

Application Note

January 2014

Configuring SnapSAN S5000 AutoCache



Summary

This Application Note describes how to configure the Level 2 Cache (L2) and the benefits of using that L2 Cache with the SnapSAN S5000 array.

Introduction

AutoCache is a feature of the Overland SnapSAN S5000 array in order to help boost application performance by up to 900%. AutoCache caching is a technique that allows the controller inside the storage system to use SSD as a cache in front of traditional disk storage. The controller identifies frequently accessed data, sometimes called "hot data," and automatically moves it to solid-state media. Overland Storage supports using SSD technology in the SnapSAN S5000 with the AutoCache feature. The SSD drives are used as Level 2 cache (L2) for the purpose of improving traditional hard disk drive-based system.

Solid State Drive (SSD) is a high-performance plug-and-play storage device that contains no moving parts. SSD components include DRAM or EEPROM memory boards, a memory bus board, a CPU and a battery card. Since they contain their own CPUs to manage data storage and have no heads or platters, they incur very small seek latencies. Consequently, they are much faster than conventional rotating hard disks. This is how SSD drives produce such high I/O rates.

Required Information, Tools, and Files

Before you begin these procedures, the following information is required.

Prerequisites

Prior to performing these procedures, ensure that you have the following:

• Overland Storage SnapSAN S3000/S5000 Disk Array must be installed and configured. You can get additional technical support from our website at http://support.overlandstorage.com, or by contacting Overland Storage using the information found on the <u>Contact Us</u> page on our web site. For additional information, see:

SnapSAN S3000/S5000 Disk Array User Guide

Overland Storage SnapSAN Downloads and Resources web page

- Verify that the following are installed on the server:
 - Java Runtime Environment (JRE)
 - SnapSAN Manager Web Management Interface
- Only SSD can be used as a physical disk for the L2 cache.
- Additional information on SnapSAN S5000 devices can be accessed from Disk Array User Guide.

Versions

The test environment used for illustration in this document uses the following versions:

- Windows Server 2008R2
- Java JRE 7 update 40
- SnapSAN Manager Server version 8.2.060
- SnapSAN S5000 software version 082R.007
- SnapSAN S5000 firmware version U22R.007

Configuring The L2 Cache

This section describes how to configure the L2 cache by using the configuration settings in the SnapSAN Manager Web Management Interface.

The following operations can be done to configure the L2 cache:

- 1. Bind the L2 Cache (to create the L2 Cache)
- 2. Change L2 Cache Settings
- 3. Set the L2 Cache On/Off for a Particular Logical Disk
- 4. Unbind the L2 Cache (to remove the L2 Cache)

Bind the L2 Cache

Before you bind the L2 Cache, note the following:

- You can create the L2 cache **only once**.
- You cannot use any of the physical disks numbered 0 to 3 that are installed on the SnapSAN S5000 array for the L2 cache.

Perform the following steps to bind the L2 cache:

 From the SnapSAN Manager Monitor screen, navigate to Configuration > L2 Cache > L2 Cache Bind.

🕎 L2 Cache Bind					
L2 Cache Bind > Confirmation > Completion					
1: Select a L2 Cache type.	1: Select a L2 Cache type.				
Read/Write					
C Read Only(Non-redundancy)					
 Find a logical disk for Persistent Write Area Specify the number of physical disks (SSDs) and their capacity for the L2 Cache. 					
• Auto disk selection	The number of physical disks (2-2) 2 = 1 Physical disk capacity 1776B				
O Manual disk selection	Select physical disks				
	Sack Next > Cancel Help				

- **2.** Select the following details:
 - The L2 Cache Type to be bound.
 - If you want to create the persistent write area, select **Bind a logical disk for Persistent** Write Area. (This is the default selection.)
 - Select Number of physical disks and Physical disk capacity as:
 - Auto disk selection Select the number of physical disks to be used and the capacity per physical disk. The number of physical disks that can be used is two or more for Read/Write and one or more for Read Only.
 - Manual disk selection Click the Select physical disks button and manually select the physical disks to be used for the L2 cache.

BL2 Cache Bind						
Select physical disks for the pool.						
The number of disks you can select for the pool: 2 ~ 2						
Unused physical disks	Physical disks: 2					
List View						
	Number A	Capacity[GB]	Type			
	00h-0008h	177.0	SSD			
	00h-0009h	177.0	SSD			
hł						
		OK	Cancel Help			

- 3. Click OK.
- 4. Click Next.
- 5. Verify the basic settings.

ZL2 Cache Bind
Configure the advanced settings.
Pool name VED_AUTOCHE_RW
Logical disks for L2 Cache
First number assigned to a logical disk for L2 Cache ffb 📻 h
Name of the logical disks for L2 Cache Pool0002_L2CHE
Explanation
- Pool name
 Specify the name of the pool for L2 tache. First number assigned to a logical disk for L2 Cache Specify the first number assigned to a logical disk for the L2 Cache. The Next unused numbers are assigned to the rest of logical disks.
- Name of the logical disk for L2 Cache
This prefix appended by a string derived from the logical disk number will be the actual name of a logical disk.
Cancel Help

To modify the default settings, click Advanced Settings, enter the Pool name and Logical disks for the L2 Cache details, then click OK.

- 6. Click Set.
- 7. Click Yes.
- 8. Click Finish.

Change L2 Cache Settings

After initial creation of the L2 cache, the option **Change of Settings** is available to use. This option allows you to disable the L2 cache mode and set the L2 cache initial value, pool and logical disk names.

- **1.** Perform **any** of the following:
 - From the SnapSAN Manager Monitor screen, navigate to Configuration > L2 Cache > Change of Settings.
 - From the L2 Cache Bind finish page, click Change of Settings.

Drange Of Settings
Enable or disable the L2 Cache mode.
🔽 Enable the L2 Cache mode.
Explanation To use the L2 Cache function, enable the L2 Cache mode. When the L2 Cache function is disabled, data in L2 Cache is moved to disks. While data in L2 Cache is moved to disks, cannot change the L2 Cache mode. Before deleting a pool for L2 Cache and logical disks in it, disable the L2 Cache mode.
Set the logical disk's L2 Cache initial value
L2 Cache on 💌 Persistent Write on 💌
Explanation The initial value which the L2 Cache is used or not can be set when bind logical disk from now on. When bind logical disk, the setting L2 Cache initial value will be used.
Set names for L2 Cache.
Pool name VED_AUTOCHE_RW
Logical disks for L2 Cache
Logical disk name 1 VED_AUTOCHE_RW_LD1
Logical disk name 2 VED_AUTOCHE_RW_LD2
Logical disk name 3 VED_AUTOCHE_RW_LD3
Set Cancel Help

This graphic shows that the L2 cache mode is enabled by default.

- **2.** Click **Set** to change the settings.
- 3. Click Yes.
- 4. Click Yes to confirm.
- 5. Click Cancel to continue.

Set the L2 Cache On/Off for a Particular Logical Disk

The option to turn the L2 cache On or Off for a specific Logical Disk is available. Use the following steps to achieve this.

1. From the SnapSAN Manager Monitor screen, navigate to Configuration > Logical Disk > Logical Disk Management > Change of Settings.

Change O	f Settings					
Select a	Indical disk that wil	Libe changed				
OCICCE G	nogical alorenaemi	r be enanged.				
- Logica	al disk list -					
Number	Type	Logical disk name	Capacity[GB]	Actual Used Capacity[GB]	Quota[C	
0001h	Windows GPT (WG)	LD2_SAS_50GB	50.0	20.2	40 🔺	
0003h	Windows GPT (WG)	LD3_NLSAS_50GB_CLONE	50.0	8.0	40	
0004h	Windows GPT (WG)	CB_50GB_NLSAS_MV	50.0	20.2	40	
003dh	Windows GPT (WG)	Win2012_75GB_5000_Test	75.0	0.0	60	
0054h	Windows GPT (WG)	Control_Volume_1570	0.2	0.0		
0055h	Windows GPT (WG)	W2012_50GB_FC_NLSAS_1542	50.0	0.0		
0056h	Windows GPT (WG)	W2K8R2_75GB_NLSAS_VSS	75.0	1.2		
0057h	Mindows GPT (NG)	M2K8R2 75GB SAS VSS 2	75 0	1.2		
Configu	re the advanced se	ttings				
Logical disk name LD2_SAS_50GB Read cache Enable Vrite cache Enable V						
Vse q	L2 Cache Enable V Persistent Write Enable V					
Actual p	0001 capacity	: 524.0	GВ			
Total ca	spacity of logical	disks in the pool : 338.0	GB			
🖌 Use t	hreshold (1-99)	70 🚍 % 35.0 GB				
Accessibility of the logical disk Don't make an LD inaccessible 🗾 🔓						

- 1. Select the Logical disk.
- 2. Change the **advanced settings** as required.
- 3. Click Set.
- 4. Click Yes.
- 5. Click Cancel.
- 6. Click OK.

Unbind the L2 Cache

The following steps allow you to remove the L2 cache. The first step is to disable the L2 cache mode from the **Change of Settings** page and then unbind the L2 cache as the following:

From the SnapSAN Manager Monitor screen, navigate to Configuration > L2 Cache > L2 Cache Unbind.

🚟 L2 Cache Unbind		
L2 Cache Unbind > Completion		
L2 Cache Information		
Name of the L2 Cache pool : VED_AUTOCHE_R L2 Cache Type : Read/Write Physical disks to be unbound	σ	
Number	Capacity [GB] Type	
00h-0008h	177.0 SSD	
00h-0009h	177.0 SSD	
	< Back St Cancel	Help

- 1. Click Set.
- 2. Click Yes.
- 3. Click Finish.