

**IBM** Information Management software



**IBM<sup>®</sup> Informix<sup>®</sup>  
Dynamic Server  
Amazon<sup>®</sup> Machine  
Image (AMI)  
Re-Bundling Guide**

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# 1. Introduction

## 1.1 Purpose

The purpose of this document is two-fold:

- ▶ To outline the process for integrating software applications into the IBM<sup>®</sup> Informix<sup>®</sup> Dynamic Server AMIs in the Amazon<sup>®</sup> Elastic Compute Cloud<sup>™</sup> (EC2<sup>™</sup>)
- ▶ To explain the steps, technical issues, and considerations regarding the re-bundling of Amazon Machine Images (AMIs)

For instructions on the deployment of the AMIs, please refer to:

- ▶ IBM Informix Dynamic Server Amazon Machine Image (AMI) Get Started Guide at:  
[http://download.boulder.ibm.com/ibmdl/pub/software/dw/cloud/ids/Get\\_Started\\_DS\\_AMI.pdf](http://download.boulder.ibm.com/ibmdl/pub/software/dw/cloud/ids/Get_Started_DS_AMI.pdf)
- ▶ Amazon EC2 guide, available at:  
<http://docs.amazonwebservices.com/AWSEC2/latest/GettingStartedGuide/>

The integration instructions contained in this guide can be applied to:

- ▶ IDS Developer Edition v11.50 AMI (32-bit)
- ▶ IDS Express Edition v11.50 AMI (32-bit)
- ▶ IDS Workgroup Edition v11.50 AMI (64-bit)

This document is intended for a technical audience and will help independent solution vendors (ISVs) obtain knowledge about integrating their software with the existing IDS AMIs in Amazon Web Services (AWS).

## 1.2 Prerequisites for Bundling an AMI Instance

In order to perform bundling and uploading operations on your AMI Instance, you will need the EC2 AMI Tools. By default, both the EC2 AMI and API Tools are installed on all IBM IDS AMIs. If you had removed the EC2 AMI Tools at an earlier time, they can be downloaded at

<http://developer.amazonwebservices.com/connect/entry.jspa?externalID=368>. Likewise, the EC2 API Tools can be downloaded at <http://developer.amazonwebservices.com/connect/entry.jspa?externalID=351>.

Since you will be performing these operations directly within your instance, you will also need to place within the file system of your instance your AWS credentials, such as the X.509 certificate and private key files.

This guide assumes that files mentioned within this document were not removed prior to the usage of this guide.

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## 2. Integrating Custom ISV Software

The purpose of pre-integrating software into the IDS AMI is to alleviate the application installation, configuration, and integration tasks from the end-user, making the deployment of the applications on IDS in an AMI easy and painless.

Before continuing on the task of integration an application on a running AMI instance, it is recommended that you create an AMI that captures the current state of the instance. In the case where the application fails to be configured properly or there is a problem with the AMI, a backed-up, working AMI may be deployed so the next iteration of the integration process can start from a clean environment.

Integrating an ISV application into the IDS AMI is similar to installing and configuring the application to work within an operating system in a normal, physical environment with a few extra considerations.

The following guidelines specify the process for integrating an ISV application into an IDS AMI:

1. Install all required dependencies needed by ISV application (e.g. Linux<sup>®</sup> operating system packages)
2. Install the ISV application and configure the default settings of the ISV application to work with IDS. It is recommended that a new IDS instance be created for the ISV application, and please ensure that it is created in the `/data` directory, where the EBS volume will reside if the end user chooses to use it.
3. Verify that all components of the ISV application are installed and configured successfully. Create, test, or sample data from the ISV application.
4. Develop and execute test plans for this integration task; Ensure the application is able to run properly, able to access the database, and is fully functional on the EC2 instance
5. Identify tasks to be performed at “first boot” of an AMI instance. E.g. any configuration of the ISV application that requires user input such as user name and password for security.
6. Develop post-install plans based on the tasks identified in the previous step (if applicable). For example, if the ISV software files are dependent on any system or database parameters such as system hostname, domain name, network protocol etc, be prepared to develop customized shell scripts and/or YaST configuration modules to configure the AMI instance accordingly.
7. Set the AMI instance back to a “first boot” state by resetting any configuration scripts and/or YaST configuration modules. This will ensure the scripts/modules

will be executed during the initial boot-up of an instance of the newly re-bundled AMI.

8. Re-bundle the file system into an AMI. When you re-bundle an AMI in EC2, the directories `/sys`, `/proc`, `/dev`, `/media`, and `/mnt` are not included. Therefore, it's recommended that any files that need to be preserved in the newly re-bundled AMI should not be stored in these directories. `/data` will also not be included in many cases where it is mounted onto an EBS volume, and therefore any data that should be saved should not reside in this directory either.

---

## 3. AMI Re-Bundling Instructions

If you installed an ISV application on top of the IDS AMI, you may want to restore the AMI back to the initial state. This will allow end-users to go through the original sequence of license agreement acceptance screens and any IDS and AMI related configuration modules. An outline of the AMI re-bundling steps are listed as follows:

1. Adding additional license text associated with the integrated ISV application to be displayed in the license agreement acceptance screens. See section [3.1 License Screens for details](#).
2. Modifying / adding reset scripts in order to save and backup any settings and data within database instances so that it may be restored after the "first boot" sequence. See section [3.2 Modifying / Adding Reset Scripts for details](#).
3. Adding automated tasks through scripts that are run during the "first boot" sequence. See section [3.3 Modifying / Adding "first-boot" Configuration Scripts for details](#).
4. Removing any user specific confidential data such as private keys, certificate files, and RSA public keys from the AMI instance.

**Note:** If you do not remove any user specific confidential data before re-bundling, they might get included in the file system of the new AMI, potentially exposing them to the public if you choose to make this new AMI public.

5. Packaging up the AMI which has ISV application integrated with IDS. See section [3.4 Re-bundling, Uploading, and Registering of AMI](#) for details.

### 3.1 License Screens

If you wish to add additional products to the IDS AMI, you may need to add corresponding license agreements for your product to the initial license acceptance screen.

1. You will need to have your product license file in .txt file format. Name the license text file as `<product_name>_license.txt`.
2. Copy the license txt file into the `/var/adm/ibmvmcoc-postinstall` directory.

```
# cp <license>.txt /var/adm/ibmvmcoc-postinstall
```

3. Copy the sample license display script file into the `/var/adm/ibmvmcoc-postinstall/licenseadds` directory. At the same time, rename the script to `<product_name>_license.sh`.

```
# cp /var/adm/ibmvmcoc-postinstall/ExampleLicense.sh
/var/adm/ibmvmcoc-
postinstall/licenseadds/<product_name>_license.sh
```

4. Edit the newly renamed license display script file by including the full path to the license text file, as well as the title of the license. In the `/var/adm/ibmvmcoc-postinstall/licenseadds/<product_name>_license.sh` file, edit the following lines:

```
LICENSEFILE="<full_path_to_license_text_file>"
BACKTITLE="<title_of_the_license>"
```

5. Repeat the process for each license that you need to add. Each license will be displayed in alphabetical order by the license display script file name (`<product_name>_license.sh`).

## 3.2 Modifying / Adding Reset Scripts

The reset process will allow the AMI to start in a clean state again upon the next bootup, giving the user an initial state to the AMI containing IDS and your product. Therefore, you may need to modify or add reset scripts to the AMI in order to save extra data / settings that you have included with your product.

1. If needed, create you own custom reset script to automate any tasks that are necessary for your product to complete a reset, so that upon the next boot-up the user will experience a fresh install of your product. Make sure this script is executable and resides in `/var/adm/ibmvmcoc-postinstall/resetadds`, where all scripts will be executed during the reset process in alphabetical order.

### 3.3 Modifying / Adding “first boot” Configuration Scripts

Products added to the IDS AMI may require additional configuration processing if the product is affected by local changes to the environment. For example, changes to the ISV product configuration must be completed if the product has a dependency on hostname changes, which will be automatically set up by the EC2 infrastructure for every new AMI instance.

1. Create the configuration script in `/var/adm/ibmvmcoc-postinstall/postconfigadds`, making sure it is executable. Scripts in this directory will be executed after the configuration of IDS in the new AMI instance environment, and in alphabetical order. To ensure that this newly configured script runs after the full configuration of IDS, name the script `##_<script_name>.sh`, where `##` is an integer after 02. For example, the script below will go edit a text configuration file to take care of the hostname change in a new AMI instance environment.

```
#!/bin/sh
NEW_HOSTNAME=`hostname`; export NEW_HOSTNAME
OLD_HOSTNAME="dummy_old_hostname"; export OLD_HOSTNAME

sed s/"$OLD_HOSTNAME"/"$NEW_HOSTNAME"/g
    /opt/myproduct/hostname.conf >
    /opt/myproduct/hostname.conf.fixed

mv /opt/myproduct/hostname.conf.fixed
    /opt/myproduct/hostname.conf
```

### 3.4 Re-Bundling, Uploading, and Registering of AMI

At this point, the file system of the AMI instance should be ready for bundling. To bundle the instance, go into the corresponding directory by issuing the command:

```
cd /usr/lib/site_ruby
```

To bundle the instance, issue the command::

```
ec2-bundle-vol -d /mnt -k <private key location> -c
    <certificate location> -u <AWS account ID>
```

The `-d` option specifies the local directory the bundle will be saved to. It is advisable to keep the certificate and private key files in the `/mnt` directory since volume bundling will exclude the `/mnt` directory, thus preventing the new AMI from bundling confidential information.

When prompted for a specifying “a value for arch”, press enter to choose the default value (this value will change depending on whether you are using the 32-bit or 64-bit versions).

```

ec2-67-202-19-184.compute-1.amazonaws.com - PuTTY
Please specify a value for arch [x86_64]: Timed out waiting for user input: arch
db2exc64:/usr/lib/site_ruby # ec2-bundle-vol -d /mnt -c ~/ec2/cert-
    .pem -k ~/ec2/pk-
    .pem -u 1849
06026224
Please specify a value for arch [x86_64]:
Copying / into the image file /mnt/image...
Excluding:
    /sys/kernel/debug
    /sys
    /proc
    /dev/pts
    /dev
    /media
    /mnt
    /proc
    /sys
    /mnt/image
    /mnt/img-mnt
1+0 records in
1+0 records out
1048576 bytes (1.0 MB) copied, 0.004638 seconds, 226 MB/s
mke2fs 1.38 (30-Jun-2005)

```

The bundling will now start and the excluded directories are shown. Bundling will take some time, as this step involves compressing the entire file system into a format that is compatible with Amazon EC2.

The bundle will be saved in `/mnt`. After bundling completes, it is time to upload the bundle to Amazon S3 storage by issuing the following command

```

ec2-upload-bundle -b <bucket name> --manifest <manifest location>
    -a <Amazon access key ID> -s <Amazon secret access key>

```

The `-b` option specifies the bucket (or folder) location that the bundle will be stored on the Amazon S3 storage. Buckets are automatically created if they do not already exist. The `--manifest` option points to the `image.manifest.xml` file stored locally on your instance.

Please refer to section 2.3 in *IBM Informix Dynamic Server Amazon Machine Image (AMI) Get Started Guide* regarding Amazon access key ID and secret access key. This document is available at:

[http://download.boulder.ibm.com/ibmdl/pub/software/dw/cloud/ids/Get\\_Started\\_IDS\\_AMI.pdf](http://download.boulder.ibm.com/ibmdl/pub/software/dw/cloud/ids/Get_Started_IDS_AMI.pdf)

```
ec2-67-202-19-184.compute-1.amazonaws.com - PuTTY
db2exc64:/usr/lib/site_ruby # ec2-upload-bundle -b db2-exprc-64-2 --manifest /mnt/image.manifest.xml -a
                                     -s

Uploading bundled image parts to https://s3.amazonaws.com:443/db2-exprc-64-2 ...
Uploaded image.part.000 to https://s3.amazonaws.com:443/db2-exprc-64-2/image.part.000.
Uploaded image.part.001 to https://s3.amazonaws.com:443/db2-exprc-64-2/image.part.001.
Uploaded image.part.002 to https://s3.amazonaws.com:443/db2-exprc-64-2/image.part.002.
Uploaded image.part.003 to https://s3.amazonaws.com:443/db2-exprc-64-2/image.part.003.
█
```

Once the bundle has been successfully uploaded to Amazon S3 storage, the final step is to register the image by issuing the following command:

```
ec2-register mybucket/image.manifest.xml
```

```
ec2-67-202-19-184.compute-1.amazonaws.com - PuTTY
db2exc64:~ # ec2-register db2-exprc-64-2/image.manifest.xml
IMAGE      ami-f8648091
db2exc64:~ # █
```

Your AMI should now be registered in Amazon. To list your AMIs, issue the following command:

```
ec2-describe-images -o self
```

## 3.5 Publicizing your AMI

By default, AMIs that users create will be private. When an AMI is private, no other AWS user will be able to see your AMI. To publicize an AMI, type:

```
ec2-modify-image-attribute <ami_id> --launch-permission -a all
```

Once the AMI is publicized, all AWS users will be able to see the AMI, and launch instances from their own accounts. Before publicizing your AMI, be sure to secure your AMI by removing all confidential information on your AMI such as certificates and private keys.

---

## 4. Additional Information

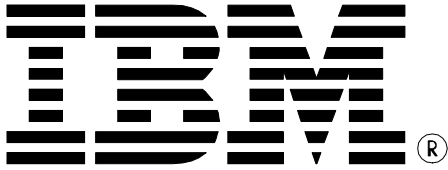
### 4.1 Feedback

Thank you for using the IDS AMI.

We welcome your feedback about your experience on the IDS AMI. If you notice any errors or discrepancies, or would like to comment on your experience on the IDS AMI, please send your feedback to [dmva@ca.ibm.com](mailto:dmva@ca.ibm.com), with the name of the IDS AMI in the subject line.

If you are an ISV and would like to engage our team for technical enablement in creating an embedded solution based on the IDS AMI, please contact us by sending an email to [dmva@ca.ibm.com](mailto:dmva@ca.ibm.com) with subject line "Embed IDS AMI".

For technical questions on IDS 11.5, please refer to the IDS Information Center at <http://publib.boulder.ibm.com/infocenter/idshelp/v115/index.jsp>.



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