



IBM z Systems Development and Test Environment Tools

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IBM z Systems Development and Test

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IBM z Systems Development and Test Environment Tools

This document describes the usage of IBM z Systems™ Development and Test Environment Tools, including capabilities, installation, and configuration.

Introduction

IBM z Systems Development and Test Environment Tools is a simple Web utility which enables you to create and monitor instances of z System installs, or import existing packages and deploy them to test systems. This allows you to develop and test outside the regular production systems.

IBM z Systems Development and Test Environment Tools includes the following features:

- Creating application images from various sources.
- Deploying and automatically provisioning application images to z Systems Development and Test Environment instances.
- Monitoring the status and availability of all created assets and target systems.

Terminology

Understand the terms that are used to describe IBM z Systems Development and Test Environment Tools.

Application Component

- Collection of volumes from an IBM z System, intended to be reusable in a mix and match fashion with other components from the same IBM z System.

Application Image

- Collection of application components that originate from the same IBM z System, a z System Development and Test Environment system, or an ADCD package. The application components can be packaged together as a single deliverable for a target system.

Target System

- One (or more) x86 Intel (or compatible) systems capable of running IBM z Systems Development and Test Environment that users can deploy an application image to.

Capabilities

Learn about the capabilities of IBM z Systems Development and Test Environment Tools.

IBM z Systems Development and Test Environment Tools includes the following capabilities:

Application image creation

IBM z Systems Development and Test Environment Tools allows you to create application images from various sources:

- Existing IBM z System

- Existing IBM z Systems Development and Test Environment instance
- Application Developers Controlled Distributions (ADCD). The z/OS® Software distribution is bundled with the product.

Self-service provision of application images

Once application images are created, IBM z Systems Development and Test Environment Tools allows you to provision application images to Linux systems, then z Systems Development and Test Environment instances will be created in an automated way.

Dashboard monitoring

IBM z Systems Development and Test Environment Tools allows you to inventory and check status on all created assets and target systems. You can ensure creation and deployment processes are running properly, and manage access permissions to images you created.

Limitations

Learn about the current limitations of IBM z Systems Development and Test Environment Tools.

IBM z Systems Development and Test Environment Tools now has the following limitations:

- There is only one ADCD license, so you can only uncompress one ADCD volume(*.ZPD) at a time.
- Only software-based licensing is supported now. Support for the hardware-based license server might be added in the future.
- IBM z Systems Development and Test Environment Tools currently only supports creation of monoplex emulated Z environments.
- When application images are in progress (for example, volume extraction is on-going), if the WebSphere® Liberty server hosting the Tools is shut down, the permissions for accessing the IBM z System are lost, which causes a failure for the extraction of the remaining volumes. You will need to re-run the application image creation process to re-extract and build these application images.

Installing IBM z Systems Development and Test Environment Tools

Learn how to install IBM z Systems Development and Test Environment Tools.

To install IBM z Systems Development and Test Environment Tools, two parts are required:

1. The web User Interface
2. The z/OS program FEUVIMG

web User Interface

The web User Interface is available as a RPM Package Manager (RPM) for installation on supported Red Hat Linux distributions, or as a Debian package (DEB) for installation on supported Ubuntu distributions.

z/OS program FEUVIMG

The z/OS program FEUVIMG is available as a System Modification Program/Extended(SMP/E) offering, and can be found in the /opt/ibm/zDT/zSystem/ directory of the IBM z Systems Development and Test Environment Tools web User Interface install.

Note: For z Systems Development and Test Environment Tools beta users, you need to manually run the following command first:

```
rpm -e ibm-java-x86_64-sdk-8.0-4.7.x86_64
```

Then you can successfully install this version of z Systems Development and Test Environment Tools.

Prerequisites

Learn about the prerequisites for IBM z Systems Development and Test Environment Tools.

IBM z Systems Development and Test Environment Tools requirements

Learn about IBM z Systems Development and Test Environment Tools requirements.

This topic includes the hardware and software requirements for the web server that the Tools runs on.

To install and run the IBM z Systems Development and Test Environment Tools, a 64-bit x86 Intel system is needed. The additional required resources are as follows:

Disk space

- 2GB of disk space is required.

Memory

- 1GB of RAM for Linux

Processor

- Minimal.

Operating systems and platforms

- Red Hat 6.x/7.x 64-bit or Ubuntu 16.04 64-bit Linux OS.

Other requirements

- root permissions.

z/OS system requirements

Learn about z/OS system requirements.

If you want to extract volumes from z/OS systems, the following required and optional requirements are needed.

Required

The required requirements include:

- An SSH server must be running and accessible by the system to run the Tools.

- FTP client must be able to connect to the Tools FTP server.
- Grant READ access to the SAF profile in class DASDVOL for the volumes that will be extracted to the user ID that will run the Tools.

Optional

The optional requirements include:

- Configure zEnterprise Data Compression (zEDC) if it is available. This hardware feature can offload the compression work from your CPs and reduce processing time.
- Grant READ access to the resource FPZ.ACCELERATOR.COMPRESSION in SAF class FACILITY to the user ID that will run the Tools.

FTP storage requirements

Learn about the FTP storage requirements.

To install and run IBM z Systems Development and Test Environment Tools, an FTP server to host the Tools artifacts, such as z system volumes, datasets, tooling metadata, must be setup.

Disk space

- Sufficient space is needed to hold numerous and potentially very large files for extracted IBM z Systems volumes.
- 150GB of disk space is needed for ADCD z/OS V2.2 distribution.

Software requirements

- FTP server running.

Target systems requirements

Learn about the target systems requirements.

To automatically deploy application images to any target Linux system, the following requirements are needed:

Basic requirements

For the basic hardware and software requirements, see Hardware requirements and Software requirements.

Additional requirements

The additional requirements are as follows:

- The software repository must be available and accessible by the target Linux systems.
 - A Red Hat software repository for 'yum' must be available and accessible by the target Linux systems.
 - An Ubuntu software repository for 'apt-get' must be available and accessible by the target Linux systems.
- An SSH server must be running on the target Linux systems and accessible by the system to run the Tools.
- The following commands must reside on the target Linux systems: `wget` and `ftp`.
- The root permission is needed for the users who are responsible for deployment.

Licensing requirements

Learn about the licensing requirements for z Systems Development and Test Environment Tools.

To install and run z Systems Development and Test Environment Tools, the following licensing requirements are needed:

- At least one License Manager that runs software licensing must be installed to provide licenses to the target systems.
- If your license requires Rational Tokens, then a Rational License Key Server must be installed and run.

Configuring the Tools server environment

Learn how to configure IBM z Systems Development and Test Environment Tools server environment.

Before starting IBM z Systems Development and Test Environment Tools, you must configure the IBM WebSphere Application Server Liberty instance to utilize your company's LDAP system.

To configure the IBM WebSphere Application Server Liberty instance, follow these steps:

1. Navigate to the `/opt/ibm/zDT/Liberty/usr/servers/zDTServer` directory, which is the IBM WebSphere Application Server Liberty instance directory for the Tools.
2. Refer to *Configuring LDAP user registries in Liberty* to learn how to define a LDAP registry.
3. The server for the Tools has been configured to read the LDAP registry information from the file `ldap-conf.xml`, you can find the file in the server instance directory. If this file does not exist, then you need to create it, and define a LDAP registry by referring to *Configuring LDAP user registries in Liberty*.

Note: The server configuration already contains the `appSecurity-2.0` and `ldapRegistry-3.0` Liberty features.

Installing IBM z Systems Development and Test Environment Tools

Learn how to install IBM z Systems Development and Test Environment Tools.

`zDT_Install.x86_64` is a bash script that allows you to install, update or uninstall the following z Systems Development and Test Environment products:

- IBM z Systems Development and Test Environment Personal Edition
- IBM z Systems Development and Test Environment License Manager
- IBM z Systems Development and Test Environment Tools

If you have previously purchased the product, you can use your existing Software Licensing or activate the product with your USB hardware device and a remote license server.

For the download information about `zDT_Install.x86_64`, see IBM z Systems Development and Test Environment e-assemblies to download from Passport Advantage.

After copying the installation file, `zDT_Install.x86_64`, to the target machine, you can run this bash script to install, update or uninstall z Systems Development and Test Environment products.

To install IBM z Systems Development and Test Environment Tools by using this script, you can select one of the following methods:

- Interactive installation
- Silent installation

Interactive installation

Learn how to install, update or uninstall IBM z Systems Development and Test Environment products interactively.

The interactive installation allows you to interact with a command line menu and select the z Systems Development and Test Environment products that you want to install, update or uninstall.

To Start the **zDT_Install.x86_64**, enter the following command:

```
$ ./zDT_Install.x86_64
```

Then the following menu is displayed:

The following products can be installed/updated/uninstalled. Please select one:

- 1) IBM z Systems Development and Test Environment Personal Edition
- 2) IBM z Systems Development and Test Environment License Manager
- 3) IBM z Systems Development and Test Environment Tools

==>

Type the corresponding number (1,2,3) of the product you want to install, update or uninstall. After selecting the option, the following menu with the options of that product is displayed:

What do you want to do with IBM z Systems Development and Test Environment Tools?

- 1) Install
- 2) Update
- 3) Uninstall

==>

Type the corresponding number (1,2,3) to decide whether you want to install, refresh or remove the product. After selecting the option, the installer will start executing the selected option.

Installing IBM z Systems Development and Test Environment Tools interactively:

Learn how to install IBM z Systems Development and Test Environment Tools interactively.

To install IBM z Systems Development and Test Environment Tools interactively, follow these steps:

1. Go to the directory where installation program is present.
2. Execute the following command:

```
./zDT_Install.x86_64
```

Then the following menu is displayed.

The following products can be installed/updated/uninstalled. Please select one:

- 1) IBM z Systems Development and Test Environment Personal Edition
- 2) IBM z Systems Development and Test Environment License Manager
- 3) IBM z Systems Development and Test Environment Tools

==>

3. Type **3** to select IBM z Systems Development and Test Environment Tools to install. Then the following menu is displayed.

What do you want to do with IBM z Systems Development and Test Environment Tools?

- 1) Install
- 2) Update
- 3) Uninstall

==>

4. Type **1** to install the product.
5. Press ENTER, and read the license agreements carefully. Then at the end of license, enter 'Yes' to accept or 'No' to decline the terms.
If you accept the terms in the license agreements, type 'yes' and then ENTER
If you do not accept the terms in the license agreements, type 'no' and then ENTER
6. Wait for the installation to complete.
7. Run following commands to see if installation is successful.

```
rpm -qa | grep war
rpm -qa | grep ibm-java-x86_64-jre
rpm -qa | grep derby
rpm -qa | grep liberty
rpm -qa | grep zdtserverenv
rpm -qa | grep zsystem
rpm -qa | grep zdttoolsdb
```

You should get the outputs respectively as below

```
war-1-11.0.0.x86_64
ibm-java-x86_64-jre-8.0-4.10.x86_64
derby-2-10.13.1.1.x86_64
liberty-2-17.0.0.1.x86_64
zdtserverenv-1-11.0.0.x86_64
zsystem-1-11.0.0.x86_64
zdttoolsdb-1-11.0.0.x86_64
```

Note: The above procedure needs to be executed from root User ID.

Updating IBM z Systems Development and Test Environment Tools interactively:

Learn how to update IBM z Systems Development and Test Environment Tools interactively.

To update IBM z Systems Development and Test Environment Tools interactively, follow these steps:

1. Go to the directory where installation program is present.
2. Execute the following command:

```
./zDT_Install.x86_64
```

Then the following menu is displayed.

The following products can be installed/updated/uninstalled. Please select one:

- 1) IBM z Systems Development and Test Environment Personal Edition
- 2) IBM z Systems Development and Test Environment License Manager
- 3) IBM z Systems Development and Test Environment Tools

==>

3. Type **3** to select IBM z Systems Development and Test Environment Tools to update. Then the following menu is displayed.

```
What do you want to do with IBM z Systems Development and Test Environment Tools?
1) Install
2) Update
3) Uninstall
```

==>

4. Type 2 to update the product.
5. Press ENTER, and read the license agreements carefully. Then at the end of license, enter 'Yes' to accept or 'No' to decline the terms.
If you accept the terms in the license agreements, type 'yes' and then ENTER
If you do not accept the terms in the license agreements, type 'no' and then ENTER
6. Wait for the update to complete.

Note:

- The above procedure needs to be executed from root User ID.
- When you update z Systems Development and Test Environment Tools, the user data will not be changed. However, when you install z Systems Development and Test Environment Tools, all user data will be deleted.

Uninstalling IBM z Systems Development and Test Environment Tools interactively:

Learn how to uninstall IBM z Systems Development and Test Environment Tools interactively.

To uninstall IBM z Systems Development and Test Environment Tools interactively, follow these steps:

1. Go to the directory where installation program is present.
2. Execute the following command:

```
./zDT_Install.x86_64
```

Then the following menu is displayed.

The following products can be installed/updated/uninstalled. Please select one:

- 1) IBM z Systems Development and Test Environment Personal Edition
- 2) IBM z Systems Development and Test Environment License Manager
- 3) IBM z Systems Development and Test Environment Tools

==>

3. Type 3 to select IBM z Systems Development and Test Environment Tools to update. Then the following menu is displayed.

```
What do you want to do with IBM z Systems Development and Test Environment Tools?
1) Install
2) Update
3) Uninstall
```

==>

4. Type 3 to uninstall the product.
5. Wait for the uninstallation to complete.

Note: The above procedure needs to be executed from root User ID.

Silent installation

Learn how to install, update and uninstall IBM z Systems Development and Test Environment products silently.

The silent installation allows you to install, update or uninstall z Systems Development and Test Environment products without using the command line menu.

The silent mode works in the following way:

Program usage: `./zDT_Install.x86_64 <option><product>`

Where '`<option>`' can be one of the following:

--install

which will install the selected option.

--update

which will update the selected option.

--uninstall

which will uninstall the selected option.

where '`<product>`' can be one of the following:

--zdtpedition

which will install, update or uninstall IBM z Systems Development and Test Environment Personal Edition.

--zdtlicense

which will install, update or uninstall IBM z Systems Development and Test Environment License Manager.

--zdttools

which will install, update or uninstall IBM z Systems Development and Test Environment Tools.

After typing the command, the installer will start executing the selected option for product.

Note: If you install silently, you will not see the option to review the license. Installation process assumes that you have reviewed the license before installation. Read the license as in the installation media, or use command line installation option.

Installing IBM z Systems Development and Test Environment Tools silently:

Learn how to install IBM z Systems Development and Test Environment Tools silently.

To install z Systems Development and Test Environment Tools silently, follow these steps:

1. Go to the directory where installation program is present.
2. Execute the following command:

```
./zDT_Install.x86_64 --install --zdttools
```

Note: If you install silently, you will not see the option to review the license. Installation process assumes that you have reviewed the license before installation. Read the license as in the installation media, or use command line installation option.

3. Wait for the installation to complete.
4. Run following commands to see if installation is successful.

```
rpm -qa | grep war
rpm -qa | grep ibm-java-x86_64-jre
rpm -qa | grep derby
```

```

rpm -qa | grep liberty
rpm -qa | grep zdtserverenv
rpm -qa | grep zsystem
rpm -qa | grep zdttoolsdb

```

You should get the outputs respectively as below

```

war-1-11.0.0.x86_64
ibm-java-x86_64-jre-8.0-4.10.x86_64
derby-2-10.13.1.1.x86_64
liberty-2-17.0.0.1.x86_64
zdtserverenv-1-11.0.0.x86_64
zsystem-1-11.0.0.x86_64
zdttoolsdb-1-11.0.0.x86_64

```

Updating IBM z Systems Development and Test Environment Tools silently:

Learn how to update IBM z Systems Development and Test Environment Tools silently.

To update z Systems Development and Test Environment Tools silently, follow these steps:

1. Go to the directory where installation program is present.
2. Execute the following command:
`./zDT_Install.x86_64 --update --zdttools`
3. Wait for the update to complete.

Uninstalling IBM z Systems Development and Test Environment Tools silently:

Learn how to uninstall IBM z Systems Development and Test Environment Tools silently.

To uninstall z Systems Development and Test Environment Tools silently, follow these steps:

1. Go to the directory where installation program is present.
2. Execute the following command:
`./zDT_Install.x86_64 --uninstall --zdttools`
3. Wait for the uninstallation to complete.

Installing IBM z Systems Development and Test Environment Tools z/OS files

Learn how to install IBM z Systems Development and Test Environment Tools z/OS files.

This section describes the installation of the mainframe portion of z Systems Development and Test Environment Tools on the system from which data will be extracted for setting up z Systems Development and Test Environment instances.

To install the IBM z Systems Development and Test Environment Tools host files, follow these steps:

1. Once zDT_Install.x86_64 bash script is run on a Linux machine to install the Web UI, the directory /opt/ibm/zDT/zSystem contains the IBM z System components and the program directory file, HALMB00.pdf.
2. For the installation instructions of IBM z System component, refer to the details in HALMB00.pdf, specifically in section 6.0 "Installation Instructions".

Using IBM z Systems Development and Test Environment Tools

Learn how to use IBM z Systems Development and Test Environment Tools for development and test activities.

Roles

Learn about the roles of users to use IBM z Systems Development and Test Environment Tools.

For the users who log in to IBM z Systems Development and Test Environment Tools, three types of roles are included:

Administrator

The users who are responsible for maintaining the system to run IBM z Systems Development and Test Environment Tools server and the software. Administrators can use any function of this product.

Builder

The users who are responsible for building the components and application images. Builders are very knowledgeable about z/OS and IBM z Systems that might be used by the Tools. However, builders do not have permission to modify any configuration settings within the Tools.

Developer or Tester

The users who use the Tools only to deploy a new instance of the IBM z Systems Development and Test Environment on a target Linux system.

Starting and stopping IBM z Systems Development and Test Environment Tools server

Learn to start and stop IBM z Systems Development and Test Environment Tools server.

To start IBM z Systems Development and Test Environment Tools server, you must use the root userid to issue the following command

```
/opt/ibm/zDT/bin/startServer
```

This script is written to ensure the server process runs under the **zdt** userid, which is created during the Tools installation.

To stop the server, issue the command

```
/opt/ibm/zDT/bin/stopServer
```

Configuring IBM z Systems Development and Test Environment Tools

Learn how to configure IBM z Systems Development and Test Environment Tools.

Once the Tools server environment is configured, you need to start the Tools server and navigate the URL in a web browser, which is specified in the output of the

startServer script. For more information about starting the Tools server, see “Starting and stopping IBM z Systems Development and Test Environment Tools server” on page 11.

Configuring the Users

Learn how to configure the Users page.

The Users page requires Administrator privileges. To configure the Users page, you need to configure the administrators first, and then configure the users.

Administrator Configuration

To log in to the Tools, use the default userid **zdtadmin** which has a default password of **password**.

To add your LDAP account to the Tools, follow these steps:

1. Click **Users** on the **QUICK START** page, or click the left-top button to navigate to the Configure > Users page.
2. Click the **Add User** button.
3. Add your LDAP user ID. Typically, the LDAP user ID is your company email address.
4. Click the **Administrator** role, which has access to all aspects of the Tools.
5. Click **Add User** to save this user.
6. Sign out of The tool.
7. Sign in to the Tool with your LDAP user ID and password to ensure all configuration is proper.
8. Navigate to the Configure > Users page, and remove the **zdtadmin** account.
9. Add any other LDAP users who will act as Administrators.

Users Configuration

Only the users who are listed on the Users page have access to the Tools.

To configure the users who have access to the Tools, follow these steps:

1. Click **Users** on the **QUICK START** page, or click the left-top button to navigate to the Configure > Users page.
2. Add the users who needs to have access to the Tools, and then select the corresponding roles for the users.
 - For a user who will create application components or application images, select the Builder role.
 - For a user who will deploy an application image to a target Linux system, select Developer/Tester role.

Configuring the target Linux systems

Learn how to configure the target Linux systems.

The the target Linux systems page is available for all users with different roles.

You can provide the list of Linux systems that the application images will be deployed to.

To configure the target Linux systems, follow theses steps:

1. Click **Target Linux systems** on the **QUICK START** page, or click the left-top button to navigate to the Configure > Target Linux systems.
2. Click **Add System**.
3. Enter the qualified hostname and SSH (Secure Socket Shell) port number of this Linux system.
4. Click **Add System** to save the system to the Tools repository.

Note:

1. When an application image is deployed to a target system, then a prompt will be issued for the root credentials.
2. For more information about required configuration and software installed on these systems, see “IBM z Systems Development and Test Environment Tools requirements” on page 3.

Configuring the FTP Storage

Learn how to configure the FTP Storage.

The FTP Storage page also requires Administrator privileges.

The FTP Storage is a crucial function of the Tools. To transfer and store all of the contents on the FTP storage, you need to have adequate storage space. For more information about the requirements for the storage space, see “FTP storage requirements” on page 4.

To configure the FTP Storage, follow these steps:

1. Click **FTP storage** on the **QUICK START** page, or click the left-top button to navigate to the Configure > FTP storage page.
2. Enter the fully qualified host name of the system that provides the FTP service, along with the port, directory, user ID and password.
3. Click the **Test Connection** button to ensure that the Tools system is able to communicate with the FTP service.
4. Click the **Save** button.

Note: The credentials for the FTP storage are the only credentials that the tools stores in its local database and are encrypted using AES 128 bit encryption.

Configuring the ADCD

Learn how to configure the ADCD.

The ADCD page also requires Administrator privileges.

ADCD is updated approximately twice a year and is provided as a part of the product. To make the ADCD provided with version 11.0.0, or later, of IBM z Systems Development and Test Environment available for image creation and deployment, you need to copy the ADCD files to your FTP storage as follows:

1. Provide the required settings for the FTP storage.
2. In the base directory specified on the FTP storage settings page, create a directory labeled **adcd**, if it does not already exist.
3. In the adcd directory created in step 2, create a directory, using any label, for each ADCD you want to make available in the Tools. For example, **adcd/may2017**.
4. Transfer all files included with the ADCD to the directory specified in step 3.

After completing all above steps, the Tools will automatically locate any ADCD provided with version 11.0.0, or later, of IBM z Systems Development and Test Environment on the **IMAGE from ADCD** page.

Note: The credentials for the FTP storage are the only credentials that the tools stores in its local database and are encrypted using AES 128 bit encryption.

Configuring the emulator licenses

Learn how to configure the emulator licenses.

The emulator licenses page also requires Administrator privileges.

The license servers used by each target z Systems Development and Test Environment instance needs to be configured within the Tools before the Target instances are created.

To configure the emulator licenses, follow these steps:

1. Click **Emulator licenses** on the **QUICK START** page, or click the left-top button to navigate to the Configure > Emulator licenses page.
2. Required: In the Primary field, enter the fully qualified host name of the system to run the primary license manager.
3. Optional: In the Secondary field, enter the fully qualified host name of the system to run the secondary license manager.
4. Optional: In the Token Servers table, enter the ports and fully qualified host names of the systems to serve Rational tokens.

Creating application images

Learn how to create application images.

An application image is a collection of application components that originate from the same IBM z Systems and packaged together as a single deliverable for a target system. IBM z Systems Development and Test Environment allows you to create application images from various sources:

- Existing IBM z™ System.
- Existing IBM z Systems Development and Test Environment instance.
- Application Developers Controlled Distributions (ADCD). The z/OS Software distribution is bundled with the product.

Option 1: Creating an application image from an existing IBM z System

Learn how to create an application image from an existing IBM z System.

To create an application image from an existing IBM z System, follow these steps:

1. Create application components from an existing IBM z System.
2. Create an application image by selecting the created components that are needed for an application image.

Creating application components

An application component is a collection of volumes from an IBM z System that is intended to be reusable in a mix and match fashion with other components from the same IBM z System. You can extract volumes from your z Systems™ into logical components, and pair each component with other volume-based ones.

Application components consist of :

- A set of sequential files that represent your system volumes.
- Data set dumps or volume sequential files that represent a subsystem.
- Data set dumps that represents an application or application data.

To create application components, follow these steps:

1. Click **COMPONENT from IBM z System** on the **QUICK START** page, or click the left-top button to navigate to the Create >Component - z System .
2. Specify the host name of the IBM z System you wish to work with, and enter valid credentials required to access it. Then enter a new component name and optional comments.

Note: Contact your administrator if you do not have this information.

3. Select all volumes from IBM z System needed for this component.
4. Click **Create Component** to complete.

When creating an application component, the information about the IBM z System and the selected artifacts will be saved and used when this component is included as a part of the application image creation process. No extraction of data will occur during this step.

Note: This process needs to be done by a system programmer, or someone that is very familiar with the IBM z System where the data is being extracted.

Creating an application image

An application image consists of a set of application components from the same IBM z System. After creating the application components, you need to combine the created application components into a single application image. An application image must contain only one application component that contains your system residence volumes as well as any number of other components that could represent your application, application data, or any number of sub systems like CICS® or IMS™.

To create application images, follow these steps:

1. Click **IMAGE from IBM z System** on the **QUICK START** page, or click the left-top button to navigate to the Create >Image - z System .
2. Specify the host name of the IBM z System you wish to work with, and enter valid credentials required to access it. Then enter a new component name and optional comments.

Note: Contact your administrator if you do not have this information.

3. Select all the components for the IBM z System that you want for this image.
4. Click **Create Image** to complete.

When creating an application image, you can start extracting the artifacts specified in the selected components from the IBM z System [Host name] now, or you can choose to schedule the extraction of these artifacts for another date or time. All extracted artifacts will be stored on the system specified on the FTP storage.

Note: This process also needs to be done by a system programmer, or someone that is very familiar with how the application components were constructed and their dependencies.

Option 2: Creating an application image from ADCD

Learn how to create an application image from ADCD.

IBM z Systems Development and Test Environment Tools allows you to create an application image by choosing existing ADCD (Application Developers Controlled Distribution) components. You can create an application image and select the pre-packaged application components that contain the IBM z/OS software, such as CICS 5.2 or 5.3, DB2® v11, and the required z/OS 2.2 components.

To create an application image from ADCD, follow these steps:

1. Click **IMAGE from ADCD** on the **QUICK START** page, or click the left-top button to navigate to the Create >Image -ADCD .
2. Select an ADCD that is configured, and enter a new image name and optional comments.
3. Select all the components for the ADCD that you want to create this application image.
4. Click **Create Image** to complete.

Option 3: Creating an application image from an existing z Systems Development and Test Environment

Learn how to create an application image from an existing z Systems Development and Test Environment.

IBM z Systems Development and Test Environment Tools also allows you to import an application image from an existing z Systems Development and Test Environment.

To import an application image from an existing z Systems Development and Test Environment, follow these steps:

1. Click **IMPORT image** on the **QUICK START** page, or click the left-top button to navigate to the Create > Import image .
2. Enter a new image name and optional comments.
3. Provide the hostname and Linux credentials of the z Systems Development and Test Environment along with the location of the devmap file. Then enter your user ID and password.
4. Click **Import Image** to complete.

Importing existing artifacts will create an application image containing the devmap file and all volumes defined in that devmap file from the system specified. All artifacts of this application image will be stored on the system specified on the FTP storage.

Deploying and automatically provisioning application images to z Systems Development and Test Environment instances

Learn how to provision application images to z Systems Development and Test Environment instances in an automated way.

After creating application images, IBM z Systems Development and Test Environment Tools will automate the ability for your application programmers or testers to have an entire z Systems Development and Test Environment constructed for their application when needed. The only requirement for the deployment is that a clean Linux OS is installed.

To deploy the application images, follow these steps:

1. Select an application image you want to deploy to a target system.
2. Select the target Linux systems that the selected application image will be deployed to.
3. Click **Deploy Image**.

Your target systems can be your own on premise physical machines with your own personal cloud, or ones from our IBM® managed cloud.

Using the deployment options in the Tools will enable you to automatically:

1. Silently install the emulator to the target Linux system.
2. Configure the host Linux machine – iptables, license server and so on.

Note: While the installation and configuration require root credentials, running the emulator processes will be done by using a newly created user called **ibmsys1**. If this ID does not already exist, it will be automatically created by the installation process. Also, a password as **sys1** will be generated. But once the deploy process completes, it is recommended that you change this password to make it unique. The deployed volumes and devmap file named **aprof1** will be located in **/home/ibmsys1/volumes**.

3. Install the application image content.
4. Generate a devmap file for application images extracted from a IBM z System.
5. Modify the z/OS parameters for application images extracted from a IBM z System so that it is able to IPL in z Systems Development and Test Environment.
6. Start the emulator.

Once the above deployment steps automatically completed, follow these steps to manually IPL the system:

1. Click on the Monitor page of the Tools, and expand the application image deployed to the system.
2. Find the section called Initial Program Load under the application image. This Initial Program Load contains the IPL command to issue.
3. SSH to the target Linux system, and login using the **ibmsys1** account.

Note: If the **ibmsys1** account was created by the Tools, then the password for this account will be **sys1**.

4. Issue the command. For example, issue the command `ipl 0a80 parm 0a82au`
If the IPL fails, you can issue the following commands in sequence from path **/home/ibmsys1/volumes**

```
awsstop ---wait for few minutes for zDT to stop
ipl 0a80 parm 0a82CS --- Monitor console for any outstanding message.
awsstart aprof1 --- wait for few minutes for zDT to get ready.
```

Once IPL is successful, you can use `ipl 0a80 parm 0a82au` to IPL next time.

Note: This process can be done by any application programmer or tester on-demand whenever they need a new environment.

Monitoring IBM z Systems Development and Test Environment Tools

Learn how to use the Tools to monitor the status of all created assets and target systems.

The monitor page provides a dashboard that allows you to inventory and check the status on all created assets and target systems.

When extracting IBM z System volumes for application image creation and deploying the application images, the process may take a long time to complete. IBM z Systems Development and Test Environment Tools allows you to track the progress of these actions from the monitor page.

The monitor page includes the status of the following parts.

- Application Image
- Target Linux Systems

Application Image status

The Application Image status include the following types:

- **Scheduled**
An application image is scheduled for creation at a later time.
- **In progress**
An application image is being created at this time.
- **Available**
An application image is fully constructed and available for use.
- **Needs attention**
An error occurred while creating an application image. When this status is displayed, you need to send the `/opt/ibm/zDT/Liberty/usr/servers/zDTServer/logs/messages.log` to IBM support.
- **Locked**
An application image can not be used currently.

Target Linux Systems status

The Target Linux Systems status include the following types:

- **Available**
A target Linux system is available for deployment.
- **Deploying**
An application image is being deployed to a target Linux system.
- **In use**
An application image has been successfully deployed to a target Linux system.

Note: Only one application image is allowed on a system at a given time, so this system cannot be used again until the application image is removed.

- **Needs attention**
An error occurred while deploying an application image. When this status is displayed, you need to send the `/opt/ibm/zDT/Liberty/usr/servers/zDTServer/logs/messages.log` to IBM support.
- **Offline**
A socket cannot be established to the target systems hostname on its SSH port.

Note: The monitor page is available for all users with different roles.