



# Enterprise Operating System

Version 05.02.00

## Release Notes P/N 958-000190-520 Rev A

9/23/03

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These release notes describe features, code fixes, and other information for enterprise operating system (E/OS) version 05.02.00.

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## Applicable Products

McDATA E/OS firmware version 05.02.00, part number 515-000010-520, is supported on the following products:

- Intrepid™ 6140 (ED-6140)
- Intrepid 6064 (ED-6064)
- Sphereon™ 3016 (Model 001 and 002)
- Sphereon 3032 (Model 001 and 002)
- Sphereon 3216
- Sphereon 3232
- Sphereon 4500

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## What's New in E/OS 05.02.00

E/OS 05.02.00 fixes the incident reports (IRs) listed under [Code Enhancements & Fixes in E/OS 05.02.00](#), page 1-8.

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## Critical Issues Resolved

The following issues were resolved in this release.

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### NVRAM Validation Errors

E/OS 05.02.00 contains an enhancement that will eliminate customer outages in certain types of NVRAM failures. In E/OS 05.01.00, when the NVRAM validation routine detects an error in the configuration data, it faults the processor. On director products this results in a failover to the redundant CTP card, with no customer interruption of service. On switch products with no redundant CTP, the processor IPLs and resets the configuration to factory defaults.

E/OS 05.02.00 implements a new correction algorithm, which allows the switch to automatically recover from errors detected during system runtime. During operation, the firmware will use the configuration data stored in DRAM to refresh NVRAM if an error is detected during the validation process. The processor will not be

faulted and no IPL will occur. An event will be logged when this occurs. Customer operation is not impacted on either switches or directors.

In addition, if a validation error is discovered on the same CTP twice during a one-hour period, the CTP will fault and fail over to the backup on a director product. If multiple errors within an hour occur on a switch, the unit will fault and be reset to defaults.

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## Standards Compliance

- E/OS 05.02.00 is compliant with the following Fibre Channel protocols:
  - FC-GS-3
  - FC-PH Rev 4.3
  - FC-PH-2
  - FC-PH-3
  - FC-GS-2
  - FC-FLA
  - FC-FG
  - FC-SW-2
- E/OS 05.02.00 is compliant with the Fibre Channel Element MIB (FE-MIB).
- E/OS 05.02.00 is compliant with the following TCP/IP MIB-II groups:
  - System
  - Interface
  - Address Translation
  - IP
  - ICMP
  - TCP
  - UDP
  - SNMP

- E/OS 05.02.00 is compliant with the following classes of service:
  - Class 2
  - Class 3
  - Class F

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## Upgrade and Downgrade Considerations

- Upgrading to E/OS 05.02.00 is non-disruptive to attached devices. Limitations to upgrades or downgrades are clearly identified to the user if there are any limitations to performing the operation.
- All products must be running E/OS 04.00.00 or higher before upgrading to 05.02.00. If a switch is operating with a firmware level below 04.00.00, you must upgrade to version 04.00.00 or higher before installing version 05.02.00.
- The switch or director is not required to be offline before performing an upgrade or downgrade operation.
- Downgrading directly to a release before 04.00.00 from release 05.02.00 is not allowed. To downgrade to a release before 04.00.00, you must first downgrade to 04.YY.ZZ. Note that the Intrepid 6140 and Sphereon 4500 cannot be downgraded below 04.01.00.
- Firmware downgrades should not be performed using SANpilot and Internet Explorer version 5.00.3315.1000x. If this operation is performed, the download operation may not complete and may eventually time-out leaving the switch with the previous version of firmware.
- Before upgrading or downgrading firmware, it is highly recommended that you back up the switch or director configuration in the event that a failure should occur. Refer to *Backup and Restore Configuration* in Chapter 5 of your switch or director Product Manager User Manual for more details. SANpilot also provides an option to print or save product configuration to a file. Refer to Chapter 6 in your SANpilot User Manual, under *Obtaining Product Information*, for more details.
- A small number of customers with early-shipped units may receive the following messages when they upgrade to E/OS 05.02.00 due to insufficient memory.

- EFCM: “Firmware cannot be loaded due to insufficient CTP memory.”
- SANpilot: “File System Error: Insufficient memory for new firmware version.”

If you get these messages during the upgrade, firmware upgrade did not occur, but the unit will continue working with existing firmware without an interruption in service. However, the upgrade process checks for sufficient memory before activating the new image and the upgrade will not complete without sufficient memory. Please contact support if you receive this message.

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## Intrepid 6064 and 6140 Director Procedure

An issue has been identified in release 04.xx.xx where the contents of the nonvolatile storage (NVS RAM) on the active CTP can become corrupted. Once the configuration has been loaded, this corruption is not detected until an IPL/IML, power cycle, or E/OS code load. If the NVSRAM in the active CTP has corrupted contents, the firmware load can cause the configuration to reset to factory defaults, which could cause a system outage. By using the following procedure to upgrade firmware, configuration can be preserved and a system outage due to this issue can be avoided.

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**NOTE:** Step 4 of the following procedure is not required if you are upgrading from any version of release 05.xx.xx.

To safely upgrade these directors:

1. Upgrade EFCM software on the EFC Server to version 07.01.00.
2. Download E/OS 05.02.00 using the *Firmware Library* option on the Product Manager *Maintenance* menu.
3. Back up the director configuration using the *Backup & Restore Configuration* option on the Product Manager *Maintenance* drop-down menu.
4. Using the Product Manager, execute a CTP swap:

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**NOTE:** Step 4 is not required if you are upgrading from any version of release 05.xx.xx.

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**NOTE:** You must have maintenance authorization rights to access EFCM Product Manager menu options used in this procedure.

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- a. From Product Manager *Hardware* view, verify that an amber LED indicator does not display for either CTP card.
  - b. Right-click the CTP you believe to be active.  
  
From the right-click pop-up menu, select *FRU Properties*, and verify that it is the active CTP.
  - c. Right-click the active CTP, and select *Switchover* from the pop-up menu. Note that the director will lose its Ethernet connection for a short period during the switchover process.
  - d. On the *Switchover* CTP dialog box, select *Switchover* to switch operation to the backup card. When switchover occurs, the green LED illuminates on the backup CTP card to indicate that it is now the active card.
5. Upgrade the E/OS 05.02.00 on each director using the *Send* function on the *Firmware Library* dialog box.

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## Switch Procedure

Switch products do not have redundant processors; therefore, the failsafe procedure recommended for Directors is not possible. Switches already running release 05.01.00 or higher, continually validate the NVSRAM configuration, so risk of outage during upgrade from 05.01.00 is extremely low. For earlier versions of E/OS, the probability of an outage for a switch-class product during an upgrade due to the NVSRAM issue is very low, but not non-existent. If an outage will compromise system integrity, it is recommended that the switch upgrade be a scheduled maintenance action that anticipates the failure of switch connectivity.

1. Upgrade EFCM software on the EFC Server to version 07.01.00.
2. Download E/OS 05.02.00 using the *Firmware Library* option on the Product Manager *Maintenance* menu.
3. Back up the director configuration using the *Backup & Restore Configuration* option on the Product Manager *Maintenance* drop-down menu.
4. Upgrade the E/OS 05.02.00 on each switch using the *Send* function on the *Firmware Library* dialog box.

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## Prerequisites for Installing and Using E/OS 05.02.00

If you are using EFCM applications, E/OS version 05.02.00 requires EFCM version 07.00.00 at a minimum. Check with McDATA Customer Support for the latest shipping version of EFCM. EFCM should be at the minimum level before installing the new E/OS firmware. Note that EFCM is not required for operating hardware products using E/OS.

Other McDATA products in the same fabric as E/OS version 05.02.00 must be at a minimum revision level for proper fabric operation. The minimum firmware levels are listed below, but it is recommended you upgrade to the latest shipping versions of each release (check with McDATA Customer Support for latest version).

- All E/OS-based products: Version 05.01.00
- ED-5000 Version 04.01.00
- ES-1000 Version 02.00.02

Although products may co-exist in a fabric running different levels of E/OS firmware, it is highly recommended that all products be at the same major functional release level for optimum fabric stability and robustness.

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## Related Documentation

The following documents provide additional support and information pertaining to E/OS release 05.02.00:

- Product Manager User Manual for your switch or director product (for example, Intrepid 6140 Director Product Manager User Manual or Sphereon 3232 Switch Product Manager User Manual)
- McDATA Command Line Interface User Manual
- McDATA Enterprise Fabric Connectivity Manager User Manual
- McDATA SANpilot User Manual

## Code Enhancements & Fixes in E/OS 05.02.00

Enhancements and fixes are organized by their Problem Category, then their incident report number (IR Number). Each enhancement and fix is assigned a Problem Category, based on whether it relates to simple network management protocol (SNMP), the Telnet command line interface (CLI), FICON management server, embedded management, open systems (OS) management server, SANpilot, systems services, maintenance port, or other issue.

IR Number	Description	Problem Category	Affected Model
9084 and 9544	Conserv NMRU now includes name server entries for switches with more than 128 devices. Now supports a maximum of 768. Sphereon 4500 will now show in both fabric view and in product view when it is in the fabric.	Embedded Management	E/OS Family
8565, 8675	A change has been made to the internal back end serdes sync pattern to improve internal frame synchronization and prevent an Intrepid 6064 from intermittently discarding class 3 frames. A dropped frame could cause up to a 20 sec pause in I/O to the host. This problem is compounded by a specific E-mail application running on the server that has a hard coded timeout of 15 seconds. This timeout would cause the application to crash if a frame is discarded.	Other	Intrepid 6064
8683	4500 will now count all class 3 frames that have been discarded.	Other	Sphereon 4500
8716	4500 will no longer send out of order frames (OOOF) to loop devices.	Other	Sphereon 4500
9024	Intrepid 6140 no longer rejects SCR and PLOGI from storage device when the fabric no longer has the device logged in.	Other	E/OS Family
9207	With devices logged into the switch, default zone disabled, no active zone set, after a POR the local switch will now show a route to themselves (the logged in devices).	Other	E/OS Family
9215	Hard zoning will no longer prevent an N-Port from talking to itself if the port/attached node is not a member of a zone (or default zone).	Other	E/OS Family

IR Number	Description	Problem Category	Affected Model
9603	Misbehaving port will no longer cause 100% utilization of processor on service processor. The events will be throttled to not exceed more than one per second.	Other	E/OS Family
9871	Code upgrade to 05.01.00 caused some devices to lose connections. Could recover ports by block/unblock. Resolved an issue where query to the name server database could be dropped. Will now queue the query and respond when the name server database is available after the IPL.	Other	E/OS Family
8711	Resolved a 59D2 fault on a Intrepid 6140 running continuous CTP swaps all night.	HW High Avail Mgmt	Intrepid 6140 and 6064
9316	Sphereon 4500 will no longer send a LIP after NOS, LIP (F7,00) with point-to-point topology.	HW High Avail Mgmt	Sphereon 4500
9053	Resolved issue where higher link utilizations that can be sustained by the newer host processors caused the S-BAR health check to fail. This would result in failing of the backup SBAR. A related improvement is targeted for release 06.00.00 as described in the Outstanding Known Issues for IR 10036.	HW High Avail Mgmt	Intrepid 6064
9676	508 events will not occur when downgrading from 05.02.00 to 4.x.	HW High Avail Mgmt	Intrepid 6140 and 6064
9021	New CLI command to disable Fabric Format RSCNs following IML/IPL or ISL modifications	Fabric Services	E/OS Family
8578	No longer missing response from Ficon Management Server (FMS).	FICON Management Server	Intrepid 6140 and 6064
8597	FMS removes all remote paths using ISL after second Plogi from same node. This can occur when the CUP is being driven by a channel on a remote switch, and a channel which previously used the same ISL to Plogi the CUP uses this ISL to Plogi the CUP again. In this case, the CUP detects that a node previously logged in on this port is logging in again and removes the existing logical paths. However, this action ignores the fact that more than one node may be using this port. This fix effectively ignores subsequent PLOGIs when received via an ISL.	FICON Management Server	EOS Family

IR Number	Description	Problem Category	Affected Model
8616	Missing TIR responses from remote CUP. When one switch in a fabric is IPL or IML'd, it may send a Domain RSCN instead of a Fabric RSCN to all attached channels. The channels react to a Domain RSCN by sending TINs (class 2) to all devices defined to it in remote domains, including the FICON Management Servers on the switches. In some cases, the switch will time out before sending the TIR response to some of these frames. FMS continues to exchange class 3 traffic with the channel while the channel awaits the TIR response. The channel will then abort after waiting two seconds for the TIR. This fix will re-send TIR even if the link is busy.	FICON Management Server	EOS Family
8659	15503 Fault. Prevents fault condition if logical path ID gets reset during asynch status reporting. This was seen when blocking one of several channels locally attached to a switch in a cascaded fabric.	FICON Management Server	EOS Family
8776	15406 Fault on CUP recovery. This fault condition was seen while running recovery tests in a cascaded fabric environment.	FICON Management Server	EOS Family
8898	Missing response to Read Port Stats command. Occasionally we are seeing the command response to a preceding setmon command, but the port stats never get sent. Bug was found in the file key verification routine and corrected.	FICON Management Server	EOS Family
9243	1A01F fault in FC2 while running recovery to the CUP. Fixed a bug where we would not recognize a CUP Port ID as being originated by the switch. Also fixed a problem where all domain controller IDs were being identified as the local switch without checking to see if the domain ID matched the local ID. There still appear to be some cases where this fault can occur and McDATA hopes to address these additional cases in 05.02.00.	FICON Management Server	Intrepid 6064
9280	Channel no longer timing out it's request for status after stacking asynchronous status from the CUP. We are now setting the token to match the request so the channel will recognizing re-presentation of async status.	FICON Management Server	Intrepid 6064
9282	FMS: timeout of host causes protocol violations on other active paths to CUP	FICON Management Server	Intrepid 6140 and 6064

IR Number	Description	Problem Category	Affected Model
9287	We are responding with attn-unit-check/busy status when the channel initiates a new command chain after stacking asynchronous status. Token was not being set in this frame and the host did not recognize it as a response to his new command chain, resulting in a timeout. Fix was to respond to the new command chain instead of sending busy status: async status is sent again at the end of the command chain.	FICON Management Server	Intrepid 6140 and 6064
9288	FMS: new chain times-out when async status arrives after start of chain. Asynchronous status is sent at the end of a command chain, but arrives at the channel after the start of a new chain. FMS is waiting for a response from the host for async status and never responds to the new chain.	FICON Management Server	Intrepid 6140 and 6064
9396	FMS: 411/15204 fault resolved while running 05.01.00. Unit lost paths, overrun buffers and caused response time problems. Turning RMF back on may have contributed to this issue.	FICON Management Server	Intrepid 6064 and 6140
8719	Sphereon 4500 can now be forced to fault and dump by pressing the IML button 5 times in 10 seconds.	System Services	Sphereon 4500
8894	Resolved condition where fault 9 occurred on random switches during fabric builds while it is trying to write a dump file.	System Services	E/OS Family
8963	Resolved problem where backup CTP faults with 09 code and continuously loops. To clear this error, the backup CTP card had to be removed and re-installed.	System Services	Intrepid 6064
9097, 9225	Will now restore NVRAM configuration data by copying configuration contents from DRAM when NVRAM errors are detected.	System Services	E/OS Family
9168	After firmware upgrade to release 5.x, backup CTP was attempting to sync to an area that is no longer used. This caused a 420 event "backup CTP card non volatile memory failure". Note: 420 event will still occur on downgrade to 4.x. This event can be ignored on a downgrade.	System Services	Intrepid 6140 and 6064
9410	On-line help files have been updated for the Sphereon 4500	SANpilot	Sphereon 4500

IR Number	Description	Problem Category	Affected Model
8670	Resolved "spikes" that may display on the SANavigator performance graph when the switch or director's statistic counters roll over from the lower 32-bits to the upper 32 bits.	SNMP	E/OS Family
8835 and 8841	Firmware fault occurring due to uninitialized memory in the name data base. The uninitialized memory is introduced into the system when a backup CTP is plugged in. When that CTP becomes master, the system could fault if using symbolic names.	Name Server	Intrepid 6064 and 6140
9545	Resolved problem when you log in devices with symbolic node name data (or hard IP address) and log them back out, the name server database memory is reinitialized, but it's not replicated on the backup. If you then did a ctpswap and log in the devices again, an 021 event would occur.	Name Server	E/OS Family
9753	Zone merge will no longer cause FCP to overwrite memory in limited situations when in open fabric mode. This happened when the zone merge would be legal in McDATA fabric mode, but takes up too much space in open fabric mode.	Interrop Mode	E/OS Family

## Outstanding Known Issues in E/OS 05.02.00

Issues are organized by their Problem Category, then their incident report number (IR Number). Each issue is assigned a Problem Category, based on whether it relates to simple network management protocol (SNMP), the Telnet command line interface (CLI), FICON management server, embedded management, open systems (OS) management server, SANpilot, systems services, maintenance port, or other issue.

**NOTE:** Descriptions for these incident reports (IRs) may state that the problem will be fixed in a future release. Please note that the targeted release for this fix may change.

IR Number	Description	Problem Category	Affected Model
8337	If a CTA is defined with a port type (i.e. fport, eport) the "all" option for the Perf.ThresholdAlerts.Counter.RemovePort command does not work. However, if the ports are defined for a CTA by #, the command works just fine and Ports field is set to "None" as expected. This problem only relates to how data is displayed, and does not impact switch operations. Fixed in 06.00.00.	CLI	E/OS Family
8343	CLI- Show.Open.Trunking.Config display doesn't indicate actual Default values for either Credit Starvation or Credit Threshold, but only displays the word "Default". This problem only relates to how data is displayed, and does not impact switch operations. Fixed in 06.00.00.	CLI	E/OS Family
8344	CLI-The "Type" displayed for the Show.NameServer and Show.NameServerExt commands are inconsistent. On the Intrepid 6140 and Sphereon 3232 it is displayed as "fport" but on the Sphereon 4500 it is displayed as "F". The CLI UIS lists the following "Type" valid values: N, NL, F/NL, F, FL, E, BAgain. This only is an inconsistency in the way this data is displayed and does not affect switch operations.Fixed in 06.00.00.	CLI	E/OS Family
8346	CLI- When in comma delim mode true, the Show.NameServer command does not display the FC4 Types table in commadelim mode. Since comma delim mode is mostly just for scripting, there is no reason to display the table. Fixed in 06.00.00.	CLI	E/OS Family

IR Number	Description	Problem Category	Affected Model
8343	CLI - Show.Open.Trunking.Config display doesn't indicate actual Default values. This is a duplicate IR. Fixed in 06.00.00.	CLI	E/OS Family
8397	CLI - Enhancement Request - add FC Address to Show. Switch command. This is not a bug, but a request to add the address when this command is issued. Fixed in 06.00.00.	CLI	E/OS Family
8784	Changing Port Speed on all Ports causes EFCM Resource Unavailable error. We don't believe customers would ever change all the port speeds once a unit is up and running. In the unusual case where they might do this, they will all ready be impacting the connection of all the devices attached to the switch, so the error will not have any additional impact. Fixed in 06.00.00.	Embedded Mgmt	Intrepid 6140
7562	Port Binding Offenders Degrade Switch Performance. When port binding is enabled, unauthorized and unfriendly devices (older devices and HBAs (such as Emulex 800 HBA) can bombard us with FLOGI requests as we reject them. Processing these useless exchanges will put a burden on our processor and degrade our embedded port performance such as fabric builds and valid FLOGI response time for other ports etc. A subject of debate is how we should handle this, and we are trying to standardize a behavior in ANSI. There are not a large number of older device in the field that would cause this issue. If this problem does occur in the field, it can be worked around by disabling port binding. Planned to be resolved in 07.00.00.	Fabric Services	Sphereon 4500
8726	Inconsistent RSCN format on IPL or code load when Domain RSCN's enabled. Most nodes seem to handle this okay and carry on with life. It appears that this is a channel problem and not a problem with the switch. There is a potential for FICON customers to encounter this in the field. Targeted for 06.00.00.	Fabric Services	Intrepid 6140
8620	ACA command contains 896 bytes of extra zeros No operational or customer impact. Targeted for 06.00.00.	Fabric Services	E/OS Family
8843	700b fault when starting 24 multi alpa ports. Heavy load test case on all ports on Sphereon 4500 with multiple loop devices on every port caused a failure when all these ports were started simultaneously. This scenario is not likely to occur in the field. Fixed in 06.00.00.	Fabric Services	Sphereon 4500

IR Number	Description	Problem Category	Affected Model
9585	Adding a bad ISL between switches may result in all the ISLs between the switches becoming segmented. Fix is targeted for 06.00.00.	Fabric Services	E/OS Family
9982	Switches in a large 24-switch fabric may fault with 801A fault code after taking the principal core director offline and deactivating the fabric zone set. The deactivate operation does complete on the switches, but EFCM posts an error that the operation timed out. Fix is targeted for 06.00.00.	Fabric Services	E/OS Family
8616	Missing TIR responses from remote CUP. Channel code has been updated since we encountered this problem in 5.1 testing, and the channel no longer initiates the TIN/TIR protocol upon receiving a fabric RSCN: it now requires a domain format RSCN with a payload indicating the attached domain to which we are running CUP traffic. This problem was also found to exist in 4.x, but has not been seen by any end users. Targeted for 06.00.00.	FICON Mgmt Server	Intrepid 6064
8773 and 9851	Fault 73: local and remote recovery to FMS. Occurs infrequently while driving simultaneous local and remote recovery to the CUP. Problem still under investigation. Fix is targeted for 06.00.00.	FICON Mgmt Server	Intrepid 6064
9318	Host times-out selective reset after cancel and CUE. Sequence is basically CUB, Cancel, Selective Reset, CUE. Channel times out the Selective Reset for lack of a response. Fix is targeted for 06.00.00.	FICON Mgmt Server	Intrepid 6064 and 6140
9586	FMS: 1520B fault when running recovery on multiple paths from a single LPAR.	FICON Mgmt Server	Intrepid 6140 and 6064
8824	Extremely intermittently after a power failure or power off sequence, NVRAM configuration will be reset to defaults.	System Services	E/OS Family
8995	Firmware downloaded to 4500 units through EFCM sometimes times out. The problem occurs somewhat randomly, but is persistent once it does occur. Firmware downloads do progress via SANpilot without trouble even when they fail through EFCM. Problem is resolved in E/OS 06.00.00.	System Services	Sphereon 4500

IR Number	Description	Problem Category	Affected Model
9263	During a firmware upgrade, if the "Download firmware file from" field is left blank, or random text is entered in this field, you will get an error, "System File Error Firmware Successfully Loaded" when you click the Send and Load Firmware button. Fix is targeted for 06.00.00.	Embedded Web Server	EOS Family
9185	Firmware upgrade from 04.01.03 to 05.01.00 caused devices to logout of fabric. Fix is targeted for 06.00.00.	Other	E/OS Family
10007	A device will no longer be able to send frames to itself after the active zone set (which it is a member of) is deactivated. The workaround available by block/unblock the port. Fix is targeted for 06.00.00.	Hard Zoning	E/OS Family
10036	Event 602, 604 in high traffic environments	HW High Avail Mgmt	Intrepid 6064