



Washington Systems Center - Storage

Exporting the DS8000 Performance Summary

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Agenda

- What is the DS8000 Performance Summary?
- Offloading the Performance Summary
 - Understanding the raw file
- Where to find the optional formatting tool
- Using the optional formatting tool
- Understanding the information in the Performance Summary
- Real-time demo

What is the DS8000 Performance Summary?

- DS8880 models beginning with microcode level version 8.2 now have the capability to collect and export performance data
 - This is in addition to the performance graphs introduced earlier
 - Data is collected and then summarized at one minute intervals
 - Contains
 - Storage system summary metrics
 - IO port metrics
 - Array metrics
 - Storage pool metrics
 - Data can be offloaded to be used with analytics and charting tools
 - Offloaded data contains last seven days of performance history

Metrics Reported

Storage System Summary		I/O Port	
Date & time	Average transfer KB (write)	Date & time	MB/second read
Interval duration	Average transfer KB	Interval duration	MB/second write
Name	MB/second read	Port ID	MB/second
I/O rate – read	MB/second write	IOPS – read	Error count
I/O rate – write	MB/second	IOPS – write	Frame errors
I/O rate – total	%Read cache hit	IOPS – total	Link failures
%Read	%Cache write delay	Latency read (ms)	Loss of sync
Read latency (ms)	GiB Allocated	Latency write (ms)	Loss of signal
Write latency (ms)	GiB Total	Average latency (ms)	CRC errors
Average latency (ms)	Power (watts)	Average transfer KB (read)	Protocol sequence errors
Average transfer KB (read)	Inlet temperature (Celsius)	Average transfer KB (write)	Invalid transmission words
		Average transfer KB	Link reset

Metrics Reported – continued

Storage Pool		Array	
Date & time	Back end transfer size read (KB)	Date & time	Back end latency (ms)
Interval duration	Back end transfer size write (KB)	Interval duration	Back end transfer size read (KB)
Pool name	Back end transfer size (KB)	Array ID	Back end transfer size write (KB)
Back end reads (KIOPS)	Back end transfer – read	Back end reads (KIOPS)	Back end transfer size (KB)
Back end write (KIOPS)	Back end transfer – write	Back end write (KIOPS)	Back end transfer – read
Back end ops (KIOPS)	Back end transfer (MB/sec)	Back end ops (KIOPS)	Back end transfer – write
Back end latency read (ms)	Capacity (GiB) allocated	Back end latency read (ms)	Back end transfer (MB/sec)
Back end latency write (ms)	Capacity (GiB) total	Back end latency write (ms)	
Back end latency (ms)	Over-provisioning ratio		

Offloading the Performance Summary

- To offload the DS8000 Performance Summary
 - Log on to the DS8000 and select the export performance summary option
 - Save the compressed raw comma separated values (CSV) file to your local workstation
 - The file will download as a compressed ZIP file to save space and reduce file transfer size and time

Exporting the Performance Summary on a DS8880

The screenshot displays the IBM Storage Management Console interface. At the top, the breadcrumb navigation shows 'IBM 210' and 'Frame 1'. The main header includes 'IBM DS8000' and the user 'pgspagn (Adm)'. On the left, an 'Actions' menu is open, with a red arrow pointing to the 'Export Performance Summary' option. A central dialog box titled 'Opening StgSysPerfSummary_20161228.zip' is displayed, showing the file name and its type as a 'Compressed (zipped) Folder'. The dialog asks 'What should Firefox do with this file?' and has 'Save File' selected. At the bottom of the console, three status bars are visible: '24.46 of 52.68 TB', 'Throughput: 319.6 MBps, 77K IOPS', and 'Online'. On the right side of the interface, a 3D rendering of an IBM DS8880 storage server is shown.

Understanding the raw file

```

StgSysPerfSummary_20161227.csv - Notepad
File Edit Format View Help
"Storage System"
"Time","Interval (seconds)","Name/ID","IOPS (IOPS) Read","IOPS (IOPS) Write","IOPS (IOPS) Total","Reads (%) of Total IOPS","
""2016-12-20 16:24:06.784""","60.4","IBM.2107-13FCM01","52.37","25.95","78.32","0.67","0.03","0.07","0.04","4.0","4.27","4.
""2016-12-20 16:25:07.192""","60.4","IBM.2107-13FCM01","50.36","25.2","75.57","0.67","0.03","0.07","0.04","4.0","4.7","4.23
""2016-12-20 16:26:07.667""","60.5","IBM.2107-13FCM01","51.52","25.79","77.31","0.67","0.03","0.07","0.04","4.0","4.68","4.
""2016-12-20 16:27:08.061""","60.4","IBM.2107-13FCM01","35.22","17.55","52.77","0.67","0.03","0.08","0.05","4.0","5.0","4.3
""2016-12-20 16:28:08.459""","60.4","IBM.2107-13FCM01","0.2","2.05","2.25","0.09","0.03","0.1","0.09","4.02","12.58","11.81
""2016-12-20 16:29:08.844""","60.4","IBM.2107-13FCM01","0.21","2.04","2.24","0.09","0.03","0.1","0.1","4.0","12.64","11.85"
""2016-12-20 16:30:09.266""","60.4","IBM.2107-13FCM01","10.44","6.38","16.82","0.62","0.03","0.08","0.05","4.0","6.75","5.0
""2016-12-20 16:31:09.648""","60.4","IBM.2107-13FCM01","55.21","25.16","80.37","0.69","0.03","0.07","0.04","4.0","4.7","4.2
""2016-12-20 16:32:10.059""","60.4","IBM.2107-13FCM01","53.96","24.47","78.43","0.69","0.03","0.07","0.04","4.0","4.72","4.
""2016-12-20 16:33:10.46""","60.4","IBM.2107-13FCM01","55.01","24.91","79.92","0.69","0.03","0.07","0.04","4.0","4.71","4.2
""2016-12-20 16:34:10.86""","60.4","IBM.2107-13FCM01","40.75","18.83","59.58","0.68","0.03","0.07","0.04","4.0","4.93","4.2
""2016-12-20 16:35:11.406""","60.5","IBM.2107-13FCM01","5.62","3.19","8.81","0.64","0.03","0.09","0.05","4.0","9.51","6.0"
""2016-12-20 16:36:11.777""","60.4","IBM.2107-13FCM01","5.69","3.22","8.91","0.64","0.03","0.09","0.05","4.0","9.47","5.98"
""2016-12-20 16:37:12.181""","60.4","IBM.2107-13FCM01","5.64","3.19","8.83","0.64","0.03","0.09","0.05","4.0","9.51","5.99"
""2016-12-20 16:38:12.598""","60.4","IBM.2107-13FCM01","6.13","20.47","26.6","0.23","0.03","0.07","0.06","4.0","4.86","4.66
""2016-12-20 16:39:13.037""","60.4","IBM.2107-13FCM01","6.26","36.4","42.66","0.15","0.03","0.07","0.06","4.0","4.48","4.41
""2016-12-20 16:40:13.578""","60.5","IBM.2107-13FCM01","6.38","36.76","43.14","0.15","0.03","0.07","0.06","4.0","4.48","4.4
""2016-12-20 16:41:13.995""","60.4","IBM.2107-13FCM01","6.1","34.87","40.98","0.15","0.03","0.07","0.06","4.0","4.5","4.43"
""2016-12-20 16:42:14.398""","60.4","IBM.2107-13FCM01","3.71","17.6","21.31","0.17","0.03","0.06","0.06","3.97","4.52","4.4
""2016-12-20 16:43:14.769""","60.4","IBM.2107-13FCM01","1.44","0.69","2.12","0.68","0.03","0.1","0.05","4.01","13.39","7.04
""2016-12-20 16:44:15.142""","60.4","IBM.2107-13FCM01","1.45","0.68","2.13","0.68","0.03","0.1","0.05","4.0","13.4","7.01"
""2016-12-20 16:45:15.547""","60.4","IBM.2107-13FCM01","4.01","23.89","27.89","0.14","0.03","0.07","0.07","4.0","4.27","4.2
""2016-12-20 16:46:15.947""","60.4","IBM.2107-13FCM01","4.72","34.86","39.58","0.12","0.03","0.06","0.06","4.0","4.18","4.1
""2016-12-20 16:47:16.338""","60.4","IBM.2107-13FCM01","5.06","38.04","43.1","0.12","0.03","0.07","0.06","4.0","4.17","4.15
""2016-12-20 16:48:16.72""","60.4","IBM.2107-13FCM01","4.91","36.69","41.6","0.12","0.03","0.06","0.06","4.0","4.18","4.15"
""2016-12-20 16:49:17.129""","60.4","IBM.2107-13FCM01","3.53","24.53","28.06","0.13","0.03","0.06","0.06","4.0","4.26","4.2
""2016-12-20 16:50:17.559""","60.4","IBM.2107-13FCM01","1.29","7.53","8.82","0.15","0.03","0.08","0.07","3.99","4.85","4.73
""2016-12-20 16:51:17.936""","60.4","IBM.2107-13FCM01","1.3","7.57","8.87","0.15","0.03","0.08","0.07","4.0","4.85","4.72"
""2016-12-20 16:52:18.354""","60.4","IBM.2107-13FCM01","1.29","7.57","8.86","0.15","0.03","0.08","0.07","3.99","4.85","4.73
""2016-12-20 16:53:18.796""","60.4","IBM.2107-13FCM01","17.89","12.49","30.38","0.59","0.03","0.07","0.05","4.0","4.51","4.
""2016-12-20 16:54:19.238""","60.4","IBM.2107-13FCM01","50.95","25.37","76.32","0.67","0.03","0.07","0.04","4.0","4.25","4.
""2016-12-20 16:55:19.664""","60.4","IBM.2107-13FCM01","51.08","25.36","76.44","0.67","0.03","0.07","0.04","4.0","4.25","4.
""2016-12-20 16:56:20.084""","60.4","IBM.2107-13FCM01","49.87","24.95","74.82","0.67","0.03","0.07","0.04","4.0","4.26","4.
""2016-12-20 16:57:20.477""","60.4","IBM.2107-13FCM01","24.45","12.48","36.93","0.66","0.03","0.07","0.04","4.0","4.51","4.
""2016-12-20 16:58:20.87""","60.4","IBM.2107-13FCM01","0.2","1.93","2.14","0.09","0.04","0.08","0.08","4.03","7.33","7.01"
""2016-12-20 16:59:21.287""","60.4","IBM.2107-13FCM01","0.21","1.93","2.14","0.10","0.03","0.08","0.08","3.99","7.33","7.01
""2016-12-20 17:00:21.683""","60.4","IBM.2107-13FCM01","17.33","9.63","26.96","0.64","0.03","0.09","0.05","4.0","9.06","5.8
""2016-12-20 17:01:22.059""","60.4","IBM.2107-13FCM01","45.76","22.0","67.76","0.68","0.03","0.09","0.05","4.0","9.38","5.7
""2016-12-20 17:02:22.448""","60.4","IBM.2107-13FCM01","49.44","23.73","73.17","0.68","0.03","0.09","0.05","4.0","9.58","5.8
""2016-12-20 17:03:22.844""","60.4","IBM.2107-13FCM01","49.76","23.84","73.6","0.68","0.03","0.09","0.05","4.0","9.55","5.8
""2016-12-20 17:04:23.215""","60.4","IBM.2107-13FCM01","25.35","13.29","38.64","0.66","0.03","0.11","0.06","4.0","13.97","7
""2016-12-20 17:05:23.618""","60.4","IBM.2107-13FCM01","5.48","4.28","9.76","0.56","0.03","0.17","0.09","4.0","34.49","17.3

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Where to find the performance export formatting tool

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Exporting and formatting the DS8880 Performance Summary

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Abstract: Export and format the DS8880 performance summary data

The DS8880 starting with microcode level release 8.2 can export the performance summary for up to the past week at one minute intervals. This includes system wide performance statistics, I/O port statistics, array statistics and storage pool statistics. The exported data is requested via the web user interface and saved as a compressed ZIP file on your workstation and contains a single CSV file. This spreadsheet is optional, but contains an Excel macro which can be used to import and format the exported CSV file into separate worksheet tabs for each set of statistics for further analysis using Excel Pivot charts.

 [DS8000 GUI Import Performance Data 2016-12-12 .xlsb](#)

Classification: Hardware Category: Planning and Design
 Platform(s): IBM System Storage
 Keywords: DS8880 DS8884 DS8886 DS8888

<http://www-03.ibm.com/support/techdocs/atmastr.nsf/WebIndex/PRS5360>

Formatting the Performance Summary

The screenshot shows a Microsoft Excel spreadsheet with the following content:

	A	B	C	D	E	F	G	H	I	J	K
1	Version 2										
2	COPYRIGHT IBM CORP. 2015. All Rights Reserved.										
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											

Overlaid on the spreadsheet is a file selection dialog box titled "Choose the DS8000 Performance Summary file to Import". The dialog shows the path "Computer > C: Drive (C:) > Video". A table of files is displayed:

Name	Date modified	Type	Size
StgSysPerfSummary_20161227.csv	12/28/2016 11:33 ...	Microsoft Excel Co...	90,232 KB

The file "StgSysPerfSummary_20161227.csv" is selected. A red arrow points to the right side of the dialog box. The "File name" field at the bottom contains "StgSysPerfSummary_20161227.csv" and the file type is set to "All Files (*.*)".

Formatted Report

StgSysPerfSummary IBM.2107-13FCM0

File Home Insert Page Layout Formulas Data Review View Developer Add-ins Tell me what you want to do

Cut Copy Paste Format Painter Clipboard

Calibri 11 A A

B I U

Wrap Text

Alignment Merge & Center

Date

Number \$ %

Conditional Formatting Table

A1 Storage System

Time	Interval (seconds)	Name/ID	IOPS (IOPS) Read	IOPS (IOPS) Write	IOPS (IOPS) Total	Reads (%)
12/20/16 16:24	60.4	IBM.2107-13FCM01	52.37	25.95	78.32	
12/20/16 16:25	60.4	IBM.2107-13FCM01	50.36	25.2	75.57	
12/20/16 16:26	60.5	IBM.2107-13FCM01	51.52	25.79	77.31	
12/20/16 16:27	60.4	IBM.2107-13FCM01	35.22	17.55	52.77	
12/20/16 16:28	60.4	IBM.2107-13FCM01	0.2	2.05	2.25	
12/20/16 16:29	60.4	IBM.2107-13FCM01	0.21	2.04	2.24	
12/20/16 16:30	60.4	IBM.2107-13FCM01	10.44	6.38	16.82	
12/20/16 16:31	60.4	IBM.2107-13FCM01	55.21	25.16	80.37	
12/20/16 16:32	60.4	IBM.2107-13FCM01	53.96	24.47	78.43	
12/20/16 16:33	60.4	IBM.2107-13FCM01	55.01	24.91	79.92	
12/20/16 16:34	60.4	IBM.2107-13FCM01	40.75	18.83	59.58	
12/20/16 16:35	60.5	IBM.2107-13FCM01	5.62	3.19	8.81	
12/20/16 16:36	60.4	IBM.2107-13FCM01	5.69	3.22	8.91	
12/20/16 16:37	60.4	IBM.2107-13FCM01	5.64	3.19	8.83	
12/20/16 16:38	60.4	IBM.2107-13FCM01	6.13	20.47	26.6	
12/20/16 16:39	60.4	IBM.2107-13FCM01	6.26	36.4	42.66	
12/20/16 16:40	60.5	IBM.2107-13FCM01	6.38	36.76	43.14	
12/20/16 16:41	60.4	IBM.2107-13FCM01	6.1	34.87	40.98	
12/20/16 16:42	60.4	IBM.2107-13FCM01	3.71	17.6	21.31	
12/20/16 16:43	60.4	IBM.2107-13FCM01	1.44	0.69	2.12	
12/20/16 16:44	60.4	IBM.2107-13FCM01	1.45	0.68	2.13	
12/20/16 16:45	60.4	IBM.2107-13FCM01	4.01	23.89	27.89	
12/20/16 16:46	60.4	IBM.2107-13FCM01	4.72	34.86	39.58	
12/20/16 16:47	60.4	IBM.2107-13FCM01	5.06	38.04	43.1	
12/20/16 16:48	60.4	IBM.2107-13FCM01	4.91	36.69	41.6	
12/20/16 16:49	60.4	IBM.2107-13FCM01	3.53	24.53	28.06	
12/20/16 16:50	60.4	IBM.2107-13FCM01	1.29	7.53	8.82	
12/20/16 16:51	60.4	IBM.2107-13FCM01	1.3	7.57	8.87	

StorageSystem_Chart Storage System IOPort_Chart IO Port Pool_Chart Pool Array_Chart Array

Producing a Simple Pivot Chart

