlashSystem-A9000-415-...	10 %	35,522.02	52,849.83	0.00
		XIV-214-1340004	10 %	23,382.47	26,106.95	0.00
		FlashSystem-A9000R-41...	8 %	186,755.31	52,753.56	0.00

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Name	Used Capacity (%)	Available Capacity (GiB)	Capacity (GiB)	Recent Fill Rate (%)	Recent Growth (GiB)
FlashSystem-900-AE2-900-1351114-1	97%	1,635.74	53,245.35	0.00	0.00
DS8900-996-75KWK61	94%	894.00	14,272.00	0.00	0.00
FlashSystem-840-AE1-1310241-1	86%	2,735.97	19,199.97	0.00	0.00
FlashSystem-840-AE1-1310540	80%	3,071.98	15,359.98	0.00	0.00
Storwize-V7000-524-10020601022-Petro	74%	5,048.91	19,339.00	0.00	0.00
FlashSystem-840-AE1-1310541	70%	3,477.98	11,519.98	0.00	0.00
FlashSystem-840-AE1-1310548	70%	3,477.98	11,519.98	0.00	0.00
FlashSystem-840-AE1-1310621-Scale1	68%	3,677.98	11,519.98	0.00	0.00
Storwize-V7000-124-200A0618664-Flex3B	64%	2,640.98	7,253.00	Unavailable	Unavailable
DS8870-961-75ZA411	44%	27,626.00	49,442.00	0.05	24.00
SVC-DH8-2006021D5D4-ATS5Stretch	30%	696.00	999.00	0.00	0.00
FlashSystem-V9000-AC1-10020609530-VSCShow	28%	36,796.16	29,920.00	0.26	78.81

IBM Storage Insights Pro



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In IBM Storage Insights, you can monitor IBM block storage only. In IBM Storage Insights Pro, you can monitor IBM block storage, and the following additional storage:

Table 1. Storage systems that can be monitored in IBM Storage Insights and IBM Storage Insights Pro

Storage System	IBM Storage Insights	IBM Storage Insights Pro
Click a storage system to view its supported versions.		
DS8000®	✓	✓
Dell EMC Unity		✓
Dell EMC VMAX		✓
Dell EMC VNX, VNXe		✓
FlashSystem 5000	✓	✓
FlashSystem 5100	✓	✓
FlashSystem 7200	✓	✓
FlashSystem 9100	✓	✓
FlashSystem 9200	✓	✓

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Browser address bar: <https://sidemo.ibm.serviceengage.com/srm/gui#storagePerformance>

Navigation: Dashboards | **Insights** | Resources | Groups | Reports | Configuration

User: dompruitt@us.ibm.com

Selected Resources: 10/10

- FlashSystem-AC1-V9000-VSCShow
- XIV-214-1340004
- SVC-DH8-Sandbox-VSCShow
- FlashSystem-AF8-9150-5
- FlashSystem-AE1-840-1310541
- DS8886-981-13FCM01
- DS8800-951-75TN211
- FlashSystem-415-A9000-SiteA-13
- V7000F-VS2
- V7000-VS1

Metrics: 1/6

Total I/O Rate - overall

Data Resolution: Daily | Hourly | Sample

Time Range: 20:37 Apr 1, 2020 - 08:37 Apr 2, 2020

Actions: Edit Table Metrics | Create Report

Name	To...	Max Total I/...
FlashSystem-AF8-9100...	65,029...	202,715.99
FlashSystem-AE2-900...	14,334...	16,023.45
SVC-DH8-Sandbox-VSC...	5,460.30	6,557.43
FlashSystem-AC1-V900...	5,352.08	6,027.41
FlashSystem-415-A900...	4,551.13	12,039.27
DS8886-981-13FCM01	3,216.88	3,450.94
FlashSystem-AE1-840...	1,868.57	3,196.58
DS8800-951-75TN211	1,383.62	1,502.88

Showing 46 items | Selected 11 items

Apr 1, 2020, 20:37:23 – Apr 2, 2020, 08:37:23

Refreshed 3½ minutes ago

IBM Storage Monitoring – SaaS – Storage Insights Pro

Navigation bar with browser address bar: <https://sidemo.ibm.serviceengage.com/srm/gui#storageSystems?tab=3>

Menu items: Dashboards, Insights, **Resources**, Groups, Reports, Configuration

User: dompruitt@us.ibm.com



Block Storage Systems

- ✔ 68 Normal
- ⚠ 1 Warning
- ✖ 3 Error

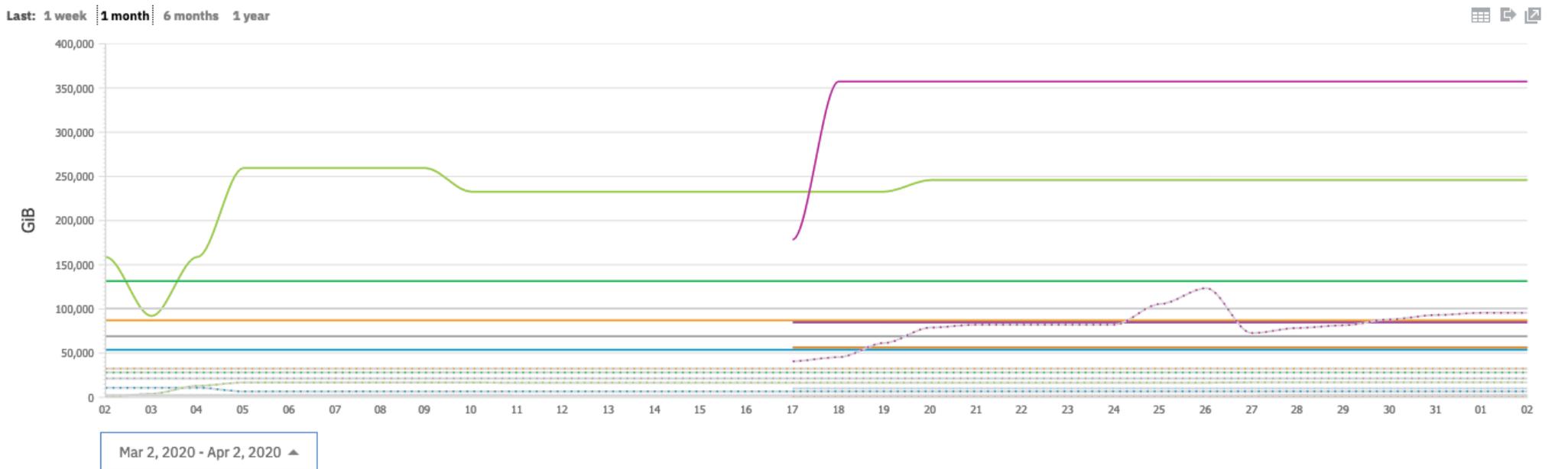
Storage Systems Alerts Performance **Capacity**

Selected Resources 10/10

- FlashSystem-AF8-9100-Class-6
- XIV-114-7825410
- XIV-114-1310115
- XIV-114-1310060
- FlashSystem-AF8-9150-5
- FlashSystem-AE3-900-Mav
- tsmcluster Netapp FAS
- V7000G3-3
- V7000G3-4
- FlashSystem-AF8-9150-Class-11

Metrics 2/6

- Used Capacity (GiB)
- Capacity (GiB)



IBM Storage Monitoring – SaaS – Storage Insights Pro

Navigation: Dashboards Insights Resources Groups Reports Configuration

User: dompruit@us.ibm.com

FlashSystem...0-Class-6
IBM FlashSystem 9100 - 9846

Actions

General

- Overview
- Tickets
- Notifications
- Advisor
- Performance
- Properties
- Alerts (204)
- Alert Definitions
- Copy Data

Internal Resources

- Volumes (48)
- Pools (2)
- Managed Disks (2)
- RAID Arrays (2)
- Drives (48)
- I/O Groups (2)
- Nodes (4)
- Enclosures (2)
- FC Ports (40)
- IP Ports (16)
- Host Connections (2)

Related Resources

- Servers (1)

Overview

Capacity 26.78 % Used
261,578.30 / 357,246.42 GiB Available

Volume Capacity 99.69 % Written
638.77 / 204,816.00 GiB Available

Capacity Savings
Total Savings: 109,147.88 GiB

- 108,509.10 GiB Drive Compression
- 0.00 GiB Pool Compression
- 0.00 GiB Deduplication
- 638.77 GiB Thin-Provisioning

Capacity Last 30 days

Overall System Activity Last 24 hours

Cache Hits

Most Active Nodes Last 24 hours

CPU Utilization

Most Active Volumes Last 24 hours

Response Time

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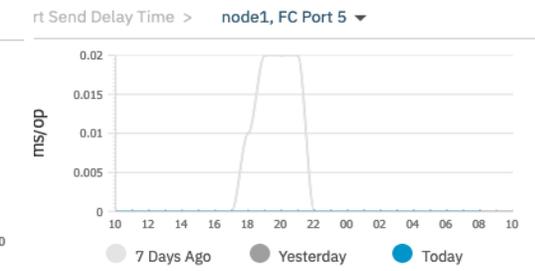
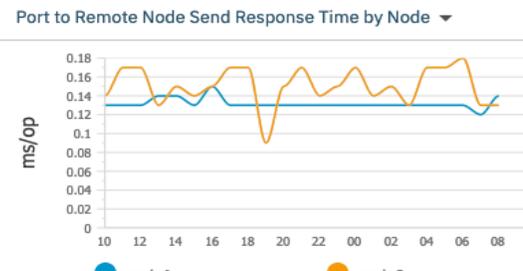
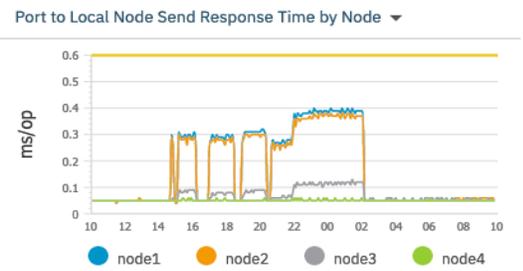
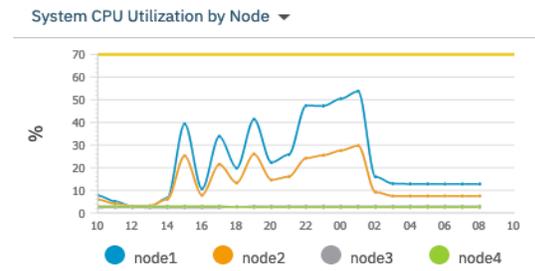
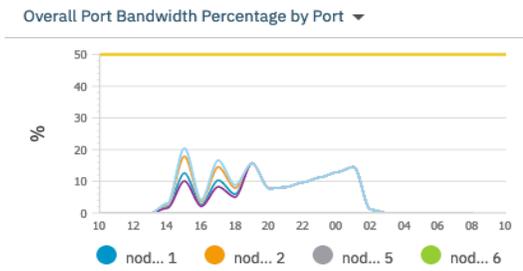
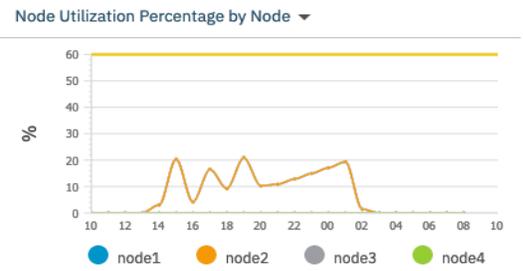
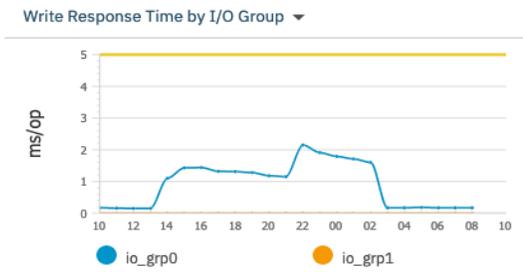
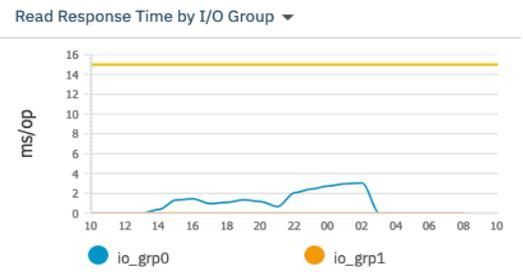
31

IBM Storage Monitoring – SaaS – Storage Insights Pro

Navigation bar with search, user profile (dompruit@us.ibm.com), and menu items: Dashboards, Insights, Resources, Groups, Reports, Configuration.

System Overview: FlashSystem...0-Class-6, IBM FlashSystem 9100 - 9846. Includes a sidebar menu with categories: General, Performance (Alerts: 204), Internal Resources (Volumes: 48, Pools: 2, etc.), and Related Resources (Servers: 1).

Key Performance Indicators Last 24 hours



IBM Storage Monitoring – SaaS – Storage Insights Pro

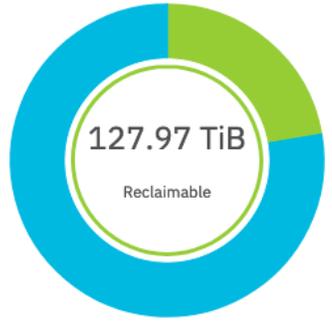
Browser: <https://sidemo.ibm.serviceengage.com/srm/gui#reclamation?tab=0>

Navigation: Dashboards **Insights** Resources Groups Reports Configuration

User: dompruitt@us.ibm.com

Reclamation

View By: Reclaimable Capacity



Recommendations Excluded

Name	Tier	Time of Last IO	Pool	Storage System	Capacity (...)	Thin Provisioned	Used Capacity (GiB)	Unused Capacity (GiB)
DEMOV7K-Target0		3 days	V7KG3-3-Enterprise	SVC-DH8-DemoSVC	2.00	Yes	2.01	0.00
rfc4122.fefa0859-...		2 weeks	mdiskgrp0	V7000F-VS2	4.00	Yes	0.17	3.83
rfc4122.38058d2b...		2 weeks	mdiskgrp0	V7000F-VS2	4.00	Yes	0.17	3.83
rfc4122.4c9247f7-...		2 weeks	mdiskgrp0	V7000F-VS2	4.00	Yes	0.15	3.85
rfc4122.c50b2eb9...		2 weeks	mdiskgrp0	V7000F-VS2	4.00	Yes	0.15	3.85
rfc4122.f4a2028f-...		2 weeks	mdiskgrp0	V7000F-VS2	4.00	Yes	0.15	3.85
rfc4122.a159c6c1...		2 weeks	mdiskgrp0	V7000F-VS2	4.00	Yes	0.15	3.85
rfc4122.05f11165...		2 weeks	mdiskgrp0	V7000F-VS2	4.00	Yes	0.17	3.83
rfc4122.bb3b1eb5...		2 weeks	mdiskgrp0	V7000F-VS2	4.00	Yes	0.15	3.85
rfc4122.a2f1d019-...		2 weeks	mdiskgrp0	V7000F-VS2	4.00	Yes	0.15	3.85
rfc4122.1f72d667-...		2 weeks	mdiskgrp0	V7000F-VS2	4.00	Yes	0.15	3.85
rfc4122.af8549d6-...		2 weeks	mdiskgrp0	V7000F-VS2	4.00	Yes	0.15	3.85

Showing 1 - 500 of 25459 items | Selected 0 items on page

Refreshed a few moments ago Page 1 of 51

IBM Storage Monitoring – SaaS – Storage Insights Pro

Browser address bar: <https://sidemo.ibm.serviceengage.com/srm/gui#pools?tab=0>

Navigation: Dashboards Insights **Resources** Groups Reports Configuration

User: dompruitt@us.ibm.com



Pools

Capacity

Actions Create Report View Performance View Capacity Filter...

Name	Storage System	Status	Tier	Used Capacity (%)	Recent Fill Rate (%)	Capacity (...)	Shortfall (%)	Provisioned Capacit...
VSC-GM-C...	SVC-DH8-San...	Online		58 %	0.00	8,600.00	87 %	375.58
vsc-Prote...	FlashSystem-A...	Online	Tier 3	45 %	0.00	4,271.00	83 %	359.63
vsc-wscsh...	FlashSystem-A...	Online	Tier 2	8 %	0.00	2,048.00	72 %	336.52
mdiskgrp0	FlashSystem-A...	Online		14 %	0.01	10,649.00	63 %	288.85
Enterprise...	Storwize-24C...	Online	Tier 2	41 %	0.00	3,346.00	77 %	277.4
SE_PO	DS8700-941-...	Normal	Tier 1	6 %	Unavailable	1,582.00	64 %	262.64
Gen-Use_...	DS8700-941-...	Normal	Tier 1	5 %	Unavailable	1,582.00	62 %	255.5
VSC-GM-C...	SVC-DH8-San...	Online		26 %	0.12	4,300.00	55 %	233.35
GF_Oxford4	XIV-114-1310...	Normal		24 %	0.00	609.00		184.21
SE_pool0	XIV-114-7825...	Normal	Tier 1	60 %	Unavailable	9,455.56		176.01
SE_pool1	XIV-114-7825...	Normal	Tier 1	26 %	Unavailable	9,327.35		155.09
Site2Pool0	SVC-CG8-svc2a	Online	Tier 1	100 %	0.00	200.00	99 %	147.58
CG_Mgmt	XIV-214-1340...	Normal	Tier 1	61 %	0.00	945.56		142.37
WSC_CDM...	V7000-VS1	Online		40 %	0.04	5,367.00	25 %	120.47
Pool0	FlashSystem-A...	Online		54 %	30.65	178,623...	0 %	114.66

Showing 757 items | Selected 0 items Refreshed a few moments ago

IBM Storage Monitoring – SaaS – Storage Insights Pro

Browser address bar: <https://5021653292.ibm.serviceengage.com/srm/gui#alertPolicy>

Navigation: Dashboards Insights Resources Groups Reports **Configuration**

All Policies

Alert Policies Resources by Policy

Actions Create Policy

Name	Resource Type	Resources	Alert Definitions	Email Addresses
Default DS8000 policy	DS8000	6	25	
Default FlashSystem 840 or 900 policy	FlashSystem 840 or 900	2	18	
Default FlashSystem A9000 or A9000R policy	FlashSystem A9000 or A90...	6	16	
Default FlashSystem Family policy	FlashSystem Family	2	24	
Default FlashSystem V840 or V9000 policy	FlashSystem V840 or V9000	8	25	
Default FlashSystem V840 or V9000 policy Copy	FlashSystem V840 or V9000	1	23	
Default SAN Volume Controller policy	SAN Volume Controller	12	24	
Default SAN Volume Controller policy chris	SAN Volume Controller	0	22	
Default Spectrum Scale policy	Spectrum Scale	3	5	
Default Storwize policy	Storwize	12	24	
Default Storwize policy Copy chris	Storwize	0	22	
Default XIV policy	XIV System	3	15	
Demo SVC	SAN Volume Controller	0	0	

IBM Storage Monitoring – SaaS – Storage Insights Pro

Browser address bar: <https://5021653292.ibm.serviceengage.com/srm/gui/alertPolicyDetail?policyId=320&topl>

Navigation: Dashboards Insights Resources Groups Reports Configuration

User: dompruitt@us.ibm.com

[Back to All Policies](#)

Default FlashSystem Family policy

Alert Definitions (24) Resources (2)

Actions Filter...

Condition	Category	Subcategory	Severity	Notification Frequency	Email
Max Write Cache Fullness >= 99.0 %	Pool	Performance	Critical	Send Once	None
Peak Back-end Write Response Time >= 10000.0 ms	Node	Performance	Warning	Send Once	None
Peak Back-end Write Response Time >= 30000.0 ms	Node	Performance	Critical	Send Once	None
Port Receive Bandwidth Percentage >= 75.0 %	FC Port	Performance	Warning	Send Once	None
Port Receive Bandwidth Percentage >= 85.0 %	FC Port	Performance	Critical	Send Once	None
Port Send Bandwidth Percentage >= 75.0 %	FC Port	Performance	Warning	Send Once	None
Port Send Bandwidth Percentage >= 85.0 %	FC Port	Performance	Critical	Send Once	None
Storage System Deleted Pool	Pool	General	Informational	Send for Every Violation	None
Storage System Deleted Volume	Volume	General	Informational	Send for Every Violation	None
Storage System Drive Status Error	Drive	General	Warning	Send Once	None
Storage System Node Status Error	Node	General	Warning	Send Once	None
Storage System Performance Monitor Status Error	Storage System	General	Critical	Send Once	None
Storage System Pool Status Error	Pool	General	Warning	Send Once	None
Storage System Probe Status Error	Storage System	General	Critical	Send Once	None
Storage System Removed Drive	Drive	General	Informational	Send for Every Violation	None
Storage System Removed Node	Node	General	Informational	Send for Every Violation	None
Storage System Removed Port	IP Port	General	Informational	Send for Every Violation	None
Storage System Removed Port	FC Port	General	Informational	Send for Every Violation	None
Storage System Status Error	Storage System	General	Warning	Send Once	None

Showing 24 items | Selected 0 items Refreshed a few moments ago

Policy Notifications

Email Addresses ⓘ No policy addresses

[Edit Policy Notifications](#)



Applications

Applications

Actions ▾
+ Create Application
Create Report
View Performance

Name ▲	Block Capacity (GiB)	File Capacity (GiB)	Object Capacity (GiB)	Volumes	Servers	Vaults	Departments
CDM Volumes	59,543.58	0.00	0.00	142	6		Copy Services
CSM Volumes	30,881.93	0.00	0.00	703	2		Copy Services
Database Volumes	2,544.00	0.00	0.00	54	VSCShow-ESX72-S...		
Dominic Test	0.00	0.00	0.00				
ESX Data Stores	44,059.79	0.00	0.00	33	11		
Isolation VM Group	5,000.00	0.00	0.00	5	VSCShow-ESX71-S...		
p9 OCP Cluster	960.00	0.00	0.00	8	8		
SQL Server	1,220.00	0.00	0.00	24	VSCShow-ESX72-S...		



Applications

Applications

-   |  A
- Name**
-  CDM Volumes
-  CSM Volumes
-  Database Volumes
-  Dominic Test
-  **ESX Data Stores**
-  Isolation VM Group
-  p9 OCP Cluster
-  SQL Server

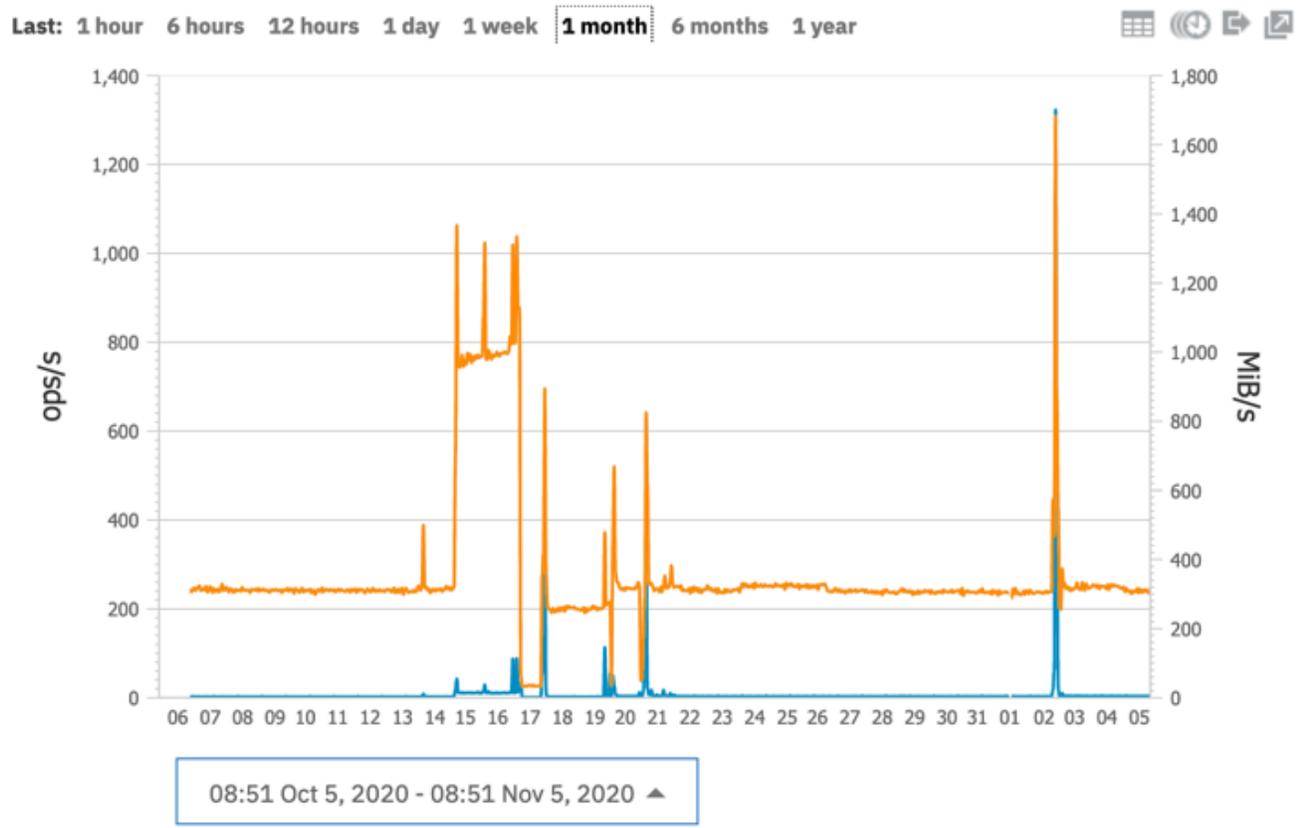
Selected Resources 1/1

- ESX Data Stores

Metrics + 2/6

-  Total I/O Rate - overall
-  Total Data Rate

Data Resolution
Daily | Hourly | Sample



  |  Actions ▼ Edit Table Metrics Create Report Filter...

Name	Total I/...	Max Total I/...	Total Da...	Max Total Da...
 ESX Data Stores	277.40	1,309.55	10.26	1,701.20



Dashboards

Insights

Resources

Groups

Reports

Configuration



dompruitt@us.ibm.com



General Groups

To monitor storage resources more closely, you can add related storage resources to general groups. Add a resource to a general group from the page where that resource is listed. For example, to add a block storage system, go to the Block Storage Systems page, right-click a storage system, and select Add to General Group.

Actions ▼ <input type="text" value="Filter..."/> 	
Name ▲	Subgroups
All V7K Enclosures	
Dominic's Resources	
JR & RP General Group	
Matt's Resources	

IBM Storage Monitoring – SaaS – Storage Insights Pro

Browser address bar: <https://5021653292.ibm.serviceengage.com/srm/gui#reports>

Navigation menu: Dashboards Insights Resources Groups **Reports** Configuration

Reports

Capacity Reports

Customize a capacity based report.

- Block Storage Systems >
- File Storage Systems >
- Object Storage Systems >
- Pools >
- Volumes >
- Managed Disks >
- Servers >
- Applications >
- Departments >
- NAS File Systems >
- Filesets >
- Network Shared Disks >

Inventory Reports

Customize an inventory report.

- Block Storage Systems >
- File Storage Systems >
- Object Storage Systems >
- Spectrum Scale Nodes >
- Spectrum Virtualize Nodes >
- Enclosures >
- Managed Disks >
- Modules >
- Servers >
- Storage System FC Ports >
- Storage System IP Ports >
- Controllers >

Summary Reports

Customize a summary report.

- Chargeback** >
 Chargeback reports show the amount and cost of the storage that is consumed by all of your applications, departments, or servers.
[Learn more](#)
- Storage Consumer** >
 Consumer reports show the amount and cost of the storage that is consumed by a single application, department, or server.
[Learn more](#)



Reports

Title:

To:
Example: joe.doe@mycompany.com, jane.doe@mycompany.com

Subject:

Frequency:

▼ Configure Report

Calculate Capacity by

Used Capacity Mapped Capacity

Capacity Unit

Consumer

Include Capacity Values in Report

Block Storage File Storage

Display Capacity by Tier

Yes No

Display Copy Data

VDisk Mirrors FlashCopy Remote Mirrors

By Tier

Yes No



Application	Cost	Total (GiB)	Block Capacity (GiB)						
			Block	Primary	VDisk Mirrors	FlashCopy	Remote Mirrors	Tier 0 Flash	
								Primary	Copy
CDM Volumes	0.00	59553.58	59553.58	29801.62	0.00	29751.96	0.00	0.00	0.00
CSM Volumes	0.00	30897.78	30897.78	29046.27	0.00	1828.51	23.01	164.23	7.93
Database Volumes	0.00	2544.00	2544.00	716.00	0.00	1112.00	716.00	407.00	0.00
Dominic Test	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ESX Data Stores	0.00	48052.79	48052.79	25015.79	7986.00	10034.00	5017.00	0.00	0.00
Isolation VM Group	0.00	5000.00	5000.00	1000.00	1000.00	2000.00	1000.00	0.00	0.00
p9 OCP Cluster	0.00	960.00	960.00	960.00	0.00	0.00	0.00	0.00	0.00
SQL Server	0.00	1220.00	1220.00	305.00	0.00	610.00	305.00	60.00	0.00

IBM Storage Monitoring – SaaS – Storage Insights Pro

The screenshot shows the IBM Storage Insights Pro web interface. The main page is titled "Block Storage Systems" and displays a summary of system health: 68 Normal, 1 Warning, and 3 Error. A modal window titled "Export Performance Data" is open, allowing users to select a time range for data export. The modal includes a "Last:" dropdown menu with options for 4 hours, 8 hours, and 12 hours. The selected time range is "02:29 Apr 2, 2020 - 10:29 Apr 2, 2020". There is also an "Advanced export" checkbox which is currently unchecked. The modal has "Cancel" and "Create" buttons at the bottom.

Block Storage Systems Summary:

- 68 Normal
- 1 Warning
- 3 Error

Export Performance Data Modal:

Select a time range to export performance data for Advanced export

Last: 4 hours 8 hours 12 hours

02:29 Apr 2, 2020 - 10:29 Apr 2, 2020 ▲

Buttons: Cancel, Create

Storage Systems Table:

Name	Status	Health	State	Capacity	Usage
FlashSystem-AE3-900-Mav					
FlashSystem-AF7-9110-1					
FlashSystem-AF7-9110-Class-2					
FlashSystem-AF7-9110-Class-3					
FlashSystem-AF8-9100-Class-6					
FlashSystem-AF8-9110-Class-8					
FlashSystem-AF8-9150-4					
FlashSystem-AF8-9150-5	✓ Normal	✗ Error	⚠ Degraded	245,849.75	7 %
FlashSystem-AF8-9150-Class-11	✓ Normal		🔄 Running	84,839.18	0 %
FlashSystem-AF8-9150-Class-12	✓ Normal		⚠ Degraded	0.00	

IBM Storage Monitoring – SaaS – Storage Insights Pro

Running

Running

Running

Running

Running

Running

Export Performance Data

The download will begin in your browser shortly.

Opening SC_PerfPkg_FlashSystem-AF7-9110-1_20200408-...

You have chosen to open:

...shSystem-AF7-9110-1_20200408-024525_8hrs0mins.zip
 which is: ZIP archive
 from: <https://sidemo.ib.ibm-serviceengage.com>

What should Firefox do with this file?

Open with Archive Utility (default)

Save File

Do this automatically for files like this from now on.

Name	Si
▼ SC_PerfPkg_FlashSystem-AF7-9110-1_20200408-024525_8hrs0mins	
metric_reference.txt	
log.txt	
PerfReport_FlashSystem-AF7-9110-1_Disks_20200408-024525_8hrs0mins.csv	
PerfReport_FlashSystem-AF7-9110-1_Nodes_20200408-024525_8hrs0mins.csv	
PerfReport_FlashSystem-AF7-9110-1_Volumes_20200408-024525_8hrs0mins.csv	
PerfReport_FlashSystem-AF7-9110-1_ManagedDisks_20200408-024525_8hrs0mins.csv	
PerfReport_FlashSystem-AF7-9110-1_Pools_20200408-024525_8hrs0mins.csv	
PerfReport_FlashSystem-AF7-9110-1_IOGroups_20200408-024525_8hrs0mins.csv	
PerfReport_FlashSystem-AF7-9110-1_HostConnections_20200408-024525_8hrs0mins.csv	
PerfReport_FlashSystem-AF7-9110-1_StoragePorts_20200408-024525_8hrs0mins.csv	
PerfReport_FlashSystem-AF7-9110-1_StorageSystem_20200408-024525_8hrs0mins.csv	
SC_PerfPkg_FlashSystem-AF7-9110-1_20200408-024525_8hrs0mins.zip	

IBM Storage Monitoring – SaaS – Storage Insights Pro

PerfReport_FlashSystem-AF7-9110-1_Volumes_20200408-024525_8hrs0mins

Home Insert Draw Page Layout Formulas Data Review View

Calibri (Body) 12

General

Conditional Formatting Format as Table Cell Styles

Insert Delete Format

Sort & Filter Find & Select

Ideas Sensitivity

F17

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	Storage System	Volume	Time	Interval (s)	ID	Host	Pool	I/O Group	Node	Capacity (GiB)	Encryption	Thin Provisioned	Compressed	Vdisk Copies	Flash Copy Relationship	Remote Copy Relation
1	FlashSystem-AF7-9110-1	MM-Targe1	4/8/20 2:49	300	24		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
2	FlashSystem-AF7-9110-1	MM-Targe2	4/8/20 2:49	300	25		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
3	FlashSystem-AF7-9110-1	MM-Targe3	4/8/20 2:49	300	26		FCM2-Pool	io_grp0	node1	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
4	FlashSystem-AF7-9110-1	MM-Targe4	4/8/20 2:49	300	27		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
5	FlashSystem-AF7-9110-1	MM-Targe5	4/8/20 2:49	300	28		FCM2-Pool	io_grp0	node1	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
6	FlashSystem-AF7-9110-1	MM-Targe6	4/8/20 2:49	300	29		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
7	FlashSystem-AF7-9110-1	MM-Targe7	4/8/20 2:49	300	30		FCM2-Pool	io_grp0	node1	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
8	FlashSystem-AF7-9110-1	MM-Targe8	4/8/20 2:49	300	31		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
9	FlashSystem-AF7-9110-1	MM-Targe9	4/8/20 2:49	300	32		FCM2-Pool	io_grp0	node1	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
10	FlashSystem-AF7-9110-1	MM-Targe10	4/8/20 2:49	300	33		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
11	FlashSystem-AF7-9110-1	vdisk0	4/8/20 2:49	300	34		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
12	FlashSystem-AF7-9110-1	vdisk1	4/8/20 2:49	300	35		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
13	FlashSystem-AF7-9110-1	vdisk2	4/8/20 2:49	300	36		FCM2-Pool	io_grp0	node1	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
14	FlashSystem-AF7-9110-1	vdisk3	4/8/20 2:49	300	37		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
15	FlashSystem-AF7-9110-1	vdisk4	4/8/20 2:49	300	38		FCM2-Pool	io_grp0	node1	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
16	FlashSystem-AF7-9110-1	vdisk5	4/8/20 2:49	300	39		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
17	FlashSystem-AF7-9110-1	vdisk6	4/8/20 2:49	300	40		FCM2-Pool	io_grp0	node1	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
18	FlashSystem-AF7-9110-1	vdisk7	4/8/20 2:49	300	41		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
19	FlashSystem-AF7-9110-1	vdisk8	4/8/20 2:49	300	42		FCM2-Pool	io_grp0	node1	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
20	FlashSystem-AF7-9110-1	vdisk9	4/8/20 2:49	300	43		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
21	FlashSystem-AF7-9110-1	JB_WSYS_RHELO_0	4/8/20 2:49	300	44	JB-WSYS-zLinux_RHELO	FCM2-Pool	io_grp0	node1	100	YES	NO	NO	1	NO_RELATIONSHIP	NO_RELATIONSHIP
22	FlashSystem-AF7-9110-1	JB_WSYS_RHELO_1	4/8/20 2:49	300	45	JB-WSYS-zLinux_RHELO	FCM2-Pool	io_grp0	node1	100	YES	NO	NO	1	NO_RELATIONSHIP	NO_RELATIONSHIP
23	FlashSystem-AF7-9110-1	MM-Targe1	4/8/20 2:54	300	24		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
24	FlashSystem-AF7-9110-1	MM-Targe2	4/8/20 2:54	300	25		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
25	FlashSystem-AF7-9110-1	MM-Targe3	4/8/20 2:54	300	26		FCM2-Pool	io_grp0	node1	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
26	FlashSystem-AF7-9110-1	MM-Targe4	4/8/20 2:54	300	27		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
27	FlashSystem-AF7-9110-1	MM-Targe5	4/8/20 2:54	300	28		FCM2-Pool	io_grp0	node1	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
28	FlashSystem-AF7-9110-1	MM-Targe6	4/8/20 2:54	300	29		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
29	FlashSystem-AF7-9110-1	MM-Targe7	4/8/20 2:54	300	30		FCM2-Pool	io_grp0	node1	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
30	FlashSystem-AF7-9110-1	MM-Targe8	4/8/20 2:54	300	31		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
31	FlashSystem-AF7-9110-1	MM-Targe9	4/8/20 2:54	300	32		FCM2-Pool	io_grp0	node1	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
32	FlashSystem-AF7-9110-1	MM-Targe10	4/8/20 2:54	300	33		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
33	FlashSystem-AF7-9110-1	vdisk0	4/8/20 2:54	300	34		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET
34	FlashSystem-AF7-9110-1	vdisk1	4/8/20 2:54	300	35		FCM2-Pool	io_grp0	node2	50	YES	YES	YES	1	SOURCE_AND_TARGET	TARGET

PerfReport_FlashSystem-AF7-9110

Ready 110%

IBM Storage Insights for Spectrum Control



IBM Storage Monitoring – SaaS – Storage Insights for Spectrum Control

- IBM Storage Insights for Spectrum Control (functionally equivalent to Storage Insights Pro)
 - An offering based on Spectrum Control licensing
 - Expands the IBM Storage Insights offering to include the monitoring
 - IBM File storage products
 - IBM Object storage products
 - IBM Software-defined storage (SDS) systems
 - Monitoring of non-IBM block and file storage systems
 - Alerts dashboard so you can view and manage alerts in one place
 - Configurable alerts
 - Predictive analytics to
 - Reduce costs
 - Plan capacity
 - Detect and investigate performance issues
 - Recommendations for reclaiming unused storage, recommendations for optimizing the placement of tiered data, capacity planning analytics, and performance troubleshooting tools.

IBM Storage Monitoring – SaaS – Storage Insights for Spectrum Control

Dashboard for FlashSystem-9150-AFB-204204008DA-5

FlashSystem 9100 - 9846
6.3.1.1 (build 150.23.2002261453000)

Component Health

- Hardware Components: Normal
- Logical Components: 16 Error
- Connectivity Components: 1 Error

Capacity

Capacity: 6.91 % used

Volume Capacity: 33.57 % written

Capacity Savings: 88,512.89 GiB

Performance

Reclamation

127.97 TiB Reclaimable

Recommendations Excluded

Name	Tier	Time of Last IO	Pool	Storage System	Capacity	Thin Provisioned	Used Capacity (GiB)	Unused Capacity (GiB)
DEM0V76-Target0	3 days		V75K3-3-Enterprise	SVC-DHB-DemoSVC	2.00	Yes	2.01	0.00
ric4122.4c924777...	2 weeks		mdiskgrp0	V7000F-V52	4.00	Yes	0.17	3.83
ric4122.36f05842b...	2 weeks		mdiskgrp0	V7000F-V52	4.00	Yes	0.17	3.83
ric4122.4c924777...	2 weeks		mdiskgrp0	V7000F-V52	4.00	Yes	0.15	3.85
ric4122.c50b2a99...	2 weeks		mdiskgrp0	V7000F-V52	4.00	Yes	0.15	3.85

Storage Performance

Selected Resources: 10/10

- FlashSystem-AC1-V9000-V5CShow
- XIV-214-1340004
- SVC-DHB-Sandbox-V5CShow
- FlashSystem-AF8-9100-5
- FlashSystem-AE1-840-1310541
- DS8886-981-13FCM01
- DS8800-951-757N211
- FlashSystem-415-A9000-SiteA-13
- V7000F-V52
- V7000-V51

Metrics: Total I/O Rate - overall: 5/6

Data Resolution: Daily | Hourly | Sample

20:37 Apr 1, 2020 - 08:37 Apr 2, 2020

All Storage Systems

FlashSystem-9150-AFB-204204008DA-5

FlashSystem-900-AE3-68B102X-Har

FlashSystem-900-AE2-900-135111...

DS8800-996-75K0W61

FlashSystem-840-AE1-1310241-L

FlashSystem-840-AE1-1310540

Storage-V7000-524-1000601022...

FlashSystem-840-AE1-1310541

FlashSystem-840-AE1-1310621-Sc...

FlashSystem-9000-AC1-1002069...

FlashSystem-9150-AFB-20420E027...

Storage-V7000-124-200A0618664...

DS8870-961-752A411

SVC-DHB-2006021D504-ATSSShresh...

FlashSystem-9150-AFB-20420E027...

Data Collection Interrupted

Reports

Capacity Reports

Inventory Reports

Summary Reports

Block Storage Systems

File Storage Systems

Object Storage Systems

Pools

Volumes

Managed Disks

Servers

Applications

Departments

NAS File Systems

Filesets

Network Shared Disks

Block Storage Systems

File Storage Systems

Object Storage Systems

Spectrum Scale Nodes

Spectrum Virtualize Nodes

Enclosures

Managed Disks

Modules

Servers

Storage System FC Ports

Storage System IP Ports

Controllers

Chargeback

Storage Consumer

IBM Storage Insights Device Support Portal

IBM Storage Monitoring – SaaS – Storage Insights Device Support Portal

- IBM Storage Insights Device Support Portal (**the IBM Internal Support View**)
 - IBM internal support website
 - Allows IBM Support to view collected metadata from customers (read only)
 - Views of Block, File, Object and Server Resources
 - Views of Call Home, Alerts, and Advisor Notifications
 - Views of Applications, Department, and General Groups
 - Views of Data Collectors and Alert Policies

IBM Storage Monitoring – SaaS – Storage Insights Device Support Portal

**IBM Storage Insights Device Support Portal**dompruitt@us.ibm.com

Account Search

Please enter the PMR number, device serial, customer number, or customer name fragment to search for.

- IBM WSC Z ([redacted]) - Type: SI (free)** 
 - ▶ Customer Numbers
 - ▶ Devices
 - ▶ PMRs
- IBM Storage Support ([redacted]) - Type: Beta Customer** 
 - ▶ Customer Numbers
 - ▶ Devices
 - ▶ PMRs

IBM Storage Monitoring – SaaS – Storage Insights Device Support Portal

Browser navigation bar with address: <https://005861044c584d5d8ccca05bb6d220f0.ibm.serviceengage.com/srm/gui#storage:>

Navigation menu: Resources, Notifications, Groups, Configuration

User profile: dompruitt@us.ibm.com



IBM WSC Z - Block Storage Systems

- ✔ 5 Normal
- ⚠ 0 Warning
- ✘ 1 Error

Storage Systems Alerts Performance Capacity

Name	Type	Serial Number	Firmware	Condition	Events	Probe Stat...	Performan...	Capacity (GiB)	Used Capacity (%)	Recent Fill Rate (%)
SK9F	DS88...	75XM621	7.6.31.42...	✔ Normal		✘ Failed	⚠ Runn...	115,255.00	77 %	0.00
SJ94	DS88...	75WM321	7.6.31.42...	✘ Error		✘ Failed	⚠ Runn...	63,826.00	50 %	0.00
SK9W	DS88...	75BNN81	7.7.51.27...	✔ Normal		✔ Succ...	⚠ Runn...	134,076.00	52 %	1.18
WSCV9000-1	Flash...	0000020320804F28	8.2.1.8 (b...	✔ Normal		✘ Failed	⚠ Runn...	53,245.00	56 %	0.00
ATSV9000-1	Flash...	0000020320A0664E	8.2.1.8 (b...	✔ Normal		✔ Succ...	⚠ Runn...	0.00		0.00
WSCV7000-1	Stor...	00000200A123077C	7.8.1.11 (...)	✔ Normal		✔ Succ...	⚠ Runn...	55,574.00	56 %	0.00

IBM Storage Monitoring – SaaS – Storage Insights Device Support Portal

← → ↻ 🏠
🔒 <https://005861044c584d5d8ccca05bb6d220f0.lb.ibm.serviceengage.com/srm/gui#storage>
🔍 Search
🔔 📄 👤 dompruitt@us.ibm.com

🏠 Resources
🔔 Notifications
👤 Groups
⚙️ Configuration

IBM WSC Z - Block Storage Systems

✔️ 5 Normal
⚠️ 0 Warning
❌ 1 Error

Storage Systems
Alerts
📊 Performance
📈 Capacity

Selected Resources 5/6

- WSCV9000-1
- WSCV7000-1
- SJ94
- SK9W
- SK9F

Metrics 2/6

Used Capacity (GiB)

Capacity (GiB)

Last: 1 week | 1 month | 6 months | 1 year

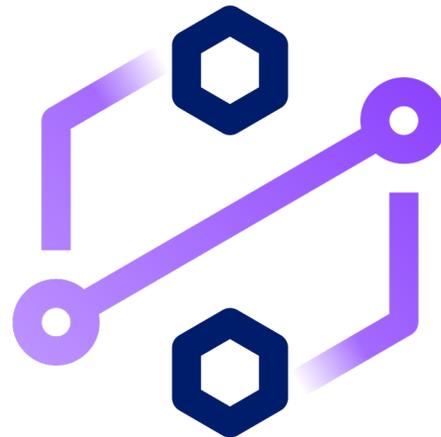
Mar 2, 2020 - Apr 2, 2020

⋮ Actions
🔍 Filter...

Name	Raw Capacity (GB)	Capacity (GiB)	Used Capacity (%)	Recent Fill Rate (%)	Total Capacity Savings (%)	Used Capacity (GiB)	Available Capacity (GiB)
SK9F	164,832.00	115,255.00	77 % <div style="width: 77%; height: 10px; background: linear-gradient(to right, blue, grey);"></div>	0.00		88,776.00	21,056.00
WSCV7000-1	76,776.98	55,574.00	56 % <div style="width: 56%; height: 10px; background: linear-gradient(to right, blue, grey);"></div>	0.00	11.76 % (3,437.85 GiB)	31,379.15	25,195.83
WSCV9000-1	68,606.11	53,245.00	56 % <div style="width: 56%; height: 10px; background: linear-gradient(to right, blue, grey);"></div>	0.00	6.45 % (2,047.00 GiB)	29,698.00	38,908.11
SK9W	243,600.00	134,076.00	52 % <div style="width: 52%; height: 10px; background: linear-gradient(to right, blue, grey);"></div>	1.18		69,845.00	173,755.00
SJ94	93,600.00	63,826.00	50 % <div style="width: 50%; height: 10px; background: linear-gradient(to right, blue, grey);"></div>	0.00		32,080.00	31,746.00

Showing 6 items | Selected 5 items Mar 2, 2020, 09:06:27 – Apr 2, 2020, 09:06:27 Refreshed 1½ minutes ago

IBM Spectrum Control v5.4



IBM Storage Management – On Premise – IBM Spectrum Control

- IBM Spectrum Control & IBM Spectrum Control Select Edition
 - Installed inside your datacenter
 - Provides a set tools for managing storage capacity, availability, alerts, events, performance, and resources
 - Reduces the complexity of managing a storage environment by centralizing, simplifying, and optimizing storage tasks that are associated with storage systems, storage networks, performance troubleshooting, and capacity management
 - Helps detect potential problems on your storage resources
 - Simplifies the management of storage infrastructures
 - Monitors and tracks performance of SAN-attached resources
 - Manages the capacity utilization and availability of file systems
 - Web GUI Reporting
 - 1-minute performance Intervals
 - Custom retention policy

IBM Storage Management – On Premise – Spectrum Control

Browser address bar: <https://odcvm19258.odcclass.ibm.com:9569/srm/gui#volumes?tab=0>

Navigation menu: Home | **Storage** | Servers | Network | Groups | Advanced Analytics | Reports | Settings

User profile: student0



Volumes

- 1158 Normal
- 0 Warning
- 16 Error

Volumes Capacity

Name	Pool	Storage System	Status	Capacity (...)	Used Capacity (%)	Used Capacity (GiB)	Written Capacity
8KE000	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE001	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE002	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE003	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE004	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE005	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE006	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE007	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE008	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE009	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE00A	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE00B	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE00C	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	
8KE00D	CKD_0	DS8900-01	Normal	7.93	Fully Allocated	7.93	

Showing 1 - 500 of 1174 items | Selected 0 items on page

Refreshed 2½ minutes ago | Page 1 of 3

IBM Storage Management – On Premise – Spectrum Control

Browser address bar: <https://odcvm19258.odcclass.ibm.com:9569/srm/gui#switches?tab=0>

Navigation menu: Home | Storage | Servers | **Network** | Groups | Advanced Analytics | Reports | Settings

User: student0



Switches

- ✔ 49 Normal
- ⓘ 0 Warning
- ✖ 0 Error
- ? 1 Unknown

Switches | Alerts | Performance

Actions: + Add Switch | Create Report | View Performance | Filter...

Name	Cond...	Probe Status	Performance ...	Fabric	Principal Switch of Fabric	Ports	Connected Ports	Links
B6510_1...	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 128	19	15	9
B6510_1...	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 15	25	24	7
B6510_1...	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 16	25	24	7
B6510_1_8	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 8	2	2	2
B6510_2...	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 128	21	9	9
B6510_2...	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 15	24	22	7
B6510_2...	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 16	24	22	7
B6510_2_8	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 8	2	2	2
B6510_3...	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 128	47	39	9
B6510_3...	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 15	10	10	7
B6510_3...	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 16	10	10	7
B6510_3_8	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 8	4	4	4
B6510_4...	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 128	25	21	9
B6510_4...	✔ Normal	✔ Successful	▶ Running	100050EB1A0...	DCX 8510-4 16	37	33	7

Showing 50 items | Selected 0 items | Refreshed a few moments ago

IBM Storage Management – On Premise – Spectrum Control

Browser navigation bar showing URL: <https://odcvm19258.odcclass.ibm.com:9569/srm/gui#fabrics?tab=0> and navigation tabs: Home, Storage, Servers, **Network**, Groups, Advanced Analytics, Reports, Settings.



Fabrics

- ✔ 14 Normal
- ⚠ 0 Warning
- ✖ 0 Error
- ❓ 2 Unknown

Fabrics

Alerts

Tasks

Actions: + Add Fabric Create Report Filter...

Name	Cond...	Probe Status	Principal Switch of Fabric	Switches	Switch Ports	Connected Switch Ports	NPV Switches
100050EB1A0D27...	✔ Normal	✔ Successful	DCX 8510-4 15	8	155	146	
100050EB1A0D27...	✔ Normal	✔ Successful	DCX 8510-4 16	8	155	146	
100050EB1A0F67...	✔ Normal	✔ Successful	DCX 8510-4 128	12	416	264	
100050EB1A0F67...	✔ Normal	✔ Successful	DCX 8510-4 8	10	48	48	
1000889471380FC3	✔ Normal	✔ Successful	SAN512B-1-9	1	5	5	
1000889471383B...	✔ Normal	✔ Successful	SAN512B-2-9	1	5	5	
1000C4F57C67D9...	✔ Normal	✔ Successful	B8510-4-2-128	1	256	8	
1000C4F57C67D9...	✔ Normal	✔ Successful	switch 4	1	0	0	
1000C4F57C67D9...	✔ Normal	✔ Successful	switch 7	1	0	0	
1000C4F57C67D9...	✔ Normal	✔ Successful	switch 8	1	0	0	
SAN512B-1-10:00:...	✔ Normal	✔ Successful	SAN512B-1-51	1	507	168	
SAN512B-1-10:00:...	✔ Normal	✔ Successful	SAN512B-1-8	1	0	0	
SAN512B-2-10:00:...	✔ Normal	✔ Successful	SAN512B-2-52	1	507	178	

Showing 16 items | Selected 0 items

Refreshed a few moments ago

IBM Storage Management – On Premise – Spectrum Control

The screenshot shows a web browser window with the URL `https://odcvm19258.odcclass.ibm.com:9569/srm/gui#historyRetention`. The navigation menu includes Home, Storage, Servers, Network, Groups, Advanced Analytics, Reports, and Settings. The main content area is titled "History Retention" and features a clock icon, "Cancel", "Restore Defaults", and "Save" buttons. The settings are organized into three sections: Capacity History, Performance Data, and Other.

Section	Setting	Value	Unit
Capacity History	Daily:	12	weeks
	Weekly:	24	weeks
	Monthly:	24	months
Performance Data	Sample:	2	weeks
	Hourly:	4	weeks
	Daily:	52	weeks
Other	Data for missing resources:	2	weeks
	Alert logs:	4	weeks
	Job logs:	5	runs

IBM Storage Management – On Premise – Spectrum Control

Rollup Server Connections

Specify the servers you want to collect information from:

[Add Server](#)

Local Server

vscdemo

Block storage systems: 45

Servers: 235

Switches: 52

Hypervisors: 12

Connected Server Actions ▾

vscrollup.wsc.ibm.com Hourly collection

Block storage systems: 15 Next collection: Apr 2, 2020, 11:01:00

Servers: 121 Last collection: Failed Apr 2, 2020, 10:00:00

Switches: 0

Hypervisors: 9

Home Storage S

Enter Rollup Mode

Exit Rollup Mode

Go to vscrollup.wsc.ibm.com

Thank you.

Questions?

Useful Links ...

- IBM Storage Insights Public Demo (IBMid required) – <http://ibm.biz/insightsdemo>
- IBM Storage Insights Security Guide
 - Everything about the storage data collector and metadata collected
 - https://www.ibm.com/support/knowledgecenter/SSQRB8/com.ibm.spectrum.si.doc/IBM_Storage_Insights_Security_Guide.pdf
- IBM Storage Insights Supported Devices
 - https://www.ibm.com/support/knowledgecenter/SSQRB8/com.ibm.spectrum.si.doc/prd_supported_storage_resources.html
- IBM Storage Insights Knowledge Center
 - https://www.ibm.com/support/knowledgecenter/SSQRB8/com.ibm.spectrum.si.doc/tpch_saas_welcome.html
- IBM Spectrum Control Knowledge Center
 - <https://www.ibm.com/support/knowledgecenter/SS5R93>
- IBM Storage Insights / Spectrum Control Demonstration Test Drive (IBM Client Demonstration Center)
 - https://www.ibm.com/systems/clientcenterdemonstrations/faces/_rlvid.jsp?_rap=!viewDemo&_rvip=/dcSearchDemonstrations.jsp&demoId=3467&conversationContext=1
- Dominic Pruitt's work blog and work twitter account (where I put useful stuff)
 - <https://StorageMVP.com> @StorageMVP