Virtual Alpha Release Notes

for Avanti, AvantiFlex and FreeAXP

Version 5.0.0

Migration Specialties Europe

8-JAN-2025

migrationspecialtieseurope

Virtual Alpha Release Notes

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Printed: 8-JAN-2025 in the Netherlands

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1 Introduction

This manual provides the latest information on the current release of Avanti, AvantiFlex, and FreeAXP, Migration Specialties' AlphaServer 400 hardware emulators.

Avanti and AvantiFlex are commercial products that require purchase of a product license. These products include 30 days of manufacturer support after purchase and the option to buy an extended support contract.

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 and have not purchased a support contract, visit the FreeAXP user forum at the OpenVMS Hobbyist web site.

1.1 Read Before Upgrading

Avanti V5.0 will not work with USB-key based licenses. If you are upgrading from an earlier version of Avanti or AvantiFlex, please contact Migration Specialties Europe to obtain your new registry-based license keys before installing.

1.2 Avanti, AvantiFlex and FreeAXP Links

Avanti and AvantiFlex Info:	https://www.migrationspecialties.nl/products/avanti
FreeAXP Info:	https://www.migrationspecialties.nl/products/freeaxp
User Guide (PDF):	https://www.migrationspecialties.nl/Downloads/VirtualAlpha_UserGuide.pdf
Online User Guide:	https://www.migrationspecialties.nl/userguides/avanti
Release Notes:	https://www.migrationspecialties.nl/Downloads/VirtualAlpha_ReleaseNotes.pdf
Pricing Guide:	https://www.migrationspecialties.nl/Downloads/VirtualAlphaPricingGuide.pdf
User Forum:	https://www.vmshobbyist.com/forum/viewforum.php?forum_id=163
Download:	https://www.migrationspecialties.nl/products/freeaxp

1.3 Document Conventions

This document uses the following conventions:

Throughout this manual, Avanti will be used to represent the Migration Specialties virtual Alpha products Avanti, AvantiFlex, and FreeAXP. Most installation, configuration, and runtime tasks are the same for all three products. Where distinctions are necessary, the products are referenced by name.

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1.4 Migration Specialties Products & Services

Product	Description
Avanti/AvantiFlex	Commercial Alpha emulator
FreeAXP	Free Alpha emulator
SimH VAX	Free open source VAX emulator
OpenVMS Consulting	OpenVMS consulting and programming services
Tru64 UNIX Consulting	Tru64 UNIX consulting and programming services

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2 Documentation Updates

The Avanti User Guide received substantial updates as part of the Avanti version 5.0 release. These are some of the highlights.

- All sections related to licensing were completely rewritten to reflect the new licensing mechanism.
- The documentation (user guide as well as these release notes) is now being maintained and produced using different software. As a result, its layout has changed substantially.

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3 Host O/S and Testing

3.1 Avanti Host Environments

FreeAXP, Avanti and AvantiFlex support 64-bit (x64) Windows host operating systems only. We test Avanti under the following Windows O/S and virtual machines:

Host O/S	x64	VMware
Windows Server 2019	x	x
Windows Server 2016	x	x
Windows Server 2012 R2	x	x
Windows Server 2012	x	x
Windows 11	x	x
Windows 10	x	x

3.2 Legacy Host O/S

Avanti 5.0 is built using the latest Windows Visual Studio and Intel C++ compiler. This development environment does not support the following legacy Windows O/S:

- Windows XP
- Windows Vista
- Windows Server 2003
- Windows Server 2008 Std

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4 Product Updates

4.1 License Unit Simplification

Prior to version 5.0, 40 additional license units were required to run any emulator beyond the first emulator on a host system. This additional license unit requirement was removed in version 5.0. Identical emulator configurations now always require the same number of license units, regardless of whether they are the first emulator instance on a host or not.

4.2 Additional Idle Loop Signatures

Idle loop detection signatures were added for additional versions of OpenVMS and Tru64 UNIX:

- OpenVMS V8.4 (patched)
- Tru64 V4.0 (various kernel variants)

4.3 Registry-Based Licenses

Avanti V5.0 no longer uses USB dongles for its licenses. Instead, it uses software-based licenses which are loaded into the Windows Registry.

4.4 Wide SCSI Controller in FreeAXP

The SCSI controller in FreeAXP can now be either a narrow (KZPAA) or a wide (KZPCA) SCSI controller.

4.5 Updated Version of PuTTY

PuTTY, the terminal emulator software that ships with Avanti, has been updated to version 0.82

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5 Known Issues

This section covers issues impacting Avanti.

5.1 OpenVMS Issues

5.1.1 Auto-Idle Restart on Bug Check

If the Auto-Idle feature is enabled, the system firmware auto_action parameter is set to boot, and an OpenVMS bug check occurs, VMS will automatically reboot once the bug check has completed its memory dump. In this scenario, Auto-Idle will not re-engage. A full Avanti shutdown and restart will be required to re-enable Auto-Idle.

5.2 Tru64 Unix Issues

5.2.1 Tru64 Unix Panic Recovery

If Tru64 Unix experiences a panic and the Alpha firmware option boot_action is set to boot, the reboot will hang. This is true on all versions of DEC and Tru64 UNIX supported by Avanti.

5.3 Windows Issues

5.3.1 End Point Security Issues

If Avanti mysteriously halts or disappears after running for a period of time, check that end point security products are not interfering with the process. We have had reports of Tanium (www.tanium.com/) products blocking Avanti because of its 100% utilization of a single host CPU. Wherever possible, place the Avanti executable (dec.exe, freeaxp.exe) on security and anti-virus exclusion lists.

5.3.2 Remote Desktop and Avanti Icon

When managing a server running multiple instances of Avanti via Windows Remote Desktop, the Avanti icon right-click menu does not always clear as expected. It is sometimes possible to have one Avanti icon menu obscure another. This is an issue with Remote Desktop, not Avanti.

5.3.3 Running Avanti From a Non-Administrator Account

On some versions of Windows, an attempt to start Avanti as a non-administrator user may fail with the error message “Could not initialize mapped file for IPC”. This is known to happen under Windows Server 2008 and Windows 7. To resolve this issue, the “Create Global Objects” privilege needs to be granted to the Avanti user account. To grant the privilege, log into an administrator account and complete the following steps:

1) Start> Control Panel> Administrative Tools> Local Security Policy
2) Open Local Policies and select User Rights Assignment.
3) Double click Create Global Objects and click Add User or Group to grant this privilege to the user that needs to run Avanti.

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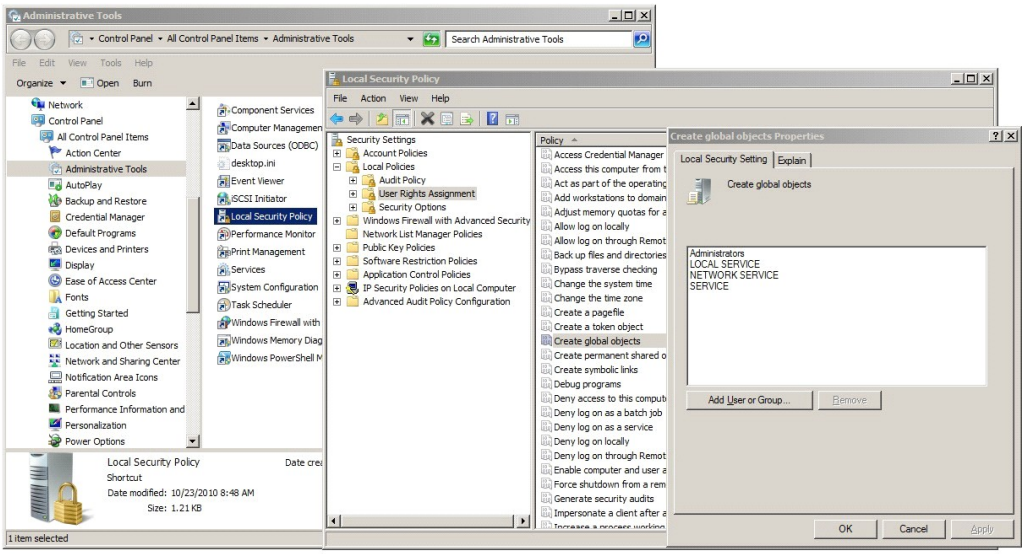

5.3.4 Avanti Service Will Not Launch

If Avanti is installed as a service, it will not launch, and an Avanti log file is not being produced, check the following.

- Make sure the Avanti configuration file listed in the Services name field actually exists.
- Check that the configuration file name and the service name minus the Avanti_ prefix are an exact match. I.e. The service name Avanti_Alpha01 should point at the configuration file Alpha01.cfg.

5.4 Network Issues

5.4.1 WinPCAP 4.1.3 Issue

Installation of the WinPCAP 4.1.3 NDIS driver disables the Avanti NDIS driver. If running applications that use WinPCAP, such as SimH VAX or Wireshark, used the WinPCAP 4.1.2 NDIS kit on systems running Windows 8.1 or Server 2012 and lower.

All version of WinPCAP conflict with the Avanti NDIS driver under Windows 10 and Server 2016. Use Win10PCAP or Npcap to avoid this issue.

5.4.2 Windows 10 Version 1709 msipcap Issue

We have seen an intermittent issue with Windows 10 version 1709 where if Avanti or the Configuration Utility is started immediately after booting Windows, they will hang. Windows must then be rebooted to recover. The issue is a conflict with the Avanti NDIS msipcap driver unique to certain builds of Windows 10 v1709. The fix is to upgrade Windows 10 to version 1803.

If you encounter this problem, a work around is to run the following commands from the Windows Command Prompt prior to launching Avanti or the Config Utility. Be sure to use "Run as administrator" when launching the Windows Command Prompt.

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5.4.3 Checksum Fixed Warnings

If you see Checksum Fixed messages in the Avanti log file, you may have a NDIS driver or NIC issue.

The messages regarding "Checksum Fixed" indicates that the emulator received network packets with an incorrect checksum, and that it fixed these before passing them on to the emulated NIC. A possible cause for this issue is that TCP/IP Offload Engine (TOE) is enabled for the network interface.

Try disabling TOE functionality on the NIC assigned to the Avanti system. This can be accomplished by going to the Advanced tab in the Properties window for the NIC, then disabling the following features:

- IPv4 Checksum Offload
- Large Receive Offload
- Large Send Offload
- TCP Checksum Offload

5.5 X-Client Color Mapping

Some X-windows clients may not display OpenVMS and Tru64 UNIX 8-bit color mapping correctly. Ensure the client has an 8-bit color mapping mode.

5.6 Third Party Emulators

5.6.1 Container File Compatibility

Other than as noted in the following sections, Avanti provides full compatibility with disk container files created by other hardware emulators that support OpenVMS, Digital UNIX, and Tru64 UNIX. This includes container files created under SimH VAX.

5.6.2 Charon Idle Loop / Powersave Driver Support

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

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$V_LOAD_SYS_IMAGES) prevents SYS$IDLE from being loaded during boot.

5.6.3 PersonalAlpha & Charon Container File

If attempting to boot a PersonalAlpha or CHARON-AXP system container file using Avanti, the following changes may need to be made to achieve a successful boot:

- Disable the CHARON Accelerator utility. As with real Alpha hardware, this extension will cause a boot check under OpenVMS.

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- PersonalAlpha's NIC device shows up as ESA0. Avanti's NIC device shows up as EWA0. If booting from a PersonalAlpha image, LAT, DECnet, and TCP/IP services will need to be reconfigured.

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