HP BridgeWorks Version 3.0A

Installation Guide for OpenVMS

March 2005

HP BridgeWorks Version 3.0A introduces new and innovative features that enable and support enterprise-level distributed applications, and includes several important bug fixes.

This file contains information that will help you install and use this release of HP BridgeWorks.

Software Version
HP BridgeWorks Version 3.0A

Hewlett-Packard Company
Palo Alto, Calif.

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About HP BridgeWorks Version 3.0A Installation Notes for OpenVMS

This Installation Guide comprises system requirements and installation instructions for OpenVMS, as well as information about running the BridgeWorks Manager and setting process quotas.

For the Windows installation instructions, refer to `Readme.htm|pdf|txt`, available from the web download page.

For release information, refer to `BWX030A.RELEASE_NOTES|.HTM|PDF|PS`, available from the web download page and after extracting the kit. (The same release note information is available from the Readme and from the BridgeWorks for OpenVMS Release Notes.)

Complete product documentation is available from the online Help installed with the Windows BridgeWorks kit.

REQUIREMENTS AND INSTALLATION

1. Platform Requirements

HP BridgeWorks is a cross-platform tool. Installation consists of:

- An OpenVMS Alpha kit, to be installed on each system on which you intend to run BridgeWorks-wrapped servers.
- A Windows kit for Windows XP or Windows 2000, to be installed on a development machine, containing the BridgeWorks development tool, plus runtime libraries for distribution if running Windows-based components.

Important

VAX is not a supported platform in this release. BridgeWorks Version 2.1A will continue to be available for wrapping VAX-based applications.

1.1 Targeted Platforms

The purpose of BridgeWorks is to encapsulate and distribute an Alpha-based user application. The server component encapsulates the application; the middle component distributes it. The source code for both components is generated on the Windows platform using a GUI-based development tool.

The generated source code for the server component must be built on the OpenVMS system that hosts the application. The generated source code for the middle component can be built on a networked Alpha system (clustered or not) or a networked Windows system.

Server Component

The BridgeWorks-generated server component is a native OpenVMS image installed on the system running the wrapped application (which can comprise 3GL server routines, ACMS tasks, DCL procedures, and text files.)

Available on OpenVMS Alpha Version 7.3, 7.3-1, 7.3-2, and 8.2

Note: OpenVMS Industry Standard 64 (Itanium) Version 8.2 is not supported in this release.

Middle Component

The BridgeWorks-generated middle component is a JavaBeans, Enterprise JavaBeans (EJB), or COM server that also acts as a client to the server component to make calls to OpenVMS server routines, tasks, and procedures.

Available platforms for each component type are:

OpenVMS Alpha Version 7.3, 7.3-1, 7.3-2, and 8.2
Windows XP and 2000

1.2 Generated Components

The middle component can expose the application you are encapsulating, or wrapping, to clients as JavaBeans, EJB, or COM objects. Only the appropriate source code is generated by BridgeWorks.

Specific limitations are shown below according to component type. Note that COM connections cannot be generated for ACMS tasks or for structure or array definitions in 3GL server routines. Note that transactions are only available for EJB components.

Component	Existing Application	Transactions	Structures
EJB	3GL, ACMS, DCL, Files	Yes	Yes
JavaBeans	3GL, ACMS, DCL, Files	Not Applicable	Yes
COM	3GL, DCL, Files	No	No

Not supported in this release:
Tru64 UNIX is not available as a target platform for middle components in this release.

Cross-platform limitations apply to COM:
Cross-platform COM connections - where a Windows client communicates with an Alpha-based middle component - have produced inconclusive results related to account and security issues. The following configurations are recommended instead:

1. Windows client to Windows COM middle component.
2. OpenVMS Alpha client to Alpha COM middle component.

Note: Your choice of component architecture should be guided by an understanding of the relative merits and limitations of each component type for your particular distributed application needs. It should take into account any preexisting middle-tier application server and client codebase.

2. Installation, Development, and Runtime Requirements

These are the minimum system requirements needed to install BridgeWorks and to build and run the generated components. “Optional” requirements represent requirements that are not needed for every type of connection. However, several such requirements will apply to your particular platform/component selection.

Make sure you have the latest MUPs, ECOs, and patches for your configuration. Search for these on the Patch Download page.

http://www2.itrc.hp.com/service/patch/mainPage.do

Always Check Cross-Product Requirements!
Always check for cross-product software requirements, which can change with new releases. These product requirements may be greater than for BridgeWorks itself.

For example, to run a BridgeWorks-generated EJB component requires OpenVMS Alpha Version 7.3 or higher and a Java 2 Runtime Environment 1.3.1 or higher. Each Java SDK and RTE has specific ECO requirements. In addition, WebLogic Server 7.0 (a J2EE 1.2-compliant application server) requires OpenVMS Alpha Version 7.3 or 7.3-1, the Java 2 SDK 1.3.1-5 or higher, and additional ECOs as specified. (See Section 2.3: Additional OpenVMS Requirements)

2.1 OpenVMS

Server Component - Installation Requirements

OpenVMS Alpha Version 7.3, 7.3-1, 7.3-2, and 8.2
4,500 blocks during installation, 3,500 blocks after installation

System requirements vary enormously depending on the way you deploy your BridgeWorks components.

Server Component - Development Requirements

The C Compiler is required to build all server components:

HP C Version 6.5 for OpenVMS Alpha or higher

Server Component - Optional Development Requirements

For automatic import and build features, you must enable REXEC and FTP services.

TCP/IP Services for OpenVMS Version 4.2 or higher

TCP/IP for OpenVMS Home Page
http://h71000.www7.hp.com/network/tcpip.html

Server Component - Optional Runtime Requirements

You can choose between non-transport and transport-based options:

Non-Transport-Based Connections

None for Alpha-only, nontransactional connections.

Transport-Based Connections

You can use choose either ICC (Intra-cluster Communications) or RPC, or both. (If you choose both, the BridgeWorks Manager automatically use ICC in a cluster configuration and RPC in a noncluster configuration.)

ICC for OpenVMS Alpha Version 7.3 or higher
(Bundled with operating system)

or

DCE RPC Runtime Services Kit Version 1.5 or higher

DCE for OpenVMS Home Page
http://h71000.www7.hp.com/commercial/dce/dce_index.html

For DCE RPC

OpenVMS Alpha DCE Denial of Service Security Patch Kit

Alpha Security ECO Kit For SSRT3608
http://www2.itrc.hp.com/service/cki/patchDocDisplay.do?patchId=ALP_DCE_030_SSRT3608

Middle Component - Optional Development and Runtime Requirements

For middle components, similar requirements apply during development and at runtime.

For JavaBeans and EJB components

Java 2 SDK ("JDK") Standard Edition 1.3.1-7 or higher

Runtime only

Java 2 RTE (JRE) Standard Edition 1.3.1-7 or higher

Java Software Patches (ECOs): See Section 2.3: Additional OpenVMS Requirements

Java Technology for Alpha Download Page
http://h18010.www1.hp.com/java/download/

For COM components only

COM for OpenVMS Version 1.3

Compaq C++ 6.5 for OpenVMS Alpha

COM Denial of Service ECO kit for SSRT3608

COM for OpenVMS Home Page
http://h71000.www7.hp.com/openvms/products/dcom/

C++ for OpenVMS Home Page
http://h71000.www7.hp.com/commercial/cplus/cplus_index.html

ECO kit for SSRT3608
http://www2.itrc.hp.com/service/cki/patchDocDisplay.do?patchId=DCOM_013_SSRT3608-V0

For EJB components only

A J2EE 1.2-compliant environment

Free 30-day evaluation license available for WebLogic Server.
Download Version 7.0 or 8.1 SP1 for HP OpenVMS.

See Section 2.3: Additional OpenVMS Requirements

BEA WebLogic Server Downloads Page
http://commerce.bea.com/showallversions.jsp?family=WLS

For Transactions (EJB components only)

DECdtm/XA SDK 2.1

This new release of DECdtm/XA ships on OpenVMS Version 7.3-2. It must be installed as a layered product on OpenVMS Alpha Version 7.3 and 7.3-1.

Note: Version 2.1 is available as a layered product from the BridgeWorks Download page.

BridgeWorks Home Page
http://www.hp.com/go/bridgeworks

Alpha System Recommendations for Java applications

	Best	**Average**	**Low**
System speed	Above 500MHz	500MHz	Below 500MHz
System memory	1GB or higher	512MB	Minimum 256MB

"Average" represents the recommended minimums for deploying Enterprise JavaBeans using BEA WebLogic Server.

For ACMS applications

A properly configured ACMS 4.3-or-later system.

2.2 Windows

Middle Component - Installation Requirements

Windows XP SP1 or Windows 2000 SP2 or higher

Note: 2000 Server or XP Professional recommended in a production environment.
2003 Server has not been tested.

40MB minimum free disk space
128MB minimum RAM
TCP/IP configured
Internet Explorer 5.5 or higher

Optional Development and Runtime Requirements

For middle components, similar requirements apply during development and at runtime.

For JavaBeans and EJB components

Java 2 SDK (SDK) Standard Edition 1.3.1 or higher

Runtime only

Java 2 RTE ("JRE") Standard Edition 1.3.1 or higher

For COM components only

Microsoft Visual C++ 6.0 SP5

Note: Visual C++ .NET is not supported and is not a substitute.

For EJB components only

A J2EE 1.2-compliant environment

2.3 Additional OpenVMS Requirements

ECO Downloads for Java 2 SDKs for OpenVMS

ECO Page for 1.4.2
http://h18010.www1.hp.com/java/download/ovms/1.4.2/sdk1.4.2_patches.html

ECO Page for 1.4.1
http://h18010.www1.hp.com/java/download/ovms/1.4.1/sdk1.4.1_patches.html

ECO Page for 1.4.0
http://h18010.www1.hp.com/java/download/ovms/1.4.0/sdk1.4.0_patches.html

ECO Page for 1.3.1
http://h18010.www1.hp.com/java/download/ovms/1.3.1/sdk1.3.1_patches.html

For BEA WebLogic 7.0 or 8.1 SP1 for OpenVMS

BEA WebLogic 8.1 SP1 for OpenVMS Requirements Page
http://edocs.bea.com/platform/suppconfigs/configs81/hpovms73_alpha/81sp1.html

BEA WebLogic 7.0 for OpenVMS Requirements Page
http://edocs.bea.com/platform/suppconfigs/configs70/hpovms73_alpha/70sp1.html

3. Installation

Installation involves setting up HP BridgeWorks on (at least) two systems:

- Installing the BridgeWorks Manager, development tool utilities, runtime library and support files on OpenVMS.
- Installing the BridgeWorks development tool, runtime library and support files on Windows.

  (For installation instructions for Windows, use Readme.html|pdf|txt, available from the web download page.)

Note: The BridgeWorks Version 3.0A OpenVMS kit can only be used in conjunction with the same Version 3.0A Windows kit. Subsequent production releases will require both installations to be repeated with the up-to-date kits.

3. 1 Installing BridgeWorks on OpenVMS

Version 3.0A installs an enhanced BridgeWorks Manager. This replaces the existing Version 2.1/2.1A Manager, but does not remove it. You can continue to use the 2.1/2.1A Manager process (which is renamed to BWX$MGR_V21) by configuring it to start automatically with 2.1/2.1A connections.

See Section 3.2: Starting the BridgeWorks Manager

The BridgeWorks Manager provides new directory services and server management for the middle component. This includes load-balancing capabilities, such as keeping track of available servers and maintaining pools of free servers (determined by configurable parameters for minimum, maximum, and idle servers) to speed response times. These extra capabilities allow some connections to avoid the high cost of process creation at server startup.

Before you begin:

- Log into an account that has SYSTEM privileges.
- If you have a previous version of BridgeWorks installed, make sure the BridgeWorks Manager is shut down by using this command from an account with SYSTEM privileges:

```
$ @SYS$STARTUP:BWX$SHUTDOWN.COM
```

- Make sure you have adequate disk space. BridgeWorks disk storage requirements are 4,500 blocks during installation and 3,500 blocks after installation.
- At the beginning of the installation, the installation procedure asks if you have backed up your system. You are recommended to do a system disk backup before proceeding.

Instructions for web download installation

1. Save the BridgeWorks self-extracting archive (`BWX030A_ALPHA.EXE`) to a temporary location on your disk by choosing the option to save the program to your disk.
2. If you are downloading to a Windows machine, move the downloaded file to your OpenVMS machine using either a shared network drive or FTP.

See Appendix 4.1: Sample FTP File Transfer.

3. On your OpenVMS system, use the DCL RUN command to unpack the contents of the compressed EXE file:

```
$ RUN BWX030A_ALPHA.EXE
```

4. When you are asked for the file specification of the unpacked file, "Decompress into (file specification):", press Enter/Return for the current directory.

See Appendix 4.2: Sample OpenVMS Installation Log.

5. Start PCSI, the utility that installs the BridgeWorks component:

```
$ PRODUCT INSTALL BRIDGEWORKS
```

6. Follow the on-screen installation instructions to complete the installation.

   To proceed with a default installation, press Enter/Return in response to any other installation questions.

After Installation:

ALWAYS restart J2EE environments, such as BEA WebLogic Server, or other bean servers, such as Tomcat, after a BridgeWorks installation. Such environments do not automatically refresh shareable images and libraries without being restarted.

Uninstalling BridgeWorks Version 3.0A

To completely remove BridgeWorks Version 3.0A from your system, perform the following steps:

1. Stop the BridgeWorks Manager (`BWX$MANAGER`), and all BridgeWorks generated servers.
2. Uninstall the BridgeWorks protected sharable image. Bring up the Install utility and use the REMOVE command to remove the `SYS$LIBRARY:BWX$COMMON_SS.EXE` image.
3. Enter the PRODUCT REMOVE BRIDGEWORKS command at the DCL command prompt.

Uninstalling BridgeWorks Version 3.0 and earlier

You are not required to uninstall a previous version of BridgeWorks before beginning an installation, and the BridgeWorks kit does not include an uninstall procedure to remove Version 3.0 and earlier versions. However, if you need to completely remove BridgeWorks Version 3.0 or earlier from your system, perform the following steps:

1. Stop the BridgeWorks Manager (`BWX$MANAGER`), and all BridgeWorks generated servers.
2. Uninstall the BridgeWorks protected sharable image. Bring up the Install utility and use the REMOVE command to remove the `SYS$LIBRARY:BWX$COMMON_SS.EXE` image.
3. Delete all files copied onto the system during installation. Refer to the list found in `SYS$HELP:BWX$VERSION.TXT` for a complete list of these files.

3. 2 Starting the BridgeWorks Manager

After the installation is complete, you must start BridgeWorks Version 3.0A for the first time. This will create directories, define system logicals, and start up the BridgeWorks Manager.

IMPORTANT: Beginning with Version 3.0, BridgeWorks installs an enhanced Manager that is not backward-compatible:

- The new Manager replaces but does not remove the existing Version 2.0/2.1 Manager.
- The new Manager uses the same process name, `BWX$MANAGER`.
- The 2.1/2.1A Manager is renamed to `BWX$MGR_V21`.
- The `BWX$MGR_V21` process will continue to be available for existing connections unless you delete `BWX$MGR_V21.EXE` from `SYS$SYSTEM`.

1. Start BridgeWorks for the first time with this command:

```
$ @SYS$STARTUP:BWX$STARTUP.COM
```

2. Modify your system startup command procedure (SYSTARTUP_VMS.COM) to include the BridgeWorks startup command:

```
@SYS$STARTUP:BWX$STARTUP.COM
```

If you are using DCE Transport
You must make sure your TCP/IP and DCE startup procedures run before the `BWX$STARTUP.COM` in `SYSTARTUP`.

If you opt not to use the SYSTEM account
The BridgeWorks Manager startup procedure must still be run every time your system starts. It can be run as part of your system startup or in another account that has full access to the `BWX$SYSTEM` directory.

Important: You are recommended to use the SYSTEM account. However, whatever account you choose to run the Manager out of must have, minimally, the following authorized account privileges:

BYPASS
SYSPRV
TMPMBX
SYSNAM
CMKRNL
DETACH
LOG_IO*

*The BridgeWorks Manager requires mailboxes to keep track of when server components become free for new connections. Therefore, `LOG_IO` privilege is mandatory for both server and manager processes.

See Also Section 3.3: Recommended Process Quotas

Stopping the BridgeWorks Manager

Stopping the BridgeWorks Manager requires the same privileges as starting it. Ensure that all client connections have been closed.

1. Log into an account that has `SYSTEM` privileges.

2. Use the following command:

```
$ @SYS$STARTUP:BWX$SHUTDOWN.COM
```

3.3 Recommended Quotas

Base Requirements

Increase the `PRCLM` quota to be high enough to run the maximum number of expected concurrent servers.

Java Requirements

The Java runtime environment was designed to perform optimally on UNIX systems, where each process is given large quotas by default. On OpenVMS, the default behavior gives each process lower quotas so that many processes can co-exist on a system. To get the best Java performance on OpenVMS, you are recommended to set process quotas to match a typical UNIX system. These are also the recommended minimum quota settings (except where noted).

These are the recommended J2SDK for OpenVMS quotas:

```
UAF Fillm               4096
Channelcnt              4096
Wsdef                   2048
Wsquota                 4096
Wsextent and Wsmax      16384
Pgfilquo                2097152*
bytlm                   400000
biolm                   150
diolm                   150
tqelm                   100
```

*A good number for `Pgflquo` is (2 x heap-size), for example, 128 MB (2*128*1024*1024)/512 = 524288. Recall that the recommended minimum `Pgflquo` is 96 MB when using the RTE. When you increase the `Pgflquo` parameter, you should always increase the system's page file size to accommodate the new `Pgflquo` parameter, if needed.

There are many other optimizations you can make to your Java environment to improve performance, such as setting the compacting garbage collector with the Fast VM.

```
–Xgc:compacting
```

This will benefit some but not all Java applications. All such optimizations should be tested in a systematic fashion. You can try out the techniques and tips available from the following source.

Guide to Optimizing Java on OpenVMS
http://h71000.www7.hp.com/ebusiness/OptimizingSDKGuide/OptimizingSDKGuide.html

J2EE – WebLogic Server Requirements

The WebLogic bea account should have the following additional minimum quotas:

```
UAF Fillm               4096
WSDEF                   8192
Wsquota                 16384
WSEXTENT                32768
Pgfilquo                2097152
bytlm                   400000
```

3.4 Running BridgeWorks on Windows

The BridgeWorks development tool is Windows-based.

1. Click the Windows Start button and click Programs.
2. Click the BridgeWorks icon in the HP BridgeWorks program folder.

Using Help
Context-sensitive and reference-based online Help is available from:

- **The HP BridgeWorks Program Folder**
  Click the BridgeWorks Help icon.
- **The BridgeWorks Development Tool**
  To get the Help Contents in the main BridgeWorks window, choose Help Topics from the Help menu. Press F1 for window-level Help.

  To search Help
  Click the Search tab, type one or more words, and click List Topics.

  To get What's This Help in the BridgeWorks Wizard or a dialog box
  Click the ? button once and click a control, or select a control and press F1.

  To get Topic Help inside the BridgeWorks Wizard or a dialog box
  Click the Help button.

  Using the Tutorials and Examples:
  In Help, open the Quick-Start Tutorials book in the Contents tree.

You'll find complete instructions for building your first JavaBeans, EJB, or COM connection, including simple clients. Supporting sample files, which are referenced in the tutorial, are included in the BridgeWorks installation kit.

Important: Disregard references to VAX as a platform for wrapping applications using BridgeWorks Version 3.0A.

Caution: Some published help topics are not fully updated or applicable to Version 3.0A. Please Refer to “Key Topics” (linked from the Help Welcome page) for the most important topics. Note: Accuracy of web links cannot be guaranteed.

To check for updated documentation
From Help, click About Help and click the “Check for Updated Documentation” link. (This opens a BridgeWorks web page from which you can download newer documentation than in the installation kit if it is available.)

4. Appendix

4.1 Sample FTP File Transfer

This is a representative example of command-line FTP from Windows to OpenVMS (with user input in angle brackets):

```
C:\>cd temp
C:\TEMP>ftp <your.server.name.com>
Connected to your.server.name.com.
220 your.server.name.com FTP Server (Version 5.0) Ready.
User (your.server.name.com:(none)): <user>
331 Username Yourname requires a Password
Password: <password>
230 User logged in.
ftp> binary
200 TYPE set to IMAGE.
ftp> <put HP BWX030A_ALPHA.EXE>
200 PORT command successful.
150 Opening data connection for disk:[user]BWX030A_ALPHA.EXE;
(16.28.0.58,4460)
226 Transfer complete.
335713 bytes sent in 0.40 seconds (837.19 Kbytes/sec)
ftp> <bye>
221 Goodbye.
C:\TEMP>
```

4.2 Sample OpenVMS Installation Log

This is a representative BridgeWorks installation log for OpenVMS Alpha.

Step 1: Extract the kit

```
$ RUN DKA0:[USER]BWX030A_ALPHA.EXE

              FTSV DCX auto-extractible compressed file for OpenVMS (AXP)
              FTSV V3.0 -- FTSV$DCX_AXP_AUTO_EXTRACT
              Copyright (c) Digital Equipment Corp. 1993

Options: [output_file_specification [input_file_specification]]

The decompressor  needs to know  the filename to use for the
decompressed file. If you don't specify any, it will use the
original name of the  file before it  was  compressed,  and
create  it  in  the  current  directory.  If  you  specify  a
directory name, the file will be created in that directory.

Decompress into (file specification):
        Opening and checking compressed file...
Decompressing (press Ctrl-T to watch the evolution)...
      Creating decompressed file...
      Original file specification: BWXODS5:[BWXBLD.AXP]BWX030A_ALPHA.EXE;1
     Decompressed file specification: SYS$SYSROOT:[SYSMGR]HP-AXPVMS-BRIDGEWO
 RKS-V0300-A-1.PCSI;1
```

Step 2: Run PCSI (POLYCenter Software Installation) utility

```
$ PRODUCT INSTALL BRIDGEWORKS

The following product has been selected:
    HP AXPVMS BRIDGEWORKS V3.0-A         Layered Product

Do you want to continue? [YES]

Configuration phase starting ...

You will be asked to choose options, if any, for each selected product and for
any products that may be installed to satisfy software dependency requirements.

HP AXPVMS BRIDGEWORKS V3.0-A: HP BridgeWorks

    Copyright(c) 2001, 2004 Hewlett-Packard Development Company, L.P.

Do you want the defaults for all options? [YES]

Do you want to review the options? [NO]

Execution phase starting ...

The following product will be installed to destination:
    HP AXPVMS BRIDGEWORKS V3.0-A         DISK$ALPHASYS:[VMS$COMMON.]

Portion done: 0%...10%...20%...30%...40%...50%...60%...70%...80%...90%...100%

The following product has been installed:
    HP AXPVMS BRIDGEWORKS V3.0-A         Layered Product

HP AXPVMS BRIDGEWORKS V3.0-A: HP BridgeWorks

    Insert the following lines in SYS$MANAGER:SYSTARTUP_VMS.COM:
        @sys$startup:bwx$startup.com
    Insert the following lines in SYS$MANAGER:SYSHUTDWN.COM:
        @sys$startup:bwx$shutdown.com
$
```

CONTACT AND SUPPORT INFORMATION

Standalone software support is available for HP BridgeWorks. For more information, contact your local HP support center at:

http://welcome.hp.com/country/us/en/contact_us.html

General Comments and Feedback

You may submit your technical suggestions and feedback to the BridgeWorks engineering team by sending mail to:

BridgeWorks@hp.com

Please do **not** use email for time-critical technical support questions, as response from the BridgeWorks engineering team is on a time-available basis only.

If you would like to provide comments or general feedback about the e-Business offerings on OpenVMS, please send mail to:

OpenVMS.eBusiness@hp.com

BridgeWorks Home Page

http://www.hp.com/go/bridgeworks/