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BEST PRACTICES

Epic on Nutanix

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Contents

1. Executive Summary

Nutanix is the industry leader in high-availability, high-performance infrastructure that's easy to use and cost-effective. The hyperconverged Nutanix platform combines enterprise-class storage, high availability, and monitoring features in a package that is simple to deploy, expand, and adapt. The intelligent platform makes multiweek tuning engagements and lengthy infrastructure upgrade planning sessions relics of the past. All these benefits make deploying Epic on Nutanix an excellent return on investment.

This best practice guide demonstrates how to plan the deployment of the entire Epic stack, including the operational database (ODB), Cogito Suite, presentation layer (Hyperspace), and Web and service servers (WSS), on Nutanix. It includes information on the benefits of running Epic on Nutanix, a guide to selecting hardware, and an example configuration.

2. Introduction

There are currently more Epic deployments on Nutanix than on any other HCI vendor. This success did not happen overnight; Nutanix has been working with Epic for more than seven years to ensure sustainable performance, reliability, and good installs, work that has inspired hundreds of improvements to the Nutanix platform. The result is that Epic workloads on Nutanix perform well not only under optimal conditions and during daily operations (like upgrades, snapshots, and backups) but also under suboptimal conditions and during uncommon operations (like unplanned outages or node failures). You can take advantage of the reliability, simplicity, and unparalleled operational efficiency of Nutanix AHV for all your Epic services. With AHV, customers get:

- Prism, a single management interface for all infrastructure across all sites.
- The Nutanix Foundation installation tool, which handles all aspects of infrastructure installation from bare metal to advanced network configuration.
- The AHV optimized data path, which reduces CPU consumption and I/O latency for the ODB and Cogito suite.
- The I/O performance improvements for Epic that are built into AHV and AOS and enabled by default.

Audience

This best practice guide is part of the Nutanix Solutions Library. We wrote it for anyone considering deploying a new Epic solution or expanding an existing one. Readers should already be familiar with Nutanix AOS and Epic software.

Purpose

In this document, we cover the following topics:

- Running Epic software on Nutanix.

- Mapping Epic design specifications to Nutanix.
- An example configuration that demonstrates how to deploy the solution.

Unless otherwise stated, the solution described in this document is valid on all supported AOS releases 5.11.2 and later.

Table 1: Document Version History

Version Number	Published	Notes
1.0	November 2016	Original publication.
1.1	December 2017	Feature updates.
2.0	March 2020	Major updates throughout.
2.1	August 2020	Updated licensing information.
2.2	June 2021	Updated the Data Copies and Backups, Compute Requirements, and Networking sections.

3. Nutanix Enterprise Cloud Overview

Nutanix delivers a web-scale, hyperconverged infrastructure solution purpose-built for virtualization and both containerized and private cloud environments. This solution brings the scale, resilience, and economic benefits of web-scale architecture to the enterprise through the Nutanix enterprise cloud platform, which combines the core HCI product families—Nutanix AOS and Nutanix Prism management—along with other software products that automate, secure, and back up cost-optimized infrastructure.

Available attributes of the Nutanix enterprise cloud OS stack include:

- Optimized for storage and compute resources.
- Machine learning to plan for and adapt to changing conditions automatically.
- Intrinsic security features and functions for data protection and cyberthreat defense.
- Self-healing to tolerate and adjust to component failures.
- API-based automation and rich analytics.
- Simplified one-click upgrades and software life cycle management.
- Native file services for user and application data.
- Native backup and disaster recovery solutions.
- Powerful and feature-rich virtualization.
- Flexible virtual networking for visualization, automation, and security.
- Cloud automation and life cycle management.

Nutanix provides services and can be broken down into three main components: an HCI-based distributed storage fabric, management and operational intelligence from Prism, and AHV virtualization. Nutanix Prism furnishes one-click infrastructure management for virtual environments running on AOS. AOS is hypervisor agnostic, supporting two third-party hypervisors

—VMware ESXi and Microsoft Hyper-V—in addition to the native Nutanix hypervisor, AHV.

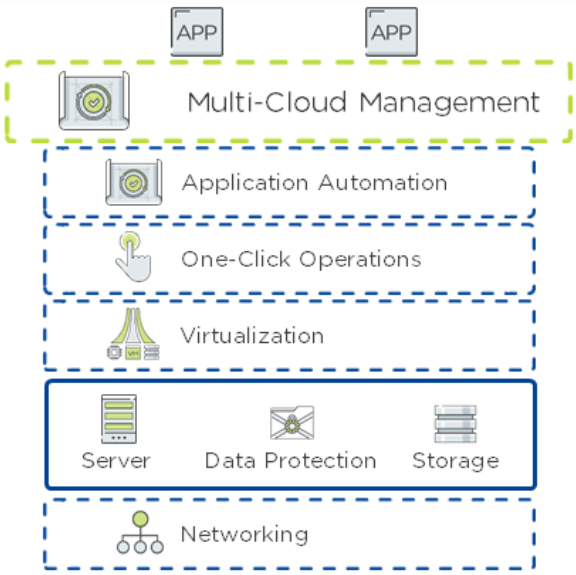

Figure 1: Nutanix Enterprise Cloud OS Stack

Nutanix HCI Architecture

Nutanix does not rely on traditional SAN or network-attached storage (NAS) or expensive storage network interconnects. It combines highly dense storage and server compute (CPU and RAM) into a single platform building block. Each building block delivers a unified, scale-out, shared-nothing architecture with no single points of failure.

The Nutanix solution requires no SAN constructs, such as LUNs, RAID groups, or expensive storage switches. All storage management is VM-centric, and I/O is optimized at the VM virtual disk level. The software solution runs on nodes from a variety of manufacturers that are either entirely solid-state storage with NVMe for optimal performance or a hybrid combination of SSD and HDD storage that provides a combination of performance and additional capacity. The storage fabric automatically tiers data across the cluster to different classes of storage devices using intelligent data placement algorithms. For best

performance, algorithms make sure the most frequently used data is available in memory or in flash on the node local to the VM.

To learn more about Nutanix enterprise cloud software, visit the Nutanix Bible and Nutanix.com.

4. Epic on Nutanix

Once you've worked with Epic to develop your Hardware Configuration Guide (HCG) or Capacity Assessment, you're ready to design your Nutanix solution.

Software

For ODB and Cogito, you need to use the native Nutanix hypervisor, AHV. For Web and Service Servers and Hyperspace you can use AHV or ESXi.

Licensing

The Nutanix products most commonly used for Epic are:

- Nutanix AOS for Hyperspace.
- Nutanix Files for Web BLOB content.
- Nutanix Flow for microsegmentation.
- Nutanix AOS Ultimate for all other Epic services.

Use the following software versions for new deployments and in-field upgrades. These recommendations are updated regularly, so always check the latest online version of this document.

Table 2: Current Software and Versions

Software Packages	Current Target Version
Nutanix AHV (where applicable)	Latest included with AOS
Nutanix AOS	5.15.0
Nutanix Files	3.6.1.3
Nutanix NCC	3.10.0
Nutanix VirtIO	1.1.5
VMware ESXi (where applicable)	6.7 Update 3

Hardware

The final hardware configuration depends on the number of services and the scale of the project. For a small facility, hardware could be as simple as two blocks—one for production and one for disaster recovery—with three or four nodes each. You can expand the system later to support additional capacity for ODB, Cogito, Hyperspace, and WSS or add functions like remote sites or a development and test environment.

A large regional datacenter may need dozens of Nutanix nodes to support the patient load, while a small remote hospital can work just fine with a three-node configuration. Nutanix makes planning and administration easy by providing a single platform and management interface for all services.

The Epic design and sizing recommendations in the HCG or Capacity Assessment include Nutanix-specific sizing information for published applications (Hyperspace). For the other services, there are some Nutanix requirements you need to consider in addition to the Epic recommendations:

- CVM requirements: The CVM requires 8–10 CPU cores and 64 GB of memory for ODB and Cogito.
- Capacity for high availability: Nutanix recommends having enough space to fully recover from a node failure.
- Nutanix Files capacity: File server VMs (FSVMs) require CPU and memory.
- Per-node I/O performance: Hardware performance must fulfill per-node I/O and throughput requirements.

Work with the Nutanix Epic team (epic@nutanix.com) to size an Epic environment. Nutanix updates sizing guidance for Epic each quarter based on existing Epic engagements, known-good installs, and engineering qualifications.

Processors

Epic provides a list of approved processors (available on Epic UserWeb or from your Epic Technical Services team). Nutanix collaborates with Epic to ensure that customers make the right platform choices.

Storage Devices

Nutanix systems align with Epic's all-flash guidance. We recommend using NVMe SSD storage wherever possible, as NVMe SSDs deliver higher IOPS and lower latency while using fewer CPU cycles. Reducing CPU usage can return CPU cycles to Epic applications and increase overall system density. All Nutanix-certified appliance vendors offer a Non-Returnable Disk Drive (NRDK) for defective media retention, which provides an additional layer of data security. The NRDK allows you to dispose of the replaced hard disk drives in compliance with your own data security requirements and other applicable laws. See the Nutanix Support FAQ and Support Policies for details.

Procurement

Customers can procure hardware from any reseller or distributor; however, the Nutanix Epic team (epic@nutanix.com) must validate the bill of materials (BoM) beforehand. All Epic on Nutanix implementations should be professionally overseen by an integrator knowledgeable about both Epic and Nutanix.

Sizing

Storage

In the HCG, Epic groups storage capacity requirements into pools that represent storage systems shared by workloads. Nutanix, on the other hand, integrates storage with CPU and memory, so Nutanix storage doesn't always map one-to-one with Epic storage pool definitions. We use the phrase "Epic pool" in this document to differentiate a storage pool as defined in the HCG from a unit of Nutanix storage.

The HCG details the storage capacity required by each Epic pool. Whether a Nutanix cluster contains one or more Epic pools depends on the scale of the deployment. To ensure that we meet the throughput and latency requirements, Nutanix Epic configurations use NVMe SSD storage. For sizing, ensure that you have sufficient capacity and performance for key workloads. Storage performance requirements for I/O-heavy workloads are defined in the I/O Projections and Requirements section of the HCG and may look something like the following image from an example HCG.

	Production ODB	Reporting Environment ODB	DR ODB	Clarity & Caboodle
Read IOPS	7,700	3,900	7,700	16,000
Read throughput (MB/sec)	100	100	100	1,000
Write operations per 80-second write burst	152,000	152,000	152,000	NA
Write volume per 80-second burst (MB)	1,600	1,600	1,600	NA
Write IOPS	NA	NA	NA	4,000
Write throughput (MB/sec)	NA	NA	NA	200
Minimum SAN write cache requirement (MB)	1,600	1,600	1,600	600
Average read response time requirement (ms)*	<4	<4	<4	<100
Average write response time requirement (ms)	<1.0	<1.0	<1.0	<5.0

Figure 2: Example HCG Storage Performance Requirements

Compute

The HCG defines the CPU and memory requirements for each workload VM and a number of physical servers. These requirements specify the minimum quantity of processors and memory per host for each workload type. These specifications include the recommended processors. Use the values in your HCG as a starting point for sizing. You may need additional CPU or memory to support Nutanix services like the CVM or Files. We took the following images from an example HCG.

Physical Hosts for ODB Servers	
Number of Hosts	3
Hypervisor	Nutanix AHV See our *Target Platform* documentation for further details
Processor Quantity and Type	Two-Socket 24 Core 2.9 GHz Intel Xeon 8268
Minimum Memory (GB)	576
Minimum Vendor Support	24 x 7 hardware support VMware Production Support
Other Hardware	Redundant power supplies Two 10 Gb network connections Four 8 Gb or two 16 Gb Fibre Channel ports Backup device for OS backup & recovery

Figure 3: Example HCG Physical Configuration

Production ODB Server	
Operating System	Red Hat Enterprise Linux 7
Minimum Number of vCPU	32
Future Version vCPU Estimate	40
Maximum Number of vCPU (Recommended)	48
Minimum vRAM (GB)	344
Future Version vRAM Estimate (GB)	456
Failover Management	AHV HA
Filesystem	XFS
Minimum Vendor Support	24 x 7 OS support with 60-minute response time Production Support
Other Hardware	None
Other Software	Perl

Figure 4: Example HCG VM-Level Configuration

Data Copies and Backups

Epic recommends using storage clones or snapshots to create data copies for support, test and development, and backup. These technologies are fast and space efficient and enable rapid recovery.

Backup Software

There is no special Epic integration needed for the backup software if the software can back up a Linux directory tree or volume group on Nutanix.

Operational Database

Use a script to clone a volume group as the source for a backup or support copy. The script pauses the IRIS database (the ODB), clones the Nutanix volume group, then restarts the database. This operation only takes a few seconds and has minimal impact on production. The VM used to run the backup software or access the support copy of the data needs to be in the same Nutanix cluster as the source volume group. Epic provides a script for pausing the database. Edit this script to add the Nutanix commands to clone the volume group. Nutanix provides the script that clones the volume groups.

The following high-level steps include the commands to clone a Nutanix volume group and mount that clone on a VM, called the proxy VM. These steps assume that the user is running the commands on the proxy VM used for backup or support and that the proxy VM has SSH access to the ODB server and Nutanix cluster enabled. For improved security, upcoming versions of AOS Nutanix disable SSH access to the CVM. The Epic team at Nutanix (epic@nutanix.com) can provide tools that manage the volume group cloning using the more secure REST API.

> Note: Although our example only has one, ODB VMs typically have more than one Nutanix volume group attached.

- Pause the IRIS DB:

```
ssh ${EPICUSER}@${EPICHOST} "sudo ${EPICFREEZE}"
```

- Clone the Nutanix volume group:

```
ssh ${NTXUSER}@${PRISM} acli vg.clone VG1_clone clone_from_vg="VG1"
```

- Restart the IRIS DB:

```
ssh ${EPICUSER}@${EPICHOST} "sudo ${EPICTHAW}"
```

- Attach the clone to the proxy:

```
ssh ${NTXUSER}@${PRISM} vg.attach_to_vm "$VG1"_clone $ProxyVM
```

- Activate the LVM volume group on the proxy:


```
vgchange -a y prdvg
```

- Mount the file system:

```
mount /dev/mapper/prdvg-prd01lv /epic/prd01
```

After you mount the volume group clone on the proxy VM, the backup software running on this proxy VM streams the data to the backup storage, providing the third copy for Epic's 3-2-1 data management requirement (three copies of data on two separate storage mediums for each datacenter).

Use the same procedure to create data copies for support and other services. Once the copy is mounted on the support server, it's used directly on that VM. The Nutanix KB Linux Mount Cloned Volume Group provides more detailed instructions on how to import and mount a cloned file system on a Linux VM.

Before your system goes into production, the Nutanix Epic team helps you test the data copy and backup functionality and uses the Epic GenerateIO stress test to measure the performance. Load testing is important to ensure that the backup solution doesn't negatively affect production ODB performance.

Cogito Suite Databases

Use standard SQL Server maintenance plans to back up Cogito Suite databases such as Clarity and Caboodle. To improve backup performance we recommend splitting the database backup across four file systems; check out Ola Hallengren's scripts for guidance. Be sure to discuss backups with both Epic and the Nutanix Epic Team (epic@nutanix.com) before your system goes live.

> Tip: Don't use volume group snapshots in conjunction with SQL backups; they cause unnecessary data usage. Use enterprise backup software to protect the data.

5. Example Configuration

In this section, we walk through an example configuration for a customer running all their Epic services on Nutanix for 4,400 concurrent database users and 5,700 concurrent Hyperspace user sessions.

> Note: We provide the requirements in this section as an example configuration. You should always get your sizing guidance from the documents Epic generates for you.

Epic has four main components that each represent multiple VMs:

1. EHR operational database (ODB): IRIS database containing patient records.
2. Cogito Reporting Suite: Data analytics running primarily on SQL Server.
3. Web and service servers (WSS): Windows-based infrastructure services.
4. Hyperspace: Presentation tier, usually running on Citrix Virtual Apps.

> Note: ODB and Cogito require AHV on Nutanix, so all the Epic components in this example are on AHV.

This design calls for two sites: one for production and the other for disaster recovery. In each site there are three clusters—one for ODB, one for Cogito, and the other for Hyperspace—for a total of six Nutanix clusters. The WSS workload is spread across the ODB and Cogito clusters. This design meets Epic's 3-2-1 requirement.

The first design step is to map Epic storage pools to Nutanix clusters. The ODB workload (IRIS database) and the Cogito workload are I/O-heavy with two distinct I/O patterns. The ODB workload needs low-latency random read and write, and Cogito needs high-throughput sequential I/O read and write. These different patterns are the first reason to split the Epic pools into separate Nutanix clusters.

The Nutanix platform is what Epic calls a workload-specific array solution. Because each Nutanix cluster can be loosely defined as an array, the second step is to place each workload (Epic pool) in a separate cluster. For this deployment, Epic Pool 1 is in the ODB Nutanix cluster. The Cogito Nutanix cluster contains NAS 1 (using Nutanix Files) as well as Epic Pool 2. Nutanix

handles the replication of the NAS 2 Web BLOB data to the disaster recovery cluster. Epic Pool 3 is in a cluster in the DR datacenter used for ODB disaster recovery.

The following figure contains the Epic pool definitions from the example HCG.

> Note: The following image refers to the ODB workload as Production Data.

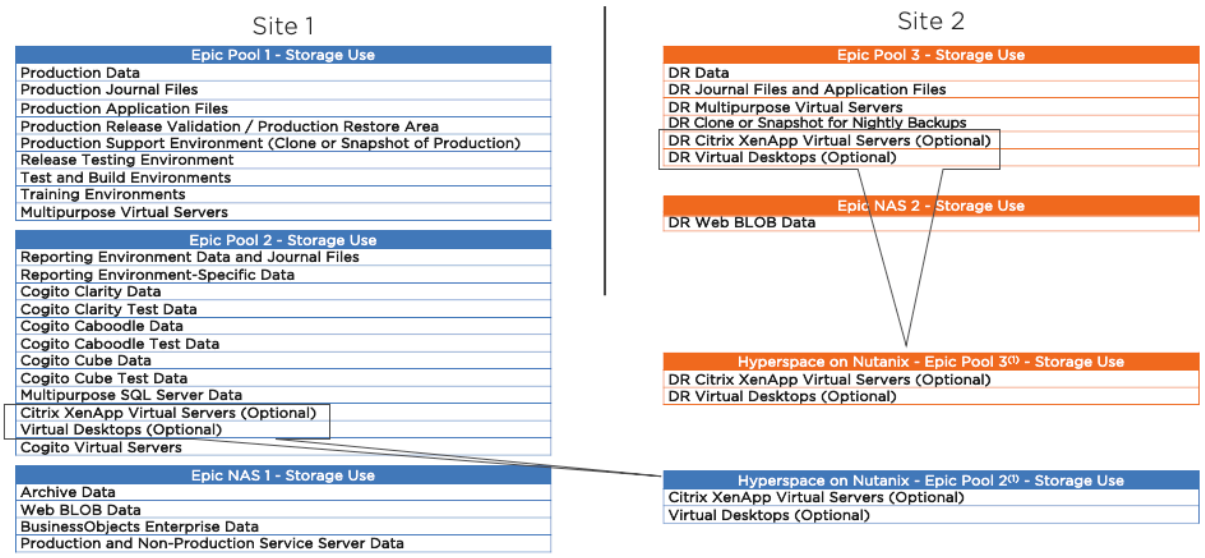

Figure 5: Epic Pools as Defined in the HCG

The presentation tier (Hyperspace) often requires many nodes, and the Epic HCG recommends only using the Hyperspace nodes for Citrix Virtual Apps servers. For these reasons, place Hyperspace into one or more separate clusters. Because Nutanix storage is contained in the cluster, the Hyperspace cluster (Epic Pool 2(1)) provides the portion of Epic Pool 2 allocated for Hyperspace. We refer to this storage as Epic Pool 2(1) (or 3(1) for Epic Pool 3), as shown in the following figure.

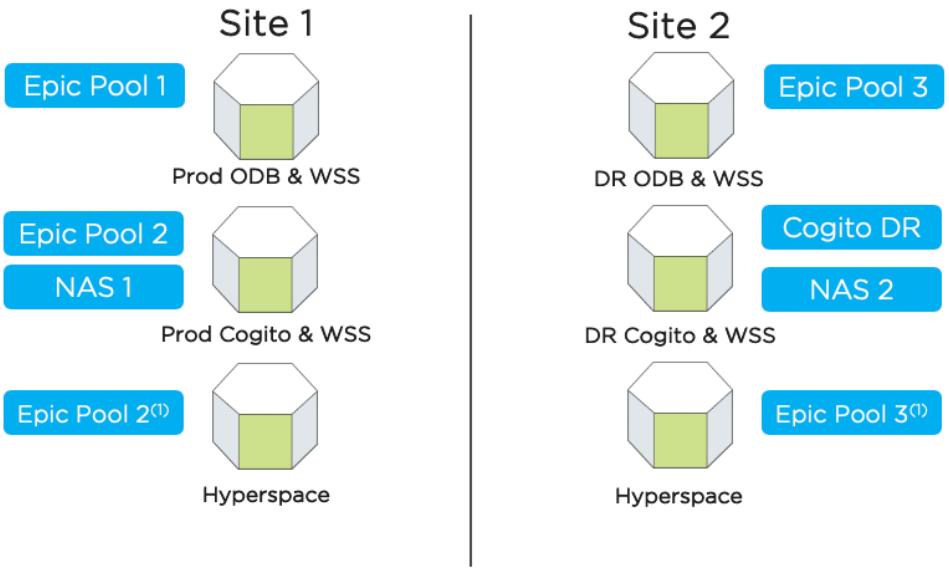

Figure 6: Deploying All Epic Services on Nutanix

Once you map the Epic Pools to Nutanix clusters, ensure that your design has enough space to fully recover from a node failure (at least one node's worth of free space). You can satisfy Epic's I/O and CPU requirements with a single-node building block like the NX-8170-G7. This setup allows dense NVMe configurations and supports Epic's preferred high-frequency processors.

Compute Requirements

The following table summarizes the physical server requirements from the example HCG.

Table 3: Summary of Physical Server Requirements in HCG

Workload	Hosts	CPU	Memory (GB)
Production (ODB)	4	Two-socket 28-core 2.7 GHz Intel Xeon 8280	576
Disaster recovery	1	Two-socket 28-core 2.7 GHz Intel Xeon 8280	1,152

Workload	Hosts	CPU	Memory (GB)
SQL Server	2	Two-socket 18-core 3.1 GHz Intel Xeon 6254	576
WSS*	4	Two-socket 18-core 3.1 GHz Intel Xeon 6254	288
Hyperspace*	52	Two-socket 18-core 3.1 GHz Intel Xeon 6254	384

*The configuration uses load-balanced datacenters, so half of this requirement is in each datacenter.

In this design, the production (ODB) and SQL Server databases (Clarity and Caboodle) must be in separate clusters. The ODB cluster needs six hosts (physical servers):

- Four hosts for the ODB workload.
- Two hosts for the WSS workload.

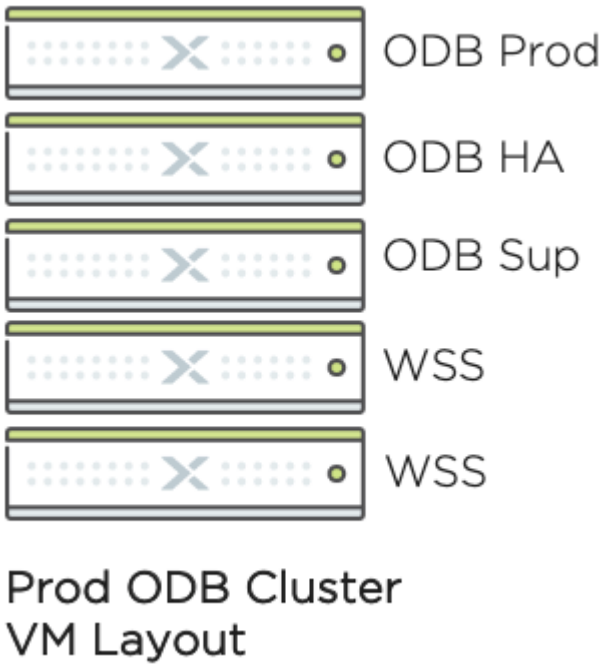

Figure 7: Example ODB Cluster VM Layout

The disaster recovery cluster needs three hosts:

- One host for the ODB disaster recovery.
- Two hosts for the WSS disaster recovery.

The HCG recommends the Intel Xeon 6254 processor for the WSS servers. Because we're putting those services in the ODB cluster, for this example we chose the more capable Intel Xeon 8280 for all the NX-8170-G7 systems to simplify cluster management and ensure good performance for the ODB workload. The production ODB and ODB HA instances should be on separate nodes.

For the production SQL Server instances

- Two hosts for SQL Server.
- Two hosts for WSS.
- Four hosts for Nutanix Files (NAS 1).

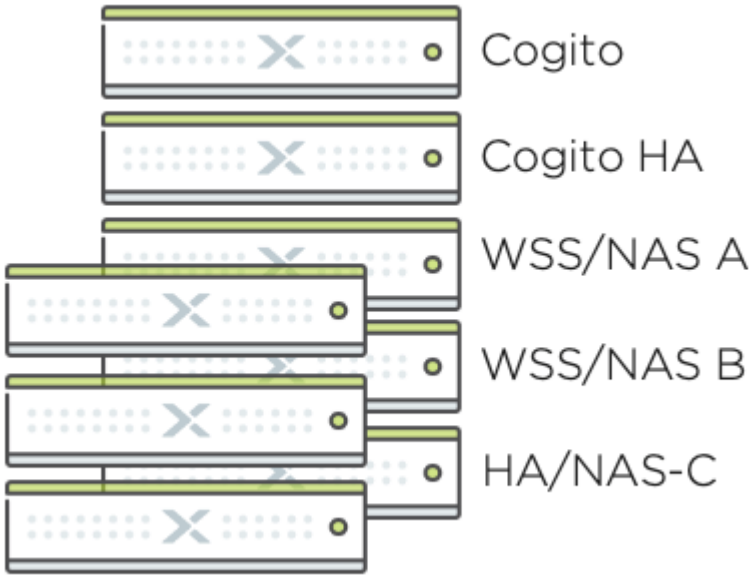

Figure 8: Production SQL Server Cluster VM Layout

According to the HCG, the Cogito Clarity and Caboodle throughput requirement is 2,200 MBps for read and 400 MBps for write. Any single VM running these products in isolation must be able to support this peak

performance, but they don't need to be able to do it simultaneously. To reach 2,200 MBps sequential read, you need active-active LACP with at least two 25 GbE NICS and six NVMe SSDs in each node. The NX-8170-G7 with 25 GbE networking meets this requirement. We used eight NX-8170-G7 nodes for the Cogito, WSS and Nutanix Files (Web BLOB) storage cluster in this example, each with the following specifications:

- 2 Intel Xeon Platinum 8260 Processor 28 cores
- 768 GB of memory
- 2 x 25 GbE ports configured with LACP
- 8 x 4 TB NVMe SSDs

Place the critical services, including Clarity and Caboodle, on separate physical nodes by adding them all to an antiaffinity policy, leaving one node free for ODB HA.

Hyperspace Cluster

The Hyperspace workload is all about CPU and memory, so for the Hyperspace cluster we use the same NX-8170-G7 nodes, just with fewer disks.

In this example, Hyperspace must support 5,700 concurrent user sessions. Most Epic customers use published applications through Citrix Virtual Apps instead of VDI to provide end-user access, which is what we did here. To determine the number of hosts needed, refer to the Physical Hosts for Published Application Servers section of the HCG. The table there lists the number of hosts needed by processor and deployment type. We show an example in the following image.

Processor Model	Hosts for a Single Active Data Center	Hosts per Load-Balanced Data Center	VMs for a Single Active Data Center	VMs per Load-Balanced Data Center	Future Version Hosts for a Single Active Data Center	Future Version Hosts per Load-Balanced Data Center
Intel Xeon 8280	48	40	644	546	60	49
Intel Xeon 8268	51	42	588	492	63	52
Intel Xeon 8260	65	54	756	636	81	67
Intel Xeon 6252	77	64	900	756	97	80
Intel Xeon 6254	64	52	620	510	79	65
Intel Xeon 6240	78	64	760	630	97	80
Intel Xeon 6242	79	65	616	512	98	81
Intel Xeon 6226	104	86	612	510	130	108

Figure 9: Required Hosts and VMs by Processor and Deployment Type

We are using the Intel Xeon 6254 in a load-balanced datacenter configuration, so each datacenter needs 52 NX-8170-G7 nodes with the following specifications:

- Dual-core Intel Xeon 6254
- 384 GB of memory
- 4 x 25 GbE ports configured with LACP
- 2 x 2 TB NVMe SSDs

Disaster Recovery

You can use Nutanix replication to create a disaster recovery copy of the Web BLOB data stored in Files. To handle disaster recovery for WSS VMs that have the Production VMs per Load-Balanced Data Center option in the HCG, you can split the services over multiple datacenters. For other WSS VMs, you can use Nutanix replication to provide disaster recovery. Database disaster recovery for Cogito services is usually handled using Microsoft SQL Server Always On availability groups (AG).

Epic software makes its own ODB disaster recovery data copies. Use Nutanix clones or snapshots to back up and make nonproduction copies of ODB (IRIS) data.

Hyperspace nodes don't contain a persistent state, so there are two ways to handle Hyperspace disaster recovery:

- Active-active

  The HCG refers to this setup as a load-balanced configuration. This configuration places 50 percent of users at one site and 50 percent at the other. This method works if the production and DR sites are close enough that latency is similar for the end users.

- Active-passive

  The HCG refers to this setup as a single active datacenter. This configuration places 90 percent of users at one site (the active site) and 10 percent at the other (the DR site). This method is more common when the DR site is farther away (high latency). Sometimes the configuration is more like 99 percent at one site and 1 percent at the other when the latency is too high for end users to easily access the DR site. In this case, a small amount of testing and development work is done there to exercise the systems so that there is at least some active load in the secondary site.

In this case, the Hyperspace production and DR datacenters are in the same city, so we used the load-balanced datacenter configuration.

Networking

According to data from Epic XGM conference proceedings, network switching and routing issues are the number-one cause of site downtime. To prevent this issue, follow these best practices for running Epic services on Nutanix:

- Use at least two 25 GbE connections for each node running Cogito Suite or IRIS (ODB) deployments.
- Use multichassis Ethernet-enabled switching.
- Use LACP in active-active mode for all Nutanix interfaces.

- Use physically redundant hardware (switches, uplinks, management, and so on).
- Implement and proactively test high availability configurations.
- Implement multilevel access (role-based security) so that untrained or unauthorized individuals can't make changes.
- Implement and follow procedures for maintenance and maintenance windows.
- Use consistent GA code versions across platform types (servers, LANs, SANs, and so on).
- Implement network monitoring and alerting to identify problems quickly.
- Connect all devices to UPS and connect critically important devices to generator power.

Epic Database vDisk Layout

The HCG specifies the Epic database server requirements for compute, memory, and storage capacity, but doesn't include vendor-specific disk layout recommendations, so we included ours here. On Nutanix, all virtual disks for databases are contained in volume groups, simplifying backup, refresh, and restore workflows.

Operational Database Volume Group Layout

Nutanix stores Epic application data in a volume group. For production instances, enable vDisk load balancing on the volume group for the best performance. Enable vDisk load balancing using the aCLI on any CVM:

```
acli vm.update [Volume Group Name] load_balance_vm_attachments=true
```

The following table contains the volume group configuration for an ODB server.

Table 4: Example Volume Group Layout for Production ODB Server

Data Type	Volume Group	Volume Group Name	Number of vDisks
OS drive	No	N/A	1
Data (/epic/prd)	Yes	prdodb-datavg*	10
Write-intent journal (WIJ)	Yes	prdodb-wijvg	2
Application software	Yes	prdodb-appvg	2
Primary journal	Yes	prdodb-prijrnvg	2
Alternate journal	Yes	prdodb-altjrnvg	2
* When you clone this volume group for SUP, REL, or backup, disable vDisk load balancing on the resulting volume group.			

When creating the Linux Logical Volume Manager (LVM) volume groups set the physical extent size to 1 MB on the ODB VM. This size aligns with the underlying Nutanix extent group and provides the best throughput and lowest latency.

Cogito Suite Volume Group Layout

The Cogito Suite VMs, such as Clarity and Caboodle, usually use Microsoft SQL Server. For more details on running SQL Server on Nutanix, refer to the Microsoft SQL Server best practices guide. The following table shows the volume group layout for the production Clarity server.

Table 5: Example Volume Group Layout for Production Clarity Server

Data Type	Typical Path	Volume Group	Volume Group Name	Number of vDisks per File System
OS drive	C:\	No	N/A	1
Mount	M:\	No	N/A	1
Database data	M:\Clarity_Report[1 – n]	Yes	prdclarity-db	1
	M:\Clarity_Stage[1 – n]	Yes	prdclarity-stage	1
	M:\tempdb[1 – n]	No	N/A	1

Data Type	Typical Path	Volume Group	Volume Group Name	Number of vDisks per File System
Transaction log	M:\Clarity_ReportLog	No	N/A	1
	M:\Clarity_StageLog	No	N/A	1
Test environment	N:\	No	N/A	1
Backup	M:\Backup[1 – n]*	No	N/A	1

n is the number of file systems recommended by Epic.

* Backup data is usually sent to a single file system; however, backing up concurrently to multiple file systems can improve performance.

6. Conclusion

Epic and Nutanix have worked together for more than seven years to ensure that Epic software runs well on the Nutanix enterprise cloud platform. This diligence has made Nutanix the number-one HCI vendor for Epic software. The Nutanix Epic team is ready to help you design your Epic deployment precisely, implement it correctly, and test it fully before deployment. To get started, contact your Nutanix representative or the Nutanix Epic team (epic@nutanix.com).

For feedback or questions, contact us using the Nutanix NEXT Community forums.

Appendix

About the Author

Scott Fadden is a Senior Staff Healthcare Solutions Engineer at Nutanix. He is one of a team of engineers testing and improving Nutanix products for use specifically with healthcare partners.

About Nutanix

Nutanix makes infrastructure invisible, elevating IT to focus on the applications and services that power their business. The Nutanix enterprise cloud software leverages web-scale engineering and consumer-grade design to natively converge compute, virtualization, and storage into a resilient, software-defined solution with rich machine intelligence. The result is predictable performance, cloud-like infrastructure consumption, robust security, and seamless application mobility for a broad range of enterprise applications. Learn more at www.nutanix.com or follow us on Twitter @nutanix.

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