

Best Practices Guide

Oracle Database with Tegile IntelliFlash[™] Storage



Overview	3
Target Audience	3
Disclaimers	3
Test Environment	4
Tegile IntelliFlash Storage Array Provisioning	5
Fibre Channel Network Configuration	10
Dracle Linux Operating System Configuration	12
Multipathing Customization	15
Oracle Database Installation.	18
Oracle Database Grid Infrastructure Installation	19
Dracle Automatic Storage Manager (ASM) Configuration	20
Tegile Snapshots and Clones	22
About Tegile Systems, Inc.	27

Overview

This document describes best practices for deploying Oracle Database with Oracle Automatic Storage Manager (ASM) and Oracle Linux on Tegile IntelliFlash arrays. For purposes of this document, Oracle Database 12*c* and Oracle Linux 7 with Unbreakable Enterprise Kernel (UEK) were used. However, these recommendations also apply to Oracle Database 11g and earlier versions of Oracle Linux. Any version-specific deviations in procedure are called out in the document.

Best practices are provided for the following areas:

- Tegile IntelliFlash Storage Array Provisioning
- Fiber Channel Network Configuration
- Oracle Linux Operating System Configuration
- Multipathing Customization
- Oracle Database Installation
- Oracle Database Grid Infrastructure Installation
- Oracle Automatic Storage Manager (ASM) Configuration
- Tegile Snapshots and Clones

Target Audience

This guide is intended for system administrators, storage administrators, database administrators, and implementation engineers who manage, monitor, or deploy database servers and storage solutions in the datacenter. It is recommended that those who will implement these best practices have familiarity with networking, storage systems, and Oracle database concepts and functionality.

Disclaimers

This document contains recommendations for building a generic Oracle system with a single database instance. It does not take into account requirements for security, performance, resilience, and other operational aspects that may vary for individual customer deployments. If recommendations in this document conflict with current operational guidelines, those existing policies should be given higher priority. Tegile accepts no liability for any issues resulting from following these recommendations.

Test Environment

The recommendations and settings in the guide were tested using the following configuration. If running an IntelliFlash version earlier that 3.7.x, please contact <u>Tegile Support</u> to verify that these best practices are compatible.

Software Environment

Oracle Linux 7.3 x86_64 with the Unbreakable Enterprise Kernel 4.1.12-94.3.7.el7uek.x86_64 Oracle Database 12c Enterprise Edition Release 12.2.0.1.0 - 64 bit Production Oracle Grid Infrastructure 12c Release 1 (12.2.0.1.0) for Linux x86-64

Hardware Environment



Figure 1 - Tegile IntelliFlash T4700 All-Flash Storage Array

1 x Tegile IntelliFlash T4700 All-Flash Storage Array with

4 x Intel® Xeon® E5 CPUs 464 GB memory 24 x 1 TB SSDs IntelliFlash version 3.7.0.0.170808(GA)

Tegile IntelliFlash Storage Array Provisioning

The following recommendations are made for optimal performance when provisioning Tegile storage for Oracle Database environments:

- 1. Use 2-way mirrored storage pools of equal size with active/active configuration. This provides redundancy with greater performance by taking advantage of the full capabilities of both controllers in the array.
- Enable Tegile data compression. Tegile compression technology is a powerful way to reduce the overall storage capacity requirements for Oracle environments. The LZ4 compression algorithm is recommended for database workloads.
- 3. Due to the nature of Oracle Database blocks and the underlying data, Oracle deployments are not well suited for data deduplication. Significant savings are not realized in Oracle environments, so data deduplication is not recommended.
- 4. Larger block sizes can yield better performance. At a minimum, an 8 KB block size is recommended. However, this recommendation is workload-specific. Depending on the workload, a 16 KB or 32 KB block size may be considered (especially for REDO logs). Modify the Oracle DB_BLOCK_SIZE parameter to match the LUN block size selected. For purposes of our testing, a 16 KB block size was found to produce optimal performance for an OLTP workload.
- 5. Use thin provisioning when creating LUNs for Oracle ASM disk groups. Thin provisioning dynamically allocates storage capacity on the array as it is needed. This avoids performance problems associated with wasted capacity when over-allocating storage for future needs.

Listed below are the Tegile IntelliFlash configuration screens to implement these recommended settings.

Pool Configuration:

Active/Active 2-way Mirror Redundancy Use Half of Total Disks

Project Configuration:

Generic Purpose Fibre Channel Access Protocol Data Deduplication Off LZ4 Data Compression

LUN Configuration:

Thin Provisioning Database Purpose 16 KB Block Size Fibre Channel Access Protocol Two pools should be created with Active/Active configuration using 2-way mirroring. Each pool is assigned half of the total number of disks.

Create Pool	×
IntelliFlash automatically allocates available disks for data Pool Configuration	a and metadata based on the model and displays usable storage space capacity in the Pool Summary.
Name *	Pool-A
Redundancy Type * Pool Size * Do not perform disk integrity check Pool Summary Creating All Flash pool with below disk allocation.	 Double Parity 2 Way Mirror 2 Way Mirror - Withstands 1 disk failure per disk group Use half of total disks Use half of total disks Enable this option to turn off disk integrity check on all disks included in the pool.
Total 24 SSD Free 12 931.51	isks allocated to Pool Data 10 (Usable Capacity : 4.48TB) Data Spare 2
	Cancel



Each project is configured as Generic Purpose, using the Fibre Channel access protocol.

New Project				×
Properties App config Share NFS Setting SMB Setting	rs g ng ng	Name and Space configuration for Project Project Name * Pool *	Project.A Pool-A 👻	
iSCSI Target SiCSI Initiator FC Target Group FC Initiator Group Data Config Snapshots Summary	et stor Group ig 5	Purpose * Configure Access * Project Quota: Project Reservation:	Generic ▼ NFS SMB ISCSI ▼ O × 1 ‡ GB ▼ O × 1 ‡ GB ▼	
Cancel			Back Ne	ext

Figure 3 - Project Configuration Settings

Each project is configured with LZ4 compression. Deduplication is not enabled for Oracle Database workloads.

New Project			×
Properties FC Target Group FC Initiator Group Data Config Snapshots	Data configuration Deduplication : O × Compression : ✓ O		
O summary	Compression Type	Level	Speed
	LZ4	***	***
	LZJB	*合合合合	***
	GZIP	***	★★☆☆☆
	GZIP2	★★★☆☆	★★★☆☆
	GZIP9	****	★☆☆☆☆
Cancel			Back Next



Each LUN is created with thin provisioning, using with a 16 KB block size and the fibre channel access protocol.

New LUN in Pool-A > Project-A			×
 LUN Properties ISCSI Target ISCSI Initiator FC Target Group FC Initiator Group Snapshots Summary 	Name and Size configuration Quantity LUN Name: * LUN Size: * Thin Provisioning Purpose Purpose Block Size:	 Single Multiple DATA1 1 TB • Obtabase • 16KB •]
	Protocol:	FC -	
Cancel	• • Addiso 1979 (Back Next



Fiber Channel Network Configuration

Tegile recommends that a database server connected to an array with fibre channel always utilize redundant fabrics to protect against hardware failure, while providing load balancing and superior performance. In the diagram below, a FC configuration with redundant fabrics is shown connecting a database server to a Tegile all-flash array.

Redundant FC fabrics can be used with a Tegile array in both an Active/Passive and Active/Active pool configuration. The fabric configuration of a Tegile storage array in an Active/Active configuration is generally the same as the Active/Passive.

With Active/Passive configuration, one of the array controllers hosts all I/O traffic as the 'Active' controller until it is either manually failed over to the 'Standby' controller, or automatically failed over due to a hardware or link failure.

Active/Active is a common configuration to use with Tegile All-Flash arrays to obtain maximum performance as well as high density. In this configuration, all paths of the server's dual HBAs are utilized in connecting to the storage array. Should a hardware failure occur on either controller in the array, all Pools will be migrated to the surviving controller with all four ports in the database server host still being utilized for I/O traffic.



Figure 2 - Fibre Channel Network Configuration

Tegile recommends a FC switch configuration with 1:1 (one-to-one) zoning when connecting an array to a FC infrastructure. With 1:1 zoning, there is a single target WWPN and a single initiator WWPN in each zone configured on the FC switch. This type of zoning necessitates many zones being created, but reduces the impact of RSCNs (Registered State Change Notifications) and makes troubleshooting link problems easier.

With 1:1 zoning, each FC Initiator port on the database server is zoned with a single corresponding FC target port on the Tegile array. Using the above Active/Active FC Configuration as an example, each FC Initiator port in the database server is connected to an FC switch that is also directly connected to 4 FC Target ports on the Tegile array. In this case, each Initiator port would require 4 zones, one to each of the target ports connected to the same switch. A total of 16 zones would be required for a full 1:1 zoning configuration for a single host.

Oracle Linux Operating System Configuration

Tegile recommends the following steps to install and configure the Oracle Linux operating system.

Download the Oracle Linux installation package from the Oracle Software Delivery Cloud (http://edelivery.oracle.com). For purposes of this document, Oracle Linux Release 7 Update 3 for x86 (64 bit) was used.

Install Oracle Linux by booting the system from DVD or the ISO installation file, and follow the prompts. Consult the Oracle Linux Installation Guide for Release 7 document for detailed installation steps.

After the Oracle Linux operating system installation is complete, the following Oracle-specific packages should also be installed:

oracle-database-server-12cR2-preinstall oracleasm oracleasm-support kmod-oracleasm

Note:

For Oracle Database 12cR2, install package oracle-database-server-12cR2-preinstall For Oracle Database 12cR1, install package oracle-rdbms-server-12cR1-preinstall For Oracle Database 11gR2, install package oracle-rdbms-server-11gR2-preinstall The following additional packages are also required:

binutils compat-libcap1 compat-libstdc++ device-mapper-multipath gcc gcc-c++ glibc glibc-devel ksh libgcc libstdc++ libstdc++-devel libaio libaio-devel libXScrnSaver make nfs-utils ntp openssh-server sysstat telnet telnet-server xinetd xorg-x11*

For optimal performance, Oracle Linux should be configured with the following kernel settings in /etc/sysctl.conf as follows. These setting may vary depending on the physical memory of your database server.

fs.file-max = 6815744 kernel.sem = 250 32000 100 128 kernel.shmmni = 4096 kernel.shmall = 1073741824 kernel.shmmax = 4398046511104 kernel.panic_on_oops = 1 net.core.rmem_default = 262144 net.core.rmem_max = 4194304 net.core.wmem_default = 262144 net.core.wmem_max = 1048576 net.ipv4.conf.all.rp_filter = 2 net.ipv4.conf.default.rp_filter = 2 fs.aio-max-nr = 1048576 net.ipv4.ip_local_port_range = 9000 65500

The following lines should be added to the file /etc/security/limits.conf to set shell limits for user oracle:

# shell limits for user oracle 12gR2										
oracle	soft	nofile	1024							
oracle	hard	nofile	65536							
oracle	soft	nproc	2047							
oracle	hard	nproc	16384							
oracle	soft	stack	10240							
oracle	hard	stack	32768							
oracle	soft	memlock	3145728							
oracle	hard	memlock	3145728							

Multipathing Customization

Tegile recommends that Linux multipathing be customized as follows:

Verify that Linux multipathing is installed.

As user root:

yum list device-mapper

Verify that Linux multipathing is enabled. As user root:

multipath -11

If needed, start Linux multipathing agent.

As user root:

```
# service multipathd start
```

Create the /etc/multipath.conf file with the following lines:

```
defaults {
       polling_interval
                              5
       path_grouping_policy
                              multibus
       failback
                              immediate
       user_friendly_names
                              yes
                              8192
       max_fds
       }
devices {
       device {
               vendor "TEGILE"
               product "INTELLIFLASH"
               hardware_handler
                                      "1 alua"
                                      "round-robin 0"
               path_selector
               path_grouping_policy
                                      "group_by_prio"
                                      10
               no_path_retry
               dev_loss_tmo
                                      50
               path_checker
                                      tur
               prio
                                      alua
               failback
                                      30
               rr_min_io
                                      128
               }
       }
mutipaths {
       multipath {
               wwid xxxxxxxxx (substitute WWID of specific LUN here)
               alias DATA1
               }
       multipath {
               wwid xxxxxxxx (substitute WWID of specific LUN here)
               alias DATA2
               }
       }
```

After creating the /etc/multipath.conf file, flush the device mapper and rescan.

As user root:

```
# multipath -F
# multipath -v2
-or-
# reboot
```

Verify that LUNs appear with correct multipathing and aliases as specified in /etc/multipath.conf file.

As user root:

```
# multipath -11
```

Oracle Database Installation

The following are recommended steps to install and configure Oracle Database software.

Download the Oracle Database installation package from the Oracle Software Delivery Cloud (http://edelivery.oracle.com). For purposes of this document, Oracle Database Enterprise Edition 12.2.0.1.0 for Linux x86-64 was used.

If they do not already exists, run the following commands to create the Oracle user and groups.

As user root:

- # groupadd dba
- # groupadd oinstall
- # useradd -m -g oinstall -G dba oracle
- # passwd oracle

Create directories for the Oracle Database installation. For purposes of this document,

ORACLE_BASE=/oracle/12c ORACLE_HOME=/oracle/12c/database

As user root:

- # mkdir -p /oracle/12c/database
- # chown -R oracle:oinstall /oracle
- # chmod -R 775 /oracle

Install the Oracle Database software by first unzipping the installation file. Then run the Oracle Database installer and follow the prompts. Consult the Oracle Database 12c Release 2 Installation Guide document for detailed installation steps.

As user oracle, set Oracle environment variables to Oracle home. Then run the Oracle Database installer.

./runInstaller.sh

Oracle Database Grid Infrastructure Installation

The following steps are recommended to install and configure Oracle Grid Infrastructure software.

Download the Oracle Database Grid Infrastructure installation package from the Oracle Software Delivery Cloud (http://edelivery.oracle.com). For purposes of this document, Oracle Database Grid Infrastructure 12.2.0.1.0 for Linux x86-64 was used.

Create directories for the Oracle Database Grid Infrastructure installation. For purposes of this document, ORACLE_BASE=/oracle/12c ORACLE_HOME=/oracle/grid

As user root:

- # mkdir -p /oracle/grid
- # chown -R oracle:oinstall /oracle
- # chmod -R 775 /oracle

Install the Oracle Database software by first unzipping the installation file. Then run the Oracle Database Grid Infrastructure installer and follow the prompts. Consult the Oracle Grid Infrastructure Installation Guide for detailed installation steps.

As user oracle, set the Oracle environment variables to Oracle Grid home. Then run the Oracle Grid installer.

./gridSetup.sh

Oracle Automatic Storage Manager (ASM) Configuration

For simplicity and performance, it is recommended that Oracle ASM be used for deploying Tegile storage with an Oracle Database environment. The following configuration recommendations are made:

- 1. Create Oracle ASM disk groups specifying external redundancy. Tegile storage pools are created with built-in redundancy. Therefore, additional overhead from specifying Oracle ASM redundancy should be avoided.
- 2. Create separate Oracle ASM disk groups for DATA (for tablespaces and temp), LOGS (for redo logs), and FRA (for Fast Recovery Area). Redo logs store all changes made to the database as they occur. The Fast Recovery Area is a Oracle-managed central storage location for back and recovery files. Separate Oracle ASM disk groups for redo logs and Fast Recovery Area should be used to provide for the segregation of disks and redundancy in case a database recovery is required.
- Add LUNs to Oracle ASM disk groups in pairs, balanced between controllers and storage pools. When adding pairs of LUNs to an Oracle ASM disk group, create one LUN from Pool A and one LUN from Pool B to take advantage of the performance benefits of Tegile active/active controller technology.
- 4. When creating an Oracle ASM disk group, eight LUNs of equal size per disk group is recommended. Tests show that this can result in greater performance and lower latency.
- 5. To avoid the unnecessary overhead of Oracle ASM rebalancing, increase the size of existing LUNs rather than add new LUNs to Oracle ASM disk groups.

For deployment of Oracle ASM with Tegile storage, first verify that Oracle ASM is installed.

As user root:

yum list oracleasm

If needed, install Oracle ASM packages.

As user root:

- # yum install oracleasm
- # yum install oracleasm-support
- # yum install kmod-oracleasm

Assign ASM labels to LUNs using multipathing aliases.

As user root:

```
# /etc/oracleasm createdisk DATA1 /dev/mapper/DATA1
```

```
# /etc/oracleasm createdisk DATA2 /dev/mapper/DATA2
```

As user oracle, set the Oracle environment variables to Oracle Grid home. Then run the ASM Configuration Assistant to create ASM disk groups.

asmca

		ASM Configurat	ion Assistant:	Disk Groups		-	o x
Disk Groups				01			12 ^c
🚆 ASM 🕀 🎆 ASM Instances	Disk Group Name	Size (GB)	Free (GB)	Usable (GB)	Redundancy	State	
🖻 🐻 Disk Groups	DATA	1200.00	79.76	79.76	EXTERN	MOUNTED	
DATA	FRA	1040.00	39.76	39.76	EXTERN	MOUNTED	
- 🔞 FRA	LOGS	1000.00	139.82	139.82	EXTERN	MOUNTED	
	Note: Use right click to see	more options. ismount All	ih				
Help							Exit

Figure 6 - ASM Configuration Assistant

Note: For Oracle Database versions below 12.1, a known issue exists with ASM on Solaris that could be observed when cloning Tegile snapshots. This is related to Oracle bug 12382627 Solaris: ORA-27063 "number of bytes read/written is incorrect". The fix for this problem is to upgrade Oracle Grid Infrastructure to version 11.2.0.4 or higher. This is relevant to Solaris 64-bit (SPARC) and Sun Solaris x86-64 environments only.

Snapshots and Clones

This section discusses best practices for managing Tegile snapshots and clones for an Oracle Database environment. This should not be confused with Oracle snapshots.

Tegile snapshots are widely used to quickly create point-in-time virtual copies of data. However, it is incorrect and dangerous to think of snapshots as a backup solution. Unless copied to different media such as a second storage array, Tegile snapshots do not protect against media failure.

Tegile snapshots can be helpful for implementing mass deployments or offline computing to ease compute and network loads. The typical use for Tegile snapshots in an Oracle Database environment is to replicate a target master (i.e. production) to a non-master (i.e. development), or to offload and cache expensive queries in a read-only data warehouse.

Another reason why Tegile snapshots are such a valuable administrative tool is because they take up virtually no additional space due to redirect on write technology. Space is only consumed by new data or pointers to old data when existing data is changed.

Before creating a Tegile snapshot of an Oracle Database environment, the database must first be put in backup mode. As user oracle:

sqlplus / as sysdba
SQL> alter database begin backup;

Note that Oracle backup mode is possible only with ARCHIVELOG enabled. NOARCHIVELOG is the default setting, but it does not provide for point-in-time snapshots. If NOARCHIVELOG is enabled, the database must be shutdown cleanly before creating a snapshot to ensure consistency.

The following commands will show the log mode (either ARCHIVELOG or NOARCHIVELOG) for a database. As user oracle:

```
# sqlplus /nolog
SQL> connect / as sysdba;
connected.
SQL> archive log list;
SQL> select log_mode from v$database;
```

The log setting for a database can be changed from NOARCHIVELOG to ARCHIVELOG with the following commands. However, this requires that the database be shutdown first.

```
As user oracle:

SQL> shutdown immediate;

Database closed.

Database dismounted.

ORACLE instance shut down.

SQL> startup mount;

ORACLE instance started.

Database mounted.

SQL> alter database archivelog;

Database altered.

SQL> alter database open;

Database altered.
```

After the database has been put in backup mode (with ARCHIVELOG) or shutdown (with NOARCHIVELOG), a Tegile snapshot can then be created. Tegile projects are convenient organizational structures that holds multiple LUNs. Snapshots are created at the project level and contain a point-in-time virtual copy of **all data** in that project.

The following screens illustrate the simple process for creating a Tegile snapshot of ProjectA.

∷tegile IntelliFlash	Dashboard Analytics Pro	vision - Services - Settings -	
Projects		Project-A	
Local (2) Replica (0)		LUNS (24) Shares (0)	
New Manage - Delete	Ö	New Manage - Delete	
Settings Projects	У	LUN Name 🗢	₽ GUID ▲
Project-A	*	DATA1	61C5A0B07AD2B51C000059FCED020008
Project P		DATA2	61C5A0B07AD2B51C000059FCED020009
Projecto		DATA3	61C5A0B07AD2B51C000059FCED03000A
		DATA4	61C5A0B07AD2B51C000059FCED04000B

Provision --> Projects --> Manage --> Data Protection

tegile IntelliFlag	Sh Dashb	oard A	Analytics	Provision -	Services 🗸						intellif	lash-perf	¢
Back You are at : Pool-A	/Project-A												
Data Protection													
Snapshots Replicatio	n												
Graph view Table vie	W												
											Π		
¢													>::
27 30	3	6	9 12	15	18 21	24	27	30	2	5	8		
Nov 10, 2017 (0 Snapshot	s)												
New Snapshot Clone	Rollback D	elete 🔹								Manag	e Schedules	Refresh	List
 Creation Time 	Sch	edule			ι	ogical Size		Detail	s				
No records found			-						Sele	ect a snaps	hot to view deta	ails	
		14 44	1 ⇒	$\left \bullet \right $									

New Snapshot

ytics	Provision -	Serv	ices • Settings •			
ject-A			Manually Adding Snapshot		×	
			Snapshot Name: *	Snapshot1		
			Quiesce:	0 ×		
					Cancel Create	

Enter Snapshot Name

✤tegile IntelliFlash	Dashboard Analytics	Provision +	Services +			intelli	lash-perf 🗘
Back You are at : Pool-A/Project	t-A						
Data Protection							
Snapshots Replication							
Graph view Table view							
 27 30 3 Nov 10, 2017 (1 Snapshots) 	6 9	12 15	18 21	24 27	30 2	5 8	>.
New Snapshot Clone Rollbac	k Delete 👻					Manage Schedules	Refresh List
Creation Time	Schedule		Log	ical Size	Details		
2 10 Nov 2017 15:15	Manual Project Snapsho	ot: "Snapshot1"	13 K	В	Project Name	Project-A	
	K ≪ 1 ≫ H					Manual Project Sna "Snapshot1"	pshot:
					Creation Time	10 Nov 2017 15:15	
					Quiesced	no	
					Used Space	0 MB	
					Logical Size	13 KB	

New Snapshot is Created

Creation of a Tegile snapshot is a very fast operation. After the snapshot has been created, the database should then be taken out of backup mode to resume normal operation.

As user oracle:

```
# sqlplus / as sysdba
SQL> alter database end backup;
```

After a Tegile snapshot has been created, it can be cloned to replicate every LUN in the project while maintaining the original LUNs for continuous use. The cloned LUNs can be assigned alternate access for recovery, data mining, or test and development purposes. When finished, the clone can be deleted without any disruption to the original data and LUNs.

The following screens illustrate the simple process for creating a clone of *Snapshot1*.



New Clone

tegile	IntelliFlash Da	shboard Analytics	Provision -	Services -				intelliflash-pe	rf D
Back You a	re at : Pool-A/Project-A	Clone Project				×			
Data Protect	tion								
Snapshots	Replication	Clor	ne of: Pool-A	VProject-A@Manu	ual-P-Snaps <mark>ho</mark> t1				
Graph view	Table view	Clone nar	me: * Clon	ie1					
	-	Inherit Project Set	tings:						
					Cancel	Create			
	27 30 3	6 9 1	2 15	18 21	24 27	30 2	5 8		

Enter Clone Name

♣tegile IntelliFlash	Dashboard	Analytics Provision -	Services	 ✓ Settings - 			
Projects		Project-A					
Local (2) Replica (0)		LUNS (48) Shares (0))				
New Manage - Delete	Ø	New Manage - De	lete				
Projects ≑	V	LUN Name 🖨	7	GUID 🖨	Size 🖨	Data 🜩	Snapshots
Project-A	DATA1		61C5A0B07AD2B51C000059FCED020	150 GB	9.5 GB	0 B	
Project-B		DATA1-Clone1 (c)		61C5A0B07AD2B51C00005A063A490	150 GB	512.0 B	0 B
		DATA2		61C5A0B07AD2B51C000059FCED020	150 G <mark>B</mark>	9.3 GB	0 B
		DATA2-Clone1 (c)		61C5A0B07AD2B51C00005A063A490	150 GB	512.0 B	0 B
		DATA3		61C5A0B07AD2B51C000059FCED030	150 GB	9.3 GB	0 B
		DATA3-Clone1 (c)		61C5A0B07AD2B51C00005A063A4A0	150 GB	512.0 B	0 B
		DATA4		61C5A0B07AD2B51C000059FCED040	150 GB	9.4 GB	0 B
		DATA4-Clone1 (c)		61C5A0B07AD2B51C00005A063A4B0	150 GB	512.0 B	0 B
		DATA5		61C5A0B07AD2B51C000059FCED050	150 GB	9.3 GB	0 B
		DATA5-Clone1 (c)		61C5A0B07AD2B51C00005A063A4B0	150 GB	512.0 B	0 B
		DATA6		61C5A0B07AD2B51C000059FCED060	150 G <mark>B</mark>	9.3 GB	0 B
		DATA6-Clone1 (c)		61C5A0B07AD2B51C00005A063A4C0	150 GB	512.0 B	0 B
		DATA7		61C5A0B07AD2B51C000059FCED070	150 GB	9.3 GB	0 B
		DATA7-Clone1 (c)		61C5A0B07AD2B51C00005A063A4C0	150 GB	512.0 B	0 B
		DATA8		61C5A0B07AD2B51C000059FCED080	150 GB	9.3 GB	0 B
		DATA8-Clone1 (c)		61C5A0B07AD2B51C00005A063A4D0	150 GB	512.0 B	0 B

Cloned LUNs are Created



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