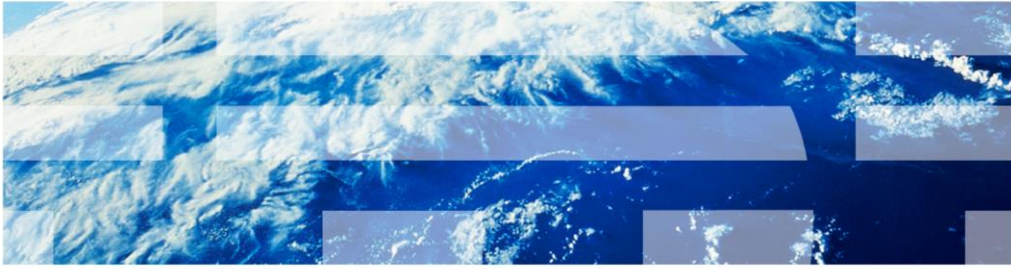


IBM Workload Deployer

Database-as-a-Service (DBaaS) administration



This presentation covers the administration of databases deployed with the IBM Workload Deployer product using the DBaaS functionality.

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- Overview
- Database instances
- Database tools
- Summary

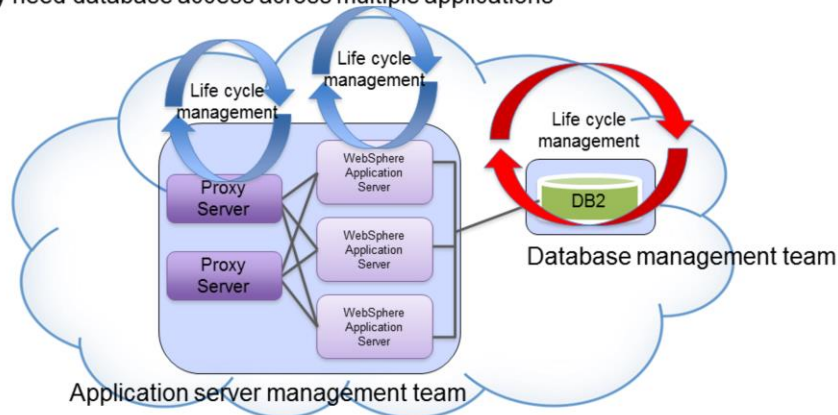
In this presentation, you will review the DBaaS support and then look at managing database instances, including some database tools that are provided for this purpose.

Overview

In this section you will see an overview of the DBaaS function available in the IBM Workload Deployer appliance.

Overview

- Separate need for Databases in many usage scenarios:
 - Separate management team
 - Life cycle independent of application life cycle
 - May need database access across multiple applications



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DBaaS administration

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In many usage scenarios the database is a distinct entity with its own administrative team and its own life cycle. IBM Workload Deployer models this behavior with database patterns and database instances.

This presentation will talk about the management of the database instances deployed by IBM Workload Deployer.

Database instances

This section covers database instances.

Database instance console (Instances > Databases)

Operations

mydb Start Stop Destroy Delete Manage

Database ID: d-7ea7d4ff-ef6e-410f-af82-310843807854 **Deployment ID – used in storehouse browser**

Created by: cbadmin

Database Description:

Host: 172.16.76.83 **Database VM Host, Port**

Port: 50000

User (Application DBA)

User (Application DBA): appdba **appdba password and URL**

Password (Application DBA): ABcsQ4tVY44xm71 Hide

JDBC URL (Application DBA): jdbc:db2://172.16.76.83:50000/mydb:user=appdba;password=ABcs Hide

User (Application User)

User (Application User): appuser **appuser password and URL**

Password (Application User): ***** Show

JDBC URL (Application User): ***** Show

Status: Running **View logs** Log

View history and status

History The virtual system has been deployed and is ready to use

The virtual system has been deployed and is ready to use Nov 26, 2011 11:39:23 PM

Starting virtual machine database-db2.11322372029745 Nov 26, 2011 11:34:57 PM

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Database instances are deployed database patterns. Put another way it is a VM with an instance of DB2 running in it. To view database instances, navigate to **Instances > Databases** and click the database instance whose details you need to look at. From the database instance panel, you can perform operations and view instance information.

As shown on the slide, operations from this database instance console include the Start, Stop, Destroy, Delete and Manage operations. As far as instance information, you can view the database deployment ID which can be used to correlate this database instance in the logs and the storehouse browser, which you will see on a later slide. You can also view the host ip address of the VM where the database is being hosted along with the port being used for database communication there. There are some user IDs and passwords that are also shown here. These include the appdba, the application database administrator, and appuser, the application user. The passwords and JDBC URL for these user IDs can be hidden or shown with the buttons shown on the right. Also available on the database instance console is a direct link to the logs and the history and status of the virtual system that was deployed for use by the database. You will see the logs on the next slide.

Database instance logs

OS logs

DB2 logs

Agent logs

Download all log files into a .zip file

Bring cursor on file – arrow link will pop up – click to download log file

Log Viewer [database-db2.11322372029745 (172.16.76.83)]

Refresh Download All

Name: database-db2.11322372029745

Date: UTC 2011

Host: a1mcp083

Command: /opt/ibm/db2/V9.7/instance/db2icrt

Insttype: 3

Level: VRMF=9.7.0.4, Interim=0, SpecialInstal

Message: DBI1070I Program db2icrt completed

ReturnCode: 0

database-db2.11322372029745

OS

/var/log

.../log/mustGather

DB2

.../sqllib/log

instance.log

.../db2dump/stmmlog

stmm.0.log

.../sqllib/db2dump

db2inst1.nfy

db2diag.log

IWD Agent

.../logs/install

.../logs/database-db2.1132

.../database-db2.11322372

.../logs/database-db2.1132

.../logs/database-db2.1132

.../logs/database-db2.1132

.../logs/database-db2.1132

/Oconfig

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When clicking on the log hyperlink as seen on the previous slide, a new browser window is opened for the “log viewer.” In the log viewer, you’ll see logs for the operating system (OS) installation, the deployed DB2 instance and the “IWD Agent” logs. The agent logs include logs such as the plug-in install logs, the activation engine logs and the DB2 life cycle logs. If a problem is encountered, there are a couple of options to download the logs. Each of the individual files can be downloaded by selecting a file and then clicking on the arrow link that pops up as seen on the slide. You can also download all the log files into a compressed .zip file.

Database instance – manage operations (Database Service Console)

The screenshot displays the Database Service Console for a database instance named 'mydb'. At the top, there are control buttons: Start, Stop, Destroy, Delete, and Manage. The 'Manage' button is highlighted with a red box and an arrow pointing to the console interface.

The console interface has a header with 'Welcome, cbadmin | Database ID: d-7ea7d4ff-ef6e-410f-af82-310843807854'. On the left, there is a navigation menu with 'Operations' selected. The main area shows several operation options:

- Create a database image**: A callout points to this option, stating 'Backup saved in Tivoli Storage Manager'.
- Update configuration**: A callout points to this option, stating 'Update passwords and SSH access'.
- List all database images**: A callout points to this option, stating 'List all images'.
- Schedule backups**: A callout points to the 'Frequency' dropdown menu, stating 'Schedule backups'.
- Result of previous operations**: A callout points to the 'Operation Execution Results' table.

The 'Operation Execution Results' table shows the following data:

Name	Status	Created Time	Result	Return Value
Create a database image	Done	Nov 27, 2011 12:16:19 AM	database-db2.11322372029745.DB2: Fail	database-db2.11322372029745.DB2: Failed to create an image of database 'mydb'. Exit code: '1'. TSM Server is not configured or the configuration is incomplete
Automatic scheduled database backup	Done	Nov 26, 2011 11:47:12 PM	database-db2.11322372029745.DB2: Success	database-db2.11322372029745.DB2: Changed the frequency of automatic scheduled database backup to '...'

At the bottom of the console, there is a footer with '8 DBaaS administration © 2012 IBM Corporation'.

To perform administrative operations on a deployed database, click the Manage icon located in the upper right corner in the Database Instance page. This will open the Database Service Console in a new browser window or tab. Select the “database” option in the “Operations” list on the left. Here you can create a database image, which is an online backup of the database instance. Tivoli Storage Manager is required for this function. You can also update the passwords for the user IDs associated with the instance and allow SSH access to the virtual machine hosting the DB2 instance. In addition, there is an option to see the existing database images and schedule automatic database backups.

Database instance – manage operations – Details 2/3

Create a database image from this database instance – backup saved in Tivoli Storage Manager

Create a database image

Description: This operation will back up a database by creating a database image.

Image Name: *

Image Description:

Change application user (**appuser**) and database administrator (**appdba**) passwords and allow SSH access

Update configuration

Description: Updates the parameters of this role dynamically

Application User Password: *

Application DBA Password: *

Allow SSH access for Application DBA: Allow Deny

Allow SSH access for Application User: Allow Deny

Shown here on the top of the page is the panel to manually create a backup of the database instance. Again, the backup is saved in Tivoli Storage Manager so it's required that the "tsm" system plug-in be configured before this will work. On the bottom of the slide, you see the "Update configuration" options. Here you can update the application User and DB Administrator passwords to something that you choose. It also allows you to allow or deny SSH access for the default user IDs, appdba and appuser. Note that by default SSH access is not enabled.

Database instance – manage operations – Details 3/3

List all database images available in Tivoli Storage Manager

List all database images			
Database Images			
LP_DB_01	LP_DB	d-cdb944b-5128-4fac-9516-15d0354b14f	Jan 9, 2012 8:10:40 PM
LP_DB_02	LP_DB	d-cdb944b-5128-4fac-9516-15d0354b14f	Jan 9, 2012 8:53:58 PM

Schedule automatic backup in Tivoli Storage Manager – Off, Daily or Weekly

Automatic scheduled database backup

Description: Select the frequency of automatic database backup or disable backup.

Frequency: *

The last two sections under the Manage Operations option allow you to list all the database images that have been created for you in Tivoli Storage Manager and turn on or off the automatic scheduled backup feature. You will see additional details on that function on the next slide.

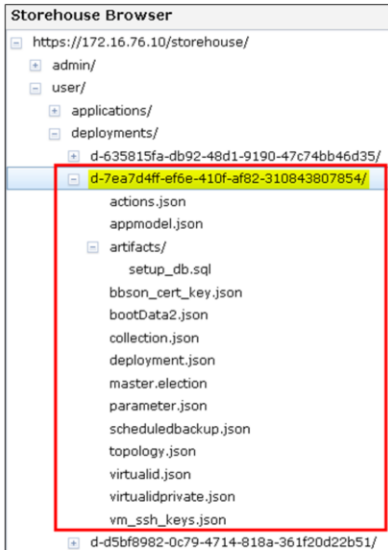
Automatic scheduled database backup details

- Uses Tivoli Storage Manager
 - Needs to be configured before scheduling backups
- Automatic
 - Default for scheduled database backups is “Daily” if Tivoli Storage Manager is configured
 - Will be set to OFF if Tivoli Storage Manager is not configured
 - Selecting frequency in Database Service Console “Operations” menu will enable it
 - Once enabled, will create an image each day at 23:00

As mentioned previously, Tivoli Storage Manager is used for the backups. In order to use the automatic scheduled backup feature, Tivoli Storage Manager needs to be configured first. If Tivoli Storage Manager is configured, scheduled backups are set to “Daily” automatically. If Tivoli Storage Manager isn’t configured, it is set to OFF until you go into the Database Service Console under the “Operation” tab and select a frequency. You can schedule a daily or weekly backup. Once scheduled, it will run automatically at 23:00. The restore of any of these backups needs to be done using Tivoli Storage Manager.

Database instance in Storehouse Browser

System → Storehouse Browser



- Browse to **user → deployments**, and then to the appropriate deployment ID
 - Database instance ID available from the Database instance console
- Database deployment files can be viewed
- Many of internal files are in JSON format

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DBaaS administration

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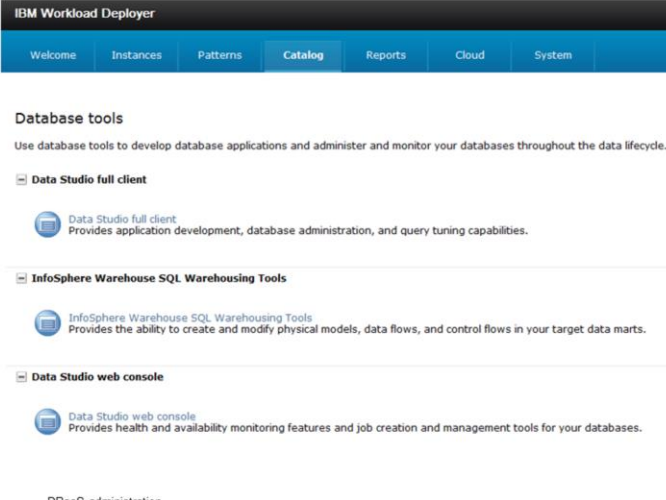
This slide shows a database instance in the storehouse browser which is found under the System menu. You can find your particular database instance by correlating the **Deployment ID** associated with the database instance. The storehouse browser allows you to look at the files associated with the deployment. Many of the files are in JSON format.

Database tools

This section will cover the available database tools.

Database tools (Catalog > Database tools)

- Use database tools to manage your databases



IBM Workload Deployer

Welcome Instances Patterns **Catalog** Reports Cloud System

Database tools

Use database tools to develop database applications and administer and monitor your databases throughout the data lifecycle.

- Data Studio full client**
 - Data Studio full client
Provides application development, database administration, and query tuning capabilities.
- InfoSphere Warehouse SQL Warehousing Tools**
 - InfoSphere Warehouse SQL Warehousing Tools
Provides the ability to create and modify physical models, data flows, and control flows in your target data marts.
- Data Studio web console**
 - Data Studio web console
Provides health and availability monitoring features and job creation and management tools for your databases.

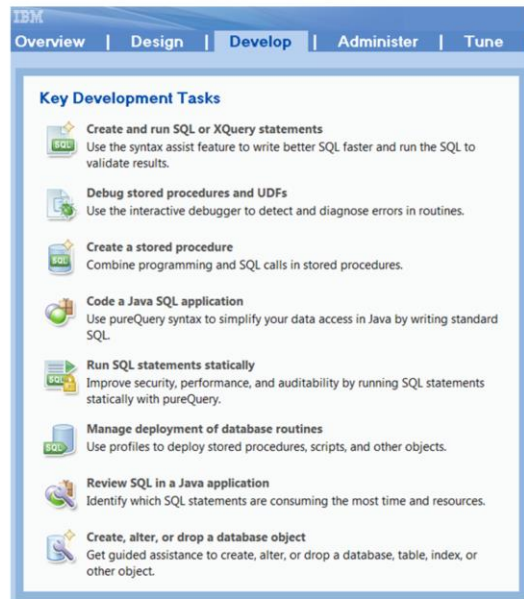
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To support the development, administration and monitoring of your databases, some database tools are made available to you. These are shown on the slide. Workload Deployer provides links to each of the database tools. To access these links navigate to **Catalog > Database tools**.

The three included database tools are the Data Studio full client, InfoSphere Warehouse SQL Warehousing Tools and the Data Studio web console. Each of these tools is licensed for use with Workload Deployer. There is no need to purchase a separate license.

Data Studio (develop)

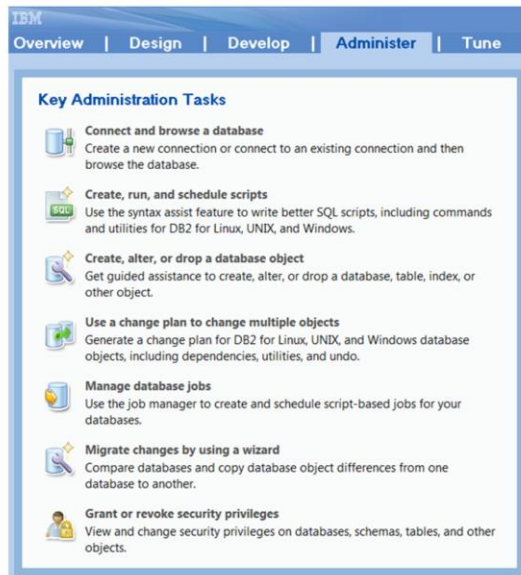
- Tasks related to developing database applications



The **Data Studio full client** provides an integrated development environment for database administration. It provides the ability to create, test and deploy your database applications. Shown here you see the “Develop” tab where the key development tasks are listed.

Data Studio (administer)

- Tasks related to administering databases



Data Studio also provides administration capabilities to manage your databases, among other things. The key administration task available to you under the “Administer” tab are shown on the slide.

InfoSphere Warehouse SQL Warehousing Tools

Welcome

Overview
Welcome! Take a few minutes to become familiar with the features in your development environment.

- IBM InfoSphere Warehouse product overview**
Learn about the InfoSphere Warehouse components and architecture.
- Workbench basics**
Learn about basic Eclipse workbench concepts
- Team support**
Find out how to collaborate with other developers

First Steps
Start here for step-by-step guidance to help you perform some key tasks.

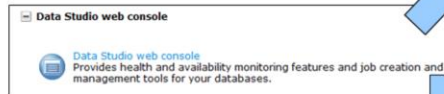
- IBM InfoSphere Warehouse Designing cube models and cubes**
Create and modify cube models, cubes, virtual cubes, and metadata objects.
- Designing SQL warehousing applications**
Model data flows and mining flows, embed these flows inside control flows, and prepare deployment packages that consist of one or more control flows.
- Designing mining models**

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InfoSphere Warehouse SQL Warehousing Tools provides tools to build a complete data warehousing solution. This slide shows the welcome screen for InfoSphere Warehouse SQL Warehousing Tools.

Data Studio web console

- Data Studio web console comes packaged as a virtual application pattern component
- Deployment is an administrative level activity



User without admin privileges

Data Studio web console

Provides health and availability monitoring features and job creation and management tools for your databases. [Learn more](#) about Data Studio web console.

Connect to the configuration repository database

Connect to the configuration repository database by following the procedure in the [IBM Workload Deployer information center](#).

Connect to a database

User with admin privileges

Data Studio web console

Provides health and availability monitoring features and job creation and management tools for your databases. [Learn more](#) about Data Studio web console.

Use IBM Data Studio web console in a Virtual Application Pattern

1. On the [Virtual Application Patterns](#) page, build a new virtual application pattern using the Data Studio web console asset as described in the [IBM Workload Deployer information center](#).
2. Deploy the virtual application pattern as described in the [IBM Workload Deployer information center](#).
3. On the [Virtual Application Instances](#) page, select the deployed application and click the `Data_Studio_web_console-dswc....` endpoint link to open the Data Studio web console.

Connect to the configuration repository database

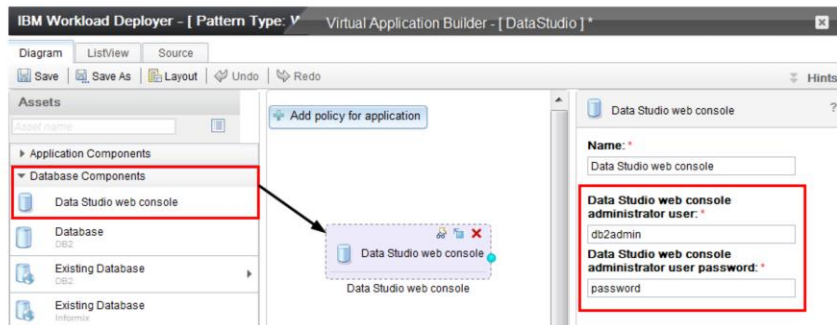
Connect to the configuration repository database by following the procedure in the [IBM Workload Deployer information center](#).

Connect to a database

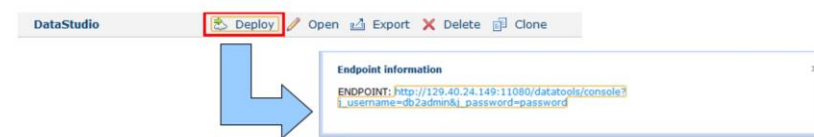
The **Data Studio web console** provides health and availability monitoring features and job creation and management tools for your databases. The Data Studio web console comes packaged as a virtual application pattern component that can be deployed into your private cloud. The deployment of the virtual application pattern is designed to be an administrative level activity. As show on the slide, only users with administrative privileges are given directions to actually deploy the virtual application that will host the IBM Data studio web console application.

Data Studio web console virtual application

- Data Studio web console component



– Deploy as a virtual application



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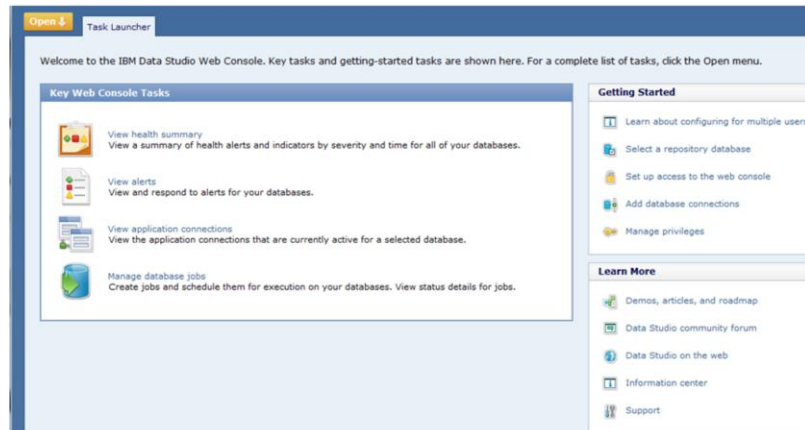
DBaaS administration

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This slide shows the “Data Studio web console” component. In this case, the created virtual application was named “DataStudio” and the “Data Studio web console” component was added to it. The only parameters you need to supply over on the right are the administrator user ID and password. The default user ID is “db2admin,” as shown. Once completed, you can deploy it to your private cloud and it can then be used to monitor the health and availability of your databases. The resulting endpoint information is shown on the bottom of the slide.

Data Studio web console – features

- Database health and monitoring
- Database job creation and management



This slide shows the main task launcher for the **Data Studio web console**. You can see the key tasks that it provides here including database health and availability monitoring in addition to database job creation and management tools. In order to use the tool, you need to add some database connections as seen under “**Getting Started**” on the slide. You will see that on the next slide. Also note that in order to use the product with other users, you must configure it for multi-user mode by adding a repository database. Then, you can configure authentication for the users and groups of that database. The repository database is used to store database connections, alerts, alert configuration settings, and other related information.

Data Studio web console – connecting to a database

- Click the database VM endpoint to get connection information
- Add a new connection in Data Studio web console

The screenshot shows two overlapping windows from the Data Studio web console. The background window displays the 'Alert List' for a data source named 'SandyDB'. The table below shows a single alert entry:

Severity	Alert Type	Start Time	End Time	Data Source	Category	Alert Group
Warning	Database Availab...	01/26/2012 01:35:37 AM		SandyDB	Data Serve...	System

The foreground window is the 'Edit Database Connection' dialog, which contains the following fields:

- Database connection name: SandyDB
- Comment:
- Data server type: DB2 for Linux, UNIX, and Windows
- Database name: SandyDB
- DB2 instance:
- DB2 CLP alias:
- Host name: 129.40.24.148
- Port number: 50000
- JDBC security: Clear text password
- Database server principal:
 - User ID: appfba
 - Password: *
- Additional JDBC properties: Example: traceLevel=32;progr...
- JDBC URL: jdbc:db2://129.40.24.148:50000/SandyDB:retrieveMessagesFromServerOnGetMessage=true;securityMechanism=3;

A blue arrow points from the 'Alert List' table to the 'Monitor health of database(s)' bullet point.

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DBaaS administration

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To connect and monitor a database click the endpoint for the deployed database VM in Workload Deployer. Next, log into the Data Studio web console and add a new database connection using the endpoint information. You are then able to monitor that database's health as shown on the slide.

Database tools – additional information

- Information Center
 - <http://publib.boulder.ibm.com/infocenter/dstudio/v3r1/index.jsp>
- IBM Workload Deployer: Restrictions and Limitations for IBM Data Studio V3.1
 - <http://www-01.ibm.com/support/docview.wss?uid=swg27022462>

For more detailed information on the database tools provided, a link to the information center is provided here. There is also a link to a document that shows the restrictions on using the database tools with IBM Workload Deployer.

Section

Summary

This section covers the summary.

Summary

- Real life database usage scenarios modeled in Workload Deployer with Database Patterns
 - Database managed independent of virtual application
- Database also available as part of virtual applications
 - Life cycle is tied to the virtual application

To align with real world database usage scenarios, databases can be managed independent of any virtual application. This is modeled in IBM Workload Deployer with the Database Pattern. This is only one available database management scenario however. You can also create a database belonging to your virtual application. In this case the database's life cycle will follow your virtual application's life cycle. In this presentation you saw how to manage databases deployed using IBM Workload Deployer and you saw some database tools that are included to help administer them.

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