



The Mainframe Software Partner For The Next 50 Years

Compuware Web Products Installation Guide

Includes Installation for:

Compuware Enterprise Services (CES)

Abend-AID Fault Analytics

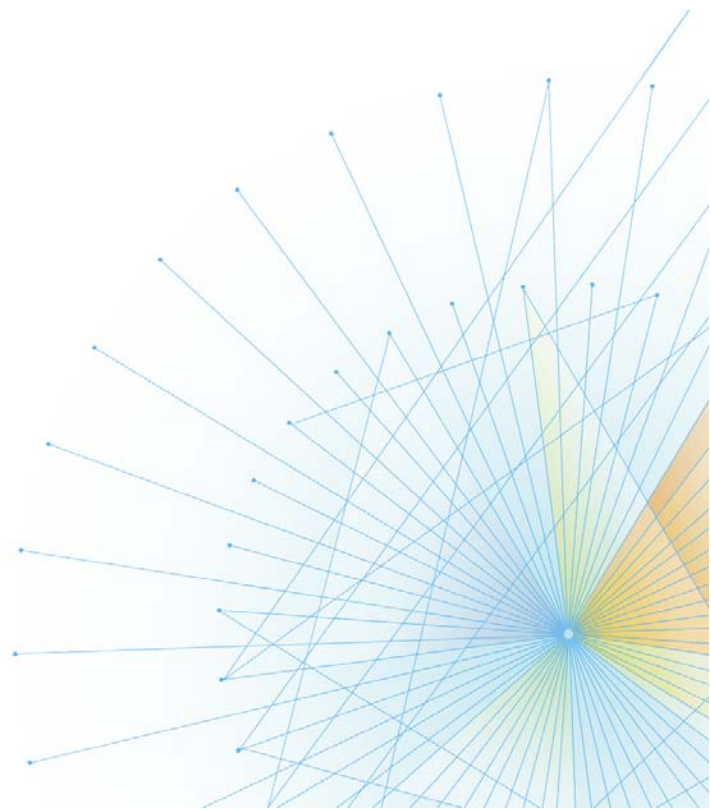
Application Audit

iStrobe

ISPW Web

Topaz for Java Performance

Release 18.02.02



Please direct questions about Compuware Web Products
or comments on this document to:

Compuware Customer Support

<https://go.compuware.com/>

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Introduction

This manual provides information about how to install, customize, and maintain Compuware Web Products.

Overview

This document is intended to guide you through installing, updating, and configuring Compuware Web Products.

Icons

The notation found in this guide includes:



A note or tip providing additional information.



Information important to remember.



Caution. Failure to follow these instructions can cause problems.

Roles.

Additional Resources

- Compuware Enterprise Services Help
- YouTube video references

Publications

To learn more about using Compuware Web Products:

- Refer to the online help within each of the products.
- Visit Compuware's FrontLine at <https://go.compuware.com> and select the web product for the latest technical information.

Customer Support

Compuware provides a variety of support resources to make it easy for you to find the information you need.

Compuware FrontLine Customer Support Website

You can access online information for Compuware products via our FrontLine customer support website at <https://go.compuware.com>.

Compuware FrontLine provides access to critical information about your Compuware products. You can review frequently asked questions, read or download documentation, access product fixes, or e-mail your questions or comments. The first time you access Compuware FrontLine, you are required to register and obtain a password. Registration is free.

Contacting Customer Support

Phone

- USA and Canada: 1-800-538-7822 or 1-313-227-5444.
- All other countries: Contact your local Compuware office. Contact information is available at <https://go.compuware.com>.

Web

You can report issues via the Quick Link **Create & View Support Cases** on the Compuware FrontLine home page.

Please report all high-priority issues by telephone.

Mail

Compuware Customer Support
Compuware Corporation
One Campus Martius
Detroit, MI 48226-5099

Corporate Website

To access Compuware's site on the Web, go to <http://www.compuware.com>.

The Compuware site provides a variety of product and support information.

Overview

The installation of Compuware Web Products now includes the option to install or upgrade any combination of Compuware Web Products. Compuware Web Products consist of the following:

Compuware Enterprise Services (CES) is a required web platform component providing common services for Compuware's web-based products and Topaz Workbench. From Compuware Enterprise Services, you can navigate between other installed Compuware web-based products such as:

- Abend-AID
- Abend-AID Fault Analytics
- Application Audit
- iStrobe
- ISPW
- Topaz for Java Performance

Installing Compuware Enterprise Services is required in order to install any of the other Compuware Web Products. In the case where cloud-based licensing has not been implemented, Compuware Enterprise Services would be required for plug-ins licensed through Topaz Workbench. It checks for valid LMS licensing through Compuware Enterprise Services' HCI Configuration as described in "Configuring Compuware Enterprise Services".

Abend-AID Fault Analytics detects application faults on mainframe systems and immediately notifies individuals or work groups when a failure occurs. Comprehensive web-based management reporting delivers valuable information on troublesome applications and trends. Fault Analytics provides the tools to continually monitor, measure, control, and improve application quality to achieve promised service levels.

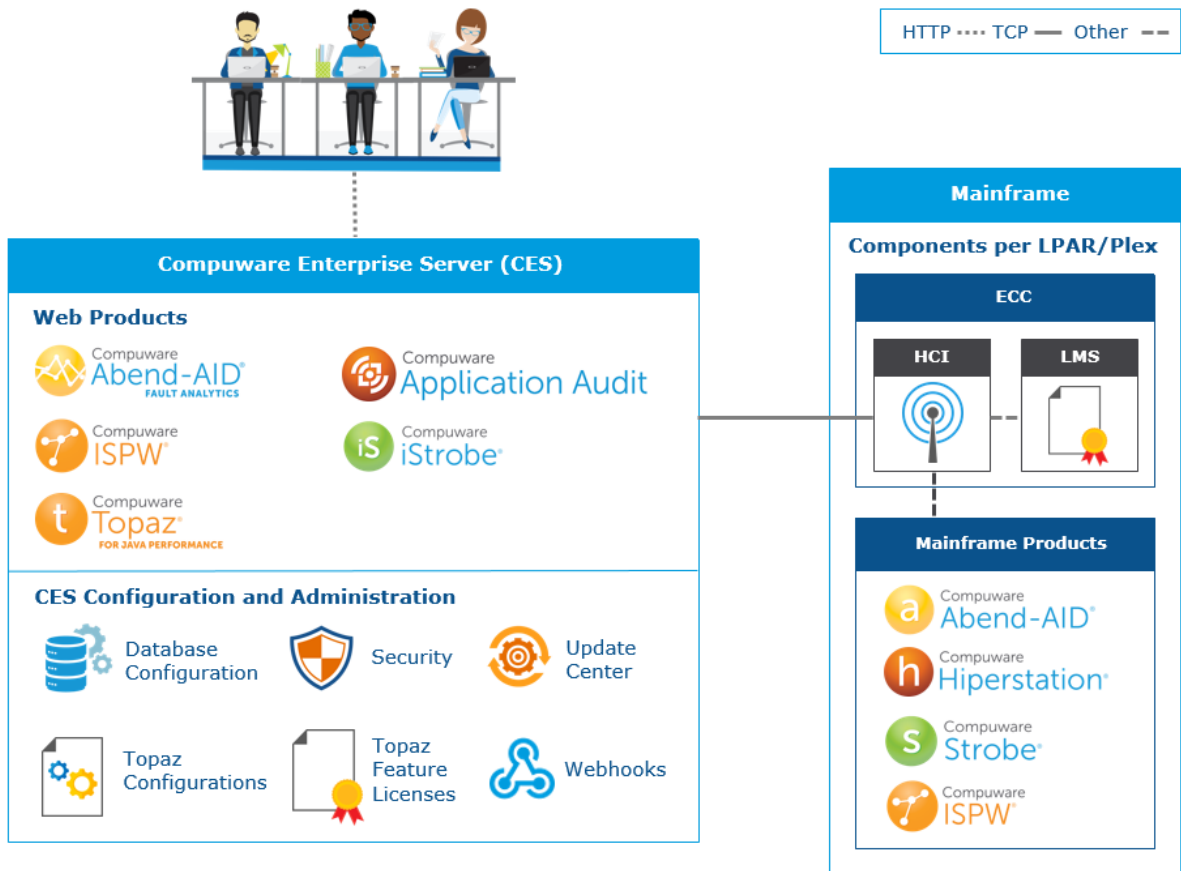
Application Audit allows you to record application activity for auditing purposes. With Application Audit, you can create search requests from which reports are created using data on the mainframe. Users and help desk personnel can access the reports and information they need from the mainframe in a format familiar to them.

iStrobe is an interactive tool for viewing and interpreting Strobe Performance Profiles. With analytical aids and a familiar interface, iStrobe guides you through the performance analysis process and offers recommendations for improving performance.

ISPW is a web-based application designed to be used on desktop web-browser and mobile devices. ISPW enables you to remotely approve or reject ISPW actions as well as deploy software to both mainframe and distributed environments.

Topaz for Java Performance (TJP) provides the information needed to tune a Java Virtual Machine (JVM) on z/OS. Sampling techniques that account for different environments program load characteristics focus on memory, threads, CPU, and class usage.

Product Architecture



Planning

This section provides planning information related to the installation or update of Compuware Web Products.

Process

1. Order the product
2. Review the system, database, and security requirements
3. Install and start CES (choose platform: Windows, z/OS UNIX, Linux)
4. Configure CES

Roles involved with this milestone:

- z/OS UNIX system administrator to install Compuware Web Products.
- Database administrator to create the database if not using Apache Derby. You no longer need to manually create tablespaces, but the database administrator needs the authority to create tablespaces as part of our database creation.
- MVS systems programmer to set up the Compuware Enterprise Services Manager on JZOS, depending on your site standards.
- Security Administrator.
- Single user to install or upgrade CES and all web products into CES. This allows CES and those installed web products to run with a single set of permissions.



If multiple users have already installed web products into an installed version of CES, then the permissions must be modified in the install directory of CES to grant both read and write permissions (755) to all users.

Roles

The following individuals may be required to complete the installation and configuration of Compuware Web Products. The roles of the individuals listed below are described in subsequent sections.

- Systems administrator
- Database administrator
- Network security administrator

System Requirements

All Compuware web products will be installed at the same release level. If your site uses a single CES instance for all Compuware web products, installing a new release of Compuware Enterprise Services will require a complete installation of each Compuware Web Product being used. To avoid having to

install and configure a new installation for each web product, your site could maintain multiple instances of Compuware Enterprise Services--one instance for each Compuware web product.

Compuware Web Products can be installed on any of the following three platforms:

Windows

- Compatible version of Java installed on the Windows machine.
 - 64-bit Oracle 1.7 or 1.8
- Identified path to the installed JRE if JAVA_HOME is not set as a system variable, or if the Java version required by CES is not the one set in the JAVA_HOME.
- Enough allocated system space during the installation:
 - Minimum required space: 1 GB
 - Recommended space: 3 GB
 - To use Update Center to upgrade Compuware Web Products, you will need at least 1GB of space for the data folder.
 - If you are hosting a Topaz Workbench p2repo, you will need at least 5GB of space for the data folder.

z/OS UNIX

- Compatible version of Java installed on the z/OS UNIX machine:
 - 64-bit IBM 1.7 or 1.8.
- 2 GB of Java memory needed to run CES.
- An appropriate user ID for running CES on z/OS UNIX. It is a long running process. Choose a user ID appropriate for this scenario.
- An OMVS or an SSH client.
- Enough allocated system space during the installation. When the installation is complete, the temporary installation files are removed.

Installed Space	Temporary Space	Total Space Required
1,125,000 of 1k blocks (1375 cylinders of HFS/zFS)	1,125,000 of 1k blocks (1375 cylinders of HFS/zFS)	2,250,000 of 1k blocks (2750 cylinders of HFS/zFS)

Note: Log files will also use this disk space and can consume it should there be numerous dumps.

Linux

- Compatible version of Java installed on the Linux machine:
 - 64-bit Oracle 1.7 or 1.8
- Identified path to the installed JRE if Java home is not set as a system variable.
- The installer should have “root” or “sudo” privileges.

- An appropriate user ID for running the CES daemon in a Linux environment. It is a long running process. Choose a user ID appropriate for this scenario.
- An SSH client.
- If you are performing an upgrade installation of Compuware Enterprise Services, be sure to stop the CES daemon *before* beginning the upgrade.
- Enough allocated system space during the installation. When the installation is complete, the temporary installation files are removed.

Installed Space	Temporary Space	Total Space Required
1.2 GB (1,125,000 of 1k blocks)	1.2 GB (1,125,000 of 1k blocks)	2.4 GB (2,250,000 of 1k blocks)

Database Configuration Planning

Compuware Enterprise Services installs with an Apache Derby database by default. Derby is a light-weight database and you may want to use a more robust DBMS for larger processing needs.

Compuware Enterprise Services can also use:

- z/OS DB2
- LUW DB2
- SQL Server
- Oracle

For further database configuration details, refer to Appendix B, “Compuware Enterprise Services Database Configuration” of this installation guide.

Port Numbers

Port Name	Default Port Number	Description
Strobe communication port	24354	Used to communicate between mainframe and client. This replaces the iStrobe Manager function that was previously used in iStrobe 5.x.
Web server port	48226	Used to access the web application via a browser.
Compuware Enterprise Services shutdown port	8465	Used to stop the web application.
Internal messaging port	17667	Used to provide additional processing capacity.
Derby port	1545	Used to start the embedded Derby database.
Abend-AID communication port (Fault Analytics only)	48301	Used to transmit messages.
Agent Communication port (Topaz for Java Performance only)	48128	Used to communicate between the mainframe agent and the server.

iStrobe

- A determined location for storing iStrobe Performance Profiles within Windows.
 - When storing Performance Profiles locally on the machine where you have installed iStrobe, you may use the “local system”. This is usually the case for a standalone workstation install.
 - When storing Performance Profiles on a file server, you need a domain ID with authority to run the CES service. The permissions on the Profile Directory must include create, read, update, and delete.
- Compuware Enterprise Services data storage requirements vary from 300k to 50MB per iStrobe profile, depending on the iStrobe measurement taken. Processor usage also varies, depending on the number of users and their use.



For iStrobe, you must export any user-defined help that was created before beginning the upgrade. Any user-defined help that is not exported is lost. After exporting the help and completing the upgrade, you must then import the user-defined help.

Security Planning (as of 18.02.01)

Compuware Enterprise Services provides the ability to secure access to the Compuware Web Products. With security enabled, authenticated users have access to products and administrative functions based on the roles and groups to which they are assigned. By default, security is not enabled.

Security options include the following:

- Internal
- LDAP
- Client certificate
- Kerberos

Best Practices

- Use HTTPS. This is the only way to ensure secure network traffic.
- Disable HTTP in the CES web server settings.
- Enable LDAP, Kerberos, or client certificates to provide product-level authentication.
- When using client certificates, you must also use HTTPS
- Principle of Least Privilege - enable user groups and provide access to only the minimum set of features required for a person to do their job.
- Secure HCI communication with TLS.
- On z/OS or Linux, run CES with a user dedicated to this purpose. This user should own the directories CES installs to. Consider restricting file permissions to this directory for other users as much as possible.
- Restrict access to the database used by CES.

Installing Compuware Web Products on Windows

This chapter guides you through the process for installing Compuware Web Products (Compuware Enterprise Services, Abend-AID Fault Analytics, Application Audit, iStrobe, ISPW Web, and Topaz for Java Performance) on Windows.

Roles are involved with this milestone:



- Windows server administrator to install Compuware Web Products for departmental or corporate use. End-users with administration authority on their workstations can do a standalone workstation installation for their own use.
- A single user to install or upgrade CES and all web products into CES. This allows CES and those installed web products to run with a single set of permissions.

Planning

Before beginning the installation, you should verify the following:

- JAVA is installed
- Space requirements
- Database is created
- Permissions are correct
- Ports are open

Installation

1. Click the **Compuware Web Products** tab from the product image.
Ex. <network or hard drive>:\Disk1\setup.exe
2. Click **Install Compuware Web Products for Windows**.
The Compuware Web Products Introduction page appears.
3. Read the introduction content, and then click **Next** to proceed. The **License Agreement** page appears.
4. Accept the terms of the License Agreement and click **Next**. The **Oracle License Agreement** page appears.
5. Accept the terms of the Oracle Technology Network Development and Distribution License Agreement and click **Next**. The **Select Instance** page appears.
6. From the **Select Instance** page you can either upgrade an existing Compuware Enterprise Services instance or create a new instance.

Select the **New CES Instance** checkbox and in the active field, type an instance name to use for the new instance of Compuware Enterprise Services. Choose an instance name that is different

than any of the previously installed instance names to distinguish it. That which you enter here will be appended to the string “Compuware Enterprise Services\$” and be used as the servicename parameter value in the CES_service.ini file. For example:

```
servicename = Compuware Enterprise Services$my_instance_name
```

7. Click **Next**. The **Select Products to Install** page appears.
8. Select the Compuware web products to be installed along with Compuware Enterprise Services. Click **Next**. The **Choose Install Folder** page appears.
9. Specify an installation folder or accept the default installation folder for Compuware Enterprise Services (C:\Program Files\Compuware\CES).
 - Select **Restore Default** to use the default folder (C:\Program Files\Compuware\CES).
 - Select **Choose...** to specify a folder. The **Browse for Folder** dialog box appears to navigate to a desired folder.
 - Enter a path.

Click **Next**. The **Compuware Web Products** page appears.

10. Compuware Enterprise Services stores log and configuration data in a specific directory. Click **Choose...** to specify a folder path or click **Next** to accept the displayed location (default: C:\ProgramData\Compuware\CES\data).



The **ProgramData** folder is a hidden folder in MS Windows.

11. Specify the port settings that Compuware Enterprise Services will use to access Compuware technology and click **Next**. Be sure that the ports you choose are open on your network's firewall.

Port Name	Port Number (by default)
Strobe Communication port	24354
Web Server port	48226
Compuware Enterprise Services shutdown port	8465
Internal Messaging port	17667
Derby port	1545

12. (*Fault Analytics only*) **Abend-AID communication port** (default: 48301) Click **Next**.
13. (*iStrobe only*) iStrobe stores measurement data in profiles. When a profile cannot be read, it goes to a different location referred to as Quarantine. Specify the locations for your Profile and Quarantine directories.
 - **Profile folder** (default: C:\ProgramData\Compuware\CES\data\istrobe/profile) Used to store measurement data in profiles.
 - **Quarantine folder** (default: C:\ProgramData\Compuware\CES\data\istrobe/quarantine) Used to store profiles that cannot be read.

Click **Next**.

14. (*Topaz for Java Performance only*) **Agent communication port** (default: 48128) Topaz for Java Performance requires a port for communication between the mainframe agent and server. Click **Next**.
15. Review the Pre-installation summary information. If anything is incorrect, click **Previous** and make revisions to the installation settings as necessary. If it is correct, click **Install** to start the

Compuware Enterprise Services installation. The **Install Complete** page appears when the installation finishes.



Before exiting the installer, use the URL provided in the installer completion page to visit the Compuware Enterprise Services page in a browser and create a bookmark for quick access. Once the CES service is started, initialization may take several minutes. You may see a 404 page in your web browser during this time.

16. Click **Done**.
17. The Compuware Enterprise Services installation process is complete. Although the installation is complete, you must still configure Compuware Enterprise Services. Continue with “Configuring Compuware Enterprise Services”.

Installing Compuware Web Products on z/OS UNIX

This chapter guides you through the process for installing Compuware Web Products (Compuware Enterprise Services, Abend-AID Fault Analytics, Application Audit, iStrobe, ISPW Web, and Topaz for Java Performance) on z/OS UNIX.

Roles involved with this milestone:

- z/OS UNIX system administrator to install Compuware Web Products.
- Database administrator to create the database if not using Apache Derby. You no longer need to manually create tablespaces, but the database administrator needs the authority to create tablespaces as part of our database creation.
- MVS systems programmer to set up the Compuware Enterprise Services Manager on JZOS, depending on your site standards.
- Security Administrator.
- Single user to install or upgrade CES and all web products into CES. This allows CES and those installed web products to run with a single set of permissions.



If multiple users have already installed web products into an installed version of CES, then the permissions must be modified in the install directory of CES to grant both read and write permissions (755) to all users.

Planning

Before beginning the installation, you should verify the following:

- JAVA is installed
- Space requirements
- Database is created
- Permissions are correct
- Ports are open

Installation

1. Click the **Compuware Web Products** tab from the product image. for example, `<network or hard drive>:\Disk1\setup.exe`
2. Click **Install Compuware Web Products for z/OS UNIX**. The **Mainframe FTP Information** tab appears.
3. Specify a valid **Host**, **User ID**, **Password**, **Port** number (default = 21), and finally an existing **z/OS UNIX Path** in which to upload the `install.jar` and `install.sh` files from the Compuware Enterprise Services product image to the mainframe. The `install.jar` and the `install.sh` are both uploaded as binary.

Note: The `install.sh` has Windows line endings. If you are manually uploading from Linux, you will need to run `dos2unix` on `install.sh` before uploading as binary.

4. Click **Upload files to mainframe** to begin the upload.
5. Log on to the mainframe and navigate to an OMVS command prompt, or use any SSH client.



For 64-bit JAVA, you may need to specify the region size by logging on with:
`logon <username> size(<desired region size>).`

6. Change the directory to the location where the `install.jar` and the `install.sh` files were transferred. For example:

```
cd <directory containing the uploaded install.jar and install.sh files>
```

7. Be sure that the `install.sh` file has execute authority and execute it. Perform a `chmod 755` to open up permissions, if necessary.
8. Execute the **install.sh** file. For example:

```
./install.sh
```

Some systems may require that you increase the JAVA HEAP size before running the installer. For example:

```
_JAVA_OPTIONS=-Xmx512M
```

The Compuware Enterprise Services installer starts.



- You can cancel the installation at any time by typing **quit**.
- You can go back in the installation panels at any time by typing **back**.

9. Enter the directory path to a supported installation of JAVA (64-bit Java 1.7 or Java 1.8). For example:

```
usr/lpp/java/J8.0_64.b1d041715
```

Note: If a valid version of JAVA is found, it may automatically be used, thereby skipping this step.

10. Specify Y (Yes) or N (No) for using the system's `/tmp` directory as the installation temporary space. If N, the installation launches. If Y, then you are prompted to enter an absolute directory path to a designated temporary directory space. Press **Enter**.



The installer requires use of the system temporary directory and may require up to 1,125,000 1k blocks (1375 cylinders) of pre-allocated space.

11. The Installer launches. Read the Introduction panel and press **Enter**. The **License Agreement** panel appears.
12. Read the Compuware Web Products license agreement. When prompted, type Y and press **Enter** to accept the terms of the license agreement. The **Oracle License Agreement** panel appears.
13. Read the Oracle Technology Network Development and Distribution License Agreement. When prompted, type Y and press **Enter** to accept the terms of the license agreement. The **Compuware Web Products** panel appears.
14. Choose products. Press **Enter**. The **Choose Install Folder** panel appears.

15. Specify the absolute directory path in which to install Compuware Enterprise Services, or press **Enter** to accept the default location (Default: `/opt/Compuware/CES`). The **Select Products to install** panel appears.



- If you choose an alternate installation directory instead of the default, the directory (and any parent directories) will be created with privileges of 775. To use Compuware Enterprise Services following installation, be sure that the Compuware Enterprise Services job has write permission to the CES directory created by the installation.
- The installer requires use of up to 1,125,000 USS 1k blocks (1375 cylinders HFS/zFS) of pre-allocated space to install properly. You may be prompted to create free space in the specified directory in order to continue with the installation.

16. Select the Compuware web products to be installed along with Compuware Enterprise Services by entering a comma delimited numbered list corresponding to the products and press **Enter**.
17. Confirm your selection. If you would like to make changes to your selection, type `Back`. Otherwise, press **Enter**.
18. Compuware Enterprise Services stores log and configuration data in the `/data` directory under the installation directory specified in step 15. Press **Enter** to accept the default location (`<installation_directory>/data`) or specify the absolute path to another location.
19. Specify `Y` (Yes) or `N` (No) whether you want to modify the default port numbers. Be sure that the ports you choose are open on your network's firewall.

Port Name	Port Number (by default)
Strobe Communication port	24354
Web Server port	48226
Internal Messaging port	17667
Derby port	1545

20. (*Fault Analytics only*) **Abend-AID communication port** (default: 48301) Used to transmit messages. Specify a port number between 1024 and 65535. Press **Enter**.
21. (*iStrobe only*) **Profile directory** (default: `<installation_directory>/data/istrobe/profiles`) Used to store measurement data in profiles. Specify the absolute directory path for the Profile directory. Press **Enter**.
22. (*iStrobe only*) **Quarantine directory** (default: `<installation_directory>/data/istrobe/quarantine`) Used to store profiles that cannot be read. Specify the absolute directory path for the Profile directory. Press **Enter**.
23. (*Topaz for Java Performance only*) **Agent communication port** (default: 48128). Topaz for Java Performance requires a port for communication between the mainframe agent and server. Specify a port on which to listen for this communication, or press **Enter** to accept the default.
24. Review installation information you selected in the **Pre-installation Summary** panel. If anything is incorrect, type `Back` and revise the installation settings as necessary. If the information is correct, press **Enter** to start the Compuware Enterprise Services installation. The **Installation Complete** panel appears when the installation finishes.



Before exiting the installer, copy the URL provided in the installer completion page and create a bookmark for quick access. Once the CES service is started, initialization may take several minutes. You may see a 404 page in your web browser during this time.



After exiting the installer, a script, `copyFilesToDataSet.sh`, will execute. It will allocate a PDS and copy several JCL files into members of a PDS on your z/OS system. In case it fails, you can re-run it after correcting the errors by issuing the following command: `./copyFileToDataSet.sh`.

25. The Compuware Enterprise Services installation process is complete. Continue with the next section, “Preparing to Start Compuware Enterprise Services”. After starting Compuware Enterprise Services, you must still configure CES. Refer to “Configuring Compuware Enterprise Services”.

Preparing to Start Compuware Enterprise Services

1. The `copyFilestoDataSet.sh` above will copy the following files from the CES installation directory on z/OS UNIX to MVS:

- CESAMN.PARMLIB
- CESEMN.PARMLIB
 - Added `_BPX_BATCH_SPAWN` and `_BPX_SHAREAS` variables to the CESEMN parmlib member to control how child processes are spawned.
- CESBATCH.JCL
- CESTASK.JCL
- JZOSPROC.JCL

The files that end with PARMLIB are input parameter files used to start the appropriate Compuware Enterprise Services Manager service. These can be shortened to CESxxx member names. The files that are qualified as JCL are the PROC and JOB samples for executing on the z/OS system; these can be shortened by removing the .JCL qualifier.

- CESEMN
 - `BPX_BATCH_SPAWN` and `_BPX_SHAREAS` variables can be configured to control how child processes are spawned.
 - `BPX_BATCH_SPAWN` - causes BPXBATCH to use spawn instead of fork/exec and allows data definitions to be carried over into the spawned process.
 - `BPX_SHAREAS` - allows the child process created by the spawn to run in the same address space as the parent.



When upgrading JAVA or DB2 on z/OS after CES has been installed, the `JAVA_HOME` variable in the CESEMN member may need to be modified.

- CESBATCH - used to run Compuware Web Products as a batch job.
 - Change the job card to match your system requirements.
 - `ARGS=CESAMN` is set by default to start the Compuware Enterprise Services Manager.
 - Change the HLQ1 and HLQ2 to match the first 2 nodes of the CESBATCH member (e.g. `CPWR.CES.CNTL(CESBATCH)...HLQ1=CPWR, HLQ2=CES`)

```
000001 //SAMPLE01 JOB ('ACCOUNT',78,1,1),'CES WEB APP SERVER',
000002 //          CLASS=L,MSGCLASS=H,NOTIFY=&SYSUID,REGION=0M,JOBRC=LASTRC
000003 //*****
000004 //*   Use CESEMN for the env member for all uses
000005 //*   Use ARGS="CESAMN" to run CES Web Application
000006 //*****
000007 //          SET QUAL='HLQ1.HLQ2'          < PARMLIB HI-LEVEL QUALIFIER
000008 //* Note: If running CES as a batch job from a dataset which is not
000009 //* part of the default JCLLIB, uncomment and update the
000010 //* JCLLIB statement below
000011 //*PROCLIB JCLLIB ORDER=HLQ1.HLQ2.CNTL
000012 //CESSVR EXEC JZOSPROC,ENV=CESEMN,ARGS=CESAMN
```

```

000013 /*
000014 /* Following step automatically restarts if we get an rc=3 since
000015 /* Since when applying a patch we shut down with RC=3 so the job
000016 /* knows we need to start CES due to it being shutdown as part
000017 /* of the upgrade process
000018 //RESTART EXEC PGM=IEBGENER,COND=(3,NE)
000019 //SYSUT1 DD DSN=&QUAL..CNTL(CESBATCH),DISP=SHR
000020 //SYSUT2 DD SYSOUT=(,INTRDR)
000021 //SYSPRINT DD SYSOUT=*
000022 //SYSIN DD DUMMY

```

- As shown in the JCL (CESBATCH) above, you can insert a JCLLIB statement if you want to invoke the JZOSPROC from the CPWR.CES.Tnnnnnn.CNTL dataset.

For example:

```
// JCLLIB ORDER=(<USER>.CPWR.CES.Tnnnnnn.CNTL)
```

– **CESTASK** - used to run Compuware Web Products as a start task.

- Change the job card to match your system requirements.
- ARG=CESAMN is set by default to start the Compuware Enterprise Services Manager.
- Change the HLQ1 and HLQ2 to match the first 2 nodes of the CESBATCH member (e.g. CPWR.CES.Tnnnnnn.CNTL(CESTASK)...HLQ1=CPWR, HLQ2=CES)

```

000001 /* Example JCL to run CES as a started task
000002 /* Note use your site's auto opts program to start this started
000003 /* task if it exits with return code 3. When CES requires
000004 /* a restart it will exit with a return code 3. Anything above
000005 /* a return code 3 is an unexpected error.
000006 /* Use CESEMN for the env member for all uses
000007 /* Use ARG="CESAMN" to run CES Web Application
000008 //*****
000009 //JLAUNCH PROC VERSION=76,
000010 //          QUAL='HLQ1.HLQ2',          < PARMLIB HI-LEVEL QUALIFIER
000011 //          ENV=CESEMN,                < CES ENVIRONMENT INPUT
000012 //          ARG=CESAMN,                < CES STARTUP MAIN CLASS
000013 //          REGSIZE='0M',              < EXECUTION REGION SIZE
000014 //          LOGLVL='+I',                < Debug LVL: +I(info) +T(trc)
000015 //          LE Parm='ENVAR(_EDC_UMASK_DFLT=000)'
000016 //JZOS EXEC PGM=JVMLDM&VERSION,REGION=&REGSIZE,
000017 //          PARM='&LE Parm/&LOGLVL'
000018 //SYSPRINT DD SYSOUT=*                < System stdout
000019 //SYSOUT DD SYSOUT=*                  < System stderr
000020 //STDOUT DD SYSOUT=*                  < Java System.out
000021 //STDERR DD SYSOUT=*                  < Java System.err
000022 //STDENV DD DISP=SHR,DSN=&QUAL..CNTL(&ENV)
000023 //MAINARGS DD DISP=SHR,DSN=&QUAL..CNTL(&ARGS)
000024 // PEND

```



Applicable to both **CESBATCH** and **CESTASK**:

The jobname of the parent is propagated to the child and appended with a numeric value in the range of 1-9, if the jobname is 7 characters or less. If the jobname is 8 characters, the jobname is propagated as is. When a jobname is appended with a numeric value, the count wraps back to 1 when it exceeds 9.

Security must be accounted for when using less than eight characters for TCP/IP port transmissions. This is used for the SMF Manager port and any processes for asynchronous profile processing.

Starting Compuware Enterprise Services as a Batch Job

Start Compuware Enterprise Services using one of the following methods:

- **Batch Method**--Submit the JCL from member CESBATCH
- **Started Task Method**--Start the system task (CESTASK - described below), to start CES.



Compuware Enterprise Services must be restarted after applying maintenance. The Compuware Enterprise Services web server will exit with a return code 3. You should configure the CES started task to restart when it gets a return code 3 using your site's standards.

Starting Compuware Enterprise Services as a Started Task

You can, optionally, set up CES to execute as a started task on your z/OS system by adding the start command to the SYS1.PARMLIB(COMMNDxx) member. Your installation may require special security authorizations for the started task to execute. You can also rename the PROC at your discretion so that the long-running task is identifiable as the CES Manager (for example: CESTASK) or to match your systems standards.



The started task userid *must* have access to the CES files and directories. You may encounter errors when starting CES if the userid does not have such authority. Compuware therefore recommends changing all the CES directories and files to be owned by the started task userid.

Execute the following change owner command from a USS command prompt such as OMVS.

```
cd <top-level-CES-install-directory>
chown -R <started-task-userid> *
```

In this setup, you would only have to start the CES Manager the first time with a z/OS console command:

```
START JZOSPROC
```

or

```
START CESTASK
```

For stopping the CES Manager, you can cleanly terminate it by using the following console command:

```
STOP JZOSPROC
```

or

```
STOP CESTASK
```

The started task userid must have access to the CES files and directories. You may encounter errors when starting CES if the userid does not have such authority. Compuware therefore recommends

changing all the CES directories and files to be owned by the started task userid.

Execute the following change owner command from a USS command prompt such as OMVS.

```
cd <top-level-CES-install-directory>
chown -R <started-task-userid> *
```

Additional (Optional) Parameters

Changing the following parameters is optional.

Changing the Time Zone for Compuware Enterprise Services

The member name CESEMN defines the Time Zone variable.

For example:

```
TZ = EST5EDT
- EST is Eastern Standard Time
- Standard Time is 5 hours west of the universal reference time
- EDT is Eastern Daylight Savings Time
```

For more information on setting time zones in Compuware Enterprise Services, refer to IBM's z/OS Information Center on the Web.

Modifying Java Heap Size for Compuware Enterprise Services

The member name CESEMN defines the startup options. The CES Server is configured with an initial heap size of 256 MB (java option = '-Xms256M') and a maximum heap size of 1536 MB (java option = '-Xmx1536m').

To modify these parameters:

1. Stop the CES Server.
2. Locate the following two lines in member CESEMN.

```
# INSTALLER: Sets java heap allocation if more becomes necessary
DEFS="-Xms256m"
```

3. Make the appropriate changes to the heap size.
4. Restart CES.

Modifying Compuware Enterprise Services to Accommodate PassTicket

This member defines the APPLID and the user ID for PassTicket.

To add these parameters:

1. Stop the CES Server.
2. Locate the following line in member CESEMN.

```
#--REQUIRED-- custom CES definitions for the runtime environment
```

3. Add the following lines after the line identified above.

The following line is **required**:

```
DEFS="$DEFS -Dces.passticket.db2.applid=<PassTicket application id>"
```

The following line is **optional**. If not specified, it defaults to the value of the system property "user.name":

```
DEFS="$DEFS -Dces.passticket.db2.userid=<PassTicket user id>"
```

4. Restart CES.

For more information on setting up PassTickets, refer to the following two IBM specific documents:

- “Defining Profiles in the PTKTDATA Class” in the IBM manual *z/OS V1R12.0 Security Server RACF Security Administrator's Guide*
- “R_ticketerv (IRRSPK00): Parse or extract” in the IBM manual *z/OS V2R1.0 Security Server RACF Callable Services*

Installing Compuware Web Products on Linux

This chapter guides you through the process for installing Compuware Web Products (Compuware Enterprise Services, Abend-AID Fault Analytics, Application Audit, iStrobe, ISPW Web, and Topaz for Java Performance) on Linux.

Roles Involved

The following individuals are involved with this milestone:

- A Linux system administrator to install Compuware Web Products.
- A single user to install or upgrade CES and all web products into CES. This allows CES and those installed web products to run with a single set of permissions.

If multiple users have already installed web products into an installed version of CES, then the permissions must be modified in the install directory of CES to grant read & write permissions to all users.

To change the permissions for the CES install directory, execute the following command:

```
chmod -R 755 /<path to CES>
```

For example, if CES is installed in /opt/cpwr/ces, then you would execute this command:

```
chmod -R 755 /opt/cpwr/ces
```

Planning

Before beginning the installation, you should verify the following:

- JAVA is installed
- Space requirements
- Database is created
- Permissions are correct
- Ports are open

systemd

- systemd is an "init system" and is the supported system on newer Enterprise Linux distributions.
- CES supports SUSE and RHEL which, in versions 12+ and 7.2+ respectively, use systemd.
- This service can be managed as mentioned above (like any other systemd service).
- This service can be uninstalled by removing the script and running "systemctl daemon-reload" again.

Installation

1. Click the **Compuware Web Products** tab from the product image.
Ex. <network or hard drive>:\Disk1\setup.exe
2. Click **Install Compuware Web Products for Linux**. The **Linux FTP Information** tab appears.
3. Specify a valid **Host**, **User ID/Password**, **Port** number (default = 21), and finally an existing Linux path in which to upload the `install.bin` file from the Compuware Enterprise Services product image to the mainframe.
4. Click **Upload files** to begin the upload.
5. Be sure that the `install.bin` file has execute authority. Perform a `chmod 755` to open up permissions if necessary. This file is located at `Disk1\InstData\NoVM`.
6. Execute the following commands:

```

JAVA_HOME=/<path to JRE>

PATH=$JAVA_HOME/bin:$PATH

./install.bin

```

The Compuware Enterprise Services installer starts.



- You can cancel the installation at any time by typing **quit**.
- You can go back in the installation panels at any time by typing **back**.

7. After reading the Introduction panel, press **Enter**. The **License Agreement** panel appears.
8. Read the Compuware Web Products license agreement, pressing **Enter** until you have scrolled through and read the entire agreement. When prompted, type `Y` and press **Enter** to accept the terms of the license agreement. The **Oracle License Agreement** panel appears.
9. Read the Oracle Technology Network Development and Distribution License Agreement, continuing to press **Enter** until you have scrolled through and read the entire agreement.
10. Again, type `Y` and press **Enter** to accept the terms of the license agreement. The **Compuware Web Products** panel appears.
11. Specify the absolute directory path in which to install Compuware Enterprise Services, or press **Enter** to accept the default location (Default: `/opt/Compuware/CES`).



- If you choose an alternate installation directory instead of the default, the directory (and any parent directories) will be created with privileges of 775. To use Compuware Enterprise Services following installation, be sure that the Compuware Enterprise Services job has write permission to the CES directory created by the installation.
- The installer requires use of up to 1.2 GB (or 1,125,000 1k blocks of pre-allocated space) to install properly. You may be prompted to create free space in the specified directory in order to continue with the installation.

12. Select the Compuware web products to be installed along with Compuware Enterprise Services by entering a comma delimited numbered list corresponding to the products and press **Enter**.
13. Confirm your selection. If you would like to make changes to your selection, type `Back`. Otherwise, press **Enter**.
14. Compuware Enterprise Services stores log and configuration data in the `/data` directory under the installation directory specified in step 11. Press **Enter** to accept the default location (`<Installation_directory>/data`) or specify the absolute path to another location.

15. Specify an Instance Name for the CES Service. This is used to distinguish between different versions that can run on your system. The name entered here will be appended to 'cpwreenterpriseservices' as the daemon name.

Ex. cpwreenterpriseservices_CES_18.2

16. Specify the user ID needed to install and run the CES daemon (Default: root).
17. Specify Y (Yes) or N (No) whether you want to modify the default port numbers. Be sure that the ports you choose are open on your network's firewall.

Port Name	Port Number (by default)
Strobe Communication port	24354
Web Server port	48226
Web Application Stop port	8465
Internal Messaging port	17667
Derby port	1545

18. (*Fault Analytics only*) **Abend-AID communication port** (default: 48301) Used to transmit messages. Specify a port number between 1024 and 65535. Press **Enter**.
19. (*iStrobe only*) **Profile directory** (default: <installation_directory>/data/istrobe/profiles) Used to store measurement data in profiles. Specify the absolute directory path for the Profile directory. Press **Enter**.
20. (*iStrobe only*) **Quarantine directory** (default: <installation_directory>/data/istrobe/quarantine) Used to store profiles that cannot be read. Specify the absolute directory path for the Profile directory. Press **Enter**.
21. (*Topaz for Java Performance only*) **Agent communication port** (default: 48128). Topaz for Java Performance requires a port for communication between the mainframe agent and server. Enter the port on which to listen for this communication, or press **Enter** to accept the default.
22. Review installation information you selected in the **Pre-installation summary** panel. If anything is incorrect, type **Back** and revise the installation settings as necessary. If the information is correct, press **Enter** to start the Compuware Web Products installation. The **Installation Complete** panel appears when the installation finishes.



Before exiting the installer, use the URL provided in the installer completion page to visit the Compuware Enterprise Services page in a browser and create a bookmark for quick access. Once the CES service is started, initialization may take several minutes. You may see a 404 page in your web browser during this time.

23. The Compuware Enterprise Services installation process is complete. Although the installation is complete, you must still configure Compuware Enterprise Services. Continue with "Configuring Compuware Enterprise Services".

Starting Compuware Enterprise Services on Linux

To start Compuware Enterprise Services on Linux, execute the following:

Service script:

```
<path to ces install>/excecs.sh start
```

SYSTEM D

A legacy service script is created during the installation in `/etc/init.d` that systemd converts to a systemd service definition file, either on restart or with a call to "systemctl daemon-reload".

Upgrading Compuware Enterprise Services

This guides you through the process for upgrading Compuware Enterprise Services (Compuware Enterprise Services, Abend-AID Fault Analytics, Application Audit, iStrobe, ISPW Web, and Topaz for Java Performance).

As of CES 17.2.1, the p2repo maintenance file is available for upgrading CES and installed products.

Roles Involved

The following individuals are involved with this milestone:

- Systems administrator and possibly a database administrator.
- Security administrator if security is enabled.

Planning

Before beginning the upgrade, you should have the following:

- For your environment, you should use the same space allocations as identified in the Planning chapter of this installation guide.
- When upgrading CES using "Update Center" (17.2.3 and higher), the CES data folder must be at least 1 GB to accommodate the CES p2repo maintenance file. The file will be deleted once the upgrade is complete.



For 18.2.1 or later, security settings that were enabled for iStrobe in the prior release will now be used to access Compuware Enterprise Services after the upgrade. For example, if LDAP security was enabled for iStrobe 17.2.0, the LDAP ID/PW will be required to access Compuware Enterprise Services. All security will now be handled through Compuware Enterprise Services.

Adding New Web Products to an Existing CES Installation

New Compuware web products can only be added through a product install, not through a maintenance file.

Upgrading from CES 5.x

- Compuware Enterprise Services 16.3, 17.x, and 18.x cannot be installed over an existing CES 5.x release. A new install of these product versions is required.
- The following data will be lost after migrating Strobe Performance Profiles:
 - Any note or tag (created in iStrobe) associated with a particular profile will be lost.
 - Past user folder information will be lost. Synchronized profiles will go to the iStrobe folder.
 - Any user configured settings under general configuration page will be lost.

- Any saved measurements record or measurement groups record will not be there.
 - iStrobe old SMF data will be lost. So, in the new database it needs to be loaded from the beginning.
 - Schedule settings for Profile Autodelete or SMF Data Management will be lost.
 - SMF Archive Database Configuration needs to be redone.
 - Usage statistics data will be lost.
 - Security configurations—including users, roles, and groups—must be reconfigured as they are now managed by CES.
- A CES 5.x database upgrade path is available once the newer CES is installed.
 - a. Upon opening the newly installed CES in a browser, you can navigate to the **CES Administration > Database** screen.
 - b. Enter the CES 5.x database information.
 - c. Click **Test Connection** and **Apply**.
 - d. Click **OK** to upgrade the database.
 - (*iStrobe only*) If you want to retain profiles created, you can manually migrate them as follows:
 - a. Make a backup of all profiles within the profile directory of the existing install (Default: <iStrobe install directory>/samples).
 - b. After installing, move the backed-up profiles into the profile directory specified during the install (Default: <CES install directory>/data/istrobe/profiles).
 - c. Within iStrobe, navigate to **iStrobe Administration > General Configuration** and click **Synchronize** to process the profiles into the 18.2 install.

Compuware Enterprise Services has been upgraded and is ready to use.

Upgrading from CES 16.x or 17.2.0

If you are performing an upgrade installation of Compuware Enterprise Services on z/OS UNIX, be sure to stop the CES service before beginning the upgrade.

- a. From the Compuware Enterprise Services (current version) media image downloaded from an RFN order or from the Enterprise Common Components (ECC) EP media, select **Install CES for Windows**, and click **Start Install**.
- b. Read the introduction content and License Agreements and click **Next** for each to proceed.
- c. Select an existing Compuware Enterprise Services instance to upgrade (e.g. CES_16.3.4.485).
- d. The Compuware Enterprise Services Instance name can be changed (optional- Windows only).
- e. If you select new products to install, you will be prompted to configure the new products. Products already installed will be upgraded.
- f. Click **Install** to begin the upgrade.



After exiting the installer, a script—**copyFilestoDataSet.sh**—will execute. It will allocate a PDS and copy several JCL files into members of a PDS on your z/OS system. In case it fails, you can rerun it after correcting the errors by issuing the following command: **./copyFilestoDataSet.sh**.

z/OS UNIX - After upgrading from Compuware Enterprise Services 16.x, the CESBATCH or CESTASK JCL members in MVS need to be modified before starting the upgraded CES. CESBATCH or CESTASK - Add SET QUAL parameter and RESTART step. Refer to “Preparing to Start Compuware Enterprise Services” in the section for installing on z/OS UNIX.

- g. After a successful upgrade, start the CES service and open Compuware Enterprise Services in a browser. You will be prompted to upgrade your database.
- h. Click the Database Configuration page link:
 - Click **Test Connection** and **Apply**.
 - Click **OK** to upgrade your database.
- i. If security was previously enabled, you will be prompted to verify and apply your security settings.
- j. (*iStrobe only*) Profiles, notes, tags, folders and any other configuration settings should now be found in the upgraded release.

Compuware Enterprise Services has been upgraded and is ready to use.

Upgrading from CES 17.2.1 or 17.2.2

This upgrade can be accomplished through either a product install or a maintenance file.

- a. Obtain a Compuware Enterprise Services Maintenance file (e.g. from Frontline) to an accessible location.
- b. Open Compuware Enterprise Services 17.2.1 or 17.2.2 and navigate to the Compuware Enterprise Services Administration > Maintenance page.
- c. Under the Web Products section, browse to the location of the CES p2Repo and click upload.
- d. Details of the maintenance file are displayed. To upgrade, click **Apply**.
- e. After a successful upgrade, refresh your browser. You will be prompted to upgrade your database.
- f. Click the Database Configuration page link.
 1. Click **Test Connection** and **Apply**.
 2. Click **OK** to upgrade your database.
- g. If security was previously enabled, you will be prompted to verify and apply your security settings.
- h. (*iStrobe only*) Profiles, notes, tags, folders and any other configuration settings should now be found in the upgraded release.

Compuware Enterprise Services has been upgraded and is ready to use.

Upgrading from CES 17.2.3 or Higher

This upgrade can be accomplished through either a product install or a maintenance file.

- a. Open Compuware Enterprise Services 17.2.3+ and navigate to the Compuware Enterprise Services Administration > Update Center page.
- b. The Installed products will display. Click Show Details for a complete list.
- c. Select the Updates tab.
 - Set **Check for updates online** to **On** (default) - You must have an HCI defined. The maintenance file can be downloaded from the Compuware server. This requires internet access. A secure proxy may be required.
 - Alternatively, set **Check for updates online** to **Off** - Obtain a maintenance file (e.g. from Frontline) that can be uploaded from an accessible location.
 - To show the latest versions only of the web-based products, set the **Show latest versions only** switch to **On**.

- d. Select **Apply** to begin the upgrade process.
- e. After a successful upgrade, refresh your browser. You will be prompted to upgrade your database.
- f. Click the Database Configuration page link.
 1. Click **Test Connection** and **Apply**.
 2. Click **OK** to upgrade your database.
- g. If security was previously enabled, you will be prompted to verify and apply your security settings.
- h. (*iStrobe only*) Profiles, notes, tags, folders and any other configuration settings should now be found in the upgraded release.

Compuware Enterprise Services has been upgraded and is ready to use.

Moving From a Sandbox to a Production Environment

- If the user uses a different database in production other than the sandbox database, then only the profiles can be synchronized. All other configuration settings or user specific settings will be lost as mentioned above.
 - a. Make a backup of all files within the profile directory of the existing 05.02.0x install (Default: <iStrobe install directory>/samples).
 - b. After installing 18.02, move the backed-up profiles into the profile directory specified during the install (Default: <CES install directory>/data/istrobe/profiles).
 - c. Within iStrobe, navigate to **iStrobe Administration > General Configuration** and click **Synchronize** to process the profiles into the 18.02 install.
 - d. Any note or tag (created in iStrobe) associated with a particular profile will be lost.
 - e. Past user folder information will be lost. Synchronized profiles will go to the iStrobe folder.
 - f. Any user configured settings under general configuration page will be lost.
 - g. Any saved measurements record or measurement groups record will not be there.
 - h. iStrobe old SMF data will be lost. So, in the new database it needs to be loaded from the beginning.
 - i. Schedule settings for Profile Autodelete or SMF Data Management will be lost.
 - j. SMF Archive Database Configuration needs to be redone.
 - k. Usage statistics data will be lost.
 - l. Users, roles, groups will need to be reconfigured (in 18.2.1 it is moved under CES).
- If the user uses the same type of database both in sandbox as well as in production, then all the data can be copied from the sandbox database to the production database to restore all the configuration settings. The version number and the build number of the product must exactly match that being used in sandbox and in production.

Configuring Compuware Enterprise Services

After installing CES, there are a few additional configuration considerations required to allow full functionality of the application.

Start Compuware Enterprise Services and launch the Compuware Enterprise Services application from a browser using the URL specified in the installation. For example:

```
http://<hostname>:48226/compuware
```

Once in the Compuware Enterprise Services application, navigate to the **Administration** page. To access this page, you are required to provide the default password. Refer to “Database Setup”.

Select each of the following configuration items:

- “Database Setup”
- “Host Connections”
- “Update Center”
- “Security”
- “Web Server”
- “Additional Product(s) Configuration”

Database Setup

Although Compuware Enterprise Services installs out of the box with a fully functional Apache Derby database, you can either switch databases or migrate that database to one of the following supported databases:

- Apache Derby (comes configured by default)
- Microsoft SQL Server
- Oracle
- IBM DB2 for LUW
- IBM DB2 for z/OS

Further CES database setup details are provided in both the online help for Compuware Enterprise Services, as well as Appendix B, “Compuware Enterprise Services Database Configuration” of this installation guide.

Host Connections

Host Connection settings are used to configure connections to the Host Communications Interface (HCI). You must have at least one HCI port configured on one LPAR. Specify the host connection of the HCI port on the LPAR that contains the license file that is available to the License Management System (LMS) connected to that LPAR.

Further details for host connections setup are provided in the Compuware Enterprise Services Help.

Update Center

The Update Center provides a means for centrally administering updates to Compuware web-based products and Topaz Workbench. Updates are provided by obtaining an update repository, either online or manually.

Installed tab

- Displays those Compuware Web Products that are currently installed.

Updates tab

- Set **Check for updates online** to **On** -- On page load, a list of available updates is retrieved from a cloud-based Compuware update server. Check with your network administrator to be sure you can issue HTTPS requests to update.compuware.com on port 443. A secure proxy may be required.
- Set **Check for updates online** to **Off** -- This option allows you to manually upload CES and Topaz updates downloaded from Frontline or obtained from a Compuware representative.
- To show the latest versions only of the web-based products, set the **Show latest versions only** switch to **On**.

Security

Compuware Enterprise Services (beginning with CES 18.2.1) provides the ability to secure access to administrative functions within the Compuware Enterprise Services application.

If a default password was enabled in the prior release, the upgraded CES will automatically create the user ID “cesadmin” with the password “cesadministration”.

The “cesrecovery” user function allows an administrator to login when there is no connection to the database in order to reconfigure the database. The default password is “cesadministration”, or a previous CES administration password. This can be changed on the Users tab.

Further details for security configuration are provided in the Compuware Enterprise Services Help.

Web Server

Web Server Settings allow you to configure and manage settings for the following:

- **HTTPS** - requires keystore information. The default port is: 48443
- **Proxy** - allows for HTTP Proxy and Secure Proxy.

Further details for Web Server settings are provided in the Compuware Enterprise Services Help.

Additional Product(s) Configuration

- (*Fault Analytics only*) To configure Abend-AID Fault Analytics web application (manager) and install the Fault Analytics Collector, refer to the *Abend-AID Fault Analytics Installation and Configuration Guide*.
- (*iStrobe only*) To configure iStrobe, refer to the *iStrobe Configuration Guide*.
- (*Topaz for Java Performance only*) At least one Topaz for Java Performance Agent per LPAR is required to be installed on z/OS UNIX in order initiate measurements. Refer to Appendix , “Installing the Topaz for Java Performance Agent on z/OS UNIX”.
- (*ISPW Web only*) To configure ISPW Web, refer to the ISPW Web online help accessed within Compuware Enterprise Services.

Appendix A.

Installing the Topaz for Java Performance Agent on z/OS UNIX

This chapter describes the installation procedure for installing the Topaz for Java Performance Agent on z/OS UNIX. Unlike the Topaz for Java Performance web product which may be installed on z/OS UNIX, Linux, or Windows 64-bit, the Topaz for Java Performance Agent is installed only on z/OS UNIX. Depending on your site standards, you may need the assistance of the following individuals:

- z/OS UNIX system administrator should install Topaz for Java Performance.
- Security administrator to grant access to end users.

Before Beginning

Before you begin the Topaz for Java Performance Agent installation, you should be sure of the following:

- A compatible Compuware Enterprise Services (CES) installation has been installed and configured with Topaz for Java Performance.
- Location of the CES instance (installation folder).
- An installed and supported database that has been configured for this CES instance.
- An installed and supported Java version.
- A host name used as part of the Topaz for Java Performance and CES URLs. For example,


```
http://<yoursitehostname>.<yoursitedomain>.com:<port number>/topazjava
```
- The Topaz for Java Performance Agent installer requires 20000 1K blocks of preallocated temporary space during the installation. When the installation is complete, the temporary installation files are removed.

Installing the Topaz for Java Performance Agent

1. Click the **Topaz for Java Performance Agent** tab from the product image.
Ex. <network or hard drive>:\Disk1\setup.exe
2. Click **Install Compuware Web Products Agent for z/OS UNIX**.
The Mainframe FTP Information tab appears.
3. Specify the following valid information for your site:
 - Host
 - Host Port
 - User ID
 - Password
 - Existing z/OS UNIX Path to the planned Agent installation location
4. Click **Upload files to the mainframe**.

The z/OS UNIX installation includes a file transfer utility that sends the Topaz for Java Performance product files to the mainframe. The `install.jar` and the `install.sh` are both uploaded as binary.

5. Log on to the mainframe and navigate to an OMVS command prompt. Change the directory to the location where the Agent `install.jar` and the `install.sh` files were transferred. For example:

```
cd /installation_folder/agent
```

6. Be sure that the `install.sh` file has execute authority. Perform a `chmod 755` to open up permissions if necessary.
7. Start the installation script by entering:

```
./install.sh
```

The system displays **RUNNING** in the lower-right corner for a few seconds. When it requests **INPUT**, press **Enter**.

8. At the Java version prompt, enter the path to a supported Java 1.7 or Java 1.8 version you want to use with this Topaz for Java Performance installation. For example,

```
/usr/lpp/java/J7.1_64.b1d111513
```

9. Respond **Y** or **N** whether you want to use another folder instead of the default system temporary folder for the Agent installation files. Press **Enter**.
 - If you responded **Y**, enter the new folder name.
 - If you responded **N**, the default system temporary file will be used.

The system displays **Launching installer...** and displays **RUNNING** in the lower-right corner for a few seconds.

10. When the system requests **INPUT**, press **Enter**.

The **Introduction** panel appears.



- You can cancel the installation at any time by typing **quit**.
- You can go back in the installation panels at any time by typing **back**.

11. After reading the Introduction panel, press **Enter**. The **License Agreement** panel appears.
12. Press **Enter** until you have read and scrolled through the agreement.
13. Enter **Y** to accept the terms of the license agreement.

The **Choose Install Folder** panel appears.

14. On the **Choose Install Folder** panel, enter an absolute path to specify the location of this Topaz for Java Performance Agent installation, or press **Enter** to accept the default path.
15. On the **Topaz for Java Performance Agent** panel:

- Enter the **Topaz for Java Performance Manager host**, or press **Enter** to accept the default.
- Enter the **Topaz for Java Performance Service port**, or press **Enter** to accept the default.

The **Ready to Install** panel appears.

16. Review the displayed entries for the **Install location**, **Topaz for Java Performance Manager host**, and the **Topaz for Java Performance Service port**.
17. Enter **back** to return to the previous panels to change any entries.
18. Review the display of any changes, and press **Enter** to begin the installation.

The system displays **Installing....** and displays **RUNNING** in the lower-right corner for a few seconds.

19. When the system requests **INPUT**, press **Enter**.

The **Installation Complete** panel appears.

20. Take note of the following for this Topaz for Java Performance Agent installation:
 - **Agent Install location path**
 - **Topaz for Java Performance Manager host**
 - **Topaz for Java Performance Service port**
21. Press **Enter** to exit the Topaz for Java Performance Agent installer.

Post-Installation

After you successfully complete the Topaz for Java Performance Agent installation procedure, do the following:

1. The Agent is the licensed Topaz for Java Performance component. Configure a Host Connection in CES for Compuware License Management System (LMS) license(s) for Topaz for Java Performance Agents.
2. Define a Host Communications Interface (HCI) with licenses available on the LPAR where you plan to use Topaz for Java Performance Agents.
3. Refer to the `readme.txt` file in the Agent installation folder root directory for an example of the Java agent parameter to add to the command line used to launch your Java application that you intend to measure. For example:

```
java -javaagent: <install-dir>/TopazJavaAgent.jar
```

where: <install-dir> is the directory where the Topaz for Java Performance Agent was installed.

4. For WebSphere usage, update the Generic JVM arguments to include the `-javaagent` parameter. Also, review the server policy file to be sure that the Topaz for Java Performance has the required security permissions to access required MXBeans and data.
5. In order to initiate any performance measurements, install at least one agent per LPAR.

Appendix B.

Compuware Enterprise Services Database Configuration

This worksheet is intended to help database administrators prepare a new database for Compuware Enterprise Services. CES supports:

- DB2 z/OS
- DB2 Linux, UNIX, and Windows
 - Compuware requires a Unicode code page
- Microsoft SQL Server
 - When installing SQL Server, it is recommended to install with case-sensitive collation.
- Oracle
 - CES uses national character data types. Using a database with a Unicode character set is recommended, but not required.
 - CES uses the JDBC Thin (type 4) driver with Thin-style server name syntax for its database URLs. You must know your database's service name for this syntax.
 - Your Oracle DBA must change the default value of the `open_cursors` parameter to at least 400 to avoid the "Maximum open cursors exceeded" error message.



At this time, DB2 v10 JDBC drivers are not compatible with Java 1.8.

Database Server

The DNS name or IP address of your database server.

DB2 z/OS

Look for "DOMAIN", by browsing the `ssidMSTR` job and doing a find on 'DSNL004I'.

The `ssid` refers to the DB2 subsystem id. `ssidMSTR` is a required DB2 address space that must be running for DB2 to be operational. 'DSNL004I' is a message generated by DB2 that can be found JES log output of `ssidMSTR`.

Port

Port on which the database is listening.

DB2 z/OS

Look for "TCPPORT", by browsing the `ssidMSTR` job and doing a find on 'DSNL004I'.

Instance name (SQL Server)

The named instance of SQL Server can be used instead of a port.

Database Location (DB2 z/OS)

Location name of your DB2 host. Look for "LOCATION", by browsing the `ssidMSTR` job and doing a find on 'DSNL004I'.

Database Name

The name of an existing database in your database server.

DB2 z/OS and DB2 LUW

The database must use a 32k bufferpool.

SQL

- Limit this name to alphabetic, numeric, and underscore characters.
- Strobe does not support delimited identifiers.
- Microsoft recommends that you back up the master database before creating a new database.
- Because CES connects through JDBC, Microsoft SQL Server authentication must be used.

Schema

The schema you would like to associate the data objects with. This will get created if it does not already exist.

DB2 z/OS

This is the Creator/Schema Name to use for the CES DB2 tables, indexes and views. If this name is different than the "Database user ID" then the "Schema" should be set up as a secondary authorization ID to the "Database user ID". Compuware recommends keeping the Schema and the Database user ID the same.

Oracle

This will be the same as the name used for the CREATE USER command, this must be created prior to configuring the CES database.

JDBC Driver Path (DB2 z/OS, DB2 LUW)

The IBM Data Server DB2 Driver for JDBC and SQLJ must be installed and the packages bound for that DB2 subsystem. Be sure that the driver files can be read by the CES installation program running on z/OS UNIX.

For additional information, refer to the reference manual "*DB2 for z/OS Application Programming Guide and Reference for Java*" found in the IBM Knowledge Center for your release of DB2.

Security Mode

Specifies the log on mode to use when accessing the CES database.

- Request: SSL is requested. If the server does not support it, then a plain text connection is used.
- Require: SSL is requested. If the server does not support it, then an exception is thrown.
- Authenticate: SSL is requested. If the server does not support it, then an exception is thrown and the server's certificate must be signed by a trusted CA.

Database User ID

This ID is used to create the CES tables, indexes, views, triggers, stored procedures, and functions.

DB2 z/OS

This ID is required and is used by CES to run the applications.

This ID will be used when the Database administrator ID below is not specified. To create the objects, DB2 will require that the ID has the following minimum DB2 authorizations:

- CREATETAB authority for the database; USE privilege for its table spaces.
- DBADM authority for the database.
- SYSADM authority.

```
GRANT USE OF BUFFERPOOL "default-bufferpool-for-user-data"
TO "Database user ID";

GRANT USE OF STOGROUP "user-specified-storage-group(see database create)"
TO "Database user ID";

GRANT DBADM ON DATABASE "user-specified-database-name" TO "database user ID";

GRANT BINDADD TO "Database user ID";

GRANT CREATEIN ON SCHEMA "Schema-Name" TO "Database user ID";

GRANT CREATE IN COLLECTION "Schema-Name" TO "Database user ID";

GRANT SELECT ON TABLE "SYSIBM"."SYSSEQUENCES" TO "Database user ID";

GRANT SELECT ON TABLE "SYSIBM"."SYSDATABASE" TO "Database user ID";

GRANT SELECT ON TABLE "SYSIBM"."SYSTABLESPACE" TO "Database user ID";
```

Note: If the Schema Name is something other than the Database user ID, then the "Schema" should be set up as a secondary authorization ID to the "Database user ID".

Database Password

The user's password associated with the database.

Database Administrator ID

The Administrator ID is optional. When specified, it is used to create the CES tables, indexes, views, triggers, stored procedures, and functions. This ID and password may be removed after the installation of CES is complete, by accessing the installation panel and blanking out the data.

DB2 z/OS

Required if the User ID does not have one of the following roles:

- CREATETAB authority for the database; USE privilege for its table spaces.
- DBADM authority for the database.
- SYSADM authority.

```
GRANT USE OF BUFFERPOOL "default-bufferpool-for-user-data"
TO "Database administrator ID";

GRANT USE OF STOGROUP "user-specified-storage-group(see database create)"
TO "Database administrator ID";
```

```

GRANT DBADM ON DATABASE "user-specified-database-name"
TO "database administrator ID";

GRANT BINDADD TO "Database administrator ID";

GRANT CREATEIN ON SCHEMA "Schema-Name"
TO "Database administrator ID";

GRANT CREATE IN COLLECTION "Schema-Name"
TO "Database administrator ID";

GRANT SELECT ON TABLE "SYSIBM"."SYSSEQUENCES"
TO "Database administrator ID";

GRANT SELECT ON TABLE "SYSIBM"."SYSDATABASE"
TO "Database administrator ID";

GRANT SELECT ON TABLE "SYSIBM"."SYSTABLESPACE"
TO "Database administrator ID";

```

DB2 Linux, UNIX, Windows

Required if the User ID does not have one of the following roles:

- CREATETAB authority for the database; USE privilege for its table spaces.
- DBADM authority for the database.
- SYSADM authority.

Microsoft SQL

Required if the Database User ID does not have the sysadmin role.

Oracle

Required if the Database User ID does not have the following roles:

- CREATE SESSION system privilege.
- CREATE TABLE or CREATE ANY TABLE system privilege.
- CREATE VIEW or CREATE ANY VIEW system privilege.
- CREATE ANY PROCEDURE system privilege.
- Space quota on the database table spaces or the UNLIMITED TABLESPACE system privilege.

Database Administrator Password

The password associated with the Database Administrator ID.

Sample Create Database DDL (DB2 z/OS)

```

SET CURRENT RULES = 'STD';

CREATE DATABASE "user-specified-database-name"

    BUFFERPOOL user-specified-32k-bufferpool-id

    INDEXBP user-specified-bufferpool

    CCSID EBCDIC STOGROUP "user-specified-storage-group";

```

Table/View Grant (DB2 z/OS)

The DDL for the GRANTs to the Tables and Views is found in the following location:

```
data/DDL Scripts/grants.sql
```

You may be required to use this to give authorizations to specific authorization users/groups. Edit the file and change 3 items:

- SQLID ('XX')
- Schema (\$DB_SCHEMA\$)
- Authorization IDs (\$SQLID\$)

The modified SQL can then be executed in SPUIFI or in Batch.

