Test drive DB2 10.1 using a virtual appliance

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IBM® virtual appliances allow you to easily experience the power of IBM software, such as DB2® for Linux®, UNIX®, and Windows®, without having to go through the setup process for either the operating system or IBM software. The virtual appliances are provided with pre-installed operating systems, and additionally, they deeply integrate IBM software in VMware virtual machines.

Introduction to DB2 10

The release of IBM DB2 10 for Linux, UNIX, and Windows introduces new features and enhancements focusing on lowering the total cost of ownership, business-critical reliability, and performance. With multiple editions available, from the no-charge Express-C to the top of the line Advanced Enterprise Edition, there is a DB2 product suitable for every business.

A look at the new features

One of the features introduced in DB2 10 that is geared toward reducing overall operational costs is multi-temperature data management. Multi-temperature storage allows you to designate fast (more expensive) storage options for your "hot" data, and slower (less expensive) storage for your "cold" data. In addition to this new feature in DB2 10, there are numerous enhancements to existing features, such as adaptive compression, which offers improved compression ratios and allows for more data in memory, thereby improving performance.

DB2 10 introduces several new features and enhancements to make the life of developers a bit easier. For example, SQL compatibility enhancements mean that applications written for competitive database systems require very few changes to run on DB2. Other enhancements include DB2 Graph Store for rapid development of

applications, row and column access control to provide fine-grained access control to tables, and temporal capabilities with standardized SQL syntax.

To ensure reliability of data, DB2 10 includes enhancements to DB2 pureScale, DB2 Workload Management, and HADR.

To find out more about the new features in DB2 10.1, visit the Resources section for more information.

Overview of DB2 virtual appliances

What is it, and why should I use it?

A virtual appliance is a pre-configured virtual server environment that greatly minimizes the work required for you to get up and running. There is no need to install an operating system, install software, and perform configuration of the software within the environment. It is pre-configured and ready-to-go. The IBM DB2 Enterprise 10.1 Trial Virtual Appliance can be run either locally on the host computer via VMware Workstation/Player, or remotely on a VMware vSphere environment. Upon initial boot of the appliance, you will need to provide secure passwords for the operating system and DB2 users, and optionally configure the network and time zone of the server. The IBM DB2 Trial Virtual Appliance features DB2 Enterprise 10.1, and an assortment of development and educational tools that are used to do the following.

- Alleviate application installation, configuration, and integration tasks.
- Test new features in DB2 10.1 with included tutorials and demonstrations.
- Develop new applications.
- Create DB2 demonstrations and presentations.
- Develop and test DB2 applications.
- Develop and deploy solutions.

Deploying the IBM DB2 Virtual Appliance starts a SUSE Linux Enterprise Server 11 instance that is configured with DB2 Enterprise 10.1. Table 1 shows you an overview of the software components that are installed in the virtual appliance, as well as driver versions that are applied as part of the deployment.

Table 1. Virtual appliance software components

	Version	Comment
SUSE Linux Enterprise Server	11 SP2	Enterprise Linux server operating system provided by SUSE.
DB2 Enterprise Server Edition 10.1	GA	DB2 Enterprise 10.1 trial license will expire 90 days after the first boot of the virtual image.
Technology Explorer for IBM DB2	4.2	Light-weight, web-based console for DB2 that helps you learn about the new features in DB2 10.1 using demonstrations and tutorials.

| Workload Multiuser Driver | 1.2.3080 | Allows multiple users to run pre-defined or custom workloads against a DB2 database and control it via the Technology Explorer for IBM DB2. Many settings such as the number of active connections to the database can be increased on-the-fly. |
| IBM Data Studio | 3.1.1 | Provides an integrated, modular environment for database development and administration of DB2. |

Launching the IBM DB2 Virtual Appliance contains all of the components that you need to start exploring DB2 10.1.

Where to get it?

From the Resources section, download IBM DB2 Virtual Appliance from DB2 Data Server 10.1 trial site, and use it for up to 90 days.

How to use it?

Requirements

The DB2 Enterprise 10.1 Trial Virtual Appliance is available in both 32-bit and 64-bit versions.

You must meet the hardware specifications on your host machine as shown in Table 2.

Table 2. Hardware requirements for DB2 Trial Virtual Appliances.

Requirement	Specification
Memory on host machine	Minimum: 1.5 GB
Disk space on host machine	Minimum: 8.0 GB

The image is designed to run in VMware Workstation 6.5.x and VMware Player 3.x or later. You can also choose to convert the image to OVF format which is designed to run in all VMware products. You may download the VMware software from the VMware website (see the Resources section for a link).

Get it, extract it, deploy it, and run it on VMware Workstation/Player

To run the virtual appliance (either 32-bit or 64-bit), perform the following steps.

> **Attention**
>
> The uncompressed image files will take just over 5 GB of space, and the size will grow as you use the Virtual Appliance. Ensure that you have enough free disk space before uncompressing the self-extracting package.

1. Download the DB2 Trial Virtual Appliances (see the Resources section for a link).

2. Copy the self-extracting package into your desired directory. The self-extracting package name should be in the form of the following.
   - `DB2_ESE_10.1_trial_VA_<bitness>bit.exe`
3. Extract the contents of the package to the desired directory.
   - On Linux you can use the following command:
     `unrar x DB2_ESE_10.1_trial_VA_<bitness>bit.exe` (This requires an **unrar** utility that is supported on your platform).
   - On Microsoft Windows you can extract the contents by double-clicking the file and following the prompts.
4. Open VMware on your host operating system.
5. Open the VMware image that was extracted in the previous step. You may do this by clicking **File** > **Open**, and then browsing to the directory where the files were extracted from within VMware Workstation.
6. Start the image by clicking the **Power** or **Play** button.

Converting to Open Virtualized Format (OVF) and deploying on an ESX server

To convert the Virtual Appliance to an Open Virtualized Format, you must first download and install the OVF Tool from VMware (see the Resources for a link). Once installed, perform either of the following steps.

- To convert the Virtual Appliance in VMX format to an OVF package, use the following command:

  Listing 1. Converting a VMX to an OVF

  ```
  ovftool DB2_ESE_10.1_trial_VA_<bitness>bit.vmx DB2_ESE_10.1_trial_VA_<bitness>bit.ovf
  ```
- To convert the Virtual Appliance in VMX format to an OVA file, use the following command:

  Listing 2. Converting a VMX to an OVA

  ```
  ovftool DB2_ESE_10.1_trial_VA_<bitness>bit.vmx DB2_ESE_10.1_trial_VA_<bitness>bit.ova
  ```

To deploy and run the Virtual Appliance on an ESX server, perform the following steps.

1. Open the vSphere Client. From the menu bar, click **File** > **Deploy OVF Template**. The Deploy OVF Template wizard appears.
2. Once you have converted to OVF or OVA, choose **Deploy from File**, then click **Browse** and navigate to the directory on your system that holds the files (make sure to select the correct file type of either OVF or OVA). Otherwise you can deploy the DB2 Virtual Appliance directly from an URL, choosing the option **Deploy from URL** and type the URL to the OVF file. Click **Next** to continue.
3. The details of the DB2 Virtual Appliance will be displayed. Click **Next** after reviewing.
4. (Optional). You can choose to edit the name of the virtual appliance as it will appear in your vSphere Client. Click **Next** to continue.

5. Select the resource pool and datastore in which to store the DB2 Virtual Appliance, then click **Next** to continue.
6. Review the deployment settings in the last screen of this wizard to ensure the deployment task is correct. Click **Finish** to start the deployment of the DB2 Virtual Appliance.

Configuring the virtual appliance for the first time

Once the DB2 10.1 Enterprise Trial Virtual Appliance is powered on for the first time, it will load up the default operating system and configure the secondary disk for database storage disk. It will be located on `/db2fs`, `ext3` file system. No action is required.

When the SUSE boot-up process is complete, you will be greeted with the following set of configuration screens that you need to complete for the customization of the virtual machine.

- A **Language** & **Keyboard** screen allows you to customize the display language and keyboard layout for the locale of your choice. It defaults to English locale with a US keyboard layout. These settings can be changed by using the drop-down menus. If you change the language, then it will automatically detect a new keyboard layout, which of course can be changed as well.
- A **Welcome** screen is shown that explains that there are a few configuration steps to be taken before the virtual image is ready for use.
- The *SUSE Linux Enterprise Server 11 SP2 license agreement* will be presented. You must read and accept the license agreement; otherwise the virtual machine will halt immediately.
- The *DB2 10.1 Enterprise Trial Virtual Appliance license agreement* will be shown as well. Again, you must read and accept the license terms and conditions to proceed with using the virtual machine.
- You will be asked if you would like to choose a hostname for the system. The default hostname can be accepted or can be changed at this configuration screen.
- Next, the **Network Configuration** screen will be shown. It defaults to DHCP IP address. However, it is recommended that a static IP address is chosen at this configuration screen. In order to configure a static IP address, click the **Change** button at the bottom of the screen to change the default configuration.
- The virtual image will next let you choose a different time zone. The default setting is Canada/Toronto. Using the available menus, the time zone can be changed to match your location.
- Next, you must choose a secure password for the root user. Click **Next** to continue.
- As a final step in the configuration, you must choose a password for the DB2 instance and fenced users, as well as the Workload Multi-user Driver (WMD) user. Once chosen, click **Next** to complete the configuration of the virtual machine.

This completes the configuration of the DB2 10.1 Enterprise Trial Virtual Appliance. The virtual appliance will take a few minutes to complete the boot up process and you will be ready to try out all the new features in DB2 10.1.

Note: It is highly recommended that you install the VMware Tools version that comes with your VMware product after the DB2 10.1 Virtual Appliance has been fully configured. VMware Tools bring in many benefits for the use of any virtual environment, including better clock synchronization with the host system, improved file movement between the host and guest OS (if applicable), and improved GUI responsiveness. For more information about VMware Tools, please refer to your VMware product manual.

Adobe Flash Player is not distributed with the virtual appliances, therefore, you will either need to download and install it manually or use a remote browser to access any web pages requiring Adobe Flash Player technology.

Tools for your use

The deployed DB2 Virtual Appliance includes several tools that have been included to ease some of the regular system tasks, such as stopping and starting the DB2 database manager as part of the SUSE boot sequence, as well as stopping and starting the WMD deamon during reboots and shutdowns of the machine.

The DB2 *init* script that was written for SUSE can be invoked by the root user at any time to stop/start/restart the DB2 database manager as shown in Listings 3 through 6.

Listing 3. Retrieve status of DB2 database manager

```
# rcdb2 status
Instance db2inst1 (50001) (/opt/ibm/db2/V10.1):    running
```

Listing 4. Stop DB2 database manager

```
# rcdb2 stop
Stopping instance db2inst1 (50001) (/opt/ibm/db2/V10.1):   done
```

Listing 5. Start DB2 database manager

```
# rcdb2 start
Starting instance db2inst1 (50001) (/opt/ibm/db2/V10.1):   done
Activating database SAMPLE for db2inst1     done
```

Listing 6. Restart DB2 database manager

```
# rcdb2 restart
Stopping instance db2inst1 (50001) (/opt/ibm/db2/V10.1):   done
Starting instance db2inst1 (50001) (/opt/ibm/db2/V10.1):   done
Activating database SAMPLE for db2inst1     done
```

The Workload Multi-user Driver (WMD) deamon *init* script written for SUSE works a similar way. It is used to start/stop/restart the service that controls the deamon, which

in turn is used to run sample workloads that can be monitored via the Technology Explorer for IBM DB2, as shown in Listings 7 through 10.

Listing 7. Retrieve status of WMD deamon

```
# rcwmd status
Status of Workload Multiuser Driver deamon ...     running
```

Listing 8. Stop WMD deamon

```
# rcwmd stop
Stopping the Workload Multiuser Driver ...     done
```

Listing 9. Start WMD deamon

```
# rcwmd start
Starting the Workload Multiuser Driver with user wmd     done
```

Listing 10. Restart WMD deamon

```
# rcwmd restart
Stopping the Workload Multiuser Driver ...     done
Starting the Workload Multiuser Driver with user wmd     done
```

These tasks can be performed when needed, but you don't need to manually stop or start DB2 or WMD when the system powers on or shuts down. Those services will be taken care of when the proper Linux reboot or shutdown procedures are used.

Other things that you can try

In addition to the DB2 Enterprise 10.1 Trial Virtual Appliance, there are numerous virtual appliances that you can use to familiarize yourself with DB2 10.

DB2 Express-C 10.1

For those who want to explore DB2 Express-C 10.1 for trial and demonstration purposes, a virtual appliance has been made available at the IBM DB2 Virtual Appliance downloads site, which you can find in the Resources section. The DB2 Express-C 10.1 Virtual Appliance is very similar in nature to the aforementioned DB2 Enterprise 10.1 Virtual Appliance, and the knowledge you have gathered from this article will apply to the DB2 Express-C 10.1 Virtual Appliance as well.

In addition, the DB2 Express-C website has the DB2 Express-C 10.1 installation packages for various different operating systems and architectures, which you can find in the Resources section.

SUSE Studio

For SUSE Studio, DB2 Express-C and Enterprise Trial 10.1 virtual images are made available in the SUSE Gallery, which you can find in the Resources section. Feel free

to download or clone to build upon these appliances. DB2 Enterprise Trial 10.1 virtual images are available for a 90-day trial period.

Discovery Kit

The IBM DB2 10 Discovery Kit includes DB2 Enterprise 10.1 install images, DB2 Enterprise 10.1 virtual image, white papers from industry experts, case studies, IBM webcasts and podcasts, product demos and more, which you can find in the Resources section.

Conclusion

The DB2 10.1 virtual appliances are an excellent way to try out the new features in DB2 10.1. The DB2 Enterprise 90-day trial virtual appliance lets you experience the full feature set of DB2. Or you can try DB2 Express-C to get you started with the community edition DB2 server.

This article included instructions on how to get these virtual appliances up and running, and included information on a variety of different places where you can downloaded the images.

For qualified IBM business partners and customers who are interested in learning more about DB2 10.1, a variety of educational resources are available. DB2 10.1 technical bootcamps are face-to-face educational opportunities that take attendees through an in-depth introduction to the new features in DB2 10.1. Visit the DB2 10 for Linux, UNIX and Windows Bootcamp in the Information Management Solution Portal to get more information and registration. See the Resources section for the link.

For remote learning opportunities, visit the IBM Information Management e-Learner Portal, which is also available with similar content to the technical bootcamps.

For more information about technical bootcamps and the e-Learner portal, contact techcamp@ca.ibm.com.

Resources

Learn

- Get a glimpse of the new features in DB2 10.1 with "DB2 10: What's new in DB2 10 for Linux, UNIX, and Windows" (developerWorks, Apr 2012).
- Learn about the VMware OVF Tool.
- Learn about the Technology Explorer for IBM DB2 and the Workload Multiuser Driver.
- Learn more about DB2 Express-C from the DB2 Express-C website.
- Download Adobe Flash Player.
- View locations and dates for the DB2 10 for Linux, UNIX and Windows Bootcamps.
- Browse the Information Management Solution Portal.
- Visit the developerWorks Information Management zone: Find more resources for DB2 developers and administrators.
- Stay current with developerWorks technical events and webcasts focused on a variety of IBM products and IT industry topics.
- Attend a free developerWorks Live! briefing to get up-to-speed quickly on IBM products and tools as well as IT industry trends.
- Follow developerWorks on Twitter.
- Watch developerWorks on-demand demos ranging from product installation and setup demos for beginners, to advanced functionality for experienced developers.

Get products and technologies

- Download the DB2 10.1 Enterprise Trial Virtual Appliance.
- To download and evaluate VMware products, access the Download Center for VMware Datacenter and Desktop Products.
- Try out the DB2 10.1 Express-C Virtual Appliances via IBM DB2 Virtual Appliance Downloads site.
- Browse the SUSE Gallery for IBM DB2 Virtual Appliances.
- Download the IBM DB2 10 Discovery Kit.
- Build your next development project with IBM trial software, available for download directly from developerWorks.
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Irina Delidjakova is a Software Developer within the Information Management Technology Ecosystem team in IBM. Irina has been working with IBM for the past six years in various job roles, which have always revolved around supporting IBM Business Partners by creating numerous virtual and physical appliances, and providing training on products within the IM portfolio. Irina has been involved in appliance integration projects such as the former IBM Balanced Warehouse C-Class, and is now the lead developer for the new IBM Smart Analytics System 5710.

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