

PSN # PSN004095u

Original publication date: 31-Oct-13, This is Issue #02, published date: 12-Dec-13. Severity/risk level Medium Urgency Optional

Name of problem Avaya CS1000 CPPM pack memory module can fail causing service outage

Products affected

CS1000 CPPM processor pack using Micron Technology memory module(s) with module date codes prior to Jan 2011.

Products affected: All early vintages of the CPPM pack that were shipped 2006 thru mid-2011.

NTDW61BAE5 - CPPM pack

NTDW66AAE5, NTDW66ABE5, - CPPM pack for CS1000M systems

NTDW99AAE5, NTDW99ABE5 - CPPM pack for CS1000E systems

N0198586 - 1GB 333DDR Memory Upgrade kit

The following vintages of the CPPM pack were not introduced until Q3 2011 and should not have the older date code Micron modules on them from initial pack production. There is however a small risk, if customers deployed memory upgrade kits to them in the field.

NTDW66ABGS, NTDW66CAE5, - CPPM pack for CS1000M systems

NTDW99ABGS, NTDW99CAE5, - CPPM pack for CS1000E systems.

Issue#2 – revised Linux commands to include full path ; and added notes about customers with Avaya parts service contracts.

Problem description

Avaya CS1000 CPPM packs equipped with suspect memory module(s) could experience failure to reboot after being power cycled off/on. Symptom is CPPM pack will not display any information on the console after a power cycle event.

The root cause is a failed memory module. The issue correlates to a Micron Technologies product defect involving semiconductor devices on the 1GB DDR333 memory modules with date codes earlier than January 2011. The memory module exhibits early life failure after approximately five (5) years of service. The defect will only show up after a power cycle, as the root cause is a silicon failure in the device's power up circuitry.

The CPPM pack can have one or two memory modules provisioned. Initial pack is delivered with a single 1GB module. Customer may add a 2nd 1GB memory module (Avaya Kit N0198586) if installing Linux based applications on the pack. Note that the CPPM pack will fail to boot if either of the modules has failed.

The suspect modules can be identified visually by the label on the memory DIMM. If the vendor symbol matches what is circled below (M for Micron) and the date code (yyyy ww) is prior to 2011 01 , the module should be replaced.



Micron memory modules with later date codes do not need to be replaced. Note that Avaya also shipped memory modules from another supplier (Avant) which do not have the defect and do not need to be replaced.

Resolution

Avaya recommends replacing all memory modules on CPPM packs which are Micron Technologies with date codes prior to 2011 01. Micron modules with later date codes and modules from other vendors are not affected by this issue.

Avaya has replacement memory modules available for sale in the CS1000 catalog. Avaya is lowering the selling price of the memory module significantly as of the November 2013 price book to assist customers with this replacement.

N0198586 - 1GB 333DDR Memory upgrade kit

Note that these memory modules are ECC (error correcting) DIMMs for embedded server applications and tend to not be readily available in the consumer PC market. We recommend sourcing the correct device from Avaya.

Customers with Avaya hardware parts service contracts in place may receive replacement DIMMs at no material cost. Please consult your Avaya service agreement.

We also recommend managing partners carry spare memory kits when doing maintenance work on CS1000 systems at customer sites.

Inspection of the label is the easiest way to determine a suspect module. The instructions below provide a method to determine module vendor and date on a running CPPM card. Note there are 3 different instructions depending on how the card is being used.

CPPM VxWorks OS Call Server Instructions:

Install patch mplr32974. The patch has no special instructions and does not require an INI. Once the query has been completed patch mplr32974 should be removed.

If the manufacturer data is **0x2c** and the year is prior to **year 11 week 01**. The memory module should be replaced. In the example below, both memory modules should be replaced.

```
pdt> pload p32974_1.cpm
Loading patch from "/u/patch/tstpatch.cpm"
Patch handle is: 0
Patch Memory Total: 4095KB Used: 206KB Avail: 3888KB ( 94% )

pdt> pins 0
function at 0x33ceb0 will be patched to jump to 0x25bcc60 (sysFwVersionShow)
Proceed with patch activation (y/n)? [y]
Patch 0 has been activated successfully.
pdt> sysFwVersionShow
DIM 1 manufacturer data is 0x2c manufacture date is year 8 week 8
DIM 2 manufacturer data is 0x2c manufacture date is year 10 week 48
value = 12 = 0xC
```

CPPM VxWorks OS Signalling Server Instructions:

Install patch mplr32974. The patch has no special instructions and does not require an INI. Once the query has been completed patch mplr32974 should be removed.

If the manufacturer data is **0x2c** and the year is prior to **year 11 week 01**. The memory module should be replaced. In the example below, both memory modules should be replaced.

```
pdt> pload p32974_1.spm
Loading patch from "/u/patch/tstpatch.cpm"
Patch handle is: 0
```

Patch Memory Total: 4095KB Used: 206KB Avail: 3888KB (94%)

```
pdt> pins 0
function at 0x33ecb0 will be patched to jump to 0x25bcc60 (sysFwVersionShow)
Proceed with patch activation (y/n)? [y]
Patch 0 has been activated successfully.
```

pdt> vxshell

```
pdt> sysFwVersionShow
DIM 1 manufacturer data is 0x2c manufacture date is year 8 week 8
DIM 2 manufacturer data is 0x2c manufacture date is year 10 week 48
value = 12 = 0xC
```

CPPM Linux OS Instructions:

Login as root and execute the 2 commands shown below.

If the Manufacturer is found to be **“Invalid”** the module is ok and does not need to be replaced.

If the Manufacturer is found to be **“Micron Technology”** and the Manufacturing Date is **prior to 2011 Wk 01** the module should be replaced.

Applying the rules above to the sample output below would indicate that 1 out of the 2 DIMMs should be replaced.

```
[root@cppmlab ~]#
[root@cppmlab ~]# /sbin/modprobe eeprom
[root@cppmlab ~]# /usr/bin/decode-dimms.pl
```

← revised instructions to include full path

Memory Serial Presence Detect Decoder
By Philip Edelbrock, Christian Zuckschwerdt, Burkart Lingner,
Jean Delvare and others
Version 2.10.6

```
Decoding EEPROM: /sys/bus/i2c/drivers/eeprom/0-0050
Guessing DIMM is in          bank 1
```

```
----- SPD EEPROM Information -----
EEPROM Checksum of bytes 0-62          OK (0x7B)
# of bytes written to SDRAM EEPROM      128
Total number of bytes in EEPROM         256
Fundamental Memory type                 DDR SDRAM
SPD Revision                             1.0
```

```
----- Memory Characteristics -----
Maximum module speed                    333MHz (PC2700)
Size                                     1024 MB
tCL-tRCD-tRP-tRAS                       2.5-3-3-7
Supported CAS Latencies                  2.5, 2
Supported CS Latencies                   0
Supported WE Latencies                   1
Minimum Cycle Time (CAS 2.5)             6 ns
Maximum Access Time (CAS 2.5)           0.7 ns
Minimum Cycle Time (CAS 2)               7.5 ns
```

Maximum Access Time (CAS 2) 0.7 ns
Module Height 1.125" to 1.25"

----- Manufacturing Information -----

Manufacturer Invalid
Custom Manufacturer Data 12 7F 00 00 00 00 00 00 ("????????")
Part Number Undefined

Decoding EEPROM: /sys/bus/i2c/drivers/eeprom/0-0051
Guessing DIMM is in bank 2

----- SPD EEPROM Information -----

EEPROM Checksum of bytes 0-62 OK (0x71)
of bytes written to SDRAM EEPROM 128
Total number of bytes in EEPROM 256
Fundamental Memory type DDR SDRAM
SPD Revision 1.0

----- Memory Characteristics -----

Maximum module speed 333MHz (PC2700)
Size 1024 MB
tCL-tRCD-tRP-tRAS 2.5-3-3-7
Supported CAS Latencies 2.5, 2
Supported CS Latencies 0
Supported WE Latencies 1
Minimum Cycle Time (CAS 2.5) 6 ns
Maximum Access Time (CAS 2.5) 0.7 ns
Minimum Cycle Time (CAS 2) 7.5 ns
Maximum Access Time (CAS 2) 0.7 ns
Module Height 1.125" to 1.25"

----- Manufacturing Information -----

Manufacturer Micron Technology
Manufacturing Location Code 0x01
Part Number 18VDDF12872HG335F1
Revision Code 0x0100
Manufacturing Date 2007-W47
Assembly Serial Number 0xD221069B

Number of SDRAM DIMMs detected and decoded: 2
[root@cpplab ~]#

Workaround or alternative remediation

Avaya recommends that CS1K maintenance partners carry spare 1GB Memory modules on maintenance and system upgrade site visits as a precaution.

Note that on CPPM packs with 2 memory modules installed, either memory module failing will cause the pack to fail to boot. You could troubleshoot by remove one module at a time to find the bad one.

In an urgent short term situation, a Linux CPPM installation normally running with 2GB (2 x 1GB modules) could still operate with only the one good module installed in the first position. The system could have significant memory thrashing but may operate short term until a replacement module is delivered to site.

Patch Notes

The information in this section concerns the patch, if any, recommended in the Resolution above.

Backup before applying the patch

Not required

Download	
mplr32974	
Patch install instructions	Service-interrupting?
See notes above	No
Verification	
n/a	
Failure	
n/a	
Patch uninstall instructions	
n/a	

Security Notes

The information in this section concerns the security risk, if any, represented by the topic of this PSN.

Security risks
n/a
Avaya Security Vulnerability Classification
Not Susceptible
Mitigation
n/a

For additional support, contact your Authorized Service Provider. Depending on your coverage entitlements, additional support may incur charges. Support is provided per your warranty or service contract terms unless otherwise specified.

Avaya Support Contact	Telephone
U.S. Remote Technical Services – Enterprise	800-242-2121
U.S. Remote Technical Services – Small Medium Enterprise	800-628-2888
U.S. Remote Technical Services – BusinessPartners for Enterprise Product	877-295-0099
BusinessPartners for Small Medium Product	Please contact your distributor.
Canada	800-387-4268
Caribbean and Latin America	786-331-0860
Europe, Middle East, and Africa	36-1238-8334
Asia Pacific	65-6872-8686

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