

IBM System Storage Easy Tier Quick Start



Product Overview



This publication introduces the IBM® System Storage® Easy Tier Quick Start, which helps you get started with Easy Tier functions using the IBM System Storage DS® Storage Manager.

Easy Tier is a new feature that is available with Version 5 Release 1 of the DS8700. It is designed to help you move data more efficiently between tiers of spinning disk and solid-state drives (SSDs).

Easy Tier provides automated and manual mode capabilities. With Easy Tier in automated mode, data (at the sub-volume or sub-LUN level) is automatically and dynamically moved to the appropriate storage tier in the system, based on ongoing performance monitoring. With Easy Tier in manual mode, you can manually and non-disruptively relocate a logical volume between extent pools or within an extent pool. Relocating a volume is used to change the extent allocation method or to redistribute the volume across new ranks that have been added. You can also merge two existing pools into one without affecting the data on the logical volumes associated with the extent pools.

IBM System Storage Easy Tier Quick Start



Easy Tier - IBM System Storage DS8000® Storage Tier Advisor application tool

In addition to the Easy Tier capabilities, the DS8700 also offers the IBM System Storage DS8000 Storage Tier Advisor, which provides a graphical representation of performance data that is collected by Easy Tier over a 24-hour operational cycle. The Storage Tier Advisor tool can help you determine which volumes are likely candidates for Easy Tier management by analyzing the performance of their current application workloads.

The Storage Tier Advisor tool displays a system summary report that contains the distribution of "heat" data in each volume and how much heat data is included for all volumes. The summary report also contains a recommendation of SSD capacity and configuration values and the potential performance improvement if SSD is applied with Easy Tier in automated mode.

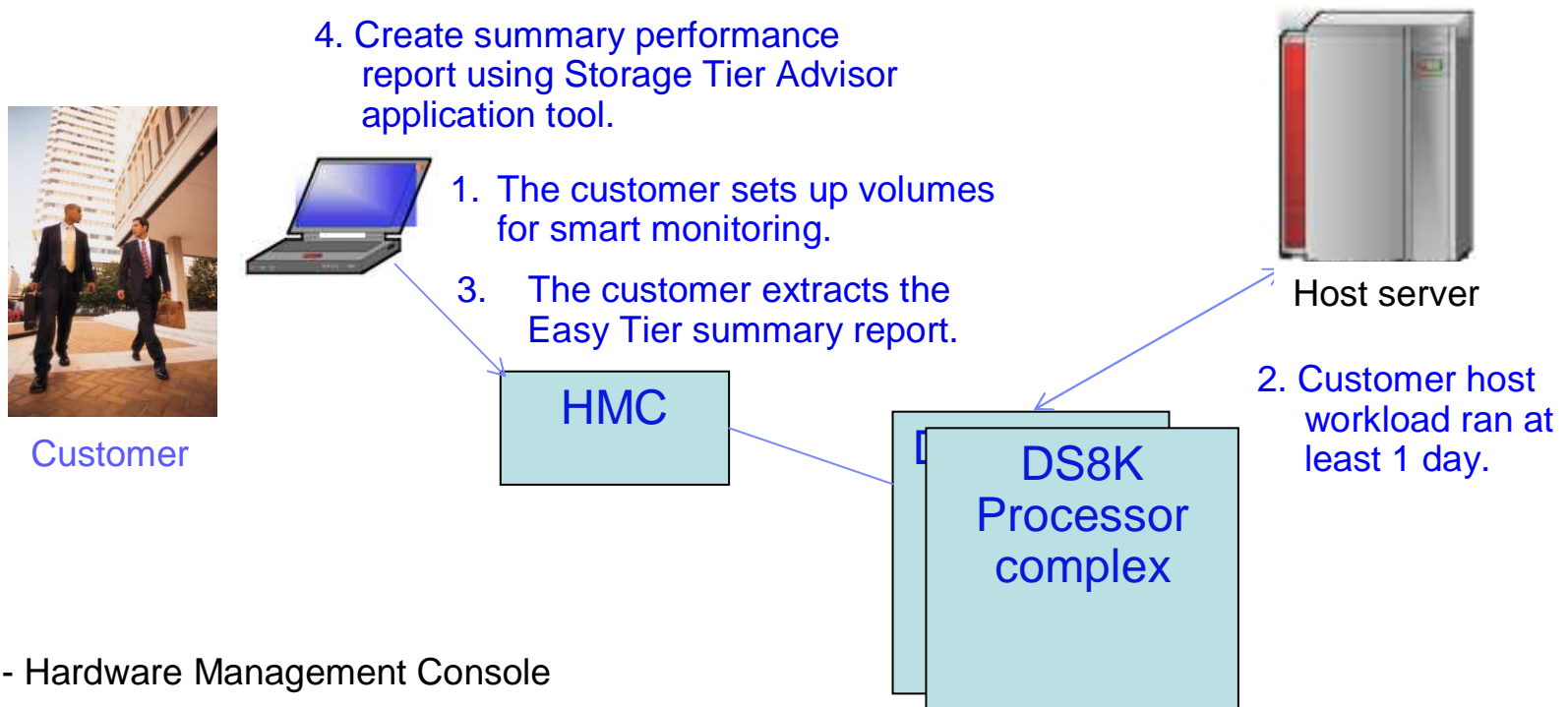
The results included in the Easy Tier summary report requires that statistics be gathered, from each processor complex over a 24-hour workload learning period. An example on how to gather the statistics is provided on a later page.

The Storage Tier Advisor application tool can be downloaded from the following Web site:
ftp://ftp.software.ibm.com/storage/ds8000/updates/DS8K_Customer_Download_Files/Storage_Tier_Advisor_Tool/

IBM System Storage Easy Tier Quick Start



Easy Tier - IBM System Storage DS8000 Storage Tier Advisor



HMC - Hardware Management Console

DS8K – System Storage DS8000

IBM System Storage Easy Tier Quick Start



Easy Tier - IBM System Storage DS8000 Storage Tier Advisor

IBM System Storage™ DS8000 Storage Manager

Welcome | Disk Configuration | User Administration | Storage Complexes

My Work | Storage Complexes

Welcome | Refresh | Last refresh: Wed May 19 10:51:10 MST 2010

Storage Complexes Summary

Select a storage image from the table to perform an action.

Select	Storage Im
<input checked="" type="checkbox"/>	<75LH241>

Showing 1 - 1 of 1

Select action

- Add
- Add 2105 Copy Services Domain
- Remove
- Attempt Connection
- Export Audit Logs
- Properties
- Storage Unit
 - System Summary
 - Power Control
 - Properties
- Storage Image
 - Apply Activation Codes
 - Change iSeries serial number
 - Configure I/O ports
 - Export Easy Tier Summary Report
 - Properties

Opening SF75LH241.2010.5.19.11.37.40.zip

You have chosen to open

SF75LH241.2010.5.19.11.37.40.zip
which is a: WinZip File
from: http://

What should Firefox do with this file?

Open with

Save File

Do this automatically for files like this from now on.

To offload the Storage Tier Advisor summary report, select **Storage Complexes** **1**, select the storage image that you want **2**, click **Select action > Export Easy Tier Summary Report** **3**, and finally click **OK** to save the offloaded, compressed file **4**. The compressed file includes two data files that will be used with the Storage Tier Advisor application tool.

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Easy Tier - IBM System Storage DS8000 Storage Tier Advisor

Example of the summary report created by the Storage Tier Advisor application:



Summary Report

Volume Heat Distribution on LPAR SF75FK840ESS01

Volume Heat Distribution

The data is collected from Tue Dec 08 01:20:55 PST 2009 to Tue Dec 08 09:23:55 PST 2009

Volume ID ^{*1}	Extent Pool ID	Configured Size ^{*2}	Capacity on SSD ^{*3}	Heat Distribution ^{*4}
0x0001	0x0000	100G	0G	90G (cold) 10G (hot)
0x0002	0x0000	100G	0G	92G (cold) 8G (hot)
0x0003	0x0000	100G	10G	70G (cold) 30G (hot)
0x0004	0x0000	116G	0G	93G (cold) 13G (hot)

20 Entries Per Page GO | < >> > | Displaying Page 1 of 1

30GB is the hot data in volume 3 and 10GB is already in SSD ranks.

- *1. Volume ID is the id to represent the volume inside DS8000, which is specified during the volume creation.
- *2. The configured capacity of the volume.
- *3. The Capacity on SSD means the capacity of data already be migrated to SSD.
- *4. The Heat Distribution shows the heat distribution of the data in this volume, and blue bar is the capacity of the cold data, and the red bar is the capacity of the hot data.

IBM System Storage Easy Tier Quick Start



Easy Tier manual migration

Easy Tier includes the ability to dynamically relocate individual logical volumes without disrupting applications. You can move a volume that is allocated to a Serial Advanced Technology Attachment (SATA) disk group to an Enterprise disk group or a SSD disk group.

After you analyze the performance of your current application workloads using tools such as the IBM Storage System DS8000® Storage Tier Advisor or IBM Tivoli® Storage Productivity Center for Disk, the steps required to determine which volumes are likely candidates for Easy Tier manual migration are straight forward.

With manual migration, you can change the allocation method that is assigned to a logical volume. For example, you can change the allocation method of a given volume that is allocated to one rank to rotating the volume's extents across all ranks in an extent pool, or vice versa.

The following procedure describes the steps used for changing the allocation method of a volume from rotating volumes across the ranks to rotating the extents of the volumes across the ranks in the same extent pool. The procedure is conceptually the same for moving volume across disk class groups (extent pools).

IBM System Storage Easy Tier Quick Start



Easy Tier manual migration

IBM System Storage™ DS8000 Storage Manager

Welcome

My Work

- Welcome
- Monitor System
 - Long Running Task Summary
 - User Administration
- Manage Hardware
 - Storage Complexes
 - Host Connections
- Encryption
 - Key Servers
 - Groups
- Configure Storage
 - Disk Configuration
 - Open Systems Volumes**
 - Open Systems Volume Groups
 - System z Volumes and LCUs
- Copy Services
 - FlashCopy
 - Paths
 - Metro Mirror / Global Copy
 - Global Mirror

Welcome

DS8000 Storage Manager

Version 5.5.1.1631

Learning and Tutorials

- [DS8000 overview](#)
- [Hardware configuration concepts](#)
- [System configuration](#)
- [Choosing the best configuration](#)

Additional Resources

- [Using the Information Center](#)
- [IBM System Storage Technical Support Web Site](#)

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1. To set up Easy Tier manual migration, select the type of system that you want to manage. From the navigation, click **Open Systems Volumes** **1**.

IBM System Storage Easy Tier Quick Start



Easy Tier manual migration

IBM System Storage™ DS8000 Storage Manager

Welcome Open Systems Volumes

My Work Open Systems Volumes

- Welcome
- Monitor System
 - Long Running Task Summary
 - User Administration
- Manage Hardware
 - Storage Complexes
 - Host Connections
- Encryption
 - Key Servers
 - Groups
- Configure Storage
 - Disk Configuration
 - Open Systems Volumes
 - Open Systems Volume Groups
 - System z Volumes and LCUs
- Copy Services
 - FlashCopy
 - Paths
 - Metro Mirror / Global Copy
 - Global Mirror

Open Systems - Storage Summary

0 GiB
0 GiB
0 GiB
0 GiB

Assigned Unassigned Ungrouped Unallocated

Alerts

No alerts active

Tasks

- Create new volumes
- Manage existing volumes
- Manage LSSs
- Explore open systems relationships

Manage a specific volume or volume range

-

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2. On the **Open Systems - Storage Summary** page, select a storage image. Then, enter a range of volumes that you want to manage and click **Go** **2**, or click **Manage Existing Volumes** **1**.

IBM System Storage Easy Tier Quick Start



Easy Tier manual migration

IBM System Storage™ DS8000 Storage Manager

Welcome | Open Systems Volumes

My Work | Open Systems Volumes

Refresh | Last refresh: Fri May 07 13:26:18 MST 2010

Back to Open Systems Volumes Main Page

Manage Volumes

Select the filtering options to use for displaying volumes. The table is updated based on the filters that you select. To perform actions, select one or more volume table.

Filter by: LSS | Select LSS: 20

Select	Nickname	Status	Type	GiB	Storage Allocation	Extent Pool	Volume Groups	Host Connections
<input checked="" type="checkbox"/>		Normal	DS	25.0	Standard	FB_BIP0	regatta3(VG)	regatta3
<input type="checkbox"/>		Normal	DS	25.0	Standard	FB_BIP10	regatta3(VG)	regatta3
<input type="checkbox"/>		Normal	DS	25.0	Standard	FB_BIP2	regatta3(VG)	regatta3
<input type="checkbox"/>		Normal	DS	25.0	Standard	FB_BIP12	regatta3(VG)	regatta3
<input type="checkbox"/>		Normal	DS	50.0	Standard	FB_BIP0	regatta3(VG)	regatta3
<input type="checkbox"/>	2005	Normal	DS	50.0	Standard	FB_BIP10	regatta3(VG)	regatta3
<input type="checkbox"/>	2006	Normal	DS	50.0	Standard	FB_BIP2	regatta3(VG)	regatta3
<input type="checkbox"/>	2007	Normal	DS	50.0	Standard	FB_BIP12	regatta3(VG)	regatta3
<input type="checkbox"/>	2008	Normal	DS	75.0	Standard	FB_BIP0	regatta3(VG)	regatta3
<input type="checkbox"/>	2009	Normal	DS	75.0	Standard	FB_BIP10	regatta3(VG)	regatta3

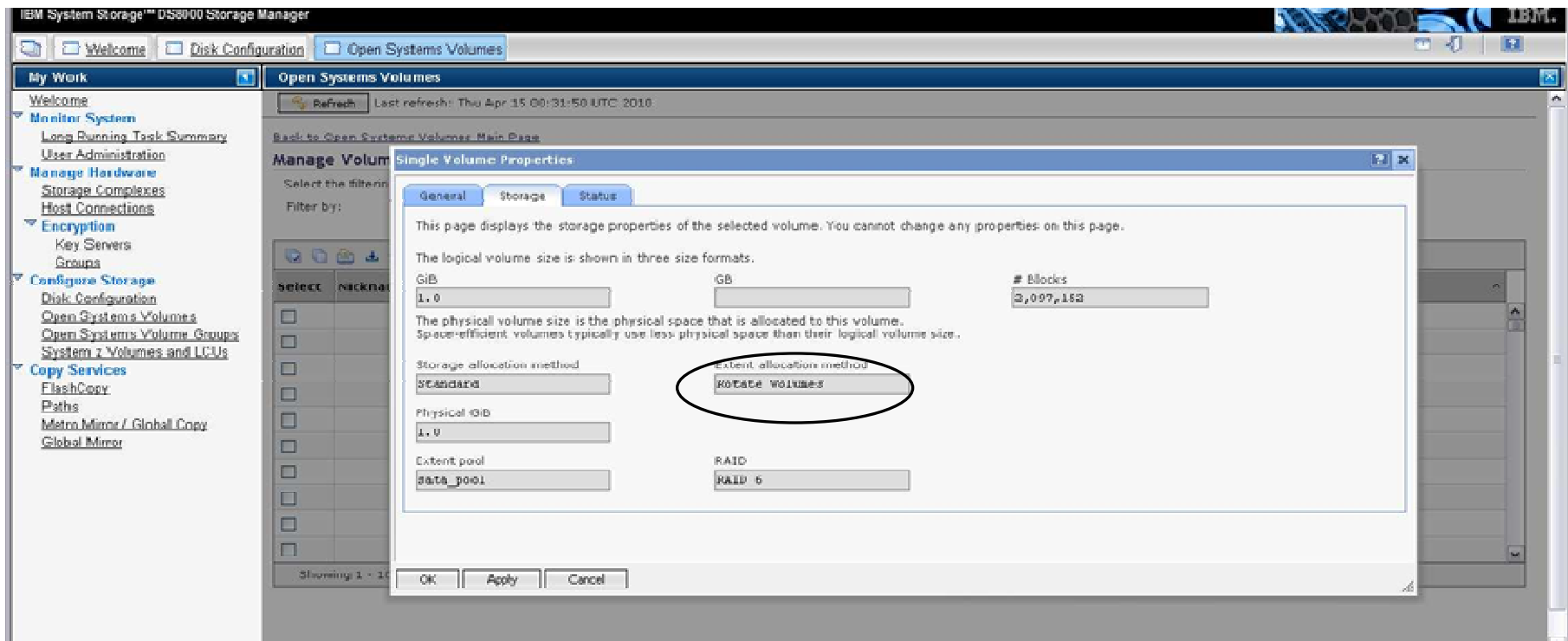
Showing 1 - 10 of 24 | Selected 1

3. On the **Manage Volumes** page, select the check box **1** next to the volume or volumes that you want to manage. Click **Select action > Properties** **2** to validate your volume selection.

IBM System Storage Easy Tier Quick Start



Easy Tier manual migration



4. Click the **Storage** tab and verify that the options that you selected for the volume are correct, and then click **OK**. Notice that the allocation method for the volume in this example was allocated with **Rotate Volumes**. Click **OK** to continue.

Note:

This example shows the **Single Volume Properties** page because only one volume was selected. However, if more than one volume is selected, a different panel displays with similar information.

IBM System Storage Easy Tier Quick Start



Easy Tier manual migration

Open Systems Volumes

Refresh Last refresh: Fri May 07 13:26:18 MST 2010

[Back to Open Systems Volumes Main Page](#)

Manage Volumes

Select the filtering options to use for displaying volumes. The table is updated based on the filters that you select. To perform actions, see table.

Filter by: LSS Select LSS: 20

Select	Nickname	Status	Type	GiB	Storage Allocation	Extent Pool	Volume Groups
<input checked="" type="checkbox"/>		Normal	DS	25.0	Standard	FB_BIP0	regatta3(VG)
<input type="checkbox"/>		Normal	DS	25.0	Standard	FB_BIP10	regatta3(VG)
<input type="checkbox"/>		Normal	DS	25.0	Standard	FB_BIP2	regatta3(VG)
<input type="checkbox"/>		Normal	DS	25.0	Standard	FB_BIP12	regatta3(VG)
<input type="checkbox"/>		Normal	DS	50.0	Standard	FB_BIP0	regatta3(VG)
<input type="checkbox"/>		Normal	DS	50.0	Standard	FB_BIP10	regatta3(VG)
<input type="checkbox"/>		Normal	DS	50.0	Standard	FB_BIP2	regatta3(VG)
<input type="checkbox"/>		Normal	DS	50.0	Standard	FB_BIP12	regatta3(VG)
<input type="checkbox"/>		Normal	DS	75.0	Standard	FB_BIP0	regatta3(VG)
<input type="checkbox"/>		Normal	DS	75.0	Standard	FB_BIP10	regatta3(VG)

Showing 1 - 10 of 24 Selected 1

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5. With the volumes selected, click **Select action > Initiate Migration**.

IBM System Storage Easy Tier Quick Start



Easy Tier manual migration

IBM System Storage™ DS8000 Storage Manager

Open Systems Volumes

Refresh Last refresh: Thu Apr 15 00:31:50 UTC 2010

Back to Open Systems Volumes Main Page

Manage Volume Initiate Migration

Choose a new extent allocation method (1) for extent pool, or both. These choices are applied to all of the volumes that you select.

Quantity of standard volumes: 1

Total size of volumes: 1 GiB

Extent allocation method

- Private Extents
- No Change
- Rotate Volumes
- Rotate Extents

extent pool for the migration. Only extent pools on server 0 that have at least 1 available GiBs are eligible.

Select	Allocation	ID	Name	Available Standard GiB	Available Virtual GiB	Total Standard GiB	Total Virtual GiB
<input checked="" type="radio"/>	<input type="text"/>	P0	sata_pool	10,186	0	11,931	0
<input type="radio"/>	<input type="text"/>	P4	hybrid_2	1,752	104	2,047	200
<input type="radio"/>	<input type="text"/>	P10	hybrid_0	4,838	0	4,998	0
<input type="radio"/>	<input type="text"/>	P14	ent_pool	7,125	0	8,589	0

Showing 1 - 4 of 4 Selected 1

Showing 1 - 1

Next Finish Cancel

6. On the **Initiate Migration** page, select the options assigned to your volumes that you want to change. You can select to move the volumes to a different extent pool, change the allocation method within the same extent pool, or change the allocation method of the volumes and move them to a different extent pool.

In this example, only the allocation method **1** is changed; the volume stays in the same extent pool **2**. If you want to move your volume to a different extent pool, select the radio button next to that extent pool and click **Next**.

IBM System Storage Easy Tier Quick Start



Easy Tier manual migration

IBM System Storage™ DS8000 Storage Manager

Welcome Open Systems Volumes

My Work Open Systems Volumes

Welcome Refresh Last refresh: Fri May 07 13:26:18 MST 2010

Back to Open Systems Volumes Main Page

Manage Volumes

Select the filtering options to use for displaying volumes. The table is updated based on the filters that you select. To perform actions, select one or more volume table.

Filter by: LSS Select LSS: 20

Select	Nickname	Status	Type	GiB	Storage Allocation	Extent Pool	Volume Groups	Host Connections
<input checked="" type="checkbox"/>		Normal	DS	25.0	Standard	FB_BIP0	regatta3(VG)	regatta3
<input type="checkbox"/>		Normal	DS	25.0	Standard	FB_BIP10	regatta3(VG)	regatta3
<input type="checkbox"/>		Normal	DS	25.0	Standard	FB_BIP2	regatta3(VG)	regatta3
<input type="checkbox"/>		Normal	DS	25.0	Standard	FB_BIP12	regatta3(VG)	regatta3
<input type="checkbox"/>		Normal	DS	50.0	Standard	FB_BIP0	regatta3(VG)	regatta3
<input type="checkbox"/>	2005	Normal	DS	50.0	Standard	FB_BIP10	regatta3(VG)	regatta3
<input type="checkbox"/>	2006	Normal	DS	50.0	Standard	FB_BIP2	regatta3(VG)	regatta3
<input type="checkbox"/>	2007	Normal	DS	50.0	Standard	FB_BIP12	regatta3(VG)	regatta3
<input type="checkbox"/>	2008	Normal	DS	75.0	Standard	FB_BIP0	regatta3(VG)	regatta3
<input type="checkbox"/>	2009	Normal	DS	75.0	Standard	FB_BIP10	regatta3(VG)	regatta3

Showing 1 - 10 of 24 Selected 1

7. If you do not receive any error messages, the task is complete. To view the status of the volumes, select the check box of each volume **1** and click **Select action > Properties 2**.

IBM System Storage Easy Tier Quick Start



Easy Tier manual migration

The screenshot displays the IBM System Storage DS8000 Storage Manager interface. The main window is titled 'System z Volumes and LCU's and shows a 'Manage LCU's and Volumes' section. A 'Single Volume Properties' dialog box is open, showing the following details:

- Status:** Migrating (indicated by a yellow warning icon)
- Access state:** Online
- Data state:** Normal
- Configuration state:** Migrating
- # Migrating extents:** 3
- Migrating from:** P0 [sata_pool1]

The dialog box also includes a 'Refresh' button and 'OK', 'Apply', and 'Cancel' buttons at the bottom. The background interface shows a navigation tree on the left and a table of storage volumes on the right.

This page is displayed.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode

After you analyze the performance of your current application workloads using the IBM System Storage DS8000 Storage Tier Advisor and determine which volumes are likely candidates for Easy Tier automatic mode optimization, setting up an Easy Tier environment can also be straightforward.

There are two methods to create your Easy Tier automatic mode environment:

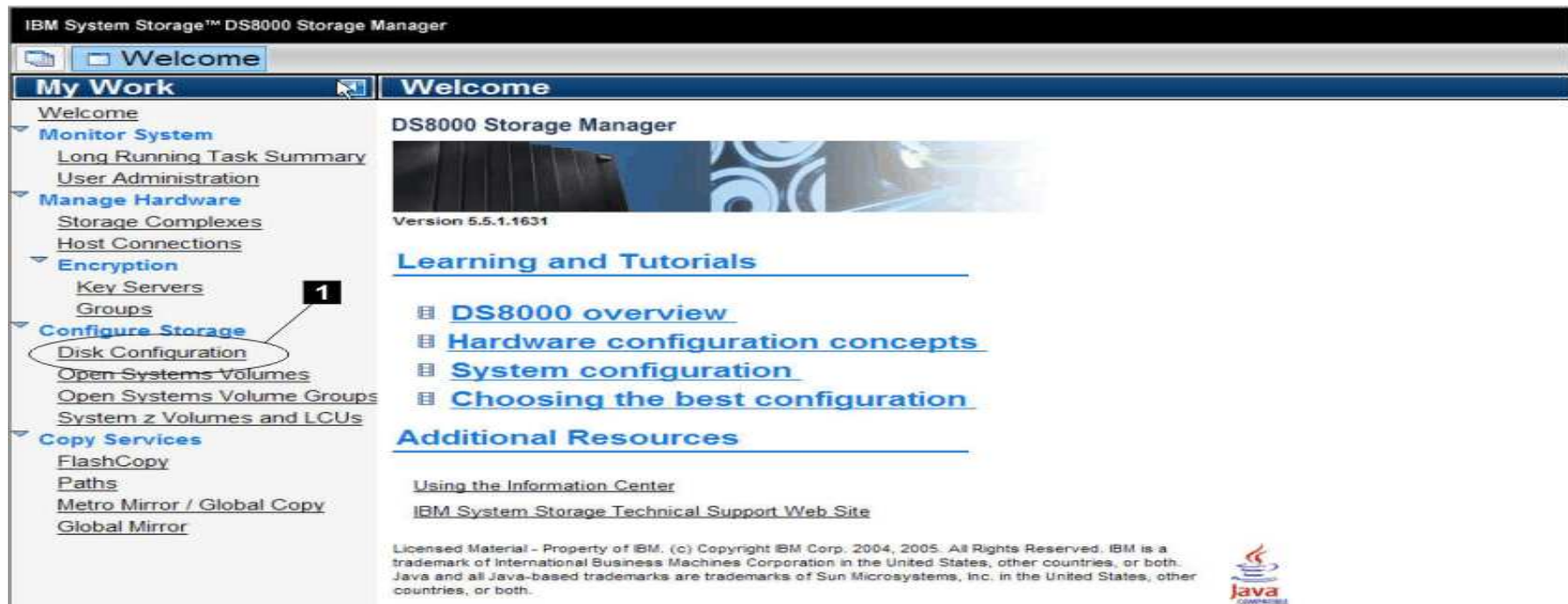
- Add capacity to an existing extent pool that you would want to optimize with one or more SSD ranks.
- Dynamically merge an extent pool that you want to optimize with an existing extent pool that has one or more SSD ranks installed.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Adding capacity to an existing extent pool

Use the following procedure to add capacity to an existing extent pool that you would want to optimize with one or more SSD ranks.



1. To set up Easy Tier automatic mode by adding capacity to an existing extent pool, click **Disk Configuration** **1**.

Note:

This example assumes that you previously assigned an SSD rank to an array.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Adding capacity to an existing extent pool

The screenshot shows the IBM System Storage DS8000 Storage Manager interface. The 'Manage Disk Configuration' section is active, and the 'Ranks' tab is selected. A table displays the following data:

Select	Rank	Status	Storage Type	RAID	Array	Server	Extent Pool	Total GiB	Used GiB	Encryption Group
<input type="checkbox"/>	R6	Normal	FB	6 (5+P+Q+S)	A3	1	fb_p5	3,976	603	None
<input type="checkbox"/>	R9	Normal	CKD	6 (6+P+Q)	A4	0	ckd_p4	4,724	141	None
<input type="checkbox"/>	R11	Normal	CKD	6 (6+P+Q)	A5	1	ckd_p11	4,724	84	None
<input type="checkbox"/>	R3	Normal	CKD	6 (6+P+Q)	A6	1	ckd_p7	4,724	32	None
<input type="checkbox"/>	R7	Normal	FB	6 (6+P+Q)	A7	0	fb_p6	4,784	371	None
<input checked="" type="checkbox"/>	R10	Normal	CKD	5 (6+P+S)	A8	None		383	0	None

2. From the **Manage Disk Configuration** section, click the **Ranks** tab **1** and find one or more SSD ranks that you created. Make note of the rank numbers. For this example, a single SSD rank, R10 **2** is selected. Also, notice that the extent pool entry is blank **3** for an unassigned rank.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Adding capacity to an existing extent pool

IBM System Storage™ DS8000 Storage Manager

Disk Configuration

Alerts

Manage Disk Configuration

Extent Pools

Select	Location	Name	ID	Status	Available GiB	Total GiB	Storage Type	RAID	Server	# Ranks
<input type="checkbox"/>		ckd_p0	P0	Normal	7,785	7,856	CKD	RAID 6	0	1
<input type="checkbox"/>		fb_p3	P3	Normal	6,899	7,955	FB	RAID 6	1	1
<input checked="" type="checkbox"/>		ckd_p4	P4	Normal	4,583	4,724	CKD	RAID 6	0	1
<input type="checkbox"/>		fb_p5	P5	Normal	3,499	4,364	FB	Mixed	1	2
<input type="checkbox"/>		fb_p6	P6	Normal	4,460	5,172	FB	Mixed	0	2
<input type="checkbox"/>		ckd_p7	P7	Normal	4,978	5,106	CKD	Mixed	1	2

Showing 1 - 6 of 8 Selected 1

3. Click the **Extent Pools** tab. The results of the Storage Tier Advisor analysis indicates that extent pool **ckd_p4** would benefit by using Easy Tier. For this example, an SSD rank will be added to this extent pool. Select the check box of the extent pool for which you want to add capacity and click **Select action** > **Add Capacity to Pool**.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Adding capacity to an existing extent pool

The screenshot shows the IBM System Storage DS8000 Storage Manager interface. The main window is titled 'Disk Configuration' and displays the 'Add Capacity to Extent Pool' dialog box. The dialog box is divided into several sections:

- Storage Characteristics:** RAID Type is set to RAID 5.
- Select Available Capacity:** Type of Configuration is set to Automatic. Drive Class is 73 GB 65K Solid State drive with 434 GB.
- Select capacity to configure:** A table with columns 'Select' and 'Name'. A callout box with the number '1' points to the 'Select capacity to configure' button.
- DA Pair Usage:** A bar chart showing the number of ranks for different DA Pair IDs. The chart has a legend with categories: New Ranks - Server 0, Assigned Ranks - Server 0, New Ranks - Server 1, Assigned Ranks - Server 1, and Assigned Ranks - Other Drives.

4. On the **Add Capacity to Extent Pool** page, click **Select the capacity to configure** **1**. In this example, there was only one rank to add **1**. Click **OK** after you are done with your selection.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Adding capacity to an existing extent pool

The screenshot shows the IBM System Storage DS8000 Storage Manager interface. The main window is titled 'Disk Configuration' and displays the 'Add capacity to pool verification' screen. The storage image is identified as '<75LH241>'. A table lists the extent pool configuration:

Select	Name	Total Capacity	Drive Type	Drive Class	Server	# DA Pairs	RAID	Quantity of New Ranks	Storage Type	Encryption Group
<input checked="" type="checkbox"/>	ekd_p4	434 GiB	73 GB 65K	Solid State	0		1 RAID 5	1	CKD	None

Below the table, the text 'Showing 1 - 1 of 1 Selected 1' is displayed. At the bottom of the table area, there are two buttons: 'Create All' and 'Cancel'. The 'Create All' button is circled in red, and a red box with the number '1' is placed next to it, indicating the step to click this button.

5. Verify your selections and click **Create All** **1** to initiate the creation process for the extent pool.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Adding capacity to an existing extent pool

IBM System Storage™ DS8000 Storage Manager

Single Pool Properties

General | Drives and Volumes | Space-Efficient Storage | **Ranks**

The table lists the ranks that are assigned to the extent pool. If you want to change the rank assignments, use the "Add Capacity to Capacity from Pools" actions from the main extent pool page.

Rank	Server	# Std. Volumes	Used GiB	Total GiB	Data State	Capacity
R9	0	64	141	4,724	Normal	No
R10	0	0	0	383	Normal	No

Showing 1 - 2 of 2

OK Apply Cancel

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6. If you did not receive errors during the merge operation, the task is complete. You can confirm the results of the task by selecting the extent pool that was modified **1**, click **Select action 2** > **Properties**, and click the **Ranks 3** to list the ranks in the pool.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Merging two existing extent pools

Use the following procedure to dynamically merge an extent pool that you want to optimize with an existing extent pool that has one or more SSD ranks installed:



1. To set up Easy Tier in automatic mode by merging two existing extent pools, click **Disk Configuration** **1**.

Note:

If you know which extent pools you would like to merge to create an Easy Tier automatic mode environment, go to step 6 and skip steps [2](#), [3](#), [4](#) and [5](#).

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IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Merging two existing extent pools

IBM System Storage™ DS8000 Storage Manager

My Work | Disk Configuration

Alerts: No alerts active

Manage Disk Configuration

Extent Pools | Ranks | Arrays | **Array Sites**

Select	Array Site	State	Array	DA Pair	Drive Type	Drive Class	Encryption Supported
<input type="checkbox"/>	S7	Assigned	A6	0	900 GB 7K	SATA	No
<input type="checkbox"/>	S8	Assigned	A7	0	900 GB 7K	SATA	No
<input checked="" type="checkbox"/>	S9	Assigned	A8	2	73 GB 65K	Solid State	No
<input checked="" type="checkbox"/>	S10	Assigned	A9	2	73 GB 65K	Solid State	No
<input checked="" type="checkbox"/>	S11	Assigned	A10	2	73 GB 65K	Solid State	No
<input checked="" type="checkbox"/>	S12	Assigned	A11	2	73 GB 65K	Solid State	No

Showing 7 - 12 of 12 | Selected 4

2. Identify which extent pool contains the SSD drives that you want to merge as well as the extent pool with hard disk drives (HDDs).

3. On the **Disk Configuration** page, click the **Array Sites** **1** tab to identify your existing SSD array sites **2** and note the arrays to which they belong. For this example, A8/S9, A9/S10, A10/S11, and A11/S12 are included.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Merging two existing extent pools

IBM System Storage™ DS8000 Storage Manager

Welcome | Welcome | Disk Configuration

My Work | Disk Configuration

Alerts: No alerts active

Manage Disk Configuration

Extent Pools | **Ranks** | **Arrays** | Array Sites

Select	Array	Data State	RAID	Status	Rank	DA Pair	Drive Type	Encryption Group
<input type="checkbox"/>	A6	Normal	6 (6+P+Q)	Assigned	R3	0	900 GB 7K	None
<input type="checkbox"/>	A7	Normal	6 (6+P+Q)	Assigned	R7	0	900 GB 7K	None
<input checked="" type="checkbox"/>	A8	Normal	5 (6+P+S)	Assigned	R10	2	73 GB 65K	None
<input checked="" type="checkbox"/>	A9	Normal	5 (6+P+S)	Assigned	R1	2	73 GB 65K	None
<input checked="" type="checkbox"/>	A10	Normal	5 (6+P+S)	Assigned	R8	2	73 GB 65K	None
<input checked="" type="checkbox"/>	A11	Normal	5 (6+P+S)	Assigned	R2	2	73 GB 65K	None

Showing 7 - 12 of 12 | Selected 4

4. Click the **Arrays** tab **1** and look for the arrays from the previous page and make note of the ranks to which they are assigned. This example includes A8/R10, A9/R1, A10/R8 and A11/R2 **2**. Click the **Ranks** tab **3** to continue.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Merging two existing extent pools

IBM System Storage™ DS8000 Storage Manager

My Work | Disk Configuration

Alerts: No alerts active

Manage Disk Configuration

Extent Pools | Ranks | Arrays | Array Sites

Select	Rank	Status	Storage Type	RAID	Array	Server	Extent Pool	Total GiB	Used GiB	Encryption Group
<input type="checkbox"/>	R3	Normal	CKD	6 (6+P+Q)	A6	1	ckd_p7	4,724	32	None
<input type="checkbox"/>	R7	Normal	FB	6 (6+P+Q)	A7	0	fb_p6	4,784	371	None
<input type="checkbox"/>	R10	Normal	CKD	5 (6+P+S)	A8	0	ckd_p4	383	0	None
<input type="checkbox"/>	R1	Normal	FB	5 (6+P+S)	A9	0	fb_p6	388	341	None
<input checked="" type="checkbox"/>	R8	Normal	FB	5 (6+P+S)	A10	1	FB_SSD	388	0	None
<input type="checkbox"/>	R2	Normal	CKD	5 (6+P+S)	A11	1	ckd_p7	383	97	None

Showing 7 - 12 of 12 | Selected 1

5. On the **Ranks** tab **1**, look for the SSD ranks that you want to manage and take note of the extent pools to which they are assigned. For this example, we selected R8 **2**, which is assigned to extent pool FB_SSD **3** (the SSD extent pool) that we want to merge with a HDD extent pool. Select the **Extent Pools** tab **4** to continue.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Merging two existing extent pools

Select	Location	Name	ID	Status	Available GiB	Total GiB	Storage Type	RAID	Server	# Ranks
<input type="checkbox"/>		ckd_p0	P0	Normal	7,785	7,856	CKD	RAID 6	0	1
<input checked="" type="checkbox"/>		FB_SSD	P1	Normal	388	388	FB	RAID 5	1	1
<input type="checkbox"/>		fb_p3	P3	Normal	6,899	7,955	FB	RAID 6	1	1
<input type="checkbox"/>		ckd_p4	P4	Normal	4,965	5,106	CKD	Mixed	0	2
<input checked="" type="checkbox"/>		fb_p5	P5	Normal	3,112	3,976	FB	RAID 6	1	1
<input type="checkbox"/>		fb_p6	P6	Normal	4,460	5,172	FB	Mixed	0	2

6. On the **Extent Pools** tab **1**, select the check box **2** by the SSD extent pool and the other extent pool that you identified that could benefit from running in Easy Tier automatic mode. For this example, fb_p5 was identified as a candidate for merging with SSD extent pool FB_SSD. Click **Select action** **3** > **Merge Extent Pools** to merge the two extent pools.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Merging two existing extent pools

Extent Pool	Pool ID	Health	Capacity	Usage	Format	RAID	Protections	Other
ckd_p4	P4	Normal	4,965	5,105	CKD	Mixed	0	2
fb_p5	P5	Normal	3,112	3,276	FB	RAID 6	1	1
fb_p6	P6	Normal	4,460	5,172	FB	Mixed	0	2

7. Select which extent pool that you want to remain. For this example, extent pool, example fb_p5 was selected to remain. Click **OK**.

IBM System Storage Easy Tier Quick Start



Easy Tier automated mode – Merging two existing extent pools

The screenshot shows the IBM System Storage DS8000 Storage Manager interface. The 'Disk Configuration' tab is active, and the 'Extent Pools' sub-tab is selected. A table lists the following extent pools:

Select	Allocation	Name	ID	Status	Available GiB	Total GiB	Storage Type	RAID	Server	# Ranks
<input type="checkbox"/>		ckd_p0	P0	Normal	7,785	7,856	CKD	RAID 6	0	1
<input type="checkbox"/>		fb_p3	P3	Normal	6,899	7,955	FB	RAID 6	1	1
<input type="checkbox"/>		ckd_p4	P4	Normal	4,965	5,106	CKD	Mixed	0	2
<input checked="" type="checkbox"/>		fb_p5	P5	Normal	3,500	4,364	FB	Mixed	1	2
<input type="checkbox"/>		fb_p6	P6	Normal	4,460	5,172	FB	Mixed	0	2
<input type="checkbox"/>		ckd_p7	P7	Normal	4,978	5,106	CKD	Mixed	1	2

Showing 1 - 6 of 8 Selected 1

8. If you did not receive any errors during the merge operation, the task is complete. The extent pool no longer displays in the Extent Pools tab after the merge operation completes successfully.

IBM System Storage Easy Tier Quick Start



Disable Easy Tier in automatic mode and controlling Storage Tier Advisor monitoring

When code is activated, monitoring for the Storage Tier Advisor is enabled to monitor extent pools which contain SSD and HDD drives by default. There might be occasions when you need to temporarily halt to automatic data relocation process or change the monitoring settings to monitor the entire unit or to disable the monitoring all together. Use the following procedure to disable Easy Tier in automatic mode or change the Easy Tier monitoring process.



1. From the navigation, click **Storage Complexes** **1**.

IBM System Storage Easy Tier Quick Start



Disable Easy Tier in automatic mode and controlling Storage Tier Advisor monitoring

The screenshot shows the IBM System Storage DS8000 Storage Manager interface. The main window displays the 'Storage Complexes Summary' page. A table lists storage images, and a context menu is open over the first row. Callout 1 points to the selected row, and callout 2 points to the 'Properties' option in the context menu.

Select	Storage Image	Emulated Type-Model	Status	Storage Unit	Storage Complex
<input checked="" type="checkbox"/>	<75LH330>	2107-941	<input checked="" type="checkbox"/> Normal	<75LH330>	IbmStoragePlex

Showing 1 - 1 of 1

Context Menu Options:

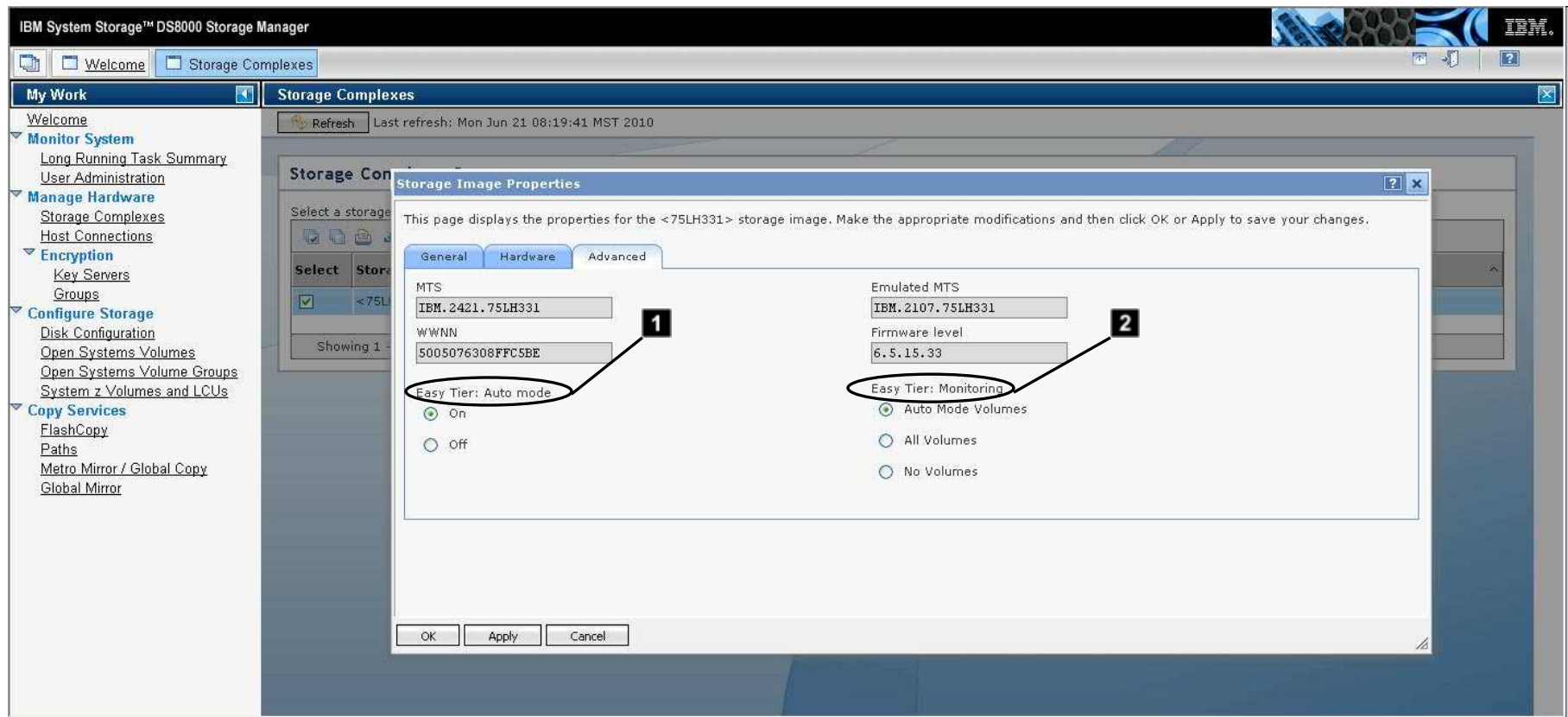
- Storage Complex
 - Add
 - Add 2105 Copy Services Domain
 - Remove
 - Attempt Connection
 - Export Audit Logs
 - Properties
- Storage Unit
 - System Summary
 - Power Control
 - Properties
- Storage Image
 - Apply Activation Codes
 - Change iSeries serial number
 - Configure I/O ports
 - Export Easy Tier Summary Report
 - Properties

1. From the **Storage Complexes Summary** page, select the Storage Facility Image **1** and then click **Select action > Properties 2**.

IBM System Storage Easy Tier Quick Start

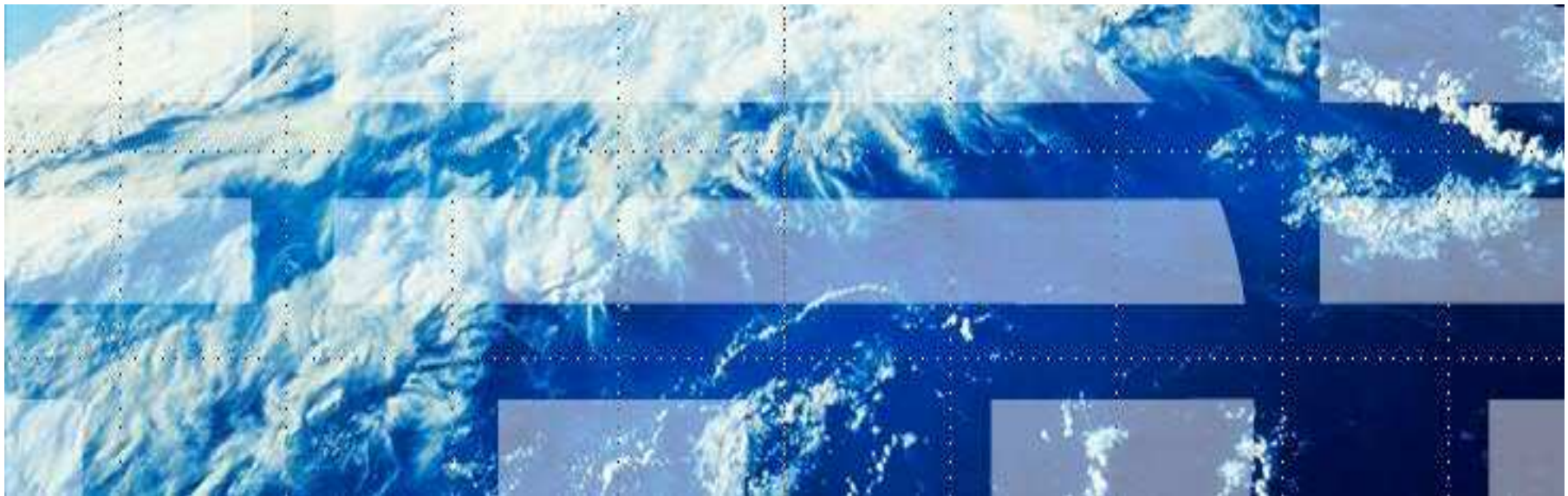


Disable Easy Tier in automatic mode and controlling Storage Tier Advisor monitoring



1. From the **Properties** page, change the Easy Tier Auto mode **1** or the Storage Tier Monitoring settings **2** .

IBM System Storage Easy Tier Quick Start



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