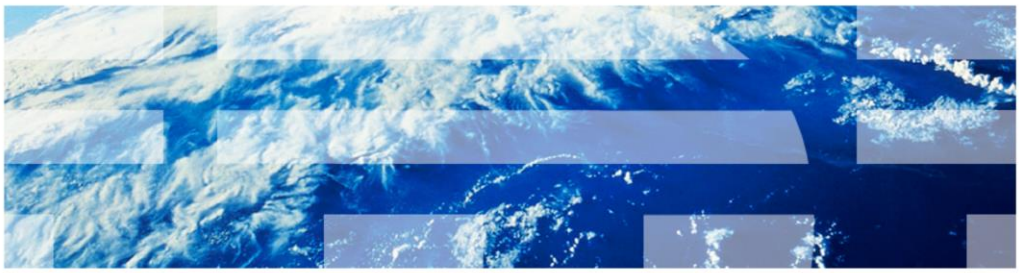
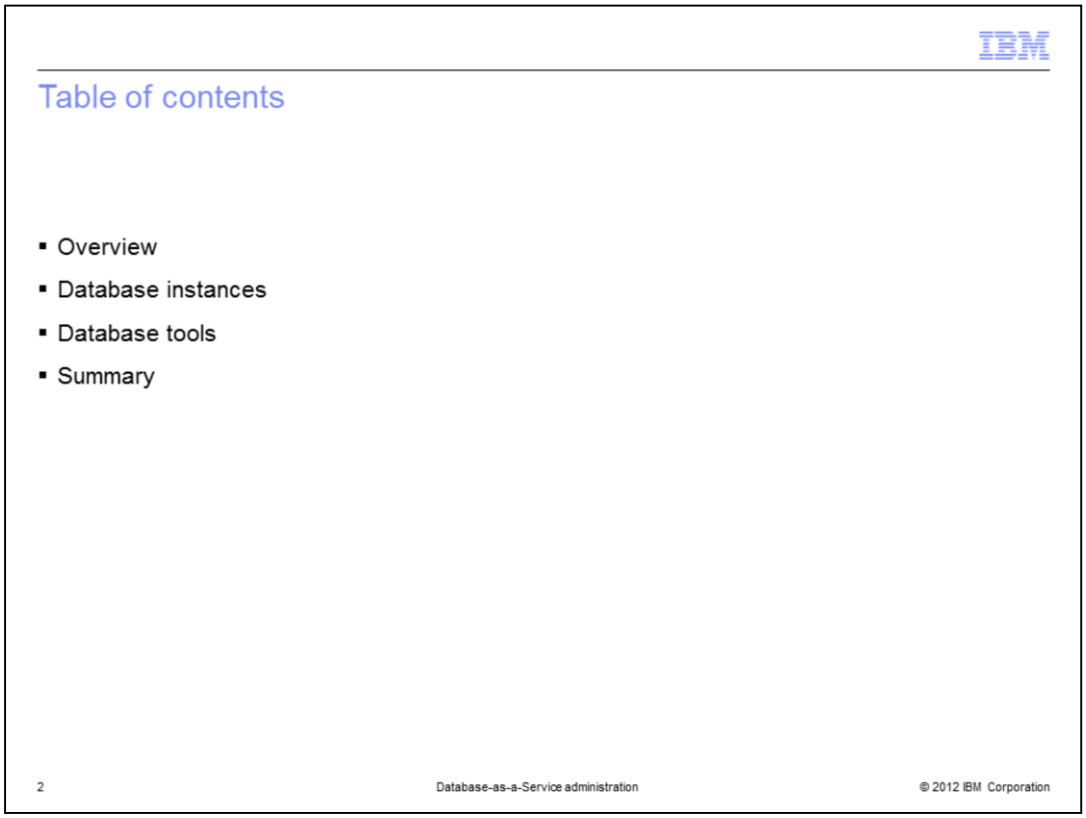
IBM PureApplication System

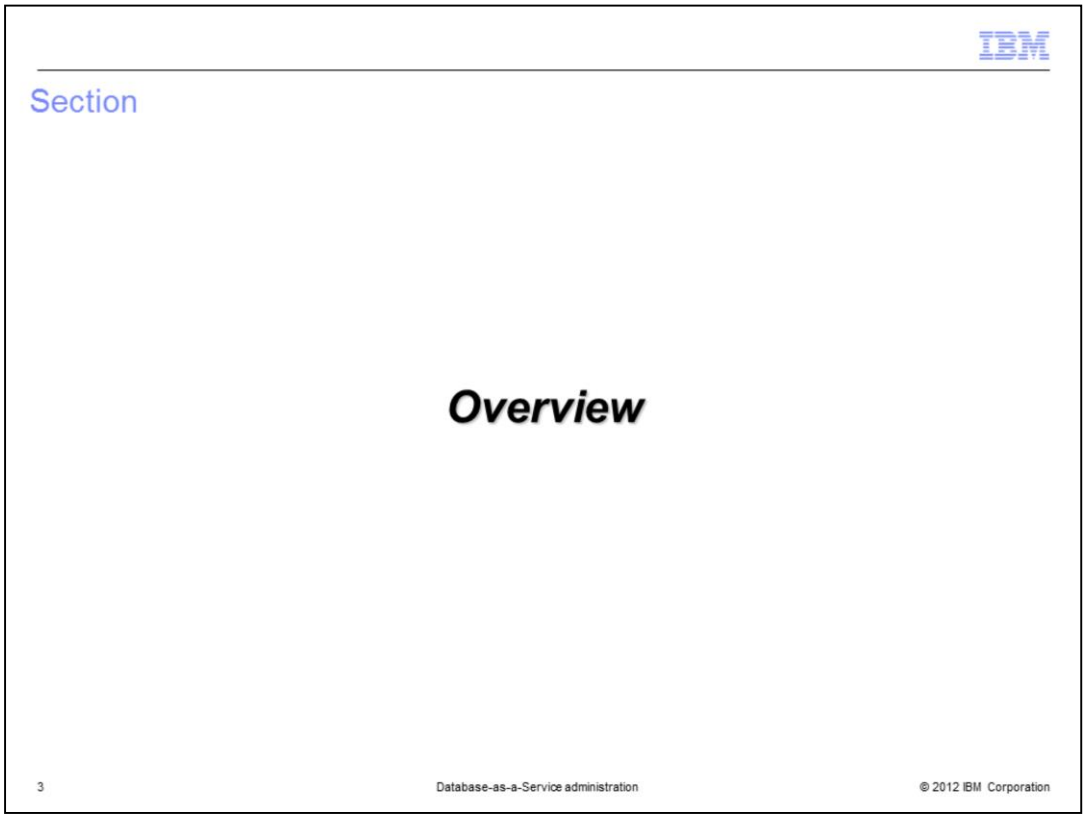
Database-as-a-Service (DBaaS) administration



IBM Database Patterns employs pattern types that create and deploy databases in a Database-as-a-Service (DBaaS) cloud environment. This presentation covers the Database-as-a-Service (DBaaS) administration found in the IBM PureApplication™ System product.



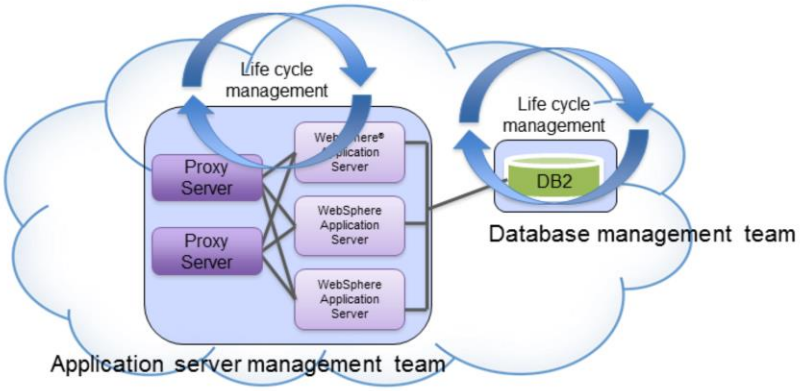
In this presentation, you will see a brief overview of the DBaaS support in PureApplication Systems, including some terminology and concepts. You will then see support to manage database instances, including some database tools that are provided for this purpose.



This section will cover an overview of the Database-as-a-Service (DBaaS) support available in PureApplication Systems.

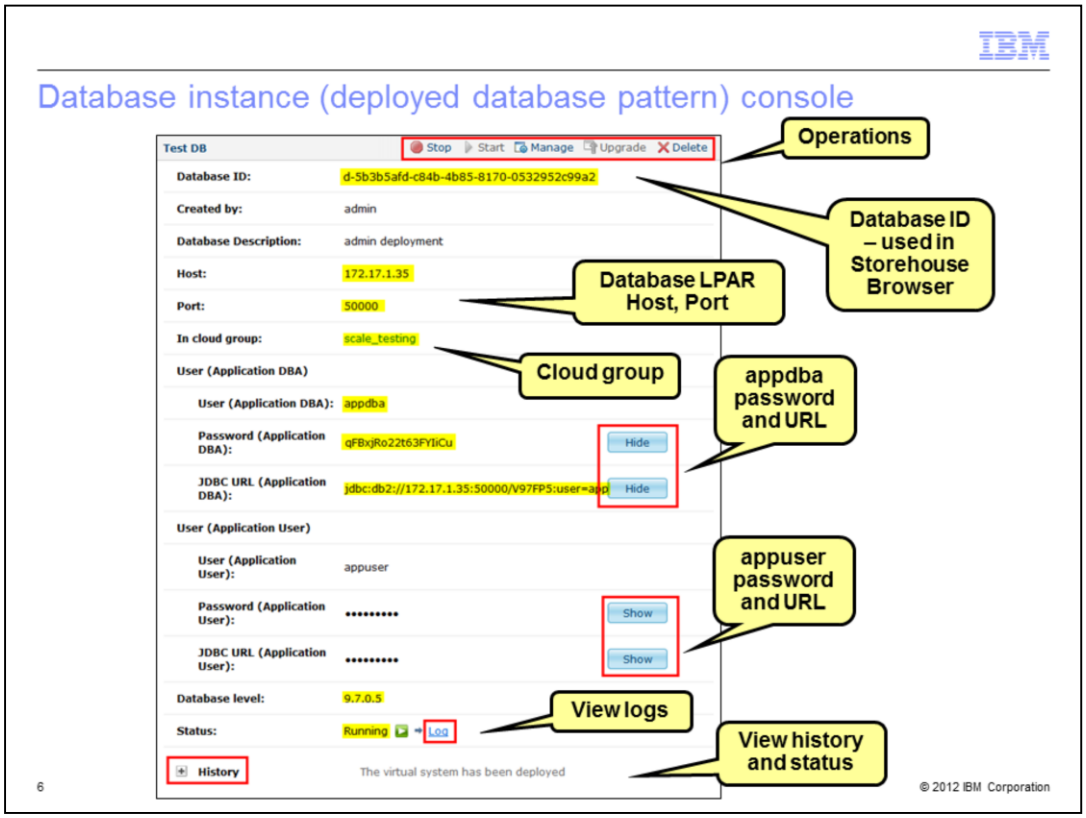
Overview

- IBM Database Patterns allow you to create and deploy DB2® databases in a Database-as-a-Service (DBaaS) cloud environment
  - You select the database requirements that meet your needs and PureApplication System builds the underlying topology to meet those requirements
- 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



In many usage scenarios the database is a distinct entity with its own administrative team and its own life cycle. PureApplication System models this behavior with database patterns and database instances. You give PureApplication System your database requirements in the form of a database pattern and it will quickly build and deploy a DB2 database instance for you. You will look at database instances in the rest of this presentation.

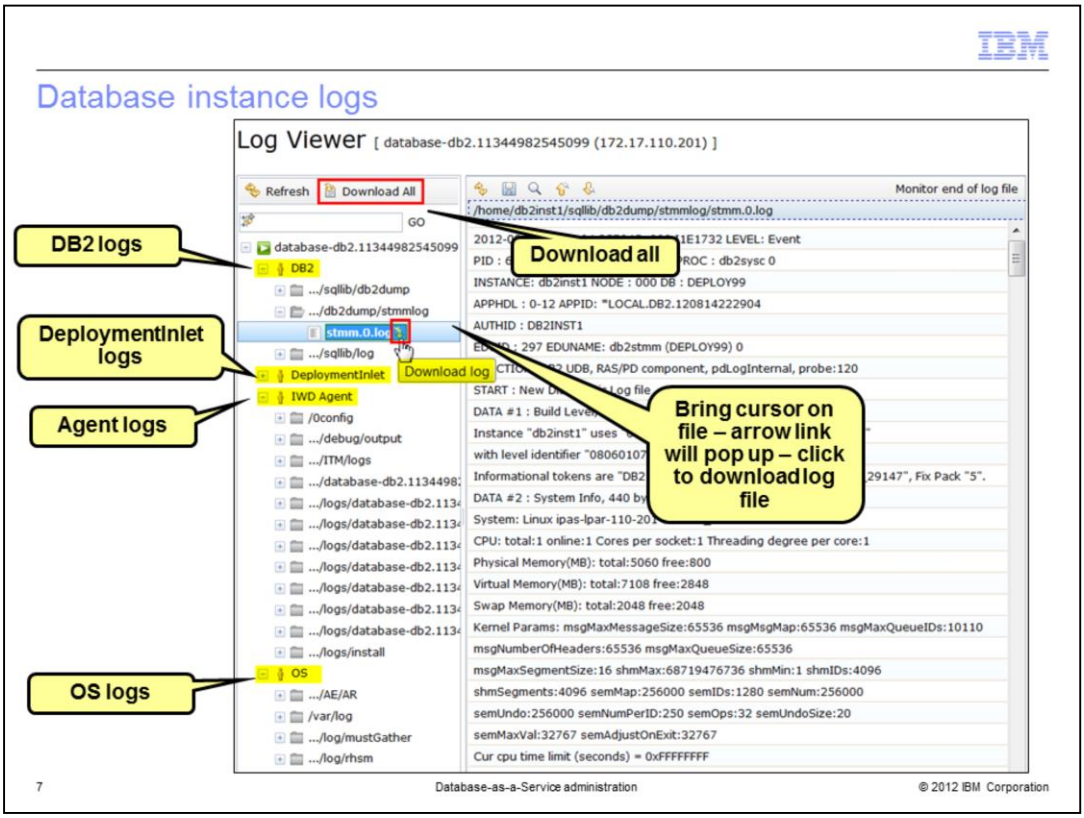
This section covers the management of database instances or deployments.



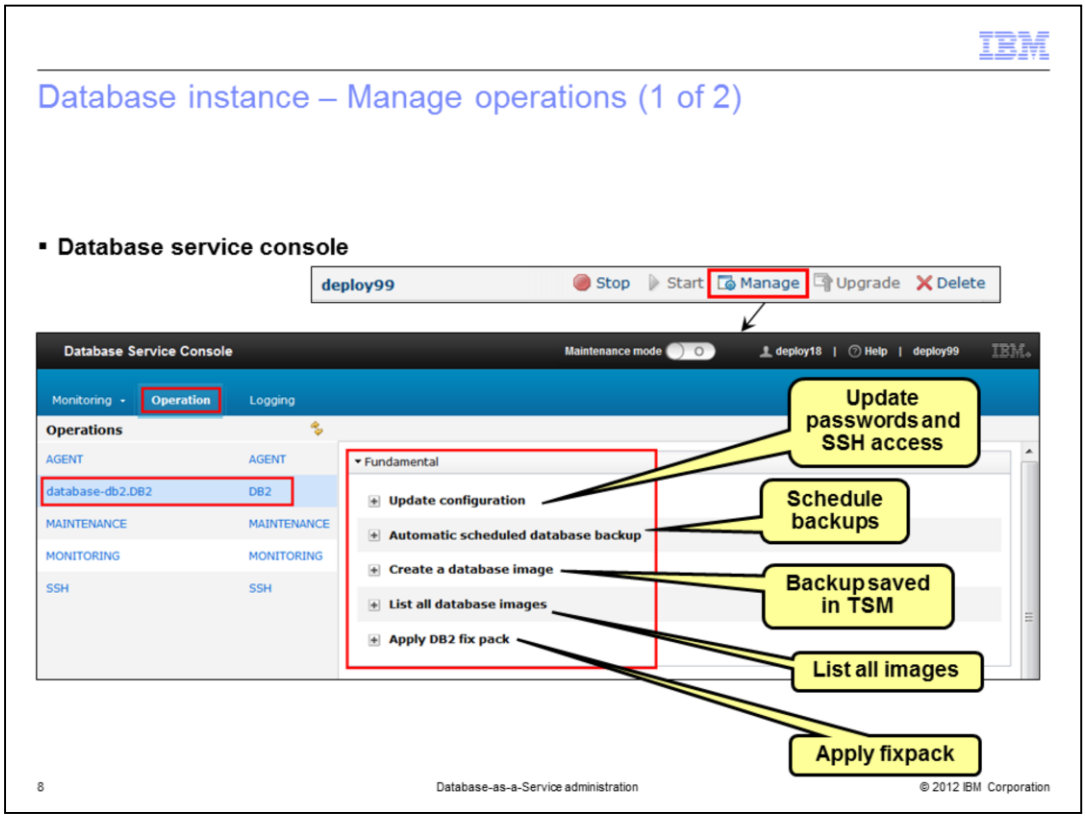
Database instances are deployed database patterns. Put another way it is a VM with an instance of DB2 running in it.

To view database instances, navigate to **Instances > Databases** in the Workload console 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 you can perform from this database instance console are Start, Stop, Destroy, Delete and Manage operations.

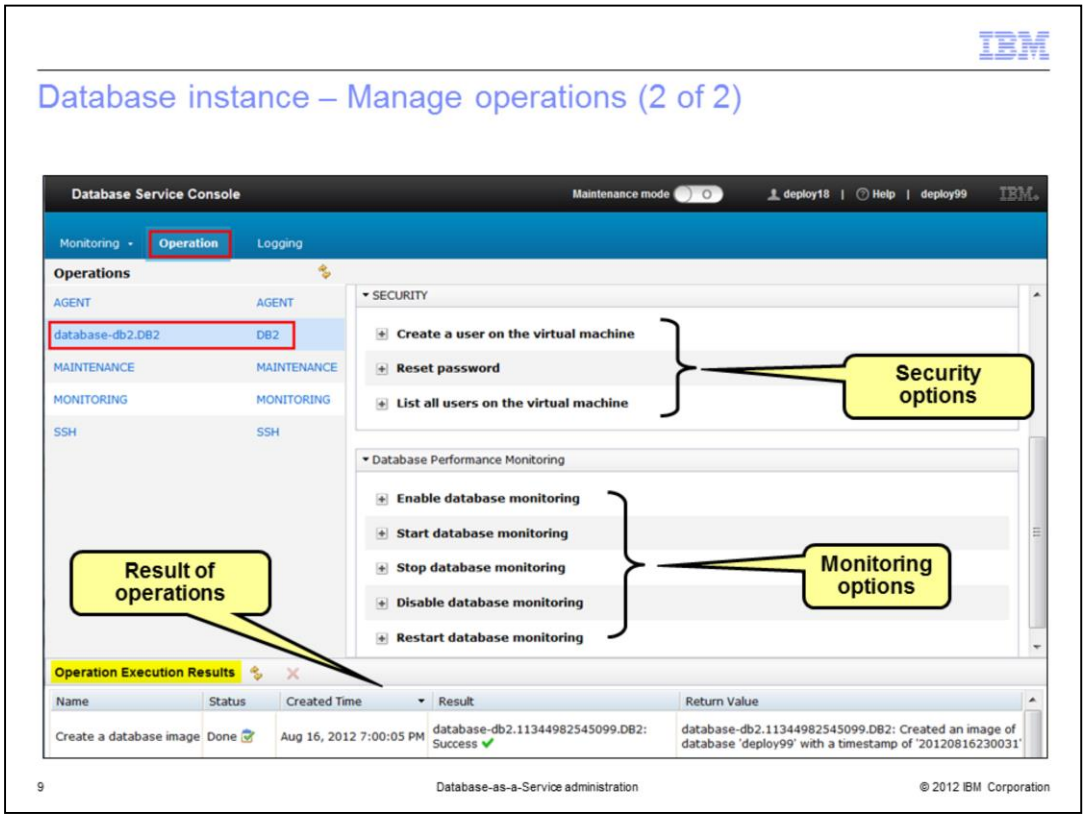
As far as instance information, you can view the database ID which can be used to correlate this database instance in the logs and the storehouse browser, which you will see on a later slide. You can also view the host IP address of the VM where the database is being hosted along with the port being used for database communication there. There are some user IDs that are created in the database instance and the passwords for those are shown here. These include the appdba user ID, the application database administrator, and the appuser user ID, 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.



When clicking on the log hyperlink as shown on the previous slide, a new browser window is opened for the “log viewer”. In the log viewer, you’ll see logs for the deployed DB2 instance, the logs from the deployment inlet, the IWD Agent logs, and the operating system (OS) logs. The deployment inlet includes the logs for the editor UI which makes calls to the IWD agent to perform operations. 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 as seen on the top of the slide.

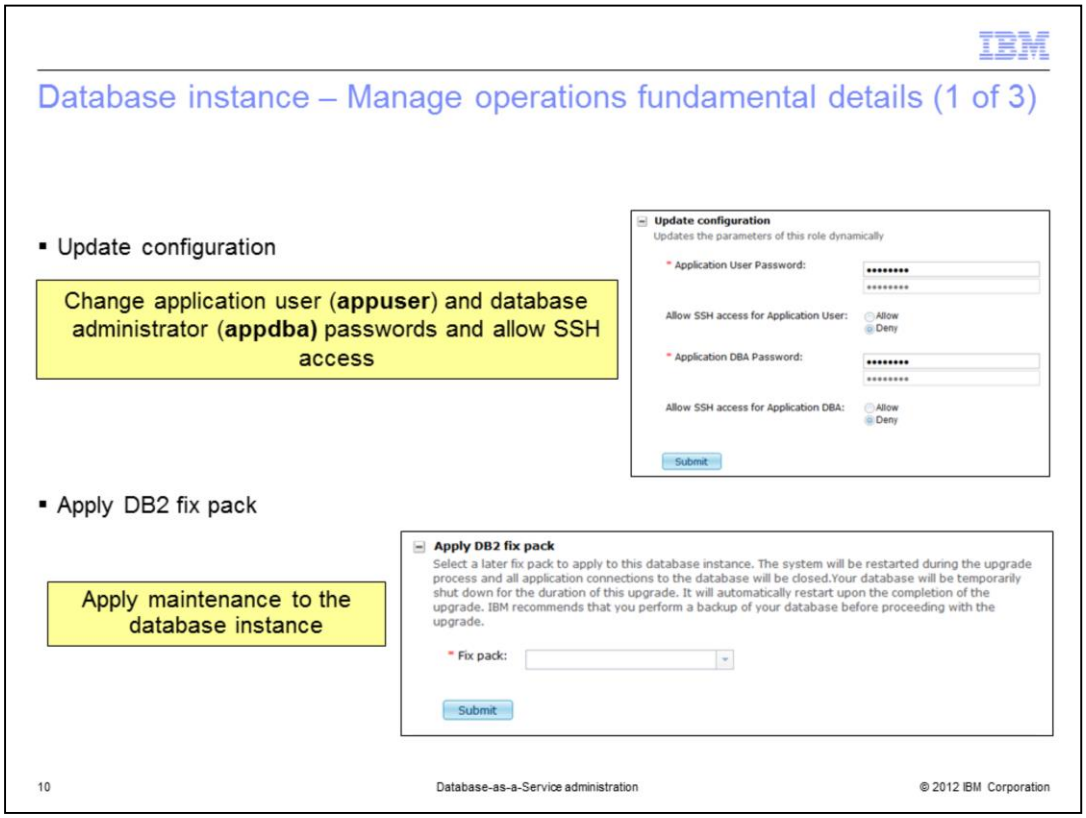


To perform administrative operations on a deployed database, click the manage icon located in the upper right corner in the database Instance page. This will open the Database Service Console in a new browser window or tab. Select the "**database**" option in the "**operations**" list on the left. Here you can update the passwords for the user IDs associated with the instance and allow SSH access to the virtual machine hosting the DB2 instance. You can also create an online backup of the database image, schedule an automatic backup and list the existing database image backups. Tivoli® Storage Manager is required for these functions. Finally, you can apply a DB2 fixpack if required.



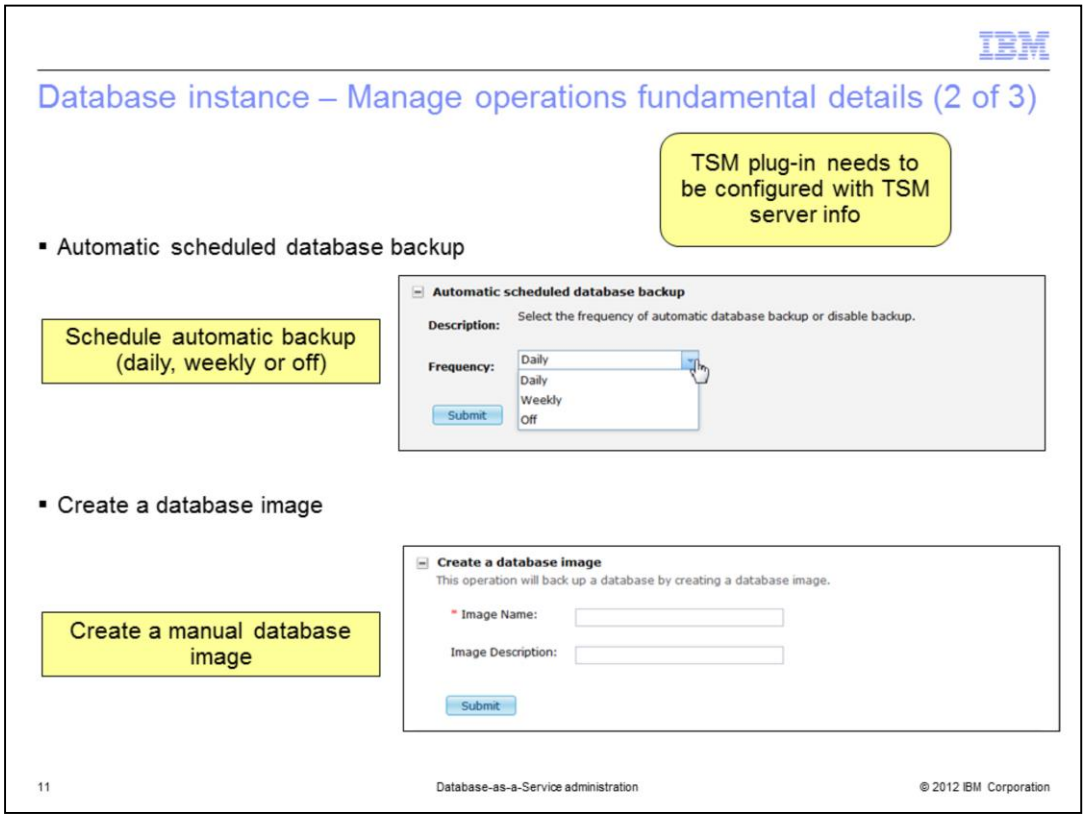
Paging down in the database service console reveals security and database performance monitoring sections. In the security section there are options to create additional user IDs, list current user IDs and reset passwords. In the monitoring section, you can enable, disable, start, stop and restart database monitoring. All of the options here and on the previous slide result in an operation that is scheduled to perform the requested task. The operation results are listed as shown on the bottom of the slide.

The other operations in the list, agent, maintenance, monitoring and ssh, are not unique to database instances but are common to all virtual applications. You will see the details of the database operations on the next slides.



Looking first at the options under the fundamental section, you see that this is where you can update the passwords for the user IDs that are created for you during the database instance deployment. The passwords are automatically generated for you so you might find that you want to change them to something you can remember. You can do that here. By default, user IDs do not have the ability to SSH into the VM. You can allow that here as well.

Also under fundamentals, you have the ability to apply a DB2 fixpack to the running database instance. You need to add the fixpack to the catalog as an emergency fix first. The system is restarted during this operation.

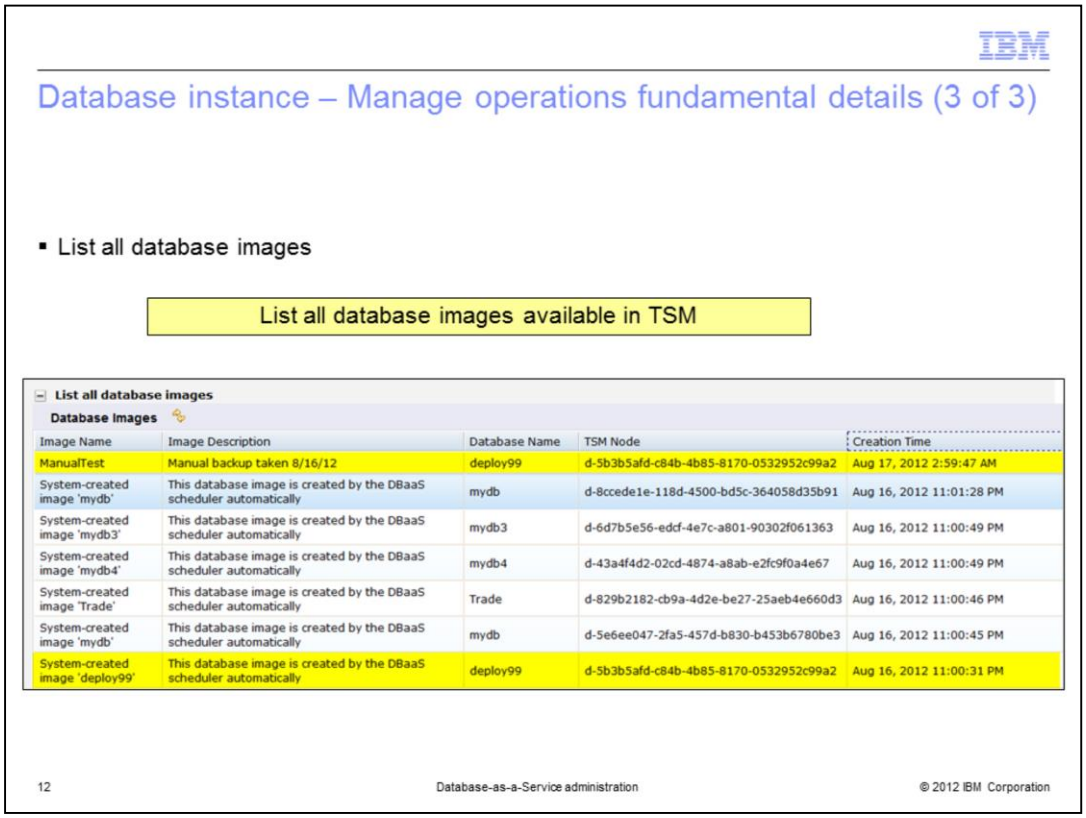


PureApplication System allows you to perform a database backup through the Database Service Console.

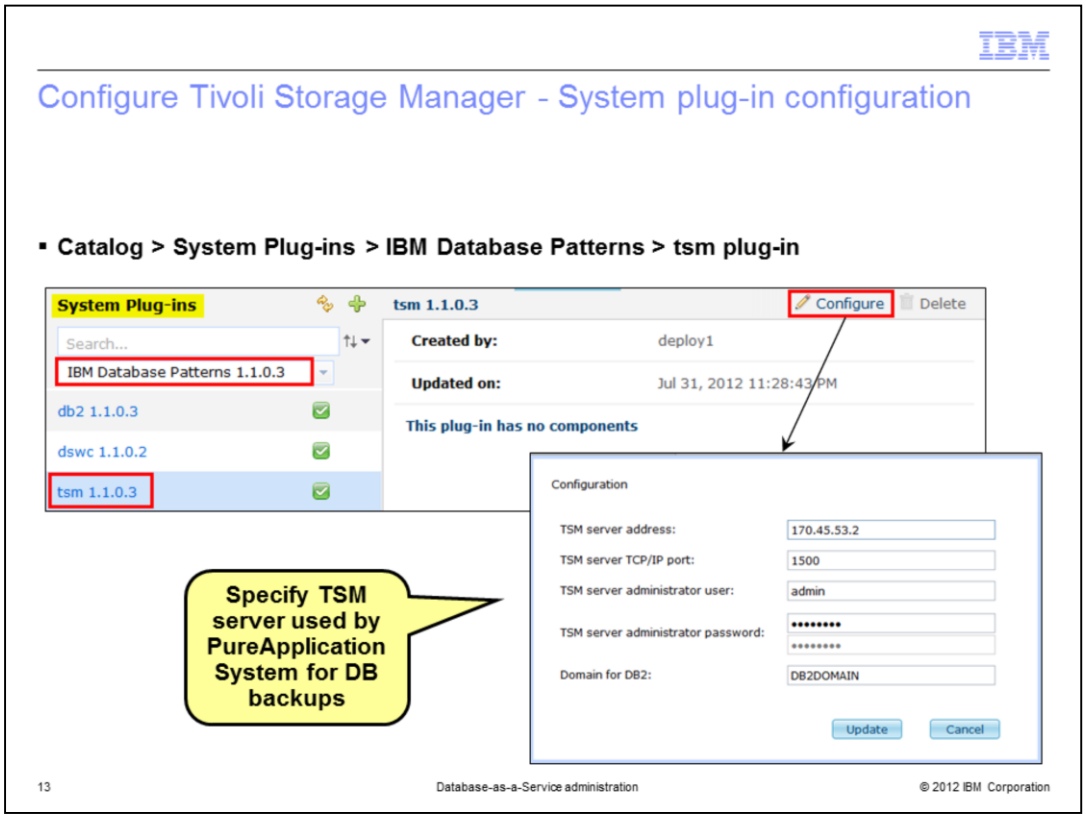
Tivoli Storage Manager (TSM) backup capabilities are integrated into the PureApplication System user interface. This functionality is not limited to databases defined in a database pattern; it also applies to databases defined in virtual applications. This backup functionality requires that the Tivoli Storage Manager system plug-in (tsm) be configured. TSM is not included in PureApplication System. You will see how to configure TSM on an upcoming slide.

Shown here on this slide you see that you can schedule automatic backups to happen daily or weekly or turn them off. If TSM is configured, scheduled backups are, by default, scheduled daily. If Tivoli Storage Manager is not configured, scheduled backups are set to OFF until you select a frequency here. Once backups are scheduled, they will run automatically at 23:00. The restore of any of these backups needs to be done using Tivoli Storage Manager.

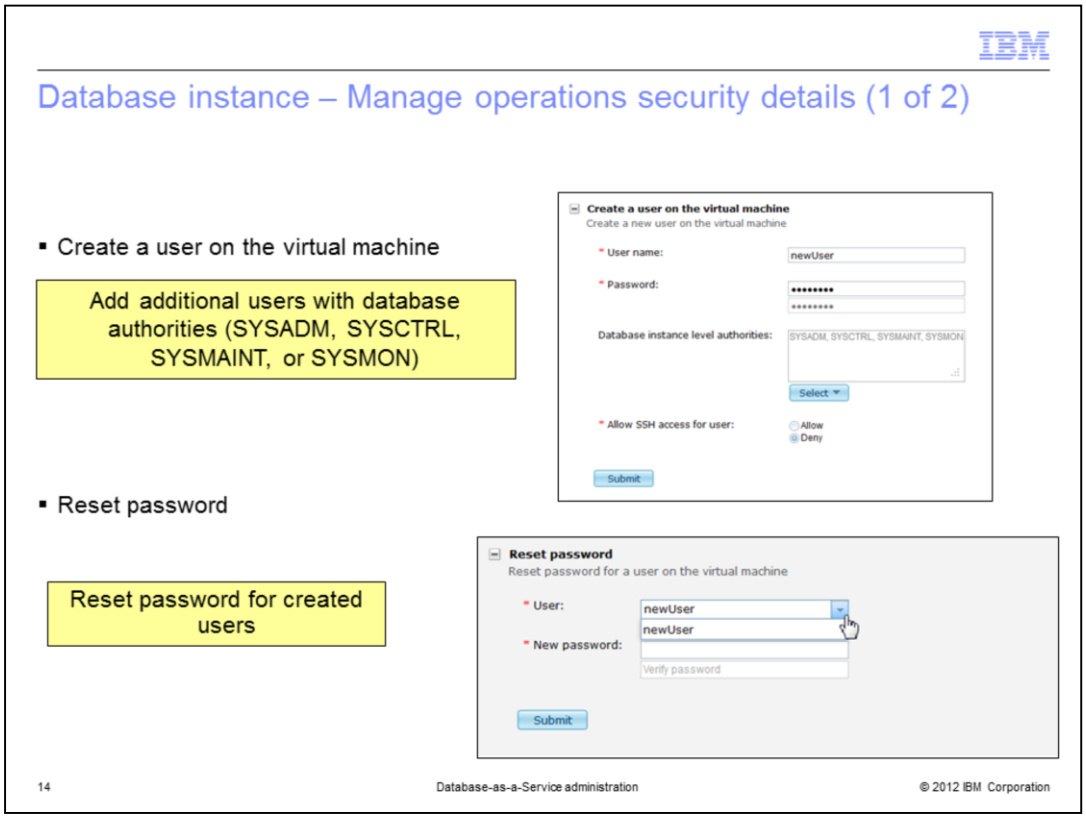
You are also able to create a manual backup here. This is recommended if you plan to use the backup as a clone in a new database instance.



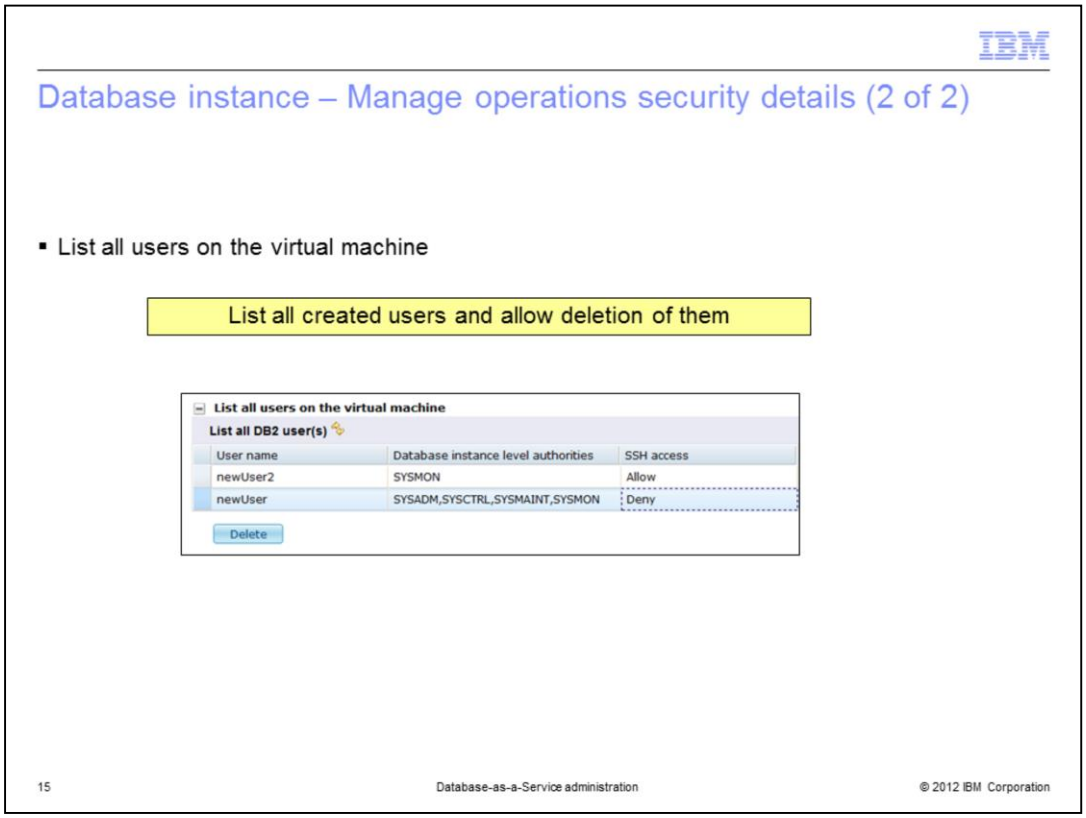
The last option under the fundamental section gives you the ability to list all the database images currently available in TSM. Highlighted on the slide you see the deploy99 database backed up twice, once manually and once automatically.



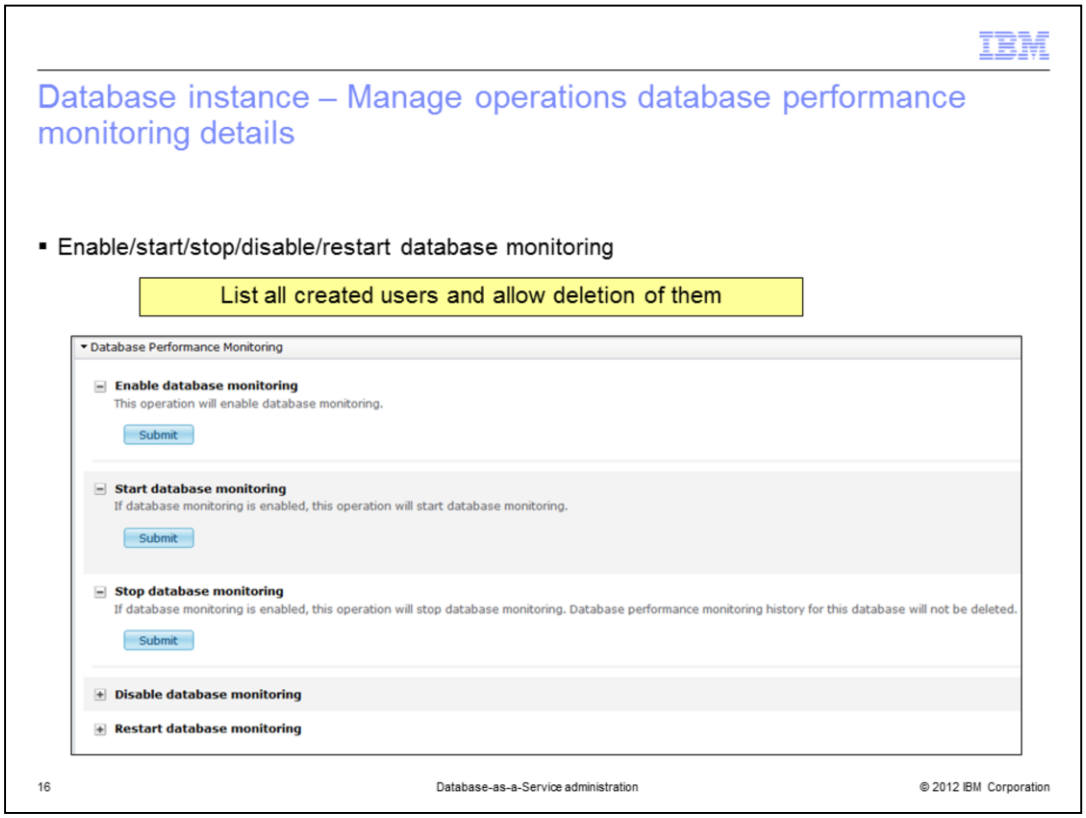
Here you see how to configure Tivoli Storage Manager so it is available for database backups. You need to configure the ‘tsm’ plug-in for the database pattern. This is found in the catalog menu option under system plug-ins. When ‘configure’ is specified there, you provide information to PureApplication System on how to communicate with TSM, including the server address and port and the user ID and password to connect to it.



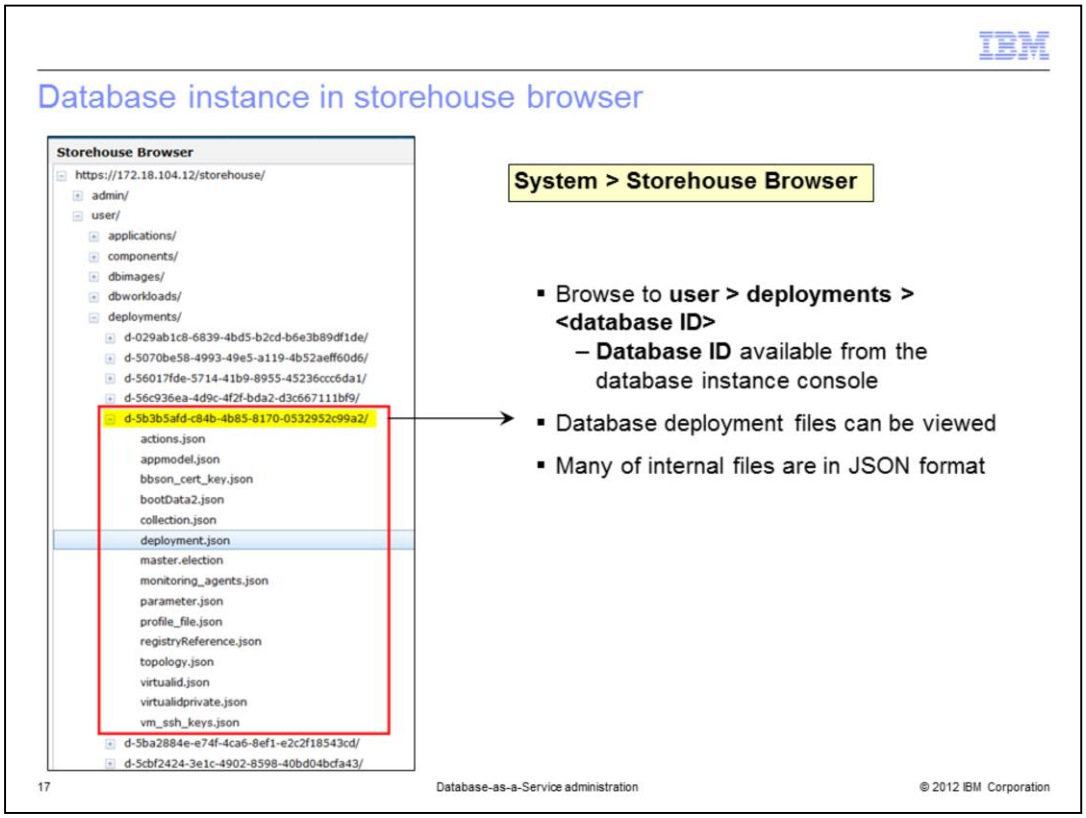
Briefly looking at the options under the security section, you see that you are able to create additional user IDs beyond the appdba and appuser user IDs. You can give it any of the database authorities listed at creation. If needed, the password can be reset for any of these created user IDs here as well.



Finally under the security section, you can list all of your created users and are able to delete them.

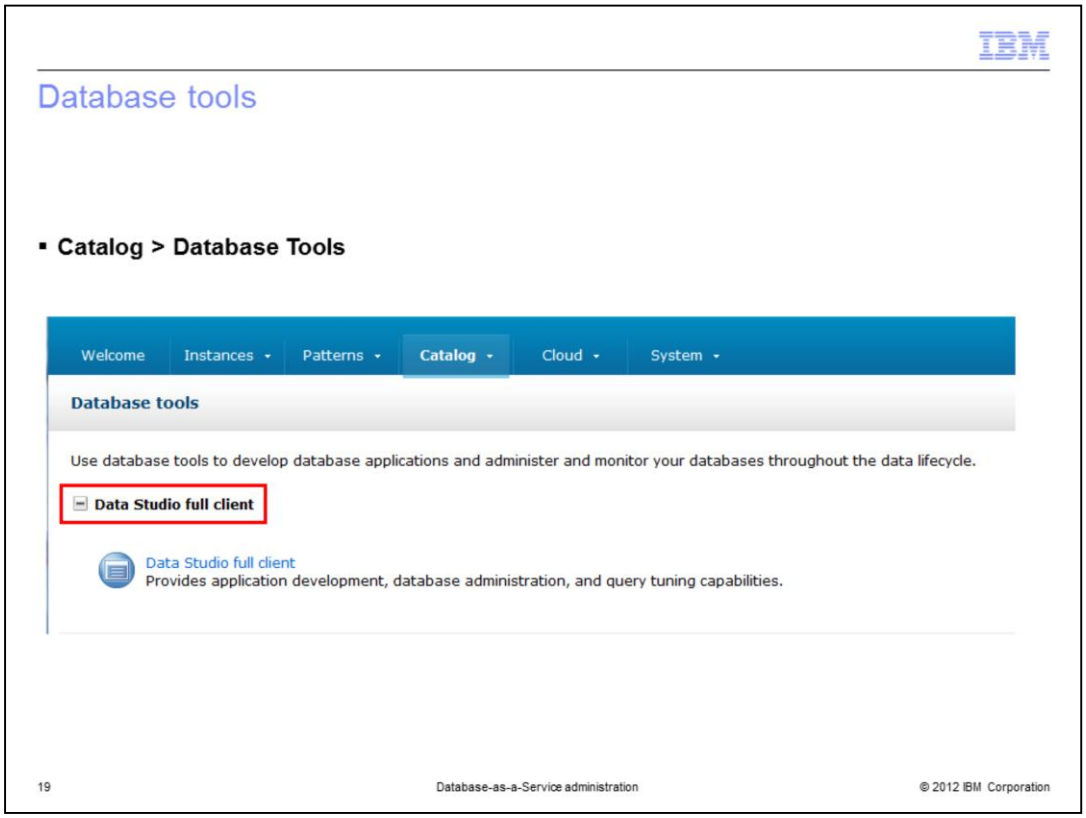


The database performance monitor service provides information on the health and availability of databases deployed in the PureApplication System. You can enable, start, stop, disable or restart database monitoring from the database performance monitoring section as shown on the slide. The Database Performance Monitoring shared service needs to be started for this function.



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 **Database 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.

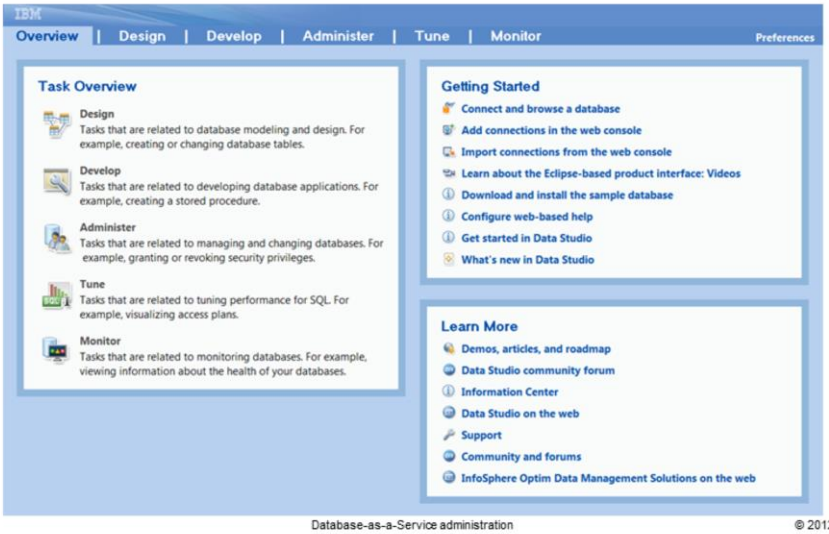
This section will cover the available database tools.



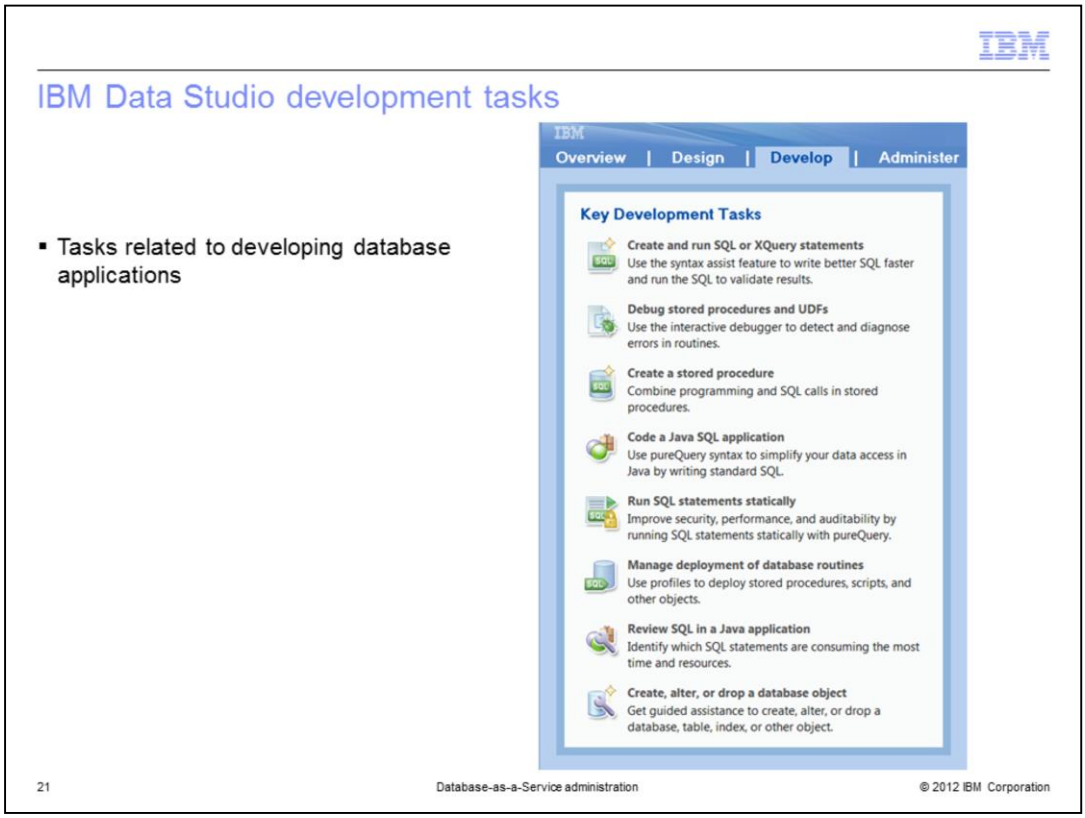
To support the development and administration of your databases, PureApplication System includes the Data Studio full client. The full client provides application development and database administration capabilities. Use the full client to create, test, deploy, tune, and manage databases and database applications. To access the full client, navigate to Catalog > Database Tools. It is licensed for use with PureApplication System. There is no need to purchase a separate license.

IBM Data Studio overview

- Overview of tasks available in IBM Data Studio



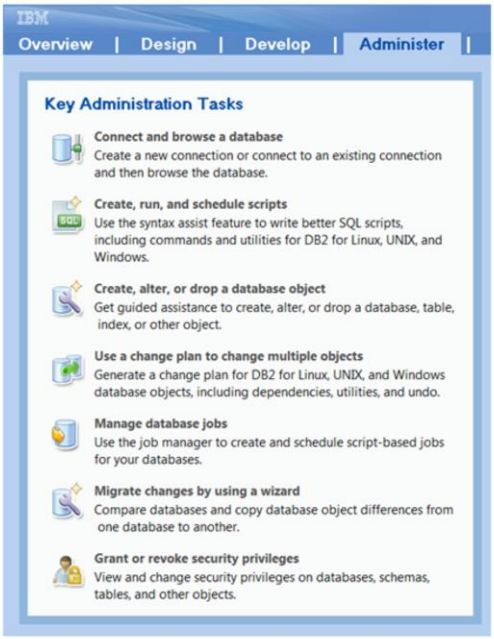
IBM Data Studio provides a rich set of functions as seen in the task overview as shown on the screen capture on the slide. You can connect to the database instances you have deployed in PureApplication System to design, develop, administer, tune and monitor them. You will see some of these capabilities on the next couple of slides.



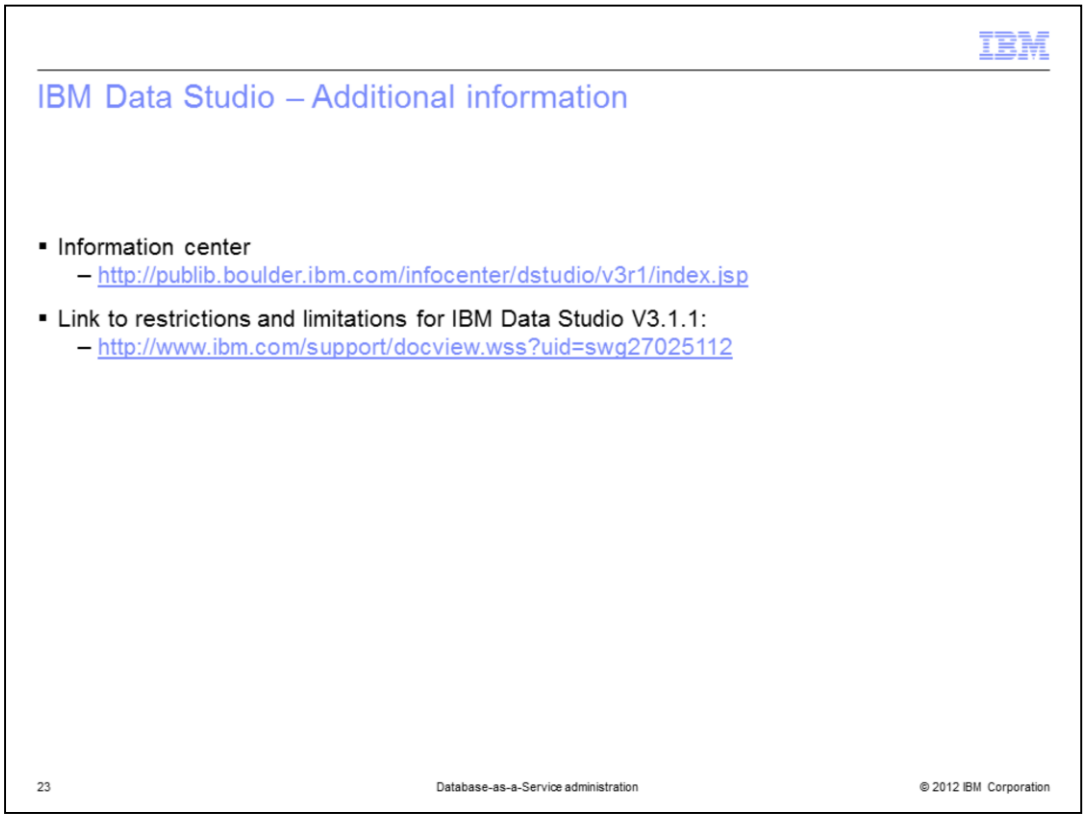
The **Data Studio full client** provides an integrated development environment for database administration. It provides the ability to create, test and deploy your database applications. Shown here you see the “Develop” tab where the key development tasks are listed.

IBM Data Studio administrative tasks

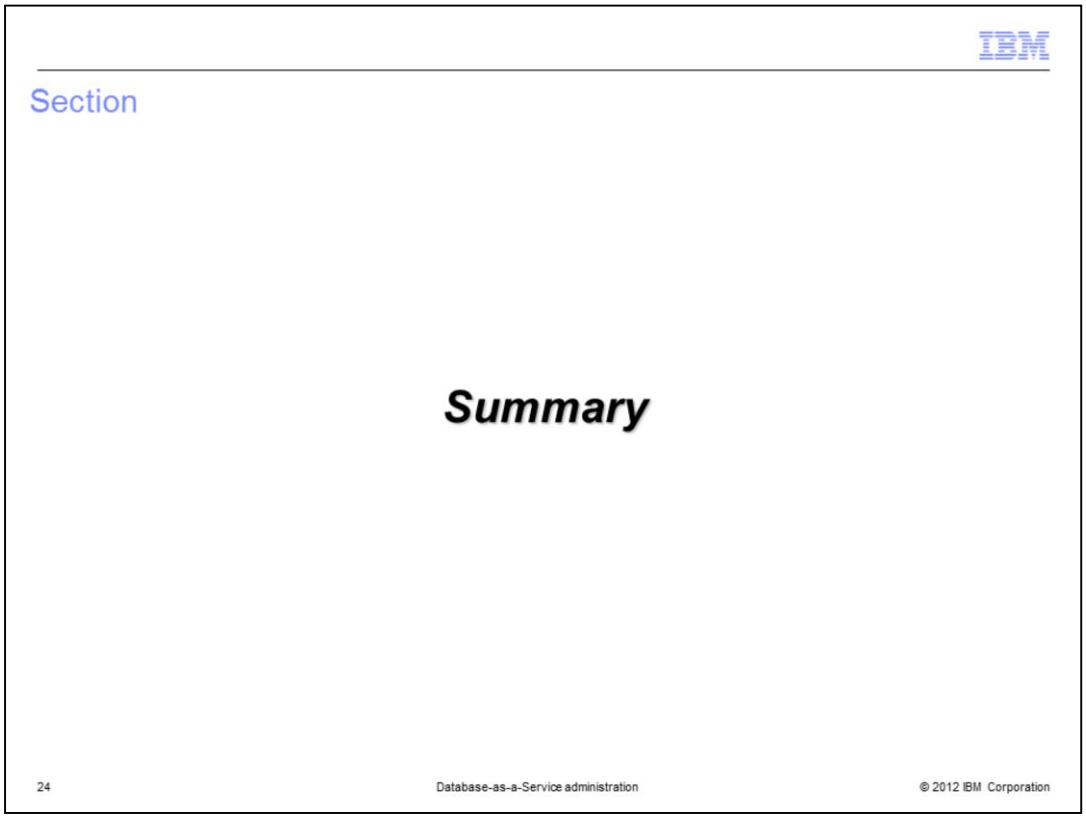
- Tasks related to administering databases



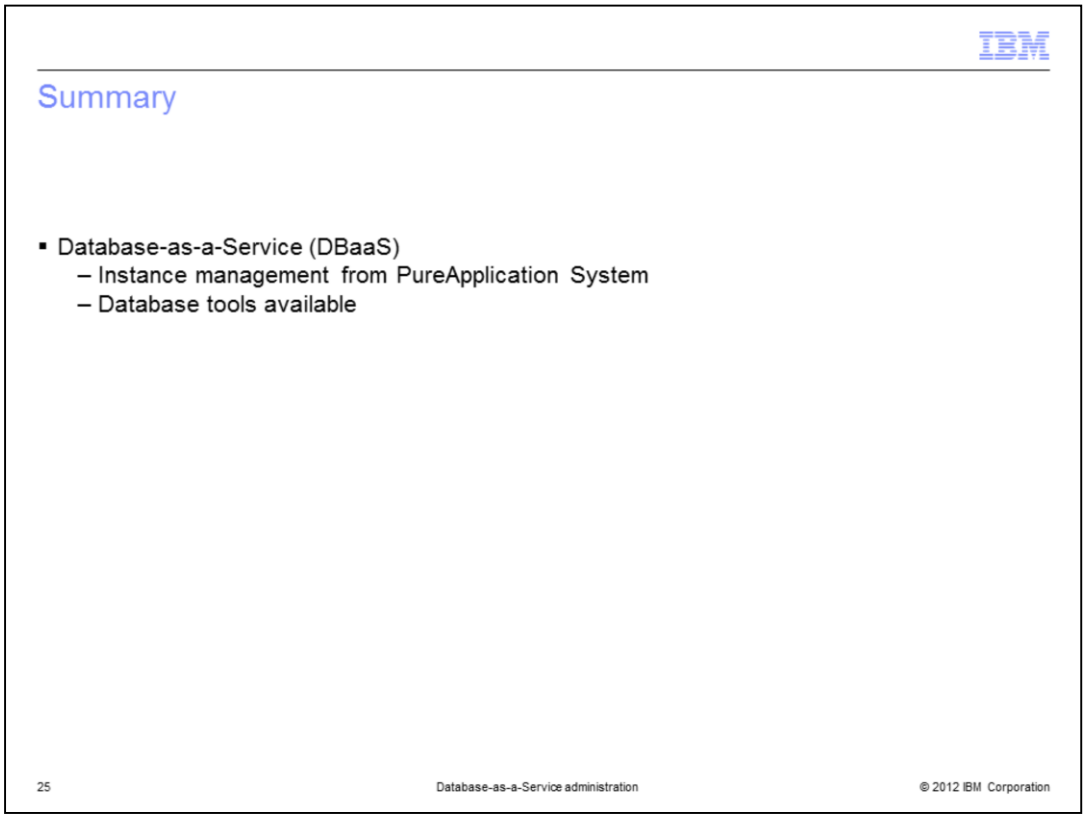
IBM Data Studio also provides administration capabilities to manage your databases, among other things. The key administration tasks available to you under the “Administer” tab are shown on the slide.



For additional information on IBM Data Studio, a link to the information center is provided here. A link is also provided that lists the known limitations and restrictions for PureApplication System users of IBM Data Studio.



This section gives a summary of what was covered in this presentation.



In this presentation, you saw how you can manage your database instances using PureApplication System once they are deployed. You then briefly looked at IBM Data Studio which is available for download and use by you to help manage your database instances further.

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