

Performance Analytics



Setup, Installation and Administration Guide

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1. Introduction

This document is intended for use with Performance Analytics. Performance Analytics provides you with a powerful tool to improve business results. Your systems administrator or supervisor will give you access to one or more sources of your data residing in the database of your organization.

Data is made available in views that are organized in a folder structure. Depending on the security set by your system administrator, it is possible to create new folders and views. You can keep folders and views to yourself or make these available to others. It is possible to create exception reports and customize these with colors to focus attention and trigger action. You can quickly generate calculations using timely, up-to-the-minute data, make charts, drill up or down to investigate your financial or operational information or drill through to your relational data. You can then save or discard these as you wish.

The Performance AL client is available as an ActiveX edition, a ClickOnce-based DesktopApp edition and as an HTML edition to display views. A view item shows the data stored in an OLAP database.

Audience

To use this guide, you should be familiar with:

- Basic Microsoft Windows administration skills
- The existing server environment and security infrastructure in your organization
- Reporting, analysis, and planning concepts
- Security issues

Forward-looking statements

This documentation describes the current functionality of the product. References to items that are not currently available may be included. No implication of any future availability should be inferred. Any such references are not a commitment, promise, or legal obligation to deliver any material, code, or functionality. The development, release, and timing of features or functionality remain at the sole discretion of cubus.

Accessibility features

This product does not currently support accessibility features that help users with a physical disability, such as restricted mobility or limited vision, to use this product.

Samples disclaimer

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2. Components used by Performance Analytics

Performance Analytics has the following components:

- Performance AL Server
- Performance AL Explorer
- Performance AL Desktop Explorer (see note on future availability)
- Performance AL Client
- Performance AL Anywhere Client
- Performance AL Desktop
- Repository
- Databases used as providers
- OLAP data sources
- Slave servers

Each component, provider, and data source of Performance AL can be installed at different locations on the network. However to get the best performance from Performance AL for your system read the notes for each of the components. The performance of Performance AL also depends on the infrastructure of the network you use.

Performance AL Server

Performance Analytics Server is software that contains the interfaces to the catalog, log, and security providers, and the API interface protocols.

You can specify where each component is located on the system by either express or custom installation settings. The selection of an express or custom install is as follows:

- The express option installs all the software components onto the same system and sets all values to default settings. An express install will validate if SQL Server is installed on the same system as the Performance AL Server, if not the installation requests the location of the SQL Server database that you will use for the repository.
- The custom option allows you to install the separate software components onto different locations on the network.

Performance AL Explorer

Performance Analytics Explorer is the software from which you can manage Performance AL Server via your Internet browser. Performance AL Explorer can be deployed to client systems on a network by a simple URL link to the Performance AL Server. Performance AL Explorer can be launched from this link.

You can install Performance AL Explorer on the same system as the Performance AL Server, or on a different system. Either HTTP/HTTPS or TCP/IP can be used as the communication protocol. When installing Performance AL Explorer on the same system as Performance AL Server, it will by default use the TCP/IP protocol.

When installing Performance AL Explorer on a different system than the Performance AL

Server, the Performance AL Server has to be specified when the installation is complete.

Performance AL Desktop Explorer

Performance Analytics Desktop Explorer is the virtual directory software from which you can manage Performance AL Server(s) via Windows Explorer. Performance AL Desktop Explorer has more functionality for the management of views and items.

Performance AL Desktop Explorer has to be installed separately on each client system. Performance AL Desktop Explorer can also be used in organizations that do not allow Internet Information Systems to be used.

You can install Performance AL Desktop Explorer on the same system as the Performance AL Server, or on a different system. Either HTTP/HTTPS or TCP/IP can be used as the communication protocol.

When installing Performance AL Desktop Explorer on a different system than the Performance AL Server, the Performance AL Server has to be specified when the installation is complete. Refer to [Specifying a Performance AL Server](#).

Performance AL Client

Performance Analytics Client is the software in which the user can perform ad-hoc analyses and is deployed as a client software program. The language of Performance AL Client depends of the culture and can be set either in the URL link for Performance AL Client, or as a language setting in Microsoft Internet Explorer. Either HTTP/HTTPS or TCP/IP can be used as the communication protocol.

Performance AL Desktop

Performance AL Desktop is a ClickOnce deployable Windows Forms Application. The language of Performance AL Desktop depends on the culture and can be set either in the URL link for Performance AL Desktop or globally in the EVServer.exe.config. Either HTTP/HTTPS or TCP/IP can be used as the communication protocol.

Performance AL Anywhere Client

Performance AL Anywhere Client is the software in which the user can perform ad-hoc analyses on devices without installing a browser add-on.

HTTP/HTTPS can be used as the communication protocol.

Repository

Performance Analytics Respository is a database that stores all the items and configuration used by Performance AL Server, including item and system security. The repository is controlled by the specified catalog provider. The best performance is obtained when the distance between Performance AL Server and the Repository is as short as possible. The performance also depends on the infrastructure of the network you use.

Providers

Providers are used to adapt the Performance AL Server installation to fit the needs of your company. A provider is software component (a dll) that provides necessary services

to Performance AL Server to extend functionality. There are three providers:

- **Catalog provider**
The catalog provider controls the storage of the repository. Performance AL Server can have only one catalog provider, in contrast to the security and log providers.
- **Security provider**
The security providers validate accounts against an existing security system. Performance AL Server does not have security accounts of its own but refers to accounts and uses the security provider to validate these accounts. The account name and credentials are validated with the security provider, that results in a valid or invalid authentication of the account. A valid authentication opens a session. Each security provider has its own system requirements and configuration.
- **Log provider**
The log providers used by Performance AL Server store log entries to an output destination depending on the Log Providers. When no log provider is configured for Performance AL Server, the Windows Event Log will be used to log errors of all log components and all log categories with the Log Level, Warning, Error, or Severe.

The providers are connected to Performance AL Server during the installation and configuration. The Performance AL Server must have a security and catalog provider.

Data sources

The data sources for Performance AL are the OLAP data bases that provide the raw data for Performance AL Server used for analysis. The data sources available are:

- Oracle Essbase
- Microsoft Analysis Services
- IBM Cognos TM1

Data sources do not have to be located on the same machine as Performance AL Server.

Data sources can also be connected to Performance AL Server via a slave server. The use of a slave server is to enable process distribution on multiple systems.

Slave servers

A slave server can be installed and configured to a master server to provide additional server infrastructure for process distribution. You can configure one master server and multiple slave servers in your network.

Process distribution extends the memory required for processing data to enable parallel processing. Process distribution allows you to load cubes into separate processes that run parallel to the main process. By using process distribution, Performance AL can maximize the memory available for the cubes to be loaded.

If you enable process distribution, you can configure process distribution for data source and database items. Also you can use the Isolation Level to group specific cubes together and load them in separate processes.

3. Preparing to install

Before you install your cubus product, it is important to know all issues that can affect your installation strategy. Performance AL must be installed and configured correctly to integrate effectively with your existing network infrastructure.

Review the release notes before you install your product. The release notes contain late-breaking information about known issues as well as documentation updates and deprecation notices.

Before you install Performance AL, ensure that your computer and your software environment meet all applicable requirements.

Supported environments

To ensure your product works properly, apply all minimum required operating system patches and use only the versions of other software that are supported for a cubus product.

See the following section for further details.

Supported languages

Performance AL supports the following globalization and language settings:

User interface	Documentation
Chinese Traditional ⁽¹⁾	-
Danish	-
Dutch	-
English	English
French	-
German	German
Italian ⁽¹⁾	-
Japanese ⁽¹⁾	-
Korean ⁽¹⁾	-
Portuguese - Brazilian ⁽¹⁾	-
Spanish	-

⁽¹⁾ These languages are maintained based on customer specific requests and could not be up to date.

System requirements

Use the following tables to check the minimum hardware and software requirements to install and run Performance AL components.

Performance AL Server requirements

To install Performance AL Server the system should meet these requirements.

Performance AL Server Hardware Requirements	Specification
Disk space	Greater than 400 MB
Memory	Greater than 4 GB * ¹ * ¹ The memory requirements of Performance AL Server additionally depend on the number and size of cubes and also if the structure of the cubes is cached permanently or released again after usage.

Performance AL Server Software Requirements	Specification
OLAP Server One is required.	IBM Planning Analytics Local 2.0 to 2.0.9.9 (IBM TM1 Server 11.0.00000.918 - 11.8.00800.5) (REST API only) Oracle Essbase Version 11.1.2.4 and 11.2.0.0 Oracle Essbase OAC Version 105.3.0-117 (12.X) Oracle Essbase 19c Version 19.3.0.0 Oracle Essbase 21c Version 21.1.0.0-21.5.0.0 Microsoft SQL Server Analysis Services 2014, 2016, 2017, 2019, 2022 Microsoft SQL Server Analysis Services Tabular Mode Compatibility Level 1100, 1103, 1200, 1400 Microsoft Azure Analysis Services 2019 (Compatibility level 1200, 1400)
Operating System One is required. Only 64bit is supported.	Microsoft Windows Server 2012, 2012 R2, 2016, 2019, 2022 Microsoft Windows 7 Professional Microsoft Windows 10 Microsoft Windows 11 For all Windows versions the latest service pack and all current updates must be installed.
Required Software	Microsoft Internet Information Services (IIS) <ul style="list-style-type: none"> IIS 8 (Windows 2012 Server) IIS 10 (Windows 2016 Server, Windows Server)

	<p>2019)</p> <p>See Preparing the operating system.</p> <p>Microsoft .NET Framework 4.8 or higher</p>
<p>Connection services</p> <p>The memory requirements depend on the number of users, usage, the size of the database models, the use of personalized databases and preload roles/users.</p>	<p>To connect to Oracle Essbase Server install Oracle Essbase Runtime Client.</p> <p>To connect to Microsoft SQL Server 2014 Analysis Services, install Connectivity Components of Microsoft SQL Server 2014.</p> <p>To connect to Microsoft SQL Server 2016 Analysis Services, install Connectivity Components of Microsoft SQL Server 2016.</p> <p>To connect to Microsoft SQL Server 2017 Analysis Services, install Connectivity Components of Microsoft SQL Server 2017.</p> <p>To connect to Microsoft SQL Server 2019 Analysis Services, install Connectivity Components of Microsoft SQL Server 2019.</p> <p>To connect to Microsoft SQL Server 2022 Analysis Services, install Connectivity Components of Microsoft SQL Server 2022.</p> <p>To connect to Oracle 11.2g or 12c, install Oracle Data Access Client (ODAC)/ODP.NET 64 bit version 12.1.x.</p> <p>To connect to IBM Cognos TM1 Server and IBM Planning Analytics Local 2.0 no local installation is needed.</p>
<p>Supported catalog providers</p> <p>Only one catalog provider can be active at any one time.</p>	<p>Microsoft SQL Server 2014, 2016, 2017, 2019, 2022</p> <p>Oracle 11.2g, 12c</p>
<p>Supported security providers</p> <p>More than one security provider can be active at the same time.</p>	<p>IBM Planning Analytics Local 2.0 to 2.0.9.9 (IBM TM1 Server 11.0.00000.918 - 11.8.00800.5) (REST API only)</p> <p>Windows Integrated Security</p> <p>Oracle Essbase Version 11.1.2.4 and 11.2.0.0 Oracle Essbase OAC Version 105.3.0-117 (12.X)</p>

	Microsoft Azure (OAuth 2.0) Keycloak 18 or higher (OIDC)
Supported log providers More than one log provider can be active at the same time.	Microsoft SQL Server 2014, 2016, 2017, 2019, 2022 Oracle 11.2g, 12c
OBI EE Integration Optional	Oracle Business Intelligence Enterprise Edition Version 11.1.1.7.141014
Report Subscription Mail Server Optional	Any SMTP Server

Untrusted Font Blocking

To ensure that the correct fonts for the code blue design are loaded [Untrusted Font Blocking](#) has to be disabled on the server that uses Performance Analytics. Please note that Microsoft [doesn't suggest](#) this setting anymore as the GDI Font Parsing is now done in an sandboxed process and not directly in kernel mode in recent Windows 10 versions after 1703.

Additional requirements

For Map support, Microsoft Internet Explorer version 11 should be installed on the machine running Performance AL Server.

Performance AL Explorer requirements

To install Performance AL Explorer the system should meet these requirements.

Performance AL Explorer Hardware Requirements	Specification
Disk space	Greater than 50 MB
Memory	Greater than 2 GB

Performance AL Explorer Software Requirements	Specification
Operating System. One is required. Only 64bit is supported.	Microsoft Windows Server 2012, 2016, 2019, 2022 Microsoft Windows 7 Professional Microsoft Windows 10 Microsoft Windows 11

	For all Windows versions the latest service pack and all current updates must be installed.
Required software.	<p>Microsoft Internet Information Services (IIS)</p> <ul style="list-style-type: none"> • IIS 8 (Windows 2012 Server) • IIS 10 (Windows 2016 Server, Windows Server 2019) <p>Microsoft .NET Framework 4.8 Chrome Version 104 Apple Safari 16 Edge Version 101 (Chromium Edge) Mozilla Firefox is not supported.</p>

Performance AL Desktop Explorer requirements

To install Performance AL Desktop Explorer the system should meet these requirements.

Performance AL Desktop Explorer Hardware Requirements	Specification
Disk space	Greater than 50 MB
Memory	Greater than 2 GB

Performance AL Desktop Explorer Software Requirements	Specification
Operating System. One is required.	<p>Microsoft Windows Server 2012, 2016, 2019, 2022</p> <p>Microsoft Windows 7 Professional Microsoft Windows 10 Microsoft Windows 11</p> <p>For all Windows versions the latest service pack and all current updates must be installed.</p>

Performance AL Client requirements

To install Performance AL Client your system should meet these requirements.

Performance AL Client	Specification
-----------------------	---------------

Hardware Requirements	
Disk space	Greater than 30 MB
Memory	Greater than 2 GB

Performance AL Client Software Requirements	Specification
Operating System. One is required. Only 64bit is supported.	Microsoft Windows Server 2012, 2016, 2019, 2022 Microsoft Windows 7 Professional Microsoft Windows 10 Microsoft Windows 11 For all Windows versions the latest service pack and all current updates must be installed.
Required software.	Microsoft Internet Explorer 11 Microsoft New Edge (Chromium) in Internet Explorer Mode. Note: Internet Explorer Protected Mode and Enterprise Mode can cause the client not to work properly and is therefore not supported.
Miscellaneous	Installation requires user rights to install and register ActiveX components in the browser and operating system. Port for communication between ActiveX and EVServer must be open when using TCP communication. Default ServerPortNumber is 7112.

Recommended Security Settings for Microsoft Internet Explorer to install the ActiveX client

If you have problems on downloading and installing the Performance Analytics Client software, please check if your Internet Explorer has the following settings.

In Internet Explorer open the **Internet Options** and navigate to the tab **Security**. Click the button **Custom level...** to validate if your account has the following settings active:

- ActiveX controls and plug-ins
 - Allow ActiveX Filtering > Enable
 - Allow previously unused ActiveX controls to run without prompt > Disable
 - Allow Scriptlets > Disable
 - Automatic prompting for ActiveX controls > Disable
 - Binary and script behaviours > Enable

- Display video and animation on a webpage that does not use external media player > Disable
- Download signed ActiveX controls > Prompt
- Download unsigned ActiveX controls > Disable
- Initialize and script ActiveX controls not marked as safe for scripting > Disable
- Only allow approved domains to use ActiveX without prompt > Enable
- Run ActiveX controls and plug-ins > Enable
- Run antimalware software on ActiveX controls > Enable
- Only allow approved domains to use ActiveX without prompt > Enable
- Run ActiveX controls and plug-ins > Enable
- Run antimalware software on ActiveX controls > Enable
- Script ActiveX controls made safe for scripting > Enable

Untrusted Font Blocking

To ensure that the correct fonts for the code blue design are loaded [Untrusted Font Blocking](#) has to be disabled on every client machine that uses Performance Analytics. Please note that Microsoft [doesn't suggest](#) this setting anymore as the GDI Font Parsing is now done in an sandboxed process and not directly in kernel mode in recent Windows 10 versions after 1703.

Performance AL Desktop requirements

To install Performance AL Desktop your system should meet these requirements.

Performance AL Desktop Hardware Requirements	Specification
Disk space	Greater than 50 MB
Memory	Greater than 2 GB

Performance AL Desktop Software Requirements	Specification
Operating System. One is required. Only 64bit is supported.	Microsoft Windows Server 2012, 2016, 2019, 2022 Microsoft Windows 7 Professional Microsoft Windows 10 Microsoft Windows 11 For all Windows versions the latest service pack and all current updates must be installed.
Required software.	.Net Framework 4.8 For the initial installation the Microsoft Edge or Microsoft Internet Explorer browser is required.

	<p>Google Chrome can also be used in combination with a valid ClickOnce add-in.</p> <p>After the initial deployment, no web browsers are required, the application updates itself automatically based on the installed server version.</p>
Miscellaneous	<p>Port for communication between Performance AL Desktop and EVServer must be open when using TCP communication. Default ServerPortNumber is 7112.)</p>

Performance AL Anywhere requirements

To install Performance AL Anywhere the system should meet these requirements.

Performance AL Anywhere Hardware Requirements	Specification
Disk space	Greater than 50 MB
Memory	Greater than 2 GB

Performance AL Anywhere Software Requirements	Specification
Operating System. One is required.	<p>Microsoft Windows Server 2012, 2016, 2019, 2022</p> <p>Microsoft Windows 10</p> <p>Microsoft Windows 11</p> <p>For all Windows versions the latest service pack and all current updates must be installed.</p>
Required software.	<p>Microsoft Internet Information Services (IIS)</p> <ul style="list-style-type: none"> IIS 8 (Windows 2012 Server) IIS 10 (Windows 2016 Server, Windows Server 2019) <p>See Preparing the operating system.</p> <p>Microsoft .NET Framework 4.8 or higher</p>

Performance AL Anywhere Client Requirements	Specification
---	---------------

Operating System	Android 7 Android 8 Android 9 Android 10 iOS 11 iOS 12 iOS 13 Windows 10 MacOS 10.15
Browser	Chrome Version 104 Firefox Version 104 Edge Version 101 (Chromium Edge) Safari 13-16

Upgrade requirements

When upgrading from the IBM Executive Viewer, the repository will be automatically migrated. Please note that this automatic upgrade is only supported for IBM Executive Viewer 9.2 to 10.1.

Configuring data sources

Each data source that is used must be configured to give access to Performance AL. These sections give the data source requirements.

Configuring Oracle Essbase data sources

For Performance AL to connect to Oracle Essbase the Essbase Runtime Client (64-bit) files need to be installed on the same system as the Performance AL Server. The version of the Runtime Client files must be the same as the version of Essbase you are using. Refer to the Oracle Essbase documentation to find the correct Runtime Client.

Oracle Analytics Cloud

If Performance AL is connecting to OAC datasources, the Windows system environment variable ESSOTLEDITSERVERMODE needs to be set to FALSE.

Configuring Microsoft Analysis Services data sources

For Performance AL to connect to Microsoft Analysis Services, the requirements are dependent on the version used.

To connect to Microsoft SQL Server Analysis Services, the following Analysis Services Client Libraries must be installed on the same system as Performance Analytics Server:

1. Microsoft Analysis Services OLE DB Provider (MSOLAP) (64-bit)

2. Microsoft Analysis Management Objects (AMO) (64-bit)

Use the setup of Microsoft SQL Server Analysis Services to install the client components. Refer to the Microsoft SQL Server Analysis Services documentation for more information. If you upgrade Microsoft SQL Server, you should also upgrade these components.

The following table lists the versions of the Analysis Services Client Libraries that are required for the versions of Microsoft SQL Server Analysis Services:

Microsoft SQL Server Analysis Services	Analysis Services Client Libraries
2014	12
2016	13
2017	15
2019	15
2022	16

Preparing the operating system

You need to prepare the operating systems before you install Performance AL.

Preparing Microsoft Windows Server

You have to enable the Web Server role and Microsoft .NET Framework for Windows Server.

Procedure

1. Open Server Manager.
2. Select Roles > Add Roles.
3. Select the Web Server role with the following Role Services:

- Web Server
 - Common HTTP Features
 - Default Document
 - Directory Browsing
 - HTTP Errors
 - Static Content
 - HTTP Redirection
 - WebDAV Publishing
 - Health and Diagnostics
 - HTTP Logging
 - Custom Logging
 - Logging Tools
 - ODBC Logging
 - Request Monitor
 - Tracing
 - Performance
 - Static Content Compression
 - Dynamic Content Compression
 - Security
 - Request Filtering
 - Basic Authentication
 - Centralized SSL Certificate Support
 - Client Certificate Mapping Authentication
 - Digest Authentication
 - IIS Client Certificate Mapping Authentication
 - IP and Domain Restrictions
 - URL Authorization
 - Windows Authentication
 - Application Development
 - .NET Extensibility 3.5
 - .NET Extensibility 4.6
 - Application Initialization
 - ASP
 - ASP.NET 3.5
 - ASP.NET 4.6
 - CGI
 - ISAPI Extensions
 - ISAPI Filters
 - Server Side Includes
 - WebSocket Protocol
 - Management Tools
 - IIS Management Console
 - IIS 6 Management Compatibility
 - IIS 6 Metabase Compatibility
 - IIS 6 Management Console
 - IIS 6 Scripting Tools
 - IIS 6 WMI Compatibility

Note that the settings shown were made on a Windows Server 2016 machine. The differences in configuration between Windows Server 2012 (R2), Windows Server 2016, Windows Server 2019 and Windows Server 2022 are shown below.

Windows 2012 (R2)	Server	Windows 2016	Server	Windows 2019	Server	Windows Server 2022
----------------------	--------	-----------------	--------	-----------------	--------	---------------------

.NET Extensibility 4.5	.NET Extensibility 4.6	.NET Extensibility 4.7	.NET Extensibility 4.8
ASP.NET 4.5	ASP.NET 4.6	ASP.NET 4.7	ASP.NET 4.8

Preparing Microsoft Windows 10

You have to enable the Web Server role for Microsoft Windows 10/Windows 11.

Procedure

1. Open **Control Panel > Programs**.
2. Click **Programs and Features > Turn Windows features on or off**.
3. Enable the features:
 - Internet Information Services.
 - Internet Information Services - World Wide Web Services - Application Development Features - ASP.NET.
Note: This will also include other options.
 - Internet Information Services - World Wide Web Services - Security - Windows Authentication.
 - Internet Information Services - Web Management Tools - IIS 6 Management Compatibility - IIS Metabase and IIS 6 configuration compatibility.

Preparing Microsoft Azure

When OAuth 2.0 should be used as authentication method Microsoft Azure needs to be configured. Performance Analytics needs to be registered in the Microsoft Azure environment as application.

Procedure

1. Open **Home > Azure Active Directory > App registrations**.
2. Click **New registration**.
3. Enter a **Name** and select the radio button **Accounts in this organizational directory only (yourOrganization - Single tenant)**.
4. Click **Register** on the bottom of the page.
5. After registration is finished the application page will be loaded
6. Redirect URIs are used to redirect back to Performance AL after the authentication. For Performance Analytics they need to be defined in **Home > Azure Active Directory > App registrations > Performance Analytics application > Authentication**:
For Performance Analytics Explorer in section **Web**: [https://\[EV_server_name\]/EVExplorer/OAuth2ResponsePage.aspx](https://[EV_server_name]/EVExplorer/OAuth2ResponsePage.aspx)
For Performance Analytics Anywhere in section **Web**: [https://\[EV_server_name\]/EVAnywhere/oauthcallback.html](https://[EV_server_name]/EVAnywhere/oauthcallback.html)
For Performance Analytics Desktop Clients in section **Mobile and Desktop Applications**: The current default value for native clients can be found in the Microsoft Azure documentation (<https://login.microsoftonline.com/common/oauth2/nativeclient>).
7. In **Home > Azure Active Directory > App registrations > Performance Analytics**

application > API permissions click on the button **Add a permission** and select the tab **APIs my organization uses**.

- a. Select **Azure Analysis Services** and select the required permission (e.g. **Model.ReadWrite.All**).
 - b. In order to use the Item/System Policies of Performance AL click on the button **Add a permission** and select the tab **APIs my organization uses**. Select **Microsoft Graph** and select the required permissions (**GroupMember.Read.All**, **User.ReadBasic.All**).
8. In **Home > Azure Active Directory > App registrations > Performance Analytics application > Certificates & secrets** click on the button **New client secret**, enter description and select Expires period. Click **Add**. Then copy the created client secret to setup security provider.

Further configuration steps are described in

- [MSAS Data Source Settings](#)
- [Specifying the security providers](#)

Limitations

When using the New Edge Browser (Chromium) either the Anywhere client or the DesktopClient can be used with OAuth 2.0. This is actually a limitation of the New Edge Browser.

Preparing Keycloak

In order to use Keycloak with Performance Analytics it needs to be configured correctly.

In the first step a new application needs to be added to Keycloak.

Procedure

1. Open the Keycloak administration console and navigate to **Configure > Clients**.
2. Create a new client here.
3. Set the access type of the client to **confidential**. After saving the client you should now see a **Credentials** tab.
4. Set the **Client authenticator** to **Client Id and secret**. Generate a new client secret.
5. If MSAS Impersonation should be used a new Mapper called **database_user** needs to be defined. This Mapper is used to define the user should be impersonated when creating a connection to the MSAS database.

There are two options:

- a. Defining the Mapper as User Attribute. This means that the administrator has to define a **database_user** manually for each user created on the Keycloak server.

To do this define the following Mapper in the **Mappers** tab of the Performance Analytics application:

Setting	Value
Name	database_user
Mapper Type	User Attribute
User Attribute	database_user
Token Claim Name	database_user
Claim JSON Type	String

- b. Defining the Mapper as User Property. This allows the administrator to map a existing property from the Keycloak server or an external provider (i.e. SAML) to be mapped to the **database_user** property.

To do this define the following Mapper in the **Mappers** tab of the Performance Analytics application:

Setting	Value
Name	database_user_userproperty
Mapper Type	User Property
Property	
Token Claim Name	database_user
Claim JSON Type	String

Set the value of the Setting **Property** to the name of the property you want to map to the **database_user** property.

6. Enable the following settings for the new Mapper:
 - Add to ID token
 - Add to access token
 - Add to userinfo
7. If the Mapper **database_user** was defined as User Attribute every user that should be able to access Performance Analytics needs to have a **database_user** attribute defined:
 - a. Navigate to **Users** and edit an already existing user or create a new user.
 - b. Navigate to the **Attributes** tab and add a new attribute with key **database_user** and user name of the user that should be impersonated as value.
 - c. If a User should be able to change system or item policies he needs the to have the roles **view-clients** and **view-users** assigned from the **realm-management** client.
8. Add the following Redirect URIs for your Application:
 - a. [https://\[EV server name\]/EVExplorer/OAuth2ResponsePage.aspx](https://[EV server name]/EVExplorer/OAuth2ResponsePage.aspx)
 - b. [https://\[EV server name\]/EVAnywhere/oauthcallback.html](https://[EV server name]/EVAnywhere/oauthcallback.html)
 - c. <http://localhost>

9. In order to use subscriptions with Keycloak you need to set **Direct Access Grants enabled** to on in the **settings** tab of your client under **Configure > Clients**.

Note:

Keycloak is an open source software product to allow single sign-on. Once logged-in to Keycloak, users don't have to login again to access a different application. It is valid for web-applications in the same browser instance, but it is wrong for Performance AL Client. Due to technical implementation, the login dialog uses an another browser instance. It means user have to login in Performance AL Client again even if he is logged in to another application.

When using Keycloak with the Anywhere client, then popups needs to be enabled. You should disable any additional prompts (e.g. if you are asked if you want to store your credentials) - if these additional prompts pop up, it may be that case that the authentication response window is not closed automatically and needs to be closed manually.

4. Installing Performance Analytics

This chapter describes the steps necessary to install and configure Performance AL Server, Performance AL Explorer, and Performance AL Client.

The setup of Performance AL verifies that Microsoft Internet Information Services (IIS) is installed on your system. If IIS is not installed, the following applies:

- A message is shown at the start of the installation process stating that IIS is not installed.
- Performance AL Explorer and Web Service are not installed during the setup. Performance AL Explorer and the Web Service can be installed later during a custom installation.
- When you install Performance AL Explorer and Web Service, no virtual directories are created during the installation.

Note: When you use IIS 6 or higher the following message might be shown during the installation: *The Web Service Extension is prohibited, this extension will be used in the created virtual directories.* To make sure Performance AL works correctly, you have to allow this Web Service Extension manually. See [Preparing the operating system](#).

Installing Performance AL

Selecting the mail server

If you want to use the Report Subscription feature you can configure a mail-server during the installation process.

Therefore you have to provide the following informations:

- SMTP Host Name
- SMTP Port
- Whether to use SSL connection
- Mail server authentication (if required by mail-server)
 - User
 - Password

Note: You can also keep the default values and skip this step in the installation process. To configure the mail-server after the installation process refer to chapter [Configuring the mail-server](#).

Installing Performance AL with default settings

The express install uses a set of default parameters for the configuration.

The default settings are:

1. Performance AL can be used by anyone who uses the computer.

2. The Performance AL service as Local System.
3. The Performance AL service starts after installation.
4. The default web site in IIS is used.
5. The catalog provider is SQL Server.
6. When you do a default installation on a system that has no previous installation of Performance AL, the setup tries to validate the local SQL server. This can take a long time. If the validation fails, the SQL Server Catalog Provider dialog box is displayed. In this dialog box you can configure the SQL server settings.
7. Installing Performance AL
8. The database name for the catalog provider is EVRepository.

The default file locations are as follows:

- Installation directory = <InstallDir>
- Performance AL Server location:
<InstallDir>\Server
- License file location:
<InstallDir>\Server
- Performance AL Explorer location:
<InstallDir>\Explorer
- Performance AL Server Web Service location:
<InstallDir>\Server\WebService
- Performance AL Client location:
<InstallDir>\Server\WebService\Client
- Performance AL Client Installer location:
<InstallDir>\Server\ClientInstaller

Procedure

1. Run the installation file that is made available to you for Performance Analytics, or type

```
setup.exe /v"/qn INSTALLDIR=##Custom Performance AL Location##"
```

in the command prompt for a silent install.
2. Select the language for the install and follow the instructions on your screen. When the Setup Type dialog box is displayed, select Express. If there are changes made to your system configuration, you may need to restart the computer for the changes to take effect.

Installing Performance AL with custom settings

The Performance AL Server and Performance AL Explorer can be installed onto different systems using custom settings.

The client software is part of the installation of the Performance AL Server. Performance AL can be installed and configured to best meet the needs of your server.

Selecting the install components

Use the custom setup to select the components to install.

When you install Performance AL Server and Performance AL Explorer using the custom

setup, you can select each program component and location of each component.

Procedure

1. Run the installation file that is made available to you for Performance AL.
2. Select the language for the install and follow the instructions on your screen. When the Setup Type dialog box is displayed, select Custom.
3. In the Custom Setup dialog box, select the features you want to install:
 - Client - the files needed to deploy the Performance AL Client from the server.
 - Documentation - the complete documentation set.
 - Web service - a service that enables Performance AL Explorer or Performance AL Desktop Explorer to connect to the server.
 - Tools - extra tools provided for use for Performance AL, including the Password Encryption tool.
 - Explorer - Performance AL Explorer.
 - Anywhere - Performance AL Anywhere client.
4. In the Install to box, click Change to change the default location of the installation if required.
5. In the Install Performance AL for box, select either:
 - Only for me - administrator only
 - Anyone who uses this computer - all users
6. In the Run Performance AL service as box, specify the account the Performance AL service runs on. The most common choice is Local System.
7. To use a slave server for process distribution, select Start Performance AL in slave mode. For more information, see "Slave servers".
Note: If you choose a slave server for process distribution you must install a master server to be able to:
 - Configure the catalog provider for Performance AL Server
 - Configure the security provider for Performance AL Server
 - Install the Performance AL Web Service
 - Install the Performance AL Client deployment files

For more information about setting up process distribution with Performance AL Explorer, see [Process distribution](#).

For more information about setting up process distribution with Performance AL Desktop Explorer, see [Process distribution](#).
8. Click Next.
9. Choose the Web site where you want to have the virtual directories. You can only select the Web Site when IIS is installed.
10. Click Next and go to the section [Specifying the catalog providers](#).

Specifying the catalog providers

You can choose one of the following for the catalog provider:

To specify **SQL Server** as the catalog provider:

Before you begin do the steps in [Selecting the install components](#).

Procedure

1. Select **SQL Server** as the catalog provider.
2. Click **Next**.
3. In the **Database Name** box, type the name of the SQL database.
4. In the **SQL Server box**, type or select the name of the SQL Server.
5. To validate the SQL Server during installation select the **Validate SQL Server check box**.
6. To connect to the SQL Server check with either **Windows Integrated Authentication** or **SQL Server Authentication**. If SQL Server Authentication is selected, you must type the Login ID and password.
7. Click **Next**.
8. Go to Specifying the security providers.

To specify **Oracle** as the catalog provider:

Before you begin do the steps in “Selecting the install components”.

Procedure

1. Select **Oracle** as the catalog provider.
2. Click **Next**.
3. In the **Database Source Name** box, type the name of the Oracle data source.
4. Type your ID and password for the Oracle server.
5. Click **Next**.
6. Go to Specifying the security providers.

Specifying the security providers

You can choose one of the following as the security provider:

- None, the security provider must be configured manually after the setup is complete.
- Windows
- IBM Cognos 8
- IBM Cognos TM1
- Forms - an XML file will be installed with the user administrator set without a password.
- Essbase

To specify **Windows** as the security provider

Procedure

1. Select **Windows** as the security provider.
2. Click **Next**.
3. Go to Completing the custom installation.

To specify **IBM Cognos 8** as the security provider

Procedure

1. Select **IBM Cognos 8** as the security provider.
2. In the box **Dispatcher Location** either accept the default location or change the default location if you want to connect to Cognos 8 on another machine.
3. In the **Namespace ID** box, type the unique ID for the namespace.
4. Type your ID and password for the Cognos 8 server.
5. Click **Next**.
6. Go to Completing the custom installation.

To specify **IBM Cognos TM1** as the security provider

Procedure

1. Select **TM1** as the security provider.
2. In the **Host Name** box, type the host name.
3. In the **Server Name** box, type the names of the server.
4. Type your ID and password for the Cognos TM1 server.
5. Click **Next**.
6. Go to Completing the custom installation.

To specify **Essbase** as the security provider.

Procedure

1. Select **Essbase** as the security provider.
2. In the **Server Name** box, type the names of the server.
3. Type your ID and password for the Essbase server.
4. Click **Next**.
5. Go to Completing the custom installation.

To specify **OAuth 2.0** as the security provider

Procedure

All required settings can be found in [Preparing Microsoft Azure](#).

1. Select **OAuth 2.0** as the security provider.
2. In the **Authorization Endpoint (v2)** box, type the correct Authorization endpoint URI.
3. In the **Token Endpoint (v2)** box, type the correct Token endpoint URI.
4. Enter **Logout Endpoint (v2)**
5. Type the registered **Application (client) ID**.
6. Type **Server location**.
7. Add **Permission**.
8. Add **Client secret**
9. Type administrator name

10. Click **Next**.
11. Go to Completing the custom installation.

Completing the custom installation

Procedure

1. Make sure the installation summary is correct. If not, click **Back** to edit the information.
2. Click **Install**.
3. Wait while the features you selected are installed. This may take several minutes.
4. Click **Finish**.

Results

If there are changes made to your system configuration, you may need to restart the computer for the changes to take effect.

Installing Performance Analytics using silent install

You can run the installation as a silent install, so that no user interface shows and no additional actions are necessary to complete the install.

The Performance Analytics installation is based on the Microsoft Windows Installer technology and uses the general Windows Installer options.

Procedure

To run the installation as a silent install, use the following command prompt:

```
setup.exe /v"/qn"
```

The following is an example command prompt to specify the installation location:

```
setup.exe /v"/qn INSTALLDIR=##Custom Performance AL Location##"
```

Installing Performance Analytics Desktop Explorer

Performance AL Desktop Explorer needs to be installed separately from the main installation sequence.

After the installation it will be available in Microsoft Windows Explorer and as an icon (



) on your desktop. Performance AL Desktop Explorer is available in 32-bit and 64-bit versions.

During the installation of Performance AL Desktop Explorer, Performance AL Client is installed.

The default Performance AL Server that is added during the installation of Performance AL Desktop Explorer uses the TCP protocol for the connection to Performance AL Server.

Procedure

1. Click the installation file for Performance Analytics Desktop Explorer.
2. Follow the instructions on your screen.

3. Click **Finish**.

Installing Performance Analytics Client

Performance AL Client is deployed as a client software program.

There are five ways to get the client program:

- From a view or canvas item in Performance AL Explorer, Performance AL Client is installed automatically on your system when you open either a view or a canvas.
- From a URL request from your browser, either as a link from an HTML web page or by typing the URL directly into the web browser. A request is sent as an HTTP Request to Performance AL Server. This HTTP Request is processed by the HTTP Handler and returns either a Web Service Call or a URL API Call.
- From a launch command in the start menu. After you have completed an express install of Performance AL Explorer, the shortcut to an internet page Client is available. Click **Start > All Programs > Serviceware Performance Analytics > Client**.
- From an object in HTML code. See [Installing Performance AL Client from a link on an HTML page](#).

If you have a Performance AL Client installed on your system that is a different version than the one you are installing, two separate Performance AL Clients are installed on your system. If the version of the Performance AL Client that is installed is the same as the version of the Performance AL Client you are about to install, the installed Performance AL Client will be replaced by the new one.

Setup Location:

The client setups can be found in the following location:

- <INSTALL_DIR>\Server\ClientInstallers\setup.exe (32 bit client)
- <INSTALL_DIR>\Server\ClientInstallers\setup64.exe (64 bit client)

Note: Only one client can be installed on the same machine at the same time. This means either the 32 bit or 64 bit client must be used, not both together.

Non-Admin Installation

The methods described above to install the Performance AL client are always performing a Non-Admin Installation. In this case the following script is executed in the background.

```
setup.exe /v"MSIINSTALLPERUSER=1" /v"ALLUSERS=2"
```

Installation path: "C:\Users\%Username%\AppData\Local\Programs\Common\cubus shared\"

Admin Installation

To perform an Admin Installation, the setup.exe can be executed without any parameters.

Installation path: "C:\Program Files (x86)\Common Files\cubus shared\"

Note: For integration into Microsoft Office (Excel, Powerpoint, Word) an Admin Installation is required.

Install options:

The client setup can be installed/uninstalled with the following options:

- Silent Install: `setup.exe /S /v/qn`
- Silent Uninstall: `setup.exe /X /S /v/qn`

For further information concerning the parameters see https://helpnet.flexerasoftware.com/installshield19helplib/helplibrary/IHelpSetup_EXECmdLine.htm.

Installing Performance Analytics Desktop

Performance AL Desktop is deployed as a ClickOnce application.

To install the application you have to navigate to the following URL:

- <http://<yourservername>/EVServer/EVDesktopApp>

Note: The ClickOnce deployment technology uses case sensitive URLs. Ensure that the provided installation link for the users matches the pattern above.

Each ClickOnce application is installed in a per-user, per-application cache folder. This folder can be found at the following location:

- `C:\Users\<username>\AppData\Local\Apps\2.0`

Deployment Package Location:

The deployment package can be found on the server at the following location:

- `<EV_INSTALL_DIR>\Server\WebService\DesktopApp`

For further information concerning the ClickOnce deployment technology see <https://docs.microsoft.com/en-us/visualstudio/deployment/clickonce-security-and-deployment>

Installing Performance AL Client from a link on an HTML page

Performance AL Client can be embedded in Microsoft Internet Explorer by using a customized HTML page. Access to an HTML page with references to specific files is required. This HTML page can be accessed with Internet Explorer via Internet or your Intranet using the HTTP protocol. It can also be accessed directly when it is available on your local network.

The following files are needed when using a customized HTML page:

- Ctrl.cab
The cab file contains the requirements to setup Performance AL Client. This file is in the subdirectory WebService\Client of the Performance AL Server directory.
- The HTML page

An HTML page, containing the correct references. You can create this file based on the example below

```
<html>
  <head>
    <title>View Name</title>
  </head>
  <body topmargin="0" leftmargin="0" scroll="no">
    <object ID="EVOBJECT" name="EVOBJECT" lang="en"
      height="100%" width="100%"
      classId="clsid:CLASSID"
      codeBase="http://YourEVServer/EVServer/Client/
Ctrl.cab#version=EVERSIONNUMBER">
      <param name="Server" value="YourEVServer" />
      <param name="DefaultView" value="/View Name" />
    </object>
  </body>
</html>
```

Further possibilities can be found in the *Client Integration Guide*.

Description of the example page

The descriptions for each of the element titles are as follows:

- `<title>View Name</title>`
This is the title that is displayed in the caption bar. This title contains free text. It can be replaced with your text, for instance 'Monthly Views'.
- `<body topmargin="0" leftmargin="0" scroll="no">`
Default properties for the margins and the presence of the scroll bar.
- `object ID="EVOBJECT" name="EVOBJECT" lang="en" height="100%" width="100%" classid="clsid:7EAC1200-0BBE-499A-A9E9-5F334DBC8E89"`
The objectID in combination with the name and the CLASSID uniquely identifies Performance AL Client. The Windows registry contains a link between this ID and the actual control after installation. The language is set to default to English. The size of Performance AL Client is set to default 100%, filling the entire screen.
- `codebase="http://YOURSERVER/ EVServer/Client/Ctrl.cab#version=10,5,0,0"`
The 'codebase' refers to the cab file in the Performance AL Server/Client directory. You can change this link, for example to the same directory as the HTML page but make sure the cab file is in the same location.
Note that the name of the cab file is case sensitive. Microsoft Internet Explorer checks if the version number in the HTML page is newer than the version of Performance AL installed on the computer. If this is the case, installation starts.
- `<param name="Server" value="YOUR Performance AL SERVER" />`
The parameter Server. The value is the Performance AL Server name. This is necessary to let Performance AL Client connect to a Performance AL Server.
- `<param name="SessionID" value="d17bf6f0-8ce8-4d2a-9f83-2cecd1b0407d" />`
- `<param name="DefaultView" value="/View Name" />`
The parameters SessionID and DefaultView are properties added by the URL API. These properties are not necessary when using your own customized HTML page.

Installing the Performance AL Client after editing the HTML page

When a user accesses the HTML files, the web browser checks if Performance AL Client is installed previously, and if so, which version. If Performance AL Client is not installed, or

the version is older than the version specified in the HTML page, Performance AL Client is downloaded and installed.

Procedure

1. If alerted, allow blocked content, click the information bar and select Allow Blocked Content. Click Yes.
2. When the Microsoft Internet Explorer - Security Warning dialog box is displayed, click Install to start the installation.

Checking the security settings of the internet browser

If Performance AL Client does not download when the HTML page is accessed, or starts to download every time the HTML page is opened, then the security settings must be adjusted for your internet browser. The internet browser must be set to allow:

- Download signed ActiveX controls.
- Run ActiveX controls and plug-ins.
- Script ActiveX controls marked save for scripting.
- File downloads.

The security level should also be set to medium or medium low.

Changing the language setting for Performance AL Client

The language for Performance AL Client can be changed to one of the following language settings:

Language	Language code
Chinese Simplified	zh-CN
Chinese Traditional	zh-TW
Danish	da-DK
Dutch	nl-NL
English	en-US
French	fr-FR
German	de-DE
Italian	it-IT
Japanese	ja-JP
Korean	ko-KR
Portuguese - Brazilian	pt-BR
Spanish	es-ES

The order that the language is set is determined by:

1. The language set in the Object element of the HTML page, or set by the URL API. For

more information, see [URL API syntax](#).

2. The language set for the internet browser. See the documentation for your internet browser.

Configuring Performance AL Server

After you have installed Performance AL, certain components need to be specified and, if required, configured:

- Specify the connection to Performance AL Server. This is required when the Performance AL Server is on a different system than the Performance AL Explorer. More than one Performance AL Server can be specified.
- Configure the connection to the data sources for the OLAP databases. There are two Performance AL Explorer applications that can be used to specify and configure the Performance AL Server:
 - Performance AL Explorer - requires IIS (Internet Information Service). Refer to [Performance AL Explorer](#).
 - Performance AL Desktop Explorer - necessary for systems that do not have IIS. Refer to [Performance AL Desktop Explorer](#).

Note: The Performance AL Desktop Explorer can also be used on systems that do have IIS installed.

Specifying a Performance AL Server

This section explains how to specify a Performance AL Server using Performance AL Explorer.

These instructions are only needed to specify a new instance of Performance AL Server. When Performance AL Server and Performance AL Explorer are on the same system, Performance AL Explorer is already configured for the Performance AL Server.

During the process you are asked for the location of Performance AL Server and the CAB locations.

Procedure

1. Start Performance AL Explorer or Desktop Explorer.
For Performance AL Explorer, click **Start > All Programs > Serviceware Performance Analytics > Explorer** from the program list.
For Performance AL Desktop Explorer, double click *My Performance Analytics* from Microsoft Windows Explorer.
2. Right click on the **Home page** of Performance Analytics. Select **Add EV Server**. The **Server Information** dialog box opens.
3. In the **Name** box, type the name of the new Performance AL Server.
4. In the **Description** box, type a description of the new Performance AL Server.
5. In the **Location** box, type the location of the new Performance AL Server. The location box needs a valid URI as input that consists of three parts, <Protocol>://<Host>:<Port>, for example, tcp://172.31.254.1:7113.
 - Protocol - HTTP, HTTPS, TCP
Note: HTTP and HTTPS are used to connect Performance AL to the Performance AL Server via the Web Service. When the protocol is not specified, HTTP is used

as the default protocol.

TCP is used to connect Performance AL Explorer to the Performance AL Server when Performance AL Explorer is on the same system as Performance AL Server or the network cannot use HTTP or HTTPS. When the Performance AL Explorer is on the same system as Performance AL Server, TCP is the default protocol.

- Host - The Host represents the host name of the Performance AL Server system. For example: demo.company.com
- Port - The port number defines the protocol port that is used for contacting the Host referenced in the URI. The valid ports are:
 - HTTP = Port 80
 - HTTPS = Port 443
 - TCP = 7113

If there is no location specified, the value of the **Name** box is used for the value of the Location box.

6. In the **Cab Location** box, type the location of the Cab files for the Performance AL Client.

The CAB location box is the location of the Performance AL Client cab files. By default when connecting to Performance AL Server with HTTP or HTTPS, this box is empty and the Client Directory that is used is in the Virtual Directory:

<http://<Name>/EVServer/Client>

If you connect to Performance AL Server via TCP, you should specify the location of the Cab files for the Performance AL Client.

If Performance AL Explorer is on the same system as Performance AL Server, the Cab Location is the Client Directory in the Virtual Directory. If the Web Service is not installed during the installation, the Cab Location of the Performance AL Server is empty.

7. If you want to select the **Automatic logon**, click the check box. If you enable Automatic logon, the logon process evaluates the availability of the following security providers in the order:
 - Windows Integrated Authentication.
 - A Logon Form shows and the user is prompted to enter credentials.
8. In the **Security Namespace** box, type the name of the security provider. When empty, the default provider is used. The default provider is the first configured security provider. Depending on the security provider used, Performance AL Server can retrieve the user credentials automatically. The IBM Cognos 8 Security provider can have multiple security namespaces.
9. Click **Add** to add Performance AL Server to the list of available servers.
10. Go to [Configuring the data source](#).

Configuring the data source

After you specify Performance AL Server, the data source needs to be configured.

The files for the data sources can be installed in any folder. The generic folders for the data sources, databases and images are to help the installer. If you select a different folder you need to reconfigure the search paths, for more information, see [Setting the search paths](#) for the Performance AL Explorer, or [Setting the search paths](#) for Performance AL Desktop Explorer. The data sources that are available are:

- IBM Cognos
- Microsoft Analysis Services or SQL Analysis Services
- Oracle Essbase

Configure IBM Cognos TM1


The steps needed to configure the data source for IBM Cognos TM1.

Enter the name of the 'adminhost', followed by a pipe character (|) and then enter the TM1 server name.

For example: TM1_demo|tm1srv.

You can find the TM1 server name by using IBM Cognos TM1 Architect. If you type the incorrect credentials in more than three times, you must restart the TM1 service.


Procedure

1. Click the icon  of the Performance AL Server you have just created > **System**. Enter access credentials if required.
2. Right-click **Data Sources** and select **Add Item > Data Source**.
3. In the **Name** box, type a name for the data source. You can create your own name.
4. In the **Description** box, type a description of the data source.
5. Click **Add**.
6. In the **Data Source Type** box, select **TM1**.
7. In the **OLAP Server** box, type the name of the server.
8. In the **OLAP Administrator** box type your administrator name for the OLAP server.
9. In the **Password** box, type the password and confirm the password for the administrator name.
10. The other fields are not required for the install process.
11. Click **Update**.
12. Right-click the data source that you just created and select **Database Wizard**.
13. If the credentials are correct, the Database Wizard shows a list of all the databases. If you are asked to enter the credentials, type them here.
14. Select the check boxes for all the databases that you want to associate with Performance AL.
15. Click **Register**. The **Database Wizard** reports when each database is created successfully.
16. Click **Close**.

Configure Microsoft Analysis Services or SQL Analysis Services

The steps needed to configure the data source for Microsoft Analysis Services or SQL Analysis Service.

Procedure

1. To set the data sources, right-click the Performance AL Server icon  then click **System > Data Sources**. Enter access credentials if required.


2. Right-click Data Sources and select **Add Item > Data Source**.
3. In the **Name** box, type a name for the data source. You can create your own name.
4. In the **Description** box, type a description of the data source.
5. Click **Add**.
6. In the **Data Source Type** box, select **MSAS**.
7. In the **OLAP Server** box, type the name of the server. The name can be an IP address, DNS name or server name.
8. In the **OLAP Administrator** box type your administrator name for the server.
9. In the **Password** box, type the password for the administrator name.
10. The other fields are not required for the install process.
11. Click **Update**.
12. Right click the data source that is just created and select **Database Wizard**.
13. If the credentials are correct, the Database Wizard shows a list of all the databases. If you are asked to enter the credentials, type them here.
14. Select the check boxes for all the databases that you want to be associate with Performance AL.
15. Click **Register**. The **Database Wizard** reports when each database is created successfully.
16. Click **Close**.

Note: Please ensure that the OLAP Administrator has local administrative rights on the Performance AL Server machine and has an admin role on the Microsoft Analysis Server (a role with the "Full control" option checked). If the loading/instantiating of the AMO Server still fails please run the Performance AL Server under the OLAP Administrator account.

Configure Oracle Essbase

The steps needed to configure the data source for Oracle Essbase.

Procedure

1. To set the data sources, in Performance Analytics, right-click the Performance AL Server icon . Then, click **System > Data Sources**. Enter access credentials if required.
2. Right-click **Data Sources** and select **Add Item > Data Source**.
3. In the **Name** box, type a name for the data source. You can create your own name.
4. In the **Description** box, type a description of the data source.
5. Click **Add**.
6. In the **Data Source Type** box, select **Essbase**.
7. In the **OLAP Server** box, type the name of the server.
8. In the **OLAP Administrator** box type your administrator name for the server.
9. In the **Password** box, type the password for the administrator name. The other fields are not required for the install process.
10. Click **Update**.
11. Right click the data source that you just created and select **Database Wizard**.

12. If the credentials are correct, the Database Wizard shows a list of all the databases. If you are asked to enter the credentials, type them here.
13. Select the check boxes for all the databases that you want to associate with Performance AL.
14. Click **Register**. The **Database Wizard** reports when each database is created successfully.
15. Click **Close**.

Note: The value of Essbase substitution members can define one or more Essbase member names. The member names must be separated by blank characters. When the value of a substitution member contains only one member you have to enclose the member name with double quotes.

Run the Performance AL Web Service on another Server than the Performance AL Server

This section explains how to run the Performance AL Web Service on another machine than the Performance AL Server.

1. Go on the machine where the Web Service should run and open the web.config of the Web Service that can be found in <InstallDir>\Server\WebService.
2. Navigate to the <appSettings> section, which should contain the following parameters:

```
<add key="CustomServer" value="" />
<add key="CustomServerPort" value="" />
<add key="CustomServerProtocol" value="" />
<add key="CustomServerRemotingPort" value="" />
```

3. Adjust the parameters according to the following settings of the EVServer.exe.config on the machine which runs the Performance AL Server:
 - Use the hostname of the machine, which the Performance AL Server as value for CustomServer.
 - Use the value of ServerPortNumber/HTTPPortNumber/HTTPSPortNumber depending on the ServerProtocol as value of CustomServerPort.
 - Use the value of ServerProtocol as value of CustomServerProtocol if you are using http or https as ServerProtocol. If you use TCP as ServerProtocol you should set CustomServerProtocol to either http or https depending on how the Web Service is reachable for clients. The Performance AL Web Service will connect to Performance AL via TCP and the web service will then proxy the requests via either http or https to the clients depending on the CustomServerProtocol.
 - Use the value of RemotingPortNumber as value of CustomServerRemotingPort. If the remoting port number has not been changed use the default value of 7113.

Afterwards the IIS on the machine with the Web Service has to be restarted.

Installing maps

Performance AL supports Map. Map is a chart component that adds the support of geographic or structural topography in relation to the database information. Map has to be setup and configured for a specific database model before the graphical feature can be used with a database view.

Adding maps for use by the Performance AL

Customer maps can be added for use by the Performance AL. These maps are made available on the server for the client systems to use.

The database server has one default location for Maps. The organization of Maps into libraries and layers is done by copying the shape file into the correct subdirectories.

Inside this Maps directory, there is one subdirectory for each library. Each library directory contains all the shape files and database files which together make up the layers for that library.

Procedure

1. Make the default directory for Maps.

```
C:\Program Files\cubus\Performance Analytics\Server\Maps
```

Note: If maps are put in a location other than the specified locations, they will not be available for use.

2. Copy the library you want to this directory.

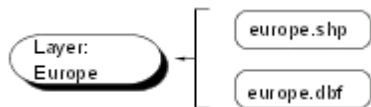
Understanding layers and shapes

The concepts of layers and shapes must be understood before you arrange the geographic maps for your organization.

Each map is represented by a shape file (.shp) and a corresponding database file (.dbf). The shape file contains vectors that define the map. The database file contains data associated to the map, the regions on the map, the short name of the map or any statistical data.

The shape file and associated database file is called a layer.

In the example layer, the coordinates that give the continent Europe shape is described by the europe.shp file, the regions associated with Europe are listed in the europe.dbf file.



Layers can be classified according to hierarchy. For example, all continents can be given the classification of layer 1 and regions, classification layer 2. The order of layers is important. Layers with the lowest level of detail are lowest in the layer hierarchy, followed by layers with a higher detail. This ensures that states are drawn on top of regions and regions are drawn on top of continents.



All layers that share the same coordinate system and are to be used together either geographically or topographically must be grouped into one library. Therefore, the definition of a library is a collection of layers that share the same coordinate system and together make up one geographic area.

Understand the mapping file

In order to develop the map feature, one of the most important processes is to link members in your OLAP database to the shape and database files for a specific layer.

This is important to ensure that the data for the members are placed in the correct map and at the correct location. For example, the member California in the OLAP database should be mapped to the shape called California in the layer USA.

An intermediary mapping file is used to match members in the OPLAP database to the layers in the map library. The name of this file is libinfo.xml. This file is a read/write XML file, and it contains the names of all the layers in the map library. The following is an example of a libinfo.xml file.

```

<?xml version="1.0"?>
<LIBRARY NAME="World Library">
  <LAYER FILE="Asia" LEVEL="0">
    <MAPPING COL="CNTRY_NAME" ALIASTABLE="Default" />
  </LAYER>
  <LAYER FILE="Europe" LEVEL="0">
    <MAPPING COL="CNTRY_NAME" ALIASTABLE="Default" />
  </LAYER>
  <LAYER FILE="Austria" LEVEL="1">
    <MAPPING COL="ADMIN_NAME" ALIASTABLE="Default" />
  </LAYER>
  <LAYER FILE="France" LEVEL="1">
    <MAPPING COL="ADMIN_NAME" ALIASTABLE="Default" />
  </LAYER>
  <LAYER FILE="Germany" LEVEL="1">
    <MAPPING COL="ADMIN_NAME" ALIASTABLE="Default" />
  </LAYER>
</LIBRARY>

```

The file has three element types LIBRARY, LAYER, and MAPPING. The element LIBRARY is the container for all the LAYER elements.

Library

Description

The LIBRARY element is the first element to be defined in the libinfo.xml file. The

element is used only once to hold the collection of layer elements. This element can also be used to give the library a different name from the directory name.

Syntax

```
<LIBRARY>  
</LIBRARY>
```

NAME

NAME is an optional attribute to give the library a different name from the library directory. If this attribute is omitted, the library is referenced by the directory name.

The library is called World Maps. If the NAME attribute is removed, the library is called by the directory name.

```
<LIBRARY NAME="World Maps">  
  <LAYER FILE="Asia" LEVEL="0">  
    <MAPPING COL="CNTRY_NAME" ALIASTABLE="Default" />  
  </LAYER>  
</LIBRARY>
```

Layer

Description

The LAYER element is a child of the LIBRARY element. The element is used to define the behavior of a single layer in the Map library. The element is used to give the layer a name, specify the level of detail and specify one or more mappings.

Syntax

```
<LAYER>  
</LAYER>
```

NAME, FILE, LEVEL

NAME is an optional attribute to give the layer a different name other than the file name. This is convenient where layers have file names that are not easy to understand. If this attribute is omitted, the layer is referenced by the file name from the shape and database files.

FILE is a mandatory attribute and defines the layer files used, the shape file and database file, that make up the layer. The name is specified without a file extension.

LEVEL is an optional attribute and defines the level of detail of a layer. The attribute is a number in the range 0-9999, where 0 indicates the lowest level of detail and 9999 the highest level. Layers that have the same level of detail, for example, all continent Maps, have the same level number.

Example: The name Australia is mapped to the database file au.dbf. The region, Australia, has a level 2 set. Level 1 could be Australasia and Level 0 Southern Hemisphere.

```
<LIBRARY>  
  <LAYER NAME="Australia" FILE="au" LEVEL="2">  
    <MAPPING COL="CNTRY_NAME" ALIASTABLE="Default" />  
  </LAYER>  
</LIBRARY>
```

```
</LAYER>  
</LIBRARY>
```

Mapping

Description

The MAPPING element is a child of the LAYER element. The element is used to link a member in the OLAP database to a specific layer.

Syntax

```
<MAPPING>  
</MAPPING>
```

Attributes

COL, QUERY, LEVEL, GENERATION, MEMBERNAME, DIMENSION, ANCESTOR, PARENT, ALIASTABLE

COL is a mandatory attribute and defines the field type in the layer database file that the members in the OLAP database should link to. The field type must be specified by name. This attribute is not case-sensitive.

QUERY is an optional attribute that works with the MEMBERNAME attributes. The QUERY attribute defines the record in the layer database file to which a member should be mapped.

MEMBERNAME is an optional attribute that works with the QUERY attribute. This attribute limits the query process to the member in the OLAP database that should be mapped to the QUERY attribute.

PARENT is an optional attribute. This attribute limits the query process to the children of the specified member.

ANCESTOR is an optional attribute. This attribute limits the query process to all descendants of the specified member.

LEVEL is an optional attribute that specifies the level that a member in the OLAP database must be before it is matched to the records in the layer database file. This makes it easy to map, for example, all level 0 members of an outline to layer 0. Level 0 is the lowest leaf in the database.

GENERATION is an optional attribute that specifies the generation that member in the OLAP database must be before it is matched against the records in the layer database file. Generation 0 is the highest leaf in the database.

DIMENSION is an optional attribute. To increase the speed of a search in the OLAP database, you can define this attribute with the specific dimension in the view. Only the specified dimension is searched for a possible match.

ALIASTABLE is an optional attribute and is added to the default libinfo.xml.

The Performance AL Server can use unique member names for members of an OLAP database. The member names shown in Performance AL Client do not have to be the same as these unique member names. To tell Performance AL Server to match the member names in the .dbf files to the member names shown in cubus Ev Client, the attribute 'ALIASTABLE=default' is used. If this Attribute is not added, not all Maps may show.

- Essbase - The ALIASTABLE attribute is used to match your database files with an Alias Table in your Essbase outline.
- Other OLAP Servers – Performance AL Server may use unique member names for members of an OLAP database. The member names shown in Performance AL Client may not be the same as these unique member names. To tell Performance AL Server to match the member names in the .dbf files to the member names shown in Performance AL Client, the attribute 'ALIASTABLE=default' is used. If this Attribute is not added, not all Maps may show. Therefore, this attribute tag is recommended when connecting to other OLAP Servers, even if the alias table is not a feature of these OLAP Servers.

Example 1: The minimum attributes that the element MAPPING can have. The mandatory attribute COL is set to the field type CNTRY_NAME that is in the Europe.dbf file. The OLAP database does not have an alias table, therefore the alias table is set to default.

```
<LIBRARY>
  <LAYER NAME="Europe">
    <MAPPING COL="CNTRY_NAME" ALIASTABLE="Default" />
  </LAYER>
</LIBRARY>
```

Example 2: The name Germany in the Europe database file is mapped to the member name GM in the OLAP database. The ALIASTABLE is not used because a mapping is specified in the element.

```
<LIBRARY>
  <LAYER FILE="Europe">
    <MAPPING COL="CNTRY_NAME"
      QUERY="CNTRY_NAME=&#8217;Germany&#8217;" MEMBERNAME="GM" />
  </LAYER>
</LIBRARY>
```

Example 3: The field FIPS_CNTRY in the Europe database file is mapped to the member name EUROPE in the OLAP database and to the children of the member EUROPE.

```
<LIBRARY>
  <LAYER FILE="Europe">
    <MAPPING COL="FIPS_CNTRY" PARENT="EUROPE" />
  </LAYER>
</LIBRARY>
```

Example 4: The field FIPS_CNTRY in the Europe database file is mapped to the member name EUROPE in the OLAP database and to all ancestors of the member EUROPE.

```
<LIBRARY>
  <LAYER FILE="Europe">
    <MAPPING COL="CNTRY_NAME" EUROPE="GM" />
  </LAYER>
</LIBRARY>
```

Example 5: The query is limited to the Market dimension in the OLAP database.

```
<LIBRARY>
  <LAYER FILE="Europe">
```

```

    <MAPPING COL="CNTRY_NAME" DIMENSION="Market" />
  </LAYER>
</LIBRARY>

```

Example 6: The query is limited to the lowest leaves of the members.

```

<LIBRARY>
  <LAYER FILE="Europe">
    <MAPPING COL="CNTRY_NAME" LEVEL="0" />
  </LAYER>
</LIBRARY>

```

Example 7: The query is limited to the highest leaves of the members.

```


<LIBRARY>
  <LAYER FILE="Europe">
    <MAPPING COL="CNTRY_NAME" GENERATION="0" />
  </LAYER>
</LIBRARY>

```

Installing images for use in Performance Analytics

An image can be used as a background in a chart or canvas in Performance AL. After the installation of Performance AL, sample images are available. These images are made available on the server for the client systems to use. Also, you can add your own images.

Procedure

1. Open a Performance AL Server  and open the **Images** folder.
 2. Right-click anywhere on the window and click **Add Item > Image**.
 3. Type a **name** and a **description** for the image.
 4. Click **Add**.
 5. Click **Browse** and select an image. Images can be of the type BMP, GIF, JPEG and PNG.
 6. Click **Open > Upload** to put the image file in the EVRepository.
- Default images are available in the directory C:\Program Files\cubus\Performance Analytics\Server\images
7. Click **Add**.

Uninstalling Performance AL components

This section describes how to uninstall Performance AL. When upgrading, it is not necessary to uninstall the old version of Performance AL Server. The Repository that contains all Performance AL Items will not be removed during an uninstall. When upgrading, it is not necessary to uninstall the old version of Performance AL Client. When uninstalling Performance AL Client, there will be no loss of Items.

To uninstall Performance AL

To remove Performance AL from the system.

Procedure

1. Open the **Control Panel**.

2. Click **Uninstall a program**.
3. Click **Performance Analytics**
4. Click **Uninstall/Change**.

To uninstall Performance AL Desktop

To remove Performance AL Desktop from the system.

Procedure

1. Open the **Control Panel**.
2. Click **Uninstall a program**.
3. Click **Performance Analytics Desktop**.
4. Click **Uninstall/Change**.

To uninstall Performance AL Desktop Explorer

To remove Performance AL Desktop Explorer from the system.

Procedure

1. Open the **Control Panel**.
2. Click **Uninstall a program**.
3. Click **Performance Analytics Desktop Explorer**
4. Click **Uninstall/Change**.

To uninstall Performance AL Client

To remove Performance AL Client from the system.

Procedure

1. Open the **Control Panel**.
2. Click **Uninstall a program**.
3. Click **Performance Analytics Client**
4. Click **Uninstall/Change**.

Configuring access for authentication portals

Performance AL allows authentication portals to access the client by passing user credentials in an HTTP POST request. This allows single sign on for users as they have to enter their credentials once in the authentication portal and will be automatically authenticated in Performance AL through the portal. To configure access to the client the following URLs have to be used:

Standard client

Example: `http://localhost/EVServer/Login.aspx?ToolBar=true&TabBar=true`

Credentials

The credentials have to be passed as POST data in the following format:

username=[username]&password=[password]

Example: username=User1&password=Pwd1

5. Configure the service and the configuration file

This section describes:

- The account that runs the Performance Analytics service and how to change the account.
- The configuration file and what it is used for.
- The element values that can be changed in the configuration file.
- How to edit the element values for a particular provider.

Change the Account that runs the Performance AL service

The default account where the Performance AL service runs is Local System. The Local System account has full access to the system and can pose a security threat if the service is compromised. To help secure your system the Local System account can be changed to an authenticated user account that has limited access across the network.

Procedure

1. Go to **Control Panel > Administrative Tools**.
2. Select **Services**.
3. Double click on the **Serviceware Performance Analytics** service.
4. Click on the **Log On** tab.
5. Add the account that the **Serviceware Performance Analytics** service should run on.
6. Click **Apply > OK**.
7. Restart the **Serviceware Performance Analytics** service for the changes to take effect.
8. Make sure that the system account has the following user right assignments:
 - *"Giving the account the rights to replace a process level token"*
 - *"Giving the account the rights to act as part of the operating system"*
 - *"Giving the account the rights to impersonate a client after authentication"*
 - *"Giving the account the rights to log on as a service"*
 - *"Giving the account the rights for Local Administrator"*

The required steps are described in the section below.

Giving the account the rights to replace a process level token

When the Performance AL service runs on a different account than **Local System**, the account must have the rights **Replace a Process Level Token** on the system that runs Performance AL Server.

Procedure

1. Go to **Control Panel > Administrative Tools**.
2. Select **Local Security Policy > Local Policies > User Rights Assignment**.
3. Right-click **Replace a Process Level Token** and select **Security or Properties**.
4. Click **Add** to add the account Performance AL Server is running on.

Note: For a domain account the 'Domain Security Policy' has to be adjusted.

Giving the account the rights to act as part of the operating system

To allow Performance AL Server to authenticate a user, the account must have the rights **Act as part of operating** system.

Procedure

1. Go to **Control Panel > Administrative Tools**.
2. Select **Local Security Policy > Local Policies > User Rights Assignment**.
3. Right-click **Act** as part of Operating system and select Security or Properties.
4. Click **Add** to add the account the Performance AL Server is running on.

Giving the account the rights to impersonate a client after authentication

To allow Performance AL Server to authenticate a user, the user needs to be 'Impersonated'. The account must have the rights **Impersonate a client after authentication**.

Procedure

1. Go to **Control Panel > Administrative Tools**.
2. Select **Local Security Policy > Local Policies > User Rights Assignment**.
3. Right-click **Impersonate** a client after authentication and select Security or Properties.
4. Click **Add** to add the account the Performance AL Server is running on.

Giving the account the rights to log on as a service

When the Performance AL service runs on a different account to **Local System**, the account should have the user rights assignment **Log on as a Service**.

Procedure

1. Select **Control Panel > Administrative Tools**.
2. Select **Local Security Policy > Local Policies > User Rights Assignment**.
3. Right-click **Log on as a service** and select Security or Properties.
4. Click **Add** to add the account on which the Performance AL service is running on.

Note: For a domain account the Domain Security Policy has to be adjusted.

Giving the account the rights for Local Administrator

When the Performance AL service runs on a different account to Local System, the account should be part of the group 'Administrators' on the system running Performance AL Server.

Procedure

1. Go to **Control Panel > Administrative Tools**.
2. Go to **Computer Management**.
3. Go to **Local Users and Groups > Users**.

4. Double click on the account you want to give Administrator rights, click **Add** on the **Member Of** tab.
5. Click **Administrators** or type **Administrators**, click **Add** to add the account.

Log on locally

Users who can not be authenticated using Integrated Authentication must have **Log on locally** rights on the system running Performance AL Server. This is necessary to enable Performance AL Server to impersonate those users.

Procedure

1. Select **Control Panel > Administrative Tools**.
2. Go to **Local Security Policy > Local Policies > User Rights Assignment**.
3. Right-click **Log on locally** or **Allow log on locally** and select **Security**.
4. Click on **Add** to add all users or a group of users.

Editing the configuration file

The configuration files are XML files that administrators can use to change how the application runs. Performance Analytics uses the following configuration files that are installed during the setup routine:

- EVServer.exe.config default location
C:\Program Files\cubus\Performance Analytics\Server.
- Web.config for Performance AL Explorer default location
C:\Program Files\cubus\Performance Analytics\Explorer.
- Web.config for Performance AL Server's Web Service default location
C:\Program Files\cubus\Performance Analytics\Server\WebService.

This section describes the EVServer.exe.config configuration file. The Web.config file for Performance AL Explorer or the Web Service should not need adjustment after installation, however if there is a need, these files are referenced to directly.

After you make changes to the EVServer.exe.config file, the Performance AL service needs to be restarted for the changes to take effect.

Example default configuration file structure

```
<configuration>
  <configSections>
    <section name="catalogProvider" type="Provider,Server" />
    <section name="securityProviders" type="Provider,Server" />
    <section name="logProviders" type="Provider,Server" />
    <section name="dataSourceSettings" type="DataSourceSettings,
BackendWrapper" />
  </configSections>
  <catalogProvider>
    <provider type="SQLServer"
externalName="SQLServerCatalogProvider">
      <dataSource pwdEncrypted="true"
connectionString="Server=MyServer;
Database=EVRepository;Integrated Security=SSPI;" />
    </provider>
  </catalogProvider>
</configuration>
```

```

</catalogProvider>
<securityProviders>
  <provider type="Windows" externalName="Windows" />
</securityProviders>
<logProviders defaultProvider="XMLLogProvider">
  <provider type="XML" externalName="XMLLogProvider">
    <properties>
      <file path="C:\Program Files\cubus\Performance Analytics
\Server\EVServerLog.xml"
        createEvery="day" />
    </properties>
    <logLevelTable>
      <logLevels>
        <logLevel logLevel="Warning" category="*" component="*" />
      </logLevels>
    </logLevelTable>
  </provider>
</logProviders>
<appSettings>
  <add key="SessionTimeout" value="30" />
  <add key="MapsPath" value="C:\Program Files\cubus\Performance
Analytics\Server\Maps\" />
  <add key="DesktopExplorerOpenViewUrl" value="http://<EVServer>/
EVServer?Item={0}
&amp;ToolBar=True&amp;Theme=Ribbon&amp;Backstage=false" />
  <add key="ChartUrl" value="http://<EVServer>/EVServer/UI/
chart.html"/>
  <add key="EVDesktop_SuppressScriptErrors" value="true"/>
  <add key="EVDesktop_WebBrowserShortcutsEnabled" value="true"/>
  <add key="EVDesktop_Culture" value="" />
</appSettings>
<dataSourceSettings>
  <mdx>
    <useSumForMultiSelect>true</useSumForMultiSelect>
  </mdx>
</dataSourceSettings>
</configuration>

```

Configuration file elements

<configSections>

The configSections element declares the names of the providers that are used by Performance AL. The elements in the configSections element should not be changed.

<catalogProvider>

This element contains the settings for the catalog provider. Refer to the section [Configuring the catalog provider](#) for settings that can be changed or added.

<securityProviders>

This element contains the settings for one or more Security Provider. Refer to the section [Configuring the security provider](#) for settings that can be changed or added.

<logProviders>

This element contains the settings for one or more Log Provider. Refer to the section [Configuring the Log Providers](#) for settings that can be changed or added.

<appSettings>

This element contains application specific settings. The following values can be set:

- `<add key="SessionTimeout" value="30"/>`
Specifies the time in minutes that a session state is maintained in Performance AL Server. If there is no activity for a period longer than the configured time out value, the session stops. The minimum value is 1, the maximum value is 120. The default value is 30.
Note: As long as the Performance AL Client exists in a browser window, it will send a keep alive in order to keep the session alive. The SessionTimeout refers to sessions that e.g. have been created from Performance AL Explorer or through the server API.
- `<add key="TokenCacheTimeout" value="X"/>`
By default Performance AL caches all Microsoft Windows tokens when using Forms, for example the OLAP administrator accounts used to preload a datasource. The TokenCacheTimeout value specifies the time in minutes in which the token will timeout and will be updated when necessary. Values: -1: unlimited 0: no caching 1: time in minutes when tokens will time out.
- `<add key="MapsPath" value="C:\Program Files\cubus\Performance Analytics\Server\Maps\"/>`
The path to the Maps Libraries.
- `<add key="ServerPortNumber" value="7112"/>`
The TCP port number, Performance AL Server uses for client communication. Default = 7112.
- `<add key="RemotingPortNumber" value="7113"/>`
The TCP port number that is registered by Performance AL Server to allow communication via remoting.
By default the Performance AL Explorer web application communicates directly with the Performance AL Server over TCP 7113. This can be configured in Performance AL Explorer > right click on the Server > Server Settings > Location. The default URL is `tcp://<EVServerHostName>:7113`.
For secure communication you can configure `https://<EVServerHostName>:443` which will make the Performance AL Explorer communicate with the Performance AL WebService which will also tunnel the communication and forward it via TCP to Performance AL Server on the RemotingPortNumber.

Note: If you set the RemotingPortNumber to another value than 7113 and you want to use the URL API, you must set the RemotingPortNumber to the same value in the **web.config** file of the Performance AL Server WebService.

The default location of the **web.config** file is `C:\Program Files\cubus\Performance Analytics\Server\WebService\`.

Add the following lines to the configuration element of the Web Service **web.config** file to set the RemotingPortNumber:

```
<!-- Add the following section into web.config -->
<configuration>
```

```

    <appSettings>
      <add key="RemotingPortNumber" value="7113" />
    </appSettings>
  </configuration>

```

- <add key="ServerProtocol" value="TCP"/>
The protocol that Performance AL clients are using to communicate with Performance AL Server. The default value is TCP. When the ServerProtocol is set to HTTP or HTTPS the Performance AL Server is still listening to the ServerPortNumber and the Performance AL clients are communicating via HTTP or HTTPS with the Performance AL Web Service which is tunneling the request to the Performance AL Server on the ServerPortNumber via TCP.
- <add key="HTTPPortNumber" value="80"/>
When ServerProtocol is set to HTTP, this sets the port number. This is the port on which the Performance AL Web Service is listening for Performance AL clients.
Default = 80
- <add key="HTTPSPortNumber" value="443"/>
When the ServerProtocol is set to HTTPS, this sets the port number. This is the port on which the Performance AL Web Service is listening for Performance AL clients.
Default = 443
- <add key="ClientLogon" value="SessionID;WIA;Forms;CAMpassport"/>
Restricts the logon type of a client. If set, the client is only allowed to logon in the specified way. If not set, the client is not restricted. The possible string values are SessionID, WIA, Forms and CAMpassport. Each string must be separated by a semicolon. When an invalid type is specified, the server will not start.
- <add key="GatewaySuppliesCredentialInformation" value="true"/>
When set to True, the Data Source Gateway can supply credential information when the security provider does not supply valid credentials, or the session does not have valid credentials to logon to the Data Source Gateway. The client asks the user for those credentials. If set to False the user does not have access to data sources that the user does not have credentials for.
Default = true
- <add key="ParallelPreload" value="1"/>
Specifies the Parallel preload level.
 - 1 = **databases** and **roles** will be preloaded **sequentially** per server.
 - 2 = **databases** will be preloaded in **parallel**, **roles** will be preloaded **sequentially** per database.
 - 3 = **databases** will be preloaded **sequentially** per server, **roles** will be preloaded in **parallel** per database.
 - 4 = **databases** and **roles** will be preloaded in **parallel**.
 Default = 1
- <add key="RetryDatabasePreload" value="-1"/>
This key defines the behavior when an error occurs during a database preloading.
Possible values
 - -1 = skip preloading database.
 - 0 = try preloading the database and roles immediately.
 - 1 (and more) = wait 1 (or more) minutes before trying to preload the database/roles. Multiple values can be separated by comma for the different

tries (e.g. 1,5,10,20,60). The last value is used indefinitely for the further tries.

Default = -1

If `RetryDatabasePreload` value is 0 or more (retry preloading) and `ParallelPreload` value is 1 or 3 (databases will be preloaded sequentially), subsequent databases cannot be loaded until the current database is fully loaded.

- `<add key="InboundIPAddress" value="IP_Address"/>`
Contains a specific subnet, IP_Address or DNS name. When configured, only client connections from a specified subnet are accepted.
Default = Any
- `<add key="AggressiveMemoryAllocationMaxMB" value="0"/>`
This key sets the limit for aggressive memory reservation that the server allocates for its buffers. The buffers can still grow beyond this limit, but not aggressively.
Default = 0
- `<add key="CheckPreloadingTimeOut" value="0"/>`
This options allows you to specify a time-out interval. After this time-out interval all pre-loaded databases are verified and reloaded if the databases are updated.
Default = minimum = 0 minutes (no verification), maximum = 1440 minutes
- `<add key="UseCurrentOutlineWhilePreloading" value="false"/>`
Use this option to connect to a database that has a changed outline and is marked for preload. When set to true, the user uses the current cached outline while in the background the updated database is reloaded. When the reload is finished the user receives the refreshed data when reopening the database connection.
When set to false, the user waits until the updated database is reloaded.
Default = False
- `<add key="SessionProtection" value="None"/>`
This allows you to protect a session. Possible values are:
 - None
No session protection is applied, this is default behavior.
 - Lock
The Session is protected/locked by the first client that connects to the server. Other connections are only allowed if they come from the same user.
 - Restrict
The session is protected/restricted when created. The protection is based on the user who connects. Restrict can only be successfully set when security providers that support impersonation are used. When a security provider that does not support impersonation is used, the value of SessionProtection is set to Lock.
- `<add key="TokenCacheTimeOut" value="-1" />`
The TokenCacheTimeOut lets you specify the time in minutes a token lasts. Possible values are:
 - -1 : Unlimited. The time the token lasts will not expire.
 - 0 : The token is not cached
 - 1 - 2147483647 : A time-out occurs when the time the token is not being used is longer than the specified time.
If you set the TokenCacheTimeOut to 540 minutes, the token expires from the cache after 9 hours of none use. This makes resources available for other tokens.
Default = -1

- `<add key="DesktopExplorerOpenViewUrl" value="https://<EVServer>/EVServer?Item={0}&ToolBar=true&Theme=Ribbon&Backstage=false" />`
This option is configured during the installation and defines the URL which is called by the desktop explorer in order to open a single view or canvas.
- `<add key="ViewLinksExpirationDays" value="10" />`
This option specifies, how long view links created by users via the Create Link functionality shall exist before they are automatically removed from the repository. The value represents the number of days since the last access of the view link by any user. Setting the value to zero (0) days disables the automatic cleanup.
Default = 0
- `<add key="EVDesktop_SuppressScriptErrors" value="true" />`
This option sets a value indicating whether the Desktop application displays dialog boxes such as script error messages. Use this option only for debugging purpose.
- `<add key="EVDesktop_WebBrowserShortcutsEnabled" value="true" />`
Set this property to false to prevent your users from using Microsoft Internet Explorer keyboard shortcuts with the Desktop application.
- `<add key="EVDesktop_Culture" value="" />`
Set this property to one of the supported cultures (see [Changing the language setting for Performance AL Client](#)) to define the language of the Desktop application.
- `<add key="RestApiProtocol" value="https" />`
The protocol the Performance AL *Anywhere* client is using for the communication with the REST server.
Possible values: http (default), https
The value which is entered here will be written to the `<EV_INSTALL_DIR>\Anywhere\config.json` file when the Performance AL service restarts as parameter **RestApiProtocol**.
- `<add key="RestApiPortNumber" value="7111" />`
The port the Performance AL *Anywhere* client is using for the communication with the REST server.
If the value is missing, the default value depends on the setting RestApiProtocol.
If the protocol is http, the port number is the value of the setting HTTPPortNumber. Default value is 80 if **RestApiPortNumber** is not defined.
If the protocol is https, the port number is the value of the setting HTTPSPortNumber. Default value is 443 if **RestApiPortNumber** is not defined.
The value which is entered here will be written to the `<EV_INSTALL_DIR>\Anywhere\config.json` file when the Performance AL service restarts as parameter **RestApiPort**.
- `<add key="RestApiCorsOrigins" value="anywhere.company.com, server2:8080" />`
The list of web hosts that are allowed to communicate with the REST server. The list can be separated by comma, semicolon or space. By default the list contains already localhost, the hostname, the full qualified hostname and the host's IP addresses. You have to add an entry to the list in the following situations:
If a reverse proxy is between the Performance AL *Anywhere* client and the Performance AL REST server, the name of the reverse proxy must be added to the list.
If an alias is used in the URL for the Performance AL *Anywhere* , the alias must be added to the list. E.g. the hostname of the Performance AL REST server is *MyEvHost*

and the URL is *https://anywhere.company.com*, then *anywhere.company.com* must be added to the list.

If you use the [PowerBI Visual](#), this parameter has to be set to "*" to allow access from an undefined origin.

- `<add key="AllowLoginOnLicenseViolation" value="true" />`
This property helps to ensure that a concurrent user license is met. The default value (true) allows users to login even if the number of currently logged on concurrent users is exceeded. A warning message will be shown to any user logging while the license is exceeded and it will be logged by the system.
Setting this property to false prevents users from logging in if the number of licensed concurrent users is equal to the number of logged on users to ensure that the license is not violated. It does not affect administrators that login into Performance AL Explorer/Performance AL Desktop Explorer.
- `<add key="SubscriptionChartUrl" value="http(s)://company.com/EVServer/UI/chart.html" />`
This property defines the url to create reports containing charts and is needed for the Report Subscription feature. It is used to call the URL from the server where Performance AL runs.
- `<add key="DesktopAppUrl" value="http(s)://<EVServer>/EVServer/EVDesktopApp" />`
This property defines the URL of the Desktop application. This setting is needed in order to start the DesktopApp from Chrome, Firefox or the Edge browser. If this setting does not exist or is incorrect, you will encounter an error message when you start the Desktop application from one of these browsers. If you are using Internet Explorer, this setting is not needed.
- `<add key="MaxNumberOfCores" value="0" />`
This property defines how many cores can be used by the Server. If the setting is missing, lower or equal than zero or is larger then the available number of cores, then all cores are used. Otherwise the Server uses only the configured cores.
- `<add key="ClassicBorders" value="true" />`
This property forces the view to render borders as classic styles before the introduction of border color feature in version 8.5.0. When this property is not set the default value is false.
- `<add key="UseOlapConnectionUser" value="true" />`
This property determines whether the user access to the OLAP database is done by the connection user or the logged-in user. This parameter is used only with OIDC security provider. If the parameter is set to True, the access will be done by the connection user. If this parameter is set to False, the access will be done by logged-in user. The user needs the appropriate permissions in the OLAP database. When this property is not set the default value is false.

<dataSourceSettings>

This element contains data source specific settings. It is recommended to only add this element in specific situations. Contact our support team for more information. For a comprehensive explanation on the dataSourceSettings, refer to the section [Appendix: dataSourceSettings](#).

<system.net>

This element contains the settings for the mail-server. Refer to the section [Configuring the mail-server](#) for settings that can be changed or added.

Configuring the catalog provider

This section describes how to configure all the built-in catalog providers for the Performance AL. This section also describes the system requirements and the specific configuration of the EVServer.exe.config file for each catalog provider.

A Repository can only be used by the Catalog Provider that created it. For example, a repository created by the SQL Catalog Provider can not be used with the Oracle Catalog Provider.

A Password Encryption tool is part of the installation of Performance AL. If the Password Encryption is used to provide the encrypted password, the encryption strength for encrypted elements in the server configuration file is 2048 bits. The password encryption tool generates 2048 bit encrypted values.

The Password Encryption tool can be found here: C:\Program Files\cubus\Performance Analytics\Server\Tools\PasswordEncrypt.

Configuring the SQL Server catalog provider

The SQL Server catalog provider stores the Performance AL Server Repository in a Microsoft SQL Server database.

Microsoft SQL Server

Procedure

1. Add the following lines to the <catalogProvider> element of the EVServer.exe.config file:

```
<catalogProvider>
  <provider type="SQLServer"
externalName="SQLServerCatalogProvider">
    <dataSource pwdEncrypted="true"
                connectionString
                = "##SQLServerConnectionString##" />
  </provider>
</catalogProvider>
```

Note: The element names are case sensitive.

2. Edit the dataSource element.

The connectionString SQLServerConnectionString has the following structure:

For standard security:

```
Server=##SERVERNAME##;Database=EVRepository; UID=##USERNAME##
;Pwd=##PASSWORD##
```

For integrated security:

```
Server=##SERVERNAME##;Database=EVRepository; Integrated
Security=SSPI
```

3. Apply password encryption.
Password encryption applies only to standard security.
If the `pwdEncrypted` attribute set to `true`, the password value should contain an encrypted value.
Note: You can use the Password Encryption tool to obtain the encrypted password.
4. Refer to the SQL Server documentation for more information about connection strings that can be used to connect to SQL Server.

Configuring the Oracle catalog provider

The Oracle Catalog Provider is the Catalog Provider that stores the Performance AL Server Repository in an Oracle database.

An Oracle catalog provider cannot create its own database. The necessary tables are created automatically if the user account has sufficient permissions.

Before you begin

Ensure that the Oracle client is installed.

The `open_cursors` database parameter must be set to at least 2, in order to start the server.

Procedure

1. Add the following lines to the `<catalogProvider>` element of the `EVServer.exe.config` file:

```
<catalogProvider>
  <provider type="Oracle" externalName="OracleCatalogProvider">
    <dataSource pwdEncrypted="true"
      connectionString="##OracleConnectionString##" />
  </provider>
</catalogProvider>
```

Note: The element tags are case sensitive.

2. Edit the `dataSource` element.
The connection string `OracleConnectionString` has the following structure.
`Data Source=##TNSNAME##;UID=##USERNAME##;Pwd=##PASSWORD##`
3. Apply password encryption.
If the `pwdEncrypted` attribute set to `true`, the password value should contain an encrypted value.
Note: You can use the Password Encryption tool to obtain the encrypted password.
4. The connection user needs the following rights:
 - CREATE PROCEDURE
 - CREATE SESSION
 - CREATE SEQUENCE
 - CREATE TABLE
 - Write access to the corresponding tablespace

5. Refer to the Oracle documentation for more information about connection strings that can be used to connect to Oracle.

Configuring the security provider

This section describes how to configure all the built-in security providers for the Performance AL. This section also describes the system requirements and the specific configuration of the EVServer.exe.config file for each security provider. Only one security provider can be used at any one time.

The file EVServer.exe.config contains the reference to the security provider. Account Name and Credentials are validated with the security provider, which results in a valid or invalid authentication of the account. A valid authentication leads to a Session.

A Password Encryption tool is part of the installation of Performance AL. If the Password Encryption is used to provide the encrypted password, the encryption strength for encrypted elements in the server configuration file is 2048 bits. The password encryption tool generates 2048 bit encrypted values.

The Password Encryption tool can be found here

C:\Program Files\cubus\Performance Analytics\Server\Tools\PasswordEncrypt

Configuring the IBM Cognos 8 Security Provider

The IBM Cognos 8 security provider uses either Windows Integrated Authentication (WIA), a Cognos 8 passport or credentials that validates against a Cognos Server. When the validation is complete a Cognos 8 passport cookie is created.

In Cognos 8 the concept of security provider is referred to as namespace. The Cognos 8 security provider can represent multiple security namespaces. You can use a subset of the namespaces that are defined in Cognos 8, depending on whether WIA is supported in the defined Cognos 8 namespace.

Before you begin

IBM Cognos 8.4 needs to be installed.

Procedure

1. Add the following lines to the <securityProviders> elements of the EVServer.exe.config file:

```
<securityProviders>
  <provider type="CAM" externalName="CAM">
    <dispatcher location="http://Cognos8SERVER:9300/p2pd/
servlet/dispatch" connectionsLimit="10"/>
    <propagateAnonymousLogon>false</propagateAnonymousLogon>
    <configurationRoot>.\cogroot</configurationRoot>
    <passportTimeOut>3600</passportTimeOut>
    <cookiePath>/cognos8</cookiePath>
    <pathSeparator>##SEPARATOR##</pathSeparator>
    <clonePassportAllowed>true</clonePassportAllowed>
    <namespaces>
      <namespace id="##&quot;NAMESPACEID&quot;##">
        <validator>
          <credentials>
            <credential>
```

```

<name>
  <CAMusername>
    <value>##USERNAME##</value>
    <credential>
      <name>CAMpassword</name>
      <value encrypted="true">
        <PASSWORD>
          <password>true</password>
          <builtInAdministrators>
            <builtInAdministrator
              namespace
                = "##&quot; ;NAMESPACEID&quot; ;##">
              <USER_OR_GROUP></USER_OR_GROUP>
            </builtInAdministrator>
          </builtInAdministrators>
        </PASSWORD>
      </value>
    </credential>
  </CAMusername>
</name>
</credential>
</credentials>
</validator>
</namespace>
</namespaces>
</provider>
</securityProviders>

```

Note: The element tags are case sensitive.

2. Edit the element tags as follows:

- <provider>
The <provider> element of the IBM Cognos 8 security provider contains the details needed to make sure this Security Provider operates correctly. One IBM Cognos 8 Security Provider represents one set of users and user groups configured on one or more Cognos 8 servers.
If multiple sets of users and user groups need to be represented, separate instances of this Security Provider with unique external names need to be configured. Each instance has to reference to its own set of servers.
- <dispatcher>
The <dispatcher> element contains the location of the Cognos 8 dispatcher. The dispatcher is used to send requests to the Cognos 8 server. Attribute `connectionsLimit` defines the maximum Http connections between EVServer and dispatcher. Default value is 10.
- <propagateAnonymousLogon>
The <propagateAnonymousLogon> element propagates the anonymous settings of the Cognos 8 installation to Performance AL. This element is optional. If you either do not specify the <propagateAnonymousLogon> element or set it to False, the anonymous user settings of Cognos 8 are not passed on to Performance AL.
- <configurationRoot>
The <configurationRoot> element lets you set an alternative configuration root. This element is optional. If you do not specify the <configurationRoot> element, the default value cogroot is used.

- `<passportTimeOut>`
The `<passportTimeOut>` element lets you set time-out for a passport in seconds. After this time of inactivity the passport is no longer valid. This element is optional. If you do not specify the `<passportTimeOut>` element, the default value '3600' will be used.
- `<cookiePath>`
The path where IBM Cognos 8 Passport cookies should be generated. These cookies will only be generated when Performance AL is on the same path.
- `<pathSeparator>`
The `<pathSeparator>` element lets you specify the character to separate user paths. This element is optional. If you do not specify the `<pathSeparator>` element, the default value '\' is used.
- `<clonePassportAllowed>`
The `<clonePassportAllowed>` element lets you specify whether making a clone of a passport is allowed, when a user logs on with that passport. This element is optional. If you do not specify the `<clonePassportAllowed>` element, the default value 'true' will be used.
- `<namespaces>`
The `<namespaces>` element contains one or more Security Namespaces. Each namespace needs to contain the correct namespace id which corresponds to the namespace id of the namespace that is defined in Cognos 8. You have to specify credentials for all the disclosed namespaces. The default Cognos 8 namespace will additionally be disclosed.
Note: If the value encrypted attribute set to true, the password value should contain an encrypted value. You can use the Password Encryption tool to obtain the encrypted password.
- `<builtInAdministrators>`
The `<builtInAdministrators>` element is optional and allows certain users or certain user groups, to be tagged as built-in administrators. Built-in administrators have full access and control over Performance AL Server without having any System or Item Policies specified.
When choosing IBM Cognos 8 as Security Provider during the setup routine, the system administrators group of the built-in Cognos 8 namespace is added as built-in administrator. This is similar to a Windows built-in administrator on the local system who has the same privilege by design. This is to prevent administrators creating a situation where they cannot access Performance AL Server.

3. Apply password encryption.

If the valueEncrypted attribute set to true, the password value should contain an encrypted value.

You can use the Password Encryption tool to obtain the encrypted password.

Configuring the TM1 Security Provider

The IBM Cognos TM1 security provider validates credentials, typically a user name and password combination, against an IBM Cognos TM1 Server. This security provider does not support Windows Integrated Authentication (WIA).

Before you begin

The TM1 OLEDB Provider is installed to connect to IBM Cognos TM1. The version of the

TM1 OLEDB Provider must be exactly the same as the version of TM1 you are using.

Procedure

1. Add the following lines to the <securityProviders> element of the EVServer.exe.config file:

```
<securityProviders>
  <provider type="TM1" externalName="TM1">
    <tmlServers>
      <tmlServer>http://Server01:8001</tmlServer>
      <tmlServer>http://Server01:8002</tmlServer>
    </tmlServers>
    <adminAccount>Admin</adminAccount>
    <adminPassword encrypted="true">##PASSWORD##</adminPassword>
    <builtInAdministrators>
      <builtInAdministrator>UserOrGroup01</builtInAdministrator>
      <builtInAdministrator>UserOrGroup02</builtInAdministrator>
    </builtInAdministrators>
    <allowUserToChangePassword>true</allowUserToChangePassword>
  </provider>
</securityProviders>
```

Note: The element tags are case sensitive.

2. Edit the element tags as follows:

- <provider>
The <provider> element of the TM1 security provider contains the details needed to make sure this security provider operates correctly. One TM1 security provider represents one set of users or user groups configured on one or more TM1 servers.
If multiple sets of users and user groups need to be represented, separate instances of this security provider with unique external names need to be configured. Each instance has to reference to its own set of servers.
- <tmlServers>
The <tmlServers> element contains the list of Cognos TM1 servers that can be used to validate credentials for the users in the represented group. The security provider attempts to connect to the servers in the order as specified. It is assumed that all specified TM1 servers share the same set of users and user groups with their corresponding privileges. Each server in the list is specified in a <tmlServer> element. A TM1 server can be identified by a (http:// or https://) Host:ServerPort string in the element. The host name can be either a netbios or a fully qualified DNS name, for example MyTM1Server or MyTM1Server.mycompany.com.
- <adminAccount>
The <adminAccount> element specifies the administrative account that the security provider uses to log on to the specified TM1 Server from the list of TM1 Servers. This account must have sufficient rights on the TM1 server to be able to retrieve information about users and groups.
- <adminPassword>
If the adminPassword encrypted attribute set to true, the password value should contain an encrypted value. You can use the Password Encryption tool to obtain the encrypted password.

- `<builtInAdministrators>`
The `<builtInAdministrators>` element is optional and allows certain users or user groups to be set as built-in administrators. Built-in administrators have full access and control over Performance AL Server without having any System or Item Policies specified.
When choosing 'TM1' as the security provider during the setup routine, the specified administrator is added as built-in administrator. This is similar to a Windows built-in administrator on the local system who has the same privilege by design. This is to prevent administrators creating a situation where they cannot access Performance AL Server.
 - `<allowUserToChangePassword>`
The optional `<allowUserToChangePassword>` element allows the user to change the TM1 Data Source credentials. By default a TM1 user is not allowed to change the password. The user needs to contact the TM1 administrator who is allowed the password of the user.
If the `<allowUserToChangePassword>` element is set to true the Administrator credentials of the TM1 Data Source will be used to allow the user to change his password. This can be useful when the password of the user has expired.
If the `<allowUserToChangePassword>` element is not specified the value of this element is interpreted as False.
3. Apply password encryption.
If the `adminPassword` encrypted attribute set to true, the password value should contain an encrypted value.
You can use the Password Encryption tool to obtain the encrypted password.

Configuring the Windows Integrated Security Provider

The Microsoft Windows Integrated Security Provider validates the accounts added to Performance AL Server against the Windows NT Authority System. This security provider supports Windows Integrated Authentication (WIA), so that the user is able to create an Impersonated Session. When an Impersonated Session is created, the user does not have to enter credentials when logging on to Performance AL Server.

Before you begin

The Windows Integrated security provider has no extra system requirements, besides the system requirements to install Performance AL Server. Refer to “Preparing to install”.

Procedure

1. Add the following lines to the `<securityProviders>` element of the `EVServer.exe.config` file:

```
<securityProviders>
  <provider type="Windows" externalName="Windows">
    <domain name="##&quot;YOUR&quot;" DOMAIN="" />
    <domain name="##&quot;OTHER&quot;" DOMAIN="" />
    <builtInAdministrators>
      <builtInAdministrator>##ACCOUNTNAME##</
builtInAdministrator>
    </builtInAdministrators>
    <allowNestedGroups value="false" />
  </provider>
```

```
</securityProviders>
```

Note: The element tags are case sensitive.

2. Edit the element tags as follows:

- `<domain>`
The `<domain>` element of the Windows Integrated security provider contains the name of the domain that the accounts have to be validated against when System or Item Policies are created, for example: 'cognos.com' for the 'Cognos' domain.
Note: It is possible to specify multiple domains.
- `<builtInAdministrators>`
The optional `<builtInAdministrators>` element allows certain users or users belonging to certain user groups, to be tagged as built-in administrators. Built-in administrators have full access and control over Performance AL Server without having any System or Item Policies specified. The accountname must be fully specified, including the domain.
The default account on which the Performance Analytics service runs on is 'Local System'. If the Performance Analytics service runs on a different account, settings may need to be adjusted for this account.
- `<allowNestedGroups>`
The optional `<allowNestedGroups>` element can be used to determine whether nested groups for users should be considered when logging in with username and password. Searching for nested groups can increase the time it takes to login when Windows Intergated Authentication is not possible and the user logs in with username and password. The default value is *false*.

Configuring the Forms Security Provider

The forms security provider is a very plain implementation of a security provider that supports a user password authentication.

Before you begin

The user names and passwords are configured in the EVServer.exe.config file. The security provider does not have any extra system requirements.

When using the forms security provider, Forms should be typed in the Providers field when adding Performance AL Server. This will remove the Domain field from the Logon dialog box.

Procedure

1. Add the following lines to the `<securityProviders>` element of the of the EVServer.exe.config file:

```
<securityProviders>
  <provider type="Forms" externalName="Forms">
    <providerCredentials id="userName">
      <credential>
        <name>userName</name>
        <caption>User Name</caption>
        <value></value>
        <readonly>false</readonly>
        <password>false</password>
        <optional>false</optional>
      </credential>
    </providerCredentials>
  </provider>
</securityProviders>
```



```

        </credential>
        <credential>
            <name>password</name>
            <caption>Password</caption>
            <value></value>
            <readonly>false</readonly>
            <password>true</password>
            <optional>false</optional>
        </credential>
    </providerCredentials>
    <users src="users.xml"></users>
    <builtInAdministrators>
        <builtInAdministrator>##admin##</builtInAdministrator>
    </builtInAdministrators>
</provider>
</securityProviders>

```

Note: The element tags are case sensitive.

2. Edit the element tags as follows:

- <providerCredentials>
The <providerCredentials> element of the forms provider configuration contains the user name and password information needed to create a session. This information is required and contains the definition of the user credentials that have to be entered to create a session for this provider.
- <users>
The <users> element contains a reference to an XML file that contains all users known by the forms provider. The credentials specified in this XML have to match the definition specified in the <providersCredentials> element.
- <builtInAdministrators>
The <builtInAdministrators> element is optional and allows certain users or user groups to be tagged as built-in administrators. Built-in administrators have full access and control over Performance AL Server without having any System or Item Policies specified.
Note: When choosing forms as security provider during the setup routine, the built-in administrator 'Admin' with no password is added as built-in administrator. This is similar to a Windows built-in administrator on the local system who has the same privilege by design. This is to prevent administrators creating a situation where they cannot access Executive Viewer Server.

3. Add a file with the name users.xml to the same directory as the installation directory of the Performance AL Server. The default directory is: C:\Program Files\cubus\Performance Analytics\Server.
An example users.xml file for one user is as follows:

```

<users>
    <user>
        <groups>
            <group>Group1</group>
        </groups>
        <userCredentials>
            <credential>
                <name>userName</name>
                <value>User1</value>
            </credential>
        </userCredentials>
    </user>
</users>

```

```

        <credential>
          <name>password</name>
          <value encrypted="true">encrypted_password</value>
        </credential>
      </userCredentials>
      <dataSourceCredentials dataSourceType="##DataSourceType##"
        dataSourceServer
        = "##DataSourceServerName>>##">
        <credential>
          <name>userName</name>
          <value>DataSourceUserName</value>
        </credential>
        <credential>
          <name>Password</name>
          <value encrypted="true">
            encrypted_DataSourcePassword</value>
          <password>true</password>
        </credential>
      </dataSourceCredentials>
    </user>
  </users>

```

4. Edit the <user> element tags as follows:

- <groups>
Can be added to specify that a user is part of a group.
- <userCredentials>
The credentials of the user that are validated against the Forms Provider.
- <dataSourceCredentials>
The data source credentials. For example, the Data Source Type is 'Essbase' and the Server Name contains the name of the Essbase server. If a user has created a Session with their credentials, the Forms Provider knows which credentials should be used to log on to the Essbase server. In this way, the Forms Provider provides a 'Single Sign On' environment, preventing the user from having to log on multiple times.
- <DataSourceServerName>
The specified server name in the <DataSourceServerName> element must exactly match the OLAP Server name specified in the OLAP Server field when you add a data source in Performance AL Explorer. Refer to "Configuring data sources".

Configuring the Anonymous Security Provider

The anonymous security provider is a security provider that gives the rights to create an anonymous session on Performance AL Server. This Provider supports Windows Integrated Authentication and Forms Authentication. In both of these authentication methods, the user's name during the Session will be 'Anonymous'. System and Item Permissions for this user can be set by adding Policies for the 'Anonymous' account.

Before you begin

The Anonymous Provider has no additional System Requirements.

Procedure

1. Add the following lines to the <securityProviders> element of the EVServer.exe.config file:

```
<securityProviders>
  <provider type="Anonymous" externalName="Anonymous"></
provider>
</securityProviders>
```

Note: The element tags are case sensitive.

2. This Provider does not have any additional configuration settings.

Configuring the Essbase Security Provider

The Essbase Security Provider validates credentials, typically a user name and password combination, against a Oracle Essbase Server. This Security Provider does not support Windows Integrated Authentication.

Before you begin

The proper Essbase Runtime Client needs to be installed on the system running Performance AL Server. The version of the Runtime Client must be exactly the same as the version of Essbase you are using.

Procedure

1. Add the following lines to the <securityProviders> element of the EVServer.exe.config file:

```
<securityProviders>
  <provider type="Essbase" externalName="Essbase">
    <essbaseServers>
      <essbaseServer>essbase01.company.com</essbaseServer>
      <essbaseServer>essbase02.company.com</essbaseServer>
    </essbaseServers>
    <adminAccount>DemoAdmin</adminAccount>
    <adminPassword encrypted="true">
      encrypted_password
    </adminPassword>
    <builtInAdministrators>
      <builtInAdministrator>UserOrGroup01</builtInAdministrator>
      <builtInAdministrator>UserOrGroup02</builtInAdministrator>
    </builtInAdministrators>
  </provider>
</securityProviders>
```

Note: The element tags are case sensitive.

2. Edit the element tags as follows:

- <provider>
The <provider> element of the Essbase Security Provider contains the details needed to make sure this Security Provider operates correctly. One Essbase Security Provider represents one set of users and user groups configured on one or more Essbase servers. If multiple sets of users and user groups need to be represented, separate instances of this Security Provider with unique external names need to be configured. Each instance has to reference to its own set of

servers.

- `<essbaseServers>`
The `<essbaseServers>` element contains the list of Essbase servers that can be used to validate credentials for the users in the represented group. The Security Provider will attempt to connect to the servers in the order in which they are specified. It is presumed that all specified Essbase servers share the exact same set of users and user groups with their corresponding privileges. Each server in the list is specified by its own `<essbaseServer>` element. The server name can be either a netbios or a fully qualified DNS name, for example 'MyEssbaseServer' versus 'MyEssbaseServer.mycompany.com'.
- `<adminAccount>`
The `<adminAccount>` element specifies the administrative account which the Security Provider should use to log on to (one of) the specified Essbase Server in the list of Essbase Servers. This account should have sufficient rights on the Essbase server to be able to retrieve information about users and groups.
- `<adminPassword>`
The `<adminPassword>` element specifies the password for the administrative account specified in the `<adminAccount>` element.
Passwords can be encrypted using the Password Encryption tool.
- `<builtInAdministrators>`
The `<builtInAdministrators>` element is optional and allows certain users or user groups, to be tagged as built-in administrators. Built-in administrators have full access and control over Performance AL Server without having any System or Item Policies specified.
Note: When choosing 'Essbase' as Security Provider during the setup routine, the specified administrator is added as built-in administrator. This is similar to a Windows built-in administrator on the local system who has the same privilege by design. This is to prevent administrators creating a situation where they cannot access Performance AL Server.

Configuring the OAuth2 Security Provider

The OAuth 2.0 security provider allows authentication using the [OAuth 2.0](#) framework. The OAuth 2.0 mechanism is for example used for the Microsoft Analysis Services cloud version on Azure.

OAuth 2.0 supports different flows for handling credentials. We implement the [Authorization Code Grant](#) flow.

Before you begin

The provider supporting the OAuth 2.0 authentication needs to be configured:

- [Configuring Azure with OAuth](#)

Procedure

1. Add the following lines to the `<securityProviders>` element of the `EVServer.exe.config` file:

```
<securityProviders>
  <provider type="OAuth2.0" externalName="OAuth2.0">
    <authorizationEndpoint location="https://
login.microsoftonline.com/[tenant id]/oauth2/v2.0/autho"/>
```

```

    <tokenEndpoint location="https://login.microsoftonline.com/
[tenant id]/oauth2/v2.0/token"/>
    <logoutEndpoint location="https://login.microsoftonline.com/
[tenant id]/oauth2/v2.0/logout"/>
    <adminRestApi location="https://graph.microsoft.com"
permission="User.ReadBasic.All GroupMember.Read.All"/>
    <application id="[application id]"/>
    <server location="[server url]"/>
    <permission value="Model.ReadWrite.All offline_access"/>
    <cacheRetentionPeriod value="1800"/>
    <clientSecret encrypted="false">[client secret]</
clientSecret>
    <redirect_uri location="https://login.microsoftonline.com/
common/oauth2/nativeclient"/>
    <accessTokenRequestTemplate
value="response_type=code&response_mode=query&client_id=
{applicationID}&redirect_uri={redirect_uri}
&scope={scope}"/>
    <tokenRequestTemplate
value="grant_type=authorization_code&client_id={applicationI
D}&redirect_uri={redirect_uri}&scope={scope}
&code={accessToken}"/>
    <builtInAdministrators>
        <builtInAdministrator>UserOrGroup01</builtInAdministrator>
        <builtInAdministrator>UserOrGroup02</builtInAdministrator>
    </builtInAdministrators>
    </provider>
</securityProviders>

```

2. Edit the element tags as follows:

- `<authorizationEndpoint>`
The endpoint for fetching the OAuth 2.0 access code. For Azure, you need to fill in your tenant id. You can find the full endpoint in the "endpoints" section of your application.
- `<tokenEndpoint>`
The endpoint for fetching the OAuth 2.0 access token. For Azure, you need to fill in your tenant id. You can find the full endpoint in the "endpoints" section of your application.
- `<logoutEndpoint>`
The endpoint for fetching the OAuth 2.0 access token. For Azure, you need to fill in your tenant id.
- `<adminRestApi>`
The endpoint from which Performance Analytics fetches informations about the configured users/groups in Azure. You shouldn't need to change this parameter.
- `<application>`
The application (client) id that will be used to identify the application . For Azure, this is the application (client) ID that you registered for Azure.
- `<server>`
The https address of the server.

- `<permission>`
The permission that will be requested when logging in. If you followed the steps in [Preparing Microsoft Azure](#), you can keep the value "Model.ReadWrite.All"
- `<clientSecret>`
A secret string that the application uses to prove its identity when requesting a token. Also can be referred to as application password. In [Preparing Microsoft Azure](#) you find a description how to create this value.
- `<cacheRetentionPeriod>`
The Performance Analytics uses a special caching mechanism to store informations about the configured users/groups. This parameter specifies the number of seconds the information stays inside the cache. Afterwards they are removed from the cache and will be fetched again from the Admin REST API. If this parameter is not defined a default value of 30 minutes will be used instead.
- `<accessCodeRequestTemplate>`
This is a template for a request to get an access code. Cannot be defined, default value is


```
"response_type=code&response_mode=query&client_id={applicationID}&redirect_uri={redirect_uri}&scope={scope}"
```
- `<tokenRequestTemplate>`
This is a template for a request to get an access token. Cannot be defined, default value is


```
"grant_type=authorization_code&client_id={applicationID}&redirect_uri={redirect_uri}&scope={scope}&code={accessCode}"
```
- `<builtInAdministrators>`
The `<builtInAdministrators>` element is optional and allows certain users or user groups, to be tagged as built-in administrators. Built-in administrators have full access and control over Performance AL Server without having any System or Item Policies specified.

See also:

- [MSAS Data Source Settings](#)

Configuring the OIDC Security Provider

The OIDC Security Provider allows authentication using the [OIDC](#) (OpenID Connect) framework. If Keycloak should be utilized as authentication mechanism Performance Analytics has to be configured.

Before you begin

The provider supporting the OIDC authentication needs to be configured:

- [Preparing Keycloak](#)

Procedure

1. Add the following lines to the `<securityProviders>` element of the `EVServer.exe.config` file:

```
<securityProviders>
```

```

    <provider type="OIDC" externalName="OIDC">
      <configurationEndpoint location="https://<root>/auth/realms/
<realm-name>/.well-known/openid-configuration"/>
      <application id="[application id]"/>
      <clientSecret encrypted="false">[client secret]</
clientSecret>
      <redirect_uri location="https://<root>/EVServer"/>
      <adminRestApi location="https://<root>/auth/admin/realms/
<realm-name>"/>
      <builtInAdministrators>
        <builtInAdministrator>UserOrGroup01</builtInAdministrator>
        <builtInAdministrator>UserOrGroup02</builtInAdministrator>
      </builtInAdministrators>
    </provider>
  </securityProviders>

```

2. Edit the element tags as follows:

- `<configurationEndpoint>`
The endpoint from which Performance Analytics fetches information about the different OpenID connect endpoints. For Keycloak you only need to replace `<root>` with the address of your server and `<realm-name>` with the name of your Keycloak realm.
- `<applicationId>`
The application id that will be sent in the access code/token requests.
- `<clientSecret>`
The application secret that you created for the application.
- `<adminRestApi>`
The endpoint from which Performance Analytics fetches informations about the configured users/groups in Keycloak. For Keycloak you only need to replace `<root>` with the address of your server and `<realm-name>` with the name of your Keycloak realm.
- `<builtInAdministrators>`
The `<builtInAdministrators>` element is optional and allows certain users or user groups, to be tagged as built-in administrators. Built-in administrators have full access and control over Performance AL Server without having any System or Item Policies specified.

Overriding request calls

If the OpenID connect provider that is used as authentication provider uses different calls than Keycloak in order to authenticate the client and to refresh the access token it is also possible to override the calls that are made to the OpenID connect server with templates.

1. Enhance the OIDC Provider in the `<securityProviders>` element of your `EVServer.exe.config` file so that it looks like this:

```

<securityProviders>
  <provider type="OIDC" externalName="OIDC">
    <configurationEndpoint location="https://<root>/auth/realms/
<realm-name>/.well-known/openid-configuration"/>
    <application id="[application id]"/>

```

```

        <clientSecret encrypted="false">[client secret]</
clientSecret>
        <redirect_uri location="https://<root>/EVServer"/>
        <adminRestApi location="https://<root>/auth/admin/realms/
<realm-name>"/>
        <accessTokenRequestTemplate
value="response_type=code&response_mode=query&client_id=
{applicationID}&redirect_uri={redirect_uri}"/>
        <tokenRequestTemplate
value="grant_type=authorization_code&client_id={applicationI
D}&redirect_uri={redirect_uri}&code={accessCode}
&client_secret={clientSecret}"/>
        <refreshTokenRequestTemplate
value="grant_type=refresh_token&client_id={applicationID}
&refresh_token={accessCode}
&client_secret={clientSecret}"/>
        <passwordGrantRequestTemplate
value="grant_type=password&client_id={applicationID}
&client_secret={clientSecret}&username={username}
&password={password}"/>
        <nativeLogoutRequestTemplate
value="redirect_uri={redirect_uri}"/>
        <builtInAdministrators>
            <builtInAdministrator>UserOrGroup01</builtInAdministrator>
            <builtInAdministrator>UserOrGroup02</builtInAdministrator>
        </builtInAdministrators>
    </provider>
</securityProviders>

```

2. Edit the element tags as follows:

- <tokenRequestTemplate>
This parameter can be used to override the HTTP POST call that is made to the OIDC server when requesting an access token. The values in brackets (i.e. {applicationID}) will be replaced with the configured values in the authentication provider when the call is made.
- <accessTokenRequestTemplate>
This parameter can be used to override the HTTP POST call that is made to the OIDC server when redirecting the user to the OAuth 2.0 login website. The values in brackets (i.e. {applicationID}) will be replaced with the configured values in the authentication provider when the call is made.
- <refreshTokenRequestTemplate>
This parameter can be used to override the HTTP POST call that is made to the OIDC server when requesting a refresh token. The values in brackets (i.e. {applicationID}) will be replaced with the configured values in the authentication provider when the call is made.
- <nativeLogoutRequestTemplate>
This parameter can be used to override the HTTP POST call that is made to the OIDC server when logging out of Performance AL Client. It is not used for Performance AL Anywhere. The values in brackets (i.e. {applicationID}) will be replaced with the configured values in the authentication provider when the call is made.

- `<passwordGrantRequestTemplate>`
This parameter can be used to override the HTTP POST call that is made to the OIDC server when requesting an access token for the EVCreateReport tool (i.e. when using Subscriptions). The values in brackets (i.e. `{applicationID}`) will be replaced with the configured values in the authentication provider when the call is made.

Configuring the Log Providers

This section describes how to configure all the built-in log providers for the Performance AL. This section also describes the system requirements and the specific configuration of the EVServer.exe.config file for each log provider.

A Password Encryption tool is part of the installation of Performance AL. If the Password Encryption is used to provide the encrypted password, the encryption strength for encrypted elements in the server configuration file is 2048 bits. The password encryption tool generates 2048 bit encrypted values.

The Password Encryption tool can be found here

C:\Program Files\cubus\Performance Analytics\Server\Tools\PasswordEncrypt.

Performance AL Server generates different level of log entries:

Log entry	Description
Severe	The highest level of detail. Only severe errors are logged. These are errors that may cause a situation where Performance Analytics is unusable.
Error	All errors are logged. These are situations where the Performance Analytics Server can run, but, for example, a provider cannot be started.
Warning	Warnings are logged, for example, when a Provider is not correctly configured.
Info	Information is logged, for example the start and stop of the Performance Analytics service.
Verbose	More detailed information is logged, for example the loading of the Catalog Items.
Trace	The same information as in 'Verbose' is logged, only more detailed.
Debug	The lowest level detail. All possible information is logged.

Log categories

The log categories are:

- General

- Session
- Security
- Configuration
- InternalError
- UnsupportedType
- ParameterValidation

Log components

The log components are:

Log Component	Name
Server	Server
Log provider	LogProviders.File LogProviders.Mail LogProviders.XML LogProviders.SQLServer LogProviders.Event LogProviders.Console LogProviders.Oracle
Catalog provider	CatalogProviders.SQLServer CatalogProviders.Oracle
Security provider	SecurityProviders.TM1 SecurityProviders.CAM SecurityProviders.Forms SecurityProviders.Anonymous SecurityProviders.Windows SecurityProviders.Essbase
Connect type specific	TM1 OEMProviders.Base Cub Essbase EssbaseDispatch Gateway MDX MSAS MSDSO

Log providers

The <logProviders> element must contain the configured log providers as shown in the example below:

```

<logProviders defaultProvider="##ExternalNameDefaultLogProvider##">
  <provider type="##ASSEMBLYNAME##" externalName="##EXTERNALNAME##">
    <properties>
      <Property PropertyName="##PROPERTYVALUE##" />
    </properties>
    <logLevelTable>
      <logLevels>
        <logLevel logLevel="##LOGLEVEL##" category="##LOGCATEGORY##"
          component="##LOGCOMPONENT##" />
      </logLevels>
    </logLevelTable>
  </provider>
</logProviders>

```

The element tags have these definitions.

- <logProviders>
The <logProviders> element can contain an extra attribute which specifies the Default Log Provider. Performance AL Explorer only shows the log entries of the Default Log Provider.

Note: When working with the web service of Performance AL Server, the default log provider must support readback if the method GetLogEntries is executed. This means that the log provider is able to read the log entries from the output destination. Not all log providers are able to readback the log entries. If the default log provider does not support readback, this method will fail.
- <properties>
The <properties> element is an additional tag for some log providers. When this element is specified it configures the log provider. The element is specific for each log provider and is mandatory when specified.
- <logLevelTable> and <logLevels>
The <logLevelTable> element defines which log entries will be logged by the specified Log Provider. This can be specified in the <logLevels> element. This element can contain multiple <logLevel> elements. It is possible to store Log Entries for each Log Category or Log Component.

Example for the XML Log Provider:

```

<logLevelTable>
  <logLevels>
    <logLevel logLevel="Severe" category="General"
      component="Server" />
    <logLevel logLevel="Info" category="General" component="MDX" /
  >
  </logLevels>
</logLevelTable>

```

This XML Log Provider records all general server log entries that have the logLevel severe and all general MDX log entries that have the logLevel info. A log provider can have more than one logLevel and the EVServer.exe.config can define more than one log provider.

A '*' denotes a wild card. All log entries for these items are recorded.

When a log provider is not configured for Performance AL Server, the Windows Event Log records all log errors of all log components and all log categories with the log level Warning, Error or Severe.

After installation, the default Log Provider is the XML Log Provider on 'Warning' Level. The XML file 'EVServerLog.xml' is created every day in the installation directory, which is by default C:\Program Files\cubus\Performance Analytics\Server.

Configuring the Event Log Provider

The Event Log Provider sends log entries to the Windows Event Log.

This Provider does not support readback. For explanation about readback, refer to "Configuring the Log Providers".

Before you begin

The Event Log Provider has no extra system requirements.

Procedure

1. Add the following lines to the <logProviders> element of the EVServer.exe.config file:

```
<logProviders
  defaultProvider="##ExternalNameDefaultLogProvider##">
  <provider type="Event" externalName="EventLogProvider">
    <logLevelTable>
      <logLevels>
        <logLevel logLevel="##LOGLEVEL##"
          category="##LOGCATEGORY##"
            component="##LOGCOMPONENT##" />
      </logLevels>
    </logLevelTable>
  </provider>
</logProviders>
```

Note: The element tags are case sensitive.

2. Edit the element <logLevelTable>. Refer to <logLevelTable> and <logLevels> for information.

Configuring the XML Log Provider

The XML Log Provider sends log entries to a file specified in the EVServer.exe.config file.

This provider supports readback. For explanation about readback, refer to <logProviders>.

Before you begin

If the Performance AL service runs on an account, this account needs to have 'write' and 'modify' permissions at the location specified in the <file>'path' element.

Procedure

1. Add the following lines to the <logProviders> element of the EVServer.exe.config file:

```

<logProviders
defaultProvider="##ExternalNameDefaultLogProvider##">
  <provider type="XML" externalName="XMLLogProvider">
    <properties>
      <file path="C:\EVServer.xml" createEvery="day" />
    </properties>
    <logLevelTable>
      <logLevels>
        <logLevel logLevel="##LOGLEVEL##"
                  category="##LOGCATEGORY##"
component="##LOGCOMPONENT##" />
      </logLevels>
    </logLevelTable>
  </provider>
</logProviders>

```

Note: The element tags are case sensitive.

- The <file> element has two attributes. Path and createEvery.

Edit the Path attribute:

This attribute contains the destination path of the file to which the log entries are written. If the file does not exist, it is created. Some examples are:

- <file path="C:\Temp\EVServer.xml"/>

Note: Make sure the directory Temp exists.

- <file path="EVServer.xml"/>

Note: The EVServer.xml log file is created in the same directory as the installation directory of Performance AL Server, which is by default C:\Program Files\cubus\Performance Analytics\Server\Logs\EVServer.xml
Make sure that the Logs directory exists.

- Edit the createEvery attribute.

This attribute is optional. The options are:

- Value

Note: The 'createEvery' attribute sets the size of the log file in MB's. If createEvery is set to '2', a new Log File is created when the Log File reaches a size of 2 MB.

- Hour

Note: A new log file is created every hour.

- Day

Note: A new log file is created every day.

- Week

Note: A new log file is created every week.

- Month

Note: A new log file is created every month.

- Year

Note: A new log file is created every year.

- Edit the element <logLevelTable>. Refer to <logLevelTable> and <logLevels> for information.

Configuring the Mail Log Provider

The Mail Log Provider sends log entries to the e-mail address specified in the EVServer.exe.config file.

This Provider does not support readback. For explanation about readback, refer to <logProviders>.

Before you begin

The Mail Log Provider needs access to an SMTP server that sends the log entries to the specified e-mail address. Refer to the documentation of the SMTP server for additional requirements.

Procedure

1. Add the following lines to the <logProviders> element of the EVServer.exe.config file:

```
<logProviders
  defaultProvider="##ExternalNameDefaultLogProvider##">
  <provider type="Mail" externalName="MailLogProvider">
    <properties>
      <config mailTo="##administrator@company.com##"
              from="##support@company.com##" />
      <network server="##mail.company.com##" />
    </properties>
    <logLevelTable>
      <logLevels>
        <logLevel logLevel="##LOGLEVEL##"
                  category="##LOGCATEGORY##"
                  component="##LOGCOMPONENT##" />
      </logLevels>
    </logLevelTable>
  </provider>
</logProviders>
```

Note: The element tags are case sensitive.

2. In the the mailTo attribute of the <config> element, type the e-mail address that receives the e-mails generated by the Mail Log Provider.
3. In the from attribute of the <config> element, type the e-mail adress from where the mail is sent.
4. In the server attribute of the <network> element, type the SMTP mail server that sends the e-mails generated by the Mail Log Provider.
5. In the port attribute of the <network> element, type the port of the SMTP mail server from where the mail has to be sent. The port attribute is optional.
6. Edit the element <logLevelTable>. Refer to <logLevelTable> and <logLevels> for information.

Configuring the SQL Server Log Provider

The SQL Server Log Provider stores log entries in a SQL Server database.

This Provider supports readback. For explanation about readback, refer to <logProviders>.

Before you begin

Microsoft SQL Server

Procedure

1. Add the following lines to the <logProviders> element of the EVServer.exe.config file:

```
<logProviders
defaultProvider="##ExternalNameDefaultLogProvider##">
    <provider                                type="SQLServer"
externalName="SQLServerLogProvider">
    <properties>
        <dataSource pwdEncrypted="false"
                                connectionString="##SQLSERVER
CONNECTIONSTRING##" />
    </properties>
    <logLevelTable>
    <logLevels>
        <logLevel logLevel="##LOGLEVEL##"
                                category="##LOGCATEGORY##"
component="##LOGCOMPONENT##" />
    </logLevels>
    </logLevelTable>
    </provider>
</logProviders>
```

Note: The tags are case sensitive.

2. Edit the dataSource element.
The connectionString SQL Server Connection String has the following structure:
For standard security:
Server=##SERVERNAME##;
Database=EVLog; UID=sa;Pwd=##PASSWORD##

For integrated security:
Server=##SERVERNAME##;
Database=EVLog;Integrated Security=SSPI
3. Apply password encryption.
Password encryption applies only to standard security.
If the pwdEncrypted attribute set to true, the password value should contain an encrypted value.
You can use the Password Encryption tool to obtain the encrypted password.
4. Edit the element <logLevelTable>. Refer to <logLevelTable> and <logLevels> for information.
5. Refer to the SQL Server documentation for more information about connection strings that can be used to connect to SQL Server.

Configuring the Oracle Log Provider

The Oracle Log Provider stores log entries in an Oracle database.

This Provider supports readback. For explanation about readback, refer to <logProviders>.

Before you begin

Ensure that an Oracle client is installed.

Procedure

1. Add the following lines to the <logProviders> element of the EVServer.exe.config file:

```
<logProviders
  defaultProvider="##ExternalNameDefaultLogProvider##">
  <provider type="Oracle" externalName="OracleLogProvider">
    <properties>
      <dataSource connectionString="##ORACLE
CONNECTIONSTRING##" />
    </properties>
    <logLevelTable>
      <logLevels>
        <logLevel logLevel="##LOGLEVEL##"
          category="##LOGCATEGORY##"
          component="##LOGCOMPONENT##" />
      </logLevels>
    </logLevelTable>
  </provider>
</logProviders>
```

Note: The tags are case sensitive.

2. Edit the dataSource tag.
The connectionString Oracle connectionString has the following structures:
Data Source=##TNSNAME##; UID=##USERNAME##; Pwd=##PASSWORD##;
3. Apply password encryption.
If the pwdEncrypted attribute set to true, the password value should contain an encrypted value.
You can use the Password Encryption tool to obtain the encrypted password.
4. The connection user needs the following rights:
 - CREATE PROCEDURE
 - CREATE SEQUENCE
 - CREATE SESSION
 - CREATE TABLE
 - Write access to the corresponding tablespace
5. Refer to the Oracle documentation for more information about connection strings that can be used to connect to Oracle.

Configuring the Shared Backend Log Provider

The Shared Backend Provider is a special provider. It writes logs to a separate log files. Only the file path and the log level are configurable for this Provider.

Before you begin

The Shared Backend Log Provider has no extra system requirements.

Procedure

1. Add the following lines to the <logProviders> element of the EVServer.exe.config file:

```

                                                                 <logProviders
defaultProvider="##ExternalNameDefaultLogProvider##">
  <provider type="SharedBackend" externalName="SharedBackend">
    <properties>
      <file path="C:\log.txt" />
      <logLevel logLevel="##LOGLEVEL##" />
    </properties>
  </provider>
</logProviders>
```

Note: The element tags are case sensitive.

2. In the the path attribute of the <file> element, type the destination path of the file to which the log entries are written. If the file does not exist, it is created.
3. In the the logLevel attribute of the <logLevel> element, type the desired log level.

Configuring the mail-server

The configured mail-server is used for sending the scheduled report subscriptions.

Before you begin

Ensure the required SMTP server is up and running. Also check if the user is set up on the mail-server and has the required permissions.

Procedure

1. Add the following lines to the <system.net> element of the EVServer.exe.config file:

```

<system.net>
  <mailSettings>
    <smtp>
      <network defaultCredentials="false" enableSsl="false"
host="##SMTPSERVERNAME##"                userName="##SMTPUSERNAME##"
password="##SMTPPASSWORD##" />
    </smtp>
  </mailSettings>
</system.net>
```

2. Restart the **Performance Analytics** service for the changes to take effect.

6. Performance AL Server API

Performance AL Server has an API (Application Program Interface). This API is available as a web service.

A web service API is an API that allows you to perform operations on a remote system that hosts a particular service. In this case the Performance AL Server.

For example you can use the web service of Performance AL Server to dynamically retrieve HTML code for the Performance AL Client, create and manage items, set security or view log entries.

You can also create scripts to automate tasks, for example to create a backup, migrate from one (test) environment to another environment or call these methods from a DTS (Data Transformation Services) package.

You can use these web service API methods to create your own (ASP.NET) application. An example of how to use the web service of Performance AL Server is Performance AL Explorer.

For more information, see the *Performance Analytics Server API Reference*.

URL API

The URL API makes views in the Performance AL Server repository addressable through a URL.

When you enter a URL in your browser an HTTP request is sent to Performance AL Server. This HTTP request is processed by the HTTP handler and results in either a web service call or a URL API call. The result is an HTML page that contains Performance AL Client with a specific view or canvas. The syntax and the options of this URL are explained in this section.

The URL API is installed when you install Performance AL Server.

HTTP handler

The Performance AL HTTP handler enables you to either send requests to Performance AL Server Web Service or to use the functionality of the URL API.

By default Microsoft Internet Information Server (IIS) passes the HTTP requests to a web application to request a file that needs to be on the Server.

To enable the URL API functionality the following code is added to the web.config file that is located C:\Program Files\cubus\Performance Analytics\Server\WebService.

```
<httpHandlers>  
  <add verb="*" path="URL API" type="Cognos.EV.ServerURLAPIHandler,"
```

```
WebService"
    validate="false" />
</httpHandlers>
```

The <httpHandlers> element tells IIS that HTTP requests to the path `http://##ServerName##/EVServer` are managed by the HTTP handler. The HTTP handler determines if the request is either a Web Service call or a URL API call.

URL API syntax

The URL of the URL API is specified by "`http://<ServerName>/EVServer`" followed by a set of URL API options for both IIS and the Web Service.

To pass options to the URL API, the following syntax is used:

```
http://<ServerName>/EVServer?<option>=<optionvalue>&<option>=<optionvalue>
http://<ServerName>/EVServer?Action=Render&item=<ItemPath>
```

The first option is preceded by "?". The second and subsequent options are preceded by "&". The option value is assigned to the option by "=".

Note: Some characters in a HTTP request need to be encoded when using the URL API. For more information, see [URL API - encoded characters](#).

Generic option parameters

The URL API defines a set of general URL API option parameters. These parameters are:

- Action
- Title
- BG Color
- TextColor
- Authentication

Action

The action parameter describes the specific setting that the URL API is required to do. The actions are that the URL API can return are:

- Render
- UpdatePreload
- Image
- CustomItem
- ListItems
- listnamedusers
- listconcurrencycounters

If an action is not specified in the URL API, then the default value of the action depends of the type of item that is specified in the item parameter. When you specify an item to have the item type `image` or `custom`, then the default action is either `Image` or `CustomItem`.

In all other cases the default action is Render. This also includes cases when no item at all is specified.

Title

The title parameter describes the title of the HTML page. If there is no title or an empty title parameter, and the Action parameter is set to Render the following applies:

- For a specified item, the title of the page contains "Performance AL Client" followed by the name of the requested item.
- For a none specified item the title of the page is "Performance AL Client".

BG Color

The background color parameter for the HTML page. The possible values are:

- All known system colors. The value can be an RGB value or an hexadecimal value. The hexadecimal value can have values between "000000" and "FFFFFF" predefined with an optional "#".
- Default value: none

TextColor

The text color of the HTML page. The possible values are:

- All known system colors. The value can an RGB value or an hexadecimal value. The hexadecimal value can have values between "000000" and "FFFFFF" predefined with an optional "#".
- Default value: none

Authentication

The authentication parameter applies the system and item security. For Performance AL Server to be able to authenticate a user a session is created.

A Performance AL Server session is created when a user logs on to Performance AL Server. After the user is successfully authenticated, then the Performance AL Server retrieves the appropriate permissions, for example to use views or to connect to an OLAP database. During the creation of a session credentials are passed to the Performance AL Server.

Performance AL Server passes these credentials to a configured security provider. This security provider validates whether the user is allowed to log on to the system with the specified credentials. Once a session is created, this session provides the access to Performance AL Server.

The "Authentication" parameter of the URL API enables you to specify which security provider should be used to create a Performance AL Server session. The "Authentication" URL API parameter must match the "externalName" of the configured security provider that needs to be used.

Security providers can require credentials such as a user name and a password. If the specified security provider requires these credentials, these credentials must be specified in order to enable the security provider to validate whether the user is allowed to create a Performance AL Server session.

For information about security providers, see "Specifying the security providers".

- Possible values: The possible values of the "Authentication" parameter depend on which security providers are configured for Performance AL Server. If the specified

security provider requires credentials, then you have to add these credentials to the URL API request as well. For example, if a security provider requires a user name and a password to validate a user, then the following needs to be added to the URL API request:

```
http://<ServerName>/EVServer?
```

```
<ItemPath>&Authentication=Example&UserName=<UserName>&Password=<Password>
```

- Default value: There is no default value for this option.

Action: render

The render action results in an HTML page that contains Performance Analytics Client with the requested item. If Performance AL Client is not installed on your system, you are prompted to install the software.

For more information, see [Installing Performance AL Client](#).

The following parameters apply to the action: render.

- RenderType
- XSLT

RenderType

The type of output that renders the view. The possible RenderType settings are:

- **ActiveX**
If the RenderType is set to "ActiveX", then the URL API returns an HTML page that contains the Performance AL Client that shows the requested item. If no RenderType is specified, then the RenderType is set to "ActiveX".
- **XML**
If the RenderType is set to "XML", then the URL API returns either XML or transformed XML.
- **GridXML**
If the RenderType is set to "GridXML", then the URL API returns an XML or transformed XML representation of the grid of a view item.

To retrieve transformed output from the URL API, you have to add an extra XSLT parameter to the URL API Request.

When the RenderType is set to "ActiveX", then the returned HTML page is created by using the "Default.xslt" file. The "Default.xslt" file is available in the installation directory of the web service. The default location of the "Default.xslt" file is "C:\Program Files\cubus\Performance Analytics\Server\WebService\XSLT". It is not possible to specify an additional XSLT parameter if the RenderType is set to ActiveX.

When the RenderType is set to "XML", then the URL API returns XML or transformed XML. If you do not specify an XSLT parameter or if you specify an empty XSLT parameter, then the URL API returns an XML file. This XML file contains the following information:

```
<EVClient>  
  <object displayMode="">  
    <id />  
    <name />
```

```

<width />
<height />
<codeBase />
<classId />
<server />
<protocol />
<port />
<camPassport />
<sessionId />
<help />
<theme />
<enableToolBar />
<defaultView />
<enableTabBar />
<enableViewsButton />
<viewLocations />
<tabbarPosition />
</object>
</EVClient>

```

Parameter	Description	Opt	Default value
Item	The item to be opened by Performance AL Client. Value = A path to an item or an item name if the item is located in the root folder The ItemType must be view, canvas, or folder. If a canvas or folder item is specified, then Performance AL Client opens all associated views. Returned in the <defaultView> element	Yes	Performance AL Client is rendered without an active view.
Syntax http://<ServerName>/EVServer?<ItemPath> or http://<ServerName>/EVServer?Item=<ItemPath>			
ControlID	The ID of the <Object> element that contains the Performance ALcontrol.	Yes	EVObject
DisplayMode	Sets the type of control that is used to show the view. Value = View	Yes	View

Syntax http://<Servername>/EVServer?DisplayMode=View			
TabBar	Sets the tab bar to show or not. Value = true or false	Yes	false
Syntax http://<Servername>/EVServer?DisplayMode=View&TabBar=true			
TabBarPosition	Sets the position of the tab bar. Value = Top, Bottom, or Theme. If set to theme then the position is: Classic = bottom Sky = top Ocean = top Desert = top Forest = top Olive = top Silver = top	Yes	Theme
Toolbar	Sets the tool bar to show or not. Value = True or False	Yes	False
Syntax http://<Servername>/EVServer?DisplayMode=View&Toolbar=true			
Theme	Sets the background theme for Performance AL. Values = Classic, Sky, Ocean, Desert, Forest, Olive, Silver	Yes	Classic
CreateControl Uri	Sets the address location of the .js file Value = The path to the CreateControl.js file.	Yes	/EVServer/ CreateControl.js
Culture	Sets the language culture for Performance AL Client Values = da-DK, de-DE, en-US, es-ES, fr-FR, it-IT, ja-JP,	Yes	Culture of the system

	ko-KR, nl-NL, pt-BR, zh-CN, zh-TW.		
Syntax http://<Servername>/EVServer? DisplayMode=View&TabBar=true&culture=en			
Help	The path to a help file or a set of help files in Performance AL Client. Once set, a help button is added to the toolbar. Value = A valid URL to an HTML page The HTML page can be either your own HTML page or the Performance Analytics User Guide as a HTML file.	Yes	None
Syntax http://<Servername>/EVServer?DisplayMode=View&Toolbar=true&Help=http://<Servername>/EVExplorer/WebHelp/index.htm			

Display mode:

The following options are dependent of the chosen "DisplayMode":

- **Viewlocations**

Option that specifies the exact location where views or canvases are stored in the repository.

- Possible values: A string that contains a valid view location. The logical name and the location (path) are separated by an "=" character. To specify more than one view location, separate the entries a semi-colon ";".

The syntax is for example:

Sales Views = /Sales/SalesView; Marketing Views = /Marketing/ MarketingFolder

- Optional: yes
- Default value: empty
- Dependent on: only available for the DisplayMode "View".

- **ViewsDialog**

Option to show the "Views" button on the toolbar.

- Possible values: "True" or "False"
- Optional: yes
- Default value: "True"
- Dependent on: only available for the DisplayMode "View".

RenderType is set to GridXML:

- **Item**

The item that needs to be opened by Performance AL Client.

- Possible values: A path to an item. A name of an item if this item is located in the root folder. For more information about the root folder, see “Folders that are added during the installation of Performance AL”.

In both cases this item needs to have the ItemType "View".

- Optional: no
- Default value: Since this parameter is not optional, a default value is not applicable.
- Syntax: In contrast to other URL API options it is possible to specify an item without entering the Option by adding "Item=" to the HTTP Request. This Item needs to be defined immediately after the "?" character.
For example: `http://<ServerName>/EVServer?<ItemPath>` has the same result as:
`http://<ServerName>/EVServer?Item=<ItemPath>`.

- **Context**

Context of the data as a string. Context represents an XML document that holds the context of the data to be returned. The context can be used to define the offspread selection of the view.

- Possible value:

The format of the context XML is as follows:

```
<root>
  <context>
    <dimension>plan_time</dimension>
    <member>2006</member>
  </context>
  <context>
    <dimension>plan_region</dimension>
    <member>USA</member>
  </context>
</root>
```

- Optional: yes
- Remark: The value of the Context option is XML. Some characters in this XML need to be encoded when using the URL API. For more information, see “URL API - encoded characters”.

- **DimensionInfo**

The status of information for each dimension in the generated XML as a boolean.

- Possible values:

"True": Additional information for each member and dimension is generated in the XML.

"False": Additional information for each member and dimension is not generated in the XML.

- Optional: yes
- Default value: "True"

- **Formatting**

The status of formatting of a view in the generated XML as a boolean.

- Possible values:
 - "True": The formatting of the view will be included in the generated XML.
 - "False": The formatting of the view will not be included in the generated XML.
- Optional: yes
- Default value: "True"
- **Offspread**

The status of the offspread area in the generated XML as a boolean.

 - Possible values:
 - "True": The offspread area is generated in the XML.
 - "False": The offspread area is not generated in the XML.
 - Optional: yes
 - Default value: "True".
- **Table**

The status of the table grid in the generated XML as a boolean.

 - Possible values:
 - "True": The table grid is generated in the XML.
 - "False": The table grid is not generated in the XML.
 - Optional: yes
 - Default value: "True"

XSLT

With the "XSLT" parameter you can specify the XSLT that needs to be used for the XSLT transformation.

The value of the "XSLT" parameter will only be interpreted when the "RenderType" parameter has been set to either "XML" or "GridXML". For more information, see "RenderType". The possible values are:

- An XSLT file name

If you specify the XSLT file name, then the URL API loads the file from the default XSLT directory.

When the XSLT file name is specified, a user does not have to add the ".xslt" extension to the file name.

The default XSLT directory is set to

"C:\Program Files\cubus\Performance Analytics\Server\WebService\XSLT".

You can change the default XSLT directory by setting the "XsltPath" in the "web.config" file. The default location of the "web.config" file is

"C:\Program Files\cubus\Performance Analytics\Server\WebService\".

If the XsltPath has been set, then the URL API checks this directory for the specified XSLT.

Add the following code to the <configuration> section in the "Web.Config" file of the web service to set the XsltPath:

```
<configuration>
  <appSettings>
    <add key="XsltPath" value="Your XSLT Path" />
  </appSettings>
</configuration>
```

```
</appSettings>
</configuration>
```

- An XSLT file location

When you specify the XSLT file location, then you must also specify the ".xslt" extension like:

```
http://localhost/EVServer?Toolbar=true&RenderType=Xml&Xslt=http://localhost/
EVServer/Xslt/yXslt.xslt
```

or

```
http://localhost/EVServer?Toolbar=true&RenderType=Xml&Xslt=C:\Temp\
MyXslt.xslt
```

It is possible to specify a local directory, such as "c:\", a web location: "http://", or, a relative path to the XSLT path.

The relative path is derived from the default XSLT directory. The default XSLT directory is set to "C:\Program Files\ cubus\Performance Analytics\Server \WebService\XSLT".

You can change the default XSLT directory by specifying the "XsltPath" in the "web.config" file.

The default location of the "web.config" file is "C:\Program Files\ cubus \Performance Analytics\Server\WebService\". If this XsltPath has been set, then the URL API checks this directory for the specified XSLT.

Add the following code to the "configuration" section of the Web Service's "Web.Config" file to set the XsltPath:

```
<configuration>
  <appSettings>
    <add key="XsltPath" value="Your XSLT Path" />
  </appSettings>
</configuration>
```

Please make sure the user has sufficient rights to access the specified XSLT file.

- Default value: empty. If the "XSLT" parameter is empty, then XML will be returned by the URL API. Depending on the RenderType, a set of render options is supported.

Examples

Example 1

If you want to render Performance Analytics Client that show the view "MyView", with the tab bar enabled and using the theme "Ocean", then the URL to type in your browser looks like:

```
http://<ServerName>/EVServer?MyView&Tabbar=True&Theme=Ocean
```

Example 2

Below is an example of the encoded notation for the view "Profit & Loss" in the folder "Financial". For more information, see "URL API - encoded characters" on page 96.

```
http://<ServerName>/EVServer?/Financial/Profit%20%26%20Loss
```

Example 3

It is not necessary to specify an item in the URL.

The example below results in only the Performance AL Client being displayed, without a

view.

<http://<ServerName>/EVServer?DisplayMode=View>

Action: updatepreload

The UpdatePreload URL API action triggers Performance AL Server to verify if the preloaded databases need to be updated and does so when necessary.

This action updates the preloaded databases by specifying:

- An item (database or data source)
If a database has been specified, the preload of this particular database will be verified. In the case of a data source the preloads of all databases that use the specified data source will be verified.
- A filter specified by a DataSourceType and optional Server and database name.
In this case all databases that match the criteria (DataSourceType, Server and database name) will be verified and updated when necessary.
Note: The UpdatePreload action preloads only those databases that are marked for preloading.

The following options apply to the UpdatePreload action:

- **Item**
The database item or data source item that needs to be verified for preloading.
 - Possible values:
A path to a database item or a data source item.
A name of a database item or a data source item if this item is located in the root folder. For more information about the root folder, see "Folders that are added during the installation of Performance AL".
 - Optional: yes. Either an item or a filter has to be specified.
 - Syntax: It is possible to specify an item without entering the option by adding "Item=" to the HTTP request. This needs to be defined immediately after the "?" character.
For example: <http://<ServerName>/EVServer?<ItemPath>>
has the same result as:
<http://<ServerName>/EVServer?Item=<ItemPath>>
- **DataSourceType**
The DataSourceType determines which databases, referring to a data source that have the specified DataSourceType, need to be verified.
 - Possible values: "TM1", "MSAS", "Essbase"
 - Optional: If an item has been specified, then this option will be ignored. If a filter has been specified (DataSourceType, Server, Database), then you must set this option.
- **Server**
The name of the Server determines which databases, referring to a data source that connects to the specified Server, need to be verified.
 - Possible values: The name of the Server that needs to be filtered.
 - Optional: If an item has been specified, then this option will be ignored. In the case of a filter the Server name is optional.
- **Database**

The name of the physical database which needs to be verified.

- Possible values: The name of the physical database that needs to be filtered.
- Optional: If an item has been specified, this option will be ignored. In the case of a filter the database name is optional.

Examples

Example 1

The following UpdatePreload example uses a database item or a data source item:

```
http://<ServerName>/EVServer?action=UpdatePreload&item=<ItemPath>
```

Example 2

The following UpdatePreload example uses a filter (required: DataSourceType, optional: Server name and database name):

```
http://<ServerName>/EVServer?action=UpdatePreload&server=<physicalserver>  
&database=<physicaldatabase>&datasourcetype=<datasourcetype>
```

Example 3

The following UpdatePreload example uses ForcePreload set to true forces the Performance AL Server to do a preload or reload of the specified database.

```
http://<ServerName>/EVServer?action=UpdatePreload&item=<ItemPath>  
&forcepreload=true
```

Action: image

The image URL API action triggers Performance AL Server to return the requested image item as a file.

The following options apply to the image action:

Item: The image item that needs to be triggered for downloading.

- Possible values:
 - A path to a valid image item.
 - A name of an image item if this item is located in the root folder.
- Optional: no
- Syntax: It is possible to specify an item without entering the option by adding "Item=" to the HTTP request. This needs to be defined immediately after the "?" character.

For example:

```
http://<ServerName>/EVServer?<ItemPath>
```

has the same result as

```
http://<ServerName>/EVServer?Item=<ItemPath>
```

Examples

Example 1

The following example results in the retrieval of the requested image item:

```
http://<ServerName>/EVServer?action=Image&item=<ItemPath>
```

Example 2

The following example results in the retrieval of the requested image item:

```
http://<ServerName>/EVServer?<ItemPath>
```

Note: In this example the ItemPath needs to represent the path to an image item in the repository.

Action: customitem

The CustomItem URL API action triggers Performance AL Server to return the requested custom item as a file.

The following options apply to the CustomItem action:

Item: The custom item that needs to be triggered for downloading.

- Possible values:
 - A path to a valid custom item.
 - A name of a custom item if this item is located in the root folder.
- Optional: no
- Syntax: It is possible to specify an item without entering the option by adding "Item=" to the HTTP request. This needs to be defined immediately after the "?" character.

For example:

```
http://<ServerName>/EVServer?<ItemPath>
```

has the same result as:

```
http://<ServerName>/EVServer?Item=<ItemPath>
```

Examples

Example 1

This example results in the retrieval of the requested custom item:

```
http://<ServerName>/EVServer?action=CustomItem&item=<ItemPath>
```

Example 2

This example results in the retrieval of the requested custom item:

```
http://<ServerName>/EVServer?<ItemPath>
```

Note: In this example the ItemPath needs to represent the path to a custom item in the repository.

Action: listitems

This action triggers Performance AL Server to extract data from the Performance AL Server repository.

Calling the list method via the URL API list is done in the following way:

```
http://<servername>/EvServer?action=ListItems<&field>=<value>...&fields=<field>
```

action

The action that has to be performed by the URL API. If you want to use the list method via the URL API you must define which list you want to receive. You do this by specifying an action. For the list method currently the "ListItems" is supported. The list method "ListItems" returns all items in the repository.

fields

The fields that have to be returned. This is a comma separated list that specifies the desired field names.

Generic item fields

```
<items>
  <item type="&lt;type&gt;" shortcut="&lt;True|False&gt;"
        createdBy="&lt;user&gt;" creationDate="&lt;dateTime&gt;"
        modifiedBy="&lt;user&gt;" modificationDate="&lt;dateTime&gt;"
        status="&lt;status&gt;">
    <name>item name</name>
    <path>item path</path>
    <description>item description</description>
    <userProperty name="&lt;property name&gt;">
      propertyvalue
    </userProperty>
  </item>
</items>
```

Examples

Example 1

Shows all views:

```
http://<YourEVServer>/EvServer?action=ListItems&type=view
http://<YourEVServer>/EvServer?action=ListItems&type=canvas
```

Example 2

Shows all valid items:

```
http://<YourEVServer>/EvServer?action=ListItems&status=valid
```

Example 3

Shows all items modified from February, 1st 2010:

```
http://<YourEVServer>/EvServer?action=ListItems&modificationDate=20100201-
```

Action: listnamedusers

This action triggers Performance AL Server to list the named users that access the specified Performance AL Server.

For more information, see [Monitoring](#).

Using the listnamedusers method you can use the "listnamedusers" method via the URL API.

Procedure

1. Open Microsoft Internet Explorer.
2. Enter the following URL:
`http://<yourevserv>/evserver?action=listnamedusers`

Results

The XML that is returned looks like this:

```
<?xml version="1.0" encoding="utf-8"?>
<licenseMonitoring>
  <namedUsers>
    <namedUser>
      <uniqueUserName>User 1</uniqueUserName>
      <userName>My Name 1</userName>
      <provider>Forms</provider>
      <firstConnect>2009-10-19T00:00:00</firstConnect>
      <lastConnect>2009-10-19T10:00:00</lastConnect>
    </namedUser>
    <namedUser>
      <uniqueUserName>User 2</uniqueUserName>
      <userName>My Name 2</userName>
      <provider>Forms</provider>
      <firstConnect>2009-11-20T00:00:00</firstConnect>
      <lastConnect>2009-11-21T11:00:00</lastConnect>
    </namedUser>
  </namedUsers>
</licenseMonitoring>
```

Action: listconcurrencycounters

This action triggers Performance AL Server to list the concurrent ports and the concurrent users that access the specified Performance AL Server.

For more information, see [Monitoring](#).

Using the listconcurrencycounters method you can use the listconcurrencycounters method via the URL API.

Procedure

1. Open Microsoft Internet Explorer.
2. Enter the following URL:
`http://<yourevserv>/evserver?action=listconcurrencycounters.`

Results

The XML that is returned looks like this:

```
<?xml version="1.0" encoding="utf-8"?>
<licenseMonitoring>
  <concurrencyCounters>
    <counter>
      <date>2009-10-19T00:00:00</date>
      <portCount>1</portCount>
      <userCount>2</userCount>
    </counter>
    <counter>
      <date>2009-11-20T10:00:00</date>
```



```

        <portCount>2</portCount>
        <userCount>3</userCount>
    </counter>
</concurrencyCounters>
</licenseMonitoring>

```

URL API - encoded characters

Some characters need to be encoded when using the URL API, otherwise these characters are not interpreted as part of the specified name.

The encoded character consists of "%" character followed by the hexadecimal representation of the specified character.

For example:

`http://<ServerName>/EVServer?Item=Profit & Loss&BGColor=#dde4ed`
should be typed as:

`http://<ServerName>/EVServer?Item=Profit%20%26%20Loss&BGColor=%23dde4ed`

The second "&" is a reserved character to separate the request parameters. Therefore this character does not have to be replaced.

The following characters must be encoded with the hexadecimal value:

- All characters with ASCII decimal values between 0 and 31.
- All characters with ASCII decimal values equal or greater than 127.
- All unsafe characters. A character can be unsafe for many reasons. For example, the character "#" is used in World Wide Web to delimit a URL from a fragment identifier that follows it.
- All reserved characters. Many URL schemes reserve characters for a designated semantic.

Unsafe Characters	Example	Hexadecimal Value
Space		20
Quotation mark	"	22
Pound character	#	23
Percent character	%	25
Plus	+	2B
Minus	-	2D
Less than symbol	<	3C
Greater than symbol	>	3E
Left square bracket	[5B

Backslash	\	5C
Caret	^	5E
Right square bracket]	5D
Grave accent	`	60
Left curly brace	{	7B
Vertical pipe		7C
Right curly brace	}	7D
Tilde	~	7E

Reserved Characters	Example	Hexadecimal Value
Ampersand	&	26
Forward slash	/	2F
Colon	:	3A
Semi-colon	;	3B
Equals	=	3D
Questionmark	?	3F
At-Symbol	@	40

Error messages

If an error occurs, then the URL API will display one of the following error messages.

The URL API Method "<Action Name>" is not supported.

The RenderType "<rendertype>" is not supported.

The parameter "<paramname>" is not specified. This parameter should be specified when calling the requested Method "<Action Name>".

The URL API could not create a Session. Please check the specified parameters in the url and the configuration of the server.

Missing parameter: UpdatePreload must be called with either an item or a valid DataSourceType.

Unsupported ItemType: The Item "<itempath>" having ItemType "<itemtype>" is not

supported for the specified URL API Action "<Action Name>".

Invalid Image format: Supported file types are "jpeg", "gif", "bmp" and "png".

Invalid Item Status: The Item Status of the specified Item "<itempath>" is invalid.

No Item Data: The specified Item "<itempath>" does not contain any Item Data. Invalid list specified.

The XSLT Transformation failed. Additional Information: <additionalinfo>.

The specified Xslt file location did not contain the ".xslt" file extension.

The specified Render Option Value is not supported for this Render Option.

Note: The possible exceptions defined by the "Render" action can also occur when using the URL API.

The possible exceptions defined by the "UpdatePreload" action can also occur when using the URL API.

Consult the Performance Analytics Server API Reference for an overview of these errors.

7. Performance AL Explorer

Performance AL Explorer is used to manage and configure Performance AL on one or more servers. It can also create, browse and organize items. Performance AL is used by both business users and the system administrator. The user interface adapts to the rights of the user.

The illustration below shows how Performance AL Explorer connects to a Performance AL Server. Performance AL Explorer uses only the available methods of the Web Service of Performance AL to communicate with Performance AL Server. For more information about the Web Service of Performance AL, see the document *Performance Analytics Server API Reference*.

Starting Performance Analytics

You can use Performance Analytics Explorer on another system than the one where Performance AL Server is installed. This way you can perform actions on any Performance AL Server you have access to. You can manage multiple Performance AL Servers with Performance AL Explorer.

Procedure





Do one of the following:

- To start Performance AL Explorer on a remote system, enter the following URL in an internet browser: `http://<name>/EVExplorer`. Where <name> is the name of the system running Performance AL Explorer.
- To start Performance AL Explorer on the system where Performance AL Server is installed, enter the following URL in your browser: `http://localhost/ EVExplorer`

Tip: You can also start Performance AL Explorer from the Windows Start menu.

The interface of Performance AL Explorer

The user interface of Performance Analytics Explorer uses the toolbar buttons as described in the table below.

Icon	Purpose
	Change the way the servers and items are listed. This can be in list mode or block mode.
	Change the size of the toolbar.
	Go back one item.
	Log off.

Managing Performance AL Server

There are settings you need to configure in Performance AL Server. You can configure these settings by using Performance AL Explorer.

Changing the environmental properties of Performance AL Server

The environmental properties specify the name and port number that gives access to a Performance AL Server from an external location. Changing the environmental properties can be necessary when a client system cannot resolve the internal Performance AL server name or when the external port for a certain protocol is different than the port that is used internally.


The environment variables apply to each session created on Performance AL Server and are valid for the session. For more information, see "Sessions".

The order in which the server name and port number are applied for a session is as follows:

1. The external name or port number as set in Performance AL Explorer.
2. The name or port number as set in the URL. For example: `http://demo.company.com:8080`.
3. The defaults as set on the system running Performance AL Server.

To change the external name or port number set in Performance AL Explorer do these steps.

Procedure

1. From Performance AL Explorer, right-click a Performance AL Server  and then click Server Settings > Advanced.
2. Change the values of the fields as described in the table below.

Environmental property	Description
External Server Name	The external name of the server as a string. For example "demo.company.com".
External Native/TCP Port	The external port number when using Native/TCP connectivity to connect to a Performance AL Server. The possible values are 0 to 65535.
External HTTP Port	The external port number when using the HTTP protocol to connect to a Performance AL Server. The possible values are 0 to 65535
External HTTPS Port	The external port number when using the HTTPS protocol to connect to a Performance AL Server. The possible values are 0 to 65535.

Changing the properties of the Performance AL repository

To change the properties of the Performance AL Server repository you access the root folder information.

Procedure

1. Open Performance AL Server .
2. Next to the Performance AL Server name, click Properties. You can change the following properties.

Property	Purpose
General	The name of the generic root folder and its description
User-defined Properties	Manage the User-defined Properties.
Policies	Manage or review the folder policies.

Changing the server settings for a Performance AL Server

Use Performance AL Explorer to change the properties of a Performance AL Server.

Procedure



1. From Performance AL Explorer, right-click a Performance AL Server and then click Server Settings.
2. You can change the following properties.

Property	Description
Name	The name of the Performance AL Server
Description	An optional description
Location	The name of the system on which Performance AL Server is running, or the location of the WebService.asmx file. If the Location field is left empty, then the name specified in the Name field will be used.
Logon Type	Specifies how Performance AL Server connects to the provider that is specified in the Providers field. You can choose either: <ul style="list-style-type: none">• Automatically logon using Windows Integrated Authentication or• Display Logon Form: The user will be prompted to enter credentials.

Providers	<p>The names of one or more security providers. If you specify multiple provider names, then separate them with a comma.</p> <p>To specify all providers, enter "*".</p> <p>You can configure one or more security providers on a Performance AL Server. When you leave this field empty, the default provider is used. This is the first security provider that is configured.</p> <p>If for the Logon Type the option Windows Integrated Authentication is chosen, the first provider that supports Automatically logon using Windows Integrated Authentication is used.</p>
-----------	--

Viewing the version information for a Performance AL Server

Procedure

1. Right-click a Performance AL Server and click Manage .
2. The Version Information section  shows the version of Performance AL Server.

Removing a Performance AL Server

You can remove Performance AL Servers that are listed in Performance AL Explorer.

Note: If you use Performance AL Explorer to remove a Performance AL Server, it is not removed from the system. Only the reference to the Performance AL Server is removed.

Procedure

1. Right-click a Performance AL Server  and then click Remove.
2. Click Yes.

Managing folders and items

A Performance AL Server contains a repository with items. Items can be of the following types:

- Folder
Used to organize items. A folder can contain child items of all defined item types. You can set item security on folders and their child items.
- View
Contains the view of the data stored in the OLAP database. The view connects to a database.
- Canvas
A collection of views.
- Database
The link between the view and the data source.
- Data source
The OLAP database that provides the raw data.

- Image
Can be used as a background image in a chart.
- Custom item
Allows users to store a custom file. This data can be of any type.
- Shortcut
A shortcut link to any item, except folder.

Folders that are added during the installation of Performance AL

During the installation of Performance AL, the following folder items are added to the Performance AL Server repository.

The root folder has the following sub folders:

- **\$Private Items** - contains all of the **My Items** folders for all users. A user has a **My Items** folder when the Has Private Folder system permission is granted. For more information, see [Item security](#) and [System security](#).
- **My Items** - contains the items for each user that has the **Has Private Folder** system permission. For more information, see [System permissions and roles](#).
- **System** - contains the following sub folders:
 - Data Sources
 - Databases
 - Images

The item structure can be adapted to your own situation. Items can be moved, deleted, and created. This initial folder structure is to help you set up your own environment.



These items (with the sub folders of the System folder) are available to the accounts that are built-in administrators. Built-in administrators are accounts that are part of the built-in administrator group on the system that runs Performance AL Server or to the accounts specified as built-in administrator in the EVServer.exe.config file. For more information, see [Configure the service and the configuration file](#).












Managing items

After an item is added you can manage items in the repository.

Procedure

1. Open a Performance AL Server.
2. Right-click and choose one of the menu options from the next table.

Icon	Description
	Opens the data source item
	Opens the database item

	Opens the view item or opens all view items
	Opens the folder item
	Opens the image item
	Opens the custom item
	Opens a canvas item
	Deletes the item
	Cuts the item
	Copies the item
	Shows the properties of an item
	If an item is copied, the option Paste is added to the options that are shown when you right-click anywhere on the window.
	If an item is copied, the option Paste Shortcut is added to the options that are shown when you right-click anywhere on the window. Note: You cannot create a shortcut to a folder.

Creating an item

You can create a folder or item with Performance AL Explorer.



The generic folder **Data Sources** can be used to add data source items.

The generic folder **Databases** can be used to add database items.


The generic folder **My Items** can be used to add view and canvas items.

The generic folder **Images** can be used to add image items.

Procedure

1. Open a Performance AL Server .
2. Right-click anywhere on the window or on a folder and click **Add Item > Folder** .
3. Choose one of the following:
 - Folder
 - Data Source
 - Database
 - View
 - Canvas
 - Image

- Custom Item
4. Type a name and a description for the folder or item.
 5. For an image item:
 - a. Click **Add**
 - b. Click **Browse** and select an image. Images can be of the type BMP, GIF, JPEG and PNG.
 - c. Click **Upload** to put the image file in the Performance AL repository.



A spark on the image icon  indicates that the image item is new and does not contain item data. For more information on the status an item can have, see "ItemStatusType Enumeration" in the *Performance AL Server API Reference*.
 6. For all other items, Click **Add**.

Creating a shortcut item


You can create a shortcut item.

Note: You cannot create shortcut items for folder items.

Procedure

1. Open a Performance AL Server .
2. Right-click any item and click **Copy**.
3. Right-click in any folder where you want to add the shortcut and click Paste Shortcut .

Results

The shortcut is added to the repository. When you are logged in as a user that has the **Manage** item permission on this shortcut, the shortcut can be recognized by a little arrow  in the left bottom corner. Another user, who does not have the **Manage** system permission, does not see this arrow, and has no indication that the item is a shortcut. For this type of user, the shortcut item is shown as an item of the item type it refers to. If a shortcut item is not valid (if it refers to an invalid item, for example an item that no longer exists), the user will not see this shortcut item.

A red shortcut indicator indicates that the shortcut item does not refer to an item of the correct type.

An exclamation mark and a shortcut indicator on the database icon indicates that for example the data source item to which the database refers could not be found at the specified location.

A spark and a shortcut indicator on the database icon indicates that the database item does not contain item data. For more information on the status an item can have, see "ItemStatusType Enumeration" in the Performance AL Server API Reference.


Opening items

The following table provides an overview of what happens when you open an item in Performance AL Explorer.

Item	What happens when you open the item
------	-------------------------------------

Folder	The contents of the folder are shown.
Data Source	The data source type and the OLAP server of the data source are shown.
Database	The data source item that connects to the database and the database name on the OLAP server are shown.
Image	The program associated with the image starts and shows the image.
View	Performance AL Client starts and shows the view. The view displays the data that is stored in the OLAP database. Depending on the installation and configuration of the security providers, Performance AL Server can authenticate the user. Otherwise you have to enter the credentials in order to log on to the specified database when you open a view.
Canvas	Performance AL Client starts and shows the canvas and any associated views.
Custom Item	The custom item is opened by the application associated with the file extension and the MIME Type of the custom item.
Shortcut	The action that the item refers to starts.

Procedure

1. Open a Performance AL Server .
2. Click an item.

Specifying a data source item

After you have created a data source item you can specify the details of the data source item.


Data source items refer to the OLAP database server. The OLAP server name depends on the type of OLAP server. For TM1 the name has a specific syntax. See [Configuring data sources](#).

Procedure

1. Open the **Data Source** item.
2. From the **Data Source Type** menu, choose the data source type.
3. In the **OLAP Server** field, specify the name of the OLAP server.
4. In the **User Name** field, enter the OLAP administrator user name.
5. In the **Password** and **Confirm Password** fields, enter the OLAP administrator password.
6. Set the data source specific items. The database settings available depend on the chosen Data Source type. For more information, see [Configuring data sources](#).

7. Click **Test Connection** if you want to test the connection details that you have specified.
8. Click **Update** to save the data source settings.

Results

A spark on the data source icon  indicates that the data source item is new and does not contain item data. For more information on the status an item can have, see "ItemStatusType Enumeration" in the Performance AL Server API Reference.

Specifying a database item

The database item refers to a specific database on an OLAP database server. This OLAP server is specified in the data source item to which the database item refers.


After you have created a database item you can specify the details of the database item. A database item is also created when a data source item is configured.

Procedure

1. Open the **Database** item.
2. From the **Data Source Type** menu, choose the data source type.
3. In the **Data Source** field, specify the data source by either typing the name or selecting the name from the menu.
4. In the **Database Name** field, specify the database name or the cube name by either typing the name or selecting the name from the menu. If you type the name, use the following format: <data source name>\<database name>.
5. Set the database specific items. The database settings available depend on the chosen Data Source type.
6. Click **Update** to save the database settings.

Results

An exclamation mark on the database icon  indicates a problem. The data source item to which the database item refers could not be found at the specified location.

A spark on the database icon  indicates that the database item is new and does not contain item data. For more information on the status an item can have, see "ItemStatusType Enumeration" in the Performance AL Server API Reference.

Properties of a Database item


- Name
 - Specifies the display name of the database within the cube selection dialog, when creating a new view. Also the reference of the database within a view or view template is defined by this name.
- Description
 - A text area to add a descriptive text for the database.
- Update all views using this database
 - If the name of the database is changed and if there are already one or more views

defined which use this database, the name of the database will also be updated within the views / view templates (see **Name** property), when this checkbox is active. If the checkbox is not checked, the database name within the views will not be updated and the view will refer to the old name of the database.

Changing the properties of an item

You can change the properties of an item.

Procedure

1. Open a Performance AL Server  and go to the item to be changed.
2. Right-click the item and click **Properties**. You can change the following properties:

Property	Purpose
General	The name of the item and its description
User-defined Properties	Add or change the User-defined Properties.
Policies	Manage or review the folder policies.


Creating user-defined properties

Each item in the Performance AL Server catalog can have user-defined and system properties associated with it.

A property is a user-defined or system attribute with a Name, a Data Type and a Value. The number of properties that an item can have is unlimited.

The Name is a unique identifier for the property. The Value is a simple-type that can contain textual, numerical or date-time information.

Procedure

1. Open a Performance AL Server .
2. Right-click an item and click **Properties > User-defined Properties**.
3. Click **New**.
4. Enter the **Name**, the **Data Type**, and the **Value** for the user defined property.
5. Click **Add**.

The following table shows the data types that are supported for user-defined properties:

Data Type	Possible value
boolean	true/false
byte	0...255



char	Unicode character 0x0000 ... 0xFFFF
datetime	12:00:00 AM, 0001-01-01 ... 11:59:59,31.12.9999
decimal	+79,228,162,514,264,337,593,543,950,335 ... -79,228,162,514,264,337,593,543,950,335
double	$\pm 5.0 * 10E-324$... $\pm 1.7 * 10E308$
guid	unique 128 bit number {F9168C5E-CEB2- 4faa-B6BF-329BF39FA1E4}
int16	-32,768 ... 32,767
int32	-2,147,483,648 ... 2,147,483,647
int64	-9,223,372,036,854,775,808 ... 9,223,372,036,854,775,807
sbyte	-128 ... 127
single	$\pm 1.5 * 10E-45$... $\pm 3.4 * 10E38$
string	Sequential collection of Unicode characters
timespan	-9,223,372,036,854,775,808 ... 9,223,372,036,854,775,807 (can be represented as [-]d.hh:mm:ss.ff)
uint16	0 ... 65,535
uint32	0 ... 4,294,967,295
uint64	0 ... 18,446,744,073,709,551,615

Changing the MIME type of a custom item

You can change the MIME type of a custom item.

The custom item will be opened by the application that is associated with the file extension and the MIME Type of the custom item.

Procedure

1. Open a Performance AL Server .
2. Right-click a custom item  and click **Open**.
3. Use the **MIME Type** field to specify the MIME type.
4. Click **Update**.

Connecting a view item to a database item

After you have created a view item you can open the view in Performance AL Client.

Depending on the installation and configuration of the security providers, Performance AL Server can authenticate the user. Otherwise you have to enter the credentials in order to log on to the specified database when you open a view.


For more information, see “Installing Performance AL Client”.


Procedure

1. If Performance AL Client is not installed, you will be prompted to install it. Once Performance AL Client is installed, the **Connection Information** dialog is displayed.
2. From the Database menu select the **database** you have configured within Performance AL Server.
3. Click **OK**.

Results

The created view is shown. The view displays the data that is stored in the OLAP database.

An exclamation mark on the view icon  indicates a problem. The data source item to which the database item refers could not be found at the specified location.

A spark on the view icon  indicates that the view item is new and does not contain item data. For more information on the status an item can have, see "ItemStatusType Enumeration" in the Performance AL Server API Reference.

Associating a view item with a canvas

After you have created a canvas item you can insert a view item to the canvas as a panel.

Procedure

1. Click the canvas item you have created in Performance AL Explorer.
2. Click **Views**.
3. Select the view to include in the canvas.
4. Click **Open**.

Results

The view shows in the canvas as a panel. The view displays the data that is stored in the OLAP database. More than one view can be associated with a single canvas.

View item

This initial situation is added to help you get started setting up your own environment. A user has a **My Items** folder when a user has the System Permission **Has Private Folder**.

Views can be added in any folder or canvas to organize your own environment.

A view item contains the view definition of the data stored in the OLAP database to which the view refers. A view connects to a database item and that database item connects to a data source.

Shortcut item

A shortcut item inherits the type of the item it refers to. A shortcut can refer to all item types except the item type folder.

Property inheritance

For a shortcut item, system- and user-defined properties are inherited from the referenced item. If an item has a property "New", then shortcuts to this item also have access to the same property "New". When retrieving the list of properties from the shortcut item, the property "New" will be included in the list.

It is not possible to change the value of an inherited property on the shortcut. The value can only be changed on the original item.

If the shortcut itself has a property "New", the value of the property "New" belonging to the shortcut will be retrieved instead of the value of property "New" of the item the shortcut refers to.


In case of a chain of references (shortcuts referencing to shortcuts, referencing to an item) this inheritance continues. This means when you retrieve the properties of the last shortcut Item in the chain, all properties of all (shortcut) items are retrieved.

Database wizard

The Database Wizard enables you to register databases for a data source.

Using the Database Wizard

Procedure

1. Right-click a valid data source  and click **Database Wizard**.
2. Enter the OLAP credentials if they are required by the data source.
3. Click **Login**. An overview of the databases that can be registered is shown.
4. In the **Destination Folder** field, specify the folder where the databases have to be created. By default the **Database Post Search Path** is used. If there is no destination folder specified, the database Items will be created in the current folder.
5. In the **Database Name Prefix** field, specify a prefix for the database name. This optional prefix will be added to the name of the created database item.
6. Click **Register**.

Note: The registration can take some time.

Results

When the databases have been registered, a status overview of the created databases is shown. Click on a link of a registered database to change the settings for preloading or process distribution. The databases are added to the Performance AL Server repository.

You can register the same databases in a different destination folder by specifying another folder.

Process distribution

Process distribution allows you to load cubes into separate sub processes that run parallel to the main process. Performance AL maximizes the memory available for the cubes to be loaded. To extend the process distribution, you can also configure master and slave servers.

When you have enabled process distribution, you can:

- configure process distribution for data source and database items.
- add slave servers to extend process distribution.
- use the isolation level to group specific cubes and load them in separate processes.

Using the combinations of master and slave servers and the isolation levels, you can configure process distribution to exactly fit your needs.

For more information on the installation of Performance AL Server and slave servers, see [Selecting the install components](#).

Note: Process distribution settings are only available if you are logged in as administrator.

The configuration of process distribution consists of the following parts:

- Enabling process distribution on the Performance AL Server.
- Specifying a port range on either the Performance AL master server or the slave server.
- Adding slave servers.
- Setting process distribution on a data source item.
- Setting process distribution on a database item.

How it works

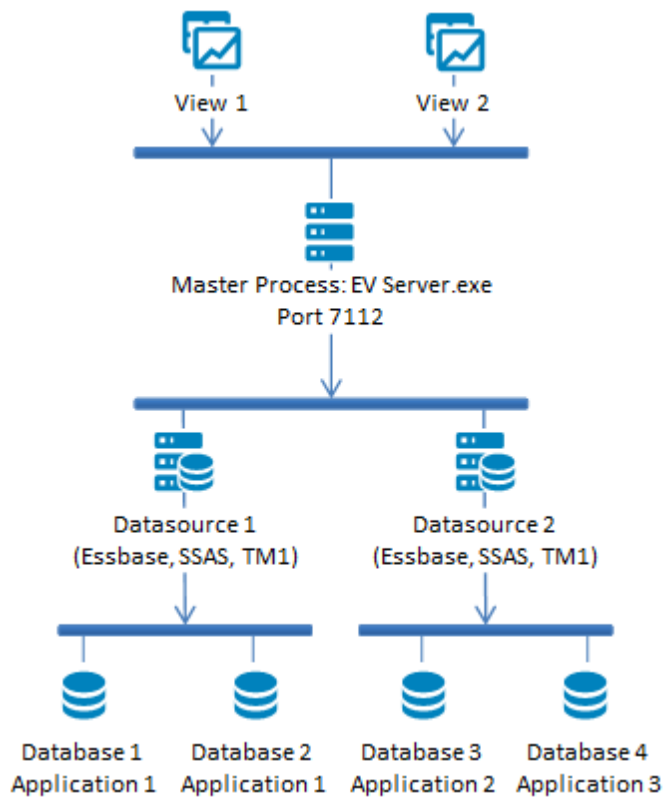
Modern CPUs provide multiple CPU cores, which can work in parallel. Using more than one CPU core increases the performance and uses the CPU more efficiently.

To solve these problems the Performance Analytics Server supports process distribution, where multiple Sub-Processes are being created automatically to distribute the application load and memory usage.

These processes can either be created on the main Performance AL Server machine, or on [Performance AL Server slave installations](#) which can be set up on other physical or virtual machines.

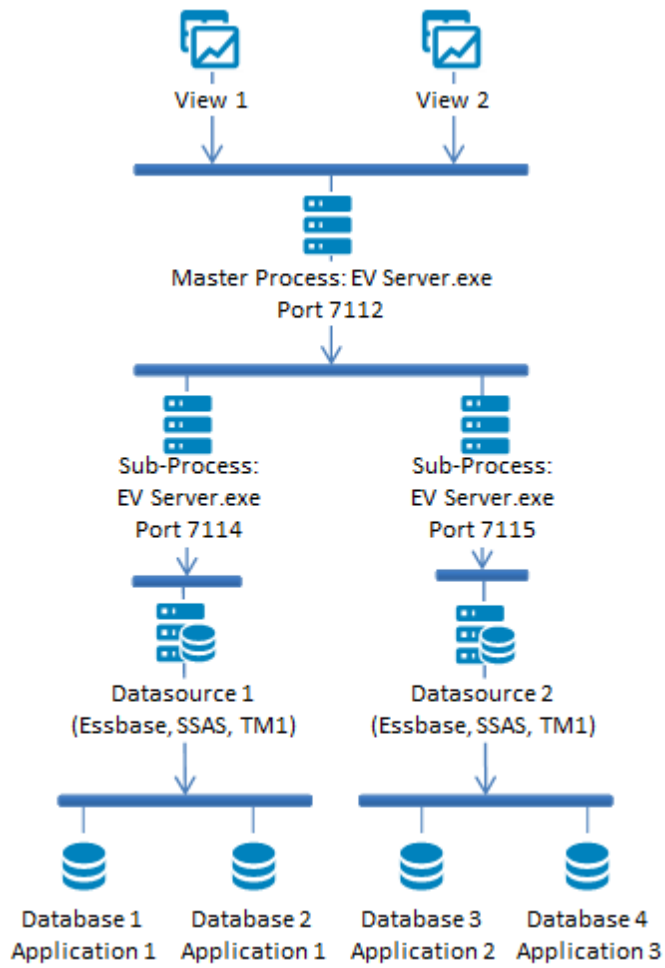
Note: The communication with the Performance Analytics Clients is always being routed over the Performance AL Server Master process.

Default behavior



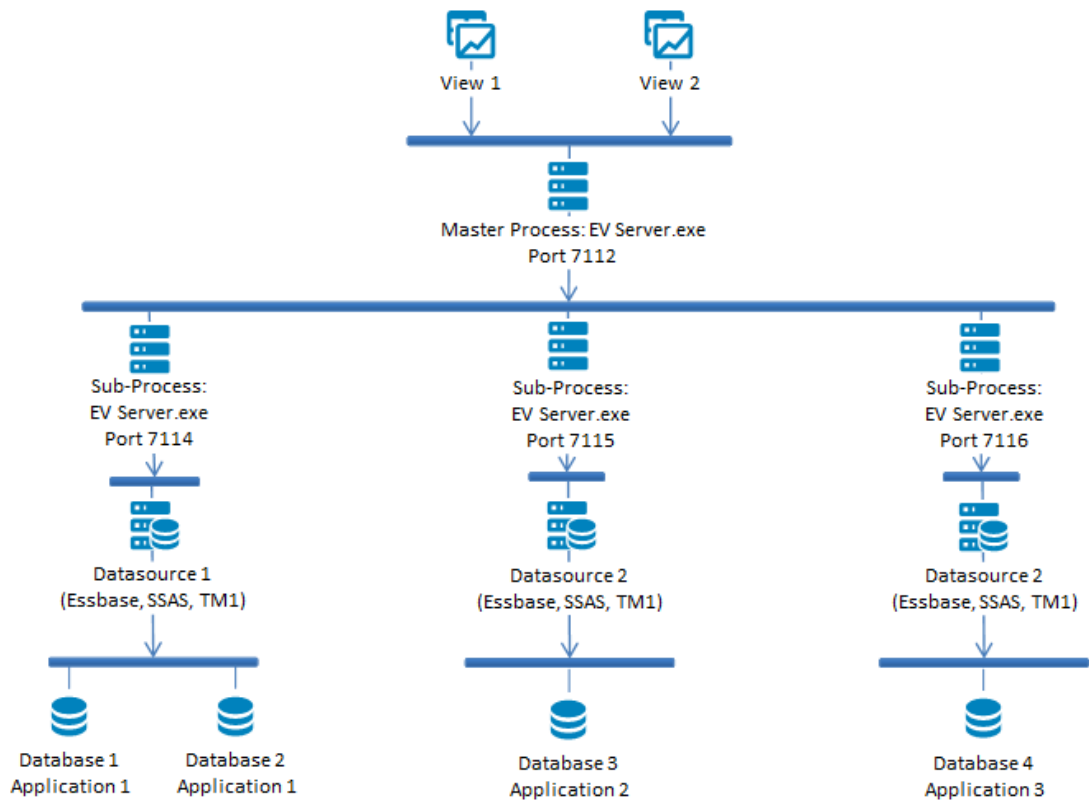
The default behavior of the Performance AL server doesn't use any distribution. All cubes, outlines and data are stored in the memory of the EVServer.exe master process and all client requests are handled by the master process.

Group Cubes from this Data Source



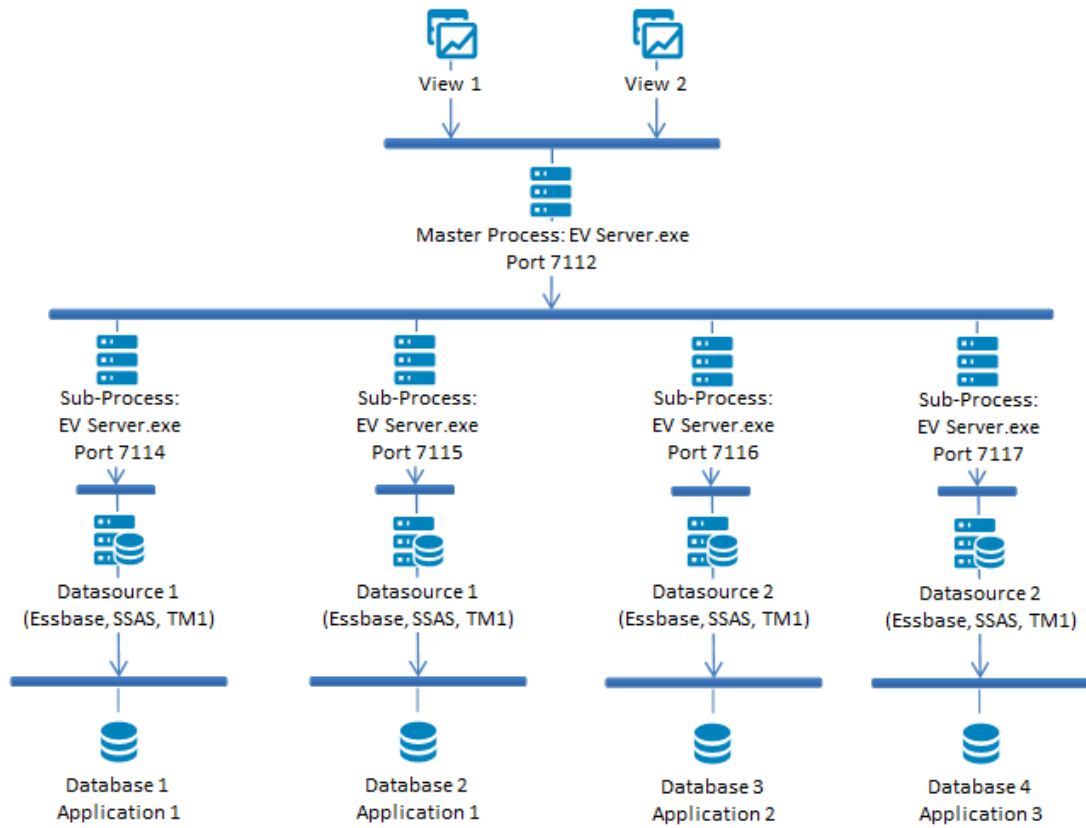
If you choose **Group Cubes from this Data Source**, an EVServer.exe Sub-Process will be created for each configured Data Source.

Group Cubes by Application



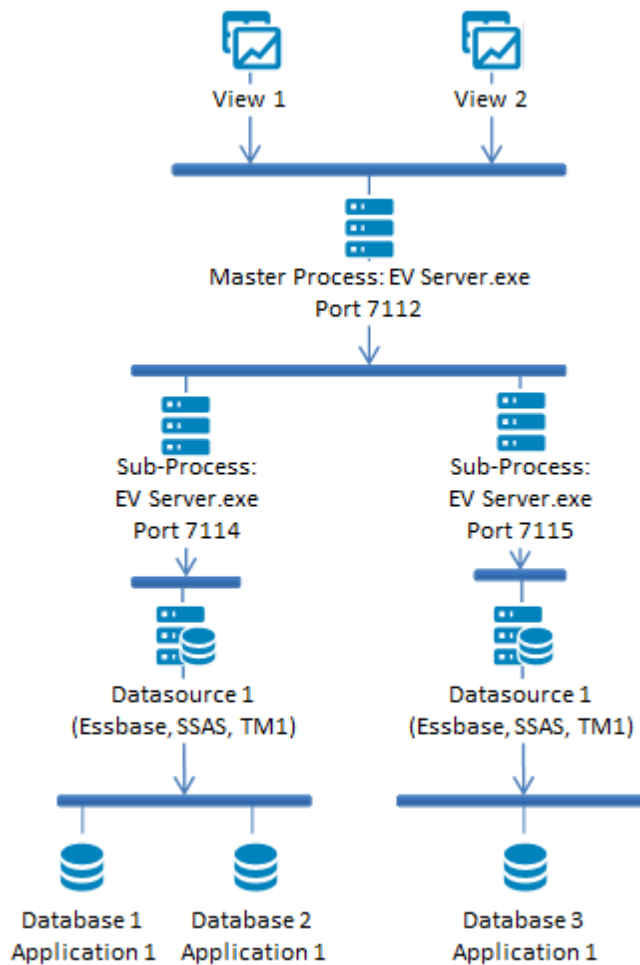
If you choose **Group Cubes by Application**, an EVServer.exe Sub-Process will be created for each Application in Essbase; respectively Catalogs in TM1.

Each Cube separately



If you choose **Each Cube separately**, a new EVServer.exe Sub-Process will be created for each Database.

Inheritance



Process distribution can be configured either on Data Sources or on Databases. By default, Databases inherit from their Data Source and apply their settings. However, in some special cases, it can be necessary to remove this inheritance and define a distribution for a specific Database.

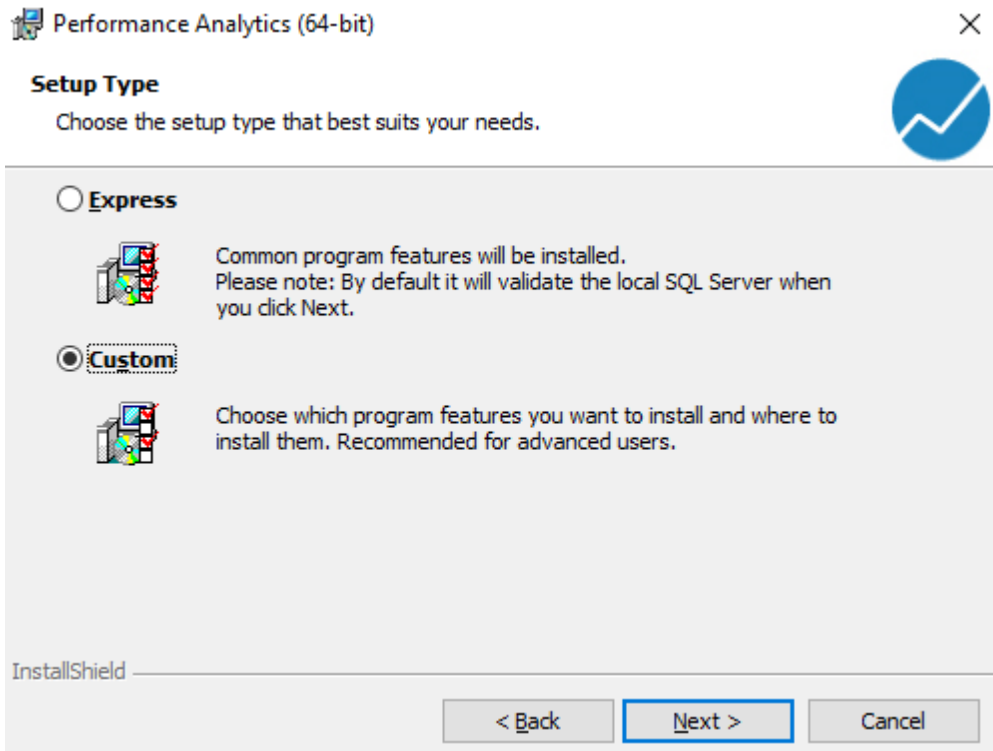
In this example, Datasource 1 is configured to create one Sub-Process for each Application. However, Database 3 should be separated in an extra process as well.

Therefore, the inheritance for Database 3 was disabled and its isolation level set to **This Cube Individually**.

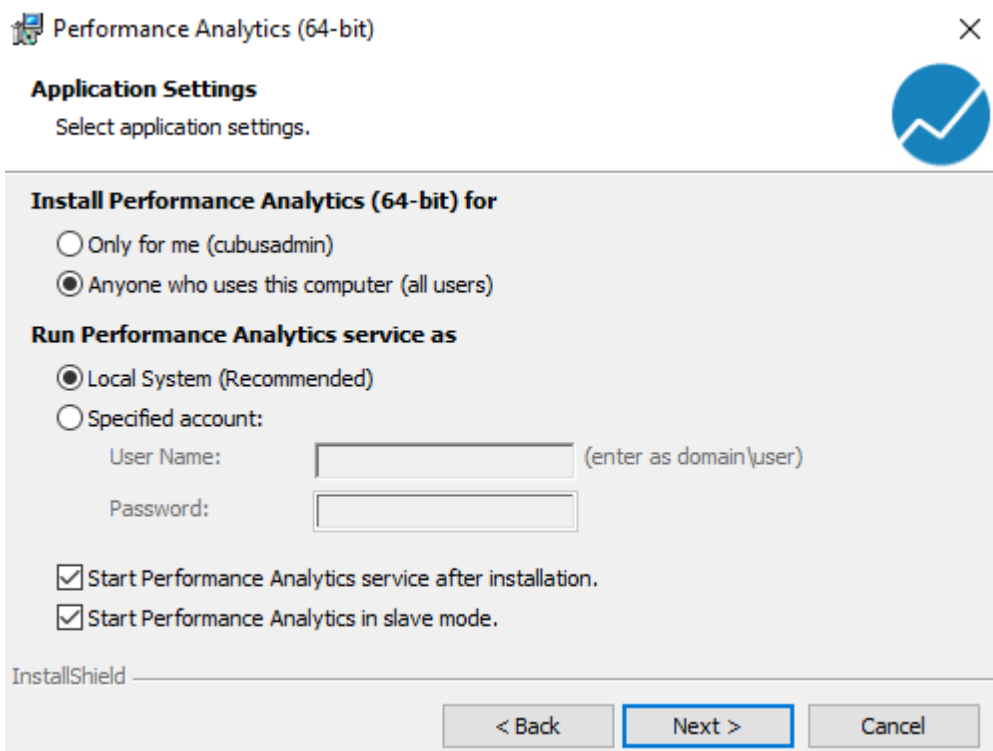
Using Slave Servers

It's possible to distribute the server load and memory usage across multiple physical or virtual machines. Therefore, the Performance AL Server has to be installed in slave mode, which can be selected during the installation procedure.

First, select the **Custom** setup type ...



... and then the **slave mode**.

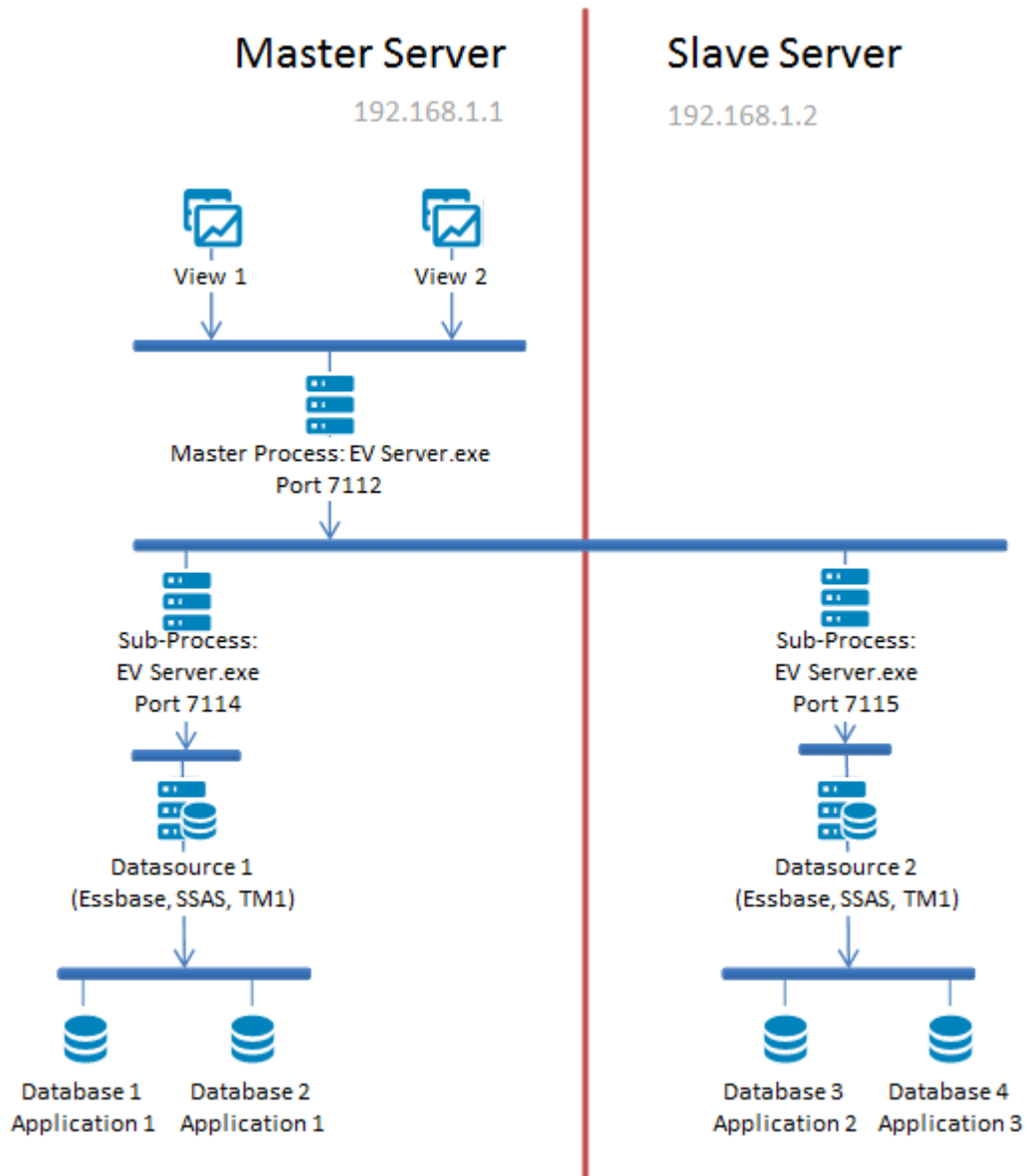


After the installation, they have to be registered on the master server, to make them available for distribution use. See the chapter [Adding a slave server to Performance AL Server](#) for further setup information.

Note: There is no (additional) license file required to run an Performance AL Server in slave mode.

Note: An Performance Analytics Server running in slave mode cannot be accessed by a client directly.

A process distribution using a slave server could look like this.



Enabling process distribution on Performance AL Server

To enable process distribution do the following steps.

Procedure

1. Right-click a Performance AL Server and click **Manage > Settings > Process Distribution**.
2. In the **Process Distribution** section, select **Process Distribution** and click **Update**.
3. **Note:** If no slave servers are configured, a port range on the master server must be

specified to allow the processes to communicate with the Performance AL Server master process.




4. In the **Port Range** field, enter port numbers for example [1;3;5] or a port range, for example [1-12]. Valid Port Numbers are: 1 - 65535.
5. Click **Update**.

Note: If you specify too few ports, the loading of more than one cube may fail.

Configuring process distribution for a data source item

If you have enabled process distribution on the Performance AL Server, you must configure process distribution on a data source item. Do the following steps to select the server and specify the isolation level.

Procedure

1. Open a Performance AL Server .
2. Open a data source item .
3. In the Process Distribution  section, select from the Server list to load the cubes to either the master or the slave server.
4. In the Isolation Level section, select the isolation level for this data source:




Data Type	Possible value
None	All cubes from this Data Source are loaded by the main process on the specified Server.
Group cubes from this Data Source	One sub process is started to load all cubes from this Data Source on the specified Server.
Group cubes by Catalog (see note)	One sub process per Catalog is started to load cubes from this Data Source on the specified Server.
Each Cube separately	A separate sub process is started for each cube from this Data Source on the specified Server.

Note: **Group cubes by Catalog** will be named **Group cubes by Server** when you use TM1 as a data source and **Group cubes by Application** when you use Essbase as a data source.

Configuring process distribution on a database item

After process distribution is enabled on the Performance AL Server, you must configure process distribution for a database item. Do the following steps to set the server location, isolation level.

Procedure

1. Open a Performance AL Server .
2. Open a database item .
3. In the **Inherent From Parent Data Source** section, select if you want the process distribution settings of the database item to be inherited from the data source item it connects to. By default the settings are inherited.
4. In the **Process Distribution**  section, select from the **Server** menu whether you want the cubes to be loaded on the master or the slave server.
5. In the **Isolation Level** section, select the isolation level for this database:

Isolation Level	Explanation
None	This cube is loaded by the main process on the specified server.
Group with cubes from this Data Source	One sub process is started to load all cubes, that use the same data source and have the same isolation level, on the specified server.
Group with cubes from the same Catalog (see note)	One sub process per catalog is started to load all cubes, that use the same data source and have the same isolation level, on the specified server.
This cube individually	A separate sub process is started for this cube on the specified server.

Note: **Group with cubes from the same Catalog** will be named **Group with cubes from the same Server** when you use TM1 as a data source and **Group with cubes from the same Application** when you use Essbase as a data source.

Adding a slave server to Performance AL Server

If one or more slave servers are available, you can specify the slave server to be used for process distribution. To add a slave server do the following steps.

Procedure

1. Right-click a **Performance AL Server > Manage > Settings > Process Distribution**.
2. In the Slave Servers section, click **New**.
3. In the Slave Server Information section, specify the following:
 - In the **Name** field, type a unique name.
 - In the **Location** field, specify a valid location for the slave server. You can extend the location with :ServerPortNumber. You must specify the **ServerPortNumber** when it is set to a value other than 7112. The ServerPortNumber is set in the EVServer.exe.config file.
For more information, see Editing the configuration file.
 - In the **Port Range** field, enter port numbers or port ranges. Port numbers are specified as 1;3;5;7. Port ranges are specified as 1-3;5-12. Valid Port Numbers are:


1 - 65535.


Note: If you specify too few ports, the loading of more than one cube may fail.

4. Click **Add**.

Results

The slave server will be added to the list of configured slave servers.

This icon  indicates that the slave server is running.

This icon  indicates one of the following problems:

- The version of the slave server is not the same version as the master server.
- The location of the slave server is not valid.
- Communication with the slave server is not possible.

Accounts

An account can be made for a single user, for a group of users, or for a user role.

System Roles (with their **Permissions**) are attached to an account. This is called a system policy.

Item Roles (with their **Permissions**) are attached to an account and to an item. This is called an item policy.

After installation of Performance AL, only the account **Everyone** appears. The created account **Everyone** represents all users that can be validated by the installed **Security Provider**.



Accounts are added when setting **Item Policies** or **System Policies**. Accounts cannot be added individually.

Performance AL Server uses the specified accounts through one or more **Security Providers**. Performance AL Server does not have accounts of its own.

When a system or item policy is set for a specified account, this account appears on the **Accounts** list.

Viewing Accounts

Procedure

1. Right-click a Performance AL Server and click **Manage > Security**  **> Accounts**.
2. In the  **Accounts** section you can view the available accounts.

Security

Performance AL Server security can be divided in two groups: system security and item security.

This means it is possible to set permissions: item permissions and system permissions.

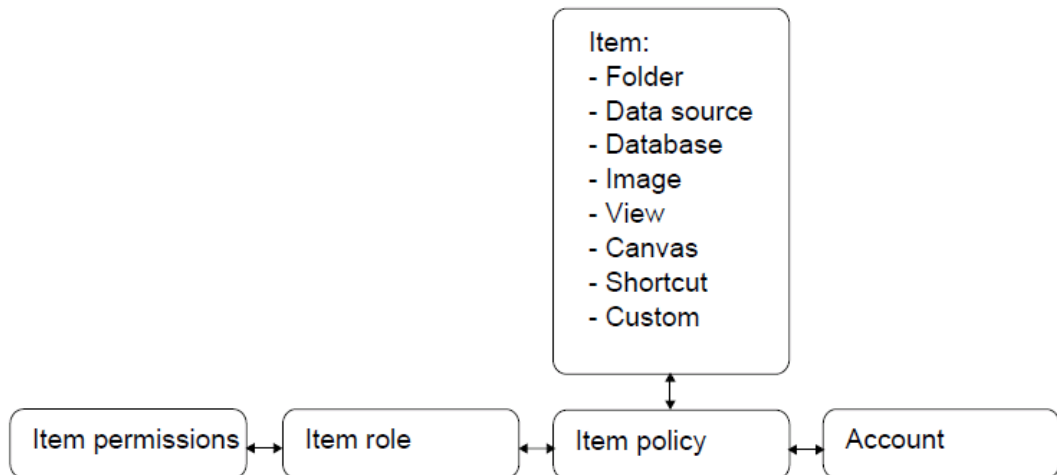
Item permissions apply to items in the repository.

System permissions apply to the system: Performance AL Server.

Note: A built-in administrator can always manage the security on a Performance AL Server by using Performance AL Explorer. This is to prevent administrators from creating a situation where they are locked out or cannot access Performance AL Server as a result of changing the System Security settings.

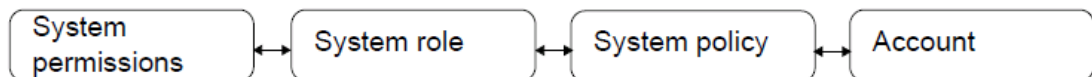
Item security

An item role (with its item permissions) is attached to an account and to an item. This is called an item policy.



System security

A system role (with its system permissions) is attached to an account. This is called a system policy.



To be able to organize and structure permissions, they are attached to roles. A role contains one or more permissions.

The item permissions and system permissions are a fixed set of permissions. After installation, several item roles and system roles are created, to help you get started with Performance AL Server security. You can modify, delete, and to create new roles.

After the installation of Performance AL Server, one system policy is added. For the root item and the items **\$Private Items** and **System** one item policy is added. These policies can be modified, or deleted and you can create your own policies.

Sessions

To apply system and item security, Performance AL Server must be able to authenticate a user. This is done via a session.

A Performance AL Server session is created when a user logs on to Performance AL Server. After the user is successfully authenticated, the Performance AL Server retrieves the appropriate permissions, for example to use views or to connect to an OLAP database. During the creation of a session, credentials are passed to the Performance AL Server. Performance AL Server will pass these credentials to a configured security provider. This security provider validates whether the user is allowed to log on to the system with the specified credentials. Once a session is created, this session provides the access to Performance AL Server.

A session can be created by a portal (for example Performance AL Explorer) by using the `CreateSession` method, or by Performance AL Client creating an instant session.

For more information about the `CreateSession` method, see the *Performance AL Server API Reference*.

For information about Security Providers, see *“Configuring the security provider”*.

Item permissions and roles

You can set permissions on an item. A named combination of these permissions is called an Item Role.

Available permissions

The next table shows the available permissions.

Permission	Description
List	List the items in the parent folder.
Read	Read the contents of an item.
Modify	Modify an item.
Manage	Manage an item. Items can be created, deleted, and renamed.
Full Control	With Full Control permission, you can change the security on an Item.

For comments, the following permissions are available.

Permission	Description
Manage Comments	Manage the comments of all users in the database.
Write Comments	Read all comments, write and modify your own comments in the database.
Read Comments	Read all comments in the database.

Permissions implications

Item permissions are dependent on each other. Setting a permission may imply other permission settings. The next table shows an overview of these implications.

x = set permission

o = implied permission

	Full Control	Manage	Modify	Read	List
Full Control	x				
Manage	o	x			
Modify	o	o	x		
Read	o	o	o	x	o
List	o			o	x

For comments, the item permissions partially depend on each other as well. The following table shows how the permissions are implied.

	Manage Comments	Write Comments	Read Comments
Manage Comments	x		
Write Comments	o	x	
Read Comments	o	o	x

Setting permissions for an item

Procedure

1. Right-click a Performance AL Server and click **Manage > Security > Item Roles**. The available predefined Item Roles are shown.
2. Click an item role and set the permissions.
3. Click **Update**.

Comments

Comment item permissions take only effect when they are set on a **Database** item. Then, the policy applies for all views, which use this particular database item as its data source.

Item roles

An item role contains item permissions. After installation, the following predefined Item Roles are available.

Item role	Description
Administrator	Has these permissions: Full Control Manage Modify Read List Manage Comments Write Comments Read Comments
Author	Has these permissions: Manage Modify Read List Write Comments Read Comments
Consumer	Has Read permissions.
Reviewer	Has Read and List permissions.

Adding an item role

Procedure

1. Right-click a Performance AL Server and click **Manage > Security > Item Roles**. The available predefined **Item Roles** are shown.
2. Right-click and click **New Item Role**.
3. Specify the following for the item role:
 - A Name
 - A Description
 - The Item Permissions
4. Click **Add**.

Opening an item role

When you open an item role you can modify the item role and set its permissions.

Procedure

1. Right-click a Performance AL Server and click **Manage > Security > Item Roles**. The available **Item Roles** are shown.
2. Right-click an item role and click **Open**.

Item Policies


After installation of Performance AL, an item policy is added for the root item. This policy gives the account **<Everyone>** the item role **Reviewer**. This means all users, that are allowed to log on to Performance AL Server, can read and list the items in the repository.

For the items **\$Private Items** and **System** an item policy is added that gives the account **<Everyone>** the item role **Consumer**. This means all users, that are allowed to log on to Performance AL Server, can read the items. This is necessary in order to let users access databases or data sources that are specified in the System folder.

An item role with its **Item Permissions** is attached to an account and to an item. This is called an item policy. You can set an item policy on an item.

Adding Item Policies

Procedure

1. Open a Performance AL Server .
2. Right-click an item and click **Properties > Policies > New**.
3. Specify the following:
 - The Account Type
 - The Account Name
 - One or more Item Roles
4. Click **Add**.

System permissions and roles

You can set permissions for a system. A named combination of these permissions is called a System Role.

Available permissions

The next table shows the available permissions.

Permission	Description
Logon	Logon to Performance Analytics Server. If this permission is not set for a system role, then the user cannot create a session and is refused to logon to Performance AL Server.
Manage Roles	Create, view, modify and delete roles.
Manage System Policies	Create, view, modify and delete System Policies.
Manage Sessions	View and invalidate sessions.
Manage Item Policies	Create, view, modify and delete Item Policies.
Manage Folders	Create, modify and delete folders.
Manage Views/Canvases	Create, modify and delete views and canvases.

Manage Databases	Create, modify and delete databases.
Manage Data Sources	Create, modify and delete data sources.
Manage Images	Create, modify and delete images.
Manage Custom Items	Create, modify and delete custom items.
Manage Logging	View logging.
Manage Subscriptions	Create, modify and delete subscriptions.
Has Private Folder	Allowed to have a Private Folder. Note: If this permission is not set for a role, then the ev client doesn't show the following folders in the backstage area for this user: <ul style="list-style-type: none"> • Recent Views • My Views • My Templates
Use Comments	Use any comment related functionality.
Use Subscriptions	Determines if the subscription functionality is available to the user.

The following system permissions apply for the corresponding item type:

- Manage Folders
- Manage Views/Canvases
- Manage Databases
- Manage Data Sources
- Manage Images
- Manage Custom Items.

The user that has these permissions, can create, modify and delete the item types at system level. For individual items, you have to set the item permissions.

For example: in order to set item policies on an item, a user needs to have the system permission **Manage Item Policies** and the Item Permission **Full Control** on the item for which to set the policy.

Setting system permissions

Procedure

1. Right-click a Performance AL Server and click **Manage > Security > System Roles**. The available predefined **System Roles** are shown.
2. Click a system role and set the permissions.
3. Click **Update**.

System roles

A system role contains system permissions. After installation, the following predefined System Roles are available.

Permission	Description
System Administrator	Has all system permissions, except the Has Private Folder system permission.
Logon	Has Logon Permission, has a private folder and can use comments.

Adding System Roles

Procedure

1. Right-click a Performance AL Server and click **Manage > Security > System Roles**. The available predefined **System Roles** are shown.
2. Right-click and click **New System Role**.
3. Specify the following for the system role:
 - A Name
 - A Description
 - The System Permissions
4. Click **Add**.

Editing system roles

When you open a system role you can modify the system role and set its permissions.

Procedure

1. Right-click a Performance AL Server and click **Manage > Security > System Roles**. The available **System Roles** are shown.
2. Right-click a system role > **Open**.

System Policies

System Roles (with their system **Permissions**) can be attached to an account. These are called System Policies.

After the installation of Performance Analytics, two System Policies are added: **Logon User** and **Evaluation User**. For information on the Evaluation User, see [Evaluation roles and policies](#).

Logon User

A system policy is added that gives the all users the system role **Logon User**.

This means that all users in the account **Everyone** can logon to Performance AL Server, which is needed in order to create a session.

Adding System Policies

Procedure

1. Right-click a Performance AL Server and click **Manage > Security > System Policies**.
2. In the Policies section, click **New**.
3. Specify the following:
 - The Account Type
 - The Account Name
 - One or more System Roles
4. Click **Add**.

Evaluation roles and policies

Some users who evaluate Performance AL do not have local administrator permissions. If a user does not have the local administrator permissions, the restricted permissions that are defined for the default Everyone Account will be used.

For evaluation purposes, evaluation roles and policies are available.

The **Evaluation User** system role and item role offer administrator permissions to change the Performance AL repository. After evaluation and defining the desired repository security, remove the **Evaluation User** roles. They should not be available in a production environment.

Note: The Evaluation User roles are created only after initialization of the Performance AL repository. The Performance AL repository is initialized when Performance AL Server is started for the first time.

Initial situation

To set the system so that all users have access during evaluation:

- The role Evaluation User is added to System Roles and item roles.
- The policy Evaluation User is added to System Policies and item policies.

Evaluation User system roles

The properties for a user can be changed according to the role that is set.

For the **Evaluation User** system role the following **Permissions** are set initially:

- Logon
- Manage Roles
- Manage System Policies
- Manage Sessions
- Manage Item Policies
- Manage Folders
- Manage Views/Canvases

- Manage Databases
- Manage Data Sources
- Manage Images
- Manage Custom Items
- Manage Logging
- Has Private Folders

Changing properties of the Evaluation User system role

Procedure

1. Right-click a Performance AL Server and click **Manage > Security > System Roles**.
2. Click the Evaluation User system role.
3. Change the following properties of the system role:
 - **Name**
 - **Description**
 - **Permissions**
4. Click **Update**.

Evaluation User item roles

For the **Evaluation User** item role the following **Permissions** are set initially:

- List
- Read
- Modify
- Manage
- Full Control

Changing properties of the Evaluation User item role

Procedure

1. Right-click a Performance AL Server and click **Manage > Security > Item Roles**.
2. Click the **Evaluation User** item role.
3. Change the following properties of the item role:
 - Name
 - Description
 - Permissions
4. Click **Update**.

Viewing the system policy Evaluation User

The policy **Evaluation User** has been added to **System Policies**. You can add this system policy to an item.

Procedure

1. Open a Performance AL Server.
2. Right-click an item and click **Properties**.

Results

In the Policies section, the Account Evaluation User is shown.

Active Sessions

If you have the system permission to manage sessions then you can view and terminate active sessions of Performance AL on a Performance AL Server.

Viewing Active Sessions

To view active sessions and the last used session of Performance AL on a Performance AL Server.

Procedure

1. Right-click a Performance AL Server and click **Manage > Activity & Log > Active Sessions**. In the Active Sessions table, the active sessions of Performance AL are listed with the following details:
 - **User**
 - **Host address**
 - **Creation time**
 - **Last used**. Last used is updated when a user performs an action on Performance AL Server.
 - **Description**
2. You can sort the table of **Active Sessions** by clicking on a detail you want to sort on.

Terminating Active Sessions

You cannot terminate your own session within Performance AL Explorer. You can only terminate other sessions.

Procedure

1. Right-click a Performance AL Server and click **Manage > Activity & Log > Active Sessions**.
2. In the **Active Sessions** table, select the active session you want to terminate and click **Terminate**.
3. Click **Yes**.

Server Log

The Performance AL Server log contains the following entries:

Log entry	Explanation
Category	Shows the category of the log. For example General, or Security.

Component	Shows the component that logged the log entry. For example the Security Provider or the Catalog Provider.
Level	Shows the log level.
Message	Contains the actual log message.
Process ID	Contains the ID of the Performance AL Server Process.
Thread ID	Contains the ID of the thread in the Process.
Session ID	Contains the ID of the Session.
Date-Time	Contains the date and time.

Showing and browsing the Log entries

Procedure

1. Right-click a Performance AL Server and click **Manage > Activity & Log > Log entries**.
2. If you have process distribution enabled with master and slave servers, you can specify the server for which you want to view the log entries.
3. You can browse the **Log entries** by clicking the following buttons:
 - First
 - Prev
 - Next
 - Last

Setting a filter on the Log entries

You can set a filter if you do not want to see all Log entries.

Procedure

1. Right-click a Performance AL Server and click **Manage > Activity & Log > Log entries**.
2. Click **Filter**. The following table lists the available filter options.

Filter	Explanation
Thread ID	Specify the Thread ID to view the log entries for, or "*" for all.
Session ID	Specify the Session ID to view the log entries for, or "*" for all.
Process ID	Specify the Process ID to view the log entries for, or "*" for all.
Level	Severe The less detailed level.

	<p>Only severe errors are logged. These are errors that may cause a situation where Performance AL Server is unusable.</p> <p>Error All errors are logged. These are situations where Performance AL Server can run but a provider cannot be started.</p> <p>Warning Warnings are logged, for example when a provider is not correctly configured.</p> <p>Info Information is logged, for example the start and stop of Performance Analytics.</p> <p>Verbose More detailed information is logged, for example the loading of the catalog items.</p> <p>Trace The same information as in Verbose is logged, only more detailed.</p> <p>Debug The most detailed level. All possible information is logged.</p> <p>Note: The levels Severe, Error and Warnings give you information about (possible) errors that occur in Performance AL Server.</p> <p>The levels Warning, Info and Verbose contain information about the status or activities of Performance AL Server.</p> <p>The levels Trace and Debug are recommended in case you experience problems with Performance AL Server and you want to see all detailed information.</p>
Sort order	Ascending or Descending
Components	<p>For more information, see <i>“Components used by Performance Analytics”</i>.</p> <p>The possible Components are: Server</p>

	The Log providers are: LogProviders.Event LogProviders.File LogProviders.Mail LogProviders.Oracle LogProviders.SQLServer LogProviders.XML
Components	The Catalog providers are: CatalogProviders.Oracle CatalogProviders.SQLServer
Components	The Categories are: Configuration General InternalError ParameterValidation Security ServerProtocol Session UnsupportedType WorkerProcessProtocol
Begin Date-Time	The start date for the filter.
End Date-Time	The end date for the filter.

Activity Log

The activity log is a easy way to see which items are used in Performance Analytics. It can be found by right-clicking a Performance AL Server and choosing **Manage > Activity & Log > Activity log**.

The activity log contains the following columns:

Property	Explanation
Path	The path under which the item can be found in folder hierarchy.
Type	The type of the item (i.e. View)
Accessed	Then time stamp when the item was last opened by a user
User	The user that last accessed the Item
Created	The time stamp when the item was created

Modified	The time stamp when the item was last modified and saved
Description	The description of the item if there was any set
Count	The number of times the item was accessed

Search paths

Performance AL Server has a search logic for resolving items that are referenced. Some item types link to another item. For example a view item can link to a database or an image, or a shortcut can link to any other item type.

The search order to find these linked items is:

1. The search **Pre paths**.
2. Search in the current folder and its ancestor folders from the specified item to the root folder.
3. The search **Post paths**.

For the item types data source, database and image, the search **Pre paths** and the search **Post paths** can be set. By default, the search **Pre paths** is empty and the search **Post paths** is the first sub folder in the **System** folder with the item type name. For example for item type images this is **/System/Images**.

Setting the search paths

Procedure

1. Right-click a Performance AL Server and click **Manage > Settings > Search Paths**.
2. For the item types **Data Source**, **Database** and **Image** you can set the **search paths** in the **Pre path** and **Post path** fields. You can define multiple search paths on new lines. Press the Enter key to create a new line.
3. Click **Update**.


Monitoring

You can monitor the present users and the number of users who have connected to a Performance AL Server over a period of time using Monitoring.

Note: Only users of Performance AL Client are registered. Users of Performance AL Explorer and Performance AL Desktop Explorer are not registered.

Viewing named users


Procedure

1. Right-click a Performance AL Server and click **Manage > Monitoring** .
2. Select **Named Users**.

3. The **Named Users** table shows the individual users of Performance AL Client that have connected to the system at any time. For each user the following data is shown:
 - **User Name**
The name of the user
 - **Security Namespace**
The security provider that is used by the user.
 - **First Connected**
The date on which the user first connected.
 - **Last Connected**
The date on which the user last connected.

Viewing concurrent users

Procedure

1. Right-click a Performance AL Server and click **Manage > Monitoring** .
2. Select **Concurrency counters**
3. The **Concurrency counters** table shows the maximum number of simultaneous connections to Performance AL Server per day. The following data is shown:
 - **Date**
The date for the concurrency counters
 - **Timestamp**
The time of the day when the maximum of concurrent users was attained for the first time. Note that this value is only populated since the 8.7.0 release and is set to 00:00:00 for all prior entries.
 - **Concurrent Users**
Represents the maximum number of users that access the system simultaneously on this date.
 - **Maximum concurrent users**
The maximum number of concurrent users that are registered on any day.

Note: If no user does log on or off on a particular day, that day will not be shown in the list of concurrent users.

Integration

Portal Integration

It is possible to integrate Performance AL in custom websites and company portals. If the portal has a login mechanism it is possible to automatically sign on in Performance AL. The following steps need to be carried out in order to do this.

Portal Web Page

The portal integration web page should be used in order to integrate Performance AL in portals. The portal integration web page can be found in the Performance AL Explorer

web application. For example:

```
http://<ServerName>/EVExplorer/PortalIntegration.aspx
```

This web page should be called or embedded in the portal you wish to integrate into, and the appropriate parameters should be specified.

The portal integration web site accepts the following parameters:

- **UserName** – The user connecting to the Performance AL server.
- **UserToken** – The authentication token that is used for verifying user access.
- **Item** – The full path to the view or canvas that should be displayed.
- **ServerName** – The server name to be used for authentication. (Optional).
- **Authentication** – The authentication provider to be used for verifying the user. (Optional).
- **ViewType** – The view type to be displayed. (Optional).
 - Static – Static Report, no user interaction.
 - OffgridOnly – OffgridOnly Report, allowing the user to select off-grid items.
 - UIActive – UiActive Report, allowing the user to add and/or remove columns/rows.
 - Adhoc – Adhoc The entire Performance AL functionality can be used for the creation, development, and modification of workbooks. This does not include save.
 - AdhocSave – Full Performance AL functionality including save.
- **Pov** – The point of view to be displayed. The member or the alias displayed in the Performance AL view must be passed; it is not possible to pass an alias from an alias table that is not in use. (Optional).
Pov=<Dimension1>=<MemberOrAlias>|<Dimension2>=<MemberOrAlias>

```
http://<ServerName>/EVExplorer/PortalIntegration.aspx?UserName=MyUser  
&UserToken=MyUserToken&Item=/Views/MyView&ServerName=Server&Authentication=Essb  
&ViewType=Adhoc&Pov=Dimension1=MemberName|Dimension2=MemberName
```

User Token

The user token must be retrieved from the repository in order for a successful login. This user token must then be passed to the portal integration web page with the corresponding user name. After a successful login, this user token will be changed and will need to be read again for the next time that the page is loaded.

An example SQL query can be seen below, showing how the user token can be read from the repository.

```
SELECT p.Value FROM CATALOGITEM c, PROPERTY p  
WHERE c.ID = p.ITEMID  
AND c.TYPE = 9  
AND p.Name = '_UserToken'
```

```
AND c.NAME = '<User_Name>'
```

Connection User

The portal integration web site uses a connection user in order to connect to the data source. The passed user name is given a prefix, in this case "CubusEV_". This means that the resulting user name that is used for creating an Performance AL session is "CubusEV_<UserName>". This user will also be used for the data source credentials.

This means, for example, if you are using Essbase as an authentication provider, the user "CubusEV_<UserName>" will need to be configured, this can be done with the UserManagement console.

User Management

Users in Performance AL can be managed using the UserManagement console application. Please refer to the documentation in [UserManagement](#)

Limitations

When using Essbase as security provider, only the Essbase native directory is supported.

CXO Software Integration

It is possible to integrate into CXO Software. The minimal required CXO version is 6.3.2.

There are two ways to integrate Performance AL in CXO Software.

1. Define a link to an existing report.

- **Item** – The path to the view that should be opened.
- **UseAliasTableForSetPov** – This parameter defines which alias table in Performance AL will be used to set the members, CXO typically passes the member name. This parameter will be used to set the point of view and then the stored alias table will be used to display the alias names in Performance AL.
- **POV** – The point of view to be set in the offgrid. This is to be defined in the following way.

```
pov=Dimension1:Member1|Dimension2:Member2
```

CXO has a mechanism to dynamically read the current selections for dimensions. For example, "YER":"[YER].name". Please see the CXO documentation for further explanation of this functionality.

An example can be seen below.

```
http://localhost/EVServer/?Toolbar=True&Tabbar=True&Item=/CXO/CXO  
PL&pov="YER":"[YER].name"| "PER":"[PER].name"&UseAliasTableForSetPov=Name
```

2. Click on the start Adhoc analysis button

The start Adhoc Analysis button in CXO opens Performance AL and creates a table based on the current CXO point of view. This allows users to perform an adhoc analysis based on a CXO report. A link to Performance AL has to be defined in CXO Software in order to use this functionality. See the CXO documentation in order to configure this functionality.

Comments

When comments shall be used, ensure that the following configuration has been applied correctly.

Database and Data Source settings

The database must be configured to allow comments. There are two options available to achieve that.

1. Navigate to the **Data Source** item which is shall be allowed
2. Select an **Allow Comments** option
 - **Never**
Disables comments for all **Database** items which use this Data Source, regardless of their **Allow Comments** checkbox state.
 - **Always**
Enables comments for all **Database** items which use this Data Source, regardless of their **Allow Comments** checkbox state.
 - **Database Specific**
Allows to configure the **Allow Comments** setting per **Database** item individually. The checkbox of the **Database** item applies now.

System roles

The logged in user has to be allowed to **Use Comments** in general.

1. Right click on a Performance AL server and select **Manage**
2. Click on **System Roles**
3. Select the role, which shall be allowed to use comments
4. Ensure, the **Use Comments** checkbox is checked
5. Click **OK**

System policies

Also ensure, that the user which shall use comments, owns a System Role which is allowed respectively.

1. Right click on a Performance AL server and select **Manage**
2. Click on **System Policies**
3. Ensure the users, which shall be allowed to use comments, have the correct **System Roles** assigned

Item roles

Define, which item role has which comment permission. An user can be allowed to read,

write or manage comments. For a more detailed description see [available permissions](#).

1. Right click on a Performance AL server and select **Manage**
2. Click on **Item Roles**
3. Select the role, which shall be configured for certain comment permissions
4. Check or uncheck the corresponding checkboxes depending on the required user permissions

Item policies

The detailed user permissions for Read, Write and Manage Comments have to be set for each Database item individually.

1. Navigate to the **Database** item for which the user permissions shall be configured
2. Click on **Properties**
3. Update policy settings for this item by adding or removing user and role combinations correspondingly

Desktop Application

This chapter describes how to create a deployment package for the Desktop Application. During the first start of the server after the software installation the Desktop App deployment package is created automatically.

It may be required to create additional packages using the Performance AL Explorer in the following scenarios:

- deploy different versions for different environments (e.g. test and production) to the same client machine
- deploy a hotfix

The source files for creating the package are located in the folder "*<INSTALL_DIR>\Server\DesktopApp*".

Any changes to the source must take place in this folder.

The deployment package is created in the **output directory** "*<INSTALL_DIR>\Server\WebService\EVDesktopApp*".

In order to install multiple Desktop Application versions on the same client machine a unique ID is required. This is often the case when a newer software version is installed on the test server and an older software version is installed in the production environment. This may also be the case when using multi-production server deployments. E.g. one server for Europe and a second server for Asia. The **assembly identity name** is used for identifying a unique client. **Product name** is the visible name of the Performance AL Desktop Application, and it appears in the start menu. These values need to be unique in order for different client versions to be deployed in parallel to the same client machine.

Warning: If the assembly identity name is changed, all users need to install a new

Performance AL Desktop application using the URL: <http://<yourservername>/EVServer/EVDesktopApp> and uninstall the old one (if they don't need it). Otherwise there will be two (or more) versions of the Performance AL Desktop application in the system.

Version number is the number for the next package. It will be automatically increased every time you create a new package.

We recommend to sign the deployment package. Therefore you need a code signing certificate. The certificate file has to be copied in the directory "*<INSTALL_DIR>\Server*". In the section **appSettings** in the file *EVServer.exe.config* add the key **CodeSigningCertFileName** with the certificate file name as value and the key **CodeSigningCertFilePassword** with the encrypted password for the certificate as value.

Note: The certificate password has to be encrypted with the tool "*<INSTALL_DIR>\Server\Tools\PasswordEncrypt*" before you add it to the **appSettings**. During package creation the server checks for an internet connection. If there is no certificate specified or no internet connection exists, the package will be created, but **not signed with the certificate**. In this case the package will get a **publicKeyToken** equal to 0. During installing or updating the Performance AL Desktop Application on the client machine the "Unknown Publisher" security warning appears on the client machine. The client will receive the same warning if there is no internet connection when installing the package.

If you do not provide a code signing certificate but you want to install multiple Desktop Applications on the same machine from different locations, every package must have a **different version number**. Otherwise it will **not be possible to install** a second application with the same version and the same **publicKeyToken**.

8. Performance AL Desktop Explorer

Performance AL Desktop Explorer provides a user interface to Performance AL Server via Microsoft Windows Explorer.

Performance AL Desktop Explorer is a client application for Performance AL Server. Performance AL Desktop Explorer creates a virtual folder in Microsoft Windows Explorer that is called My Performance AL.

You can use this virtual folder to perform tasks similar to those of Performance AL Explorer. The use of Performance AL Desktop Explorer is similar to the use of other folders and files in Microsoft Windows Explorer. You can use the commonly used Microsoft Windows procedures, such as Drag&Drop and Copy&Paste, to perform tasks.

Note:


Desktop Explorer does not support OAuth2.0 and OIDC security providers.

Starting Performance AL Desktop Explorer

You can start Performance AL Desktop Explorer in two ways.

Procedure

Do one of the following:

- Double-click the Performance AL Desktop Explorer icon () on your desktop.
- Start Microsoft Windows Explorer.

Windows Setting Show all Folders

In order to use the Performance AL Desktop Explorer within the navigation area of the windows explorer, the option "Show all folders" needs to be activated.

This can be found within the folder options of windows.

Changing the language of Performance AL Desktop Explorer

You can change the language of Performance AL Desktop Explorer after the installation of the software by changing the installation files of the Performance AL Desktop Explorer.

Procedure

1. In Microsoft Windows, click **Start > Settings > Control Panel**.
2. Double-click **Add or Remove Programs**.
3. Click Performance AL Desktop Explorer.
4. Click **Change**.
5. On the Performance Analytics Desktop Explorer setup screen, click **Next**.
6. On the **Program Maintenance** screen, click **Modify > Next**.
7. Select the desired language and click **Next**.

8. Click **Install** and **Finish** to set the desired language.


Adding a Performance AL Server

When you start Performance AL Desktop Explorer for the first time, there will be no servers available.

Except when Performance AL Server is running on the system where you installed Performance AL Desktop Explorer the Server will be automatically added.

Procedure

1. Right click the **My Performance AL** window and select **Add Server**.
2. Specify the following:

- In server name field  the name of the Performance AL Server
- A **Description** of the Server
- The **Location** of the Server
Depending on the server protocol of the Performance AL Server the location is either tcp://<Servername>, http://<Servername> or https://<Servername>.

Note: If you want to add a Performance AL Server with a version number before 8.5 you have to use either http://<Servername> or https://<Servername>.


- If you want to use **Automatic Logon**.
 - The Security **Namespace**.
3. Click **OK**.

Removing a Performance AL Server

You can remove Performance AL Servers that are listed in Performance AL Desktop Explorer.

Note: If you remove a Performance AL Server via Performance AL Desktop Explorer, then the Performance AL Server is not removed from the system. Only the reference to the Performance AL Server will be removed from Performance AL Desktop Explorer.

Procedure

1. Right-click a Performance AL Server  and click **Delete**.
2. Click **Yes**.

Items

A Performance AL Server contains a repository with items. Items can be of the following type:

- Folder
- Data source
- View
- Canvas

- Image
- Custom item
- Shortcut

The item type **View** contains the view of the data stored in the OLAP database. A view connects to a database. A database connects to a data source.

The item type **Canvas** contains a collection of views.

The item type **Image** can be used as background image in a chart.

The item type **Folder** can be used to organize items in a folder structure. A folder can contain child items of all defined item types. This helps to organize all views and other items in the repository. You can set item security on folders and their child items.

A **Custom item** allows users to store a custom file. This data can be of any type. A shortcut item can be created which refers to any other item, except items of the type folder.

Default settings after installation

After the installation of Performance AL, the following folder items are added to the Performance AL Server repository.

- The root folder with sub folders.
- **\$Private Items** This folder contains all **My Items** folders of all users. A user has a My Items folder when a user has the **Has Private Folder** system permission.
- The **My Items** folder is created for each user that has the Has Private Folder system permission.
- The **System** folder is the generic system folder. It contains the following sub folders:
 - **Data Sources** In this folder you can add data sources. A database item connects to a data source.
 - **Databases** In this folder you can add databases. Databases connect to data sources. A view connects to a database.
 - **Images** In this folder you can add images. Images can be used as a background in a chart.

Note: If the Has Private Folder system permission is enabled, a folder **My Items** is also added. For more information, see [System permissions and roles](#).

The complete item structure can be adapted to your own situation. Items can be moved, deleted and created. This initial situation is added to help you getting started setting up your own environment.

These items (with the sub folders of the System folder) are available to the accounts that are built-in administrators. Built-in administrators are accounts that are part of the built-in administrator group on the system that runs Performance AL Server or to the accounts specified as built-in administrator in the EVServer.exe.config file.

Adding items

With Performance AL Desktop Explorer you can add items to the repository.








New items of the type **Image**, **Custom**, **Data Source**, **Database**, **View** and **Canvas** can also be added via the commonly used Microsoft Windows procedures, such as Drag&Drop and Copy&Paste from and to the file system.

The following table shows how files from the Windows file system convert to Item types in Performance AL Desktop Explorer.

File types in the Microsoft Windows file system	Item types in Performance AL Desktop Explorer
.bmp	Has all system permissions, except the Has Private Folder system permission.
.jpg	Has Logon Permission.
.gif	image
.png	image
.pvwx	view
.canvas	canvas
other	custom
.xml	database or data source depending on the content of the .xml file

Procedure

1. Open a Performance AL Server.
2. Right-click and click New.

- Folder 
- Data Source 
- Database 
- Image 
- View 
- Canvas 
- Custom Item 

Note: When you use Drag&Drop from or to Performance AL Desktop Explorer, then the items or files are always copied and not moved.

Managing items

After an item is added you can manage items in the repository with Performance AL Desktop Explorer.

If an item is copied, the options **Paste** and **Paste Shortcut** are added to the options that show when clicking on screen or on a folder with your secondary mouse button.

Note: It is not possible to create a shortcut to a folder.

Procedure

1. Open a Performance AL Server.
2. Right-click an item. The following options can be available:
 - Explore the item (only on folder items)
 - Open the item
 - Open all Views (only on folder items)
 - Preview the item (only on images and custom items)
 - Delete the item
 - Cut the item
 - Copy the item
 - Rename the item
 - See the Properties of an item

Opening items

The following table provides an overview of what happens when you open an item in Performance AL Desktop Explorer.

Item	What happens when you open the item
Folder	The content of the folder is shown.
Data Source	The properties of the data source are shown.
Database	The properties of the database are shown.
Image	The program associated with the image is started to show the image.
View	Performance AL Client is started to show the view.
Canvas	Performance AL Client starts and shows the canvas and any associated views.
Custom Item	The program associated with the custom item is started to show the custom item.
Shortcut	Opening a shortcut triggers the same action as the item it refers to.

Security warning when opening a view

When you open a view or canvas in Performance AL Desktop Explorer, then the Performance AL Client starts in Microsoft Internet Explorer. Depending on how the security settings are set in Internet Explorer on your system, a message is presented stating Internet Explorer has restricted this webpage from running scripts or ActiveX controls that could access your computer. As a result the Performance AL Client will not be started.

You can resolve this security restriction by allowing the active content to run in files on "My Computer". Please refer to the documentation of Internet Explorer on how to do this.

Opening an item

Procedure

1. Open a Performance AL Server.
2. Double-click an item.

The folder item in Performance Analytics Desktop Explorer

Items of the type folder can be used to organize items in a folder structure. After installation of Performance AL Server, all predefined items are created in the root folder.

Note: The root folder cannot be deleted.


A folder can contain child items of all defined item types. It can be seen as a container for all other items, including folder Items.

This facilitates the overview of the Performance AL implementation and makes it easier to perform backup procedures, maintenance and migration from one (test) environment to another.

Creating a folder item

You can create a folder item with Performance AL Desktop Explorer.

Procedure


1. Open a Performance AL Server.
2. Right-click on screen or on a folder and click **New > Folder** .
3. Enter a name for the folder item.

Changing the properties of a folder item

You can change the properties of a folder item with Performance AL Desktop Explorer.

Procedure

1. Open a Performance AL Server .

- Right-click a folder item and click Properties . You can change the following properties:


Properties on tab	Purpose
General	The name of the folder item and its description
User Properties	Add or change the User Properties.
Item Policies	Manage or review the folder policies.

Creating a data source item

The predefined folder Data Sources is meant to be used to add items of the type data source.

Database items connect to data source items. Data source items refer to the OLAP database server.

Procedure

- Open a Performance AL Server.
- Right-click **New > Data Source** .
- Enter a name for the data source item. You can create your own name.


Results

Now you can specify the data source item.


Specifying the details of a data source item

After you have created a data source item you can specify the details of the data source item.

Procedure

- Open a Performance AL Server.
- Right-click on a data source item  and click **Properties**.
- Click the **Data Source** tab.
- From the **Data Source Type** menu, choose the data source type.
- In the **OLAP Server** field, specify the name of the OLAP server.
- In the **User Name** field, enter the OLAP administrator user name.
- In the **Password** and **Confirm Password** fields, enter the OLAP administrator password.
- Set the data source specific items. The database settings available depend on the chosen Data Source type. For more information, see [Configuring data sources](#).
- Click Test Connection if you want to test the connection details that you have specified.
- Click **OK** to save the data source settings.

Results

A spark on the data source icon  indicates that the data source item is new and does not contain item data. For more information on the status an item can have, see "ItemStatusType Enumeration" in the *Performance AL Server API Reference*.

Changing the properties of a data source item

You can change the properties of a data source item with Performance AL Desktop Explorer.

Procedure

1. Open a Performance AL Server.
2. Right-click a data source item and click Properties. You can change the following properties:

Properties on tab	Purpose
General	The name of the data source item and its description
User Properties	Add or change the User Properties.
Item Policies	Manage or review the data source policies.
Data Source	The details of the data source item.
Process Distribution	The Process Distribution settings for the data source item.

Database item in Performance Analytics Desktop Explorer

The predefined folder **Databases** is meant to be used to add items of the type database.

Views connect to database items. Database items connect to data source items. The database item refers to a specific database on an OLAP server. This OLAP server is specified in the data source item to which the database item refers.

Creating a database item

You can create a database item with Performance AL Desktop Explorer.

Procedure

1. Open a Performance AL Server.
2. Right-click and click **New > Database**.
3. Enter a name for the database item.


Results

Now you can specify the database item.


Specifying the details of a database item


After you have created a database item you can specify the details of the database item.

Procedure

1. Open a Performance AL Server.
2. Right-click on a database item  and click **Properties**.
3. Click the **Database** tab.
4. From the **Data Source Type** menu, choose the data source type.
5. In the **Data Source** field, specify the data source by either typing the name or selecting the name from the menu.
6. In the **Cube Name** field, specify the database name or the cube name by either typing the name or selecting the name from the menu. If you type the name, use the following format: "<data source name>\<database name>".
7. Set the database specific items. The database settings available depend on the chosen Data Source type. For more information, see *"Configuring data sources"*.
8. Click **OK** to save the database settings.

Results

An exclamation mark on the database icon  indicates a problem. For example the data source item to which the database item refers could not be found at the specified location.

A spark on the database icon  indicates that the database item is new and does not contain item data. For more information on the status an item can have, see "ItemStatusType Enumeration" in the *Performance AL Server API Reference*.

Changing the properties of a database item

You can change the properties of a database item with Performance AL Desktop Explorer.

Procedure

1. Open a Performance AL Server.
2. Right-click a database item and click **Properties**. You can change the following properties:

Properties on tab	Purpose
General	The name of the database item and its description
User Properties	Add or change the User Properties.
Item Policies	Manage or review the database policies.

View item in Performance Analytics Desktop Explorer


The predefined folder **My Items** can be used to add items of the type view. This initial situation is added to help you get started setting up your own environment. A user has a **My Items** Folder when a user has the System Permission **Has Private Folder**.

Views can be added in any folder or canvas to organize your own environment. A view item contains the view definition of the data stored in the OLAP database to which the view refers. A view connects to a database item and that database item connects to a data source.

Creating a view item

You can create a view item in Performance AL Desktop Explorer.

Procedure

1. Open a Performance AL Server.
2. Right-click and click **New > View** .
3. Enter a name for the view item.

Opening a view after creation of a view item

After you have created a view item with Performance AL Desktop Explorer you can open the view in Performance AL Client.

Depending on the installation and configuration of the security providers, Performance AL Server can authenticate the user. Otherwise you have to enter the credentials in order to log on to the specified database when you open a view.


For more information, see *"Installing Performance AL Client"*.


Procedure

1. If Performance AL Client is not installed, you will be prompted to install it. Once Performance AL Client is installed, the **Connection Information** dialog is displayed.
2. From the **Database** menu select the database you have configured within Performance AL Server.
3. Click **OK**.

Results

The created view is shown. The view displays the data that is stored in the OLAP database.

An exclamation mark on the view icon  indicates a problem. For example the data source item to which the database item refers could not be found at the specified location.

A spark on the view icon  indicates that the view item is new and does not contain item data. For more information on the status an item can have, see "ItemStatusType Enumeration" in the Performance AL Server API Reference.

Changing the properties of a view item

You can change the properties of a view item with Performance AL Desktop Explorer.

Procedure

1. Open a Performance AL Server.
2. Right-click a view item and click **Properties**. You can change the properties as specified in the next table.

Properties on tab	Purpose
General	The name of the view item and its description
User Properties	Add or change the User Properties.
Item Policies	Manage or review the view item policies.

Canvas item in Performance Analytics Desktop Explorer



The predefined folder **My Items** can be used to add items of the type canvas. Canvases can be added in any folder to organize your own environment.

A canvas item contains the associated views. The associated views connect to a database item and that database item connects to a data source.

Creating a canvas item

You can create a canvas item in Performance AL Desktop Explorer.

Procedure

1. Open a Performance AL Server .
2. Right-click and click **New > Canvas** .
3. Enter a name for the canvas item.

Opening a canvas after creation of a canvas item

After you have created a canvas item with Performance AL Desktop Explorer you can open the canvas in Performance AL Client.

Depending on the installation and configuration of the security providers, Performance AL Server can authenticate the user. Otherwise you have to enter the credentials in order to log on to the specified database when you open a view.

Procedure

1. If Performance AL Client is not installed, you will be prompted to install it. Once Performance AL Client is installed, the **Connection Information** dialog is displayed.
2. From the Database menu select the database you have configured within Performance AL Server.
3. Click **OK**.

Results

The canvas displays the associated views.

An exclamation mark on the canvas icon indicates a problem.

A spark on the view icon indicates that the view item is new and does not contain item data.

Associating a view item with a canvas with Performance AL Desktop Explorer

After you have created a canvas item with Performance AL Explorer you can insert a view item to the canvas as a panel.

Procedure

1. Click the canvas item you have created in Performance AL Explorer.
2. Click **Views**.
3. Select the view to include in the canvas.
4. Click **Open**.


Results

The view shows in the canvas as a panel. The view displays the data that is stored in the OLAP database. More than one view can be associated with a canvas.

Changing the properties of a canvas item

You can change the properties of a canvas item with Performance AL Desktop Explorer.

Procedure

1. Open a Performance AL Server  .
2. Right-click a canvas item and click **Properties**. You can change the properties as specified in the next table.

Properties on tab	Purpose
General	The name of the canvas item and its description
User Properties	Add or change the User Properties.
Item Policies	Manage or review the canvas item policies.

Image item in Performance Analytics Desktop Explorer


The data in a view can be displayed as a chart. You can use an image item as a background image in that chart.

The predefined folder **Images** can be used to add items of the type image. For more information, see the Performance Analytics User Guide.


Creating an image item

You can create an image item in Performance AL Desktop Explorer.

Procedure

1. Open a Performance AL Server.
2. Right-click and click **New > Image** .
3. Enter a name for the image item.
4. Right-click the image item and click **Properties**.
5. Click the **Image** tab.
6. Click **Browse** and select an image. Images can be of the type BMP, GIF, JPEG and PNG.
7. Click **Upload** to put the image file in the Performance AL repository.
8. Click **OK**.

Results

A spark on the image icon  indicates that the image item is new and does not contain item data. For more information on the status an item can have, see "ItemStatusType Enumeration" in the Performance AL Server API Reference.

Changing the properties of an image item

You can change the properties of an image item with Performance AL Desktop Explorer.

Procedure

1. Open a Performance AL Server.
2. Right-click an image item and click **Properties**. You can change the properties as specified in the next table.

Properties on tab	Purpose
General	The name of the image item and its description .
Image	A preview of the image and the possibility to upload an image.
User Properties	Add or change the User Properties.
Item Policies	Manage or review the image item policies.


Custom item in Performance Analytics Desktop Explorer

A custom item allows you to store a custom file. This data can be of any type.


Creating a custom item

You can create a custom item with Performance AL Desktop Explorer.

Procedure

1. Open a Performance AL Server.
2. Right-click and click **Add Item > Custom Item** .
3. Enter a name and a description for the custom item.
4. Right-click the image item and click **Properties**.
5. Click the **Custom Item** tab.
6. Click Browse and select a file.
7. Click **Upload** to put the file in the Performance AL repository.
8. Click **OK**.

Results



A spark on the custom icon  indicates that the custom item is new and does not contain item data. For more information on the status an item can have, see "ItemStatusType Enumeration" in the *Performance AL Server API Reference*.

Opening a custom item

You can open a custom item in Performance AL Desktop Explorer.

The custom item will be opened by the application that is associated with the file extension and the MIME Type of the custom item.

Procedure



1. Open a Performance AL Server .
2. Double-click a custom item .

Changing the MIME type of a custom item

You can change the MIME type of a custom item with Performance AL Desktop Explorer.

The custom item will be opened by the application that is associated with the file extension and the MIME Type of the custom item.

Procedure

1. Open a Performance AL Server .
2. Right-click a custom item  and click **Properties**.
3. Click the Custom Item tab.
4. Use the **MIME Type** field to specify the **MIME type**.
5. Click **OK**.

Changing the properties of a custom item

You can change the properties of a custom item in Performance AL Desktop Explorer.

Procedure

1. Open a Performance AL Server.
2. Right-click a custom item and click **Properties** . You can change the properties as specified in the next table.

Properties on tab	Purpose
General	The name of the custom item and its description
Custom Item	The possibility to upload a file. Upload a file Set the File Name Set the MIME Type
User Properties	Add or change the User Properties.
Item Policies	Manage or review the custom item policies.

Shortcut item in Performance Analytics Desktop Explorer


A shortcut item inherits the type of the item it refers to. A shortcut can refer to all item types except the item type folder.

Creating a shortcut item


You can create a shortcut item with Performance AL Desktop Explorer.

Note: You cannot create shortcut items for folder items.


Procedure


1. Open a Performance AL Server.
2. Right-click an item and click **Copy**.
3. Right-click in any folder where you want to add the shortcut > **Paste Shortcut** .

Results

The shortcut is added to the repository. When you are logged in as a user that has the Manage item permission on this shortcut, the shortcut can be recognized by a little arrow  in the left bottom corner. Another user who does not have the necessary permission, neither sees the arrow, nor knows that the item is a shortcut. For this user, the shortcut item is shown as an item of the item type it refers to. If a short cut item is not valid (if it refers to an invalid item, for example an item that no longer exists), the user does not see it.

A red shortcut indicator indicates that for example the shortcut item does not refer to an item of the correct type.

An exclamation mark and a shortcut  indicator on for example the database icon indicates that for example the data source item to which the database refers could not be found at the specified location.

A spark and a shortcut  indicator on for example the database icon indicates that the database item does not contain item data. For more information on the status an item can have, see "ItemStatusType Enumeration" in the Performance AL Server API Reference.

Property inheritance

In case of a shortcut item, system- and user-defined properties are inherited from the referenced item. This means if an item has a property "New", then shortcuts to this item also have access to the same property "New". When retrieving the list of properties from the shortcut item, the property "New" will be included in the list.

It is not possible to change the value of an inherited property on the shortcut. The value can only be changed on the original item.


If the shortcut itself has a property "New", the value of the property "New" belonging to the shortcut will be retrieved instead of the value of property "New" of the item the shortcut refers to.

In case of a chain of references (shortcuts referencing to shortcuts, referencing to an item) this inheritance continues. This means when you retrieve the properties of the last shortcut item in the chain, all properties of all (shortcut) items are retrieved.

Database wizard in Performance Analytics Desktop Explorer

The Database Wizard enables you to register databases for a data source.

Procedure

1. Right-click a valid data source  and click **Database Wizard**.
2. On the **Welcome to the Database Wizard** screen click **Next**.
3. Enter the OLAP credentials if they are required by the data source. An overview of the databases that can be registered is shown.
4. In the **Destination Folder** field specify the folder where the databases have to be created. By default the **Database Post Search Path** is used. If there is no destination folder specified, the database Items will be created in the current folder.
5. In the **Database Name Prefix** field specify a prefix for the database name. This optional prefix will be added to the name of the created database item.
6. Click **Next**.
Note: The registration can take some time.
7. When the databases have been registered, a status overview of the created databases is shown. The databases are added to the Performance Analytics Server repository.
8. Click **Finish**.

Item system properties and view system properties

System properties are defined by Performance AL Server. In general, it is not possible to delete a system property of an item. Some system properties are marked as read-only (RO). If this is the case, the value of the property cannot be changed. System properties have the prefix "_" in the property name. The following table shows the available system properties:

Name	Type	Description	State
_Description	string	Description of the item. Available for all items, optional for shortcut. Can be created or deleted only for shortcut.	RW
_DateCreated	datetime	Date item is created. Available for all items, except shortcut. Cannot be created or deleted.	RO
_UserCreated	string	Date item is created. Available for all items, except shortcut. Cannot be created or deleted.	RO
_DateModified	datetime	Date of modification. Available for all items, except shortcut. Cannot be created or deleted.	RO
_UserModified	string	Name of the user who modified the item. Available for all items, except shortcut. Cannot be created or deleted.	RO
_DateAccessed	datetime	Date of last access. Available for views and canvas. Cannot be created or deleted.	RO
_UserAccessed	string	Name of the user who accessed the item. Available for views and canvas. Cannot be created or deleted.	RO
_AccessCount	int64	Cumulated access count. Available for views and canvas. Cannot be created or deleted.	RO
_Link	string	Path to the item of the shortcut. Cannot be created or deleted.	RW
_Database	string	The database that the view connects to. Can be created or deleted.	RW
_Datasource	string	The data source that the database connects to. Can be created or deleted.	RW

_DataSourceType	string	The data source type of the data source and the database. Can be created or deleted.	RW
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The following table shows the available system properties that apply to the item type view. They contain meta information about a view.

Name	Type	Description
_Notes	string	The notes in a view. If a view does not contain a note, this system property is not available.
_ScalingFactor	double	The scaling factor that is applied to the view. This is the scaling factor set on the Numbers tab of the Options dialog. This system property is not available if the scaling factor is set to default value 1.
_DynaSelectText	string	The text of the DynaSelect. If the view does not contain a DynaSelect, this system property is not available.
_DisplayMode	string	The parts that the view contains. Possible values are: table notes drillthrough line bar pie area radar maps bubble range scatter The names are separated with a comma.
_PrintOrientation	string	The print orientation of the view. Possibilities are: default portrait landscape

Properties

Each item in the Performance AL Server catalog can have user-defined and system properties associated with it.

A property is a user-defined or system attribute with a **Name**, a **Data Type** and a **Value**. The number of properties that an item can have is unlimited.

The **Name** is a unique identifier for the property. The **Value** is a simple-type that can contain textual, numerical or date-time information.

User-defined properties

The following table shows the data types that are supported for user-defined properties:

Data Type	Possible value
boolean	true/false
byte	0...255
char	Unicode character 0x0000 ... 0xFFFF
datetime	12:00:00 AM, 0001-01-01 ... 11:59:59,31.12.9999
decimal	+79,228,162,514,264,337,593,543,950,335 ... -79,228,162,514,264,337,593,543,950,335
double	$\pm 5.0 * 10E-324$... $\pm 1.7 * 10E308$
guid	unique 128 bit number {F9168C5E-CEB2- 4faa-B6BF-329BF39FA1E4}
int16	-32,768 ... 32,767
int32	-2,147,483,648 ... 2,147,483,647
int64	-9,223,372,036,854,775,808 ... 9,223,372,036,854,775,807
sbyte	-128 ... 127
single	$\pm 1.5 * 10E-45$... $\pm 3.4 * 10E38$
string	Sequential collection of Unicode characters
timespan	-9,223,372,036,854,775,808 ... 9,223,372,036,854,775,807 (can be represented as [-]d.hh:mm:ss.ff)
uint16	0 ... 65,535
uint32	0 ... 4,294,967,295
uint64	0 ... 18,446,744,073,709,551,615

Creating user-defined properties

Procedure

1. Open a Performance AL Server.

2. Right-click an item and click **Properties > User Properties**.
3. Click **Add**.
4. Enter the Name, the Data Type and the Value for the user defined property.
5. Click **OK**.

Managing Performance AL Server with Performance AL Desktop Explorer

There are settings you need to configure in Performance AL Server. You can configure these settings by using Performance AL Desktop Explorer.

Viewing the version information

Procedure

1. Right-click a Performance AL Server and click **Properties**.
2. On the **Info** tab, the **Version Information** section shows the version of Performance AL Server.

Accounts

An account can be made for a single user, for a group of users, or for a user role.

System Roles (with their **Permissions**) are attached to an account. This is called a system policy.

Item Roles (with their **Permissions**) are attached to an account and to an item. This is called an item policy.

After installation of Performance Analytics, only the account **Everyone** appears.

The created account **Everyone** represents all users that can be validated by the installed **Security Provider**.

Accounts are added when setting **Item Policies** or **System Policies**. Accounts cannot be added individually.

Performance AL Server uses the specified accounts through one or more **Security Providers**. Performance AL Server does not have accounts of its own.

When a system or item policy is set for a specified account, this account appears on the **Accounts** list.

Viewing Accounts

Procedure

1. Right-click a Performance AL Server and click **Security > Accounts**.
2. In the Accounts section you can view the available accounts.

Deleting Accounts

Procedure

1. Right-click a Performance AL Server and click **Security > Accounts**.
2. Select the account you want to delete and click **Delete**.

Results

After deleting an account, all associated Item Policies and System Policies of the account are deleted from Performance AL Server.

When an account has no Item Policies and System Policies defined, the account is no longer available from Performance AL Server.

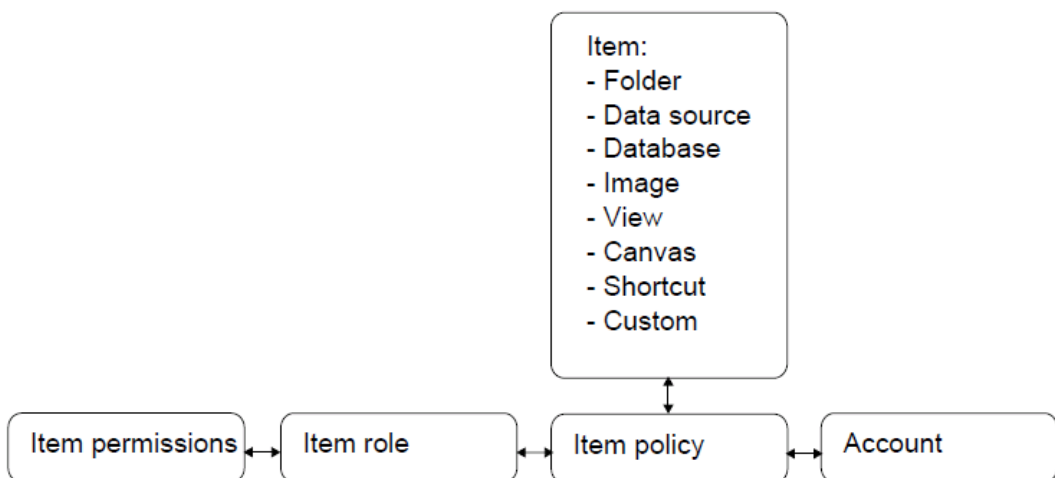
Security

Performance AL Server security can be divided into two groups: system security and item security. You can set both permissions: item permissions and system permissions. Item permissions apply to items in the repository. System permissions apply to the system: Performance AL Server.

Note: A built-in administrator can always manage the security on a Performance AL Server by using Performance AL Desktop Explorer. This is to prevent administrators creating a situation where they are locked out or cannot access Performance AL Server anymore as a result of changing the System Security settings.

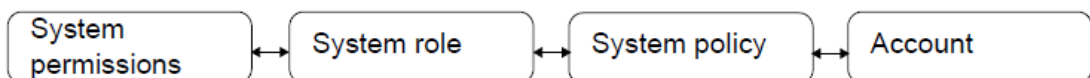
Item security

An item role (with its item permissions) is attached to an account and to an item. This is called an item policy.



System security

A system role (with its system permissions) is attached to an account. This is called a system policy.



To be able to organize and structure permissions, they are attached to roles. A role contains one or more permissions.

The item permissions and system permissions are a fixed set of permissions. After installation, several item roles and system roles are created, to help you get started with Performance AL Server security. You can modify, delete, and to create new roles.

After the installation of Performance AL Server, one system policy is added. For the root item and the items **\$Private Items** and **System** one item policy is added.

These policies can be modified, or deleted and you can create your own policies.

Sessions

To apply system and item security, Performance AL Server must be able to authenticate a user. This is done via a session.

A Performance AL Server session is created when a user logs on to Performance AL Server. After the user is successfully authenticated, the Performance AL Server retrieves the appropriate permissions, for example to use views or to connect to an OLAP database. During the creation of a session, credentials are passed to the Performance AL Server. Performance AL Server will pass these credentials to a configured security provider. This security provider validates whether the user is allowed to log on to the system with the specified credentials. Once a session is created, this session provides the access to Performance AL Server.

A session can be created by a portal (for example Performance AL Explorer) by using the `CreateSession` method, or by Performance AL Client creating an instant session.

For more information about the "CreateSession" method, see the *Performance AL Server API Reference*.

For information about Security Providers, see "*Configuring the security provider*".

Item permissions and roles

You can set permissions on an item. A named combination of these permissions is called an Item Role.

Available permissions

The next table shows the available permissions.

Permission	Description
List	List the items in the parent folder.
Read	Read the contents of an item.
Modify	Modify an item.
Manage	Manage an item. Items can be created, deleted, and renamed.

Full Control	With Full Control permission, you can change the security on an Item.
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For comments, the following permissions are available.

Permission	Description
Manage Comments	Manage the comments of all users in the database.
Write Comments	Read all comments, write and modify your own comments in the database.
Read Comments	Read all comments in the database.

Permissions implications

Item permissions are dependent on each other. Setting a permission may imply other permission settings. The next table shows an overview of these implications.

x = set permission

o = implied permission

	Full Control	Manage	Modify	Read	List
Full Control	x				
Manage	o	x			
Modify	o	o	x		
Read	o	o	o	x	o
List	o			o	x

For comments, the item permissions partially depend on each other as well. The following table shows how the permissions are implied.

	Manage Comments	Write Comments	Read Comments
Manage Comments	x		
Write Comments	o	x	
Read Comments	o	o	x

Setting permissions for an item

Procedure

1. Right-click a Performance AL Server and click **Security > Item Roles**. The available predefined Item Roles are shown.
2. Select an item role and click **Edit**.
3. Set the **Permissions** for the item role.
4. Click **OK**.
5. Click **Close**.

Comments

Comment item permissions take only effect when they are set on a **Database** item. Then, the policy applies for all views, which use this particular database item as its data source.

Item roles

An item role contains item permissions. After installation, the following predefined Item Roles are available.

Item role	Description
Administrator	Has these permissions: Full Control Manage Modify Read List Manage Comments Write Comments Read Comments
Author	Has these permissions: Manage Modify Read List Write Comments Read Comments
Consumer	Has Read permissions.
Reviewer	Has Read and List permissions.

Adding an item role

Procedure

1. Right-click a Performance AL Server and click **Security > Item Roles**. The available predefined Item Roles are shown.
2. Right-click and click **New Item Role**.
3. Specify the following for the item role:
 - A **Name**
 - A **Description**
 - The **Item Permissions**
4. Click **Add**.

Opening an item role

When you open an item role you can modify the item role and set its permissions.

Procedure

1. Right-click a Performance AL Server and click **Security > Item Roles**. The available Item Roles are shown.
2. Right-click an item role and click **Edit**.

Item Policies

After installation of Performance AL, an item policy is added for the root item. This policy gives the account **<Everyone>** the item role **Reviewer**. This means all users, that are allowed to log on to Performance AL Server, can read and list the items in the repository.

For the items **\$Private Items** and **System** an item policy is added that gives the account **<Everyone>** the item role **Consumer**. This means all users, that are allowed to log on to Performance AL Server, can read the items. This is necessary in order to let users access databases or data sources that are specified in the System folder.

An item role with its **Item Permissions** is attached to an account and to an item. This is called an item policy. You can set an item policy on an item.

Adding Item Policies

Procedure

1. Open a Performance AL Server .
2. Right-click an item and click **Properties**.
3. On the Item Policies tab click **Add**.
4. Specify the following:
 - The **Account Type**
 - The **Account Name**
 - One or more **Item Roles**
5. Click **OK**.

6. Select an account and in the policies area specify one or more **Roles**.
7. Click **OK**.

System permissions and roles

You can set permissions for a system. A named combination of these permissions is called a System Role.

Available permissions

The next table shows the available permissions.

Permission	Description
Logon	Logon to Performance Analytics Server. If this permission is not set for a system role, then the user cannot create a session and is refused to logon to Performance AL Server.
Manage Roles	Create, view, modify and delete roles.
Manage System Policies	Create, view, modify and delete System Policies.
Manage Sessions	View and invalidate sessions.
Manage Item Policies	Create, view, modify and delete Item Policies.
Manage Folders	Create, modify and delete folders.
Manage Views/Canvases	Create, modify and delete views and canvases.
Manage Databases	Create, modify and delete databases.
Manage Data Sources	Create, modify and delete data sources.
Manage Images	Create, modify and delete images.
Manage Custom Items	Create, modify and delete custom items.
Manage Logging	View logging.
Has Private Folder	Allowed to have a Private Folder. Note: If this permission is not set for a role, then the ev client doesn't show the following folders in the backstage area for this user: <ul style="list-style-type: none"> • Recent Views • My Views • My Templates
Use Comments	Use any comment related functionality.

The following system permissions apply for the corresponding item type:

- Manage Folders
- Manage Views/Canvases
- Manage Databases
- Manage Data Sources
- Manage Images
- Manage Custom Items.

The user that has these permissions, can create, modify and delete the item types at system level. For individual items, you have to set the item permissions.

For example: in order to set item policies on an item, a user needs to have the system permission **Manage Item Policies** and the Item Permission **Full Control** on the item for which to set the policy.

Setting system permissions

Procedure

1. Right-click a Performance AL Server and click **Security > System Roles**. The available predefined **System Roles** are shown.
2. Select a system role and click **Edit**.
3. In the **Edit System Roles** window set the **Permissions**.

System roles

A system role contains system permissions. After installation, the following predefined System Roles are available.

Permission	Description
System Administrator	Has all system permissions, except the Has Private Folder system permission.
Logon	Has Logon Permission, has a private folder and can use comments.

Adding System Roles

Procedure

1. Right-click a Performance AL Server and click **Security > System Roles**. The available predefined *System Roles* are shown.
2. Right-click and click **Add**.
3. Specify the following for the system role:
 - A **Name**
 - A **Description**
 - The **System Permissions**
4. Click **Add**.

Editing system roles

When you open a system role you can modify the system role and set its permissions.

Procedure

1. Right-click a Performance AL Server and click **Manage > Security > System Roles**. The available System Roles are shown.
2. Right-click a system role > **Open**.

System Policies

System Roles (with their system **Permissions**) can be attached to an account. These are called **System Policies**.

After the installation of Performance Analytics, two System Policies are added: **Logon User** and **Evaluation User**. For information on the Evaluation User, see “Evaluation roles and policies”.

Logon User

A system policy is added that gives the all users the system role **Logon User**.

This means that all users in the account **Everyone** can logon to Performance AL Server, which is needed in order to create a session.

Adding System Policies

Procedure

1. Right-click a Performance AL Server and click **Manage > Security > System Policies**.
2. In the Policies section, click **New**.
3. Specify the following:
 - The Account Type
 - The Account Name
 - One or more System Roles
4. Click **Add**.

Evaluation roles and policies

Some users who evaluate Performance AL do not have local administrator permissions. If a user does not have the local administrator permissions, the restricted permissions that are defined for the default Everyone Account will be used.

For evaluation purposes, evaluation roles and policies are available.

The **Evaluation User** system role and item role offer administrator permissions to change the Performance AL repository. After evaluation and defining the desired repository security, remove the **Evaluation User** roles. They should not be available in a production environment.

Note: The **Evaluation User** roles are created only after initialization of the Performance AL repository. The Performance AL repository is initialized when Performance AL Server is started for the first time.

Initial situation

To set the system so that all users have access during evaluation:

- The role **Evaluation User** is added to **System Roles** and item roles.
- The policy **Evaluation User** is added to **System Policies** and item policies.

Evaluation User system roles

The properties for a user can be changed according to the role that is set.

For the **Evaluation User** system role the following **Permissions** are set initially:

- Logon
- Manage Roles
- Manage System Policies
- Manage Sessions
- Manage Item Policies
- Manage Folders
- Manage Views/Canvases
- Manage Databases
- Manage Data Sources
- Manage Images
- Manage Custom Items
- Manage Logging
- Has Private Folders

Changing properties of the Evaluation User system role

Procedure

1. Right-click a Performance AL Server and click **Security > System Roles**.
2. Select the **Evaluation User** system role and click **Edit**.
3. Change the following properties of the system role:
 - Name
 - Description
 - Permissions
4. Click **OK**.
5. Click **Close**.

Evaluation User item roles

For the Evaluation User item role the following Permissions are set initially:

- List
- Read

- Modify
- Manage
- Full Control

Changing properties of the Evaluation User item role

Procedure

1. Right-click a Performance AL Server and click **Manage > Security > Item Roles**.
2. Click the **Evaluation User** item role.
3. Change the following properties of the item role:
 - **Name**
 - **Description**
 - **Permissions**
4. Click **Update**.

Viewing the system policy Evaluation User

The policy **Evaluation User** has been added to **System Policies**. You can add this system policy to an item.

Procedure

1. Open a Performance AL Server.
2. Right-click an item and click **Properties**.

Results

In the **Policies** section, the **Account Evaluation User** is shown.

Active Sessions

If you have the system permission to manage sessions then you can view and terminate active sessions of Performance AL on a Performance AL Server.

Viewing Active Sessions

To view active sessions and the last used session of Performance AL on a Performance AL Server.

Procedure

1. Right-click a Performance AL Server and click **Active Sessions**. In the **Active Sessions** table, the active sessions of Performance AL are listed with the following details:
 - **User**
 - **Host address**
 - **Creation time**
 - **Last used**. Last used is updated when a user performs an action on Performance AL Server.

- **Description**

2. You can sort the table of **Active Sessions** by clicking on a detail you want to sort on.

Terminating Active Sessions

You cannot terminate your own session within Performance AL Explorer. You can only terminate other sessions.

Procedure

1. Right-click a Performance AL Server and click **Active Sessions**.
2. In the **Active Sessions** table, select the active session you want to terminate and click **Terminate**.
3. Click **Yes**.

Server Log

The Performance AL Server log contains the following entries:

Log entry	Explanation
Category	Shows the category of the log. For example General, or Security.
Component	Shows the component that logged the log entry. For example the Security Provider or the Catalog Provider.
Level	Shows the log level.
Message	Contains the actual log message.
Process ID	Contains the ID of the Performance AL Server Process.
Thread ID	Contains the ID of the thread in the Process.
Session ID	Contains the ID of the Session.
Date-Time	Contains the date and time.

Showing and browsing the Log entries

Procedure

1. Right-click a Performance AL Server and click **View Log**.
2. If you have process distribution enabled with master and slave servers, you can specify the server for which you want to view the log entries.
3. You can browse the **Log entries** by clicking the following buttons:
 - First
 - Prev
 - Next
 - Last

Setting a filter on the Log entries

You can set a filter if you do not want to see all Log entries.

Procedure

1. Right-click a Performance AL Server and click **View Log**.
2. Click **Filter**. The following table lists the available filter options.

Filter	Explanation
Thread ID	Specify the Thread ID to view the log entries for, or "*" for all.
Session ID	Specify the Session ID to view the log entries for, or "*" for all.
Process ID	Specify the Process ID to view the log entries for, or "*" for all.
Level	<p>Severe The less detailed level. Only severe errors are logged. These are errors that may cause a situation where Performance AL Server is unusable.</p> <p>Error All errors are logged. These are situations where Performance AL Server can run but a provider cannot be started.</p> <p>Warning Warnings are logged, for example when a provider is not correctly configured.</p> <p>Info Information is logged, for example the start and stop of Performance Analytics.</p> <p>Verbose More detailed information is logged, for example the loading of the catalog items.</p> <p>Trace The same information as in Verbose is logged, only more detailed.</p> <p>Debug The most detailed level. All possible information is</p>

	<p>logged.</p> <p>Note: The levels Severe, Error and Warnings give you information about (possible) errors that occur in Performance AL Server.</p> <p>The levels Warning, Info and Verbose contain information about the status or activities of Performance AL Server.</p> <p>The levels Trace and Debug are recommended in case you experience problems with Performance AL Server and you want to see all detailed information.</p>
Sort order	Ascending or Descending
Components	<p>For more information, see <i>“Components used by Performance Analytics”</i>.</p> <p>The possible Components are:</p> <p>Server</p> <p>The Log providers are:</p> <p>LogProviders.Event LogProviders.File LogProviders.Mail LogProviders.Oracle LogProviders.SQLServer LogProviders.XML</p>
Components	<p>The Catalog providers are:</p> <p>CatalogProviders.Oracle CatalogProviders.SQLServer</p>
Components	<p>The Categories are:</p> <p>Configuration General InternalError ParameterValidation Security ServerProtocol Session UnsupportedType WorkerProcessProtocol</p>
Begin Date-Time	The start date for the filter.

End Date-Time	The end date for the filter.
---------------	------------------------------

Search paths

Performance AL Server has a search logic for resolving items that are referenced. Some item types link to another item. For example a view item can link to a database or an image, or a shortcut can link to any other item type.

The search order to find these linked items is:

1. The search **Pre paths**.
2. Search in the current folder and its ancestor folders from the specified item to the root folder.
3. The search **Post paths**.

For the item types data source, database and image, the search **Pre paths** and the search **Post paths** can be set. By default, the search **Pre paths** is empty and the search **Post paths** is the first sub folder in the **System** folder with the item type name. For example for item type images this is **/System/Images**.

Setting the search paths

Procedure

1. Right-click a Performance AL Server and click **Properties > Search Paths**.
2. For the item types **Data Source**, **Database** and **Image** you can set the search paths in the **Pre path** and **Post path** fields. You can define multiple search paths on new lines. Press the Enter key to create a new line.
3. Click **Update**.

Monitoring

You can monitor the present users and the number of users who have connected to a Performance AL Server over a period of time using Monitoring.

Note: Only users of Performance AL Client are registered. Users of Performance AL Explorer and Performance AL Desktop Explorer are not registered.

Viewing named users

The **Named Users** table shows the individual users of Performance AL Client that have connected to the system at any time. For each user the following data is shown:

- **User Name**
The name of the user
- **Security Namespace**
The security provider that is used by the user.
- **First Connected**
The date on which the user first connected.
- **Last Connected**
The date on which the user last connected.

Procedure

1. Right-click a Performance AL Server and click **Named Users**.

Viewing concurrent users

The Concurrency counters table shows the maximum number of simultaneous connections to Performance AL Server per day. The following data is shown:

- **Date**
The date for the concurrency counters
- **Timestamp**
The time of the day when the maximum of concurrent users was attained for the first time. Note that this value is only populated since the 8.7.0 release and is set to 00:00:00 for all prior entries.
- **Concurrent Users**
Represents the maximum number of users that access the system simultaneously on this date.
- **Maximum concurrent users**
The maximum number of concurrent users that are registered on any day.

Note: If no user does log on or off on a particular day, that day will not be shown in the list of concurrent users.

Procedure

1. Right-click a Performance AL Server and click **Concurrency Counters**.

Comments

When comments shall be used, ensure that the following configuration has been applied correctly.

Database and Data Source settings

The database must be configured to allow comments. There are two options available to achieve that.

1. Navigate to the **Data Source** item which is shall be allowed
2. Select an **Allow Comments** option
 - **Never**
Disables comments for all **Database** items which use this Data Source, regardless of their **Allow Comments** checkbox state.
 - **Always**
Enables comments for all **Database** items which use this Data Source, regardless of their **Allow Comments** checkbox state.
 - **Database Specific**
Allows to configure the **Allow Comments** setting per **Database** item individually. The checkbox of the **Database** item applies now.

System roles

The logged in user has to be allowed to **Use Comments** in general.

1. Right click on a Performance AL server and select **Manage**
2. Click on **System Roles**
3. Select the role, which shall be allowed to use comments
4. Ensure, the **Use Comments** checkbox is checked
5. Click **OK**

System policies

Also ensure, that the user which shall use comments, owns a System Role which is allowed respectively.

1. Right click on a Performance AL server and select **Manage**
2. Click on **System Policies**
3. Ensure the users, which shall be allowed to use comments, have the correct **System Roles** assigned

Item roles

Define, which item role has which comment permission. An user can be allowed to read, write or manage comments. For a more detailed description see [available permissions](#).

1. Right click on a Performance AL server and select **Manage**
2. Click on **Item Roles**
3. Select the role, which shall be configured for certain comment permissions
4. Check or uncheck the corresponding checkboxes depending on the required user permissions

Item policies

The detailed user permissions for Read, Write and Manage Comments have to be set for each Database item individually.

1. Navigate to the **Database** item for which the user permissions shall be configured
2. Click on **Properties**
3. Update policy settings for this item by adding or removing user and role combinations correspondingly

General Settings

1. Right click on a Performance AL server and select **Manage**
2. In the section **Comments** click on **General Settings**

The following settings can be made:

- **Maximum comment length (characters)**
The number of characters which a comment can have at most.
- **Maximum attachment size (MB)**

The maximum size of one attachment

- **Maximum total attachment size per entry (MB)**
On one comment several attachments can be added. The cumulative size of all these attachments can't be higher than this number.
- **Allowed attachment file types**
This is a white list of all allowed file types (endings) that are allowed as attachments. Each file type needs to be added in a new row.
- **History length**
Defines the number of comments that should be shown in the comment panel. If there are more comments available a button **Show all comments** will be under the last comment. Clicking this button will load the rest of the comments.

Orphaned Items

1. Right click on a Performance AL server and select **Manage**
2. In the section **Comments** click on **Orphaned Items**

A comment is identified by a coordinate (unique combination of **Dimension / Member** values).

If a member of a dimension (or a whole dimension) gets deleted in the structure of the cube, the coordinate of the comment does not match any more and the comment is not assigned to a certain item in this state.

Also if a new dimension was added to the structure, the coordinates are not unique any more and need to be adjusted.

Therefore the **Orphaned Items** panel gives the following features.

After selecting the cube in the **Database** box the following functions can be applied to the comments:

- **Remove invalid dimensions from all orphaned members**
Clicking this link will delete all **Dimension / Member** pairs that don't match to the current cube structure. This is useful when a dimension was removed from the structure of a cube.
- **Add a new dimension to all orphaned members**
- Clicking this link will open a panel where a **New dimension name** and a **New member name** can be added. This is useful when a dimension was added to structure of a cube.
- **Map Member**
Clicking this link will open a panel where the **Old dimension name** and **Old member name** are shown. By entering values in the fields **New dimension name** and **New member name** the comment coordinates can be updated.
- **Delete Comments**
Clicking this link will delete the comments that match on a certain coordinate.

9. Performance AL Desktop

Performance AL Desktop basically is a desktop application wrapper around the Performance AL Client allowing you to access Performance AL without using Microsoft Internet Explorer.

The application can be started by either calling the installation URL (see [Installing Performance AL Desktop](#)) or by using the desktop shortcut, which will be created during the installation.

Performance AL Desktop URL parameters

Performance AL Desktop supports the following URL parameters, which can be appended to the installation URL (see [Installing Performance AL Desktop](#))

- *Item*
With the *Item* parameter you can pass a view path, which is opened directly after starting the application.
Example:
<http://<yourservername>/EVServer/DesktopApp?Item=/MyView>
- *Culture*
The *Culture* parameter sets the language of the application, independent of the server settings.
Example:
<http://<yourservername>/EVServer/DesktopApp?Culture=fr-FR>
- *SessionID*
With the *SessionID* parameter you can pass a valid session to the application.
Example:
<http://<yourservername>/EVServer/DesktopApp?SessionID=MySessionID>
- *EnableLogging*
You can log the startup process of the Desktop application for debugging purpose. To enable the logging mode you have to set this parameter to "True". Once the application has finished loading you can see the logfile path in the window header. Alternatively, use the shortcut "CTRL + L", which copies the file path into the clipboard. This shortcut is only available until you clicked anything in the application window.
Example:
<http://<yourservername>/EVServer/DesktopApp?EnableLogging=True>

Note: The shortcut created during the installation points to the URL (including the

parameter) which was called. Before you use any of this parameters you should install the application via the installation URL without any parameters.

10. Performance AL Anywhere

The Performance AL *Anywhere* client is a web based client that communicates with Performance AL Server through a restful Web API. The REST server providing the Web API runs self-hosted inside the Performance AL Server process.

The following section describes how to configure the web application, REST server and clients for Performance AL *Anywhere*.

Configuring the web application

The web application for Performance AL *Anywhere* is hosted in IIS. The application serves a static web page (index.html) to the client. All further communication will take place between the client and the Performance AL REST server. Thus the web application does not need to require authentication.

In order to configure the web application, open the "EVServer.exe.config" file. It can by default be found in the folder "C:\Program Files\cubus\Performance Analytics\Server".

The following parameters can be configured:

- **EVDesktop_Culture**

The language the client is using. Valid values are *da, de, en, es, fr, nl*. By default the browser language is used.

```
<add key="EVDesktop_Culture" value="en" />
```

- **ActivatePreviewFeatures**

Determines whether the client is allowed to use the pre implemented features.

```
<add key="ActivatePreviewFeatures" value="true" />
```

Note: If the first configuration of security provider is Windows, then the user is able to create an Impersonated Session. When an Impersonated Session is created, the user does not have to enter credentials when logging on to Performance AL Server regardless any other security provider configured after that.

Configuring the REST server

The following section describes how to configure the REST server which is hosted inside the Performance AL Server process.

Configuration parameters

The following configuration parameters can be configured in EVServer.exe.config and are described in chapter [<appSettings>](#)

- **RestApiPortNumber**
- **RestApiProtocol**
- **RestApiCorsOrigins**

Configuration for SSL

In order to use HTTPS for the communication between the Performance AL Anywhere and the Performance AL REST Server the following steps:

1. In Performance AL Server configuration file EVServer.exe.config set the parameter
<add key="RestApiProtocol" value="https" />
2. In Performance AL Server configuration file EVServer.exe.config set the parameter for the port to e.g.
<add key="RestApiPortNumber" value="443" />

Configuring the mobile device

After the application has been set up and configured in the web server, it can be opened using the following URL in your browser.

```
http(s)://hostname/EVAnywhere
```

Hint: If the mobile device you're using is an iOS or Android device, it's recommended to add the application to your home screen.

Windows Integrated Authentication

In order to use Windows Integrated authentication (WIA) and Kerberos authentication the browsers need to be configured as follows:

Chrome

Add the host name of the REST server to the following registry key list:

- Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Google\Chrome\AuthNegotiateDelegateWhiteList

Firefox

Add the host name of the REST server to the following parameter list (navigate to *about:config*):

- network.negotiate-auth.delegation-uris
- network.negotiate-auth.trusted-uris

If you are not using a full qualified domain name, set the following parameter to **true**:

- network.negotiate-auth.allow-non-fqdn

Edge

Ensure that the host name of the REST server is in the **Intranet** or **Trusted sites** list of your browser.

Note: Users will be prompted to enter the credentials for the first time for every new instance of Microsoft Edge.

Functionality

The Anywhere version contains limited functionality that will be enhanced in the future. It has been designed and implemented to run on multiple devices, such as, desktops, laptops, tablets and smart phones.

The following functionality is available:

- Backstage
 - List Recent and Favorite Views
 - List and search Shared Views
 - List and search My Views
 - Save
 - Save As
 - Close all
- General menu
 - Undo
 - Redo
 - Reload view
 - Fullscreen mode
- Tables
 - Select Offspread elements
 - Select Inspread elements
 - Swap dimensions (Offspread and Inspread)
 - Stack Inspread dimensions
 - Sparklines (Display and Create/Edit)
 - Databars (Display and Create/Edit)
 - Display Grid comments
 - Display additional member information in tables
- Member Selection
 - Display member name and alias
 - Search by member name or alias
 - Make asymmetrical selections
 - Selection methods
 - Lowest from
 - All lowest
 - Select all
 - Deselect all
 - Expand all
 - Collapse all
 - Change selection order
 - including Predefined orders like the outline order
 - Change chart selection

- Quick Navigation via Context Menu
 - Keep Only
 - Remove
 - Drillup/down
 - Include/HideChildren
 - Databar
 - Edit sparkline
- Data Options
 - Suppress rows by null, missing or no access
 - Suppress columns by null, missing or no access
 - Data window
- Layout Options
 - Display table, chart or both
 - Show or hide title
 - Show or hide offspread
- Format Options
 - Basic Functionality like "Show Data in Thousands"
- Chart Options
 - Most Options are supported
- Client API
 - Refer to the client api documentation for the functionality of the client api (see windows startmenu shortcuts)
- Url API
 - Refer to the url api documentation for the functionality of the url api (see windows startmenu shortcuts)

PowerBI Visual

The Anywhere Client is also provided as a Custom Visual for PowerBI. The PowerBI Visual is available as a download from the Performance AL server under the following url:

```
http(s)://hostname/ev/PowerBI/ALVisual.pbiviz
```

Opening the url in a browser allows you to download the file. Downloading the file in Internet Explorer is not supported.

It is recommended to add the Visual to the store of your organization, refer to the Power BI documentation for further details.

Configuration

Custom PowerBI Visuals are designed to run in Sandboxed Iframes. Thus, the Visual does not have an origin and the Performance AL server has to be configured to support the

access from the Visual by setting the [RestApiCorsOrigins](#) to a "*".

Limitations

- The Custom Visual offers almost the same functionality as the Anywhere client. However, it doesn't support OAuth2.0 Authentication.
- The Visual is a "private" visual and not certified by the PowerBI AppSource validation team. That certification requires the Visual not to access any additional resources - hence it wouldn't be possible to load additional data from the OLAP database/ Performance AL server. As the Visual is not certified, the *Export to PDF* functionality is not supported. If you want your PowerBI report printed as a pdf, we recommend to print the report using the *print* functionality and a pdf printer.

Updates

When you upgrade your version of Performance AL, you also need to upgrade the version of the Visual. Most likely, Visuals in older versions will not be compatible to new versions of Performance AL. If you uploaded the Visual to the store of your organization, all you need to do is to upload the new version of the Visual and all existing reports will be updated automatically.

11. Appendix: dataSourceSettings

The **dataSourceSettings** section in the "EVServer.exe.config" file contains specific settings related to the several data source types. You only need to add these settings to the dataSourceSettings section if you want to specify a value other than the default value.

The "EVServer.exe.config" file can by default be found in the folder "C:\Program Files \cubus\Performance Analytics\Server".

For more information see "Editing the configuration file".

The following examples show the elements that can be edited.

TM1

```
<tm1>
  <authenticateUsingWIA>false</authenticateUsingWIA>
  <authenticateUsingWIAExceptions>
    <server name="tm1server1|sdata" />
    <server name="tm1server2|planning sample" />
  </authenticateUsingWIAExceptions>
  <allowWIA>false</allowWIA>
  <allowOIDC>false</allowOIDC>
  <isWriteEnabled>true</isWriteEnabled>
  <mdx>
    <compliant>true</compliant>
    <msExtensions>true</msExtensions>
    <evCalculations>true</evCalculations>
    <solveOrderBase>1000</solveOrderBase>
  </mdx>
</tm1>
```

MSAS

```
<msas>
  <redirectUriNative>https://login.microsoftonline.com/common/oauth2/
nativeclient</redirectUriNative>
  <ptsTimeOut>30</ptsTimeOut>
  <provider>MSOLAP</provider>
  <allowWIA>true</allowWIA>
  <dimensionsFromOtherPerspectives>true</
dimensionsFromOtherPerspectives>
  <mdx>
    <compliant>true</compliant>
    <msExtensions>true</msExtensions>
    <evCalculations>true</evCalculations>
    <solveOrderBase>1000</solveOrderBase>
  </mdx>
  <amo>
    <active>true</active>
    <autoReloadCache>true</autoReloadCache>
    <reloadAllOutlinesAfterDimensionProcess>true
</reloadAllOutlinesAfterDimensionProcess>
    <reloadRoleOutlinesAfterRoleChange>true</
reloadRoleOutlinesAfterRoleChange>
```

```

<ttl>5</ttl>
<servers>
  <server name="servername1.company.com">
    <active>true</active>
    <ttl>5</ttl>
  </server>
  <server name="servername2.company.com">
    <active>true</active>
    <ttl>5</ttl>
  </server>
</servers>
</amo>
<dso>
  <active>true</active>
  <autoReloadCache>true</autoReloadCache>
  <ttl>5</ttl>
  <servers>
    <server name="servername1.company.com">
      <active>true</active>
      <ttl>5</ttl>
    </server>
    <server name="servername2.company.com">
      <active>true</active>
      <ttl>1</ttl>
    </server>
  </servers>
</dso>
</msas>

```

Essbase

```

<essbase>
  <unicode>true</unicode>
  <nonUnicodeCodePage>1250</nonUnicodeCodePage>
</essbase>

```

mdx

```

<dataSourceSettings>
  <mdx>
    <useSumForMultiSelect>true</useSumForMultiSelect>
  </mdx>
</dataSourceSettings>

```

Data source type TM1

Element <tm1>

This is the parent tag for the TM1 data source related settings. You can use these settings to configure none default behaviour for all, or specific, TM1 data sources.

Filter	Possible values	Default value
<dataSourceSettings>	n/a	n/a

Element <adminHosts>

If the admin host for configured TM1 servers is running on another URL than [http://\[servername\]:5895](http://[servername]:5895) (which is the default), the connection parameters can be specified using the <adminHost> tag. This connection is used to look up the connection information for the configured TM1 servers.

Filter	Possible values	Default value
<tm1>	n/a	n/a

Example:

```
<adminHosts>
  <adminHost name="servername1">
    <port>5897</port>
    <useSSL>false</useSSL>
  </adminHost>
  <adminHost name="servername2">
    <port>5898</port>
    <useSSL>>true</useSSL>
  </adminHost>
</adminHosts>
```

Element <authenticateUsingWIA>

The value set for the <authenticateUsingWIA> tag specifies if Performance Analytics Server uses Windows integrated authentication (WIA) to logon to your TM1 servers. If this tag is set to "true" then WIA will be used for authentication on your TM1 servers. You can specify exceptions with the 'authenticateUsingWIAExceptions' tag.

Filter	Possible values	Default value
<tm1>	true, false	false

Example:

```
<authenticateUsingWIA>true</authenticateUsingWIA>
```

Element <authenticateUsingWIAExceptions>

You can use this tag to specify TM1 servers that are exceptions to the configured authenticateUsingWIA behavior. For example if you have set the value for the <authenticateUsingWIA> tag to "true", you can use the <authenticateUsingWIAExceptions> tag to specify the TM1 servers that Performance AL should not use Windows integrated authentication for. You can specify a server by using the <server>-tag.

Filter	Possible values	Default value
--------	-----------------	---------------

<tm1>	n/a	n/a
-------	-----	-----

Example:

```
<authenticateUsingWIAExceptions>
  <server name="tmladminhost|planning sample" />
</authenticateUsingWIAExceptions>
```

Element <server>

Tag to specify a specific server. The value of this server is specified in the name-attribute. You can only specify one server in this tag. If you want to specify more than one server you need to add additional server-tags.

Filter	Possible values	Default value
<authenticateUsingWIAExceptions>	The value is specified in the name-attribute.	n/a

Name attribute:

The name of the server. The name needs to be specified according the following syntax:

```
<TM1 Admin Host>|<TM1 Server>
```

<TM1 Admin Host> is the name of the Admin Host for the TM1 Server

<TM1 Server> is the name of the TM1 Server

Example:

```
<authenticateUsingWIAExceptions>
  <server name="tmladminhost|sdata" />
  <server name="tmladminhost|planning sample" />
</authenticateUsingWIAExceptions>
```

Element <allowWIA>

When Performance AL Client has authenticated itself against Performance AL Server using WIA (Windows Integrated Authenticated) or OIDC security provider, then the value set for the <allowWIA> tag specifies if Performance AL Server is allowed to pass the identity of the authenticated client to the TM1 data source server.

Filter	Possible values	Default value
<tm1>	true,false	false

If set to "true" and if the TM1 data source server is configured for WIA, then Performance AL Server passes the identity of the authenticated client to the TM1 data source server.

If set to "false" and if the TM1 data source server is configured for WIA, then credentials are required to connect to the TM1 data source server. If Performance AL Server is not configured for single sign on, then the user will be asked for credentials.

Example:

```
<allowWIA>true</allowWIA>
```

Element <allowOIDC>

This parameter is deprecated and will be ignored.

When Performance AL Client has authenticated itself against Performance AL Server using OIDC security provider, then it is impossible to authenticate user on TM1 level using OIDC Token. The value of the <allowOIDC> tag specifies if Performance AL Server is allowed to create connection using technical credentials and impersonation on TM1 level.

Filter	Possible values	Default value
<tm1>	true,false	false

If set to "true" and if the TM1 data source server is configured for Basic authentication, then Performance AL Server creates connection using technical credentials and TM1 impersonation.

If set to "false" and if the TM1 data source server is configured for Basic authentication, then credentials are required to connect to the TM1 data source server. The user will be asked for credentials.

Example:

```
<allowOIDC>true</allowOIDC>
```

Element <mdx>

This tag is the parent tag for all tags that are related to the MDX settings. These settings determine the way Performance AL creates the MDX-queries.

Filter	Possible values	Default value
<tm1>	n/a	n/a

Example:

```
<mdx>
  <compliant>false</compliant>
  <msExtensions>false</msExtensions>
  <evCalculations>true</evCalculations>
  <solveOrderBase>500</solveOrderBase>
</mdx>
```


</mdx>

Element <compliant>

The <compliant> tag defines if Performance AL uses advanced MDX queries with functions or basic MDX queries without any functions. If the value is set to true then Performance AL uses the advanced MDX queries. If the value is set to false then all the other tags defined within the <mdx> tags do not apply anymore.

Parent tag	Possible values	Default value
<mdx>	true,false	true

Example:

```
<mdx>
  <compliant>false</compliant>
</mdx>
```

Element <msExtensions>

This tag specifies if Performance AL uses the Microsoft specific way to use specific MDX functions.

Parent tag	Possible values	Default value
<mdx>	true,false	true

Example:

```
<mdx>
  <compliant>true</compliant>
  <msExtensions>false</msExtensions>
</mdx>
```

Element <evCalculations>

This tag specifies whether calculations are performed by Performance AL ("false") or by the OLAP server ("true").

Parent tag	Possible values	Default value
<mdx>	true,false	false

Example:

```
<mdx>
  <compliant>true</compliant>
  <evCalculations>false</evCalculations>
</mdx>
```

Element <solveOrderBase>

The <solveOrderBase> tag specifies the solve order value for the first calculation that is created in a Performance AL view. If the <evCalculations> tag is set to false then the value set to this tag does not apply anymore.

Parent tag	Possible values	Default value
<mdx>	Any number.	1000

Example:

```
<mdx>  
  <compliant>true</compliant>  
  <solveOrderBase>500</solveOrderBase>  
</mdx>
```

Element <usePersonalizedDimension>

The <usePersonalizedDimension> tag specifies if members with no-access are added to the member structure or not. If the <usePersonalizedDimension> tag is set to false then all members independent of the access rights are added. The toplevel dimension member is always added..

Filter	Possible values	Default value
<tm1>	true,false	false

Example:

```
<usePersonalizedDimension>true</usePersonalizedDimension>
```

Data source type MSAS

Element <msas>

Tag to specify the dataSourceSettings for your Analysis Services data sources. This tag is required when you want to specify dataSourceSettings for Analysis Services data sources.

Parent tag	Possible values	Default value
<dataSourceSettings>	n/a	n/a

Element <ptsTimeOut>

The value set for this tag specifies the time-out for the PivotTable service connection to the Analysis Server. If the connection is idle for the number of seconds defined in the value of this tag, then the PTS-connection will be closed.

Parent tag	Possible values	Default value
<msas>	0 - 14400	30

Example:

```
<ptsTimeOut>30</ptsTimeOut>
```

Element <redirectUriNative>

The redirectUriNative tag defines the redirect URI for mobile and desktop applications to an OAuth 2.0 system, when a non OAuth 2.0 security provider is used (e.g. Essbase).

If an OAuth 2.0 security provider is used this URI is implicitly defined in the security provider and is not required in the <msas> datasource section.

Parent tag	Possible values	Default value
<redirectUriNative>	Any valid native client redirect URI	n/a

Example:

```
<redirectUriNative>https://login.microsoftonline.com/common/oauth2/nativeclient</redirectUriNative>
```

Element <provider>

The <provider> tag can be used to specify the provider for the connection string to the data source.

Parent tag	Possible values	Default value
<msas>	MSOLAP, MSOLAP.6, MSOLAP.7, MSOLAP.8	MSOLAP

- MSOLAP.6 - SQL Server 2014
- MSOLAP.7 - SQL Server 2016
- MSOLAP.8 - SQL Server 2017, 2019

Example:

```
<provider>MSOLAP</provider>
```

Element <allowWIA>

The value set for the <allowWIA> tag specifies if Performance AL Server is allowed to pass the identity of the authenticated client to the MSAS data source server.

Parent tag	Possible values	Default value
<msas>	true,false	true

If set to "true", then Performance AL Server passes the identity of the authenticated client to the MSAS data source server.

If set to "false", then credentials are required to connect to the MSAS data source server. If Performance AL Server is not configured for single sign on, then the user will be asked for credentials.

Example:

```
<allowWIA>true</allowWIA>
```

Element <allowOIDC>

This parameter is deprecated and will be ignored.

The value set for the <allowOIDC> tag specifies if Performance AL Server is allowed to pass the windows identity of the authenticated client to the MSAS data source server.

Parent tag	Possible values	Default value
<msas>	true,false	true

If set to "true", then Performance AL Server passes the windows identity of the authenticated client to the MSAS data source server.

If set to "false", then credentials are required to connect to the MSAS data source server. The user will be asked for credentials.

Example:

```
<allowOIDC>true</allowOIDC>
```

Element <dimensionsFromOtherPerspectives>

The value set for the <dimensionsFromOtherPerspectives> tag specifies if Performance AL Server is allowed to use already loaded in the cache hierarchy members for other perspectives in a catalog. This option works for both multidimensional and tabular mode.

Parent tag	Possible values	Default value
<msas>	true,false	false

If set to "true", then Performance AL Server will not load the whole hierarchy members from MSAS and will reuse already loaded information from other perspectives from the same catalog. It will improve performance when loading a database structure should several perspective be used.

If set to "false", then Performance AL Server will load hierarchy members directly from MSAS for every perspective.

Example:

```
<dimensionsFromOtherPerspectives>true</dimensionsFromOtherPerspectives>
```

Element <mdx>

This tag is the parent-tag for all tags related to the MDX-settings. These settings determine the way Performance AL creates the MDX-queries.

Parent tag	Possible values	Default value
<msas>	n/a	n/a

Example:

```
<mdx>
  <compliant>false</compliant>
  <msExtensions>false</msExtensions>
  <evCalculations>true</evCalculations>
  <solveOrderBase>500</solveOrderBase>
</mdx>
```

Element <compliant>

The <compliant> tag defines if Performance AL uses basic MDX queries without any functions or more advanced MDX queries with functions. If the value is set to true then Performance AL uses the advanced MDX-queries. If the value is set to false then all the other tags defined within the <mdx> tags do not apply anymore.

Parent tag	Possible values	Default value
<mdx>	true,false	true

Example:

```
<mdx>
  <compliant>false</compliant>
</mdx>
```

Element <msExtensions>

This tag specifies if Performance AL will use the Microsoft-specific way to use specific MDX functions.

Parent tag	Possible values	Default value
<mdx>	true,false	true

Example:

```
<mdx>  
  <compliant>true</compliant>  
  <msExtensions>>false</msExtensions>  
</mdx>
```

Element <evCalculations>

This tag specifies whether calculations are performed by Performance AL ("false") or by the OLAP server ("true").

Parent tag	Possible values	Default value
<mdx>	true,false	true

Example:

```
<mdx>  
  <compliant>true</compliant>  
  <evCalculations>>false</evCalculations>  
</mdx>
```

Element <solveOrderBase>

The <solveOrderBase> tag specifies the solve order-value for the first calculation created in a Performance AL view.

Parent tag	Possible values	Default value
<mdx>	Any number	1000

If the <evCalculations> tag is set to false then the value set to this tag does not apply anymore.

Example:

```
<mdx>  
  <compliant>true</compliant>  
  <solveOrderBase>500</solveOrderBase>  
</mdx>
```

Element <amo>

This tag is the parent-tag for all tags related to the Analysis Management Objects (AMO) settings. These settings determine the way Performance AL handles the AMO-data and caching. The <amo> tag only applies to Microsoft SQL Server 2012 Analysis Services and is the equivalent of the <dso> tag.

Parent tag	Possible values	Default value
<msas>	n/a	n/a

Example:

```
<amo>
  <active>true</active>
  <ttl>5</ttl>
  <autoReloadCache>true</autoReloadCache>
  <servers>
    <server name="server1.company.com">
      <active>true
      <active>
        <ttl>0</ttl>
      </active></active>
    </server>
  </servers>
</amo>
```

Element <dso>

This tag is the parent-tag for all tags related to the Decision Supported Objects (DSO) settings. These settings determine the way Performance AL handles the DSO-data and caching.

Parent tag	Possible values	Default value
<msas>	n/a	n/a

The <dso> tag only applies to Microsoft SQL Server Analysis Services 2000 and is the equivalent of the <amo> tag.

Example:

```
<dso>
  <active>true</active>
  <ttl>5</ttl>
  <autoReloadCache>true</autoReloadCache>
  <servers>
    <server name="server1.company.com">
      <active>true</active>
      <ttl>0</ttl>
    </server>
  </servers>
```

</dso>

Element <servers>

The <servers> tag is the parent tag for all server-specific settings for the AMO or DSO settings. Within this tag you can specify the AMO or DSO settings for specific servers. These settings will override the general settings.

Parent tag	Possible values	Default value
<amo>	n/a	n/a

Example:

```
<amo>
  <active>true</active>
  <ttl>5</ttl>
  <autoReloadCache>true</autoReloadCache>
  <servers>
    <server name="server1.company.com">
      <active>false</active>
    </server>
  </servers>
</amo>
```

Element <server>

Tag to specify a specific server. The value of this server is specified in the name attribute.

Parent tag	Possible values	Default value
<servers>	The value is specified in the name-attribute.	n/a

You can only specify one server in this tag. If you want to specify more than one server you need to add additional server tags. The tags specified within this <server> tag only apply to this server and do override the general settings.

Example:

```
<amo>
  <active>true</active>
  <ttl>5</ttl>
  <autoReloadCache>true</autoReloadCache>
  <servers>
    <server name="server1.company.com">
      <active>true</active>
      <ttl>0</ttl>
    </server>
  </servers>
</amo>
```


Element <active>

The <active> tag specifies if Performance AL will retrieve AMO or DSO-data from the Analysis Server.

Parent tag	Possible values	Default value
<amo>,<dso><server>	true,false	true

When this value is set to false, Performance AL will not share memory images of the cube structure between users and loads the cube structure in memory for each user. Therefore it is not recommended to set this value to false.

If the <active> tag is specified within the <server> tag it will only apply to the server defined in this tag, when it is defined within the <amo> or <dso> tag, then it will apply to all servers not defined within the <servers> tag (general setting).

Example:

```
<amo>
  <active>true</active>
  <ttl>5</ttl>
  <autoReloadCache>true</autoReloadCache>
  <servers>
    <server name="server1.company.com">
      <active>true</active>
      <ttl>0</ttl>
    </server>
  </servers>
</amo>
```

Element <ttl>

This tag specifies the duration (time to live) for the cached AMO or DSO data.

Parent tag	Possible values	Default value
<amo>,<dso><server>	0 - infinite	5

The value is specified in minutes. When the ttl expires the AMO or DSO data is flagged dirty and needs to be reloaded before any data can be retrieved from Performance AL.

If the value is set to 0, then the cache will never be refreshed.

If the <ttl> tag is specified within the <server> tag it will only apply to the server defined in this tag. When it is defined within the <amo> or <dso>tag, it will apply to all servers not defined within the <servers> tag (general setting).

Example:

```
<amo>
  <active>true</active>
  <ttl>5</ttl>
  <autoReloadCache>true</autoReloadCache>
  <servers>
    <server name="server1.company.com">
      <active>true</active>
      <ttl>0</ttl>
    </server>
  </servers>
</amo>
```

Element <autoReloadCache>

The <autoReloadCache> tag specifies if Performance AL will refresh the cached AMO or DSO data at the moment its ttl is expired or at the moment a user requests data. If the value is set to true it will immediately reload the cache after its ttl is expired.

Parent tag	Possible values	Default value
<amo>,<dso>	true,false	false

You cannot specify this setting for a specific server.

Example:

```
<amo>
  <active>true</active>
  <ttl>5</ttl>
  <autoReloadCache>true</autoReloadCache>
  <servers>
    <server name="server1.company.com">
      <active>true</active>
      <ttl>0</ttl>
    </server>
  </servers>
</amo>
```

Element <reloadAllOutlinesAfterDimensionProcess>

The <reloadAllOutlinesAfterDimensionProcess> tag specifies if Performance AL will refresh the cached outlines (the full outline as well as role specific outlines) after a cube dimension has been processed.

Parent tag	Possible values	Default value
<amo>	true,false	true

After a dimension has been processed, Performance AL needs to refresh the AMO data to get the information about the last processed date. The point in time where the refresh of

the AMO data will happen depends on the <ttl> tag. After this refresh Performance AL will reload the outline at the time it is requested (e.g. when a user opens a view).

This functionality is only available if the <active> tag is true.

You cannot specify this setting for a specific server.

Example:

```
<amo>
  <active>true</active>
  <reloadAllOutlinesAfterDimensionProcess>true</
reloadAllOutlinesAfterDimensionProcess>
</amo>
```

Element <reloadRoleOutlinesAfterRoleChange>

The <reloadRoleOutlinesAfterRoleChange> tag specifies if Performance AL will refresh a cached role specific outline after this role has been changed.

Parent tag	Possible values	Default value
<amo>	true,false	true

After a role has been changed, Performance AL needs to refresh the AMO data to get the information about the changed role. The point in time where the refresh of the AMO data will happen depends on the <ttl> tag. After this refresh Performance AL will reload the role specific outline at the time it is requested (e.g. when a user opens a view).

This functionality is only available if the <active> tag is true.

You cannot specify this setting for a specific server.

Example:

```
<amo>
  <active>true</active>
  <reloadRoleOutlinesAfterRoleChange>true</
reloadRoleOutlinesAfterRoleChange>
</amo>
```

Data source type Essbase

<essbase>

Tag to specify the dataSourceSettings for your Essbase Data Sources. This tag is required when you want to specify dataSourceSettings for Essbase Data Sources.

Parent tag	Possible values	Default value
<dataSourceSettings	n/a	n/a

<unicode>

This tag specifies if Performance Analytics does use the Unicode- or the non-Unicode mode to connect to Essbase.

Parent tag	Possible values	Default value
<essbase>	true,false	true

Example:

```
<unicode>true</unicode>
```

<nonUnicodeCodePage>

If Performance AL is configured to use the non-Unicode mode to connect to Essbase you need to specify the non-Unicode codepage. The codepage needs to correspond with the value of the ESSLANG-variable set on the Essbase Server. The table below shows the corresponding codepages for the available ESSLANG-values.

Parent tag	Possible values	Default value
<essbase>	See table below.	n/a

ESSLANG variable	Codepage
Arabic_SaudiArabia.ISO-8859-6@Default	1256
ESSLANG variable	Codepage
Arabic_SaudiArabia.ISO-8859-6@Default	1256
Arabic_SaudiArabia.MS1256@Default	1256
Croatian_Croatia.ISO-8859-2@Croatian	1252
Croatian_Croatia.MS1250@Croatian	1252
CyrillicSerbian_Yugoslavia.ISO-8859- 5@Default	1251
CyrillicSerbian_Yugoslavia.MS1251@Default	1251
Czech_CzechRepublic.ISO-8859-2@Czech	1250
Czech_CzechRepublic.MS1250@Czech	1250
Danish_Denmark.ISO-8859-15@Danish	1252
Danish_Denmark.IBM500@Danish	1252
Danish_Denmark.Latin1@Danish	1252
Danish_Denmark.MS1252@Danish	1252
Dutch_Netherlands.IBM037@Default	1252
Dutch_Netherlands.IBM500@Default	1252

Dutch_Netherlands.ISO-8859-15@Default	1252
Dutch_Netherlands.Latin1@Default	1252
Dutch_Netherlands.MS1252@Default	1252
English_UnitedStates.IBM037@Binary	1252
English_UnitedStates.IBM285@Binary	1252
English_UnitedStates.IBM500@Binary	1252
English_UnitedStates.Latin1@Binary	1252
English_UnitedStates.MS1252@Binary	1252
English_UnitedStates.US-ASCII@Binary	1252
Finnish_Finland.IBM500@Finnish	1252
Finnish_Finland.ISO-8859-15@Finnish	1252
Finnish_Finland.Latin1@Finnish	1252
Finnish_Finland.MS1252@Finnish	1252
French_France.IBM297@Default	1252
French_France.IBM500@Default	1252
French_France.ISO-8859-15@Default	1252
French_France.Latin1@Default	1252
French_France.MS1252@Default	1252
German_Germany.IBM273@Default	1252
German_Germany.IBM500@Default	1252
German_Germany.ISO-8859-15@Default	1252
German_Germany.Latin1@Default	1252
German_Germany.MS1252@Default	1252
Greek_Greece.ISO-8859-7@Default	1253
Greek_Greece.MS1253@Default	1253
Hebrew_Israel.ISO-8859-8@Default	1255
Hebrew_Israel.MS1255@Default	1255
Hungarian_Hungary.ISO-8859-2@Hungarian	1250
Hungarian_Hungary.MS1250@Hungarian	1250
Italian_Italy.IBM280@Default	1252
Italian_Italy.IBM500@Default	1252
Italian_Italy.ISO-8859-15@Default	1252
Italian_Italy.Latin1@Default	1252
Italian_Italy.MS1252@Default	1252
Japanese_Japan.IBM930@Binary	932

Japanese_Japan.JapanEUC@Binary	932
Japanese_Japan.MS932@Binary	932
Korean_Korea.MS1361@Binary	949
Korean_Korea.MS949@Binary	949
Norwegian_Norway.IBM500@Danish	1252
Norwegian_Norway.ISO-8859-10@Danish	1252
Norwegian_Norway.ISO-8859-15@Danish	1252
Norwegian_Norway.ISO-8859-4@Danish	1252
Norwegian_Norway.Latin1@Danish	1252
Norwegian_Norway.MS1252@Danish	1252
Polish_Poland.ISO-8859-2@Polish	1250
Polish_Poland.MS1250@Polish	1250
Portuguese_Portugal.IBM037@Default	1252
Portuguese_Portugal.IBM500@Default	1252
Portuguese_Portugal.ISO-8859-15@Default	1252
Portuguese_Portugal.Latin1@Default	1252
Portuguese_Portugal.MS1252@Default	1252
Romanian_Romania.ISO-8859-2@Romanian	1250
Romanian_Romania.MS1250@Romanian	1250
Russian_Russia.ISO-8859-5@Default	1251
Russian_Russia.MS1251@Default	1251
Serbian_Yugoslavia.ISO-8859-2@Default	1250
Serbian_Yugoslavia.MS1250@Default	1250
SimplifiedChinese_China.IBM935@Binary	936
SimplifiedChinese_China.MS936@Binary	936
SimplifiedChinese_China.UTF-8@Binary	936
Slovak_Slovakia.ISO-8859-2@Slovak	1250
Slovak_Slovakia.MS1250@Slovak	1250
Slovenian_Slovenia.ISO-8859-10@Slovenian	1250
Slovenian_Slovenia.ISO-8859-2@Slovenian	1250
Slovenian_Slovenia.ISO-8859-4@Slovenian	1250
Slovenian_Slovenia.MS1250@Slovenian	1250
Spanish_Spain.IBM500@Spanish	1252
Spanish_Spain.ISO-8859-15@Spanish	1252
Spanish_Spain.Latin1@Spanish	1252

Spanish_Spain.MS1252@Spanish	1252
Swedish_Sweden.IBM500@Swedish	1252
Swedish_Sweden.ISO-8859-15@Swedish	1252
Swedish_Sweden.Latin1@Swedish	1252
Swedish_Sweden.MS1252@Swedish	1252
Thai_Thailand.MS874@Thai	874
TraditionalChinese_Taiwan.EUC-TW@Binary	950
TraditionalChinese_Taiwan.IBM937@Binary	950
TraditionalChinese_Taiwan.MS950@Binary	950
Turkish_Turkey.ISO-8859-3@Turkish	1254
Turkish_Turkey.ISO-8859-9@Turkish	1254
Turkish_Turkey.MS1254@Turkish	1254
Ukrainian_Ukraine.ISO-8859-5@Ukrainian	1251
Ukrainian_Ukraine.MS1251@Ukrainian	1251

Setting type mdx

<mdx>

Tag to specify the dataSourceSettings for mdx specific settings. This tag is required when you want to specify dataSourceSettings for mdx.

Parent tag	Possible values	Default value
<dataSourceSettings>	n/a	n/a

<useSumForMultiSelect>

This setting, when set to true uses 'Sum' instead of 'Aggregate' in the MDX queries sent to the data source for multi-select offspread members.

SUM() is used instead of AGGREGATE() when a member with a unary operator is defined. It has effect on SSAS and TM1 databases.

Parent tag	Possible values	Default value
<mdx>	true,false	false

Example:

```
<dataSourceSettings>
  <mdx>
    <useSumForMultiSelect>true</useSumForMultiSelect>
  </mdx>
```

```
</dataSourceSettings>
```

12. Appendix: Database Specific Configuration

There are different configuration options for the multidimensional databases.

These options can be configured in the Performance AL Explorer as well as in the Desktop Explorer and are described in the following chapter.

Essbase Data Source Settings

When an Essbase Data Source is added, it can be configured for the following items:

- **Preload Databases**

This setting can be set for all Databases at once or for specific Databases. Here you can specify if Performance AL Server should load the Essbase Databases on this Essbase Server automatically at startup. By doing this, users can connect immediately to the database and access its outline and data instantly without delays caused by opening the database.

- **Personalize Databases**

This setting can be set for all Databases at once or for specific Databases. 'Personalize Databases' allows you to limit the outline of all users according to their access rights within Essbase. According to the filters defined for this user in Essbase, the outline will be stripped of those members to which the user has no read access. Using this feature allows you to hide sensitive information in the outline or to simplify outlines for certain users. It also makes it possible to easily create personal reports.

- **Remove One Member Dimensions**

This setting can be set for all Databases at once or for specific Databases. With this option you can remove dimensions from the outline, when only one member with data remains when a database is personalized. For example, if the Essbase filter only allows a user to see 'New York', the 'Market' dimension will be completely hidden.

- **Retain Structure Using Labels**

This setting can be set for all Databases at once or for specific Databases. When only members on a lower level are accessible when a Database is personalized, members on a higher level disappear. This changes the structure of the outline. If this behavior is not desirable, use this option to have Executive Viewer Server insert those members again as a label. The user still has the original structure to work with, but does not see data from these members.

- **Add Substitution Members**

This setting can be set for all Databases at once or for specific Databases. An Essbase Substitution Variable is a global variable you can set that applies for the entire Database. These Substitution Variables can be treated as a member of the dimension for which they are defined. By enabling this option, the Substitution Variables will be added to the outline as Substitution Members.

- **Enable drillthrough**

This setting can be set for all Databases at once or for specific Databases. If it is enabled an XML Outline is generated for the database that is used to provide the context for drillthrough. Note that Preloading needs to be enabled to allow drillthrough.

- **REST API Endpoint**

This setting can only be set for all Databases at once and is only valid for Datasources using Oracle Essbase 21.3 or higher. It defines the endpoint that is used to connect to the Essbase REST API. One example would be: **<https://essbase-server.local:9001>**.

Essbase Database Settings

For each Essbase Database Item it is possible to set the one of the following options:

- Preload
- Personalize
- Personalized Dimensions
- Remove One Member Dimensions
- Retain Structure Using Labels
- Add Substitution Members

See the previous section for an explanation of these options. The option 'Personalized Dimensions' is explained in this section.

- **Personalized Dimensions**

It is possible to specify dimensions that should not be personalized if the 'Personalize' option is checked, or specify the Dimensions that should be personalized, if the 'Personalize' option is not checked.

When specifying dimensions in the 'Personalized Dimensions' field while the 'Personalize' option is not checked, only these dimensions will be limited to users according to their access rights within Essbase. The dimensions that are not specified will show without any restrictions applied. This means members that the user has no access to in these dimensions, will show as 'no access'. The dimension names can be entered in the 'Personalized Dimensions' field, separated by a semi-colon.

Example: *Year;Product;Market*

- **Enable drillthrough**

If drillthrough is enabled an XML Outline is generated for the database that is used to provide the context for drillthrough. Note that Preloading needs to be enabled to allow drillthrough.

TM1 Data Source Settings

When a Cognos TM1 Data Source is added, it can be configured for the following items:

- **Preload Cubes**

This setting can be set for all Databases at once or for specific Databases. Here you can specify if Performance AL Server should load the TM1 Databases on this TM1 Server automatically at startup. By doing this, users can connect immediately to the database and access its outline and data instantly without delays caused by opening the database.

- **Provider Specific**

This setting can be set for all Databases at once or for specific Databases. Click on 'Add' to add a Provider Specific setting. Specific OLE DB Properties can be set here. For a complete overview of the Properties available, consult the TM1 Documentation about OLE DB Properties. By default, no Properties are added here. It is recommended when connecting to a TM1 Server to leave this field empty. We advise you to contact our support team if you want to add Properties.

- **Preload Roles/Users**

This setting can be set for all Databases at once or for specific Databases. This setting only applies to the cubes, that are preloaded. With this option you can preload the users defined for a cube. When, for example, the cube with the dimension 'Market' is preloaded and a user with a role for only dimension 'East' is defined, this outline will be loaded when the option 'Preload Roles/Users' is checked.

Note: For MSAS, roles can be preloaded. For TM1, users can be preloaded.

TM1 Database Settings

For each TM1 Database Item it is possible to set the one of the following options:

- Preload
- Default Hierarchies

See the previous section for an explanation of the Preload option.

- **Preload Roles/Users exceptions**

It is possible to specify for each Database the Users that should not be preloaded if the 'Preload Roles/Users' option is checked, or specify the Users that should be preloaded, if the 'Preload Roles/Users' option is not checked.

These Users names can be entered in the 'Preload Roles/Users exceptions' field, separated by a semi-colon.

Example: *User1;User2*

- **Default Hierarchies**

It is possible to specify for each Database the default hierarchy that Performance AL will use for initial selections while creating new views.

This is a case sensitive parameter and only dimensions and hierarchies with an exact match will be applied.

If the hierarchy does not exist, the database default hierarchy will be applied as the default hierarchy.

Default hierarchies can be entered into the 'Default Hierarchies field. Only one

dimension and hierarchy can be entered per line.

The unique dimension name and unique hierarchy name needs to be specified separated with an equals (=) character.

Example:

```
[UniqueDimensionName]=[UniqueDimensionName].[UniqueHierarchyName]
```

```
[Market]=[Market].[Population]
```

```
[Product]=[Product].[Size]
```

MSAS Data Source Settings

When a MS Analysis Services server Data Source is added, this server can be configured for the following items:

- **OAuth 2.0**

The OAuth 2.0 authentication scheme can be used for MSAS data sources. In order to use this type of authentication, the following configurations have to be set.

- **Authorization Endpoint**

This is the full HTTPS URL to the **OAuth 2.0 Authorization Endpoint (v2)**. It must exactly match the OAuth 2.0 Authorization Endpoint (v2) of the application which is registered in the portal. On the Microsoft Azure portal it can be found under the path **Home > Azure Active Directory > App registrations > Endpoints**

Example for Microsoft Azure: `https://login.microsoftonline.com/<TenantId>/oauth2/v2.0/authorize`

- **Token Endpoint**

This is the full HTTPS URL to the **OAuth 2.0 Token Endpoint (v2)**. It must exactly match the OAuth 2.0 Token Endpoint (v2) of the application which is registered in the portal. On the Microsoft Azure portal it can be found under the path **Home > Azure Active Directory > App registrations > Endpoints**

Example for Microsoft Azure: <https://login.microsoftonline.com/<TenantId>/oauth2/v2.0/token>

- **Logout Endpoint**

This is the full HTTPS URL to the **OAuth 2.0 Logout Endpoint (v2)**.

Example for Microsoft Azure: <https://login.microsoftonline.com/<TenantId>/oauth2/v2.0/logout>

- **Server Name**

The server name can be found in your portal inside the current Permissions (see parameter description below).

By opening the menu **Home > All resources > YourAnalysisServicesResourceName > Overview** the Server name can be found in a format **asazure://YourAzureServerLocation.asazure.windows.net/YourResourceName**

Use that information to create an URI as follows: `https://yourAzureServerLocation.asazure.windows.net`

The YourAnalysisServicesResourceName is the name of your Analysis Services resource.

Example for Microsoft Azure: https://westeurope.asazure.windows.net

- **Application ID**

When defining the application in the **App registrations** section of the portal, an **Application (client) ID** is defined. This needs to be inserted here.

It can be found under **Home > Azure Active Directory > App registrations**.

- **Permission**

This is the the API permission of the service, that is used. In the Microsoft Azure portal it can be found in the API permissions section of the application.

It can be found under **Home > Azure Active Directory > App registrations > yourApp > API permissions**.

Example for Azure Analysis Services: Model.ReadWrite.All

- **Client secret**

This is a secret string that the application uses to prove its identity when requesting a token.

Note: default **Integrated Security** value is **false**. All other values will be ignored if **Integrated Security** will be added explicitly in the **Provider Specific Properties** section in the data source configuration panel. When OAuth 2.0 is configured, **Integrated Security** does not require a definition. To find more read [Impersonation](#) chapter.

Further configuration steps are described in

- [Preparing Microsoft Azure](#)
- [Specifying the security providers](#)
- [Configuring the OAuth2 Security Provider](#)

- **Preload Cubes**

This setting can be set for all Databases at once or for specific Databases. You can specify if Performance AL Server should load the MS Analysis Services cubes automatically at startup. By doing this, users can connect immediately to the cube and access its outline and data instantly without delays caused by opening the cube.

- **Provider Specific**

- When adding a MS Analysis Services Data Source it is possible to specify PivotTable Service Properties in the 'Provider Specific' field, for example, the 'Client Cache Size Property'.

Note: For a complete overview of the Properties available, consult the Microsoft Documentation about 'PivotTable Service Properties'.

By default, no Properties are added here. It is recommended when connecting to a MS Analysis Server to leave this field empty. We advise you to contact our support team if you want to add items.

Performance AL Server uses several of the Properties available, such as the 'Roles' Property or the 'MDX Compatibility' Property. The Properties already in use by

Performance AL Server may not be specified here.

When specifying Properties, you have to use the Property Name, exactly as specified in the Microsoft documentation. Note that this is case-sensitive.

You can enter multiple Properties by clicking on 'Add'. Specify the name and the value and click on 'Update'.

A PivotTable Service Property is passed on to all connections from Executive Viewer Server to MS Analysis Services.

- If it is impossible to use Windows integrated authentication with MS Analysis Services Data Source, you should specify a 'integrated security' property and set it to 'false'. Consult the Microsoft Documentation about Integrated Security to connect to data sources that support it. Note that default value for 'integrated security' is 'sspi'.

- **Interpret Roles**

This setting can be set for all Databases at once or for specific Databases. If this option is checked, Performance AL Server checks which users and groups belong to a role. For the first user to log on, the outline is loaded. If other users connect who belong to the same role, the outline is reused. If this option is not checked, the outline gets loaded for each individual user.

- **Preload Roles/Users**

This setting can be set for all Databases at once or for specific Databases. This setting only applies to the cubes, that are preloaded, and to Roles which are interpreted. With this option you can preload the roles defined for a cube. When, for example, the cube with the dimension 'Market' is preloaded and a role for only dimension 'East' is defined, this outline will be loaded when the option 'Preload Roles/Users' is checked.

Note: For MSAS, roles can be preloaded. For TM1, users can be preloaded.

MSAS Database Settings

For each MS Analysis Services Database Item it is possible to set the one of the following options:

- Preload
- Interpret Roles
- Interpret Roles exceptions
- Preload Roles/Users
- Preload Roles/Users exceptions

See the previous section for an explanation of these options. The options 'Interpret Roles exceptions', 'Preload Roles exceptions' and 'Default Hierarchies' are explained in this section.

- **Interpret Roles exceptions**

It is possible to specify for each Database the Roles that should not be interpreted if the 'Interpret Roles' options is checked, or specify the Roles that should be interpreted, if the 'Interpret Roles' option is not checked.

These Roles names can be entered in the 'Interpret Roles exceptions' field, separated by a semi-colon.

Example: *DemoRole;SampleRole*

- **Preload Roles/Users exceptions**

It is possible to specify for each Database the Roles that should not be preloaded if the 'Preload Roles/Users' option is checked, or specify the Roles that should be preloaded, if the 'Preload Roles/Users' option is not checked.

These Roles names can be entered in the 'Preload Roles/Users exceptions' field, separated by a semi-colon.

Example: *DemoRole;SampleRole*

Note: If a user has multiple roles assigned in MSAS (e.g. Role1 and Role2), the outline for this user is not loaded when the 'Preload Roles' option is checked. In order to preload outlines for users with multiple roles, these role combinations have to be entered in the 'Preload Roles exceptions' field, separated by a comma, while the 'Preload Roles' option is unchecked.

Example: *DemoRole;SampleRole;Role1,Role2*

- **Default Hierarchies**

It is possible to specify for each Database the default hierarchy that Performance AL will use for initial selections while creating new views.

This is a case sensitive parameter and only dimensions and hierarchies with an exact match will be applied.

If the hierarchy does not exist, the database default hierarchy will be applied as the default hierarchy.

Default hierarchies can be entered into the 'Default Hierarchies field. Only one dimension and hierarchy can be entered per line.

The unique dimension name and unique hierarchy name needs to be specified separated with an equals (=) character.

Example:

[UniqueDimensionName]=[UniqueDimensionName].[UniqueHierarchyName]

[Market]=[Market].[Population]

[Product]=[Product].[Size]

13. Appendix: Preloading

Preloading process can be used to reduce waiting time to open a view. If preloading is activated, the server will load outline (database structure) in cache automatically at startup. By doing this, users can connect immediately to the cube and access its outline and data instantly without delays caused by opening the cube.

Preloading process contains two parts: preloading full outline and preloading restricted outlines. It is possible to manage preloading using **Preload** and **Preload roles/users** in a datasource or database settings.

Preload activates preloading full outline without restrictions. **Preload roles/users** activates preloading restricted outlines for different users.

The preload process starts:

1. If preloading is activated right after the server start. The full outline will be loaded to the cache.
2. After an user logs in preloading starts according to the preloading settings. If the user is the first the user's outline will be loaded first then full outline.
3. An user with administrator rights can force a preload using [forcePreloading](#) if e.g. database structure has been changed.

If Preload roles/users is activated, Performance AL starts preloading restricted outlines after the full outline has been loaded. While preloading, each dimension will be checked if it has restriction. If not - the dimension will be reused from the full outline.

When user logs in the system will check first if his outline is in cache. Timestamps that show when the database structure was changed will be compared with the outline in the cache and with the database. The user will get his outline if it is already loaded and up to date. The preloading process will be triggered to find outdated outlines and update them according to the preloading settings.

Preloading may take some time until all the outlines where this option is enabled are loaded. If you have a lot of roles/user but not all of them use Performance AL every day it makes sense to activate preloading the full outline only. It can save time until the system will be ready. You can configure different preloading options to get the desired result, suitable for your environment. It is possible to manage preloading process using Parallel Preloading for databases and users. Check **ParallelPreload**, **RetryDatabasePreload** and **UseCurrentOutlineWhilePreloading** keys in [Configure the service and the configuration file](#) chapter. Using parallelization can reduce the time for preloading, but it can increase the load on the processor. Also using **Preload Roles/Users exceptions** field to manage preloading process for specific users or roles can help to avoid unnecessary preloading for users who uses Performance AL on a case-by-case basis. The best way is to check and choose the option that is better for your case.

- **MSAS**

MSAS provides roles concept to define restrictions for different users. It means different users can have the same role and same restrictions. It make sence to activate **Interpret Roles** flag to save memory required for the cache and preloading time when different users with the same role can use the same outline.

If you use Dynamic security when the restrictions depend not only on the role but also on the user name you should not activate Interpret Roles otherwise user can get wrong restrictions. In this case user specific outlines will be loaded for each user.

Interpret Roles exceptions field helps to combine classical roles and roles with dynamic security. Check [MSAS Data Source Settings](#) chapter to read about Interpret Roles.

Information about restrictions in a dimension will come directly from MSAMO. While preloading, each restricted dimension will be checked if it has been loaded already for another perspective for this role. If yes, the dimension will be reused. It can save additional time and memory.

- **TM1**

TM1 provides restrictions on a group level that means it is impossible to have personal users outline and outline will be loaded for all users from the same group (the same meaning as a role in MSAS).

Information about user restrictions in a dimension will be available by comparing number of available members for 'administrator' and 'user' connections.

- **LOG**

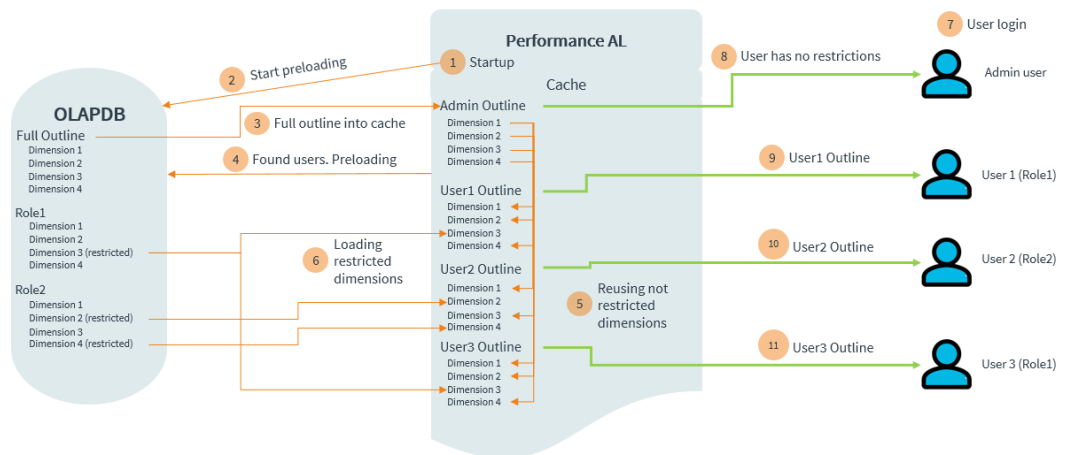
You can track the full preloading process in Performance AL log file with Debug log level. All entries related to the preloading have the category Preloading. The first message when preload starts is "Preloading database". The last is "Preloading Database succeeded." or "Preloading Database failed".

Preloading users/roles process has messages: "Loading user" or "Loading role", "Loading user succeeded" or "Loading role succeeded", "Loading user failed" or "Loading role failed".

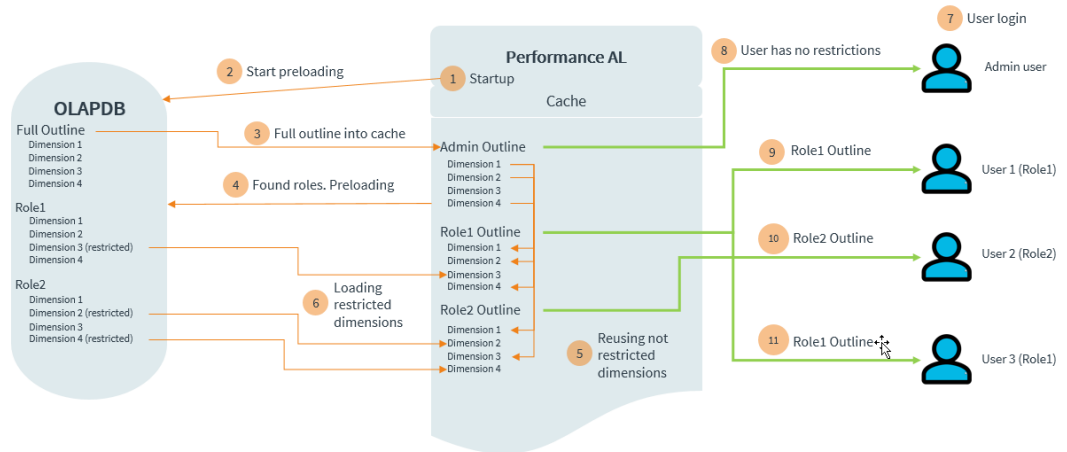
If parallel preloading is used, it can be helpful to use a thread parameter to filter out the thread and check preloading for the certain user or role.

- **Examples of preload schemes**

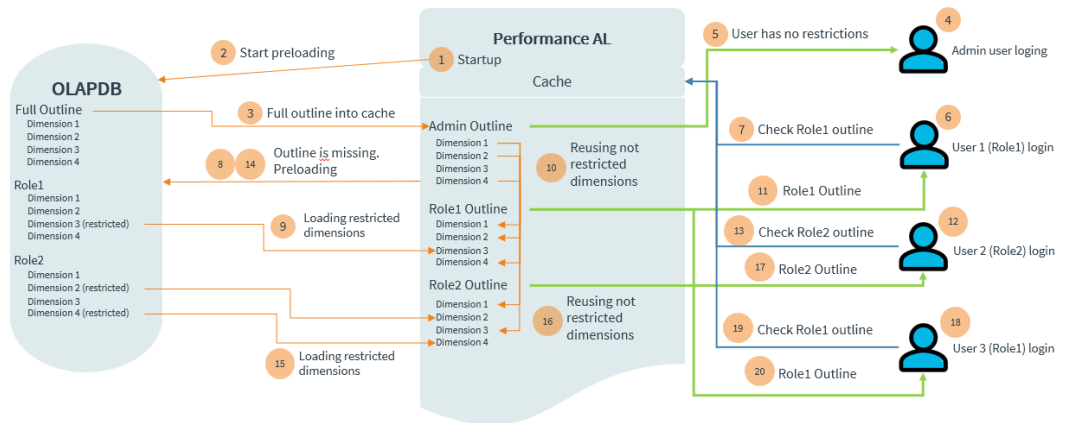
1. This scheme describes process if preload and preload users/roles are activated, Interpret Roles flag is deactivated. Valid only for MSAS.



2. This example shows scenario with activated Interpret Roles for MSAS. Valid for MSAS and TM1.



3. The next scheme describes what happens if preload users/roles is disabled. Interpret Roles is activated. Valid for MSAS and TM1.



14. Appendix: Impersonation

This part explains the impersonation mechanism in Performance Analytics.

Impersonation is a way to create user specific connections to the database. Impersonation allows to get all user's restrictions without using his password. It is can be used in case of preloading users or if some external security provider is used to authenticate users and Performance AL has no access to the real user's credentials. Such an authentication provider can be [OIDC security provider](#). Performance AL has used impersonation on system level to impersonate a user with his windows identity before. Beginning with the version 9.1.0 impersonation is used on the database level for MSAS and TM1.

Impersonation workflow in Performance AL has been changed to realize or improve the following features:

- preload user outlines for MSAS;
- provide mapping between OIDC security provider and the database layer without using current Windows user;
- subscriptions with restrictions applied properly if OIDC is used as security provider.

- **MSAS**

Integrated security parameter in connection string defines if the Windows identity of the caller is used to connect to Analysis Services. That means that connection user credentials defined in the datasource settings will be used to create a database connection. You don't need to set Integrated security explicitly for Azure databases in provider specific parameters. If you define another value for **Integrated security** with Azure databases it will be ignored.

Note: If the Impersonation does not work in your environment you may need to set Integrated Security = false explicitly in the provider specific settings of the Analysis services datasource.

Impersonation is activated by parameters **EffectiveUserName** or **Roles** in the connection string.

If you use Profiling to analyze connections to the database you will see that all connections to the database will be made using a connection user from the datasource settings.

Additional information can be found in the Session Initialize data. If impersonated connection was created this will be role name and EffectiveUserName or Roles attributes in the PropertyList for the connection.

If impersonated user does not exist or has no access to the database the connection can not be established. This eliminates the situation when a windows user cannot be impersonated for some reasons and gets full access to the database.

- **TM1**

TM1 supports 3 different ways to authenticate a user. These are Basic, Windows and CAM authentication mechanisms. TM1 uses REST API therefore TM1 Impersonation is possible during a database connection creation using TM1-Impersonate HTTP header

with the value:

- TM1 user name for Basic authentication (IntegratedSecurityMode = 1)
- Windows user name or corresponding to it TM1 user name for IntegratedSecurityMode = 3
- CAMID for IntegratedSecurityMode = 4

A connection to the TM1 database will be created using connection user from the datasource settings. If impersonated user does not exist or has no access to the database the connection can not be established.

- **Essbase**

Impersonation is not supported for Oracle Essbase. If an user can not be authenticated using the security provider he will get a database login dialog to enter credentials.

If OIDC is used as security provider the mapping of user names between OIDC server and the database should be correctly [configured](#). The 'database_user' attribute has to be added in OIDC user settings. The value depends on what authentication mechanisms has been selected for the database.

- For **Basic** authentication **user name** has to be used as the value.
- For **Windows** authentication **DOMAIN\USERNAME**.
- For **TM1 CAM** security **CAMNAMESPACE/USERNAME**.

Pay attention to the correct use of \ and / symbols.

15. Appendix: Essbase Drill Through

This part describes Essbase Drill Through and its restrictions in Performance Analytics.

Drill Through report shows external data from one or more Essbase cell intersections and provides additional information not contained in the Essbase cube.

In order to turn on this functionality, "Enable drillthrough" setting needs to be switched on for Database and "REST API Endpoint" has to be specified. More about these settings can be found in the following chapters: [Essbase Data Source Settings](#) and [Essbase Database Settings](#)

Drill Through in Performance Analytics is supported for Datasources using Oracle Essbase 21.4 or greater.

When a Drill Through script is created, at least one Drillable Region should be defined. It consist of combination of members and/or calls of Essbase Member-Set functions. The functions, which are supported by Performance Analytics can be found below:

Supported Member-Set Functions
@LEVMBRS
@IANCESTORS
@ANCESTORS
@SIBLINGS
@LSIBLINGS
@RSIBLINGS
@DESCENDANTS
@IDESCENDANTS
@CHILDREN

Limitations:

- Calling a function from another function (e.g. @CHILDREN(@SIBLINGS(Jan))) is not supported
- For all members, which are defined in Drillable Regons, '(' , ')' and ',' are not allowed to be part of the member's name.

16. Appendix: Tools

This chapter describes the tools that come with Performance Analytics.

EVCreateReport

The EVCreateReport tool can be used to generate PDF and Excel documents from Performance AL views.

It can be found in the `<Install_Dir>/Server/Tools/EVCreateReport` directory.

The tool creates a log file with the name: `EVCreateReport_<DAY><MONTH><YEAR>.log`

The following parameters are used:

Option	Parameter	Required	Description	Example
-s	EVSERVER	Yes	The host name of the machine where the Performance AL Server is running. It's also possible to include a port number in the host name.	-s localhost -s localhost:1234
-u	USER	Yes (If WIA is not used)	The name of the identity that is used to open the report.	-u admin
-p	PASSWORD	Yes (If WIA is not used)	The password of the identity that is used to open the report. It can either be send in clear text or as an encrypted string. For encryption use the tool <code><Install_Dir>/Server/Tools/EncryptConsole/EncryptConsole.exe</code>	-p password
-v	VIEWNAME	Yes	The name of the view (starting with / and including the full path) for which the document is created. Multiple views can be passed.	-v /View1 -v /Folder1/View2
-f	OUTPUTFILE	Yes	The name of the document that is created.	-f "c:\temp\MyReport.pdf"
--theme	THEME	No	The name of the theme that will be used for the report. For valid values refer to the chapter Theme settings in the	--theme Classic

			User Guide.	
-- wia		No	Use Windows Integrated Authentication. No user and password is required. The identity of the user executing the program is used.	--wia
-e	FILETYPE	No	The type of file with which the document is created. Valid values are: - PDF (default) - EXCEL	-e EXCEL
-t	TITLE	No	The title of the frontpage in a PDF document. Parameter -l <i>Frontpage</i> must be passed in order to print the title on the frontpage.	-t "Sales Report Q1"
-o	OFFGRIDD IMENSION OFFGRIDM EMBER	No	The member of an offgrid dimension in the view can be selected.	-o Market Region01
-or	ORIENTATI ON	No	The orientation of the document paper. Valid values are: - Landscape (default) - Portrait	-or Portrait
-l	TOC	No	Print the table of contents.	-l TOC
-l	Header	No	Print page headers and footers. (PDF only)	-l Header
-l	Frontpage	No	Print a frontpage in the document (PDF only). Title can be defined with parameter -t <i>Title</i> .	-l Frontpage
-l	PrintRange	No	Use the print range that is defined in the view. If parameter -pf <PRINTRANGEFILE> is used in addition, then the print range from the <PRINTRANGEFILE> is used.	-l PrintRange
-pf	PRINTRAN GEFILE	No	Use the print range from the <PRINTRANGEFILE>. This needs to be a JSON file containing the name of the view and the	-pf "c:\temp \ReportPrintRange.json"

			<p>corresponding PrintRange.</p> <p>Example:</p> <pre> [{ "Name": "/View1", "PrintRange": { "Dimensions": [{ "Dimension": "Product", "Members": [{ "Name": "100" }, { "Name": "300" }] }, { "Dimension": "Market", "Members": [{ "Name": "RegGrp01" }, { "Name": "RegGrp02" }] }] </pre>	
-tl	Table LineStyle	No	<p>Define linestyle of the table of content.</p> <p>Valid values are:</p> <ul style="list-style-type: none"> - none - dot (default) - dash - thin 	-tl dash
-im	Image Name	No	<p>Include an image on the frontpage. The image must locate inside the "Images" directory of the server.</p> <p>Note: If the image doesn't have a file extension in its name then it must not be added to the argument here.</p>	-im "MyImage.jpg"
-imh	Horizontal Image Alignment	No	<p>Define the horizontal alignment of the frontpage image.</p> <p>Valid values are:</p> <ul style="list-style-type: none"> - left - center - right (default) 	-imh center
-imv	Vertical Image Alignment	No	<p>Define the vertical alignment of the frontpage image.</p> <p>Valid values are:</p> <ul style="list-style-type: none"> - top (default) - center 	-imv center

			- bottom	
-th	Horizontal Title Alignment	No	Define the horizontal alignment of the frontpage title. Valid values are: - left (default) - center - right	-th center
-tv	Vertical Title Alignment	No	Define the vertical alignment of the frontpage title. Valid values are: - top (default) - center - bottom	-tv center
-db	Database Info	No	Show/hide database connection info for excel export. Valid values are: - on (default) - off	-db on
-chartUrl	Chart URL	No	Set chart URL.	-chartUrl http(s):// <server>/EVServer/UI/ chart.html

UserManagement

Users in Performance AL can be managed using the UserManagement console application. The UserManagement console can be found in the tools directory after the installation, for example:

```
<Install_Dir>/Server/Tools/UserManagement
```

The UserManagement console has the following parameters. Please note the parameters are passed using double hyphen (except -h and -?).

- --help/-h/-?
Display help message (optional)
- --EVServer
The Performance AL server name. (optional)
- --Authentication
Security provider Windows, WindowsForms or Essbase (required)
- --EVUser
The connection username that is used to create the user. (required)

- --EVPassword
The connection password that is used to create the user. (required)
- --EssbaseServer
The Essbase server. If Essbase is being used as a security provider, the user can also be created automatically in Essbase. (optional)

Only one of the following arguments can be passed:

- --Add <UserName>
Adds a user to the specified server.
- --Delete <UserName>
Deletes the user from the specified server.
- --Update
Creates or updates a CubusEV user on essbase based on an existing user. If you use the --Update parameter, then the --EssbaseServer parameter must be also set.
Note: The CubusEV user will be overwritten, including all access rights.
- --List
Lists all users configured for the specified server.

Creating Users

Users can be created in Performance AL by executing the UserManagement console in the following way.

```
UserManagement --EVServer ServerName --EVUser ConnectionUserName
                --EVPassword Password --Authentication SecurityProvider
                --Add NewUserName
```

To create the user on the Performance AL server and in Essbase.

```
UserManagement --EVServer ServerName --EVUser ConnectionUserName
                --EVPassword Password --Authentication SecurityProvider
                --Add NewUserName --EssbaseServer EssbaseServerName
```

Note: The user access rights still need to be set after the user has been created in Essbase. It may be that the user has no access to the required databases.

Deleting Users

Users can be deleted in Performance AL by executing the UserManagement console in the following way.

```
UserManagement --EVServer ServerName --EVUser ConnectionUserName
                --EVPassword Password --Authentication SecurityProvider
                --Delete DeleteUserName
```

To delete the user on the Performance AL server and in Essbase.

```
UserManagement --EVServer ServerName --EVUser ConnectionUserName
```

```
--EVPassword Password --Authentication SecurityProvider
--Delete DeleteUserName --EssbaseServer EssbaseServerName
```

Listing Users

All configured users can be displayed using the UserManagement console in the following way.

```
UserManagement --EVServer ServerName --EVUser ConnectionUserName
--EVPassword Password --Authentication SecurityProvider --List
```

EncryptConsole

The EncryptConsole tool is used to encrypt the password for [EVCreateReport](#).

It can be found in <Install_Dir>/Server/Tools/EncryptConsole directory.

The following parameters are used:

Option	Parameter	Required	Description	Example
-h		No	Displays help messages.	-h
-t	TEXT	Yes (If -i is not used)	The text that should be encrypted.	-t test
-i	FILE	Yes (If -t is not used)	The file that should be encrypted.	-i C:\Temp\test.txt
-o	FILE	No	If this is enabled and set to a valid file path the encrypted output will be written to the file.	-t test -o output.txt
-k	KEY	No	This setting allows the user to specify a different key for encryption. If it not set the default key for Performance will be used.	-t test -k test2

17. Appendix: Migration

This chapter describes migration tasks that need to be manually run by the administrator.

Performance AL 9.0.2 to 9.1.0

Due to Deprecation of the **unique_name** User Attribute as user name when using Performance AL with Keycloak authentication the following tasks have to be done:

1. The **unique_name** Mapper in the **Mappers** tab of your Performance AL application should be removed.
2. The **unique_name** Attribute should be removed from all users where it was defined. This can be done under the **Attributes** tab while selecting a user in the Keycloak user administration.
3. The **database_user** Mapper needs to be added when using impersonation. See [Preparing Keycloak](#) for instructions.

Performance AL 9.1.0 to 9.2.0

Due to an added system permission ("Manage Subscriptions") which is added to prepare the management of subscriptions, the webservice definition changed.

If you have a custom implementation/external program working with the Performance AL SOAP webservice, you have to update your webservice reference to ensure everything works as expected.

Please refer to the Server API Reference for more details on the webservice.

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Version 2.1, February 1999

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Jean-loup Gailly jloup@gzip.org

Mark Adler madler@alumni.caltech.edu

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