

Microsoft Exchange on HPE Morpheus Software Virtualization

Best Practices and Configuration Guidance



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Executive summary

Microsoft Exchange was launched in 1996 and quickly became the leading business email and collaboration system. Many large HPE customers upgraded their environments to the latest version of Exchange to appreciate the benefits of maintaining their important email data on-premises where they can ensure its performance, security, control, and economics.

Customers who prefer to maintain their email on-premises can realize increased efficiency of moving their Exchange environment to a virtualized one using HPE's solution compared with increased VMware® costs. Some considerations for an on-premises system should include the following:

- Depending on an organization's size, they need to look at the economics of using an on-premises solution where they are in full control of their data, or using a cloud service like MS365, where Microsoft would manage the entire application as a subscription.
- Another consideration of on-premises vs cloud environment is OpEx versus CapEx. Does running Exchange for the next five years make more sense than a cloud-based solution for an organization's user base?
- Security is also a concern, as previous versions of Exchange (2016 and earlier) are unsupported and not receiving updates. In the last few years, increased remote work has required greater access to email and other collaboration systems, thus increasing an organization's exposure to cybersecurity threats. This jump in remote work has also increased related infrastructure requirements.
- Companies must also consider data compliance — what they need to keep and for how long — due to corporate policy or industry regulations.
- Compared to previous versions of Exchange, service delivery speeds have greatly increased, leading to a better user experience.

This guide demonstrates support for running virtualized Microsoft Exchange Server on the HPE Morpheus or VME platform. It also includes updated best practices, with specific details for deploying on the new HPE Morpheus or VME.

Target audience: The intended audience for this document are organizations that plan to upgrade their Exchange infrastructure to the latest supported version from Microsoft and customers who are exploring virtualization using HPE Morpheus or VME from their current hardware. The secondary audience includes storage and Windows system administrators.

Document purpose: This guide demonstrates running a virtualized Microsoft Exchange cluster on the HPE Morpheus or VME platform. It includes configuration guidance, with specific details on virtualized Microsoft Exchange. Exchange in a virtualized environment is fully supported by Microsoft (assuming the requirements are met) - [Exchange Server virtualization](#)

Introduction

The latest version of Exchange - Exchange SE (Subscription Edition) is intended for Windows Server 2025 and retains the same code base as the last version of Exchange 2019 (CU15). With this new version of Exchange, licensing has changed to a user-based model. In Exchange 2019 and below, licenses were based on Standard and Enterprise editions (based on the total number of databases).

Exchange Server SE can be downloaded at this link: microsoft.com/en-us/download/details.aspx?id=108244.

Microsoft has published the [Exchange Server preferred architecture](#) (PA) that describes best practice recommendations and optimum deployment architecture for Microsoft Exchange Server.

Microsoft Preferred Architecture for Exchange follows these design principles:

- Includes both high availability within the data center and site resilience between data centers.
- Supports multiple copies of each database, thereby allowing for quick activation with clients shifted to other database copies.
- Reduces the cost of the messaging infrastructure.
- Increases Exchange system availability by optimizing around failure domains and reducing complexity.

Support for SAN storage is now an option for database storage, increasing supported storage options from the previous direct-attached recommendations. Hewlett Packard Enterprise recommends following the Exchange Preferred Architecture wherever possible.

More details on Exchange storage configuration options can be found here - [Exchange Server storage configuration options](#)

Solution overview

This guide covers configuring Microsoft Exchange Server on HPE Morpheus Enterprise and VM Essentials.

The Morpheus environment in this solution uses five redundant HPE DL-380 servers in a cluster configuration, with storage backed by the HPE Alletra Storage MP B10000, connected via multi-path Fibre-channel. This configuration provides robust redundancy for both the compute and storage, allowing for multiple failure points without affecting the application. The HPE Alletra Storage MP B10000 uses 3.84TB TLC NVMe SSDs in a RAID6 configuration and is serving other applications besides Exchange.

With the robust redundancy built into the native Exchange software, snapshots at the hypervisor level are not supported as they are not application aware. Reverting a VM to its previous state using these snapshots will create problems since Exchange manages its own cluster state in software.

Note that unlike previous Exchange whitepapers from HPE, this configuration is not compatible with the MetaCacheDatabase (MCDB) feature of Exchange. The MCDB is a tiered storage layout traditionally used on bare metal installations of Exchange that uses high-capacity spinning HDDs for database storage, and SSDs for a high-performance smaller cached version of the main Exchange databases.

This design uses a building-block approach with a multi-copy high availability design using Exchange Database Availability Groups (DAGs), which can be scaled to large numbers of users. A DAG provides high availability with copies of databases across multiple servers in a primary data center location and an optional secondary data center for a disaster recovery (DR) location.

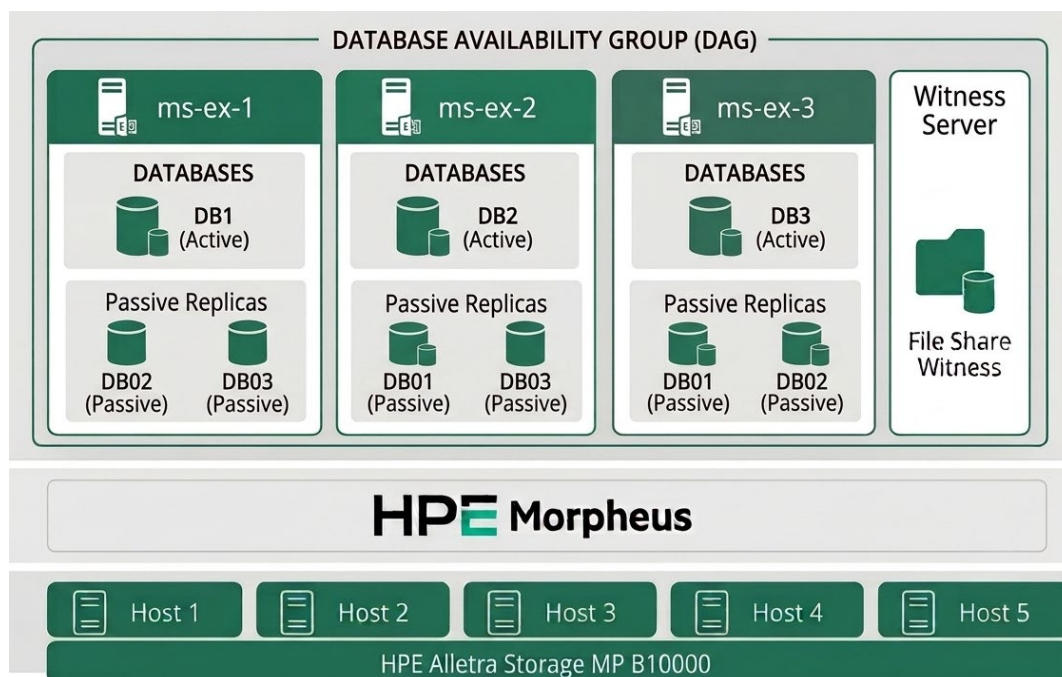


Figure 1. Architectural diagram of the virtualized three server DAG on HPE Morpheus

Solution components

The following were used for this solution:

Hardware

5 HPE ProLiant DL-380s were used for the Morpheus cluster, connected via multipath switched Fibre-Channel to a HPE Alletra Storage MP B10000 with a full array of 3.84TB TLC NVMe SSDs.

Software

The software components of this guide include:

- HPE Morpheus Enterprise v8.1. The VM Essentials version should work equivalently.
- Microsoft Exchange Server 2019 Cumulative Update 15. This codebase is identical to the newer Exchange Server SE, but with the non-user-based licensing requirements. Everything shown in this document will work the same way between both versions.
- Windows Server 2025 Standard Edition. Exchange does not make use of any of the Datacenter Edition features.

VM configuration in Morpheus

In the HPE Morpheus webUI, three identical VMs (ms-ex-1 through 3) were provisioned for each Exchange Server and used to create a three-node DAG.

INSTANCES

All Groups

All Clouds

All Statuses

☐	NAME	SUMMARY	LOCATION	STATS
☐	ms-ex-1 	IP addr: 192.168.0.43 Version: 1.0 Virtual Machines: 1	Group: TMaaS-WL Cluster: WL	 STATUS
☐	ms-ex-2 	IP addr: 192.168.0.46 Version: 1.0 Virtual Machines: 1	Group: TMaaS-WL Cluster: WL	 STATUS
☐	ms-ex-3 	IP addr: 192.168.0.96 Version: 1.0 Virtual Machines: 1	Group: DB Cluster: WL	 STATUS

Figure 2. Exchange Server Instances in Morpheus

Plan and Volumes details for each Exchange Server VM are identical. Best practices for a physical production server would be 128GB of RAM, but in a virtualized environment, avoiding performance problems and memory overcommitment for other VMs is paramount. Memory use on a production Exchange server should be tailored to workload size following Microsoft’s virtualization guidance. For this demonstration, 16GB will be more than enough.

PLAN

4 CPU, 16GB Memory

VOLUMES

root

121

GB

Standard

VIRTIO 0

st08-b10

data-1

120

GB

Standard

VIRTIO 0:

st08-b10

Figure 3. Plan and Volume configuration for each Exchange server

Database storage must be setup in a symmetrical configuration for all Exchange Servers prior to DAG creation. The 120GB database volumes (data-1) are from the HPE Alletra Storage MP B10000 (ST08) storage pool, configured using the Morpheus storage plugin for this array. Volumes are formatted as REFS and set as the F: drive on each of the three Exchange servers. The following screenshot shows the drive layout from the Windows Disk Management tool.

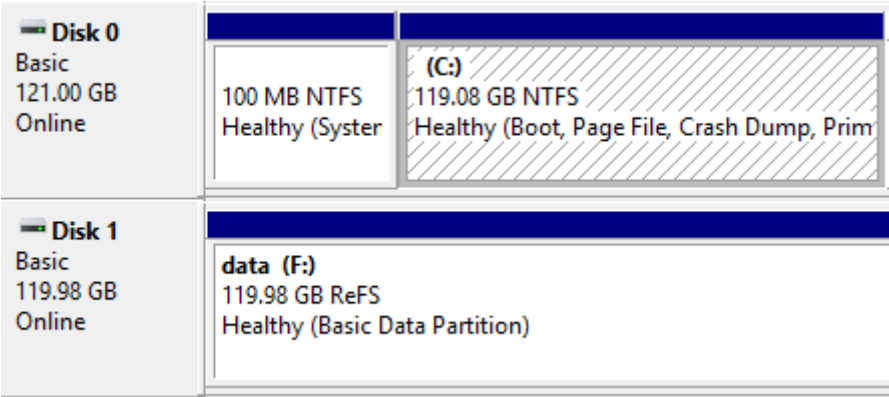


Figure 4. Drive layout for each Exchange server

Exchange Server configuration

After installing Exchange on all three servers, they should appear under the “servers” tab in the Exchange Administrator Console (EAC).

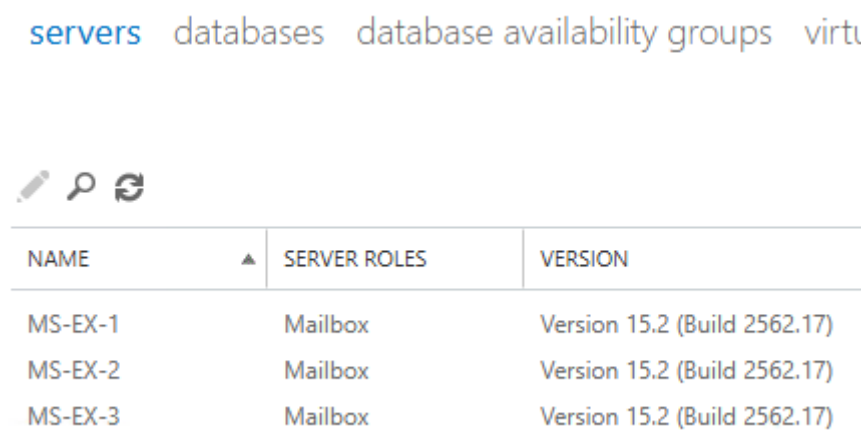


Figure 5. Server list of available Exchange servers from the EAC

Prior to creating the DAG, the default databases were changed to a friendlier name (DB01-DB03) than the default Microsoft naming convention (“Mailbox Database XXXXXXXXXXXX”). Renaming and moving databases must be done before the DAG is created.

The database and logs were moved to the F: drive of each server. Recommendations for having the database and logs on separate drives was to prevent performance problems when running Exchange on bare metal servers with spinning disks. As the HPE Alletra Storage MP B10000 is an NVMe SSD based RAID array, these performance problems are unlikely except under extreme conditions that would have long since degraded performance on a bare metal Exchange server.

This screenshot shows the DAG name, the witness server, and three member servers.

servers databases database availability groups virtual directories

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NAME ▲	WITNESS SERVER	MEMBER SERVERS
ExchangeDAG	ms-w2025-03.hpelab.local	MS-EX-2,MS-EX-3,MS-EX-1

Figure 6. All three servers added to the DAG, with witness

Copies of each server’s database are created on the other servers in the DAG by clicking the “add database copy” from the pulldown menu and specifying which servers will host a copy of that database. The screenshot below shows that all members of the DAG have been added for DB01. This was also done for DB02 and DB03.

add mailbox database copy

Mailbox database name:

DB01

*Specify Mailbox server:

Browse...

Activation preference number:

1 ▼

Servers hosting a copy of this database:

MS-EX-1
MS-EX-2
MS-EX-3

Figure 7. Each server’s database is replicated to the other members of the DAG

Each server should now have unique active databases as well as two passive copies from the other two servers. If a server hosting an active database fails, another will automatically take over by making one of the replicated passive databases active. The following screenshot shows the EAC “databases” tab, which include the database’s name and which server it is active on, and servers with copies.

servers databases database availability groups virtual directories certificates

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NAME ▲	ACTIVE ON SERVER	SERVICES WITH COPIES	STATUS	BAD COPY COUNT
DB01	MS-EX-1	MS-EX-1,MS-EX-2,MS-EX-3	Mounted	0
DB02	MS-EX-2	MS-EX-2,MS-EX-3,MS-EX-1	Mounted	0
DB03	MS-EX-3	MS-EX-3,MS-EX-1,MS-EX-2	Mounted	0

Figure 8. Each server’s database is replicated to the other members of the DAG

This screenshot shows a detailed view for the active DB01 database on the ms-ex-1 server, and passive copies available from either ms-ex-2 or ms-ex-3. Manually clicking on “Activate” on either of those servers will make the DB01 database active on that specific server and put the original server into passive mode.

Database copies

DB01\MS-EX-1

Active Mounted

Copy queue length: 0

Content index state: NotApplicable

[View details](#)

DB01\MS-EX-2

Passive Healthy

Copy queue length: 0

Content index state: NotApplicable

[Suspend](#) | [Activate](#) | [Remove](#)

[View details](#)

DB01\MS-EX-3

Passive Healthy

Copy queue length: 0

Content index state: NotApplicable

[Suspend](#) | [Activate](#) | [Remove](#)

[View details](#)

Figure 9. Details of DB01 show it is active on the 1 server, with passive copies on servers 2 and 3

For database copies to work properly, all three Exchange Servers in the DAG must have symmetrical storage, with identical database volumes. Database copies are automatically replicated to the same path on each server. The following screenshot shows identical database paths for any of the DAG member servers.

This PC > data (F:) >

Sort View

Name	Date modified	Type
DB01	7/21/2026 11:13 AM	File folder
DB01-logs	7/23/2026 9:25 AM	File folder
DB02	7/21/2026 11:18 AM	File folder
DB02-logs	7/23/2026 8:55 AM	File folder
DB03	7/20/2026 3:23 PM	File folder
DB03-logs	7/23/2026 9:07 AM	File folder

Figure 10. Each server’s F: drive should look the same if all database replication is properly configured.

Summary

This guide highlighted configuration best practices for running a virtualized Exchange cluster on HPE Morpheus using the HPE Alletra Storage MP B10000 storage array. Each server's database was moved to the common replicated to the other two servers in the DAG for robust failover protection outside of just regular backups. The MCDB was not installed as only SSD based storage was used in this configuration, reducing the complexity and increasing performance by eliminating the spinning drive storage layer.

Implementing a proof-of-concept

Sizing for new installations or migration to the latest version of Exchange can be found using the Microsoft [Exchange Server Sizing Calculator](#). Hewlett Packard Enterprise has experts that can help understand and get the most out of this tool when sizing your Exchange environment with HPE hardware.

As a matter of best practice for all deployments, Hewlett Packard Enterprise recommends implementing a proof-of-concept using a test environment that matches as closely as possible the planned production environment. This way, appropriate performance and scalability characterizations can be obtained. For help with a proof-of-concept, contact a Hewlett Packard Enterprise Services representative (hpe.com/us/en/services/consulting.html) or your Hewlett Packard Enterprise partner.

These best practices are only a guide — customers should always test their own solution to ensure it meets their Exchange requirements.

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