User's Manual for asix6

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AsRaport -

asix system reporting functionality based on the Microsoft Reporting Services

Doc. No. ENP6100 Version: 22-10-2010



AsRaport

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1 Introduction

The 6th version of **asix** system has been enriched in the reporting system based on Microsoft Reporting Services.

Microsoft[®] SQL Server[™] 2008 Reporting Services is a comprehensive server platform designed to meet a broad range of enterprise-wide reporting-related needs. The Reporting Services (in fact a component of the SQL Server 2008 database) enable report creation from various data sources; report environment management (planning the moment of report generation/subscribing/access control), as well as delivering reports to the users in the format and the way most convenient for them. The delivery methods include e-mail subscription and embedding the reports in business applications and/or Web portals.

In order to be able to cooperate with the Reporting Services reporting platform, the asix has been extended by the following components:

- Askom.Data.Host program
- AsRaport query editor
- AsixConnect database (run on a Microsoft SQL server)
- independent alarm archiver to store alarms in Microsoft SQL database.

The **AsixConnect database** is a key element. Its stored procedures with the use of Askom.Data.Host share process data from **asix** applications to the reporting environment. The **AsRaport** query editor plays a vital role in the report designing phase as the tool used to work out necessary SQL queries. Data from **asix** applications retrieved by the queries are used by the **Report Builder** or the **Report Designer** client applications of the Reporting Services environment to generate final reports. The AsRaport program is a visual editor so that SQL queries may be constructed even by users not familiar with syntax of the Structured Query Language.

Report Builder is a tool that enables the workers without programming skills to construct report definitions for individual report generation ad hoc (on demand) by end users. The Reporting Services environment is similar to the Microsoft Office package and may be intuitively operated especially by persons acquainted with the Office Excel or Access program.

Report Designer is a very flexible and productive reporting environment for programmers and advanced report designers. It is a component of SQL Server Business Intelligence Development Studio of Business Intelligence programming environment based on the well known Microsoft Visual Studio programming interface. Simple reports may be quickly and easily developed with the help of the Report Wizard, more sophisticated ones may be worked out in visual development environment of the Report Designer platform.



Fig. Architecture of the interface between the **asix** system and the Reporting Services environment

Users who develop reports that are going to retrieve some data from **asix** system applications simultaneously works in AsRaport interface and Report Builder/Designer interface.

The AsRaport and Askom.Data.Host.exe programs must be first configured and the AsixConnect database must be created to get the **asix** system ready for cooperation with the Reporting Services environment.

Design works on each new report form starts from defining syntax of SQL queries posted to database of stored procedures in order to retrieve source data, on which the reports are to be based; the AsRaport query editor is used to that end. Next, report layout must be specified in the Report Builder/Designer program - it demands a layout template with pre-defined data sections (tables, arrays, charts) to be selected, selected data elements to be placed in the project view, and suitable filtering criteria to retrieve source data for the reports to be defined. Report Builder/Designer may also be used to add new computational fields to the report form, almost arbitrarily format appearance of the report, and to view/print/Web-publish the report. A completed report form is stored on the Reporting Services central report server. The server shares the stored report forms throughout the entire enterprise using various methods, including making them available to Internet browsers.

More information on generation of reports in SQL Server 2008 Reporting Services may be found on the Microsoft Webpage.

1.1 Software requirements

SQL Server 2008 Service Pack 1 must be installed for cooperation of the **asix** 6 system with the Microsoft Reporting Services environment.

2 Access to asix system data

To use Microsoft Reporting Services, first of all install MS SQL Server 2008 on the computer, on which the report forms are to be developed. The procedure to configure access to application process data that are to be used as report source data includes the following steps (discussed in subsequent chapters below):

- 1. AsixConnect database creation.
- 2. AsRaport environment configuration.
- 3. Running Askom.Data.Host.exe.

2.1 The AsixConnect database

AsixConnect database stored procedures with use of the Askom.Data.Host program retrieve process data from **asix** applications and make them available to the reporting environment.

Use the Architect program to create AsixConnect database. It is the first step of the procedure to get the **asix** system ready for reporting based on Microsoft Reporting Services.

ATTENTION: AsixConnect database is indispensable if **asix** application process data are to be used by the reporting system.

To create AsixConnect database with access process data of an asix application:

- 1. Run the Architect program and open in that program the **asix** application configuration file.
- 2. Run the AsRaport set-up program:

Architect > *Application* menu> *Configure Reporting System AsRaport* > *AsxConnect database* tab

3. Select MS SQL server name for the AsixConnect database, select the to-be-used user authentication method, and click the *Create Database* button.

Three options used to select method to authenticate AsixConnect database users include:

1. Log-in as the current Windows user – use operating system user credentials

2. Log-in as a user of MS SQL Server named '_asix_internal' – such user was automatically created by the **asix** package installer if only it was running on a computer with previously installed MS SQL server

3. Log-in as the specified user of MS SQL Server – enter credentials of an user defined via the Architect program in the AsRaport set-up program prior to creating the AsixConnect database.

xConnect database	
ficrosoft SQL server name	
)atabase name	AsixConnect
) Log in as the current Window	IS USET
	SQL Server named '_asix_internal'
Dog in as the specified user of the speci	
Name	
Password	
Password	
	AsixConnect on specified local Microsoft SQL Server
	containing stored procedures which provide data from inect database is required by AsRaport reporting system.
Create a database if you have n	not created when you installed ASIX.
	<u>C</u> reate database

Fig.: 'Configurator of the AsRaport reporting system' window – AsixConnect database.

2.2 The AsRaport query editor

Configuration parameters of the AsRaport query editor include:

- asix application server computer;
- name of the report server.

The following application parameters are retrieved from the indicated **asix application server computer**:

- location of the variable definition database,
- network name of the alarm server,
- name of the MS SQL server and alarm database name.

Give attention to...

Lcation of the variable definition database is declared in: Architect > *Databases* > *Variable Definition Base* > *Format* tab

Network name of the alarm server is declared in: Architect > *Fields and Computers* > *Alarms system* > *Alarms/Network Name* tab

Name of the SQL server and alarm database name are declared in: Architect > Fields and Computers > Alarms system > Archive /Microsoft SQL Server tab

To declare asix application server computer:

- 1. Run the Architect program and open in that program the **asix** application configuration file.
- 2. Run the AsRaport set-up program:

Architect > Application menu > Configure reporting system AsRaport > Name of the server computer tab

3. Drop down list of server names, select the name of computer and click **OK**.

formation	Name of the server computer	AsixConnect database	Reports server	
]			
Name of	the server computer of Asix app	olication		
		(assi)		
From th	ne configuration of the current a	pplication following parar	neters are read:	
- locati	on of the variable definitions ba:	9 0		
	bases -> Varbase -> Format			
- netwo	ork name of the alarm server			
Field	s and Computers -> Alarms Syst	em -> Alarms -> Network	name	
	of the SQL server and databas			
Field	s and Computers -> Alarms Syst	em -> Archive -> Microso	ft SQL Server	
			ОК	Cancel

Fig.: 'Configurator of the AsRaport reporting system' window – Name of the server computer.

Declaration of MS Reporting Services report server is necessary to be able to open reports generated within the MS Reporting Services environment directly from the **asix** system application level (using the AsRapView module of the **asix** system).

To declare report server:

- 1. Run the Architect program and open in that program the **asix** application configuration file.
- 2. Run the AsRaport set-up program:

Architect > Application menu> Configure reporting system AsRaport > Reports server tab

3. Declare report server address and name of the folder within the server, as well as select the method to be used to authenticate users.

4. Click OK.

Three methods to authenticate report server users include:

1. Log-in as the current Windows user – use operating system user credentials.

2. Log-in as the 'AskomInternal' Windows user automatically created by the **asix** package installer.

3. Log-in as the specified Windows user – enter credentials of an user defined via the Architect program in the AsRaport set-up program

Configurator of the AsRaport reporting system		×
Information Name of the server computer AsixConnect database Microsoft Reporting Services Address of the reports server Name of the directory in the reports serv	Reports server	
 Log in as the current Windows user Log in as the Windows user AskomInternal Log in as the specified Windws user: Name 		
Password		
	ΠΚ	Cancel
	<u>0</u> K	Cancel

Fig.: 'Configurator of the AsRaport reporting system' window – Report server.

2.3 The Askom.Data.Host.exe program

The Askom.Data.Host program must be running if retrieval of process data from **asix** application is to be possible. By default the **asix** package installer puts the program within the package C:\Program Files\Askom**Asix** main folder.

3 AsixConnect SQL queries built in AsRaport

The AsRaport query editor is run by the AsRaport.exe executable put by default by the **asix** package installer into the package C:\Program Files\Askom**Asix** main folder.

The *Tools* and **View** tabs at the top part of the main window of the editor display collections of tools. The remaining part of the window is consumed by *Query1*, *Query2*,... tabs used to define various queries to the database of process value archive and to the database of variable definitions.

6					AsRaport		_ 🗆 🔀
2	Tools	View					
Oper	file arc File	ew query - Ne chival data de		Run 🖹 Ci	in Insert		×
	Period						
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(Column list						
	Name		Agregate	Alias			
-	starttime endtime	•	start	Start T End Tin			
	Query result						

Fig: AsRaport – main window – the tab for a query to the database of process value archive.

The *Tools* tab includes:

Open application file – open the **asix** application configuration file (XML file).

New query – archival data – add a tab for a new query to the database of process value archive.

New query – variable definitions database – add a tab for a new query to the database of variable definitions.

Run – display results of the so-far defined query.

Copy – copy query defined in the AsRaport window to the Windows Clipboard (to paste it later at the report development stage to the Report Builder/Designer query definition window).

Paste – paste a query from the Windows Clipboard to the AsRaport window.

Select – select process variable.

Insert – insert a new row to list of columns (in case of a query to the database of process value archive) or a new row to list of attributes/variables (in case of a query to the database of variable definitions).

Remove – remove the highlighted row from list of columns (in case of a query to the database of process value archive) or list of attributes/variables (in case of a query to the database of variable definitions).

Tools of the *View* tab are used to select styles and colors used in the AsRaport window to control its appearance.

Each **Query** tab opened by the **New query** – archival data command displays the following elements:

Specifications of the period to be covered by the query:

Beginning – beginning of the period

End – end of the period

The length of the interval [s] – interval between subsequently retrieved process variable values (the entire query period is divided into constant-length time intervals).

Column list – list of fields (report columns) to be presented in the report. Click in the new row in the **Name** column, then click the button to drop down selection list of all predefined field names:

starttime - interval start time

endtime - interval end time

shiftnumber – operator shift number. Three shifts have been pre-defined: 6 am–2 pm (the 1^{st} shift); 2 pm–10 pm (the 2^{nd} shift); and 10 pm–6 am (the 3^{rd} shift).

shiftdate – date when the given shift commenced.

For each query field an Agregat (aggregate: average0, average, delta, end, max, min, range, start, Total, quality_bad, quality_good, quality_uncertain) and an Alias may be defined. The aggregate is calculated for each interval using all archived data belonging to that interval.

Name	Agregate	Alias	
starttime	start	Start Time	
🥂 endtime	start	💌 End Time	
Query result	average average0 delta end max min range		
	start		
	total quality_bad quality_good		
	quality_uncertain		

Fig. The query field declaration for a query to the database of process value archive.

Query result – result of a query posted to the database of process value archive.

		AsRaport - 0	C:\AsixApp\Factory\Base\Variable_base.mdb	_ =
Tools View				
∱ 🗁		Paste 📫 Select		
en application New query - file archival data	 New query - variable Rur definitions database 	Copy		
File	Query	Column/Row		
ery1	. /			
Period				
	Beginning	End	The length of the interval [s]	
	MINUTE	DAY+1D	1M	
The value to be input	ParamStart	ParamEnd	ParamInterval	
by the user	ParamStart	ParamEnd	ParamInterval	
Column list	ParamStart Agregate	ParamEnd	ParamInterval	
by the user			ParamInterval	
Column list	Agregate	Alias	ParamInterval	
by the user Column list Name starttime	Agregate start	Alias [Start Time]	ParamInterval	
by the user Column list Name starttime endtime	Agregate start start	Alias [Start Time]	ParamInterval	
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Column list Column list Name starttime endtime A082 A046	Agregate start start average start	Alias [Start Time]	ParamInterval	
Column list Column list Name starttime endtime A082 A046	Agregate start start average start start start	Alias [Start Time]	ParamInterval	
by the user Column list Name starttime andtime A082 A046 > A048 ✓	Agregate start start average start start ztar start zba rekordów: 417	Alias [Start Time] [End Time]	ParamInterval	
by the user Column list Name starttime endume A082 A046 A048 Wynik zapytania - licc	Agregate start	Alias [Start Time] [End Time]	ParamInterval	
by the user Image: Column list Name starttime endtme A082 A046 > A048 W Wynik zapytania - lic. Start Time	Agregate start abs2 abs2 start bas2 A082 A082 A082 A082 A082	Alias [Start Time] [End Time] 8	ParamInterval	

Fig. The tab for a query to the database of process value archive.

Each *Query* opened by the *New query - variable definitions database* command displays the following elements:

Attribute list – list of attributes of variables to be presented in the report.

Variable list – list of names of variables to be presented in the report.

Query result – results of the query posted to the database of variable definitions.

		AsRa	aport - C:\Asix/	App\Facto	y\Base\Variable_base.mdb	_ =
To	ols View					
n application file	n New query - New query - variable archival data definitions database Query		nin Select nin Insert "₩ Remove Column/Row			
ery1 Que			ColumnyRow			
•	of the result table te names are names of columns, row co	ontains the values of s	elected attributer			
🔘 Variable	e names are names of columns, row cor					
O Variable				cted variable		
				cted variable	5 5	
Attribut Name		ntains the values of on		cted variable	/ariable list	
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Attribut Name Name	e list	ntains the values of on		cted variable	A riable list Name A000 A048	
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Attribute Name Name Description	e list on	ntains the values of on		cted variable	A riable list Name A000 A048	
Attribute Name Description Wynik za Jame Desc	e list on pytania - liczba rekordów: 3 zription gases temperature before mister	ntains the values of on		cted variable	A riable list Name A000 A048	
Attribute Name Description Wynik za Iame Desc 000 Flue 048 Flue	e list on pytania - liczba rekordów: 3 zipton	ntains the values of on		cted variable	A riable list Name A000 A048	

Fig: AsRaport – main window – the tab for a query to the database of variable definitions.

3.1 Data retrieval – AsixConnect database stored procedures

The AsRaport query visual editor may assist users who are not familiar with syntax of the SQL language. However, some users may prefer to construct the queries – including queries to alarm archives – on their own. Time-related parameters of the query (periodStart, periodEnd, resampleInterval, periodLen) may be specified in local time, or in the OPC time format (see the *Date/time/period OPC format* section below). Retrieval of archived process data, data from variable definition database, alarms from the SQL archive, and alarms from file archives is discussed in subsequent sections below.

3.1.1 Date/time/period OPC format

The OPC time format

The syntax: keyword +/- offset number +/- offset number ... 'keyword': NOW, MINUTE, HOUR, DAY, WEEK, MONTH, YEAR 'offset': S, M, H, D, W, MO, Y

Examples: DAY-1D, YEAR+1MO

The OPC duration format

The syntax: +/- offset number +/- offset number ... It doesn't contain 'keyword' 'offset': S, M, H, D, W, MO, Y Examples: 5M, 1H, 12H, 1MO, 1D+12h

3.1.2 Retrieval of archived data

ReadProcessed periodStart, periodEnd, resampleInterval, column1, column2, column3, ...

Time period specification:

periodStart, periodEnd: date, for example: '2009-1-1 0:0:0'

resampleInterval: number of seconds

Columns with variable values:

- Variable name: 'A000'
- As before + alias: 'A000 as [Flue gases temp.]'
- Aggregate and variable name: 'avg(A000)'
- As before + alias: 'avg(A000) as [Averaged flue gases temp.]'

Time columns:

- stamp time of interval start 'starttime'
- stamp time of interval end 'endtime'
- date of shift start 'shiftdate'
- number of shift 'shiftnumber'

3.1.3 Retrieval of data from variable definition database

Retrieve data from the database of variable definitions:

- ReadAttributes variableNames, column1, column2, column3, ...
- variableNames: the list of variable names, for example. 'A000, A004, A008'

Retrieve and transpose data from the database of variable definitions:

- ReadAttributesTranspose attributeNames, column1, column2, column3, ...
- attributeNames: the list of variable attributes, for example. 'Name, Description, Unit'

3.1.4 Retrieval of historical alarms (SQL archive)

Retrieve historical alarms from the SQL archive:

- ReadProcessedHistoricalAlarms resourceName, periodStart, periodEnd, alarmIdPattern, alarmTextPattern, alarmTextLang
- only alarms that were initiated within the specified period will be retrieved
- alarm start/end/confirmation date, ID, text and duration will be retrieved
- periodStart, periodEnd period in local time/OPC time format
- alarmIdPattern empty, alarm ID, alarm template or list of IDs, e.g.

1,2,3,

1-3

• alarmTextPattern – alarm text or its template e.g.

<text>

• alarmTextLang – alarm language ID ('pl' for Polish)

Alarm activity periods

- ReadProcessedHistoricalAlarms_ActivePeriods resourceName, periodStart, periodEnd, alarmIdPattern, alarmTextPattern, alarmTextLang
- only alarms that were active within the specified period will be retrieved
- each alarm start/end date earlier/later than the query period start/end date will be replaced with the query period start/end date, respectively.

Sum of activity period lenghts

• ReadProcessedHistoricalAlarms_ActivePeriodTotal resourceName, periodStart, periodEnd, alarmId, alarmTextPattern, alarmTextLang

• length of the period during which the alarm was active within the specified query period will be returned.

3.1.5 Retrieval of historical alarms (file archive)

- ReadHistoricalAlarmsOpc periodStart, periodLen, alarmIdRange, alarmTextMask, alarmType, alarmStatus, maxNumberOfAlarms
- Alarm start/end dates will be returned as separate rows.

4 Designing reports in Report Builder

Basic steps of the procedure that must be performed to develop a report utilizing some values of process variables/variable definitions retrieved from **asix** system applications are described below using an example of the "Factory" demo application delivered with the **asix** package. Reporting Services from the SQL Server 2008 Service Pack 1 version Express have been used. For detailed instructions see documentation of the Report Builder program.



Main window of the Report Builder program in version 2 is shown in the figure below.

Fig. Report Builder - main window.

Form used to define new reports contains by default report contents, page footnote, and the following elements:

- text box with the "click to add title" prompt
- link to the table/matrix wizard and link to the chart wizard
- the embedded [&ExecutionTime] field in the footnote (to add report execution date/time to each page of the report at page bottom).

4.1 Create a new report

Click the **Start** button and select the **Programy/Microsoft SQL Server 2008 Report Builder/Report Builder 2.0** option to create a new report. The displayed Report Builder window will show new report in the project view.

4.2 Declare data source/layout/format (wizard)

The first step is to select source of the to-be-reported data and to indicate the format, in which the reported data are to be arranged. Data presented in examples below are arranged <u>in tables</u>.

Table may be added to the report using the table wizard. The wizard helps to define links to data sources, to create query specifying which data are to be reported, to organize data in some groups, and to add summary rows (in which data contained within the group in question are aggregated).

1. Click the *Design* button to switch to the project view.



Fig. Design button to switch to the project view.

2. Click the *Table or Matrix* icon within the *Click to add title* area.

4 Designing reports in Report Builder

e B Z U	A ·	Â	A Image: Split in the split		
			\cdot 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6 \cdot 7 \cdot 8 \cdot 9 \cdot 10 \cdot 11 \cdot 12 \cdot 13 \cdot 14 \cdot		roperties
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					DataTransfor
	4		Table or Chart Matrix	Ξ	General
			Malix		Author
	ы				Description
					Width 432
	ы				Localization
	•		[&ExecutionTime		DescriptionL
					Language
					Other
					AutoRefresh 0
					ConsumeCor Fals
					CustomProp
					Page

Fig. 'Click to add title' area.

The 'Choose a connection to a data source' window appears.

v Table or Matrix	
Choose a connection to a data source	
Choose a published data source, or create a connection for use only in this report.	
Data Source Connections:	
Browse New	
Help	< <u>B</u> ack <u>N</u> ext > Cancel

Fig. 'Choose a connection to a data source' window.

List of data sources appears, if some folder with shared source data has been defined on the report server. Otherwise such folder (data source) must be defined.

3. Click the *New...* button to add a data source from the report level.

4. Select the '**Microsoft SQL Server**' connection type, then click the *Build* button to define connection properties.

New Table or Matrix			×
Choose a connection to	a data source		
Choose a published data source	e, or create a connection for use	e only in this report.	
Data Source Connections:			
Data Source Properties			×
General Credentials	Change name, type, and Name: DataSource1 Select connection type: Microsoft SQL Server Connection string: Click here to type or paste a Use single transaction wi	<u>v</u>	Build £
Help		Connect to a database	Cancel
		Select or enter a database name: Attach a database file: Dogical name: Advanced Test Connection OK. Cancel	

Fig. 'Connection properties' window.

5. Enter path to the AsixConnect database.

6. Click **OK** to close the 'Connection Properties' window, another **OK** to close the 'Data Source Properties' window, and **Next** to proceed with the wizard.

ATTENTION: The above procedure may be used to define data sources from the report level. However, in order to be able to freely modify reports stored on a report server, the data source should be declared on that server, too. Such sources are automatically displayed on the 'Choose a connection to a data source' wizard screen. This may be done (for example) using the Report Manager tool, which may be invoked as follows: Menu Start > Microsoft SQL Server 2008 > Configuration Tools > Reporting Services Configuration Manager > Report Manager URL > URLs

	R F	Reporting Services Configuration Mana	Iger: BPI-NOTEBOOK\SQLEXPRESS	<u>- U X</u>
		Microsoft SQL Server 2008 Reporting Service		
		Reporting Services Config	guration Manager	
		2 Connect		
			Report Manager URL	
	3	BPI-NOTEBOOK\SQLEXPRESS		
		service Account	Configure a URL to access Report Manager. Click Advanced to define multiple URLs, or to specify additional parameters on the URL.	
		🐊 Web Service URL	Report Manager Site Identification	
		Database	Virtual Directory: Reports_SQLEXPRESS	
		Detabase	URLs: http://BPI-NOTEBOOK:8080/Reports_SQLEXPRESS Advanced	
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C	Attp://bpi-notebook:80	080/Reports_SQLEXPRESS/Pages/DataSource	.aspx?ItemPa 💌 🐓 🗙 💿 570c 4712 b74d 85f537a5a75f DisplayLang en 👂 🔹	
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	Home > Data Source	25 >	Search for:	
	ReportsDataSo			
Properties	Dependent Items Su	ubscriptions		
	Name:	ReportsDataSource		
General	Description:		A	
Security				
		_	¥	
		Hide in list view		
		Enable this data source		
	Data Source Type	Interessore sign server		Exit
	Connection string:	Data Source=BPI- NOTEBOOK\SQLEXPRESS;Init	ial	-
		Catalog=AsixConnect	¥	
	Connect using:		The second se	_
		supplied by the user running the		
		e following text to prompt user fo		_
	Type or e	enter a user name and password	to access the data sou	
			New Yorkalay intranet	

Fig. Report Manager - report data source declaration.

Once data source is declared, declare a query to retrieve the to-be-reported data. Proceed with the table wizard:

7. Once path to the AsixConnect database is declared, the table wizard will display the 'Design a query' window.

8. Provided that the query has already been created in the AsRaport editor, copy it from the editor to the Windows Clipboard, navigate to the '*Design a query*' screen of the Report Builder wizard, select the *Edit As Text* option and paste the Clipboard contents. Click the button

to display query results.

🔂 Edit As Text 🛛	🗳 Import 🕴	Commar	d type: Text		
exec ReadPro końca]', 'AO		'DAY+1D', '1	H', 'starttime as	[Czas początku]',	'endtime as [Cza
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Fig. Report Bulider – table wizard – 'Design a query' window.

9. Click *Next*.

10. Arrange the fields grouping them into rows, columns or rows/columns and click *Next*.

New Table or Matrix		×
Arrange fields		
	mns, or both, and choose values to display. Data ons such as Sum, Avg, and Count on the fields in	a expands across the page in column groups and in the Values box.
Available fields		Column groups
Сzas_początku Czas_końca A080		
	Row groups	∑ Values
Help	L	< <u>B</u> ack <u>N</u> ext > Cancel

Fig. Report Bulider – table wizard – 'Arrange fields'.

11. Select a layout for the table and click *Next*.

New Table or Matrix		×
Choose the layout		
If you choose to show subtotals and grar with indented groups in the same colum		
Options:	Preview	_
Show subtotals and grand totals	Start Time End Time	
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Blocked, subtotal above		
Stepped, subtotal above		
Expand/collapse groups		
Help	< Back Next > Cancel	

Fig. Report Bulider – table wizard – 'Choose the layout' window.

12. Select a style for the table and click *Finish*.

Table or Matrix	
Choose a style	
Styles feature different fonts and	olor schemes, but do not affect the basic layout. You can customize the style after you finish the wizard.
Styles:	Preview
Corporate Forest Generic Mahogany Ocean	StartTime End Time [Start_Time] [End_Time]
Slate	
Help	< <u>B</u> ack <u>Finish >></u> Canc

Fig. Report Bulider – table wizard – 'Choose a style' window.

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			BackgroundColor Specifies the background color of the item.
Current rep	port server http://bpi-n	notebook:8080/ReportServer_SQLEXPRESS	

Fig. Report in 'Design' view.

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Fig. Report in 'Run' view.

4.3 View the report

Use the *Run* command on the Report Builder *Home* tab to view the report.

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Fig. Report in 'Run' view.

4.4 Add/edit data set

Data sets may be edited from the '*Report Data'* window pane (the part of Report Builder main window).

ATTENTION: Data source must be specified.

To create a data set:

1. Right-click data source name displayed in the '*Report Data*' window pane, then click the *Add Dataset…* command button to open the '*Dataset Properties*' dialog window.

If there is no data source item in the '*Report Data*' window pane select *New* menu and *Data Source...* command.

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Fig. 'New' menu in the 'Report Data' window.

Accept the default name for the edited data set or enter another name into the *Name* field.
 Select name of one of the existing and shared data sources displayed in the *Data source* field, or click the *New...* button to create a new embedded data source.

- 4. Depending on the data source type select the appropriate *Query type* option:
 - select the *Text* option for queries written in the data source query language
 - select the *Table* option to retrieve all fields of a relational database table

select the *Stored Procedure* option to run stored procedure specified by its name.
 Enter name of the query/stored procedure/table to the *Query* field. Alternatively you may click the *Query Designer...* button to open a graphical/text query editor, or the *Import...* button to import the query from some existing report.

6. Enter maximum number of seconds the report server is to wait for a replay from the database into the *Time out* field. Default value 0 means that there will be no limit at all. 7. Click *OK*.

The data set and its collection of fields is displayed in the '*Report Data*' window pane in the data source node of the Report Builder main window.

AsRaport



Fig. The data set and its collection of fields in the 'Report Data' window pane.

To edit a dataset:

Right-click the data source name displayed in the '*Report Data*' window pane, then right-click the data set name and click the *Dataset Properties* button to open dataset properties window in the query properties view.

ataset Properties	
Query Parameters Fields Options Filters	Choose a data source and create a query. Name: DataSet1 Data source: ReportsDataSource New
	Query type: © Text © Table © Stored Procedure Query: exec ReadProcessed 'DAY', 'DAY+1D', '1H', 'starttime as [Czas początku]', 'endtime as [Czas końca]', 'A080'
	Query Designer Import Refresh Fields Time out (in seconds): 0 •
Help	OK Cancel

Fig. 'Dataset Properties' window.

Select another category in the left window pane to switch to another dataset property.

4.5 Embedded vs. shared sources of data

Report Builder 2.0 can link a report to a data source shared on a report server or embed a data source into a report; in the latter case the data will be used exclusively by the report.

To be able to link a report to a data source shared on a report server one has to have access to the server and to know data source location within the server. To embed data source one has to specify connection and to know what privileges to specify so that the data needed within the report might be retrieved.

Once a shared data source is selected on a report server, the server becomes the current report server.

To create a link to a shared data source (shared connection):

1. Click the *New...* menu bar option in the '*Report Data'* (left) window pane of the Report Builder main window, then click the *Data Source...* option to open the '*Data Source Properties*' dialog window.

2. Accept the default name for the edited data source or enter another name into the *Name* field.

3. Set the *Use a shared connection or report model* option to display list of shared data sources and report models used in the report. If the list is empty, click the *Browse…* button and navigate to the report server folder, in which the shared data sources reside.

4. Highlight the shared data source and click **OK**.

Data source name will appear in the '*Report Data*' window pane.

To embed a data source:

1. Click the *New...* menu bar option in the *'Report Data'* (left) window pane of the Report Builder main window, then click the *Data Source...* option to open the *'Data Source Properties'* dialog window.

2. Accept the default name for the edited data source or enter another name into the *Name* field.

3. Make sure the *Use a connection embedded In my report* option is selected.

4. Drop down the *Select connection type* list and select data source type e.g. 'Microsoft SQL Server' or 'OLE DB'.

5. Using one of the following methods specify the connection string:

- enter the string directly into the *Connection string* text box
- click the *fx* formula button to display the '*Expression*' dialog window, enter expression into the *Set expression for:* box, click *OK*.

6. Click the *Build...* button to open the '*Connection Properties*' dialog window with properties of the above specified connection.

7. Depending on the selected data source type fill up appropriate fields of the 'Connection **Properties**' dialog window (data source type/name, credentials used to connect etc.). Click the **Test Connection** button to make sure that the data source is available and that the supplied credentials are correct.

8. Click the *Advanced* butoon - the 'Connection Properties' window will appear.

9. Specify credentials to be used to connect to the data source. Data owner is responsible for selecting acceptable credentials. Sometimes the owner decides to share data source on a report server and sets (in the server properties) up credentials available for other users. Ask data owner for the credentials.

10. Click **OK**.

Data source name will be displayed in the 'Report Data' window pane.

4.6 Save the report

To save the report:

1. Click the icon in the top left corner of the Report Builder main window and select the *Save As* command.

2. Specify URL address of the target server report or a local computer target folder. The report will be saved in a *.RDL file.

3. Click the *Save* button.



Fig. 'Save As Report' window.
5 Designing reports in Report Designer

Only basic steps of the procedure to define simple reports utilizing process data sources from **asix** system applications have been described in this section. The "Factory" demo application delivered with the **asix** package has been used as a sample application. Services from the SQL Server 2008 Service Pack 1 version Express have been used. For detailed instructions see documentation of the Report Designer program.



Fig. The main Report Designer window.

1. Run Start > Programs > Microsoft SQL Server 2008 > SQL Server Business Intelligence Development Studio

- 2. Select the Create: Project... option in the 'Recent Projects' window pane.
- 3. Enter basic report parameters: its name and location. Click OK.

New Project						? ×
Project types:		Templates:	.N	ET Framework 3.5	–	0-0- 0-0- 0-0-
B- Other Project	igence Projects Types	Visual Studio installed tem	tions P 🛃 Integrati	nalysis Services 2008 on Services Project lodel Project	Dat	
Create a new Repo	ort Server project usin	ig Report Wizard.				
<u>N</u> ame:	Report Project4					
Location:	D:\Documents and Settings\BPi\Moje dokumenty\Visual Studio 2008\projects			æ		
Solution Na <u>m</u> e:	Report Project4		Create directory f	or solution		
				ОК	Can	cel

Fig. 'New Project' window.

4. Report Wizard welcome screen appears. Click Next.

🕵 Report Wizard	
	Welcome to the Report Wizard
	The Report Wizard helps you create a report. With this wizard, you can: - Select a data source from which to retrieve data - Design a query to execute against the data source - Choose the type of report you want to create - Specify the basic layout of the report - Specify the formatting for the report Click Next to continue.
	Don't <u>s</u> how this page again
Help	< <u>Back</u> Next > Einish >> Cancel

Fig. Report Wizard - greeting window.

5. On the 'Select the Data Source' screen specify data source: name of the SQL server serving the AsixConnect database and the AsixConnect database - use Edit... button to open 'Connection Properties' window. Click Next.

Report Wizard Select the Data Source Select a data source from which to obtain data for this report of source.	or create a new data		
C Shared data source New data source Name: DataSource 1 Type: Microsoft SQL Server Connection string:			
	Edit Credentials	Connection Properties Data source:	<u>?</u> ×
		Microsoft SQL Server (SqlClient) Server name:	Change Refresh
Make this a shared data source Help Kext >	Finish >> [Cancel	Log on to the server Use Windows Authentication Use SQL Server Authentication User name: Password: Gave my password	
		Connect to a database © Select or enter a database name:	
		C Attach a database file;	Browse
			Advanced
		Test Connection OK	Cancel

Fig. Report wizard - 'Connection Properties' window.

6. The 'Design the Query' screen appears. Provided that the query has already been created in the AsRaport editor, copy it from the editor to the Windows Clipboard, navigate to the 'Design the query' screen, and paste the Clipboard contents into the Query string: field.

🧟 Report Wizard	
Design the Query Specify a query to execute to get the data for the report.	
Use a query builder to design your query.	
Q <u>u</u> ery Builder	
Query string:	
exec ReadProcessed 'DAY', 'DAY+1D', '1H', 'starttime as [Start Time]', 'endtime as [End Tir 'A036', 'A004']	ne]',
<u>H</u> elp < <u>B</u> ack <u>N</u> ext > <u>Finish</u> >> Ca	incel

Fig. Report wizard - 'Design the Query'.

7. Select report type: 'Tabular' or 'Matrix'. Click *Next*.

🧟 Report Wizard		
Select the Report Type Select the type of report that you want to create.		
G Thur		I
Tabular	****	
O Matrix	<u>×××× ×××× ×××× ×××× ××××</u>	
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	xxxxx xxxxx xxxxx xxxxx xxxxx	

Help < Back !	Next > Finish >> Ca	ncel

Fig. Report wizard – 'Select the Report Type' window.

8. Design a layout of the data within the report (a table was selected in this example). Click *Next*.

<u> Report Wizard</u>			
Design the Tab Choose how to gr	le oup the data in the table.		
<u>Available fields:</u>	Displ	ayed fields:	
A036 A004	Page>		****
	<u>G</u> roup>		* XXXX XXXX XXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
	etails>Star End	t_Time _Time	
Help	< R <u>e</u> move	Next >	Einish >> Cancel

Fig. Report wizard – 'Design the Table'.

9. Select table style. Click Next.

Slate Forest	XXXX	xx			
Corporate	XXXXX	****	x xxx	XXXX	****
Bold	XX XX XX XX	XX XX XX XX	XXXX	XXXX XXXX	× × × × ×
Dcean	XXXX	XXXX	XXXX	XXXX	XXXX
Generic	XXXX	XXXX	XXXX	XXXX	XXXX
	XXXX	XXXX	XXXX	XXXX	XXXX
	XXXX	XXXX	XXXX	XXXX	****
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	XX XX	XXXX	XXXX	XXXX	XXXX
	XXXX	XXXX	XXXX	XXXX	XXXX
	XXXX	XXXX	XXXX	XXXX	XXXX
	XXXX	XXXX	XXXX	XXXX	XXXX

Fig. Report wizard – 'Choose the Table Style'.

10. Specify report server and its folder, to which the reports will be transferred (deployed). Click *Next*.

🧟 Report Wizard	
Choose the Deployment Location Choose a location to which to deploy the report.	
<u>Report server:</u> <u>http://localhost/ReportServer</u> For a report server running in native mode, the path to the report server where the pr deployed, for example http://servername/reportserver. For a report server running in Sharepoint integrated mode, the URL of the Sharepoint site to which the project is dep example http://servername. Deployment folder:	1 I
Report Project5	
For a report server running in native mode, the path to the report folder, for example For a report server running in Sharepoint integrated mode, the URL of the Sharepoint I reports, for example http://servername/Shared Documents/Report Folder.	
Help < Back Next > Einish >>	Cancel

Fig. Report wizard – 'Choose the Deployment Location' window.

11. Specify report name. Click *Finish*. The report will be displayed in the project view.

Report Wizard	<u>_ 🗆 ×</u>
Completing the Wizard Provide a name and click Finish to create the new report.	
Report name:	
Test Report	
Report summary:	
Data source: DataSource1	
Connection string: Data Source=BPI-NOTEBOOK\SQLEXPRESS;Initial Catalog=AsixConn	ect
Report type: Table	
Layout type: Stepped	
Style: Slate	
Details: Start_Time, End_Time	
Query: exec ReadProcessed 'DAY', 'DAY+1D', '1H', 'starttime as [Start Time]', 'endtime as [End Time]', 'A036', 'A004'	
Preview report	
Help < Back Next > Finish C	Cancel

Fig. Report wizard – 'Completing the Wizard' window.

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New • Edit X 💩 🕸	
E- De Built-in Fields	Report Project5
- anatomic and a second	Shared Data Sources Control Contro Control Control Control Control Control Control Control Control Co
	Test Report.rd
Start Time	
GE End_Time Start Time End Time -EEE A036 [Start Time] [End Time]	
× [Properties 🚽 🕂 🗙
🔛 Row Groups 🛄 Column Groups 👻	Test Report.rdl •
(table1_Details_Group)	2↓ □
	Location
Output - 4 X	File Name Test Report.rdl Full Path D:\Documents and Setting
Show output from:	
	File Name Specifies the name of the file.
Control List	
Creating project 'Report Project5' project creation successful.	

Fig. Final report in design view.

12. Click the Preview button to view the report.



Fig. Final report in preview.

13. Select the *Deploy <report_name>* option of the *Build* menu to store the report on the report server.

6 Access to reports stored on report server

Reports shared on a report server may be viewed in any Internet browser. To view a report, specify URL address of the server. In case of the MS SQL Server 2008 Reporting Services environment the address for report server is:

http://<computer_name>/ReportServer_<SQL_server_instance_name>



Fig. Access to reports stored on report server via Internet browser.

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Raport przy	ygotowany dla	celów testov	vych			-
Czas początku	Czas końca	A050	A046			
1/31/2010 12:00:00 AM	1/31/2010 1:00:00 AM	1				
1/31/2010 1:00:00 AM	1/31/2010 2:00:00 AM					
1/31/2010 2:00:00 AM	1/31/2010 3:00:00 AM					
1/31/2010 3:00:00 AM	1/31/2010 4:00:00 AM					
1/31/2010 4:00:00 AM	1/31/2010 5:00:00 AM					
1/31/2010 5:00:00 AM	1/31/2010 6:00:00 AM					
1/31/2010 6:00:00 AM	1/31/2010 7:00:00 AM					
1/31/2010 7:00:00 AM	1/31/2010 8:00:00 AM					
1/31/2010 8:00:00 AM	1/31/2010 9:00:00 AM					
1/31/2010 9:00:00 AM	1/31/2010 10:00:00 AM					
1/31/2010 10:00:00 AM	L/31/2010 11:00:00 AM					
1/31/2010 11:09:00 AM	1/31/2010 12:00:00 PM					
1/31/2010	1/31/2010	124	426		To O Internet	/ a + (* 100% ·

Fig. Final report in Internet browser.

Reports accessed via Internet browsers may be printed and/or exported to PDF, Excel and/or Word formats.

7 Viewing reports directly from asix applications

Reports created within the MS SQL Reporting Services environment may be directly viewed from the **asix** system application level using the **AsRapView** report viewer. The viewer may be started by the ASRAPORT operator action according to the syntax:

ASRAPORT /RN=<report_name>[<report_parameters>]

where:

report_name	- name of the report created within the MS SQL Reporting Services
	environment (report definitions are stored in *.RDL files)
report_parameters	- additional parameters of the report.

Location of reports (within the MS SQL Reporting Services report server) to be displayed in the AsRapView viewer must be defined in the AsRapViewReportServerConfig.xml configuration file - it is declared with the use of *Configurator of the AsRaport reporting system* run from Architect > *Application* menu > *Configure Reporting System AsRaport*.