

Data Protection Using Cohesity data platform

Summary:

The purpose of this document is to document how District data will be protected by a data protect solution from Cohesity data platform.

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Department: Information Services
Title: How to backup District data
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Terminology:

Access port - sends and receives single untagged frames. Belongs to 1 VLAN only.

Backup Sources - VMWare workloads, Active Directory, and MS SQL.

Backup Targets - Cohesity data platform appliance and AWS S3 buckets.

Backup DR and Archives - AWS S3 buckets.

Bond Mode - Bonding is the creation of a single bonded interface by combining two or more Ethernet interfaces for high availability or performance reasons.

Bond Mode 1 - Combine network interfaces into active-backup configuration.

Bond Mode 4 - Combine network interfaces into active-active configuration.

Cloud Spin - a feature in Cohesity to convert virtual machines in a format that can be power on at the cloud provider. It is currently work with Azure provider.

Cohesity DataPlatform CLI - iris_cli to gather information from Cohesity Platform.

East-West Traffic - Node to node traffic between Cohesity nodes.

Global Search - Cohesity global search capability similar to Google search. The ability to search backup files from the console. For example, the ability to search for files and directories without searching location of files on the virtual machine like from current legacy solution Veeam.

Immutable backup - Backup cannot be changed. Immutable backup is a way to ensure the data is fixed, unchangeable, and can never be deleted, encrypted, or modified.

Instant Mass Restore - The ability to restore mass virtual machines from backup.

Instant Restore - is a process to recover virtual machines and have it available instantly. The way it works is Cohesity presents NFS share to vSphere and power on the virtual machine from Cohesity NFS share. While the virtual machine is powering on and running, Cohesity instructs vSphere to storage motion from Cohesity NFS to a datastore within vSphere.

Layered defense - Defense in depth by having multiple layers to the data crown jewels.

MFA - multi-factor authentication to Cohesity data platform.

Nodes - Cohesity clusters are deployed as a minimum of 3 nodes.

North-South Traffic - Backup data, file services, and replication traffic from outside.

S3 bucket - AWS Simple Cloud Storage. This is where older backups are stored.

SpanFS - Cohesity file system using B+ tree architecture. The ability to distribute metadata with unlimited snapshots with no performance impact.

Trunk Port - Carries traffic on one or more VLAN's on the same physical links. It only support tagged frames.

Data Backup Topology:

Backup (Workloads)

vmware®



7 Days Backup to Cohesity Appliance

aws

Backups older than 7 days to AWS DR Account



Data Protect Plan:

Backup of VM workloads to Cohesity data platform appliance up to seven days. Data backups that older than seven days will go to AWS cloud S3 bucket at DR account. From there, we will decide to send to S3 glacier for items that older than two months.

Active Directory domain controller (DC) backup requires Agent installation on DC.

Backup policies:

One week worth of backup on premise Cohesity Data Platform. Older than one week will archive to AWS S3 DR account.

Cohesity Implementation Design and Planning:

Cohesity server back view.

Node 1 is bottom right.

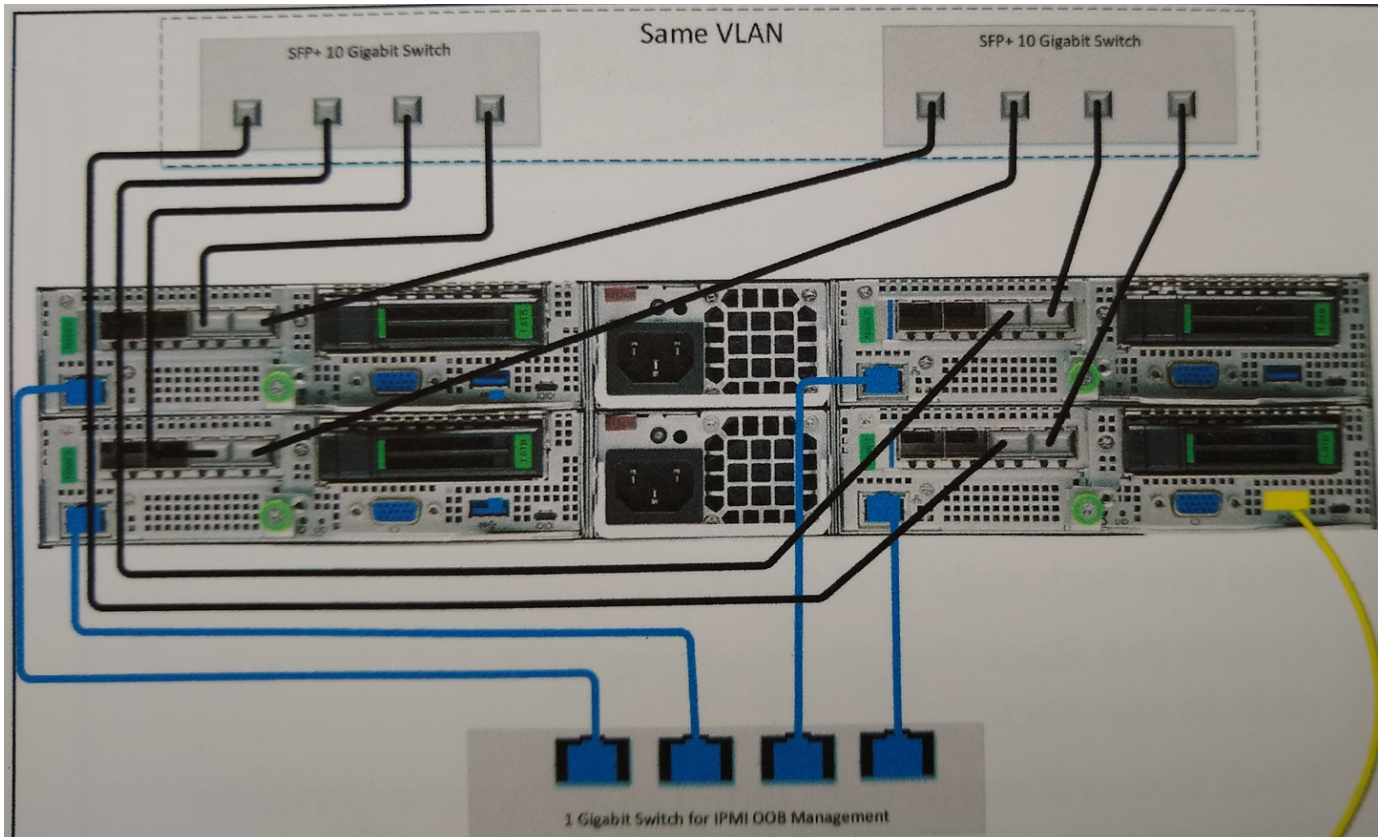
Node 2 is top right.

Node 3 is bottom left.

Node 4 is top left.



Connection view diagram:



Node Hostname: cnode1, cnode2, cnode3, and cnode4 with suffix nocccd.edu.

Static IP configurations:

Node Static IPs

10.200.8.110 cohesity-node1
10.200.8.111 cohesity-node2
10.200.8.112 cohesity-node3
10.200.8.113 cohesity-node4

Management Ports:

10.200.8.114 cohesity-ipmi-node1
10.200.8.115 cohesity-ipmi-node2
10.200.8.116 cohesity-ipmi-node3
10.200.8.117 cohesity-ipmi-node4

Floating VIP Address Pool:

10.200.8.118 cohesity-node1-vip
10.200.8.119 cohesity-node2-vip
10.200.8.120 cohesity-node3-vip
10.200.8.121 cohesity-node4-vip
10.200.8.122 cohesity-cluster (this one should resolve to four nodes ips and to .122)

DNS Entries at Route53

<input type="checkbox"/>	Record name	Type	Routin...	Differ...	Value/Route traffic to
<input type="checkbox"/>	cohesity-cluster.nocccd.edu	A	Simple	-	10.200.8.118 10.200.8.119 10.200.8.120 10.200.8.121
<input type="checkbox"/>	cohesity-ipmi-node1.nocccd.edu	A	Simple	-	10.200.8.114
<input type="checkbox"/>	cohesity-ipmi-node2.nocccd.edu	A	Simple	-	10.200.8.115
<input type="checkbox"/>	cohesity-ipmi-node3.nocccd.edu	A	Simple	-	10.200.8.116
<input type="checkbox"/>	cohesity-ipmi-node4.nocccd.edu	A	Simple	-	10.200.8.117
<input type="checkbox"/>	cohesity-node1-vip.nocccd.edu	A	Simple	-	10.200.8.118
<input type="checkbox"/>	cohesity-node1.nocccd.edu	A	Simple	-	10.200.8.110
<input type="checkbox"/>	cohesity-node2-vip.nocccd.edu	A	Simple	-	10.200.8.119
<input type="checkbox"/>	cohesity-node2.nocccd.edu	A	Simple	-	10.200.8.111
<input type="checkbox"/>	cohesity-node3-vip.nocccd.edu	A	Simple	-	10.200.8.120
<input type="checkbox"/>	cohesity-node3.nocccd.edu	A	Simple	-	10.200.8.112
<input type="checkbox"/>	cohesity-node4-vip.nocccd.edu	A	Simple	-	10.200.8.121
<input type="checkbox"/>	cohesity-node4.nocccd.edu	A	Simple	-	10.200.8.113

NTP: time.nist.gov and pool.ntp.org
SMTP: 10.200.7.18

Preferred setup method with using Bond 4 Active-Active configuration.


Initial IPMI set up notes:



8/2/2022


Skip the shell command.



Project Plan with Cohesity Implementation

Task Name	Assignee	Due Date	Completion Status	Notes
Kick off meeting with Cohesity	Tim Nguyen	7/26/2022	completed	
Network / Workbook validation https://nocccd0-my.sharepoint.com/:x:/r/personal/tnguyen_nocccd_edu/_layouts/15/Doc.aspx?sourcedoc=%7BEAE6DF76-3B01-4F2C-9779-3A06B66BDF03%7D&file=Cohesity%20Pre%20Install%20Checklist%20for%20PS%20SKU%20V14.2.xlsx&wdOrigin=OFFICECOM-WEB.MAIN.REC&ct=1658857812644&action=default&mobileredirect=true	Tim Nguyen	7/26/2022	completed	
Meeting with Quamrul and Boaz for going over network and firewall requirements	Tim Nguyen	7/26/2022	completed	
Configure four lags on Aruba 8400 switch	Quamrul Shahid / Boaz Carmi	8/4/2022	completed	

<p>Create firewall entries to Cohesity nodes</p> <div style="text-align: center;">  <p>Manage Firewall Ports.pdf</p> </div>	Boaz Carmi / Quamrul Shahid	8/4/2022	completed	No need to add firewall entry,
Create DNS to resolve Cohesity cluster to four vips (dns load balancing).	Boaz Carmi / Quamrul Shahid	8/4/2022	completed	cohesity-cluster.nocccd.edu resolves to four nodes IPs
Prepare AWS DR Account with S3 bucket and credential for Cohesity older backups.	Tim Nguyen	8/4/2022	completed	
Configure initial setup with IPMI commands.	Tim Nguyen	8/2/2022	completed	
Technical Review Call for site readiness (management and data ports were plugged in)	Tim Nguyen	8/2/2022	completed	
Installation Services via Remote	Tim Nguyen	8/15/2022	completed	
Create Backup source and configure policy to keep seven days worth of backup on Cohesity Cluster. Older than seven days will go to AWS S3 bucket	Tim Nguyen	8/15/2022	completed	
Enable MFA, DataLock, S3 bucket connection, CloudArchive, CloudSpin, create view	Tim Nguyen	8/15/2022	completed	CloudSpin works with Azure
Knowledge Transfer and Daily Operation		8/15/2022	completed	
Completion and Signoff installation	Tim Nguyen	8/15/2022	completed	
Verify Protection Groups	Tim Nguyen	8/16/2022	completed	Initial backup took 15 hours
Verify Restore VM, Folder, Files, Active Directory Object Attributes	Tim Nguyen	8/19/2022	completed	AD objects recovery requires Cohesity joined to the Domain

<p>Install Agent on Domain Controller for AC.local and NOCCCD.local domains. Create Protect group per domain</p> <div style="border: 1px solid #ccc; padding: 10px; text-align: center;">  <p>Install Cohesity Agent.pdf</p> </div>	<p>Tim Nguyen</p>	<p>8/16/2022</p>	<p>completed</p>	<p>With agent installed, we will be able to perform AD granular object attributes level recovery with the Cohesity data platform. Requires port 50051 open on DC.</p> <p>Add port 5000 for restore port. Make sure the domain controller is able to resolve cohesitycluter.domain.local</p> <p>If not, add entries to hosts file with 10.200.8.118-121</p> <ol style="list-style-type: none"> 1. https://docs.cohesity.com/6_6/Web/UserGuide/Content/ActiveDirectory/ADRequirements.htm?Highlight=recover object active directory
<p>Agent installation on Debian system</p> <div style="border: 1px solid #ccc; padding: 10px; text-align: center;">  <p>Agent on Debian system.pdf</p> </div>	<p>Tim Nguyen</p>	<p>8/18/22</p>	<p>completed</p>	<p>Agent installation on Debian system such as Ubuntu</p> <p>Download the binary to Debian system.</p> <pre>sudo dpkg -i cohesity-agent_6.6.0d-u5-1_amd64</pre>

Agent installation on Red Hat or OL	Tim Nguyen	8/18/22	completed	On Red Hat or Oracle Linux rpm -ivh el-cohesity-agent-6.6.0d_u5-1.x86_64 dependencies: lsof rsync yum install lsof rsync Need to open port on firewall 50051
				
Install Agent on SQL Servers (sql utils)	Tim Nguyen	8/16/2022	completed	Requires reboot. Agent installed on SQL-util2 server.
Complete Post Installation Checklist	Tim Nguyen	8/22/2022	completed	
Demo Cohesity product to Technical Support Team	Tim Nguyen	8/30/2022	completed	
Configure Nagios to monitor Cohesity Cluster: alert failed, chassis info, node list, cluster health, new user account creation, failed logon, mfa enabled, uptime.	Tim Nguyen	9/30/2022	completed	Wrote bash shell script to check using iris_cli https://docs.cohesity.com/1_0_0/Web/UserGuide/Content/CLI/ConfigureWithCLI.htm?tocpath=Tools Using the Cohesity CLI _____0
Work with NOCE IT team to backup NOCE Active Directories.	Tim Nguyen	9/12/2022	completed	Meeting with NOCE staff to add NOCE Active Directory to Cohesity cluster . Added ad.northorange.edu domain. Added student AD domain to Cohesity cluster Protection job.
Demo Cohesity product to Hai Nguyen and Tony Pham with backup/restore VM, folder, and files.	Tim Nguyen	9/22/2022	completed	

<p>Backup and Restore MS SQL Server DB</p> <div style="text-align: center;">  MS SQL Requirements.pdf </div> <div style="text-align: center;">  SQL Server Minim...Permissions.docx </div>	<p>Tim Nguyen</p>	<p>9/20/2022</p>	<p>completed</p>	<p>Cohesity agent service account needs SysAdmin role in SQL login.</p>
<p>Test recover folder, files, and virtual machines from S3 bucket DR account Cloud Archive.</p>	<p>Tim Nguyen</p>	<p>8/31/2022</p>	<p>completed</p>	<p>Test restoring file from CloudArchive and Virtual Server.</p>
<p>Decommission Veeam Backup Server, Proxies, Backup Repositories, and Tape Library.</p>	<p>Tim Nguyen</p>	<p>12/31/2022</p>	<p>12/30/2022</p>	<p>Repurpose hardware for second copy backup.</p>

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