conro

Professional Services

System Installation Workbook

For Avanade

Clustered Data ONTAP®

p

|  |  |
| --- | --- |
| **Sales Order #:** | 600210095 |
| **Order Date:** | 11/5/14 |
| **Project #:** | n/a |
| **Targeted Install Date:** | 11/13/14 |
| **Install Location:** | San Jose |
| **NetApp Contact Name:** | Jillian Mackey |
| **NetApp Contact Email:** | Jillian.Mackey@netapp.com |
| **Avanade Contact Name:** | Mike DeLuca |
| **Avanade Email:** | Mike.de.luca@avanade.com |
| **Avanade Phone Number:** | 650-839-3140 |
| **Customer PO#:** | n/a |
| **Installer/Engineer Name:** | TBD |

Welcome

Dear Leslie,

Thank you for choosing a NetApp Storage System and Professional Services installation.

To ensure a seamless deployment and integration into your environment, please complete and return this document to NetApp following the instructions in the section entitled [How To Use This Workbook](#_HOW_TO_USE).

The information you provide will be used by NetApp to prepare for the installation and configuration of your NetApp system.

I have listed my contact information below for your immediate reference in the event you have any questions.

Thank you for your business. We look forward to working with you.

Jeff Cox

Project Manager

NetApp

jeff.cox@netapp.com

Phone:404-931-4959

TABLE OF CONTENTS

[Welcome ii](#_Toc389222916)

[HOW TO USE THIS WORKBOOK 5](#_Toc389222917)

[1 Site Readiness Checklist 6](#_Toc389222918)

[2 Basic Clustered Data ONTAP® Configuration Requirements 8](#_Toc389222919)

[2.1 Cluster Interconnect Switch 8](#_Toc389222920)

[2.2 Cluster Information 9](#_Toc389222921)

[2.3 Licensing 9](#_Toc389222922)

[2.4 Admin Vserver 10](#_Toc389222923)

[2.5 Time Synchronization 12](#_Toc389222924)

[2.6 Time Zone 12](#_Toc389222925)

[2.7 Node Information 12](#_Toc389222926)

[2.8 Physical Port Identification 12](#_Toc389222927)

[2.9 Node Management LIF 13](#_Toc389222928)

[2.10 SP Management (Support Processor) 13](#_Toc389222929)

[2.11 Interface Groups(IFGRP) 14](#_Toc389222930)

[2.12 Configure Virtual LANs (VLANs) 14](#_Toc389222931)

[2.13 Intercluster Network Information 15](#_Toc389222932)

[2.14 AutoSupport Settings 15](#_Toc389222933)

[2.15 Customer/RMA Details 16](#_Toc389222934)

[3 Advanced Clustered Data ONTAP® Configuration Requirements 16](#_Toc389222935)

[3.1 Vserver Information 16](#_Toc389222936)

[3.2 Aggregates 18](#_Toc389222937)

[3.3 Data Logical Interfaces (LIFs) 18](#_Toc389222938)

[3.4 Failover Group Configuration 19](#_Toc389222939)

[3.5 Volumes 19](#_Toc389222940)

[3.6 Volume Options (e.g., Thin Provisioning, De-Duplication, etc.) 20](#_Toc389222941)

[3.7 Setup Exports 20](#_Toc389222942)

[3.8 Vserver Snapshot Schedule Configuration 20](#_Toc389222943)

[3.9 SnapMirror Relationships 21](#_Toc389222944)

[3.10 Remote Support Agent Setup 21](#_Toc389222945)

[3.11 iSCSI Node Name 22](#_Toc389222946)

[3.12 IGroup 22](#_Toc389222947)

[3.13 Data LIFs – FC/FCOE 22](#_Toc389222948)

[3.14 Motherboard/Disk/Shelf Firmware Revision Requirements 23](#_Toc389222949)

[3.15 SAS Configuration 23](#_Toc389222950)

[4 Installation and Verification Checklists 25](#_Toc389222951)

[Basic Configuration Testing 25](#_Toc389222952)

[4.1 Installation Checklist 25](#_Toc389222953)

[4.2 Network Health and Configuration Validation 26](#_Toc389222954)

[4.3 Cluster Health and Failover Availability 28](#_Toc389222955)

[4.4 Storage Aggregate and Volume Status 29](#_Toc389222956)

[4.5 Optional Post Installation Checklist 29](#_Toc389222957)

[Advanced Configuration Testing 30](#_Toc389222958)

[4.6 CIFS Configuration Validation Using Test SVM 30](#_Toc389222959)

[4.7 NFS Configuration Validation Using Test SVM 31](#_Toc389222960)

[4.8 iSCSI Configuration Validation Using Test SVM 31](#_Toc389222961)

[4.9 FCP Configuration Validation Using Test SVM 32](#_Toc389222962)

[A. Glossary 33](#_Toc389222963)

## HOW TO USE THIS WORKBOOK

The purpose of this workbook is to capture and document the business and operational requirements for implementing the services sold under SO# 600210095.

**Instructions:**

#### Avanade

1. Please complete Sections 1 and 2 of this workbook.
2. Review the latest version of the Site Requirements Guide from the [NetApp Support](https://library.netapp.com/ecm/ecm_get_file/ECMP1112530) site for the dimensions and power requirements of your NetApp equipment.
3. Email the completed workbook to NetApp Coordinator listed on the cover page.

Upon receipt of this completed document, the NetApp Project Lead will contact you to schedule the Install Review Meeting and the installation.

For information describing the operations of Data ONTAP in Cluster mode, see the NetApp Support Site under [Documentation](http://support.netapp.com/portal/documentation).

#### NetApp Engineer

1. Complete Section 4 of this workbook during the installation and return the updated workbook to Documentation Control, via e-mail to ([*ng-InstallDocs*](mailto:ng-InstallDocs?subject=Workbook%20completed%20by%20Engineer%20during%20install%20for%20SO%23)).

# Site Readiness Checklist

The Site Preparation Checklist is intended to eliminate delays by ensuring all site preparation tasks are completed prior to the arrival of the NetApp engineer.

**Completion** of this checklist determines readiness to perform the installation and ensures all staging requirements are met **BEFORE** the NetApp installation team arrives on site to perform the install, enabling the NetApp Engineer to fully complete the installation and begin important monitoring of the device(s).

**Note:** If a category is “Not Applicable” for this installation please mark NA in the Status section.

| **** | **Requirement** | **Description/Comments** | **Status**  **(Open, Closed, NA)** | **Assigned To** |
| --- | --- | --- | --- | --- |
|  | **Admin/Logistics (Site Location, Contacts, Access, Shipment, Sign-off)** | | | |
|  | Confirm site location and contacts on cover page of this workbook. |  |  |  |
|  | Specify the Floor location. | SV5:1:52395:AVANADE INC |  |  |
|  | Review sales order to reconfirm what was ordered. |  |  |  |
|  | Begin coordinating Site Access arrangements – **to be finalized during Install Review Meeting** |  |  |  |
|  | Specify local site access requirements and protocols i.e. day or time restrictions | Engineer name  Prefer AM installation |  |  |
|  | Please provide contact information for the individual that will be my engineer’s on site POC | Mike DeLuca |  |  |
|  | Confirm all NetApp hardware listed on sales order has arrived and prep for site survey | As of 11/5, equipment hasn’t arrived |  |  |
|  | Initiate Change Control/Request for Pending Install, if applicable |  |  |  |
|  | Will there be someone on-site to sign the completion document | Yes |  |  |
| No |
|  | Please provide name and contact information of the person who will be signing off the completion document? | Mike DeLuca |  |  |
|  | **Installation Prep & Planning (Space, Rack, Power, Network, Cabling, Configuration)** | | | |
|  | Confirm power is installed | Rack will have power |  |  |
|  | Do you use standard 3 prong power cords or C13/14 hooded power cords? | C13/14 |  |  |
|  | Did you receive the correct power cables? | As of 11/5, we haven’t received equipment |  |  |
|  | Confirm network drops | Network in place |  | Avanade |
|  | Is the network running and functional? | Yes |  |  |
|  | Confirm IPs and Ports Are Assigned and Configured at the switch level as required | Confirmed |  |  |
|  | Add Host Names & IPs to worksheet and confirm they have been added into DNS? | Confirmed |  |  |
|  | Provide Visio cabling diagram from Avanade detailing if there are: | New Loops?  Existing Loop (if shelf add)? If Existing Loop, please identify Loop to be added to: |  |  |
|  | NetApp Supplied Rack?  Note to engineer, review power cable type. | Yes |  |  |
| No |
|  | Specify rack location and shelf elevations. | SV5:1:52395:AVANADE INC |  |  |
|  | Please describe where the equipment will be installed, (i.e. a 2-post rack, 4-post rack, cabinet, etc.) | 4-post Cabinet (Square Hole) |  |  |
|  | Can you confirm the whereabouts of the equipment and that the engineer will have access to it? | Yes |  |  |
| No |
|  | Specify the Filer Serial Numbers or Host Names for the shelf add. | Not known until arrival |  |  |
|  | Does equipment need to be placed in racks? | Yes |  |  |
| No |
|  | Is there a staging area assigned/identified to unpack boxes and install shelves? | Yes |  |  |
| No |
|  | Is there adequate space for the equipment in the room or in the rack if existing rack? | Yes |  | Avanade |
| No |
|  | Name of personnel from storage team who will perform checkout? | Mike DeLuca |  | Avanade |

# Basic Clustered Data ONTAP® Configuration Requirements

Avanade, use this section to document specific business requirements for the implementation and configuration of your NetApp infrastructure.

The requested information enables NetApp to configure your equipment as per your specifications. Depending on the desired configuration, some fields may not be applicable. If necessary, contact the NetApp Contact listed on the cover page for the purpose of scheduling a meeting with the correct NetApp technical resources for completing this section of the workbook.

## Cluster Interconnect Switch

**Switch Model: CN1610**

To maintain cluster consistency, 2 \* 10GbE network ports were configured from each node as cluster ports. All cluster ports on the nodes as well the inter-site link communicate using Jumbo Frames (9000 MTU). All cluster ports from X nodes in the cluster are interconnected via the 2 networking switches that are supplied by NetApp. These will use an class B subnet of 169.254.x.x and will be auto assigned during the cluster create and join processes. There will also be a management port from each switched used by NetApp customer support if needed.

| Node Name | Name | IP Address | Netmask | Gateway |
| --- | --- | --- | --- | --- |
| SV5-SAN-cisw01 | SV5-SAN-cisw01 | 172.20.9.36 | 255.255.255.0 | 172.20.9.1 |
| SV5-SAN-cisw02 | SV5-SAN-cisw02 | 172.20.9.37 | 255.255.255.0 | 172.20.9.1 |

**Password Administration:**

There are 2 passwords on each switch:

* an Administrator login password, and
* an ‘Enable’ password that allows configuration of additional switch parameters.

To set the Administrator password, log into the switch and enter the following commands:

>password

>(prompt) Enter Old Password: **<oldpasswordhere>**

>(prompt) Enter New Password: **<newpasswordhere>**

>(prompt) Confirm New Password: **<newpasswordhere>**

To set the ‘enable’ password, log into the switch and enter the following commands:

>enable

>(prompt) Enable Password: **<oldenablepasswordhere>**

>enable password: **<newenablepasswordhere>**

>exit

## Cluster Information

**IMPORTANT:** Please be sure to specify both **Storage Controller Model** and **Data ONTAP Version**.

| Cluster name | Cluster Serial Number | Storage Controller Model | Data ONTAP® Version | Cluster Base Aggregate |
| --- | --- | --- | --- | --- |
| SV5-SAN02 | TBD | 8040 | 8.3 (Latest) |  |

It is assumed that the cluster will contain four nodes. If there are more than four nodes, replicate the appropriate section to add additional node information.

Starting from Data ONTAP 8.1, the 'cluster create' and 'cluster join' commands have built-in wizards. The wizard generates hostnames, IP addresses for the cluster LIF and subnet masks for the cluster LIF. It is recommended to use the cluster setup wizard while creating a new cluster or attempting to join an existing cluster.

The wizard has the following rules:

* The names for the nodes in the cluster are derived from the name of the cluster. If the cluster is named clust1, the nodes will be names as clust-01, clust-02 and so on. The node name can be changed later with the cluster: system>node>modify command.
* The cluster LIF will be assigned IP address in the 169.254.0.0 range with a Class B subnet (255.255.0.0) if the default is taken.
* The initial cluster creating and configuration will be performed on the first node that is booted. The initial setup script will ask if the operator wants to create a cluster or join a cluster. The first node will be “create” and subsequent nodes will be “join”.

Once the cluster has been defined and the nodes are joined to the cluster, other elements can be created. These elements can be created using System Manager, or CLI.

## Licensing

A base license is required, but additional features also need licensing. Avanade, if applicable, please specify any additional licensing required that has not already been purchased.

| License | Values |
| --- | --- |
| CIFS | Yes |
| No |
| FCP | Yes |
| No |
| FlexClone | Yes |
| No |
| iSCSI | Yes |
| No |
| NFS | Yes |
| No |
| SnapRestore | Yes |
| No |
| SnapMirror\_DP | Yes |
| No |
| SnapManager | Yes |
| No |

## Admin Vserver

The Cluster Administration Vserver is used to manage the cluster activities. It is different from the node Vservers and is used by System Manager to access the cluster.

| Type of information | Value |
| --- | --- |
| **Cluster administrator password**  The password for the ‘admin’ account that the cluster requires before granting cluster administrator access at the console or through a secure protocol.  The default rules for passwords are as follows:   * A password must be at least eight characters long. * A password must contain at least one letter and one number. | netapp123 |
| **Cluster management interface port**  The physical port that is connected to the data  network and enables the cluster administrator  to manage the cluster.  Because the cluster management interface  can fail over to any node in the cluster, the  cluster management interface port should  have a port role of data. |  |
| **Cluster management LIF IP address**  A unique IP address for the cluster management LIF. The cluster administrator uses this address to access the cluster admin Vserver and manage the cluster. Typically, this address should be on the data network. | 172.20.9.38 |
| **Cluster management LIF netmask**  The subnet mask that defines the range of valid IP addresses on the cluster management network. | 255.255.255.0 |
| **Cluster management LIF default gateway**  The IP address for the router on the cluster management network. | 172.20.9.1 |
| **DNS domain name**  The name of your network's DNS domain. The domain name cannot contain an underscore (\_) and must consist of alphanumeric characters. To enter multiple DNS domain names, separate each name with either a comma or a space. | ci.avahc.com |
| **Name server IP addresses**  The IP addresses of the DNS name servers. Separate each address with either a comma or a space. | 172.20.11.20, 172.20.11.21 |
| **Physical location of the controller**  A description of the physical location of the  node. Use a description that identifies where  to find this node in the cluster (for example,  "Lab 5, Row 7, Rack B"). | SV5:1:52395:AVANADE INC, Cab 0215 |

## Time Synchronization

| Time synchronization details | Values |
| --- | --- |
| Time services protocol (NTP) | NTP |
| Time Servers (up to 3 internal or external hostnames or IP addresses) | 172.20.11.20, 172.20.11.21 |
| NTP Version |  |

## Time Zone

What time zone should the systems set their clocks to (for example, US/Pacific)?

| Time Zone | Location |
| --- | --- |
| US / Pacific | San Jose, CA |

## Node Information

Individual controllers are called nodes. Each node has a unique name. Unlike the cluster name, the node name can be changed after it is initially defined.

|  |  |  |
| --- | --- | --- |
|  | **Node name** | **Serial Number** |
| Node 1 | SV5-SAN02-01 | TBD |
| Node 2 | SV5-SAN02-02 | TBD |
| Node 3 |  |  |
| Node 4 |  |  |

## Physical Port Identification

Each port services a specific type of function or role. These roles are:

* Node Management
* Data Intercluster
* Cluster

Node Management ports are required to maintain connection between the node to site services such as NTP and AutoSupport. Data ports are used to transfer data or communicate between the cluster and the applications. Intercluster LIFs are used to setup peer relations between clusters for replicating data between clusters. Cluster ports are specifically used to transfer data between nodes within a cluster.

Some controllers have an e0M interface for environments with a subnet dedicated to managing servers. Include the e0M settings if you have a management subnet.

For systems without an e0P port, leave one network port available for ACP connections to SAS disk shelves.

The following table is used to define port roles.

| Node | Node Name | Port or IFGRP | MTU | Port Role |
| --- | --- | --- | --- | --- |
| Node 1 | SV5-SAN02-01 |  |  |  |
| Node 2 | SV5-SAN02-02 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

## Node Management LIF

Each node has a management port that is used to communicate with it.

| Node Name | Port or IFGRP | LIF Name | IP Address | Netmask | Gateway |
| --- | --- | --- | --- | --- | --- |
| Not sure, We have plenty of IP’s available and will work with the engineer onsite to figure out the best port layout. |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

## SP Management (Support Processor)

Each node has a support processor port that is used to communicate with it (lights out).

| Node Name | Port or IFGRP | IP Address | Netmask | Gateway |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

## Interface Groups(IFGRP)

(Optional) Interface groups bond multiple network ports together for increased bandwidth and/or fault tolerance.

| IFGRP name | Node | Distribution function | Mode  (Single-mode, multi-mode or LACP) | Ports |
| --- | --- | --- | --- | --- |
| We’ll want these but need to work with the engineer to figure out how many ports we need and to where. |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

## Configure Virtual LANs (VLANs)

(Optional) VLANs are used to segment network domains. The VLAN has a specific name that is a combination of the associated network port and the switch VLAN ID.

| VLAN name | Node | Associated Network Port | Switch VLAN ID |
| --- | --- | --- | --- |
| Storage |  |  | 107 |
|  |  |  |  |
|  |  |  |  |

## Intercluster Network Information

(Optional) The intercluster ports used for cross-cluster communication. An intercluster port should be routable to the following:

* Another intercluster port
* Data port of another cluster.

| Node name | Port | LIF name | IP address | Netmask | Gateway |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

## AutoSupport Settings

AutoSupport is an automated diagnostic reporting function designed to notify you and NetApp of any event triggered messages. In addition, it provides weekly logs, NetApp health triggers, and performance statistics. This ensures prompt support responsiveness and system wide proactive health checks.

System must remain on a support contract and the level of responsiveness is dependent on the level of service purchased.

| AutoSupport Settings | Controller 1 | Controller 2 | Controller 3 | Controller 4 |
| --- | --- | --- | --- | --- |
| Configure AutoSupport on: | Yes | Yes |  |  |
| SMTP Server Name or IP | 172.20.11.28 | 172.20.11.28 |  |  |
| AutoSupport Transport | HTTPS (default)  HTTP  SMTP | HTTPS (default)  HTTP  SMTP | HTTPS (default)  HTTP  SMTP | HTTPS (default)  HTTP  SMTP |
| AutoSupport From E-Mail address | <mailer@ci.avahc.com> | <mailer@ci.avahc.com> | <nodename@yourdomain> | <nodename@yourdomain> |
| AutoSupport To E-Mail address(es) | [Sv5support@ci.avahc.com](mailto:Sv5support@ci.avahc.com) | [Sv5support@ci.avahc.com](mailto:Sv5support@ci.avahc.com) |  |  |

## Customer/RMA Details

Verify this information by logging into the http://support.netapp.com website. This information is required to ensure that the Technical Support personnel can reach you and the replacement parts are sent to the correct address.

| Customer/RMA details | Primary contact | Secondary contact |
| --- | --- | --- |
| Contact Name | Mike DeLuca | Lee Talbert |
| Contact Address | 818 Stewart St, Seattle, WA | 818 Stewart St, Seattle, WA |
| Contact Phone | 650-839-3140 | 253-334-8996 |
| Contact E-mail Address | [Mike.de.luca@avanade.com](mailto:Mike.de.luca@avanade.com) | Lee.talbert@avanade.com |
| RMA Address | SV5:1:52395:Avanade Inc., Equinix, 9 Great Oaks Blvd, San Jose, CA 95119 | |
| RMA Attention to Name | SV5:1:52395:Avanade Inc. | |

|  |  |
| --- | --- |
|  | Avanade, this completes the information required for a basic install and configuration. |

# Advanced Clustered Data ONTAP® Configuration Requirements

Avanade, upon installation of your NetApp storage system, work with your NetApp System Engineer, or NetApp ACS consultant to complete this section and document requirements for the advanced configuration of your NetApp infrastructure.

## Vserver Information

Application access to data residing in the cluster must be done through a Vserver. Vservers can be used to support single or multiple protocols, user groups, or whatever delineation that the customer chooses. Additionally Vservers can restrict allocation of data to specific Aggregates.

To create a Vserver, you can use any of the available administrative interfaces: System Manager, or CLI. The Vserver Setup wizard has the following sub-wizards, which you can run after you create a Vserver:

* Network setup
* Storage setup
* Services setup
* Data access protocol setup

Use the following section as a guide to create Vservers. Replicate this section as many times as required.

|  |  |  |  |
| --- | --- | --- | --- |
| Protocol |  |  |  |
| Vserver Name |  |  |  |
| Name service order |  |  |  |
| NIS Domain Name |  |  |  |
| Hostname of NIS Server 1 |  |  |  |
| Hostname of NIS Server 2 |  |  |  |
| LDAP Domain / Base DN |  |  |  |
| LDAP Scope (subtree) |  |  |  |
| LDAP BIND DN (user) |  |  |  |
| Hostname of LDAP Server 1 |  |  |  |
| Hostname of LDAP Server 2 |  |  |  |
| Default Gateway |  |  |  |
| CIFS Settings |  |  |  |
| NetBIOS Name |  |  |  |
| FQDN |  |  |  |
| DNS domain |  |  |  |
| IP Address of DNS Server 1 |  |  |  |
| IP Address of DNS Server 2 |  |  |  |
| Preferred DC 1 |  |  |  |
| Preferred DC 2 |  |  |  |
| Organizational Unit (OU) |  |  |  |
| IP Address of NIS Server 1 |  |  |  |
| IP Address of NIS Server 2 |  |  |  |
| IP Address of LDAP Server 1 |  |  |  |
| IP Address of LDAP Server 2 |  |  |  |

## Aggregates

List the aggregates to be created for this configuration.

| Aggr Name | Host/Node | Type | Disk Type | # of Disks | RAID Size | Capacity |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

## Data Logical Interfaces (LIFs)

Data Logical Interfaces are the point at which the customer interfaces with the Vserver.

| Vserver Name | LIF name | Protocol | VLAN | IP Address | Subnet mask | Default Gateway | Home node | Home port | Failover group |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

## Failover Group Configuration

| Failover Group Name | Node Name | Port |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

## Volumes

List the volumes to be created for this configuration.

| Vserver | Volume | Aggregate | Security Style | Size | Options |
| --- | --- | --- | --- | --- | --- |
|  |  |  | NTFS  Unix |  |  |
|  |  |  | NTFS  Unix |  |  |
|  |  |  | NTFS  Unix |  |  |

## Volume Options (e.g., Thin Provisioning, De-Duplication, etc.)

List the volume options to be enabled for this configuration.

| Volume Option | Recommended Value | Notes |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

## Setup Exports

**NFS**

| Export Policy Name | IP Address | UID | GID | Permission Levels |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**CIFS**

| Vserver | Users/Groups | Local Group |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

## Vserver Snapshot Schedule Configuration

List the SnapShots to be created for this configuration.

| Vserver | Volume | %reserve | Schedule | Retention |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

## SnapMirror Relationships

List the SnapMirror Relationships to be created for this configuration.

| Source Volumes | Destination Volumes | Number of Relationships |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

## Remote Support Agent Setup

|  |  |
| --- | --- |
| Remote Management Device IP / Proxy IP Address: |  |
| Proxy Type: | SOCKS  HTTP  None |
| Proxy User Name and Password: |  |
| Administration HTTP or HTTPS IP address: |  |
| Port number: |  |
| Agent administrator user name and password: |  |

## iSCSI Node Name

| Host Name | IQN | Network IP Address |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

## IGroup

| Vserver | Group Name | Protocol | OS Type | Initiator |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

## Data LIFs – FC/FCOE

Use the following table to specify the desired data logical interface (LIF) for FC/FCOE.

| Vserver Name | LIF name | Protocol | VSAN | WWPN | Home node | Home port |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

## Motherboard/Disk/Shelf Firmware Revision Requirements

| Firmware | Version |
| --- | --- |
| Motherboard |  |
| Disk Shelf |  |
| Disk |  |
| ACP |  |

## SAS Configuration

Use the following table to describe any SAS configuration requirements for this implementation.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SAS Configuration** | | | | | | | | | |
| **Local Node** | **Partner Node** | **Stack #** | **Slot/Port Assignment** | | | | **Shelf Count** | **Drive Geometry** | **Shelf Address Range** |
| **Primary** | | **Redundant** | |
| **Local** | **Partner** | **Local** | **Partner** |
| Node A of a HA pair | Node B of a HA pair |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

**EXAMPLE:**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SAS Configuration** | | | | | | | | | |
| **Local Node** | **Partner Node** | **Stack #** | **Slot/Port Assignment** | | | | **Shelf Count** | **Drive Geometry** | **Shelf Address Range** |
| **Primary** | | **Redundant** | |
| **Local** | **Partner** | **Local** | **Partner** |
| netapp1 | netapp2 | 1 | 1a | 1b | 2a | 2b | 10 | 450GB SAS | 10 - 19 |
| 2 | 1c | 1d | 2c | 2d | 4 | 2TB BSAS | 20 - 23 |
| N/A |  |  |  |  |  |  |  |
| N/A |  |  |  |  |  |  |  |

# Installation and Verification Checklists

Upon completion of the installation, the NetApp Engineer will complete the checklists in this section to confirm that the system has been configured as per best practices and agreed upon requirements and design. The following checklists are included in this section:

**Basic Configuration**

* 4.1 Installation Checklist
* 4.2 Network Health and Configuration
* 4.3 Cluster Health and Failover Availability
* 4.4 Storage Aggregate and Volume Status
* 4.5 Optional Post Installation Checklist

**Advanced Configuration**

* 4.6 CIFS Configuration Validation Using Test SVM
* 4.7 NFS Configuration Validation Using Test SVM
* 4.8 ISCSI Configuration Validation Using Test SVM
* 4.9 FCP Configuration Validation Using Test SVM

|  |  |
| --- | --- |
| **NetApp Installer Name:** |  |
| **NetApp Installer Email:** |  |

### Basic Configuration Testing

## Installation Checklist

| **** | **Installation Checklist** | **Assigned To** | **Status** |
| --- | --- | --- | --- |
|  | Confirm the NetApp controllers are properly installed in the cabinets. |  |  |
|  | Confirm there is sufficient airflow and cooling in and around the NetApp system. |  |  |
|  | Power up the disk shelves to ensure that disks spin up and are initialized properly. |  |  |
|  | Confirm the racks are grounded (if not in NetApp cabinets). |  |  |
|  | Confirm there is redundant power distribution to NetApp controllers & disk shelves. |  |  |
|  | Confirm no fault lights are present on shelves and controllers |  |  |
|  | Confirm that all cables laid between cabinets are properly connected and are not prone to physical damage. |  |  |
|  | Confirm disk shelve IDs are set correctly. |  |  |
|  | Confirm that Ethernet cables are arranged and labeled properly. |  |  |
|  | Confirm all cables are arranged and labeled properly. |  |  |
|  | Confirm the Cluster Interconnect Cables are connected for HA pairs (does not apply for single chassis ). |  |  |
|  | Confirm there is sufficient space behind the cabinets to perform hardware maintenance. |  |  |
|  | Confirm that the latest “Reference Configuration File” for the Cluster and Management switches has been installed. |  |  |
|  | Use the Config Advisor tool to verify that all the shelves are cabled correctly and switches are properly connected. |  |  |
|  | Confirm the network has been configured as per customer requirements (e.g., IFGRPs, VLANs, etc. ) |  |  |
|  | Confirm the customer can access the system console using Service Processor, Node Management Interface, Cluster Management Interface. |  |  |
|  | Verify configured IFGRPs with more than one port function properly by disconnecting one or more cables |  |  |
|  | Verify NTP configuration in the cluster ( if applicable). |  |  |
|  | Confirm that AutoSupport is configured and functioning correctly by invoking an Auto Support test. |  |  |
|  | Verify SNMP configuration, if applicable. |  |  |

## Network Health and Configuration Validation

| **** | **Network Health and Configuration Validation** | **Assigned To** | **Status** |
| --- | --- | --- | --- |
|  | Verify that all LIF’s currently reside on their home ports.  **net int show -is-home false** |  |  |
|  | Verify that all LIF’s are currently up, none showing as operationally down.  **net int show -status-oper down** |  |  |
|  | Verify that all of the ports for each VLAN are actually there.  **net port vlan show** |  |  |
|  | Ensure none of the physical ports used are down.  **net port show \* -port \* -link !up** |  |  |
|  | Verify that none of the used data ports are using MTU size of 1500.  **net port show \* -port \* -role data -mtu 1500**  **net port show \* -port \* -role data -mtu !9000 -link !down** |  |  |
|  | Verify that only the cluster interconnect LIFs have a system-defined failover policy.  **net int show -use-failover-group system-defined** |  |  |
|  | Verify that zero LIF’s returned as the result of this command.  **net int show -use-failover-group system-defined -role !cluster**  (Note: use-failover-group not required for provisioning in 8.2 and above. Can still be used for checks.) |  |  |
|  | Verify that only ISCSI LIFs are returned.  **net int show -use-failover-group disabled -fields vserver,lif,data-protocol** |  |  |
|  | Check to see whether any LIF’s, excluding iSCSI LIFs, currently have the use-failover-group disabled.  **net int show -use-failover-group disabled -data-protocol !iscsi -fields vserver,lif,data-protocol** |  |  |
|  | Verify that no LIFs have auto-revert enabled (except cluster interconnect ports where it should be enabled).  **net int show -auto-revert true -role !cluster** |  |  |
|  | Identify any data LIFs (CIFS/NFS) that don't have use-failover-group enabled. All non-ISCSI data LIF's should have a failover-group enabled.  **net int show -data-protocol nfs -use-failover-group !enabled** |  |  |
|  | Verify proper failover group defined based on home node/port (VLAN) and failover-group name.  **net int show -fields lif,role,data-protocol,home-node,home-port,use-failover-group,failover-policy,failover-group** |  |  |
|  | Verify proper failover group defined and all targets look correct.  **net int failover show -role data** |  |  |
|  | Verify that all failover ports within a defined group are correct (correct interfaces, VLAN tagged port versus physical interface, etc.)  **failover-group show** |  |  |
|  | Verify that all APP LIFs have data protocol set to none.  **net int show -vserver \* -lif \*app\* -data-protocol none** |  |  |
|  | Verify that all APP LIFs have firewall policy set to data.  **net int show -vserver \* -lif \*app\* -firewall-policy data** |  |  |

## Cluster Health and Failover Availability

| **** | **Cluster Health and Failover Availability** | **Assigned To** | **Status** |
| --- | --- | --- | --- |
|  | Verify node health and eligibility are both set to true across all nodes.  **cluster show** |  |  |
|  | Verify that failover is possible  **storage failover show** |  |  |
|  | Ensure no system health alerts present.  **system health alert show** |  |  |
|  | Verify HA is enabled for two-node clusters.  **cluster ha show**  Note: If the cluster is bigger than 2 nodes then this option must be set to false |  |  |
|  | Confirm location of epsilon (clusters with 4 nodes or greater).  **set advanced**  **cluster show**  Modify epsilon location, if warranted, based on specific change being implemented:  **cluster modify -node <current\_epsilon\_node> -epsilon false**  **cluster modify -node <new\_epsilon\_node> -epsilon true** |  |  |
|  | For each process ensure that:   * The relational database epoch and database epochs match for each node. * The per-ring quorum master is the same for all nodes.   **set advanced**  **cluster ring show -unitname vldb**  **cluster ring show -unitname mgmt**  **cluster ring show -unitname vifmgr**  **cluster ring show -unitname bcomd (for SAN)** |  |  |
|  | Check connectivity between the controller and the cluster backend switches.  **cluster ping-cluster –node <node\_name>** |  |  |
|  | Test manual node Takeover (in both directions) and ensure success, rectify any errors and prove network connectivity continues to function correctly during failover.  cluster::>**system storage failover takeover –ofnode <node> -bynode <node>**  cluster::>**system storage failover show-giveback**  cluster::>**system storage failover giveback –ofnode <node> -fromnode** |  |  |

## Storage Aggregate and Volume Status

| **** | **Storage Aggregate and Volume Status** | **Assigned To** | **Status** |
| --- | --- | --- | --- |
|  | Verify no broken disks currently exist within system.  **storage disk show -broken** |  |  |
|  | Verify storage health.  **storage errors show** |  |  |
|  | Verify all ACP cabling has full connectivity.  **node run \* storage show acp** |  |  |
|  | Verify all disks are MPHA.  **node run \* storage show disk -p** |  |  |
|  | Verify health of disk connectivity.  **system health node-connectivity disk show** |  |  |
|  | Verify health of shelf connectivity.  **system health node-connectivity shelf show** |  |  |
|  | Verify health of system adapters (disk/shelf connectivity adapters).  **system health node-connectivity adapter show** |  |  |
|  | Verify health of connectivity with cluster switches.  **system health cluster-switch show**  Note: only for systems running 8.2 and above. |  |  |

## Optional Post Installation Checklist

| **** | **Optional Post Installation Checklist** | **Status** | **Notes** |
| --- | --- | --- | --- |
|  | Give new customers a brief tour of [Systems Manager](http://support.netapp.com/documentation/productlibrary/index.html?productID=30062) to explain the basic functions of managing their new cluster. |  |  |
|  | Log onto the Support.NetApp.com website and give the customer a brief tour of the site. Show them how to access documentation, download software and firmware, search the Knowledge Base, and verify their RMA information. |  |  |
|  | Discuss training available through [NetApp University](http://www.netapp.com/us/services-support/university/index.aspx) with new customers. |  |  |
|  | This concludes Basic Installation and Configuration testing.  The sections that follow apply to Advanced Configuration testing, if applicable. | | |

### Advanced Configuration Testing

## CIFS Configuration Validation Using Test SVM

| **** | **CIFS configuration (per Vserver servicing CIFS)** | **Status** | **Notes** |
| --- | --- | --- | --- |
|  | Confirm CIFS access is enabled.  **cifs show -instance** |  |  |
|  | Check the export policy rules to ensure that the CIFS access protocol will allow access  cluster::>**vserver export-policy rule show** |  |  |
|  | If necessary, run through CIFS setup and join the controllers to the customer's Active Directory (requires an AD account with suitable permissions). |  |  |
|  | Confirm the NetApp controller’s local administrator account was created while configuring the CIFS service (and the password is set appropriately). |  |  |
|  | Confirm the permissions to the root volume (c$) and /etc folder (etc$) are configured appropriately (that is, NOT Everyone Full Control). |  |  |
|  | Confirm that appropriate Windows Domain Administrators group(s) are member of the cluster’s local administrator group. |  |  |
|  | Create a share. |  |  |
|  | Have the customer map the share to a host, write data to it. |  |  |
|  | Create a Snapshot and confirm that Snapshot visibility is configured appropriately (for example, hidden to regular CIFS clients) |  |  |
|  | Confirm that qtrees storing CIFS data have the appropriate security style specified:  cluster::volume> **qtree show –vserver <vserver> -volume <volume name> -qtree <qtree name>** |  |  |
|  | Confirm that qtrees storing CIFS data have the appropriate ‘oplocks’ setting. |  |  |
|  | Take a Snapshot and confirm that Snapshot visibility is configured appropriately (for example, hidden to regular clients) |  |  |

## NFS Configuration Validation Using Test SVM

| **** | **NFS configuration (per Vserver servicing NFS)** | **Status** | **Notes** |
| --- | --- | --- | --- |
|  | Confirm NFS access is enabled.  **nfs show -instance** |  |  |
|  | Create a qtree and confirm the appropriate security style is specified  cluster::>**volume qtree create –vserver <vserver> -volume <volume name> -qtree <qtree name> -security-style {unix|ntfs|mixed}**  cluster::>**volume qtree show –vserver <vserver> -volume <volume name> -qtree <qtree name>** |  |  |
|  | Check the export policy rules to ensure that the NFS access protocol will allow access  cluster::>**vserver export-policy ruleshow** |  |  |
|  | Have the customer mount the qtree from a host and write data to it. |  |  |
|  | Take a Snapshot and confirm that Snapshot visibility is configured appropriately (for example, hidden to regular clients) |  |  |

## iSCSI Configuration Validation Using Test SVM

| **** | **iSCSI configuration (per Vserver servicing iSCSI)** | **Status** | **Notes** |
| --- | --- | --- | --- |
|  | Make sure the iSCSI service is started.  **iscsi show -instance** |  |  |
|  | Verify that an iSCSI host attach or support kit has been installed on the host. |  |  |
|  | If appropriate, verify SnapDrive has been installed on the host. |  |  |
|  | Create a qtree, igroup, and LUN on the system (using SnapDrive if necessary). |  |  |
|  | Have the customer establish an iSCSI session from the host. |  |  |
|  | Create a file system on the LUN, write some data to it and confirm the data is on the LUN. |  |  |
|  | Reboot the host and confirm that the LUN is still attached. |  |  |

## FCP Configuration Validation Using Test SVM

| **** | **FCP configuration (per Vserver servicing FCP)** | **Status** | **Notes** |
| --- | --- | --- | --- |
|  | Make sure the FCP service is started  **fcp show -instance** |  |  |
|  | Verify an FCP host attach or support kit has been installed on the host. |  |  |
|  | If appropriate, verify that SnapDrive has been installed on the host. |  |  |
|  | Create a qtree, igroup, and LUN on the system (using SnapDrive if necessary). |  |  |
|  | Have the customer establish an FCP session from the host. |  |  |
|  | Have the customer create a file system on the LUN and, write some data to it. |  |  |
|  | Have the customer reboot the host and confirm the LUN is still attached. |  |  |

| **** | **Failover** | **Status** | **Notes** |
| --- | --- | --- | --- |
|  | Path failure test |  |  |
|  | Switch failure test |  |  |
|  | Host failure test |  |  |

# Glossary

This section contains the glossary of terms used throughout this document.

| Term | Definition |
| --- | --- |
| CIFS | Common Internet File Service |
| DNS | Domain Name System |
| DR | Disaster Recovery |
| DRC | Disaster Recovery Center (data center) |
| FAS | Fabric Attached Storage |
| FC | Fibre Channel |
| FlexVol | Flexible volume |
| IOPS | Input/Output Operations per Second |
| iSCSI | Internet Protocol – Small Computer Systems Interface |
| MAN | Managed / Metro Area Network |
| LUN | Logical Unit Number |
| NAS | Network Attached Storage |
| NFS | Network File System |
| NIS | Network Information Service |
| NTP | Network Time Protocol |
| PDU | Power Distribution Units |
| PDC | Primary Data Center |
| RPM | Rotations Per Minute |
| RAID | Redundant Array of Independent Disks |
| SAN | Storage Area Network |
| SNMP | Simple Network Management Protocol |
| SATA | Serial Advanced Technology Attachment |
| UPS | Uninterruptible Power Supply |
| VIF | Virtual Interface |
| VLAN | Virtual Local Area Network |
| WINS | Windows Internet Naming Service |

About NetApp

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