Cisco C880 M4 Storage Subsystem

Service Supplement

October, 2014

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Contents

1. Preface

The storage subsystem is a passive system that can be directly attached for data management or for expanding the hard disk capacity of connected servers.

With 2 height units (HU), the storage subsystem satisfies the requirements of both compactness and maximum hard disk capacity in 19-inch rack infrastructures.

1.1. Documentation Overview

Concept and target groups

This Service Supplement supplements the information contained in the operating manual.

ATTENTION!

The activities described in this manual may only be performed by specialist personnel with technical training.

The installation and removal of the hot-plug components is described in the operating manual supplied with the storage subsystem.

Information/Activity	**Manual**
Features and technical data of the storage subsystem Installation and activation, including: - External connections to the storage subsystem - Operation - Configuration of the storage subsystem - Installation of the rack mounting kit Troubleshooting Installation/removal of all hot-plug components, such as: - Hot-plug power supply units - Hot-plug HDD modules	Operating manual
Replacing components: - Replacing the SAS expander module - Replacing LED displays - Replacing the midplane - Replacing the housing Cable overview	Service Supplement

Table 1: Overview of the documentation

1.2. Notation Conventions

Italics	indicate commands, menu items or software programs.
”Quotation marks”	indicate names of chapters and terms that need to be emphasized.
►	indicates an activity that must be performed.
 **ATTENTION!**	indicates that, if you ignore the information given at this point, your health, the correct functioning of your system or the security of your data may be at risk.
	indicates supplementary information, remarks and tips.

Table 2: Notational conventions

2. Procedure

ATTENTION!

The activities described in this manual should only be performed by engineers, service personnel or technical specialists.

- ► First of all please familiarize yourself with the safety instructions in the chapter “Important Notes” on page 7.
- ► Make sure that all the manuals you need are available, printing out the PDF files if necessary. You will definitely need the operating manual for the storage subsystem.
- ► Shut down the server connected to the storage subsystem correctly (see the operating manual for the relevant server).
- ► Pull out the power plugs of your storage subsystem and – if necessary – also disconnect the cables of the expander module as described in the chapter “Replacing Components” on page 12.
- ► Replace the defective component as described in the relevant chapter.
- ► If necessary, reconnect the cables of the SAS expander module to the storage subsystem.
- ► Plug the power plugs into the grounded power outlets.

3. Important Notes

3.1. Notes on Safety

This chapter provides safety instructions which you must observe when handling your storage subsystem. The device complies with the relevant safety regulations for data processing equipment.

The following safety instructions can also be found in the manual entitled “Safety notes and other important information”. Please also read the notes in the operating manual for the attached system. If you have any questions on setting up and operating the device in your particular environment, please contact your sales outlet or one of our Service Desks.

ATTENTION!

- The activities described in this manual may only be performed by specialist technical personnel. Equipment repairs must only be performed by service staff. Any unauthorized opening or improper repairs could endanger the user (through electric shock, energy hazard, fire hazard) or damage the equipment. Please note that any unauthorized opening of the device will result in the invalidation of the warranty and exclusion from all liability.
- Transport the device only in its original packaging or in packaging which protects it from knocks and jolts.
- If the device is brought in from a cold environment, condensation may form both inside and on the outside of the machine. Before operating the device, wait until it is dry and has reached approximately the same temperature as the installation site. Failure to observe these guidelines can lead to material damage of the device.
- Check that the rated voltage specified on the device's ID plate is the same as the local mains voltage.
- Only connect the device to a properly grounded wall outlet (the device is fitted with a tested and approved power cable).

ATTENTION!

- Make sure that the sockets on the device and the power points used are freely accessible.
- Switching off the devices does not disconnect them from the mains. To completely disconnect it from the mains voltage, you must remove the power plugs from the power outlet.
- Before opening the device pull out the power plug first.
- Route the cables in such a way that they do not form a potential hazard (tripping) and cannot be damaged. When connecting a device, refer to the relevant notes in the appropriate operating manual.
- Do not connect or disconnect any data transmission cables during a thunderstorm (lightning hazard).
- Systems which comprise a number of cabinets must use a separate fused socket for each cabinet.
- Always connect the server and the directly connected external storage subsystems to the same power supply distributor. Otherwise you run the risk of losing data if, for example, the central unit is still running but the storage subsystem has failed during a power cut.
- Make sure that no objects (such as bracelets or paper clips) fall into or liquids spill into the device (risk of electric shock or short circuit).
- In emergencies (e.g. damaged casing, control elements or cable, penetration of liquids or foreign bodies), unplug the device from the mains immediately, and contact your customer service center.
- Note that proper operation of the system (in accordance with IEC 60950-1/EN 60950-1) is only guaranteed if slot covers are installed in all vacant slots and/or dummies in all vacant bays and the housing cover is fitted (cooling, fire protection, RFI suppression).

3.2. ESD Label

Components which can be damaged by electrostatic discharge (ESDs, electro- static-sensitive devices) may have the following label:

Figure 1: ESD label

When handling modules with ESDs, it is essential that you observe the following guidelines:

- ► You must electrostatically discharge yourself (e.g. by touching a grounded object) before handling modules with ESDs.
- ► Any devices or tools that are used must be free of electrostatic charge.
- ► Pull out the power plug before installing or uninstalling modules containing electrostatic-sensitive components.
- ► Touch modules containing electrostatic-sensitive components only at the edges.
- ► Do not touch any connectors or conduction paths on a module containing electrostatic-sensitive components.
- ► While installing modules, wear a suitable grounding strap that connects you to the system unit.
- ► Place all the components on a pad which is free of electrostatic charge.

For a detailed description of how to handle ESD-module components, see the relevant European or international standards (EN 61340-5-1, ANSI/ESD S20.20).

3.3. CE Conformity

CE The device complies with the requirements of EC directives 2004/108/EEC regarding "Electromagnetic Compatibility" and 2006/95/EEC "Low-Voltage Directive". This is indicated by the CE certificate label (CE = Communauté Européenne) on the back of the device.

3.4. RFI Suppression

All other equipment which is connected to this product must also have radio noise suppression in accordance with EC directive 89/336/EEC.

Products which meet this requirement are accompanied by a certificate to that effect issued by the manufacturer and/or bear the CE mark. Products which do not meet this requirement may be operated only with the special permission of the German Federal Approvals Office for Telecommunications (BZT).

i This is "Class A" equipment. This equipment may cause harmful inter- ference in residential areas. In this case, the user may be required to take appropriate measures and bear the costs resulting from these measures.

3.5. Notes on Mounting the Rack

- For safety reasons, at least two people are required to install the storage subsystem because of its weight and size.
- When connecting and disconnecting the cables, observe the notes in the operating manual for your system and the chapter "Important notes" in the technical manual for the relevant rack.
- Ensure that the anti-tilt bracket is correctly mounted when you set up the rack.
- For safety reasons, no more than one unit may be pulled out of the rack at any one time during installation and maintenance work.
- If more than one unit is pulled out at any one time, the rack may tip over.
- The rack must be connected to the mains by an authorized specialist (electrician).

3.6. Environmental Protection

Notes on packaging

Do not throw away the packaging as you may need it for future transport. If possible, devices should be transported in their original packaging.

This packaging information doesn't apply to the Japanese market.

Notes on labeling plastic housing parts

Avoid sticking your own labels on plastic housing parts whenever possible, as this makes recycling more difficult.

Take-back, recycling and disposal

The device must not be disposed of together with regular household refuse. This device is labeled according to European directive 2002/96/EC on Waste from Electrical and Electronic Equipment - WEEE).

This directive sets the framework for EC-wide take-back and recycling of used devices. To return your device, please use the return or collection systems available to you.

4. Replacing Components

ATTENTION!

When handling systems and boards, make sure you observe the safety information in the chapter “Important Notes” on page 7.

4.1. Preparation

To replace components which are not hot-pluggable, proceed as follows:

- ► Shut down the server connected to the storage subsystem; wait until the server and the storage subsystem are switched off.
- ► Unplug the two power plugs of the storage subsystem from the mains.
- ► Disconnect the SAS cable(s) from the SAS expander module (after keeping a record for the correct reconnection).

4.2. Replacing the SAS Expander Module

This component is **NOT** hot replaceable.

Requirements

- The connected server has been shut down, and the server and the storage subsystem are switched off.
- The power cables have been uplugged.
- The SAS cable(s) have been removed (after keeping a record for the correct reconnection).

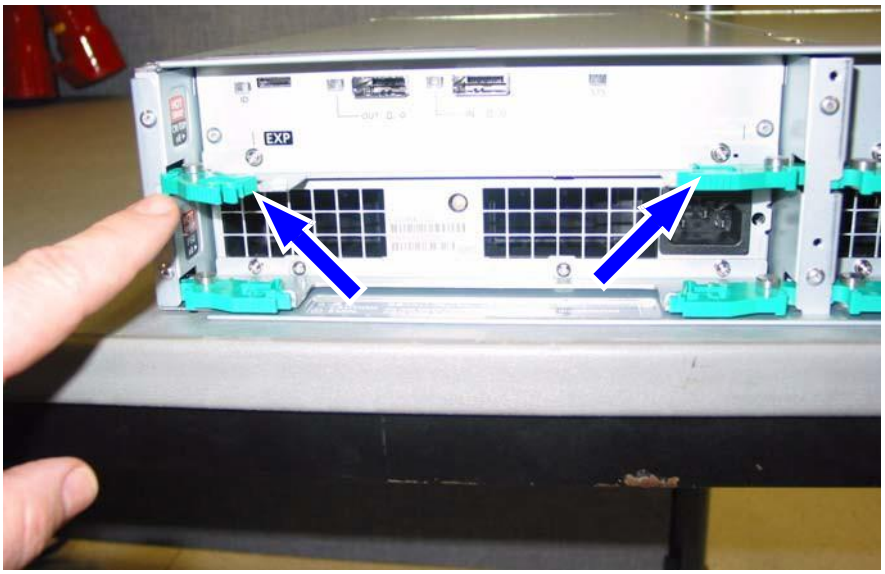

Figure 2: Removing the SAS expander module

► Release the latch of ejector lever on both sides with fingers of both hands, and pull the SAS expander unit out halfway.

► Take the SAS expander module out of the bay while supporting its bottom. To install the SAS expander module follow the above steps in reverse.

4.3. Replacing the LED Display

This component is **NOT** hot replaceable.

Requirements

- The connected server has been shut down, and the server and the storage subsystem are switched off.
- The power cables have been unplugged.
- The SAS cable(s) have been removed (after keeping a record for the correct reconnection).

► Loosen the knurled thumb screw which fastens the bezel on the left side of the storage subsystem and remove the bezel.

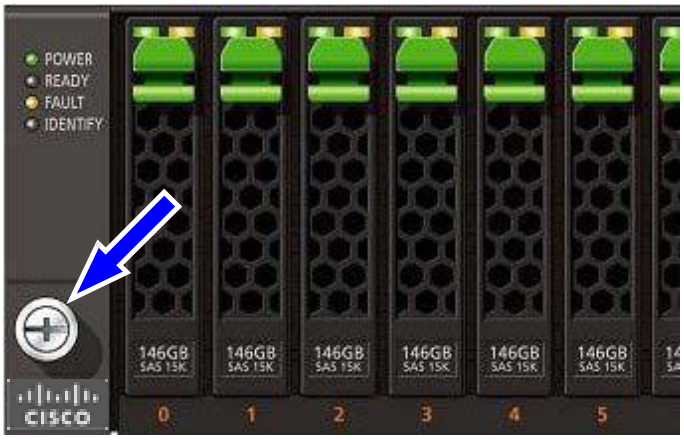

Figure 3: Loosening the knurled thumb screw of the bezel

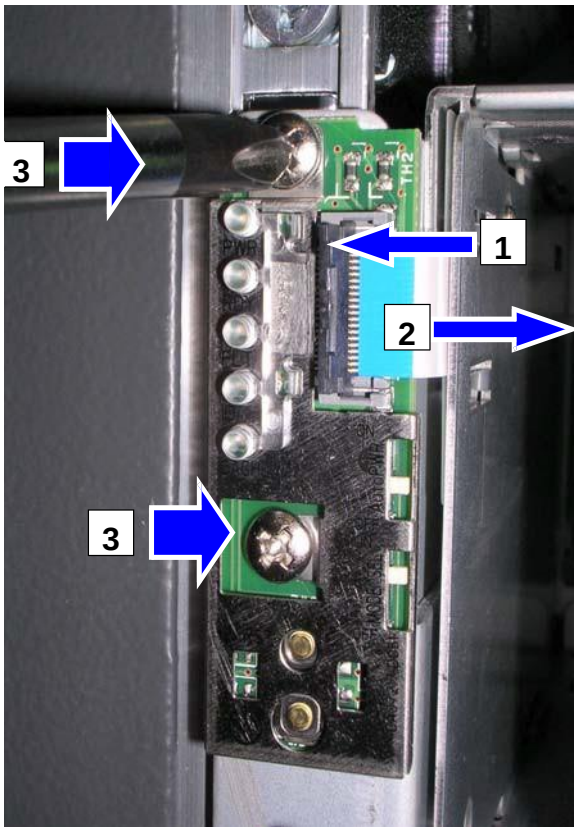

Figure 4: Removing the panel behind the bezel

When disconnecting the panel and the flexible flat cable (FFC), be careful not to damage or break the lever, the connector, or the FFC.

- ► Lift up the lever of the flexible flat cable connector to the left (1).
- ► Remove the connector carefully from the panel (2).
- ► Undo the two screws (3).
- ► Remove the metal plate, the printed board, and the foil behind it.

Figure 5: Panel parts

To install the LED display follow the above steps in reverse.

4.4. Replacing the Backplane

This component is **NOT** hot replaceable.

Requirements

- The connected server has been shut down, and the server and the storage subsystem are switched off.
- The power cables have been unplugged.
- All other cables connected to the storage subsystem have been removed.
- All HDD modules and dummy modules have been removed (as described in the operating manual).
- The LED display has been removed (see section "Replacing the LED Display" on page 19).
- The power supply units have been removed (as described in the operating manual).
- The SAS expander module and the dummy blind right beside it have been removed (see section "Replacing the SAS Expander Module" on page 13).
- The storage subsystem has been removed from the rack cabinet (see operating manual).

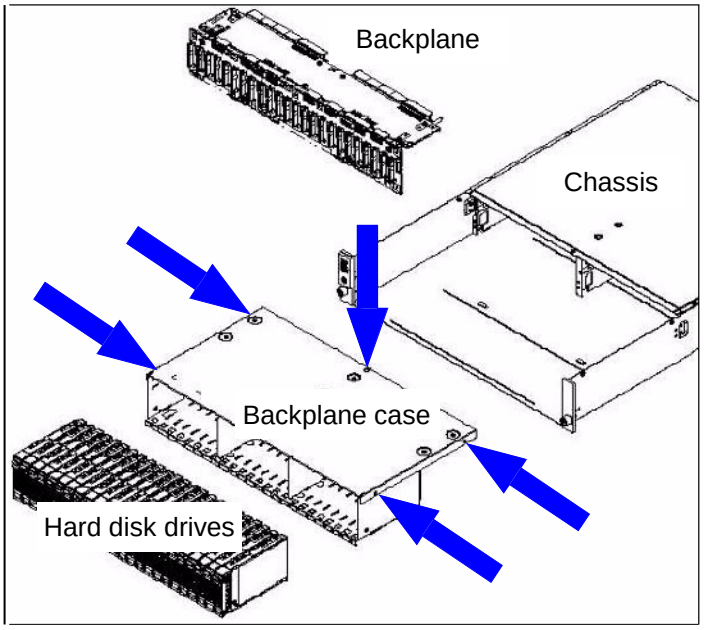

Figure 6: Screws securing the backplane case on the chassis

► Remove the screws (flat-head Phillips screws) securing the backplane case.

► Remove the backplane case and deposit it bottom up.

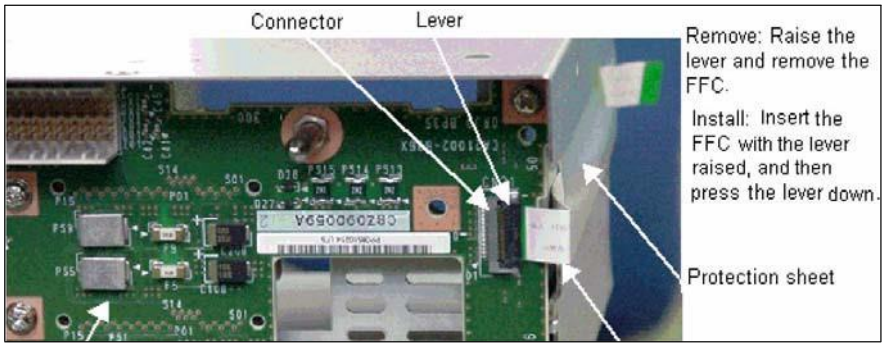

Figure 7: Removing/installing the FFC from/to the backplane

► At the flexible flat cable connector (FFC) connecting the backplane, lift up the lever and disconnect the FFC.

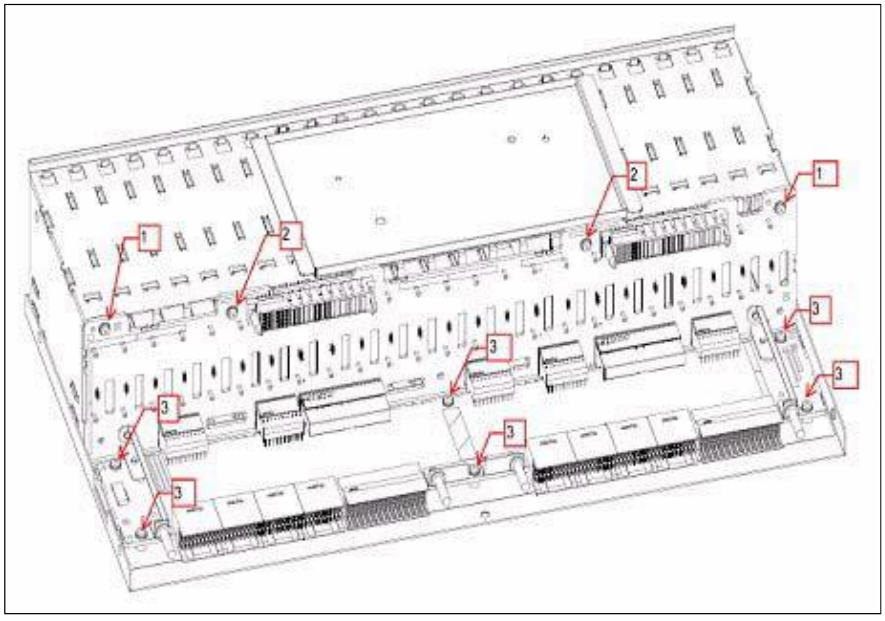

Figure 8: Screws securing the backplane

► Remove the screws securing the backplane.

► Replace the backplane with a new replacement one.

To reassemble the storage subsystem, follow the above procedure basically in reverse.

5. Cable Overview

Description	From	To
External SAS connection cable (2.0m) with two SFF8088 plugs	SAS expander module	RAID-Ctrl of the server
External SAS connection cable (4.0m) with two SFF8088 plugs	SAS expander module	RAID-Ctrl of the server
External SAS connection cable (6.0m) with two SFF8088 plugs (planned)	SAS expander module	RAID-Ctrl of the server
External SAS connection cable (0.75m) with two SFF8088 plugs	SAS expander module	RAID-Ctrl of the server

*: A maximum of three storage subsystem can be daisy-chained in a connection to one RAID controller port.

Abbreviations

The technical terms and abbreviations given below represent only a selection of the full list of common technical terms and abbreviations.

Not all technical terms and abbreviations listed here are valid for the described device.

AC

Alternating Current

ACPI

Advanced Configuration and Power Interface

ANSI

American National Standard Institute

ASR&R

Automatic Server Reconfiguration and Restart

ATA

Advanced Technology Attachment

BBU

Battery Backup Unit

BIOS

Basic Input-Output System

BMC

Baseboard Management Controller

CC

Cache Coherency

CHS

Cylinder Head Sector

CMOS

Complementary Metal Oxide Semiconductor

COM

Communication

CPU

Central Processing Unit

DC

Direct Current

DIMM

Dual Inline Memory Module

DIP

Dual Inline Package

DMA

Direct Memory Access

DMI

Desktop Management Interface

DRAM

Dynamic Random Access Memory

ECC

Error Checking and Correcting

EFI

Extensible Firmware Interface

EMC

Electromagnetic Compatibility

EMI

Electromagnetic interference

EMP

Emergency Management Port

EMRL

Embedded RAID Logic

ESD

Electrostatic Sensitive Devices, Electro Static Discharge

EVRD

Enterprise VRD

FPC

Front Panel Controller

FRU

Field Replaceable Unit

FSB

Front Side Bus

GUI

Graphical User Interface

HBA

Host Bus Adapter

HDD

Hard Disk Drive

HPC

Hot-plug Controller

HSC

Hot-swap Controller

I^2C

Inter-Integrated Circuit

I/O

Input/Output

ICM

Intelligent Chassis Management

ID

Identification

IDE

Integrated Drive Electronics

IEC

International Electrotechnical Commission

IME

Integrated Mirroring Enhanced

IPMB

Intelligent Platform Management Bus

IPMI

Intelligent Platform Management Interface

iRMC

integrated Remote Management Controller

IRQ

Interrupt Request Line

LAN

Local Area Network

LBA

Logical Block Address

LCD

Liquid Crystal Display

LUN

Logical Unit Number

LVD

Low-Voltage Differential SAS

MMF

Multi-Mode Fiber

MRL

Manual-Retention Latch

NMI

Non-Maskable Interrupt

NVRAM

Non-Volatile Random Access Memory

OEM
: Original Equipment Manufacturer

OHCI
: Open Host Controller Interface

OS
: Operating System

PCI
: Peripheral Component Interconnect

PDA
: Prefailure Detection and Analyzing

PDB
: Power Distribution Board

PIO
: Programmed Input Output

PLD
: Programmable Logic Device

POST
: Power-On Self Test

PS(U)
: Power Supply (Unit)

RAID
: Redundant Arrays of Independent Disks

RoHS
: Restriction of the Use of Certain Hazardous Substances (Waste from Electric and Electronic Equipment, EU guideline)

RoMB
: RAID on Motherboard

RSB
: RemoteView Service Board

RST
: ReSeT

RTC
: Real Time Clock

RTDS
: Remote Test and Diagnostics System

SAF-TE
: SCSI-Accessed Fault-Tolerance Enclosures

SAS
: Serial Attached SCSI

SATA

Serial ATA

SBE

Single-Bit Error

SCA

Single Connector Attachment

SCSI

Small Computer System Interface

SDR

Sensor Data Record

SDRAM

Synchronous Dynamic Random Access Memory

SEL

System Event Log

SHDG

Server Hardware Design Guide

SMI

System Management Interrupt

SMM

Server Management Mode

SMP

Symmetrical Multi-Processing

SSD

Solid State Disk

SSU

System Setup Utility

SVGA

Super Video Graphics Adapter

UHCI

Unified Host Controller Interface

USB

Universal Serial Bus

WEEE

Waste from Electric and Electronic Equipment (EU directive)

WfM

Wired for Management

WOL

Wake up On LAN

Figure

Table