Dell PowerVault MD24 Series Enclosure

Support Matrix

April 2025
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DELL Technologies

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

Contents

1

Introduction

This document provides information about supported software, firmware, and hardware for Dell PowerVault MD24 Series enclosures.

NOTE:

- This Support Matrix contains the latest compatibility and interoperability information. This document supersedes all other MD24 Series documentation information.
- MD24 Series enclosures can be used as JBODs attached to PowerEdge servers, but cannot be used as expansion for PowerVault MD3, ME4, or ME5 Series arrays.

2

Storage enclosure rules

This section provides information about server and storage configurations for Dell PowerVault MD24 Series enclosures.

See your PowerEdge server technical documentation to determine which adapters it supports. In general:

- HBA355e adapters are supported on 14G, 15G, and 16G PowerEdge servers.
- H840 PERC adapters are supported on 14G, and 15G PowerEdge servers.
- H965e PERC adapters are supported on 16G PowerEdge servers.
- HBA465e adapters are supported on 16G PowerEdge servers.

Table 1. MD24 Series enclosure rules

JBOD	Adapter	Max enclosures per adapter	Max drives per enclosure	Maximum drive count	Max adapters per server
MD2460	H840 PERC	2	60-3.5" drives	120	1
	HBA355e	4	60-3.5" drives	240	1
	H965e PERC	4	60-3.5" drives	240	1
	HBA465e	4	60-3.5" drives	240	1
MD2412	H840 PERC	4	12-3.5" drives	48	1
	HBA355e	8	12-3.5" drives	96	1
	H965e PERC	8	12-3.5" drives	96	1
	HBA465e	8	12-3.5" drives	96	1
MD2424	H840 PERC	4	24-2.5" drives	96	1
	HBA355e	8	24-2.5" drives	192	1
	H965e PERC	8	24-2.5" drives	192	1
	HBA465e	8	24-2.5" drives	192	1

NOTE: MD24 Series enclosures have a unified backplane and are cabled in a multipath mode configuration. This design means that an enclosure can only be attached to a single server; the drives within each enclosure cannot be accessed in a "split mode" between two servers.

The H840 PERC supports 14G and 15G servers. The H965e PERC and HBA465e SAS support only 16G servers.

Cabling rules

- Mixing any MD2412 and MD2424, MD2412 and MD2460, or MD2424 and MD2460 on the same port chain is not supported. A port chain only supports one type of MD24 Series enclosure.
- If port chain rules and max drive counts are not exceeded, mixing different MD24 Series enclosures on the same adapter is supported.
- Mixing MD24 Series enclosures with any other storage product, such as MD14xx, ME484, or Tape Devices, on the same HBA is not supported.
- Mixing MD24 Series enclosures on the same HBA is supported as long as port chain rules and max drive counts are not exceeded
- Loop back connections are not supported. For example, you cannot connect a port on a second enclosure back to a port on the first enclosure.
- Mixing of single path and dual path configurations on the same controller is not supported. For example, you cannot connect port 2 to enclosure 1 if port 0 and port 1 are connected to enclosure 0.

- Interleaving ports for a dual path configuration is not supported. For example, if port 0 is connected to the first EMM on an enclosure, then only port 1 can be used to connect multipath to the 2nd EMM on that same enclosure.
- Using port 1 and port 2 for dual path on the same enclosure is not supported.

3

Storage enclosure firmware versions

This section provides information about firmware versions for Dell PowerVault MD24 Series enclosures.

MD24 Series storage enclosures have two Enclosure Management Modules (EMMs). Both EMMs must be at the same firmware level. EMMs do not automatically synchronize firmware versions, and so each EMM must be updated individually.

Table 2. MD24 Series enclosure firmware

Firmware version	Release date
7.4.1	18 April 2025

4

Management Tools

MD24 Series enclosures are managed using either of the following tools:

Table 3. iDRAC support based on adapter

iDRAC display	MD2412				MD2424				MD2460			
	HBA355e	PERC H840	PERC H965e	HBA465e	HBA355e	PERC H840	PERC H965e	HBA465e	HBA355e	PERC H840	PERC H965e	HBA465e
Enclosure status	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Advanced properties	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Physical disks overview	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fans	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Power supplies	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Temperature probes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
EMM	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Event logging	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Full support requires minimum iDRAC version 7.00.60.00.

- PowerTools Server Hardware Manager software: a Command-Line Interface (CLI) used to obtain device and status information about storage and hardware components. For more information, see the *PowerTools Server Hardware Manager Administrator's Guide* or the *PowerTools Server Hardware Manager Support Matrix* on the Dell Technologies Support site.
- Integrated Dell Remote Access Controller (iDRAC): used to manage, configure, and troubleshoot storage devices through a PowerEdge server. For more information, see the *Integrated Dell Remote Access Controller User's Guide* on the Dell Technologies Support site.

To determine if a Dell PowerEdge server supports an adapter, see the technical information for that server.

NOTE:

The H840 PERC supports 14G and 15G servers. The H965e PERC and HBA465e SAS support only 16G servers.

5

Supported operating systems

The Dell PowerVault MD24 Series storage enclosures are managed by a PowerEdge server using any of the following operating systems:

Windows

- Windows Server 2025
- Windows Server 2022
- Windows Server 2019

Linux

- Red Hat Enterprise Linux 9.4
- Red Hat Enterprise Linux 9.3
- Red Hat Enterprise Linux 9.2
- Red Hat Enterprise Linux 9.1
- Red Hat Enterprise Linux 9.0
- Red Hat Enterprise Linux 8.10
- Red Hat Enterprise Linux 8.9
- Red Hat Enterprise Linux 8.8
- Red Hat Enterprise Linux 8.7
- Red Hat Enterprise Linux 8.6
- SUSE Linux Enterprise Server 15 SP6
- SUSE Linux Enterprise Server 15 SP5
- SUSE Linux Enterprise Server 15 SP4

NOTE: MPIO (Windows) or Device Mapper Multipath (Linux) is required for multipath support. See the related MD Series Owner's Manual or Field Service Manual for instructions on configuring multipath support.

6

Supported adapters and controllers

The Dell PowerVault MD24 Series storage enclosures connect to PowerEdge servers using a PERC or HBA. The following adapters and controllers have been tested for use with Dell PowerVault MD24 Series storage enclosures.

See your PowerEdge server technical documentation to determine which adapters it supports. In general:

- HBA355e adapters are supported on 14G, 15G, and 16G PowerEdge servers.
- H840 PERC adapters are supported on 14G, and 15G PowerEdge servers.
- H965e PERC adapters are supported on 16G PowerEdge servers.
- HBA465e adapters are supported on 16G PowerEdge servers.

NOTE: MD24 Series enclosures support speeds up to 24 Gbps. However, the enclosures can only operate at the speed that is supported by the adapters that are available, which is 12 Gbps for HBA355e and PERC H840. The PERC H965e and H465e do support speeds up to 24Gbps between the host and the enclosure.

You can download the supported drivers and firmware for the adapters and controllers from the Dell Technologies Support site.

Table 4. Firmware and driver minimum requirements

Operating system or Application	HBA355e SAS adapter (12 Gbps)	PERC H840 adapter (12 Gbps)	PERC H965e adapter (24 Gbps)	HBA465e SAS adapter (24Gbps):
Windows 2025	FW: 24.15.10.00 Driver:2.61.48.00	FW: 51.16.0-4795 Driver: 7.721.03.00	FW: 8.4.1.0.18-1 Driver: 8.4.5.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
Windows 2022	FW: 24.15.10.00 Driver:2.61.48.00	FW: 51.16.0-4795 Driver: 7.721.03.00	FW: 8.4.1.0.18-1 Driver: 8.4.5.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
Windows 2019	FW: 24.15.10.00 Driver:2.61.48.00	FW: 51.16.0-4795 Driver: 7.721.03.00	FW: 8.4.1.0.18-1 Driver: 8.4.5.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
Red Hat Enterprise Linux 9.4	FW: 24.15.10.00 Driver:43.00.02.00	FW: 51.16.0-4795 Driver: 7.719.03.00-rh1	FW: 8.4.1.0.18-1 Driver: 8.4.2.0.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
Red Hat Enterprise Linux 9.3	FW: 24.15.10.00 Driver:43.00.02.00	FW: 51.16.0-4795 Driver: 7.719.03.00-rh1	FW: 8.4.1.0.18-1 Driver: 8.4.2.0.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
Red Hat Enterprise Linux 9.2	FW: 24.15.10.00 Driver:43.00.02.00	FW: 51.16.0-4795 Driver: 7.719.03.00-rh1	FW: 8.4.1.0.18-1 Driver: 8.4.2.0.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
Red Hat Enterprise Linux 9.1	FW: 24.15.10.00 Driver:43.00.02.00	FW: 51.16.0-4795 Driver: 7.719.03.00-rh1	FW: 8.4.1.0.18-1 Driver: 8.4.2.0.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
Red Hat Enterprise Linux 9.0	FW: 24.15.10.00	FW: 51.16.0-4795	FW: 8.4.1.0.18-1 Driver: 8.4.2.0.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0

Table 4. Firmware and driver minimum requirements (continued)

Operating system or Application	HBA355e SAS adapter (12 Gbps)	PERC H840 adapter (12 Gbps)	PERC H965e adapter (24 Gbps)	HBA465e SAS adapter (24Gbps):
	Driver:43.00.02.00	Driver: 7.719.03.00-rh1		
Red Hat Enterprise Linux 8.10	FW: 24.15.10.00 Driver:43.00.02.00	FW: 51.16.0-4795 Driver: 7.719.03.00-rc1	FW: 8.4.1.0.18-1 Driver: 8.4.2.0.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
Red Hat Enterprise Linux 8.9	FW: 24.15.10.00 Driver:43.00.02.00	FW: 51.16.0-4795 Driver: 7.719.03.00-rc1	FW: 8.4.1.0.18-1 Driver: 8.4.2.0.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
Red Hat Enterprise Linux 8.8	FW: 24.15.10.00 Driver:43.00.02.00	FW: 51.16.0-4795 Driver: 7.719.03.00-rc1	FW: 8.4.1.0.18-1 Driver: 8.4.2.0.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
Red Hat Enterprise Linux 8.7	FW: 24.15.10.00 Driver:43.00.02.00	FW: 51.16.0-4795 Driver: 7.719.03.00-rc1	FW: 8.4.1.0.18-1 Driver: 8.4.2.0.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
Red Hat Enterprise Linux 8.6	FW: 24.15.10.00 Driver:43.00.02.00	FW: 51.16.0-4795 Driver: 7.719.03.00-rc1	FW: 8.4.1.0.18-1 Driver: 8.4.2.0.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
SUSE Linux Enterprise Server 15	FW: 24.15.10.00 Driver:43.00.02.00	FW: 51.16.0-4795 Driver: 7.721.03.00	FW: 8.4.1.0.18-1 Driver: 8.4.2.0.0	FW: 8.8.0.0.15-26 Driver: 8.8.8.0
PowerTools Storage Hardware Manager CLI	3.1.0	3.1.0	3.1.0	3.1.0
iDRAC	6.10.80.00	6.10.80.00	6.10.80.00	6.10.80.00

7

Supported drives

This section provides information about the drives that MD24 Series enclosures support.

NOTE: MD24 Series enclosures support speeds up to 24 Gbps. However, the MD2412 and MD2460 enclosures can only operate at the speed that is supported by the current drives, which is 12 Gbps, even when connected to the host using a 24 Gbps adapter.

MD2412 and MD2460 supported drives

For information about latest available drive firmware for MD24 Series enclosures, see the Drivers and Downloads page for the enclosure available on the Dell Technologies Support site. When purchasing additional drives, always use the Dell P/N details when ordering to ensure that the drives are Dell-certified and supported.

NOTE: The MD2412 and MD2460 enclosures do not support SATA, SSD, NVMe, vSAS, or 2.5" drives.

Table 5. MD2412 and MD2460 supported drives

Dell P/N	Form Factor	Model	Capacity	Speed	Vendor	FW	SED
HDWXN	3.5"	ST2000NM013B	2 TB	7.2 K	Seagate	LWOB	No
HHX14	3.5"	MG04SCA20ENY	2 TB	7.2 K	Toshiba	EG03	No
NT1X2	3.5"	HUS726T4TALS200	4 TB	7.2 K	HGST	PU09	No
10N7R	3.5"	ST4000NM019B	4 TB	7.2 K	Seagate	LWOB	No
1MVTT	3.5"	MG04SCA40ENY	4 TB	7.2 K	Toshiba	EG03	No
FN2YX	3.5"	MG08SDA400NY	4 TB	7.2 K	Toshiba	EK05	No
44YFV	3.5"	HUS728T8TAL5200	8 TB	7.2 K	HGST	RS09	No
C5HD0	3.5"	ST8000NM024B	8 TB	7.2 K	Seagate	LS0C	No
NJWMG	3.5"	MG08SDA800EY	8 TB	7.2 K	Toshiba	EL01	No
9HXK6	3.5"	HUH721212AL5200	12 TB	7.2 K	HGST	NS11	No
M1C0T	3.5"	ST12000NM006J	12 TB	7.2 K	Seagate	PSLB	No
0N96X	3.5"	MG09SCA12TEY	12 TB	7.2 K	Toshiba	EM05	No
41DXR	3.5"	ST16000NM006J	16 TB	7.2 K	Seagate	PSLB	No
MXC46	3.5"	MG09SCA16TEY	16 TB	7.2 K	Toshiba	EM05	No
VF206	3.5"	WUH721816AL5200	16 TB	7.2 K	WD	US07	No
R3G03	3.5"	ST20000NM004D	20 TB	7.2 K	Seagate	GS07	No
1D4CR	3.5"	WUH722020AL5200	20 TB	7.2 K	WD	VS18	No
DC2GD	3.5"	WUH722222AL5200	22 TB	7.2 K	WD	WS03	No
DK7C9	3.5"	MG07SCA12TEY	12 TB	7.2 K	Toshiba	E10D	No
NT45N	3.5"	MG10SCA20TEY	20 TB	7.2 K	Toshiba	EN03	No
R0G8W	3.5"	ST16000NM007H	16TB	7.2 K	Seagate	SWS9	No
R5KP7	3.5"	ST20000NM007H	20TB	7.2 K	Seagate	SWS9	No

Table 5. MD2412 and MD2460 supported drives (continued)

Dell P/N	Form Factor	Model	Capacity	Speed	Vendor	FW	SED
GPP63	3.5"	ST24000NM007H	24TB	7.2 K	Seagate	SUS9	No
R0G8W	3.5"	ST16000NM007H	16TB	7.2 K	Seagate	SYS5	No
R5KP7	3.5"	ST20000NM007H	20TB	7.2 K	Seagate	SYS5	No
GPP63	3.5"	ST24000NM007H	24TB	7.2 K	Seagate	SUS5	No
MTTCF	3.5"	WUH722420AL5200	20TB	7.2 K	WD	YS01	No
J0PVX	3.5"	WUH721414AL5200	24TB	7.2 K	WD	YS01	No

MD2424 supported drives

For information about latest available drive firmware for MD24 Series enclosures, see the Drivers and Downloads page for the enclosure available on the Dell Technologies Support site. When purchasing additional drives, always use the Dell P/N details when ordering to ensure that the drives are Dell-certified and supported.

MD2424 enclosures do support speeds up to 24 Gbps when connected to a 24 Gb controller.

NOTE: The MD2424 enclosures do not support SATA, NVMe, vSAS, or 3.5" drives.

Table 6. MD2424 supported drives

Dell P/N	Form Factor	Model	Capacity	Speed	Vendor	FW	SED
NNGV4	2.5"	KPM6XVUG800G	800 GB	SSD	Kioxia	BA48	No
3CHC8	2.5"	MZILG800HCHQAD3	800 GB	SSD	Samsung	DWG9	No
J92FY	2.5"	KPM6WVUG960G	960 GB	SSD	Kioxia	BD48	Yes
H8DG4	2.5"	MZILG960HCHQAD3	960 GB	SSD	Samsung	DSG9	No
DMP3R	2.5"	ST1200MM0069	1.2 Tb	10K	Seagate	SSC8	Yes
G2G54	2.5"	ST1200MM0099	1.2 TB	10K	Seagate	ST38	No
01M0D	2.5"	AL15SEB120NY	1.2 TB	10K	Toshiba	EF09	No
CHJJJ	2.5"	KPM6XVUG1T60	1.6 TB	SSD	Kioxia	BA48	No
5RJND	2.5"	MZILG1T6HCJRAD3	1.6 TB	SSD	Samsung	DWG9	No
1081V	2.5"	KPM6WVUG1T92	1.92 TB	SSD	Kioxia	BD48	Yes
H1P07	2.5"	KPM6WRUG1T92	1.92 TB	SSD	Kioxia	BD48	Yes
VRTN9	2.5"	KPM6XRUG1T92	1.92 TB	SSD	Kioxia	BA48	No
NRR34	2.5"	MZILG1T9HCJRAD3	1.92 TB	SSD	Samsung	DSG9	No
4GDNY	2.5"	CL2400MM0149	2.4 TB	10K	Seagate	SBT6	Yes
1D0F5	2.5"	BL2400MM0159	2.4 TB	10K	Seagate	SBS6	No
F9NWJ	2.5"	AL15SEB24EQY	2.4 TB	10K	Toshiba	EF09	No
DY0NH	2.5"	MZILG3T2HCLSAD3	3.2 TB	SSD	Samsung	DWG9	No
2XVX2	2.5"	KPM6XRUG3T84	3.84 TB	SSD	Kioxia	BA48	No
MD4YN	2.5"	KPM6WVUG3T84	3.84 TB	SSD	Kioxia	BD48	Yes
9N32F	2.5"	MZILG3T8HCLSAD3	3.84 TB	SSD	Samsung	DSG9	No
5T78C	2.5"	KPM6WRUG7T68	7.68 TB	SSD	Kioxia	BD48	Yes
YM0T1	2.5"	KPM6XRUG7T68	7.68 TB	SSD	Kioxia	BA48	No
Y8H7M	2.5"	MZILG7T6HBLAAD3	7.68 TB	SSD	Samsung	DSG9	No
4TRHM	2.5"	KPM7XVUG1T60	1.6 TB	SSD	Kioxia	C10E	No
G4NY4	2.5"	KPM7WVUG1T60	1.6 TB	SSD	Kioxia	C40E	Yes
RGP9J	2.5"	KPM7WVUG3T20	3.2 TB	SSD	Kioxia	C40E	Yes
X96H8	2.5"	KPM7XVUG800G	800 GB	SSD	Kioxia	C10C	No
81G77	2.5"	KPM7WVUG800G	800 GB	SSD	Kioxia	C40A	Yes
VF206	2.5"	KPM7XRUG1T92	1.92TB	SSD	Kioxia	C10E	No
MT0R5	2.5"	KPM7XRUG3T84	3.84 TB	SSD	Kioxia	C10E	No

Table 6. MD2424 supported drives (continued)

Dell P/N	Form Factor	Model	Capacity	Speed	Vendor	FW	SED
YTVTF	2.5"	KPM7WRUG3T84	3.84 TB	SSD	Kioxia	C40E	Yes
7N1WT	2.5"	KPM7XRUG7T68	7.68 TB	SSD	Kioxia	C10E	No
HCTYM	2.5"	KPM7WRUG7T68	7.68 TB	SSD	Kioxia	C40E	Yes
8YWH3	2.5"	ST2400MM0149	2.4TB	10K	Seagate	SSEE	Yes

8

Supported I/O cables

The following SAS4 I/O cables are supported for connecting Dell PowerVault MD24 Series enclosures:

Table 7. MD24 Series supported I/O cables

Part Number	Interface Speed	Length	Description
F82HG	24 Gb SAS	0.5 m	SAS4 mini-SAS
NX1XW	24 Gb SAS	1 m	SAS4 mini-SAS
W1W05	24 Gb SAS	2.0 m	SAS4 mini-SAS
3J2R2	24 Gb SAS	3.0 m	SAS4 mini-SAS
39Y00	24 Gb SAS	4.0 m	SAS4 mini-SAS
TV165	24 Gb SAS	5.0 m	SAS4 mini-SAS

Table 8. MD24 Series supported I/O cables (customer kits)

Part Number	Interface Speed	Length	Description
3NTTR	24 Gb SAS	0.5 m	SAS4 mini-SAS
F3VGY	24 Gb SAS	1 m	SAS4 mini-SAS
K19PM	24 Gb SAS	2.0 m	SAS4 mini-SAS
2G3YH	24 Gb SAS	3.0 m	SAS4 mini-SAS
8YX4R	24 Gb SAS	4.0 m	SAS4 mini-SAS
KWJ0M	24 Gb SAS	5.0 m	SAS4 mini-SAS

9

Dell Storage Support Policy

Level 1: Full Contractual Support

For tested devices listed in this Support Matrix, (and for the specific version listed), Dell will provide solution support, under an active support contract assuming that all other components in the storage solution are also under contracted support with their respective manufacturers and that documented recommended design best practices are followed.

Level 2: Conditional Support

In addition to the product versions tested by Dell and listed in this Support Matrix, the compatibility of comparable hardware models and newer firmware versions can be projected based upon the results for the systems actually tested and will be designated as "conditionally supported".

Dell will provide full contractual support for the storage solution under an active support contract, assuming that all components in the storage solution are also under contracted support with their respective manufacturers and that documented recommended design best practices are followed.

Resolution of functional and/or performance issues may be out of Dell's control. In such cases, these issues will need to be addressed by the applicable device or software/firmware vendor. Dell may require, in its sole discretion, as a condition of continuing support, that the customer replace the component with one that was tested and/or upgrade/downgrade to a supported software version.

Examples of Conditional Support situations include, but are not limited to:

- If a switch or server adapter shares the same underlying ASIC or chipset and is from the same vendor as a tested configuration, then it may produce similar results.
- If a component is an identical model of a component listed, but differs in firmware version, then it may produce similar results for any firmware and/or drivers that are newer than those listed. For example, if version X of firmware has been tested and is listed as compatible, then versions newer than version X are expected to continue to work.

Failure of a "conditionally supported" component to provide the same service level as the similar device listed, unless Dell has communicated end of support or a specific incompatibility for a particular product, firmware or software version, would be treated as a bug that needs to be fixed by the device or software/firmware vendor.

Level 3: Commercially Reasonable Effort

For components not listed within this Support Matrix, OR where customer has not, or is not willing to apply accepted Dell recommended best practices for the specific storage family's SAN design and implementation, as long as the customer has an active support contract with the appropriate vendor(s), and an active support contract, Dell will provide storage solution support for any untested component of the configuration, until such time as it is determined, in Dell's sole discretion, that a problem lies within the untested component(s) or the way they interoperate with Dell.

Once an untested component has been determined to be the source of the issue, Dell will only provide support for the storage solution on a Commercially Reasonable Effort (CRE) basis. CRE support may be limited to certain days of the week and during normal business hours only.

Dell does not guarantee that issues undertaken on a CRE basis will be resolved in a timely fashion, or at all. There is a possibility that the customer would need to replace an untested component or take the affected system out of production to resolve the issues.