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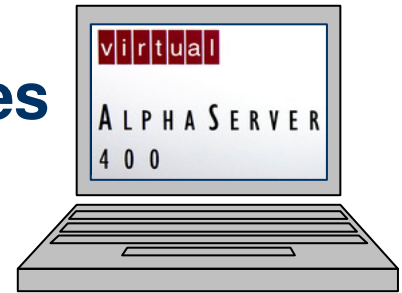


Continuity in Computing

FreeAXP™ Beta Release Notes

Version 1.1.0.307

August 24, 2010



This document provides the latest information on the current release of Migration Specialties FreeAXP virtual Alpha solution. It includes recent enhancement, bug fixes, known problems, and tips on using FreeAXP.

FreeAXP can be used for personal and commercial purposes. FreeAXP is unsupported without purchase of a support contract. If you have questions or problems with FreeAXP, visit the [FreeAXP User Forum](#) at the OpenVMS Hobbyist web site.

Users requiring features or performance beyond those offered by FreeAXP should consider the Migration Specialties Avanti™ and Avanti *Flex*™ virtual Alpha products.

FreeAXP Links

- Product Info:** <http://www.migrationspecialties.com/FreeAXP.html>
- Download:** <http://www.migrationspecialties.com/FreeAXP.html>
- User Guide:** http://www.migrationspecialties.com/pdf/FreeAXP_UserGuide.pdf
- Release Notes:** http://www.migrationspecialties.com/pdf/FreeAXP_ReleaseNotes.pdf
- User Forum:** http://www.openvmshobbyist.com/forum/viewforum.php?forum_id=163
- License:** http://www.migrationspecialties.com/pdf/FreeAXP_License.pdf
- SPD:** http://www.migrationspecialties.com/pdf/FreeAXP_SPD.pdf

Avanti & Avanti *Flex* Links

- Product Info:** <http://www.migrationspecialties.com/Emulator-Alpha.html>
- User Guide:** http://www.migrationspecialties.com/pdf/Avanti_UserGuide.pdf
- Release Notes:** http://www.migrationspecialties.com/pdf/Avanti_ReleaseNotes.pdf
- License:** <http://www.migrationspecialties.com/pdf/AvantiLicense.pdf>
- SPD:** http://www.migrationspecialties.com/pdf/Avanti_SPD.pdf
- Pricing Guide:** <http://www.migrationspecialties.com/pdf/VirtualAlphaPricingGuide.pdf>

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1. FREEAXP SUPPORTS 32 & 64-BIT WINDOWS HOST O/S

FreeAXP supports both 32 (x86) and 64-bit (x64) Windows host O/S. We test FreeAXP under the following Windows O/S and virtual machines:

Host O/S	x86	x64	Sun Virtual Box	VMware	Apple Parallels	Apple Boot Camp
Windows Server 2008 R2		✓		✓		
Windows Server 2008		✓		✓		
Windows 7 Ultimate	✓	✓		✓		
Windows 7 Pro	✓	✓	✓		✓	✓
Windows 7 Home Premium		✓				
Windows Vista Business		✓				
Windows Vista Ultimate	✓	✓		✓		
Window Server 2003		✓		✓		
Windows Server 2003 R2	✓	✓		✓		
Windows XP Pro	✓	✓		✓	✓	✓

1.1 DOCUMENTATION CHANGES

As of FreeAXP Beta 1.1.0.307, the following sections have been moved to the *FreeAXP User Guide*.

- **Tips & Tricks**
- **OpenVMS Specific Notes**
- **Tru64 Specific Notes**

2. PRODUCT UPDATES

2.1 PERFORMANCE

FreeAXP Beta 1.1.0.307 provides a 1% - 8% performance improvement over FreeAXP Beta 1.0.8.283. It provides a 16 fold improvement in network throughput.

2.1.1 Performance Dependencies

The performance gains experienced will vary depending upon the Host and Guest O/S in use. As a past example, using FreeAXP Beta 1.0.6.271, Windows Server 2003 x64, and VMS 7.3-2, we recorded a 10% improvement. On the same hardware and version of FreeAXP under Windows Server 2003 x64 and VMS 8.3 we recorded a 14% improvement.

2.1.2 AlphaServer 400/166 Performance

As of FreeAXP Beta 1.0.6.271, 64-bit edition provides equal or better performance than a real AlphaServer 400/166 running on a dual-core Intel(R) Xeon(R) CPU 5150 @ 2.66GHz.

2.2 NIC REFERENCE BY NAME

As of FreeAXP Beta 1.1.0.307, the NIC(s) assign to FreeAXP can be referenced by name. For example, under Network Connections a two NIC system might support NICs named *Windows* and *Emulator*. Within the FreeAXP configuration file, the *Emulator* NIC can be referenced as follows:

```
pci11 = de435
{
  adapter="Emulator";
}
```

NIC entries by name need to be done manually.

2.3 OSF/1 AND TRU64 UNIX RZ DISK IMAGE FILES

As of September, 2010 a collection of empty disk image files are available for download to support OSF/1 and Tru64 Unix users. These are empty RZ disk images that have been correctly formatted with appropriate Unix disk-labels. They can be used to support authentic DEC RZ-style volumes of the correct size. The canned disks facilitate authentic looking migrations and early versions of OSF/1 and Tru64. The disk images are available off the FreeAXP page:

http://www.migrationspecialties.com/FreeAXP.html#Tru64_Disks

2.4 PASTING LARGE AMOUNTS OF TEXT TO A SERIAL PORT

FreeAXP 1.1.0.307 and subsequent versions support pasting large amounts of text into the virtual serial ports without data lost. In the past we have seen data loss issues, particularly when using the PuTTY terminal emulator.

2.5 DE435 NIC ADDED

As of FreeAXP Beta 1.1.0.304 support for the DE435 NIC has been added. The previous code sample depicts a DE435 definition in the FreeAXP configuration file.

The DE435 is the preferred choice for older versions of OpenVMS and Tru64 Unix. It will work with all supported versions of OpenVMS and Tru64. We recommend using the DE435 with versions of VMS prior to VMS 7.2 and with Tru64 versions prior to V4.0.

The DE435 must be inserted in the configuration file manually. At present the FreeAXP configuration wizard defaults to the DE500.

2.6 ERROR MESSAGE BOX

As of FreeAXP Beta 1.1.0.304 a message box containing (rare) virtual Alpha failure messages is presented. The error box presents the error and remains present until the user clicks "OK" and finish closing the virtual Alpha.

2.7 SERIAL PORT LOGGING

As of FreeAXP Beta 1.1.0.304 serial port output is no longer logged to the virtual Alpha log file by default. To enable logging, add the `log = true` parameter to the serial port definition in the configuration file.

```
serial0 = i16550
{
  log = true;
  s0_tn = telnet
  {
    port = 9000;
    wait = true;
    action = ""C:\Program Files\FreeAXP\putty.exe" telnet://localhost:9000";
  }
}
```

2.8 NUMERIC SUFFIXES CASE INSENSITIVE

As of FreeAXP Beta 1.1.0.304 numeric suffixes in the configuration file are now case-insensitive. For example, when specifying a virtual disk create size, 4g and 4G are equivalent.

2.9 TTA0/tty01 SERIAL PORT

The FreeAXP Beta 1.0.8.283 configuration wizard introduced a check box to enable the TTA0 serial port. `/dev/tty01` is the equivalent of TTA0 under Tru64 Unix. By default TTA0 is enabled via telnet port 9001. The FreeAXP configuration wizard allows the port to be changed.

However, the wizard does not yet remember the TTA0 serial port setting. Re-running the wizard will clear the port by default. If the wizard is re-run, you must remember to re-check the TTA0 box to enable the serial port. This issue will be corrected in a future release of FreeAXP.

2.10 CHARON IDLE LOOP SUPPORT

FreeAXP 1.0.6.271 and subsequent releases support the Charon idle loop. VMS system disks with the Charon idle loop driver installed will boot and run without issue under FreeAXP.

Note: The Charon idle loop can be enabled and disabled using the system parameter `LOAD_SYS_IMAGES`. The default is 7. Changing it to 6 (clearing bit 0 = `SGN$V_LOAD_SYS_IMAGES`) prevents `SY$IDLE` from being loaded during boot.

2.11 SECOND NIC

FreeAXP Beta 1.0.5.261 and subsequent releases include support for a second NIC to facilitate Tru64 clustering. The second NIC requires manual configuration. See section [Error! Reference source not found.](#) for instructions on how to add a second NIC to a FreeAXP configuration. We will address adding the second NIC definition to the configuration wizard in a future release of FreeAXP.

3. BUG FIXES

3.1 FLOATING POINT FIX

FreeAXP Beta 1.1.0.304 fixes a floating point issue uncovered via a FORTRAN program issue reported in the forum where 100.0 is not accepted as a valid input (the application complains that 100.0 is larger than 100.0!)

3.2 COPY PROBLEM WITH VMS 8.3 & PHYSICAL CD

FreeAXP Beta 1.1.0.304 corrects a problem copying large files from a physical CD under OpenVMS 8.3 and 8.4FT. Prior to VMS 8.3, the default block size for copy operations was 63. This changed to 124 under VMS 8.3. The virtual Alpha now correctly configures the CD drive block size for any version of VMS.

3.3 SCSI MODE PAGE HANDLING

FreeAXP Beta 1.1.0.304 corrects the problem of the virtual Alpha crashing when an unsupported SCSI mode page is requested.

3.4 NIC UPDATES

FreeAXP Beta 1.1.0.304 updates the virtual NICs to protect against illegal Jumbo packets and provide proper write back of ring descriptors.

3.5 FLOATING POINT BUG FIX

FreeAXP Beta 1.0.8.283 corrects a problem with floating point calculations. The problem manifested itself under OpenVMS with BASIC, the symbolic debugger, and the Monitor utility. See section [Error! Reference source not found.](#) for additional details on floating point implementation.

4. KNOWN PROBLEMS

4.1 PYTHON PERFORMANCE

FreeAXP emulates and EV4 Alpha processor. Python is compiled by default for the EV56 processor. Most of what the Python interpreter does is string manipulation and it uses the byte/word-extension instructions to do so. These instructions do not exist on an EV4 system, so each of these instructions takes a TRAP, firmware passes the trap to VMS, and VMS emulates the instructions. This is *very* slow, both on real and virtual EV4 hardware. See this Python forum thread for additional information regarding this issue:

<http://www.pi-net.dyndns.org/piforum/viewtopic.php?t=89>

4.2 FREEAXP CONFIGURATION WIZARD CRASHES

If you experience problems with the FreeAXP Configuration Wizard crashing under Windows Vista or Windows 7, run wizard in XP compatibility mode.

4.3 TRU64 AND DUAL NICs

In a dual-NIC configuration, some Windows NIC drivers do not behave properly when sharing the Window's active NIC with the primary NIC for Tru64. Symptoms may include poor throughput, packet loss/re-transmission, or even Tru64 UNIX 0x670 Machine Checks associated with incoming broadcast packets. The solution is to use the recommended configuration of dedicated NICs for the virtual Alpha. Note that there are a wide range of NICs and associated drivers available for Windows and many will not exhibit this shortcoming.

4.4 MARVEL YUKON NIC AND SAMSUNG LAPTOPS

There is a know problem with Samsung laptops using Marvell Yukon chip set in the onboard NIC. Assigning this NIC to the virtual Alpha may cause a NETDLLERR crash under OpenVMS. A detail problem description can be found in the [FreeAXP forum](#) at this link:

http://www.openvmshobbyist.com/forum/viewthread.php?forum_id=163&thread_id=1341

We have been unable to reproduce the problem on other systems using a NIC with a Marvel Yukon chip set. Possible workarounds for the problem include:

- Use the DE435 instead of the DE500 virtual NIC in the FreeAXP configuration file.
- Update the NIC drivers.
- Use a different NIC for FreeAXP

4.5 CONFIGURATION WIZARD FORGETS TTA0 SERIAL PORT SETTING

The configuration wizard does not remember the TTA0 serial port setting. Re-running the wizard will clear the port by default. If the wizard is re-run, you must remember to re-check the TTA0 box to enable the serial port. This problem will be corrected in a future release of FreeAXP.

4.6 AMD PROCESSOR TIMING ISSUE

Symptoms:

- **OpenVMS:** The login prompts go by too fast to enter anything.
- **Tru64:** Response time at console slows sporadically when system has no load.

There is a known problem on AMD Athlon X2 systems that may cause various timing issues under FreeAXP. The problem is caused when the timestamp counters in each of the AMD CPU's drift apart over time since the last power-on. This drifting of the timestamps causes a higher timer-interrupt rate on the emulated Alpha. The fix is to install an updated processor driver from AMD that ties the Windows time routines to a single CPU core. The update is available at <http://support.amd.com/us/Pages/AMDSupportHub.aspx>.

4.7 VMS 7.0 LOGIN AFTER INSTALLATION

After installing OpenVMS 7.0, it is not possible to log in from the console. This is not a FreeAXP bug. The real AlphaServer 400 behaves the same way.

An alternative is to install the OpenVMS licenses during the installation process. It is then possible to log into the system via TTA0.

Another option is to execute a conversational boot to log into the system and install licenses. Here is one way to do this:

4.7.1 Conversational Boot

```
>>> B DKA0 -FLAG 0,1
SYSBOOT> SET/START=OPA0:
SYSBOOT> CONTINUE
```

The system will boot to the \$ prompt. Spawn a subprocess so you do not get logged off the console, then run the system startup procedure.

```
$ SET NOON
$ SPAWN
%DCL-S-SPAWNED, process SYSTEM_1 spawned
%DCL-S-ATTACHED, terminal now attached to process SYSTEM_1
$ @SYS$SYSTEM:STARTUP
```

The system will come up normally and give you back the \$ prompt when the startup procedure logs out. From there, spawn again to prevent being logged out of the console. You can now work you will on the system.

```
$ SET NOON
$ SPAWN
%DCL-S-SPAWNED, process SYSTEM_1 spawned
%DCL-S-ATTACHED, terminal now attached to process SYSTEM_1
$ SET DEF SYS$SYSTEM:
```

When you are finished, do another conversational boot and reset the startup file.

```
>>> B DKA0 -FLAG 0,1
SYSBOOT> SET/START=SYS$SYSTEM:STARTUP.COM
SYSBOOT> CONTINUE
```

4.8 VMS 6.2 – 7.1 CONSOLE ISSUE

We see an issue on two out of ten of our test systems when installing VMS 6.2, 7.0, and 7.1 from an ISO image. The VMS installation will run normally. During the final reboot after the automatic AUTOGEN phase, error messages similar to those shown below will be displayed. The system will boot, but you will be unable to log in via the console.

The workaround is to <Ctrl^P> the virtual Alpha and boot again. There is no need to restart the virtual Alpha. On the second VMS boot the problem goes away.

We've placed a thread titled [VMS 6.2 – 7.1 Console Issue](#) in the [FreeAXP User Forum](#). If you encounter this problem, please post your host hardware information and the Windows O/S under which you are running FreeAXP to this thread. Include whether it is a 32 or 64-bit edition of Windows.

```
%ADA-I-CONSTRAINT_ERRO, CONSTRAINT_ERROR
-ADA-F-CONSTRAINT_ERRO, CONSTRAINT_ERROR
%ADA-F-CONSTRAINT_ERRO, CONSTRAINT_ERROR
-ADA-I-EXCRAIPRI, Exception raised prior to PC = 00057B48
%%%%%%%%%% OPCOM 17-NOV-1858 00:00:05.15 %%%%%%%%%%%
Message from user SYSTEM on VMS062
%SECSRV-E-NOPROXYDB, cannot find proxy database file NET$PROXY.DAT
%RMS-E-FNF, file not found

%TRACE-E-TRACEBACK, symbolic stack dump follows
Image Name      Module Name      Routine Name      Line Number      rel PC      abs PC
ADARTL          ADARTL              0 00054C94        003DEC94
                0 80495D44        80495D44
----- above condition handler called with exception 00318324:
%ADA-F-CONSTRAINT_ERRO, CONSTRAINT_ERROR
-ADA-I-EXCRAIPRI, Exception raised prior to PC = 00057B48
----- end of exception message
                0 82F842BC        82F842BC
ADARTL          SECURITY_SER        0 00037BBC        003C1BBC
SECURITY_SER    SECURITY_SER        0 00047B48        00057B48
SECURITY_SER    SECURITY_SER        0 0007D25C        0008D25C
%%%%%%%%%% OPCOM 17-NOV-1858 00:00:05.17 %%%%%%%%%%%
Message from user SYSTEM on VMS062
%SECSRV-E-NOPROXYDB, cannot find proxy database file NET$PROXY.DAT
%RMS-E-FNF, file not found

SECURITY_SER    ADA$ELAB_SECURI    0 000300C0        000400C0
ADARTL          0 00054E18        003DEE18
ADARTL          0 00054594        003DE594
ADARTL          0 0003F4D0        003C94D0
SECURITY_SER    ADA$ELAB_SECURI    0 0003005C        0004005C
SECURITY_SER    0 0008773C        0009773C
                0 83082170        83082170
```

4.9 VMS 6.2 INSTALLATION FROM CD

A VMS 6.2 installation from a physical CD will fail. We are working on resolving this issue. VMS 6.2 can be successfully installed from an ISO image.

4.10 WINDOWS VISTA, WINDOWS 7

If you experience problems launching FreeAXP or the configuration wizard, try using the "Run as Administrator" option.

4.11 PHYSICAL DEVICE ACCESS

When accessing a physical device like a CD-ROM, FreeAXP needs to run from an account with administrator rights.

5. PROBLEM SUBMISSION

If a problem is encountered, seek help at the [FreeASP Support Forum](http://www.freeasp.com/support/forum/):

http://www.openvmshobbyist.com/forum/viewforum.php?forum_id=163

When posting a problem report, the following information is helpful:

- 1) FreeASP configuration file (.cfg)
- 2) FreeASP log file (.log)
- 3) FreeASP Virtual Layer Console (VLC) contents
- 4) Host System Information
 - a) Windows O/S
 - b) Hardware information:
 - i) CPU Type
 - ii) Number of CPU's
 - iii) Memory Installed

5.1 LOG FILE RETENTION

FreeASP retains up to 6 log files. It uses a version number appended to each log file name to retain the last five log files.

Current Log: .log
Previous Log: .log;-1
Oldest Retained Log: .log;-5

5.2 TIP: CAPTURING CONSOLE INFORMATION

Two changes to the PuTTY console configuration are useful when capturing error information:

- 1) Under Change Settings> Window modify "Lines of scrollbar" to 20000. PuTTY then retains 20,000 lines of history in the scroll back buffer.
- 2) Under Change Settings> Sessions select "Never" for "Close window on exit". This preserves the PuTTY console window if the virtual Alpha crashes.
- 3) Once these changes have been made, highlight "Default Settings" under the Saved Sessions box and click the [Save] button. PuTTY will then retain the setting for future console sessions.