Certificate of Volatility for AlphaServers AS2100, AS4000, AS41000, AS41000LP, ES45, ES40, ES40C, DS25, DS15, and DS15A

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This is a statement regarding the volatility of customer data stored in various types of memory devices and hard disk drives that are part of these AlphaServers: AS2100, AS4000, AS41000, AS41000LP, ES45, ES40, ES40C, DS25, DS15, and DS15A, .

These servers use two types of memory devices to store customer data: volatile (RAM, SRAM) and non-volatile EEROM, NVRAM and Flash memory devices.

Power cycling the system will erase RAM and SRAM memory devices during the power up self test. However, Flash, NVRAM and EEROM devices must be erased or reset to the original manufacturing state by using the following procedures.

Flash Memory – all platforms

You can reset flash memory to its initial state as it left the manufacturing site. To do this, obtain a trusted Firmware Release CD and follow the Firmware update instructions to overwrite the firmware flash memory.

NVRAM – all platforms

Execute the following commands from the SRM console to clear non-volatile SRM console variables:

```
P00>>> set user_def1 ""
P00>>> set user_def2 ""
P00>>> set boot_def ""
P00>>> set bootdef_dev ""
P00>>> set sys_serial_number ""
```

Clear the console error log in NVRAM by executing menu selection 8. For example:
Note: Not applicable to AS2100, AS4000, AS4100, AS4100LP.

```
P00>>> info
0. HWRPB MEMDSC
1. Console PTE
2. GTC/FRU 5
3. Dump System CSR's
4. IMPURE area (abbreviated)
5. IMPURE area (full)
6. LOGOUT area
7. Dump Error Log
8. Clear Error Log

Enter selection: 8
Number of Errors Saved = 10, Errors Being Cleared
P00>>>
```

Clear out any user program that may be stored in NVRAM, examine NVRAM, and deposit zeros in any program locations. For example:

```
P00>>> edit nvram
Editing 'nvram'
50 bytes read in
*list
10 deposit 45c8 1       /first line of user code
20 deposit 4bc8 1       /second line of user code
30 show error           /third line of user code
40 show cpu             /fourth line of user code
*10                     /deposit zeros in first line
*20                     /deposit zeros in second line
*30                     /deposit zeros in third line
*40                     /deposit zeros in fourth line
*list                   /no listing, user code zeroed
*exit
0 bytes written out to nvram  /no user code stored
P00>>>
```

The RMC console contains environment variables that the user can set. The variables are stored in NVRAM. Clear these variables by entering the RMC console and executing these commands. For example:

```
RMC> set password
RMC> Password:
RMC>

RMC> set init
Init String:
RMC>

RMC> set dial
Dial String:
RMC>
```

```
RMC> set alert
Alert String:
RMC>

RMC>set escape
Escape Sequence:
RMC>

RMC>set user
User String:
RMC>
```

EEROM

EEROM devices are contained on all the major Field Replaceable Units (FRU). These devices must be individually cleared using SRM console commands. The console commands are the same for all platforms, but individual EEROM devices have a unique address. This unique address is slightly different for each platform.

Notes:

- The AS2100 has no FRU EEROMS.
- The AS4000, AS4100, and AS4100LP EEROMS are not writeable from the console.

The following example shows the procedure for clearing the devices:

```
P00>>>dep dpr:3500 00 –b –n ff        /set up 256 bytes of zero data
P00>>>dep dpr:f9 ff –b                /set up a byte count of 256
P00>>>dep dpr:fa [EEROM address] –w   /place address of EEROM /here
P00>>>dep dpr:fe 1 –b                 /set up command code to write
P00>>>dep dpr:ff 0 –b                 /dummy write which causes the
                                      /EEROM to be cleared.
```

The following tables list the platforms and the EEROM function and address to be used in the clearing process. Not all platforms have the same number of EEROM devices because the number of FRUs is different for each platform.

Table 1 – ES45 EEROM Device List

FRU Part	FRU EEROM Address
Riser0-J2-DIMM1	100
Riser0-J3-DIMM2	200
Riser0-J4-DIMM3	300
Riser0-J5-DIMM4	400
Riser0-J6-DIMM5	500
Riser0-J7-DIMM6	600
Riser0-J8-DIMM7	700
Riser0-J9-DIMM8	800
Riser1-J2-DIMM1	900
Riser1-J3-DIMM2	A00
Riser1-J4-DIMM3	B00
Riser1-J5-DIMM4	C00
Riser1-J6-DIMM5	D00
Riser1-J7-DIMM6	E00
Riser1-J8-DIMM7	F00
Riser1-J9-DIMM8	1000

Riser2-J2-DIMM1	1100
Riser2-J3-DIMM2	1200
Riser2-J4-DIMM3	1300
Riser2-J5-DIMM4	1400
Riser2-J6-DIMM5	1500
Riser2-J7-DIMM6	1600
Riser2-J8-DIMM7	1700
Riser2-J9-DIMM8	1800
Riser3-J2-DIMM1	1900
Riser3-J3-DIMM2	1A00
Riser3-J4-DIMM3	1B00
Riser3-J5-DIMM4	1C00
Riser3-J6-DIMM5	1D00
Riser3-J7-DIMM6	1E00
Riser3-J8-DIMM7	1F00
Riser3-J9-DIMM8	2000

CPU 0	2100
CPU 1	2200
CPU 2	2300
CPU 3	2400

Memory Riser 0	2500
Memory Riser 1	2600
Memory Riser 2	2700
Memory Riser 3	2800

PCI Backplane	2900

System Module	2A00

Power Supply 0 1st 256	3100
Power Supply 1 1st 256	3200
Power Supply 2 1st 256	3300

1st SCSI Backplane	3B00
2nd SCSI Backplane	3C00

Power Supply 0 2nd 256	3D00
Power Supply 1 2nd 256	3E00
Power Supply 2 2nd 256	3F00

Table 2 – ES40 EEROM Device List

FRU Part	FRU EEROM Address
Riser0-J4-DIMM1	100
Riser0-J8-DIMM2	200
Riser0-J5-DIMM3	300
Riser0-J9-DIMM4	400
Riser0-J2-DIMM5	500
Riser0-J5-DIMM6	600
Riser0-J3-DIMM7	700
Riser0-J7-DIMM8	800
Riser1-J4-DIMM1	900
Riser1-J8-DIMM2	A00
Riser1-J5-DIMM3	B00
Riser1-J9-DIMM4	C00
Riser1-J2-DIMM5	D00
Riser1-J5-DIMM6	E00
Riser1-J3-DIMM7	F00
Riser1-J7-DIMM8	1000
Riser2-J4-DIMM1	1100
Riser2-J8-DIMM2	1200
Riser2-J5-DIMM3	1300
Riser2-J5-DIMM4	1400
Riser2-J2-DIMM5	1500
Riser2-J3-DIMM6	1600
Riser2-J6-DIMM7	1700
Riser2-J7-DIMM8	1800
Riser3-J4-DIMM1	1900
Riser3-J8-DIMM2	1A00
Riser3-J5-DIMM3	1B00
Riser3-J9-DIMM4	1C00
Riser3-J2-DIMM5	1D00
Riser3-J6-DIMM6	1E00
Riser3-J3-DIMM7	1F00
Riser3-J7-DIMM8	2000
CPU 0	2100
CPU 1	2200
CPU 2	2300
CPU 3	2400
Memory Riser 0	2500
Memory Riser 1	2600
Memory Riser 2	2700
Memory Riser 3	2800
Power Supply 0 1st 256	3100
Power Supply 1 1st 256	3200
Power Supply 2 1st 256	3300

1st SCSI Backplane	3B00
2nd SCSI Backplane	3C00

Power Supply 0 2nd 256	3D00
Power Supply 1 2nd 256	3E00
Power Supply 2 2nd 256	3F00

Table 3 – DS25 EEROM Device List

FRU Part	**FRU EEROM Address**
DIMM0, J15	100
DIMM1, J14	200
DIMM2, J12	300
DIMM3, J10	400
DIMM4, J45	1100
DIMM5, J47	1200
DIMM6, J48	1300
DIMM7, J50	1400
DIMM8, J9	900
DIMM9, J6	A00
DIMM10, J3	B00
DIMM11, J1	C00
DIMM12, J51	1900
DIMM13, J53	1A00
DIMM14, J55	1B00
DIMM15, J56	1C00

CPU 0	2100
CPU 1	2200

Main Logic Board	2A0

Power Supply 0 1st 256	3100
Power Supply 1 1st 256	3200
Power Supply 2 1st 256	3300

1st SCSI Backplane	3B00
2nd SCSI Backplane	3C00

Power Supply 0 2nd 256	3D00
Power Supply 1 2nd 256	3E00
Power Supply 2 2nd 256	3F00

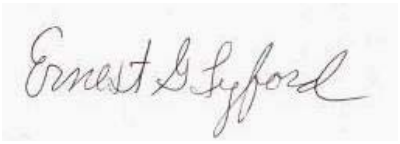
Table 4 – DS15/DS15A EEROM Device List

FRU Part	**FRU EEROM Address**
DIMM0	100
DIMM1	200
DIMM2	300
DIMM3	400

Main System Module	700
PCI Riser	800

Hard Disk Drives

Each AlphaServer contains hard disk drives that retain customer data after the system is powered off. Data should be removed from these hard disk drives using locally approved methods.



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