Washington Systems Center - Storage

IBM Storage Monitoring & Management Options for the IBM FlashSystem 9200

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Storage Monitoring vs Storage Management

- Storage Monitoring
  - Views of storage metadata collected from data collectors
  - IBM Storage Insights
  - IBM Storage Insights Pro
  - IBM Storage Insights for Spectrum Control
  - *IBM Storage Insights Device Support Portal (the IBM internal support view)*
- Storage Monitoring and Management
  - Views of storage metadata collected from data collectors and can take administrative action on storage
  - IBM Spectrum Control Standard Edition
  - IBM Spectrum Control Advanced Edition

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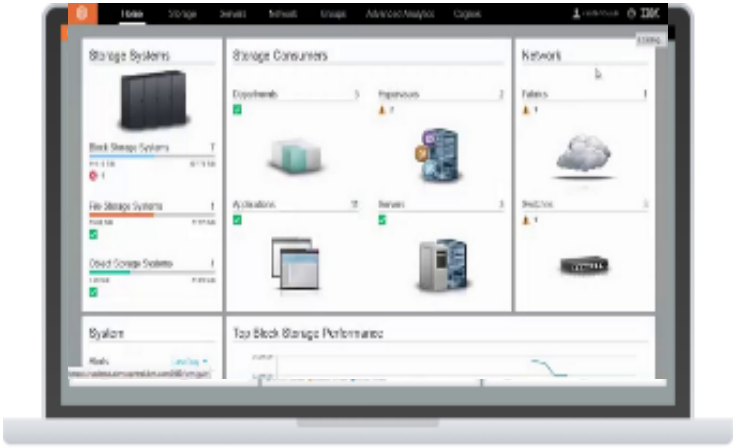
Software as a Service vs On Premise

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

- On Premise
  - IBM Spectrum Control Standard Edition
  - IBM Spectrum Control Advanced Edition



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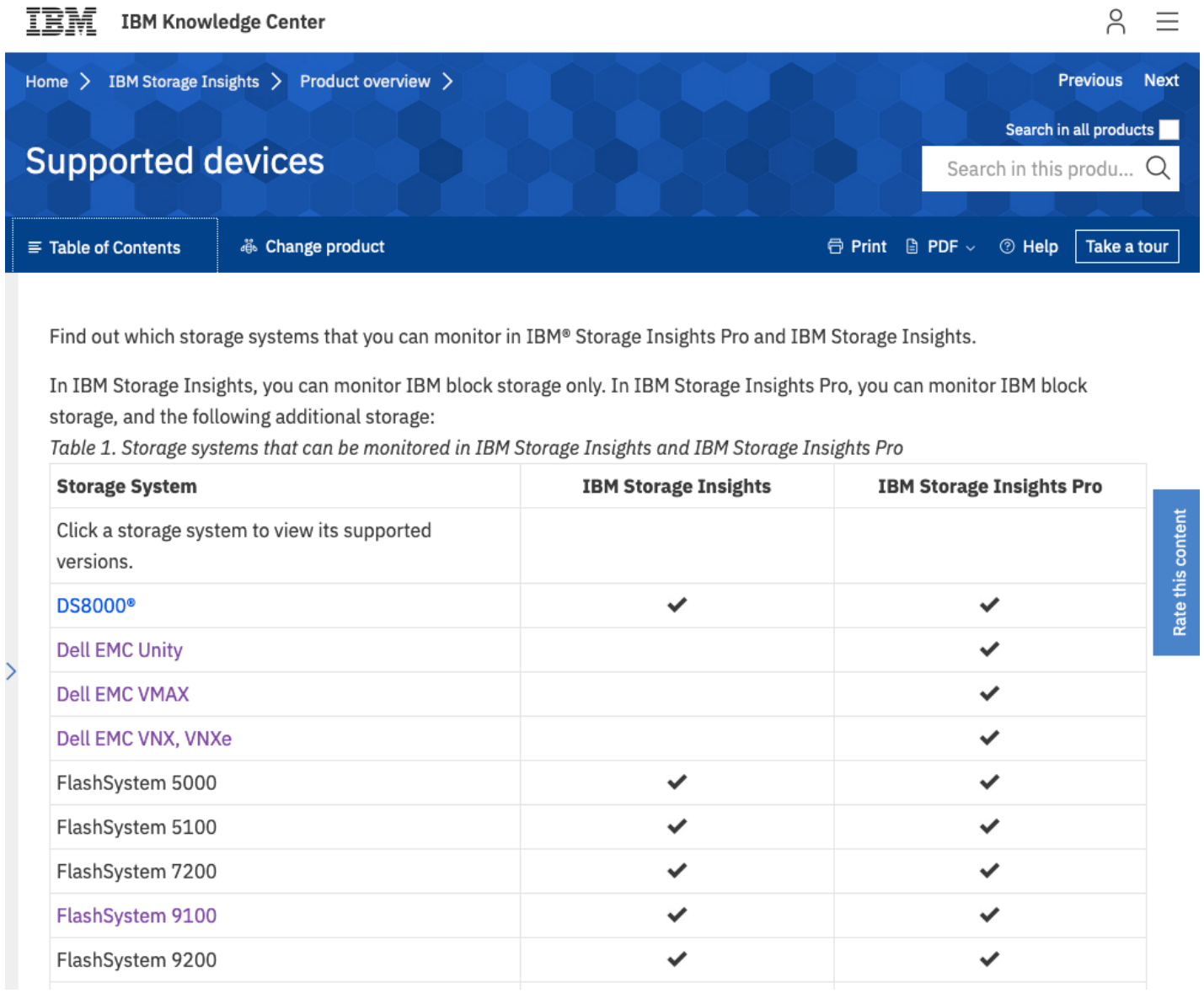

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Find out which storage systems that you can monitor in IBM® Storage Insights Pro and IBM Storage Insights.

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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IBM Storage Insights

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IBM Storage Monitoring – SaaS – Storage Insights (free)

- IBM Storage Insights (free / entitled)
  - Free of charge to customers who own IBM block storage systems
  - It is an IBM Cloud storage service that monitors IBM block storage
  - It provides single-pane views of IBM block storage systems
    - Operations dashboard
    - Notifications 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

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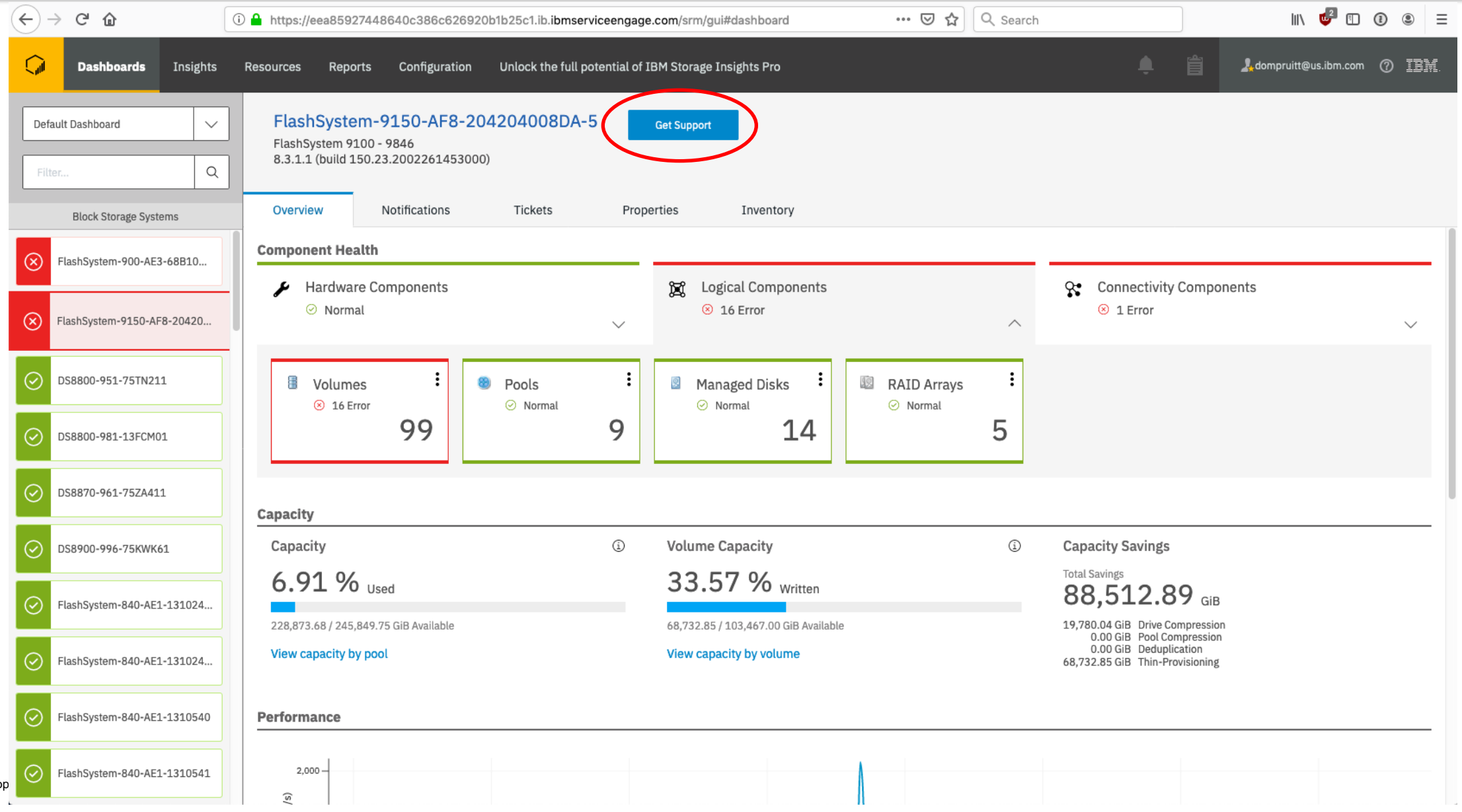

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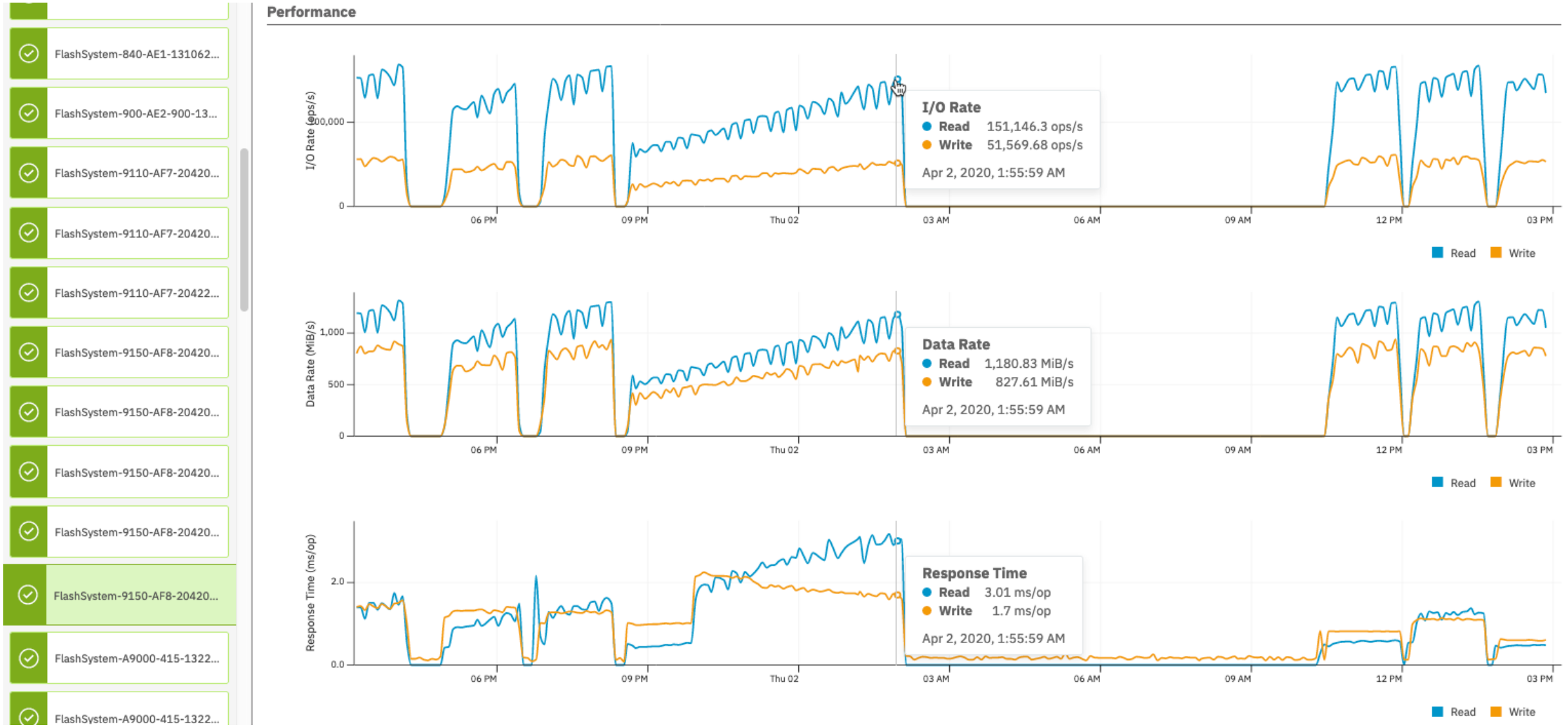

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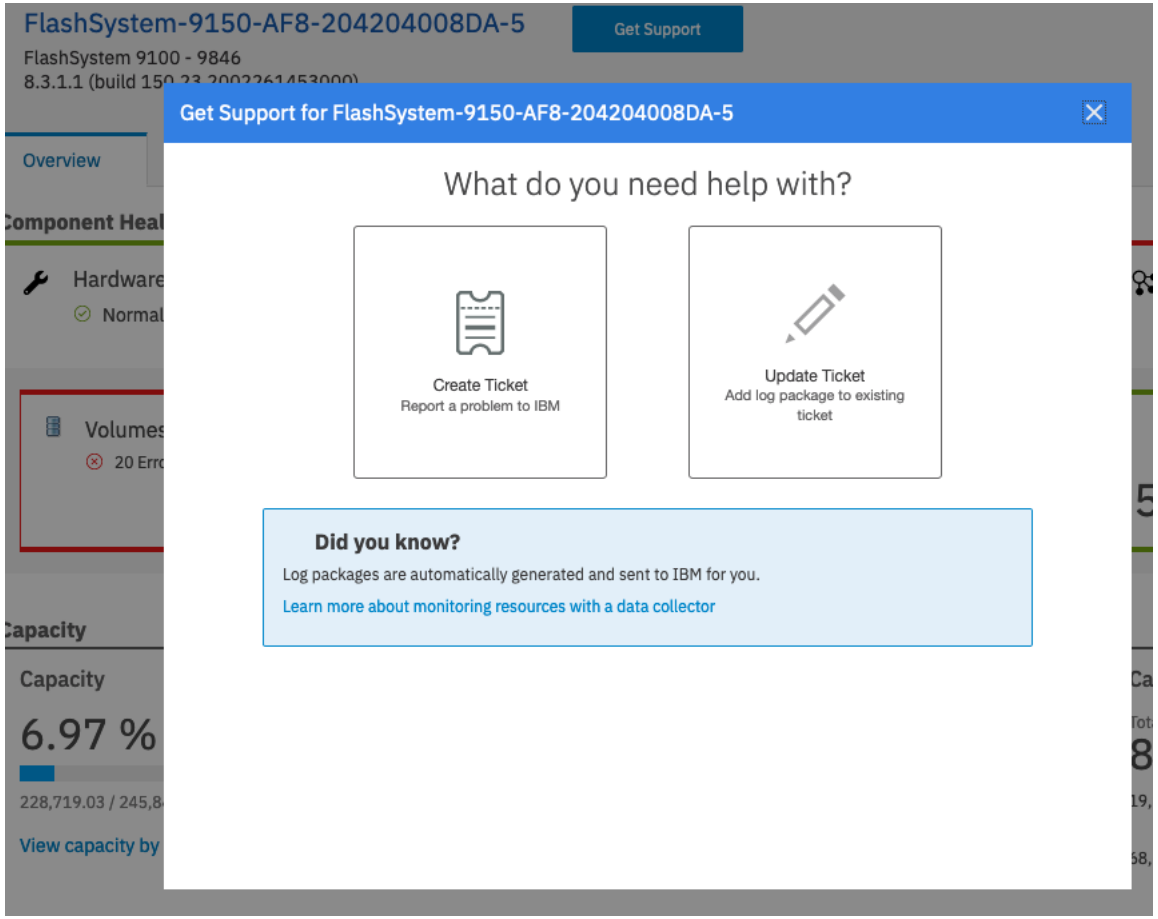

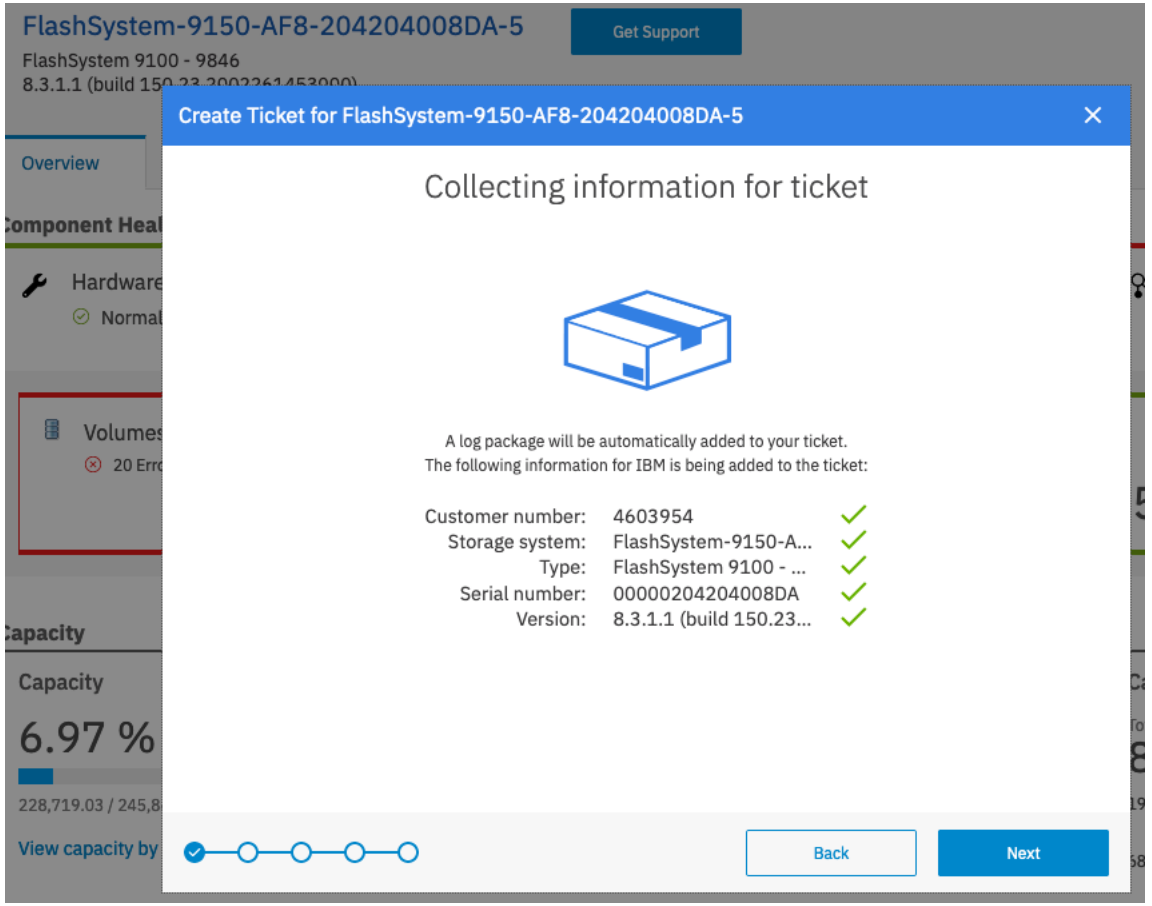

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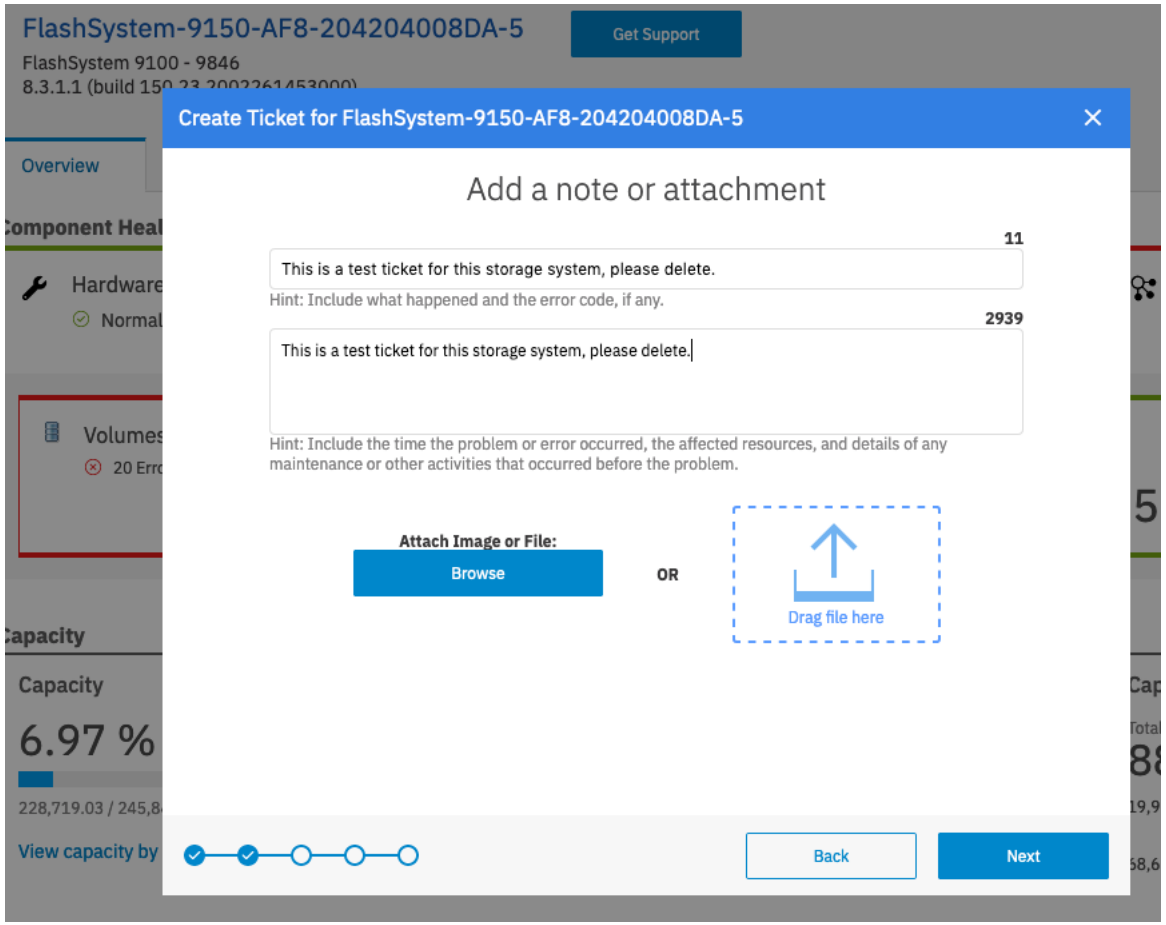

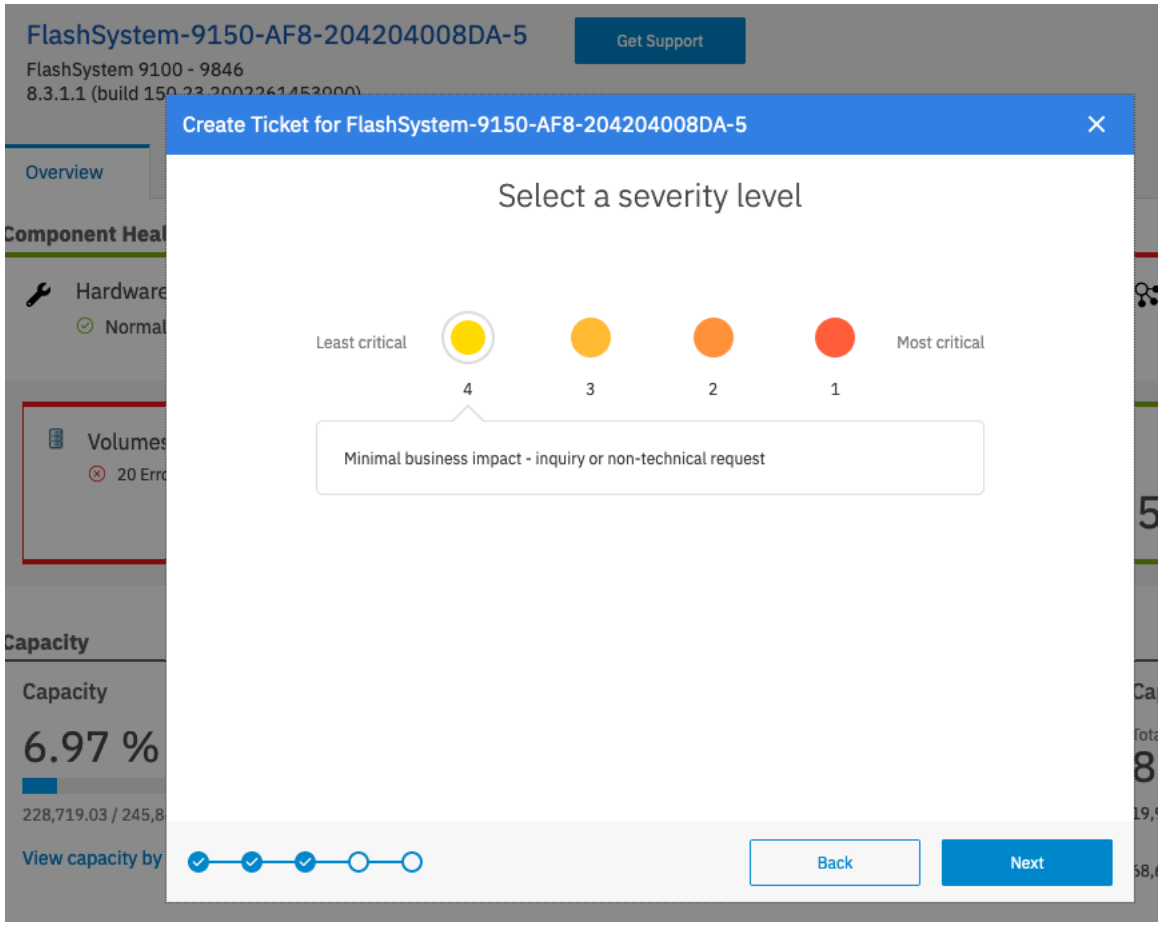

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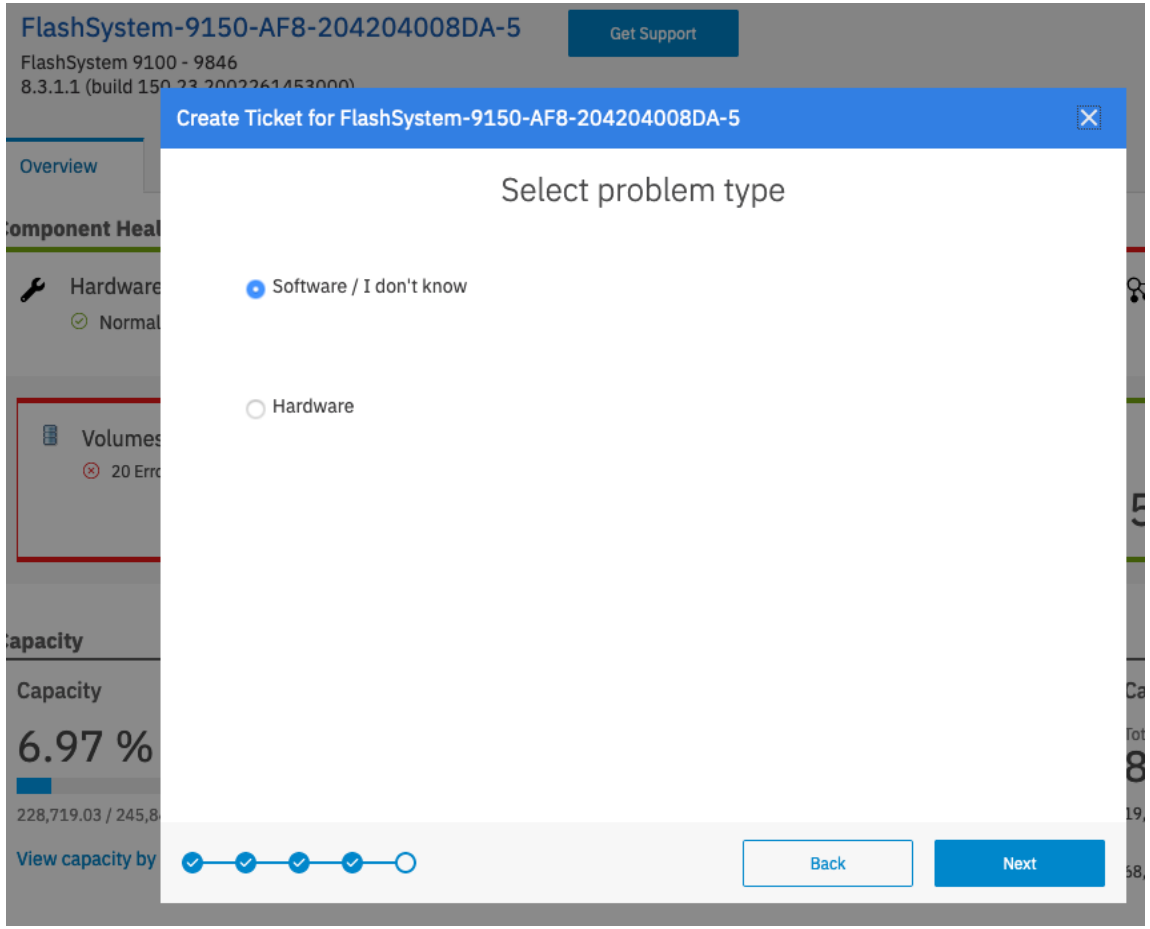

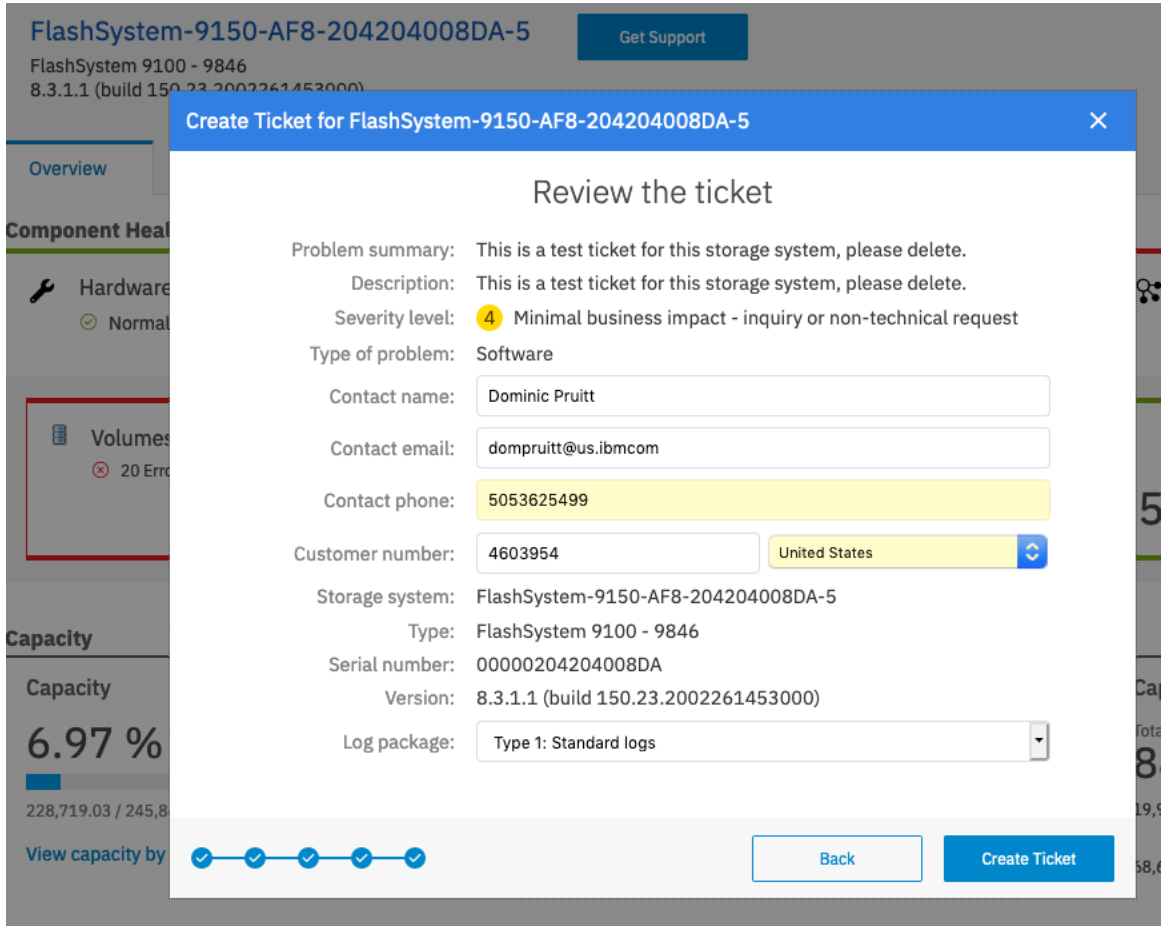

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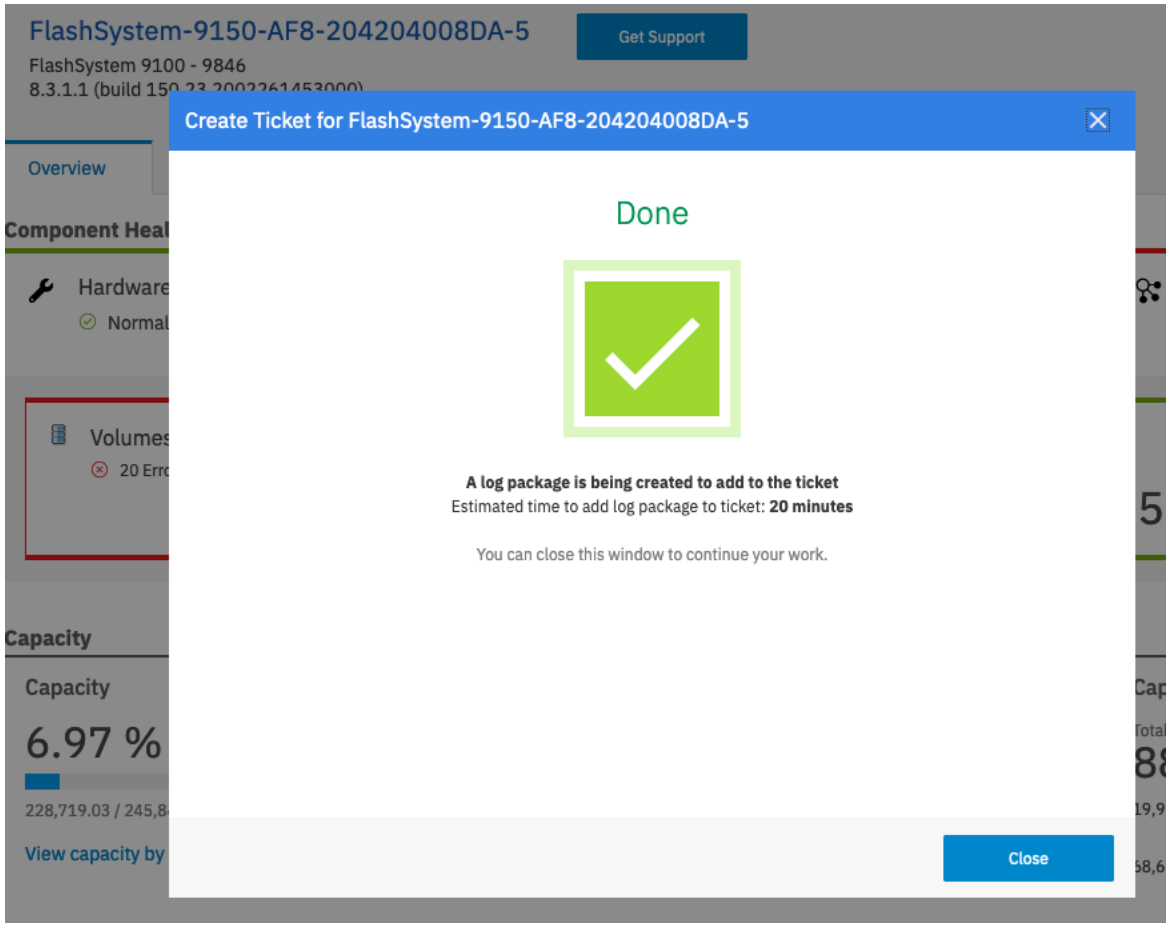

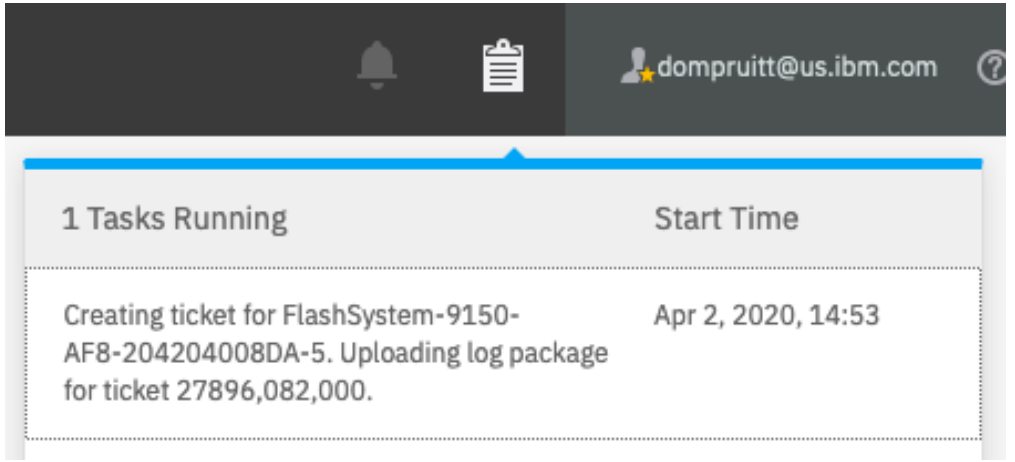

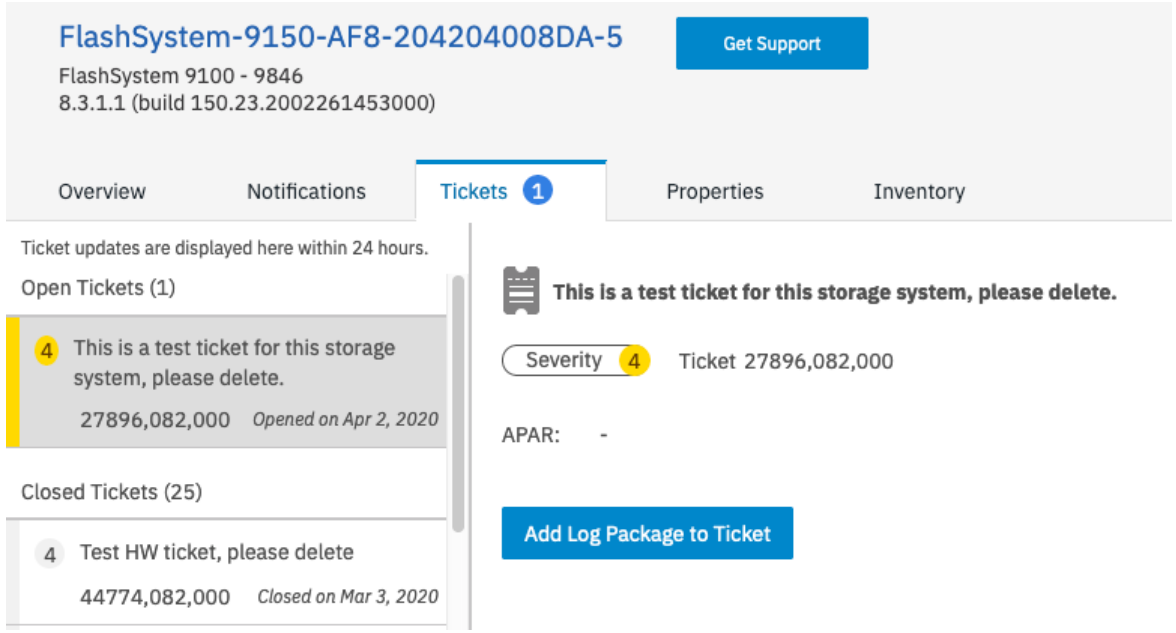

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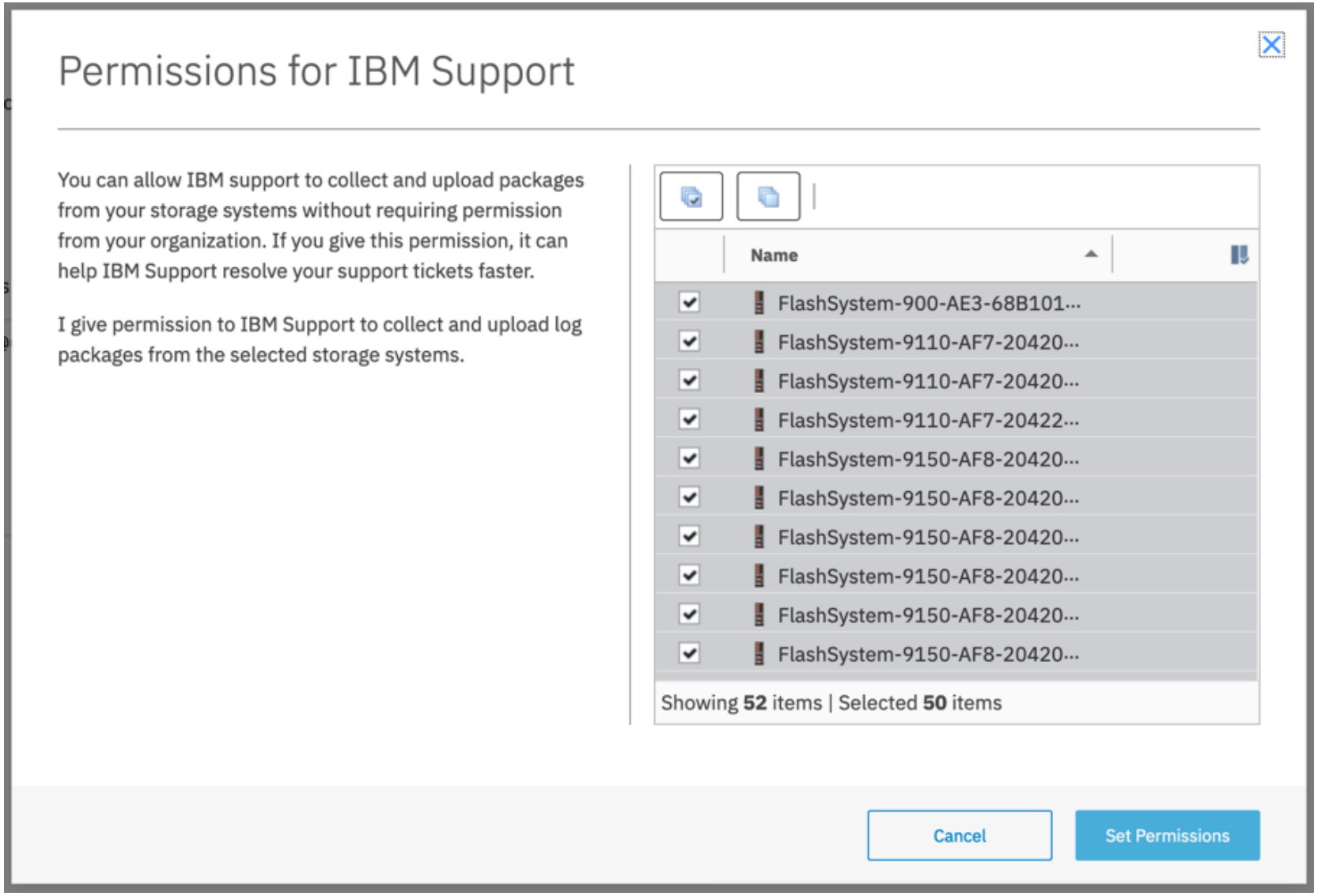

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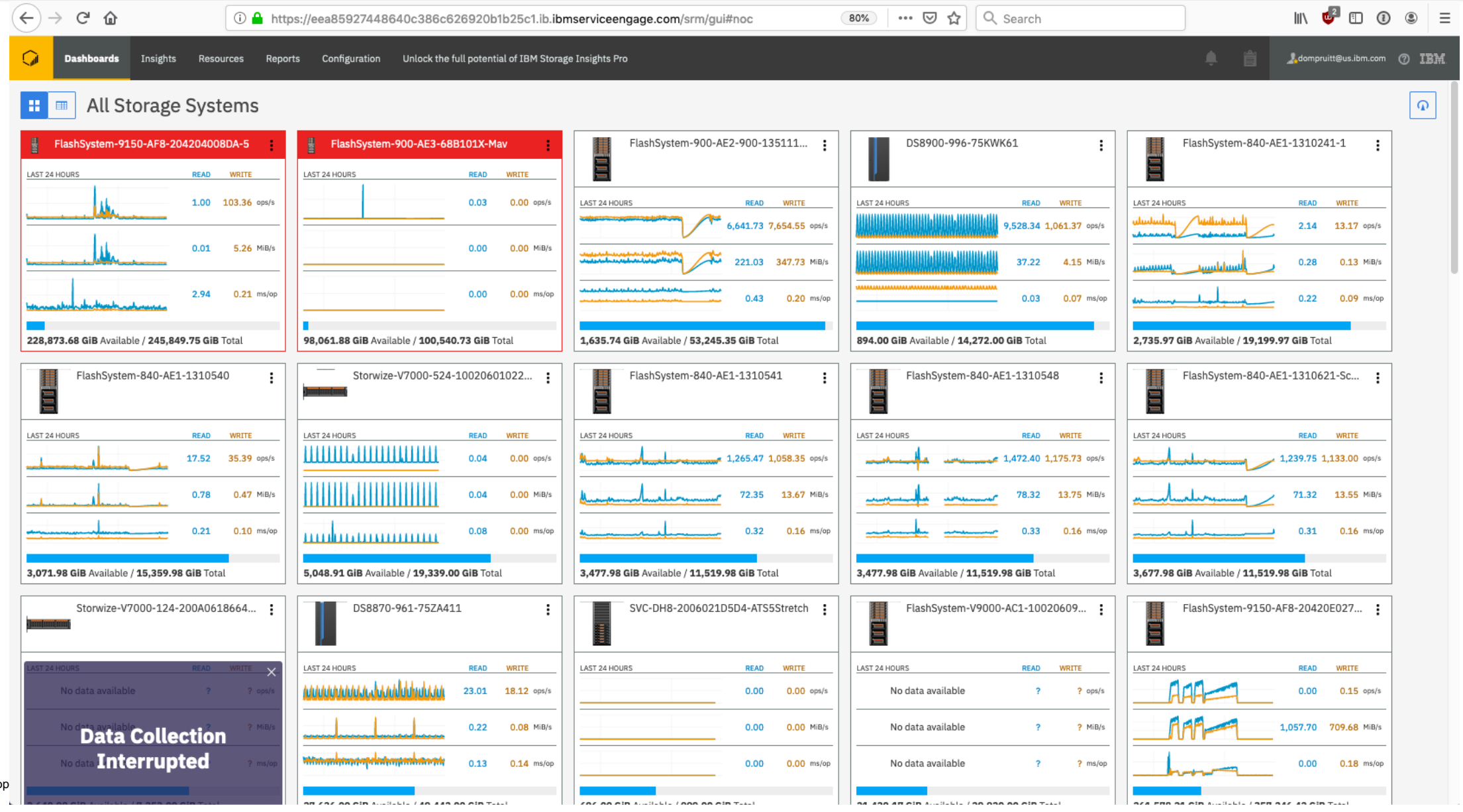

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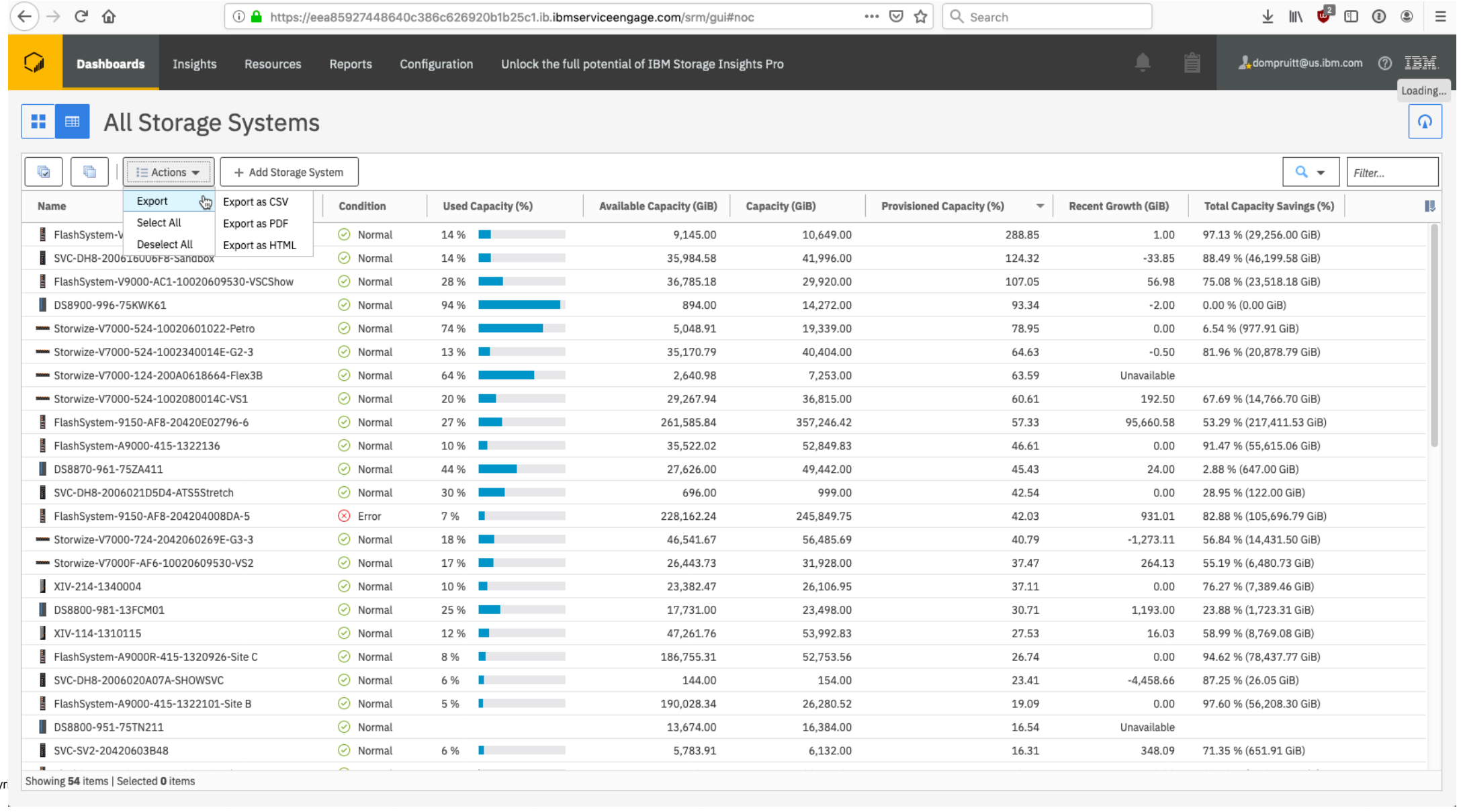

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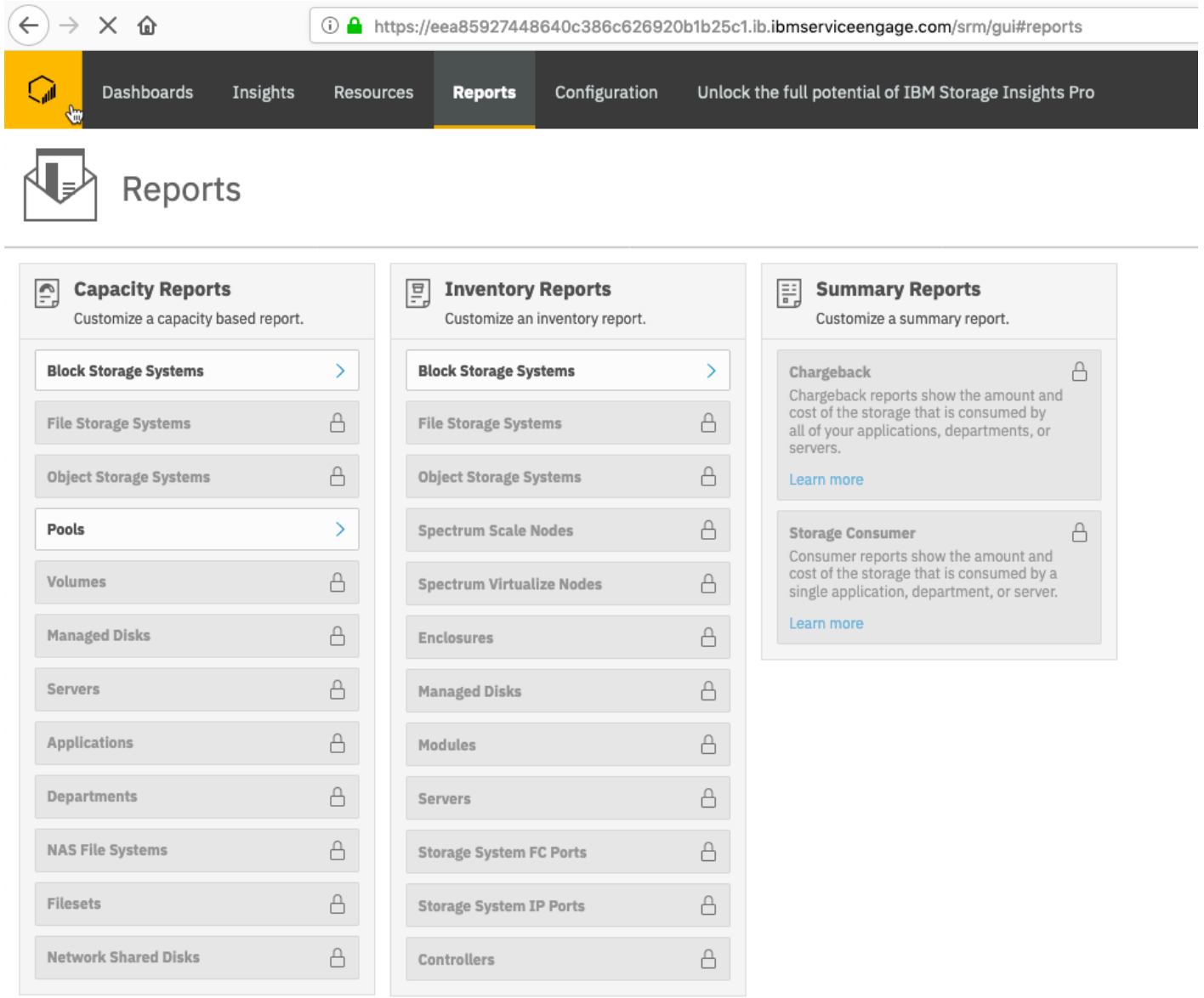

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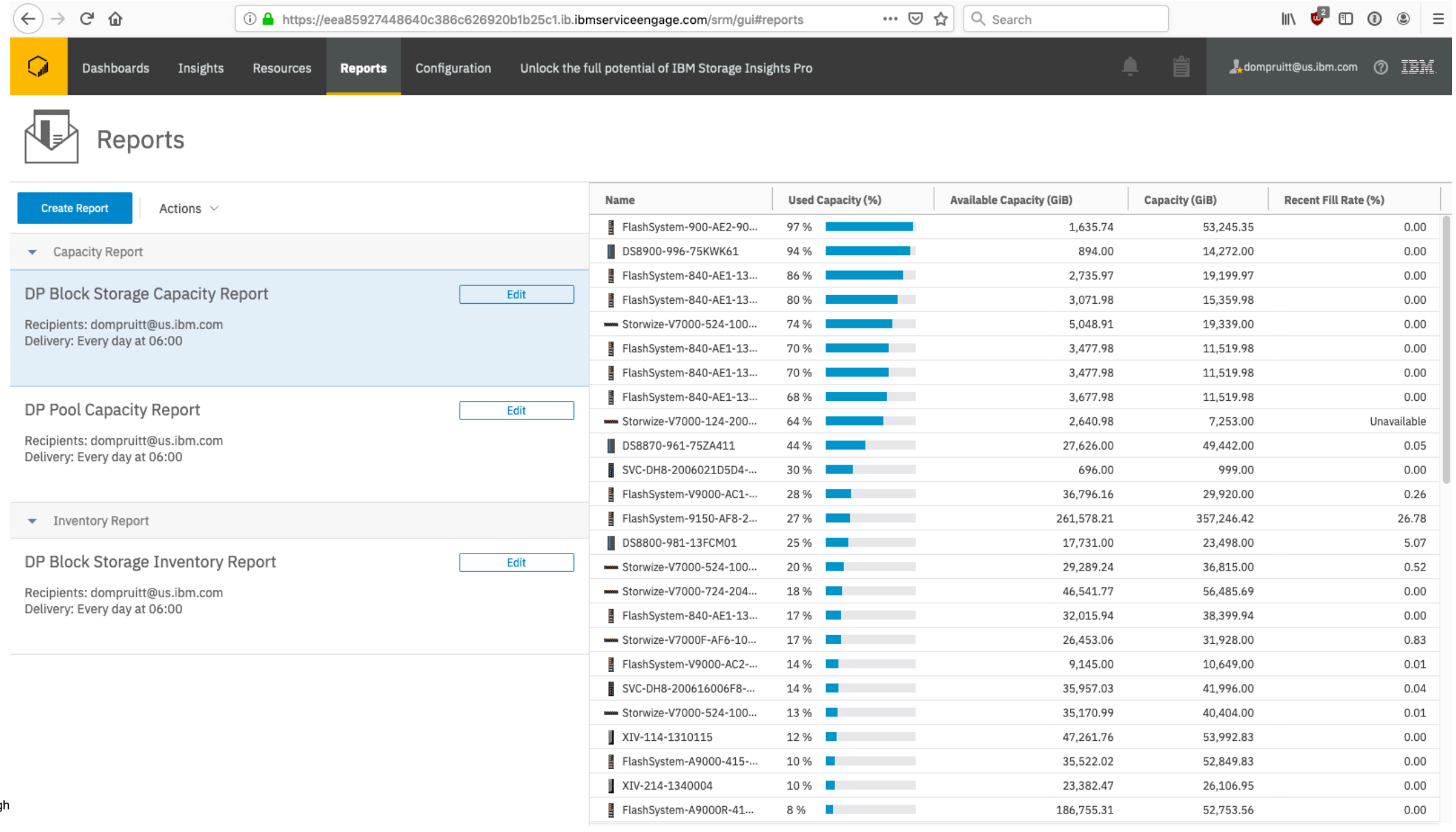

Name	Used Capacity (%)	Available Capacity (GiB)	Capacity (GiB)	Recent Fill Rate (%)
FlashSystem-900-AE2-90...	97 %	1,635.74	53,245.35	0.00
DS8900-996-75KWK61	94 %	894.00	14,272.00	0.00
FlashSystem-840-AE1-13...	86 %	2,735.97	19,199.97	0.00
FlashSystem-840-AE1-13...	80 %	3,071.98	15,359.98	0.00
Storwize-V7000-524-100...	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
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
FlashSystem-V9000-AC1-...	28 %	36,796.16	29,920.00	0.26
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

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IBM Storage Monitoring – SaaS – Storage Insights Pro

- IBM Storage Insights Pro (includes all functions of Storage Insights free)
  - A subscription-based offering
  - Expands the IBM Storage Insights offering to include the monitoring of
    - 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.

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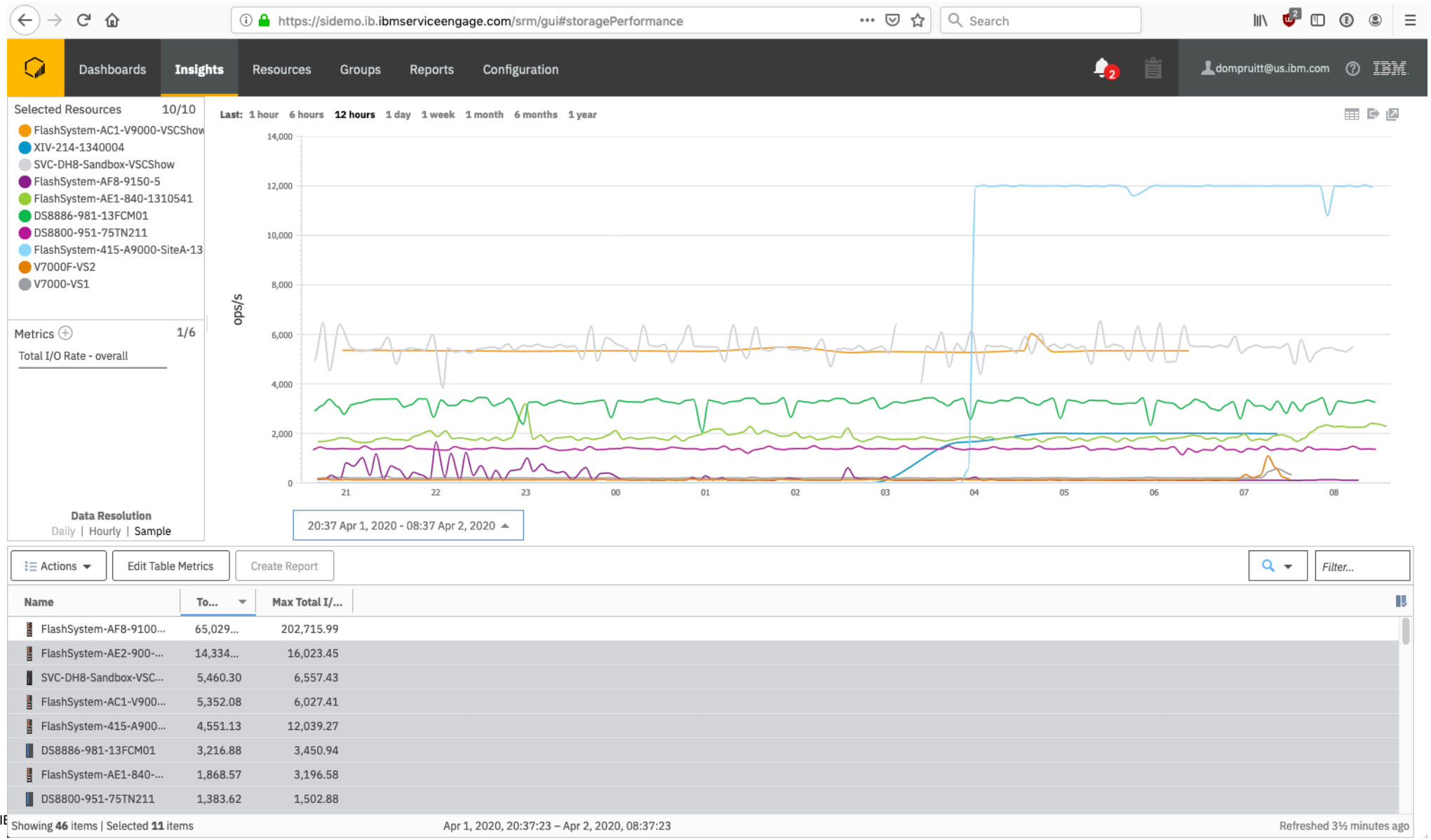

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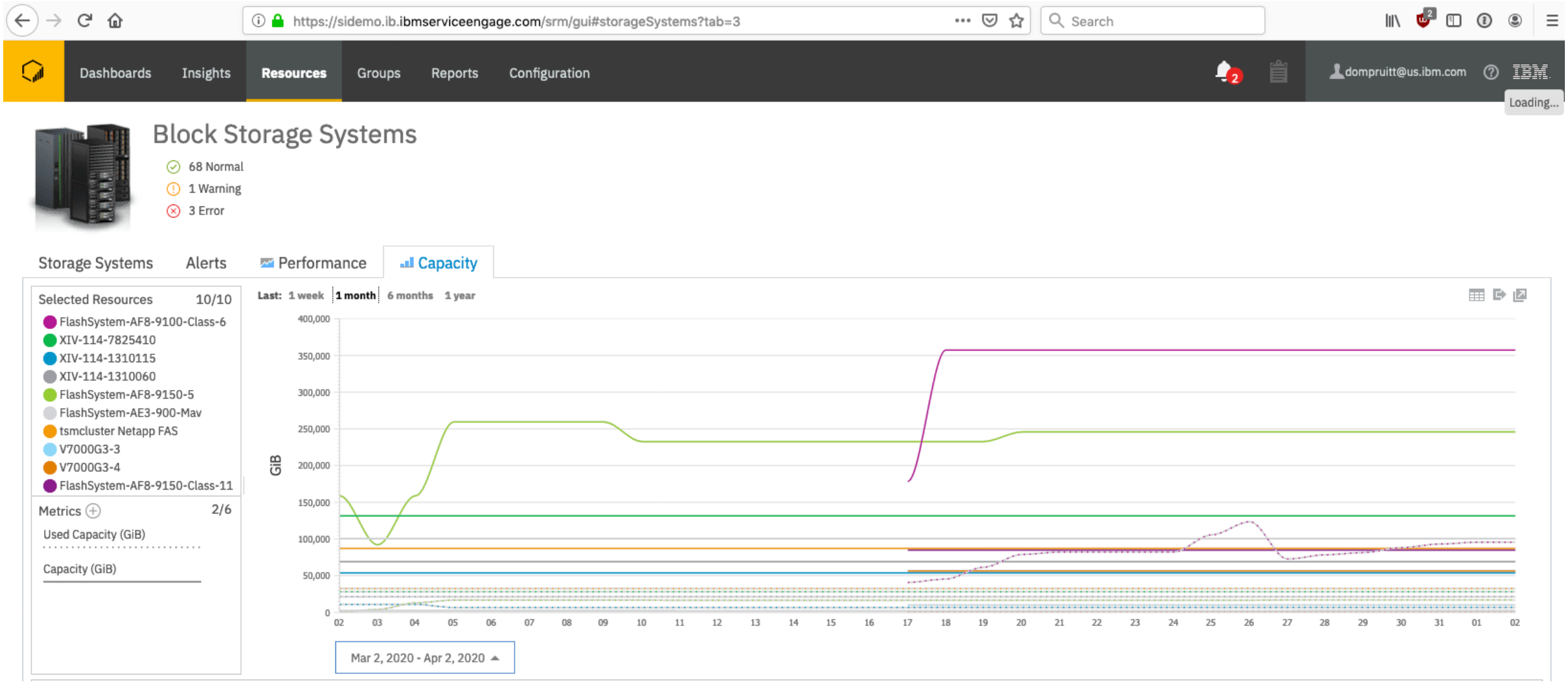

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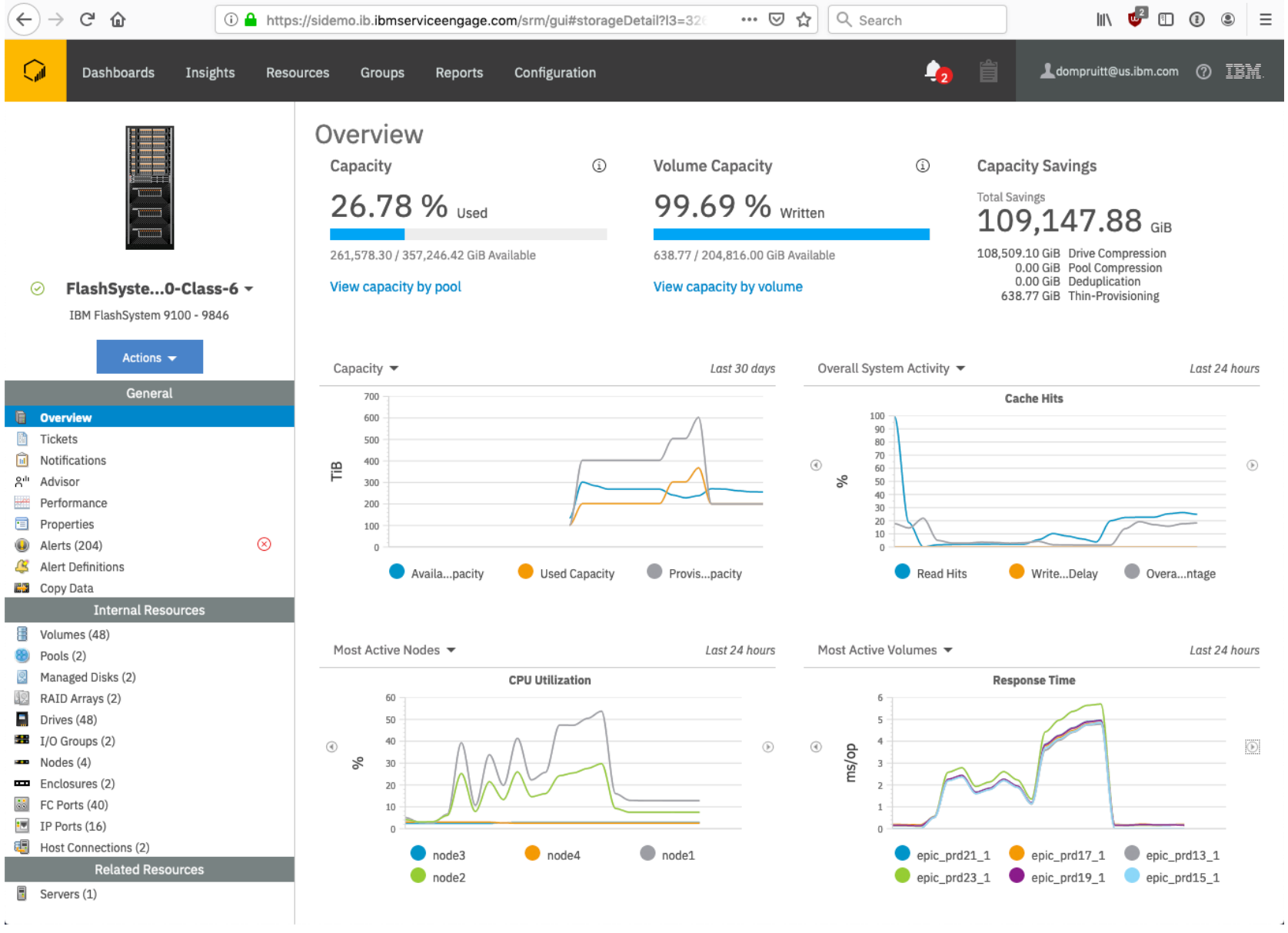

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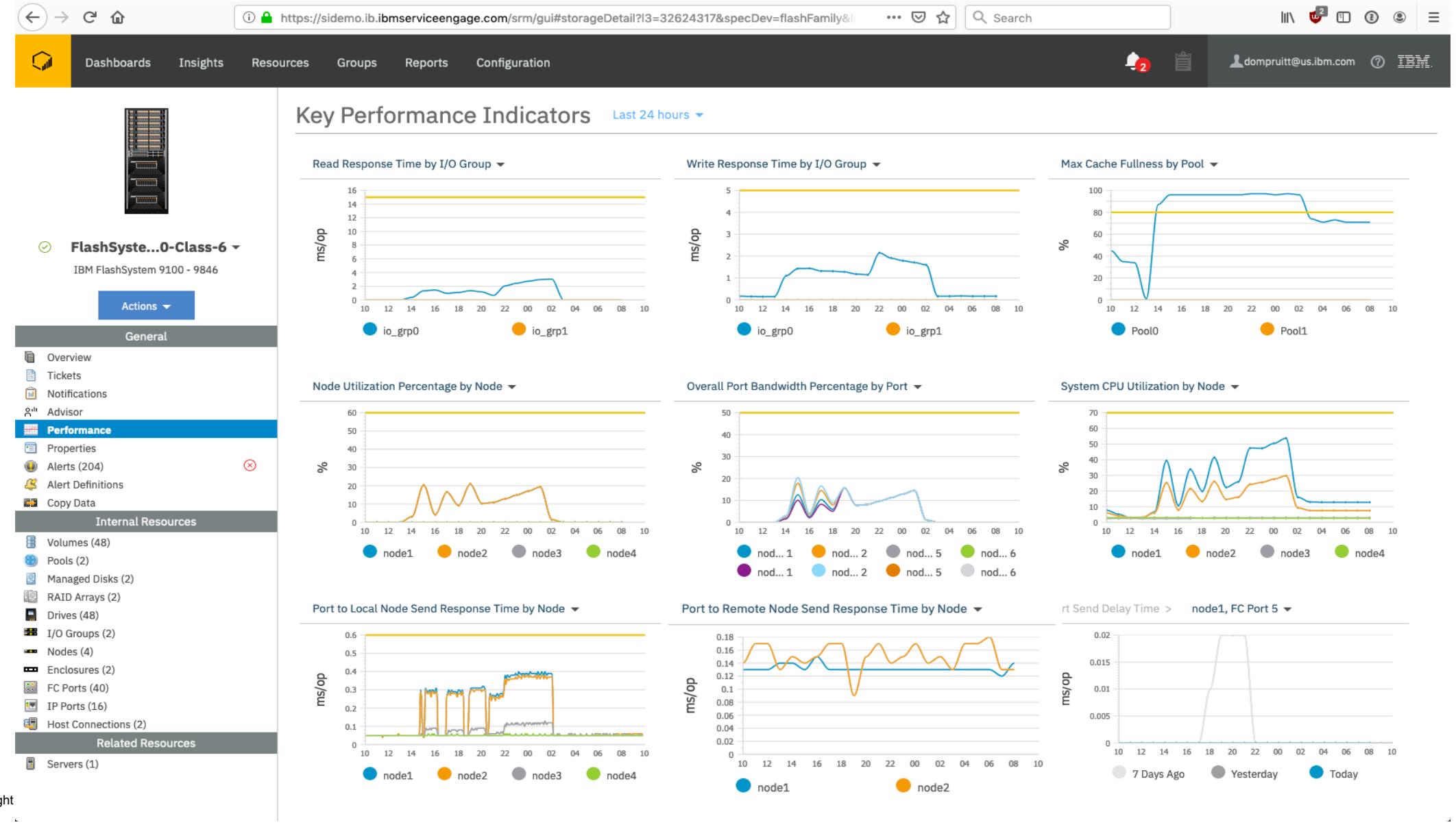

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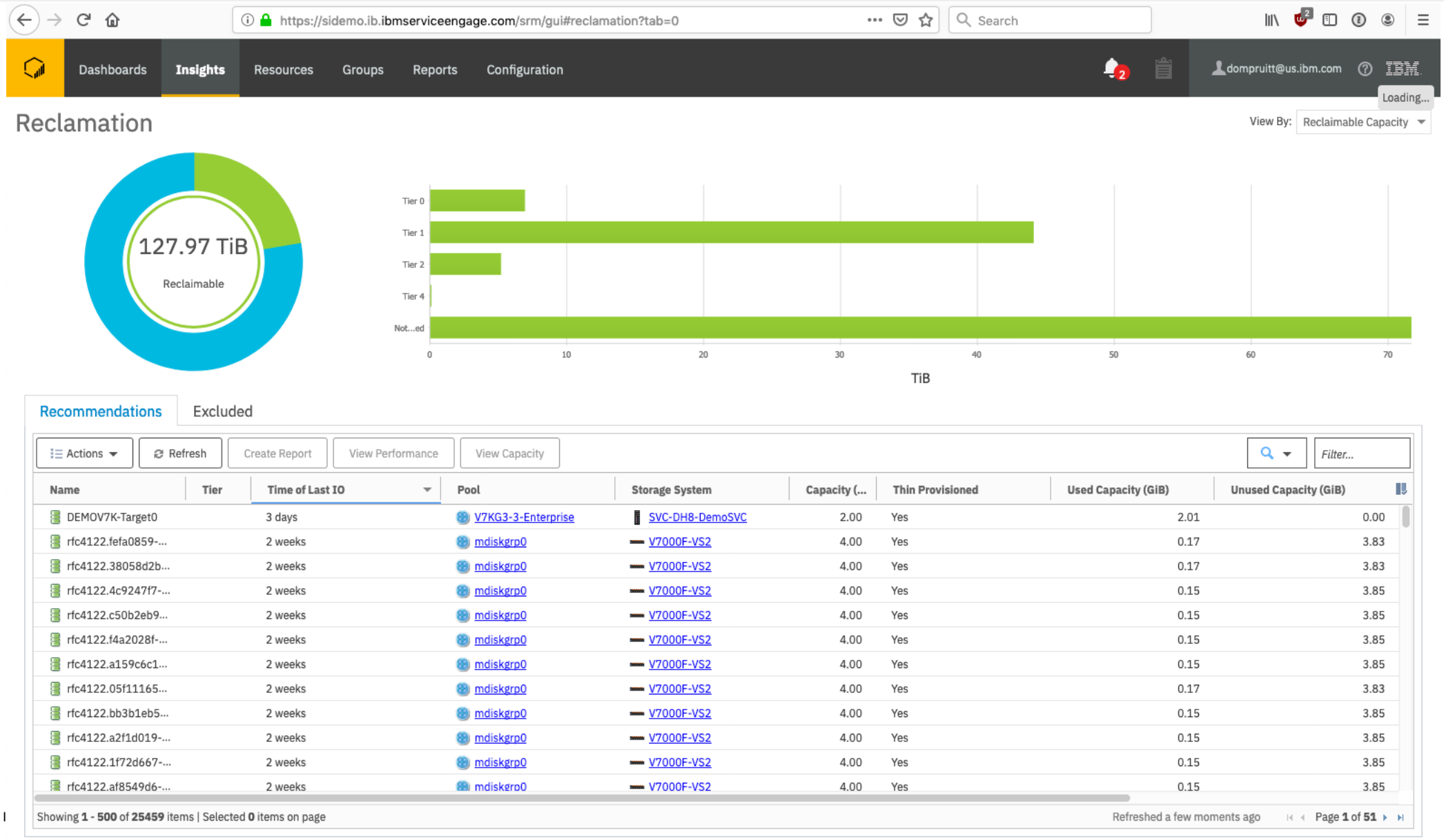

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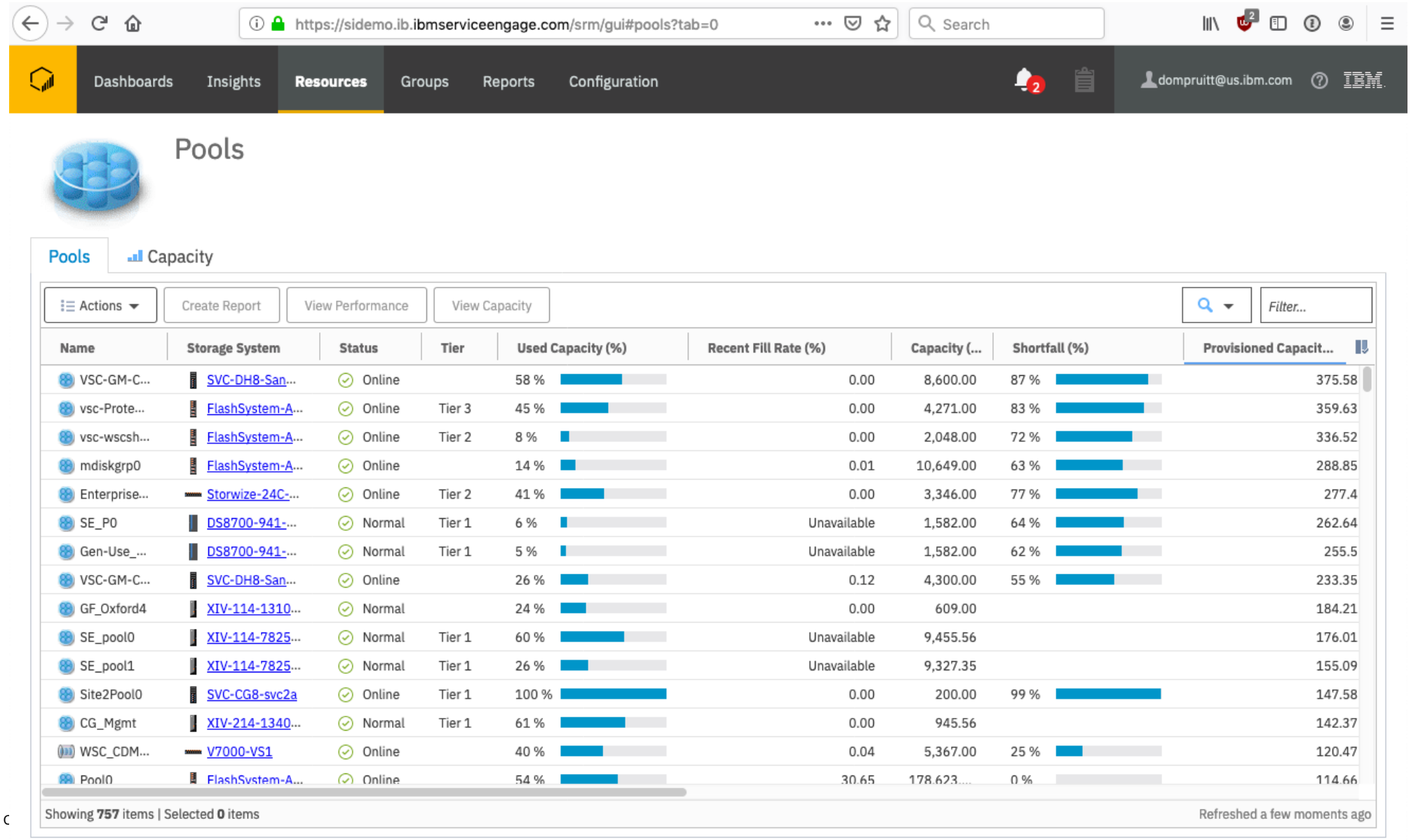

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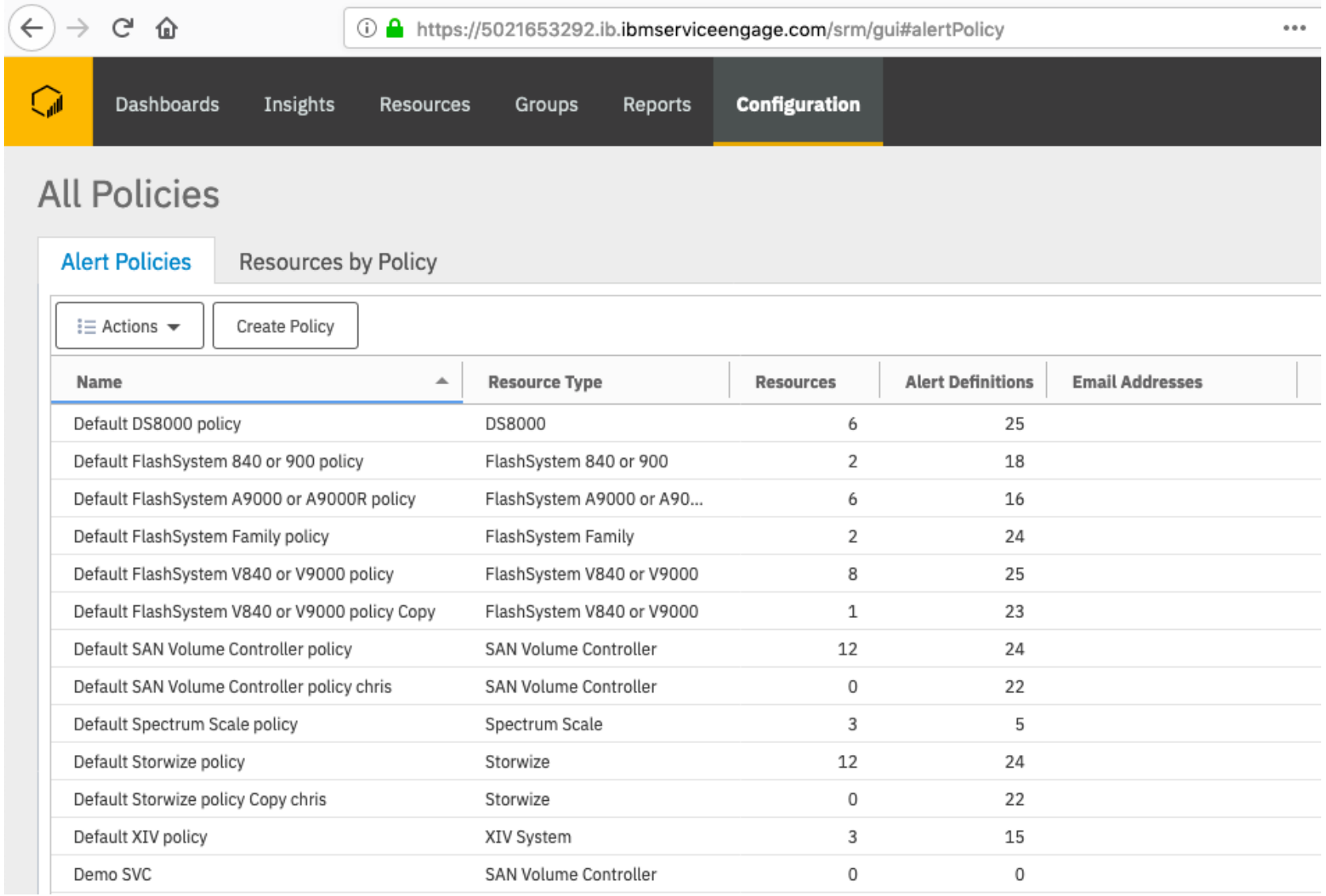

Name	Resource Type	Resources	Alert Definitions	Email Addresses
Default DS8000 policy	DS8000	6	25	
Default FlashSystem 840 or 900 policy	FlashSystem 840 or 900	2	18	
Default FlashSystem A9000 or A9000R policy	FlashSystem A9000 or A90...	6	16	
Default FlashSystem Family policy	FlashSystem Family	2	24	
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	

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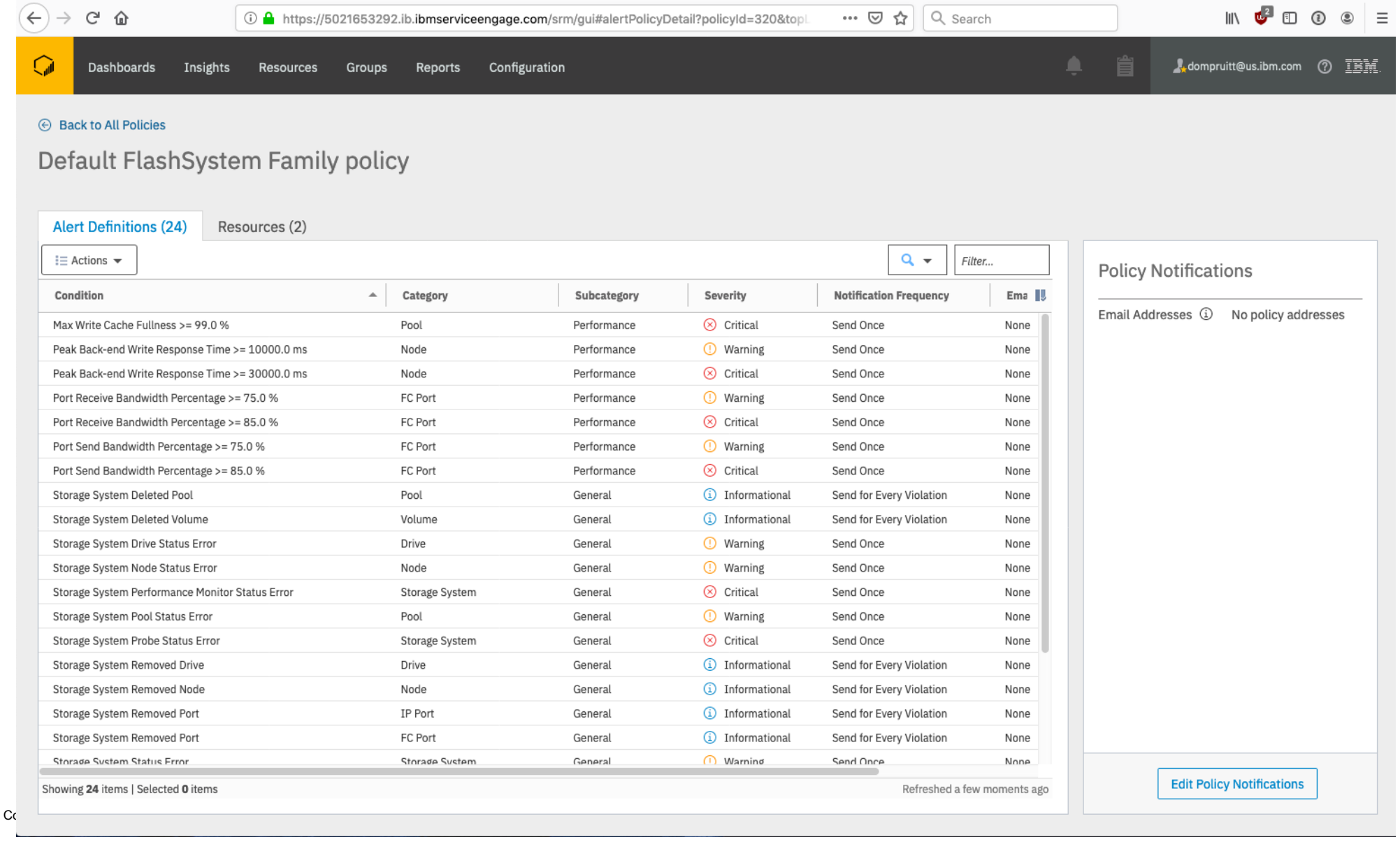

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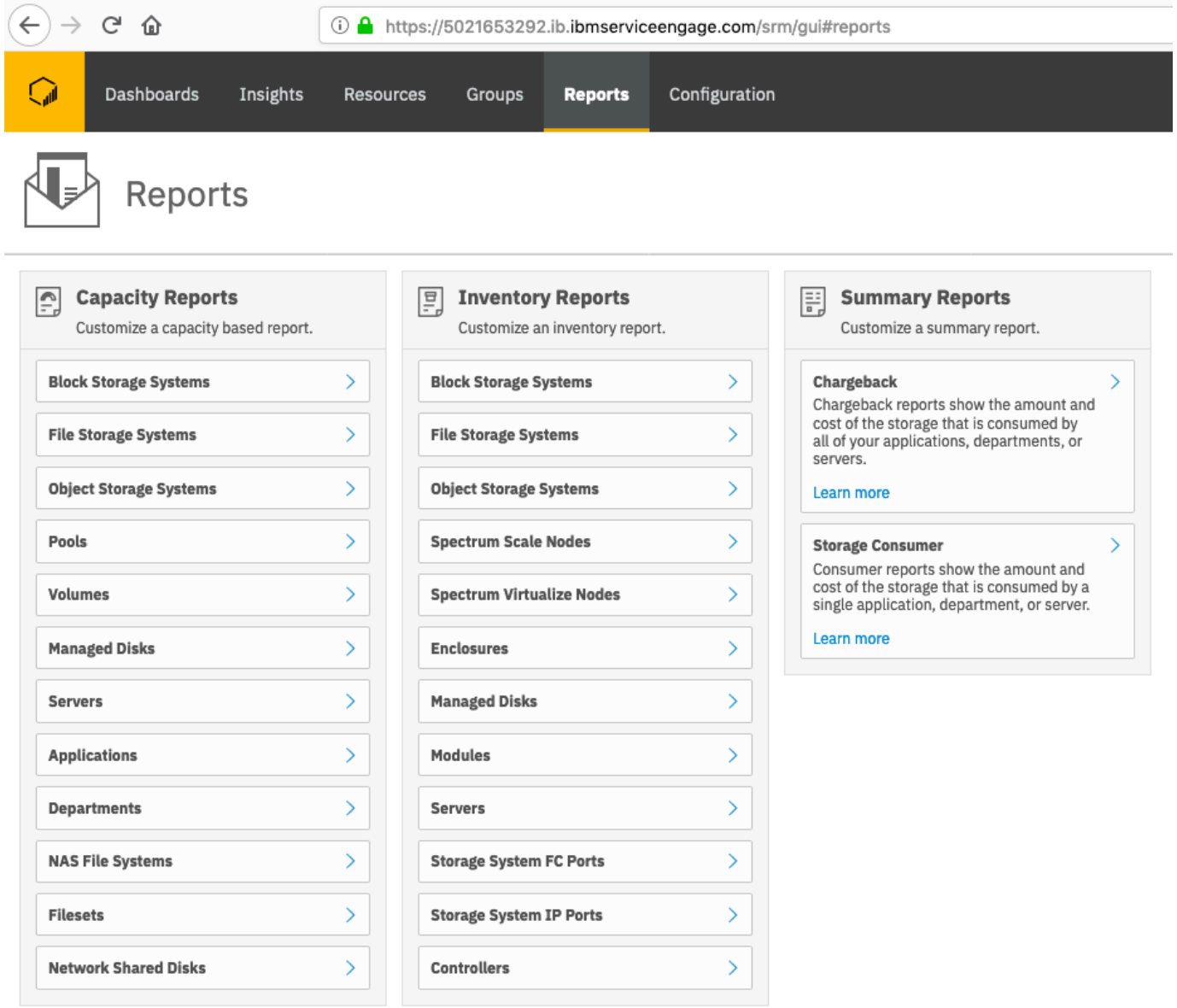

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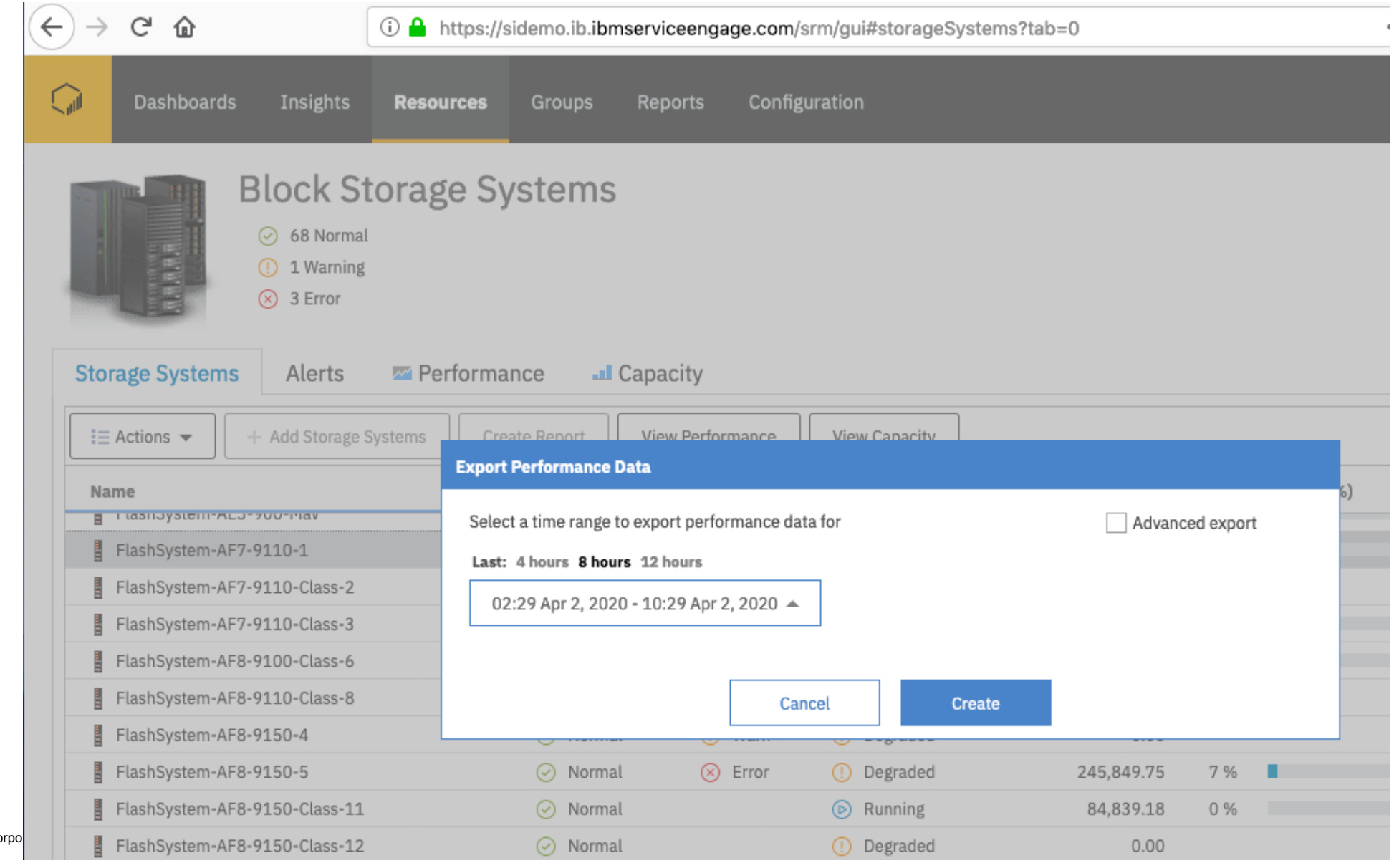

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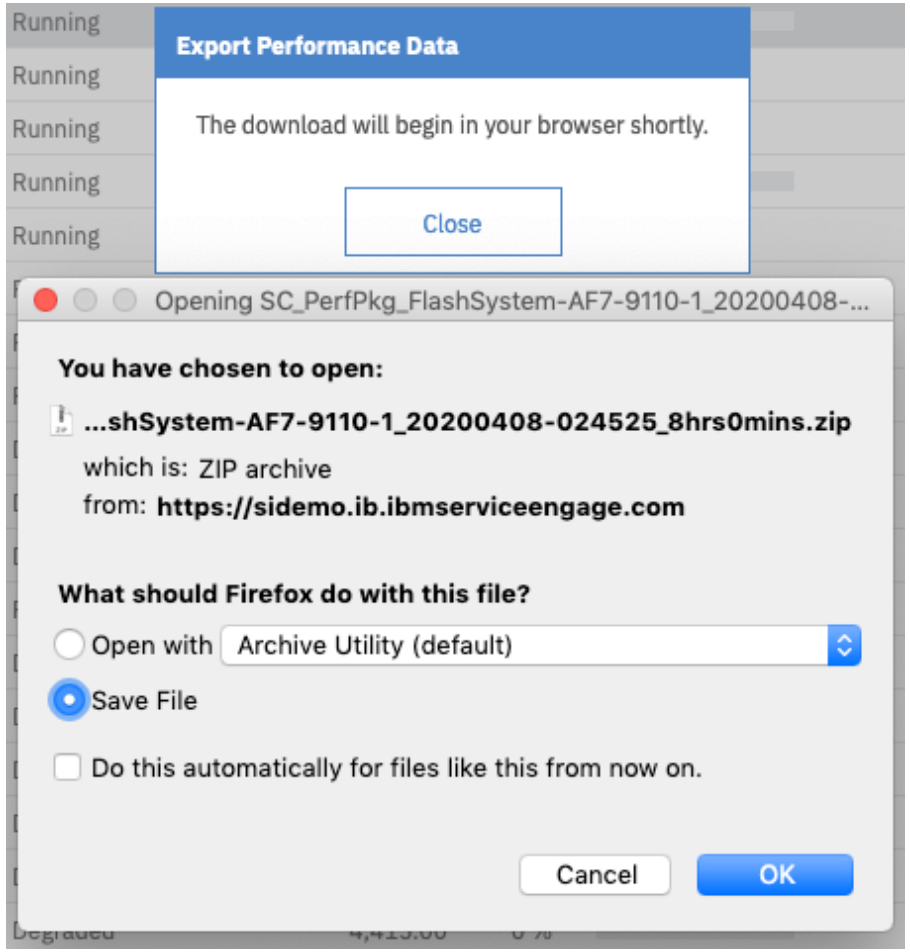

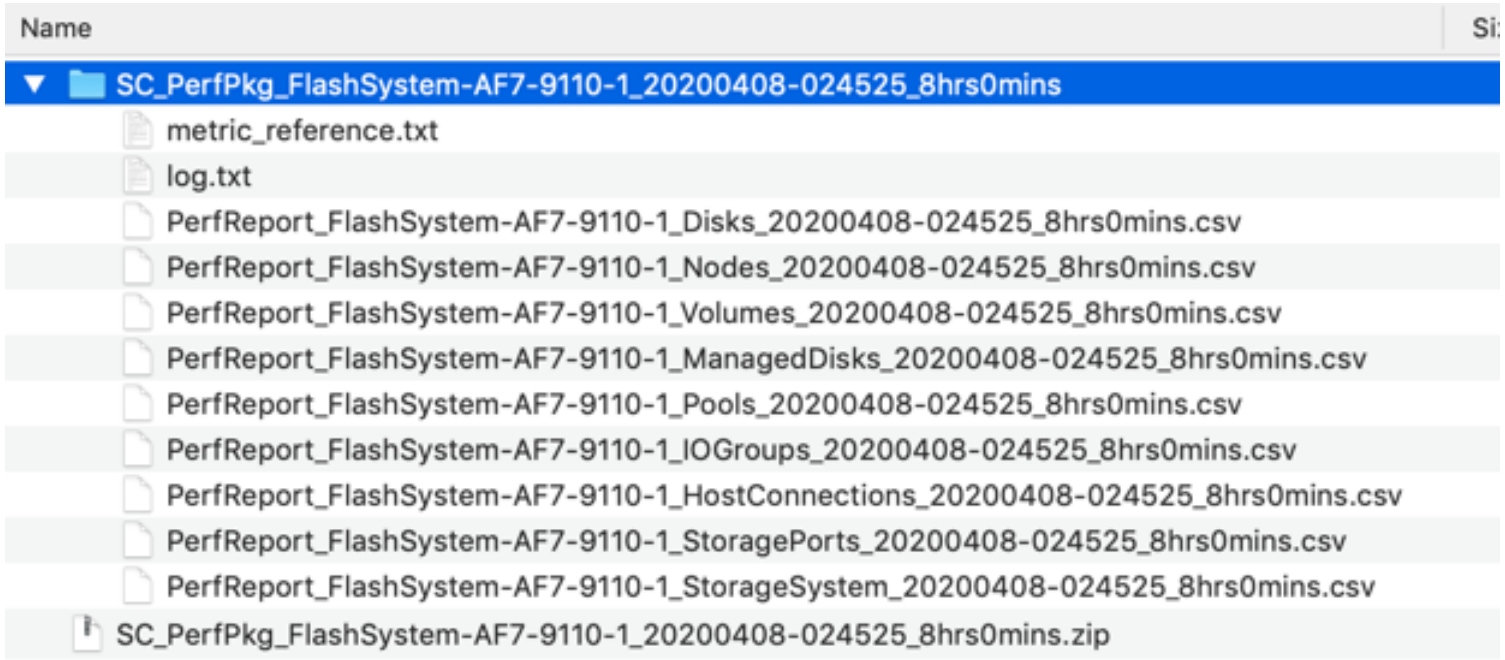

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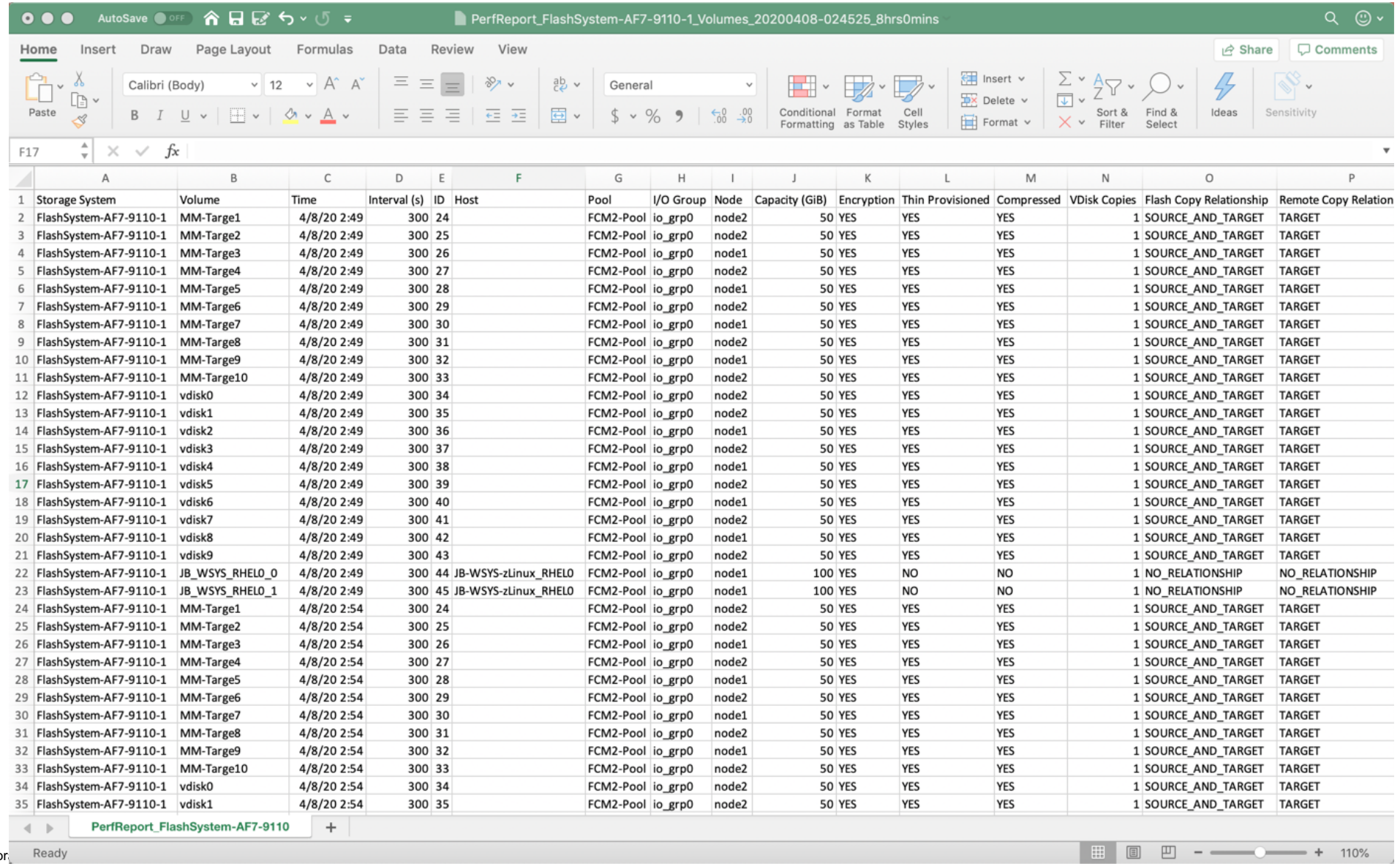

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F17

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	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
2	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
3	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
4	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
5	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
6	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
7	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
8	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
9	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
10	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
11	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
12	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
13	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
14	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
15	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
16	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
17	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
18	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
19	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
20	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
21	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
22	FlashSystem-AF7-9110-1	JB_WSYS_RHEL0_0	4/8/20 2:49	300	44	JB-WSYS-zLinux_RHEL0	FCM2-Pool	io_grp0	node1	100	YES	NO	NO	1	NO_RELATIONSHIP	NO_RELATIONSHIP
23	FlashSystem-AF7-9110-1	JB_WSYS_RHEL0_1	4/8/20 2:49	300	45	JB-WSYS-zLinux_RHEL0	FCM2-Pool	io_grp0	node1	100	YES	NO	NO	1	NO_RELATIONSHIP	NO_RELATIONSHIP
24	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
25	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
26	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
27	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
28	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
29	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
30	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
31	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
32	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
33	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
34	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
35	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%

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IBM Storage Insights for Spectrum Control

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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.

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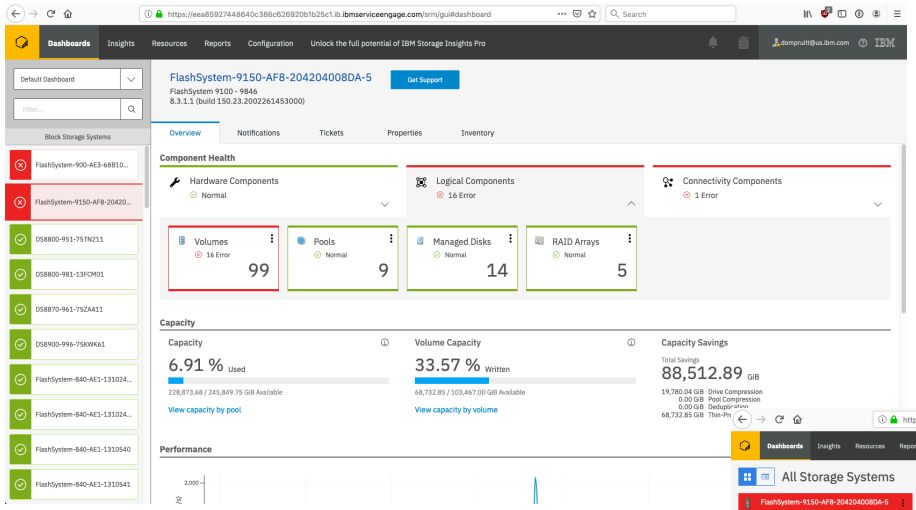
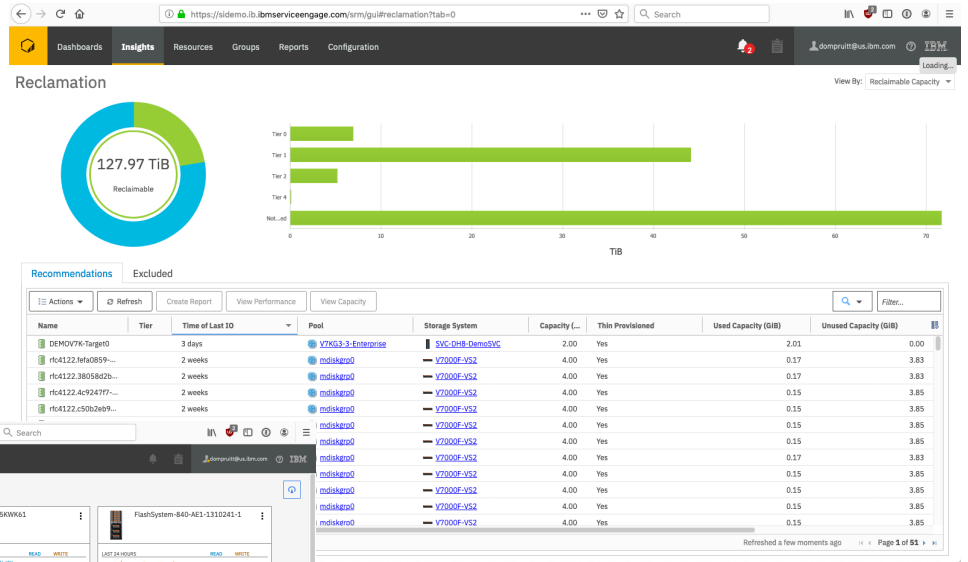
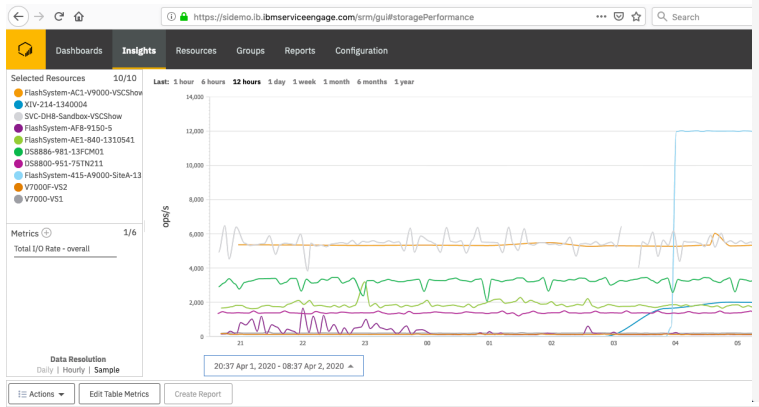
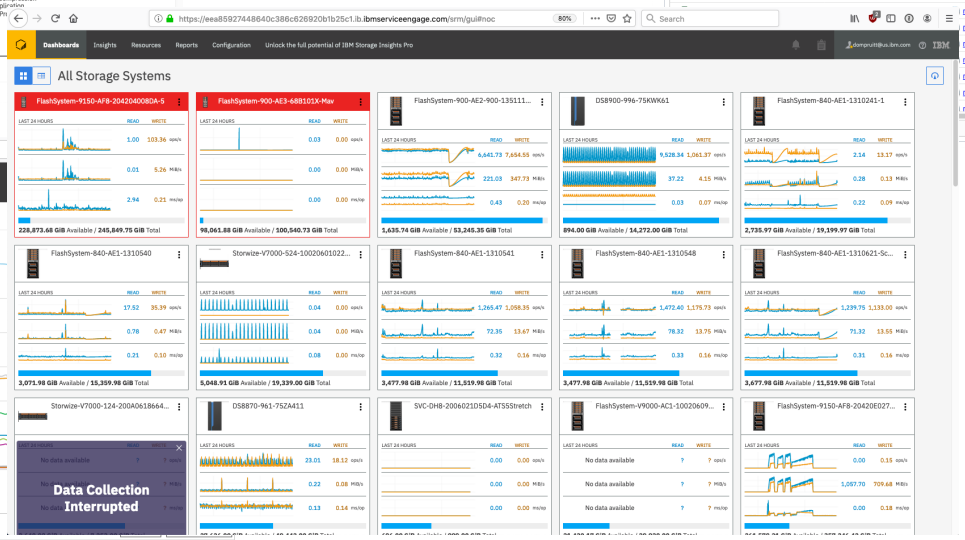
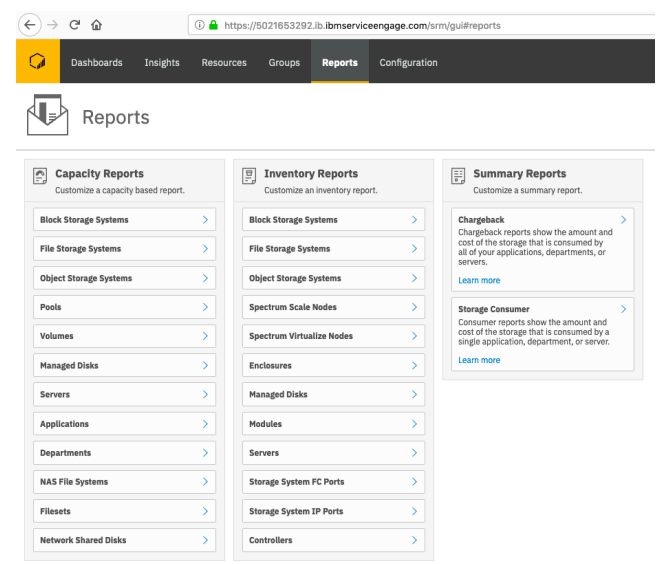
IBM Storage Monitoring – SaaS – Storage Insights for Spectrum Control

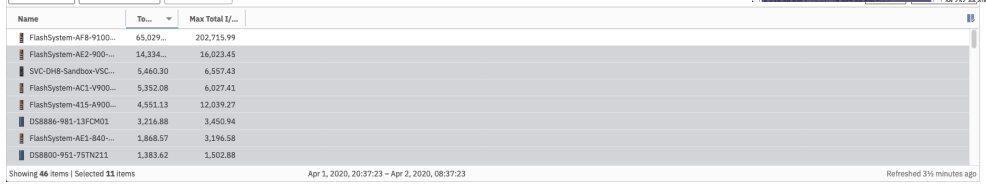












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IBM Storage Insights Device Support Portal

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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

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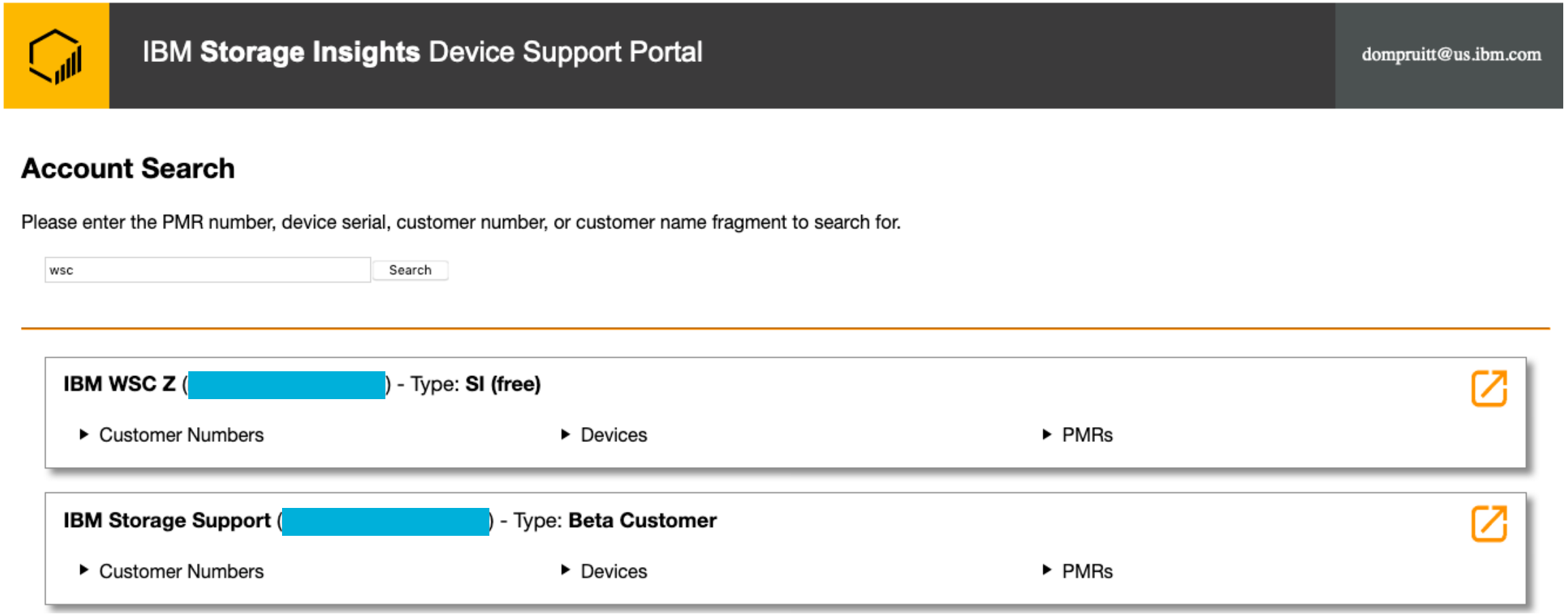

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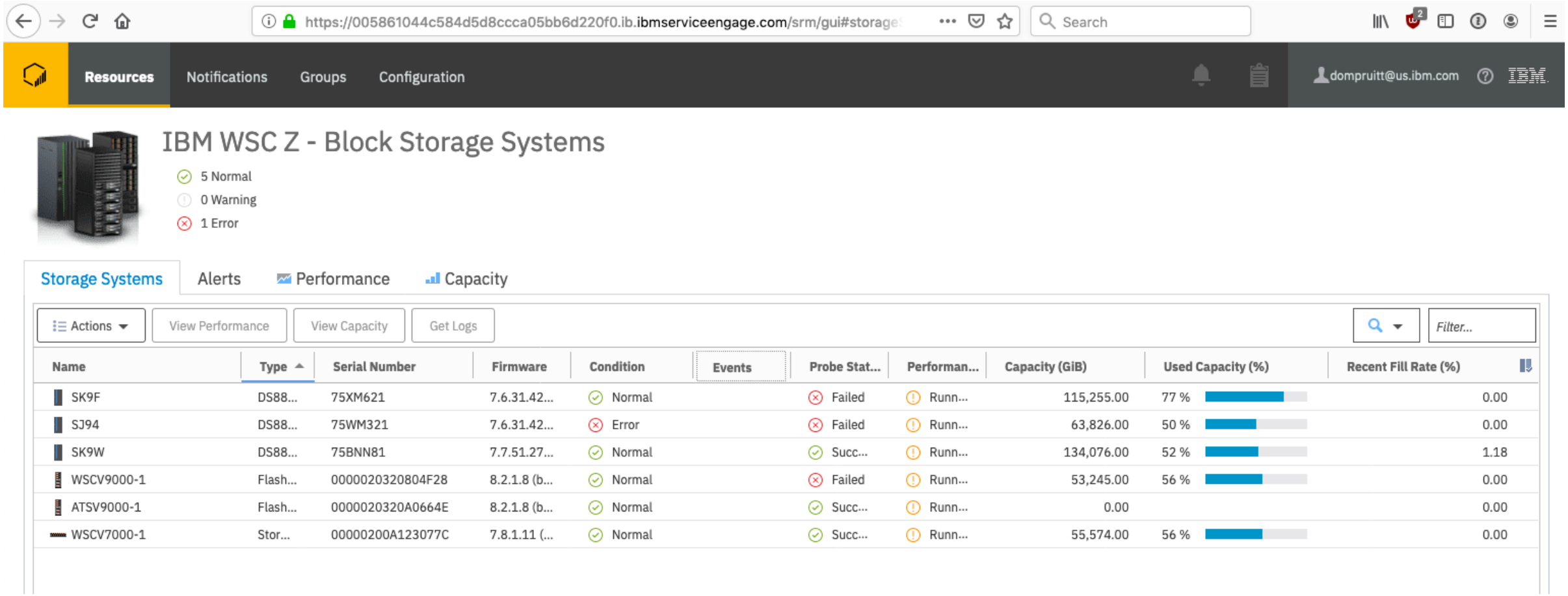

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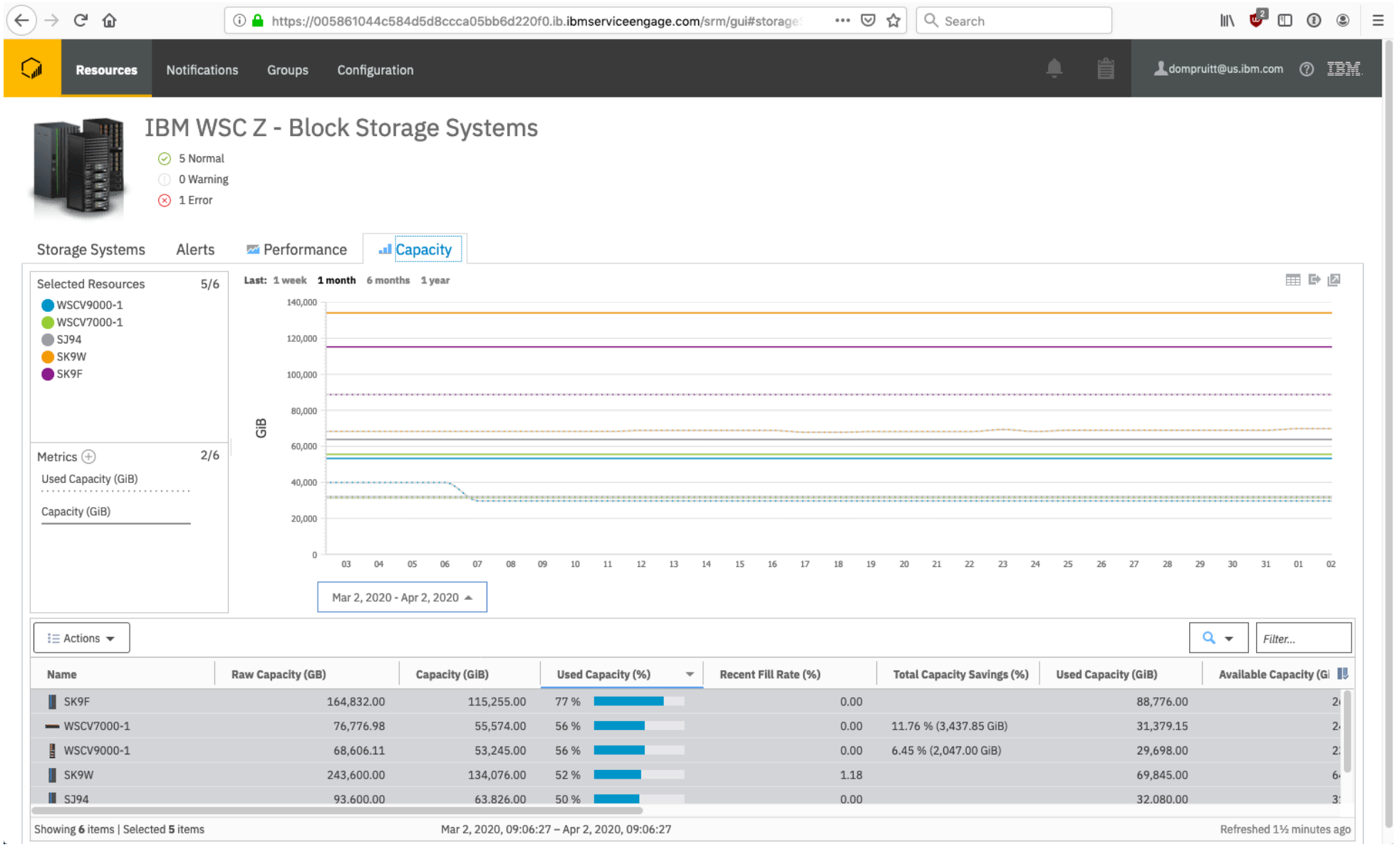

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IBM Spectrum Control Standard Edition

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IBM Storage Management – On Premise – Spectrum Control Standard Edition

- IBM Spectrum Control Standard 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
  - Manages, administers, and provisions SAN-attached storage
  - Monitors and tracks performance of SAN-attached resources
  - Monitors, manages, and controls (through zones) SAN fabric components
  - Manages the capacity utilization and availability of file systems
  - Web GUI Reporting

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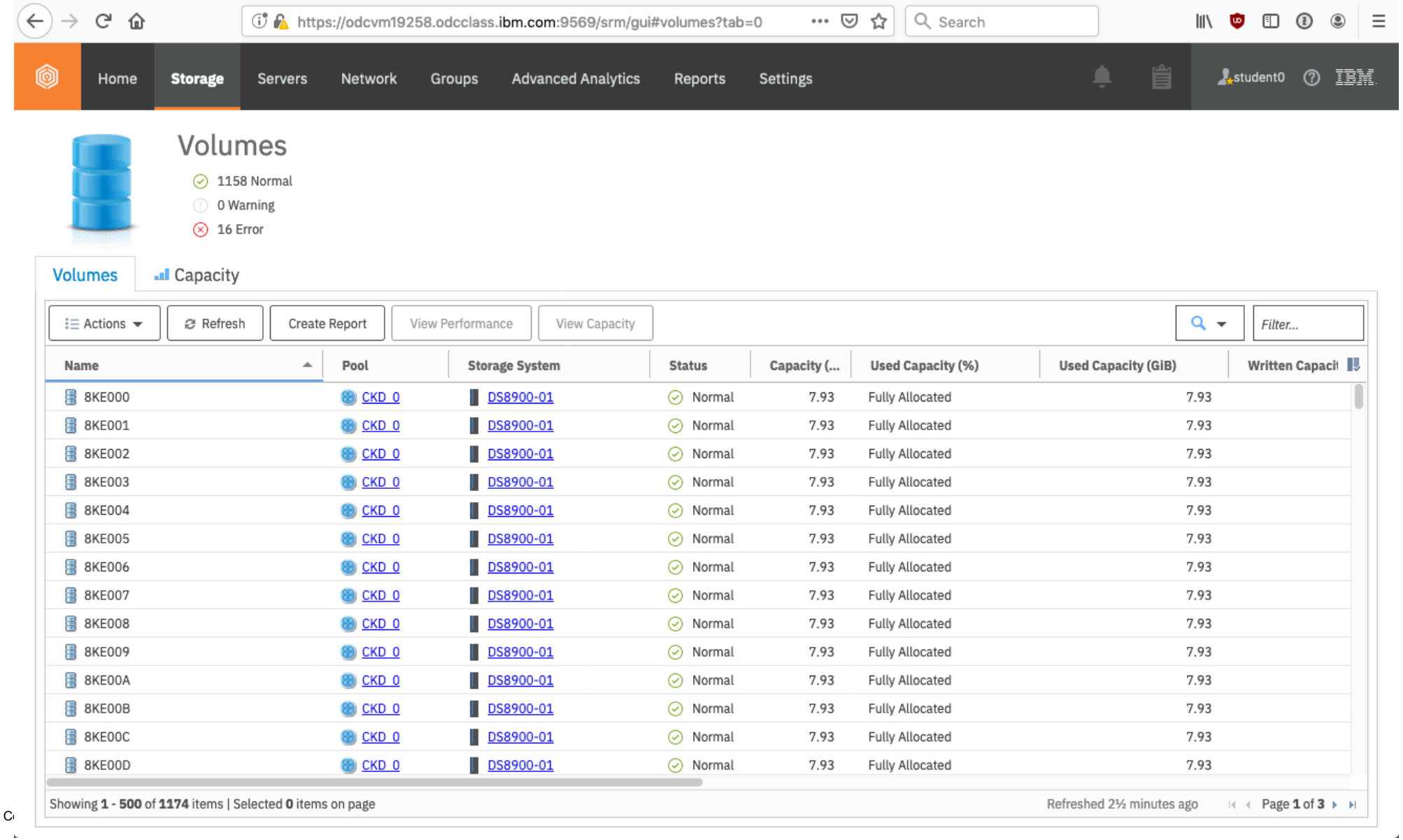

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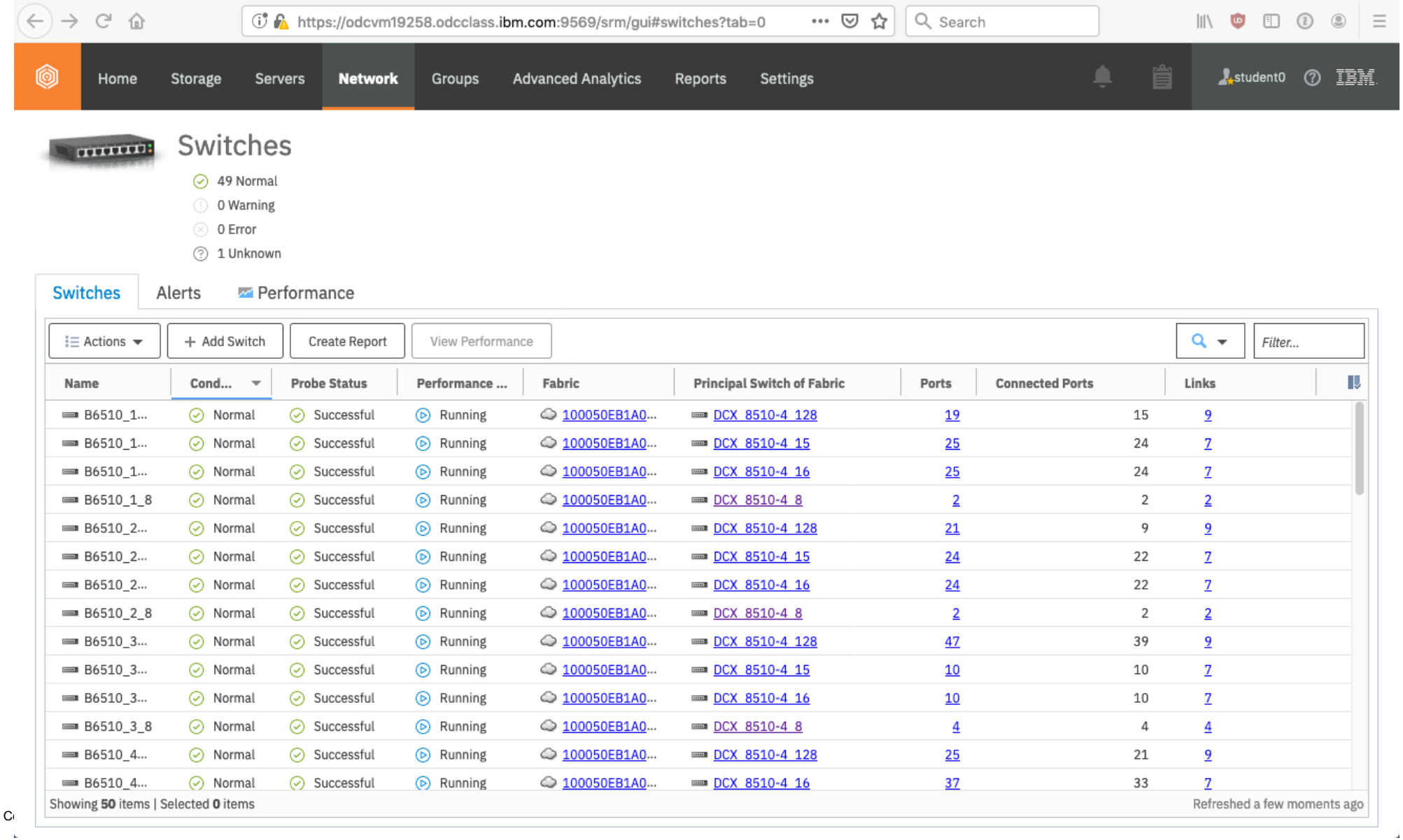

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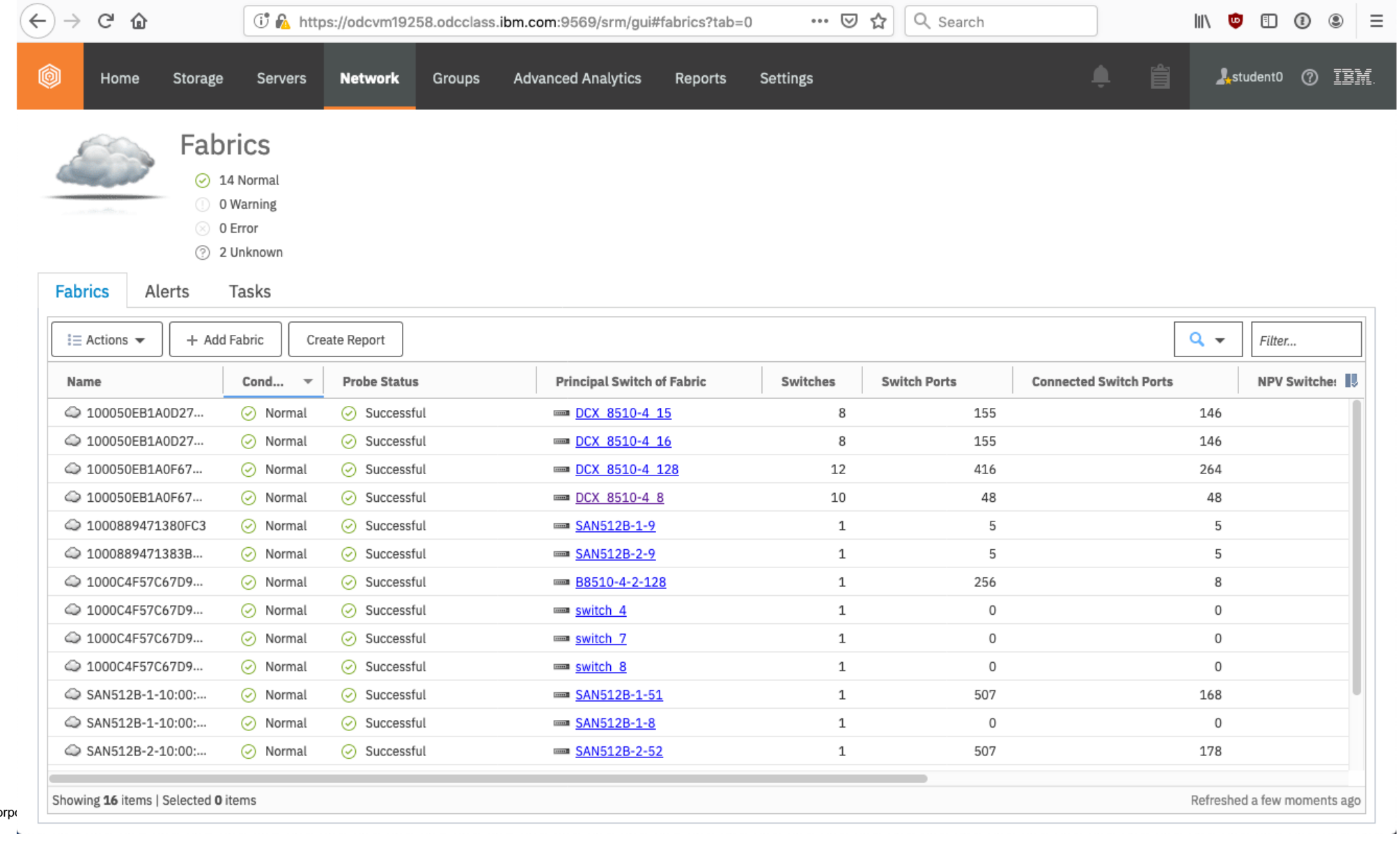

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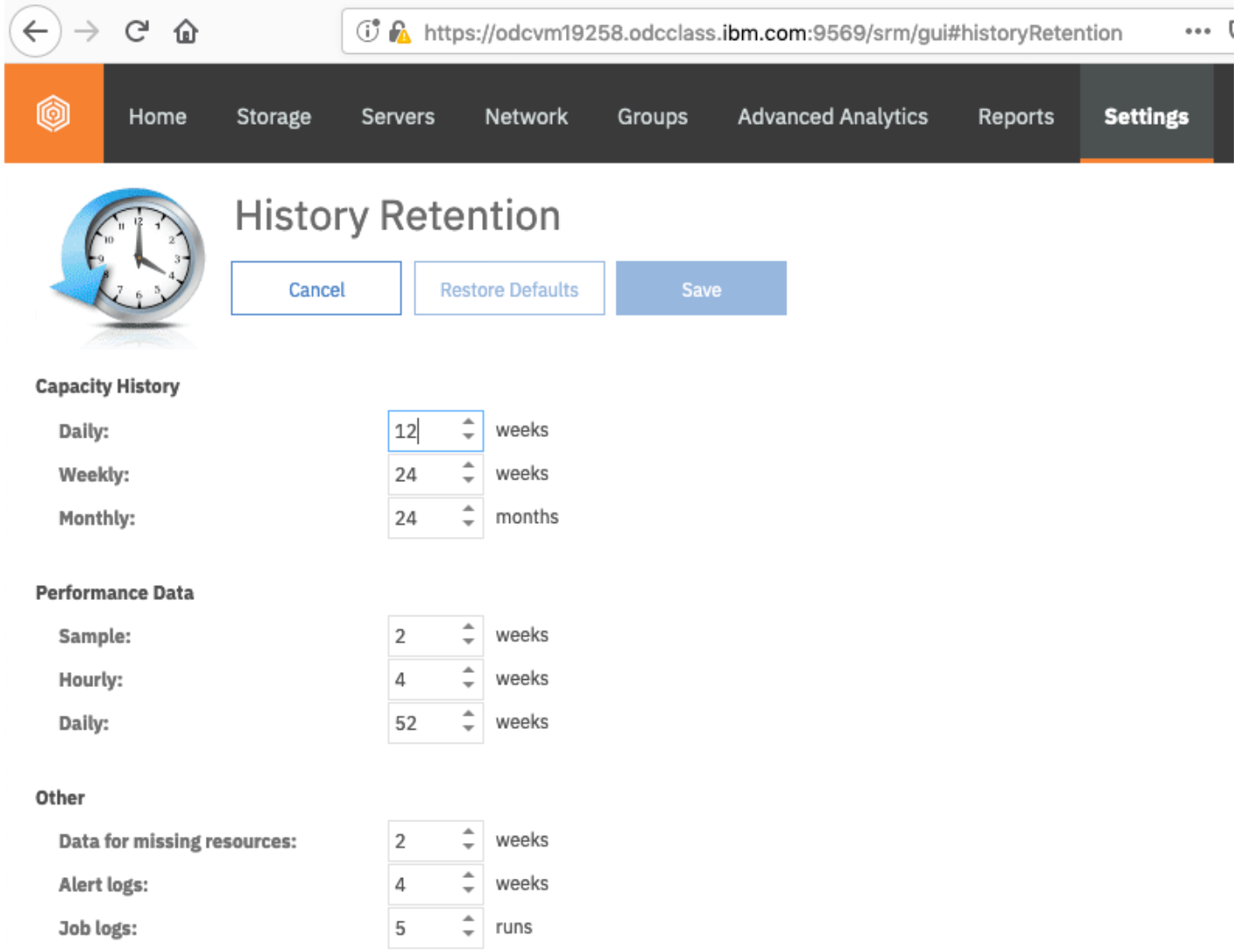

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IBM Spectrum Control Advanced Edition

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IBM Storage Management – On Premise – Spectrum Control Advanced Edition

- IBM Spectrum Control Advanced Edition
  - Installed inside your datacenter
  - All functions of Spectrum Control Standard
  - Additional Web GUI Reports
  - Storage transformation (thick volume to thin or compressed)
  - Tiering automation (movement of volumes to optimize performance)
  - Storage Pool Balancing
  - Storage Reclamation
  - Rollup reporting

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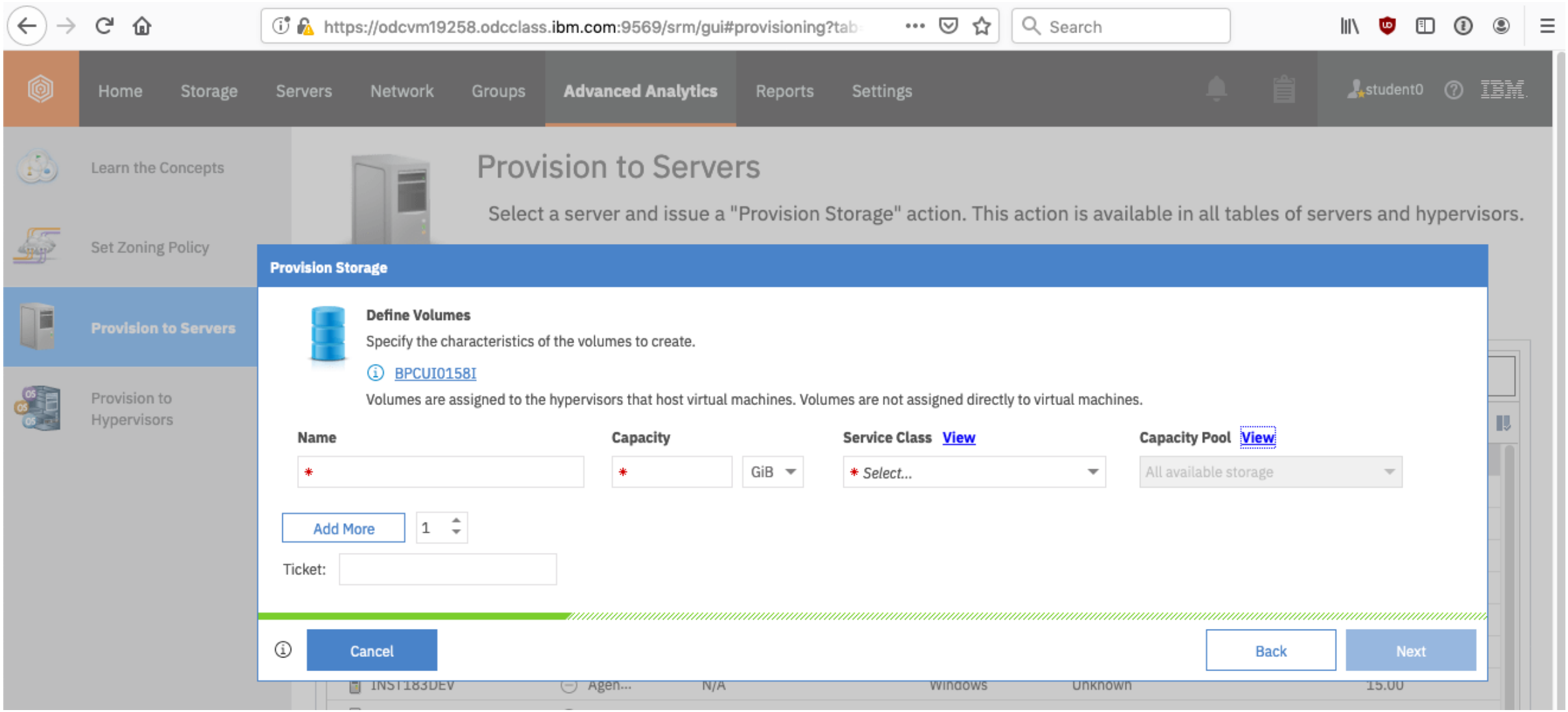

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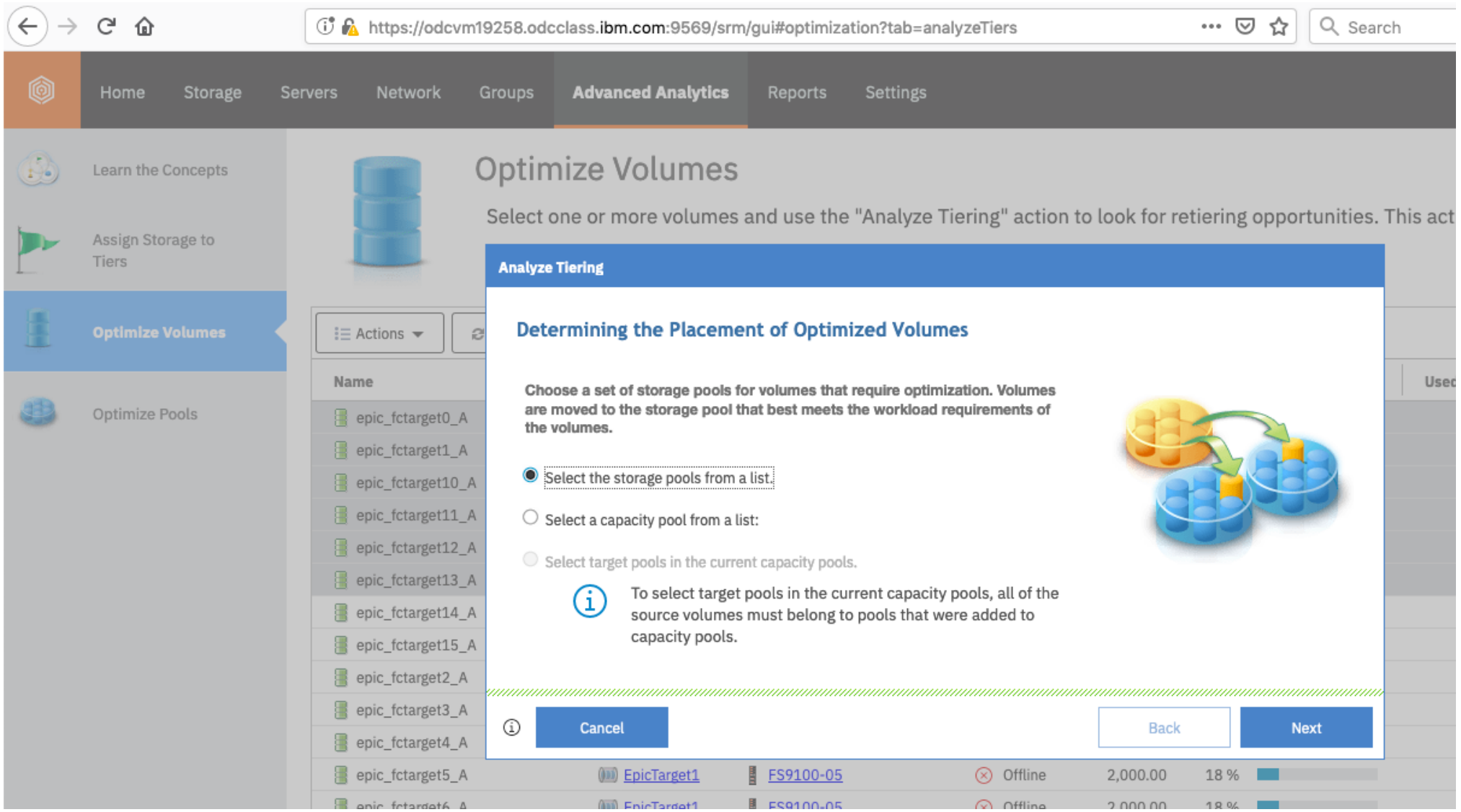

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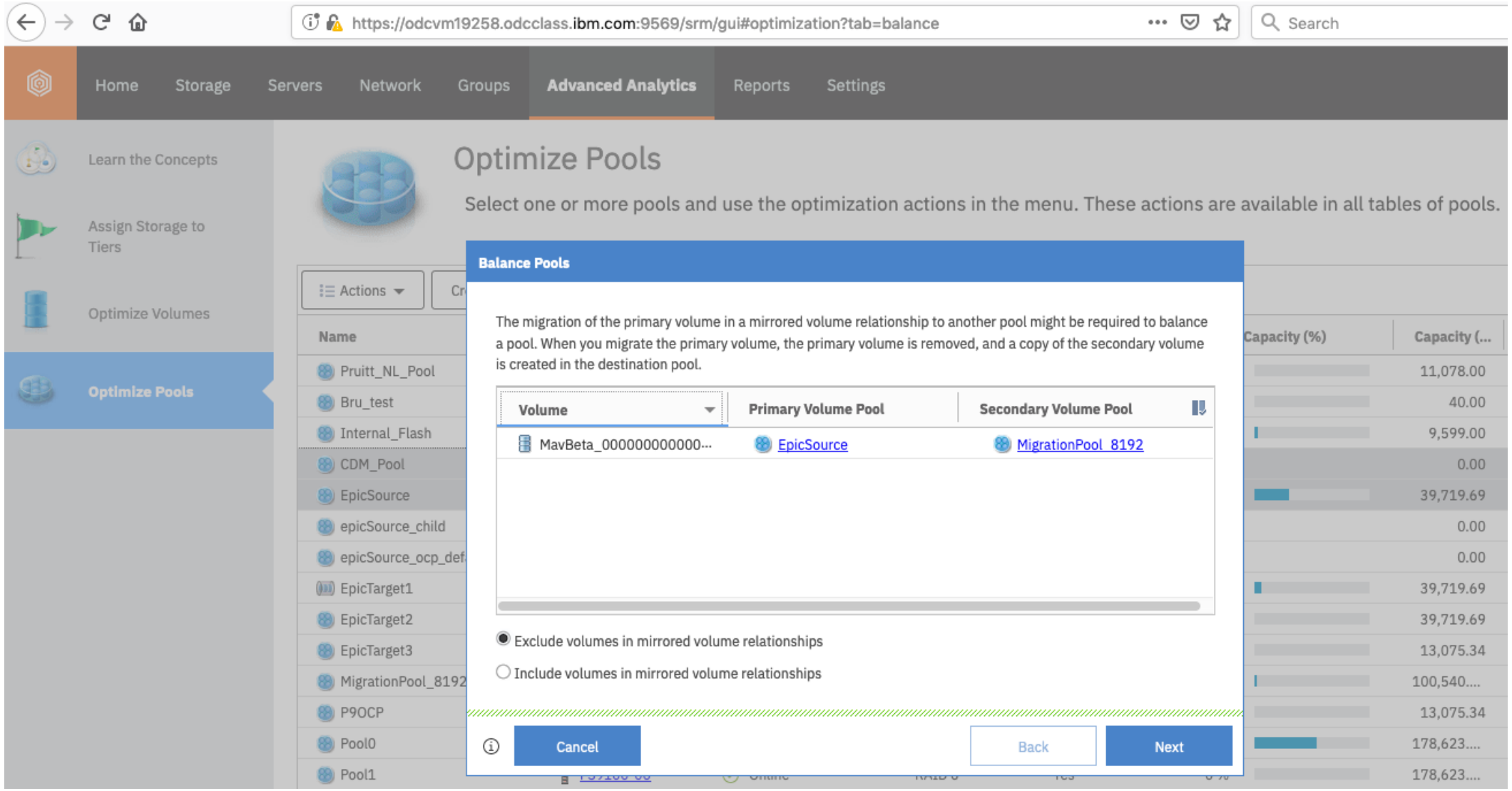

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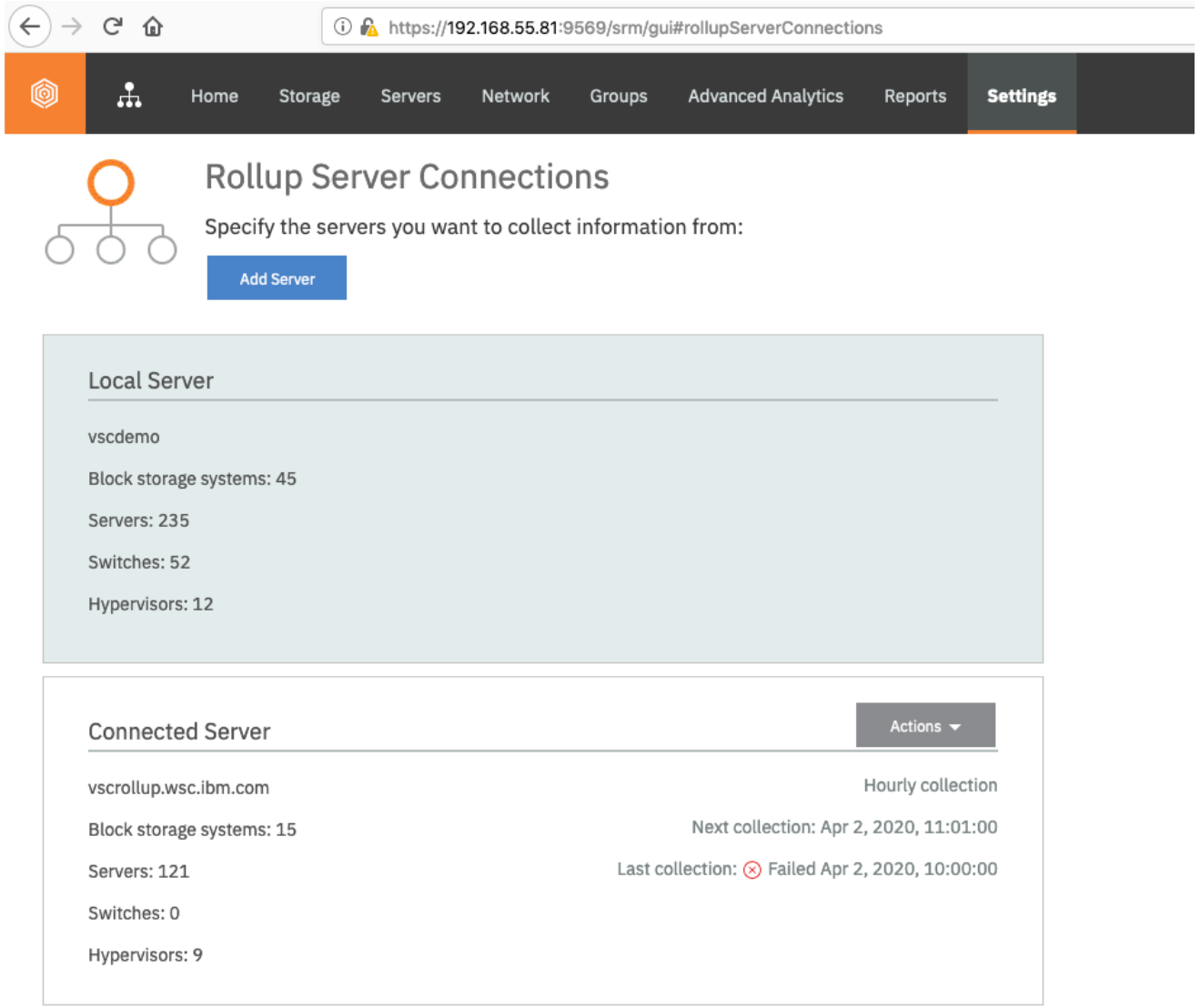

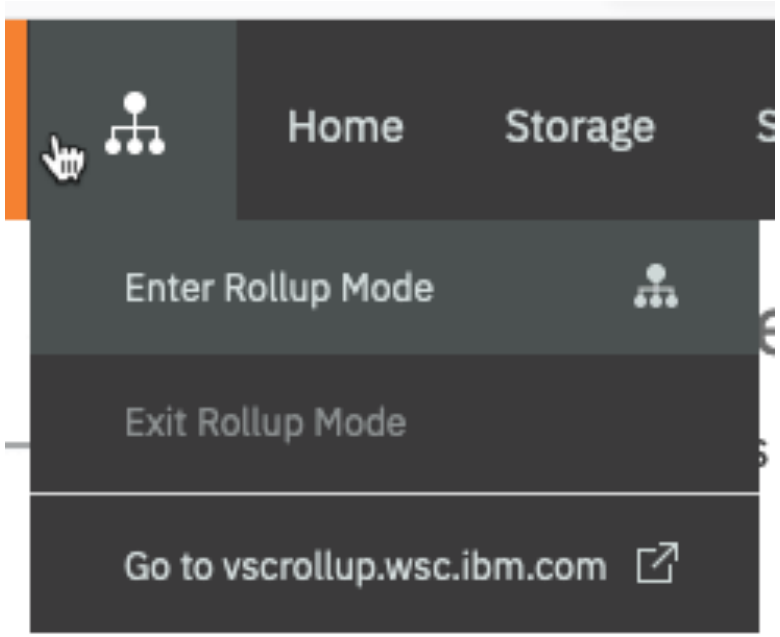

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Useful Links …

- 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_5.3.6/com.ibm.spectrum.sc.doc/tpc_kc_homepage.html
- 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

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Thank you. Questions?

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