1 Introduction

What is Usage Monitor?

Proving completeness of the usage revenue stream is one of the key challenges for any Revenue Assurance department. Teams are often forced to manage with piecemeal controls over these major streams. These don't provide a complete picture and make problems and unwelcome trends difficult to spot.

Telcos need an automated end-to-end reconciliation which builds up a clear overview of event-based revenue streams.

Cartesian can provide an operator with such a tool. Ascertain Usage Monitor (UM) examines throughput of event transaction files, volumes and trends. It can identify missing files, loss of records, excessive suspense or filtered records, files out of sequence, backlogs in processing and changes in trend outside of acceptable thresholds. UM also generates data for Key Performance Indicators and raises alerts both externally and for reporting through the dashboard.

Design Principles

Every operator employs a different system architecture and choice of applications. Ascertain is designed to cope with this and it can model any kind of architecture, even handling event record files that get split or joined several times. And as a Telco's systems never stay static, there are features to easily accommodate changes to the core systems.

New checks can be added over time and the system can easily be extended to cover new flows and services. So an operator may initially use the system for the main retail billing chain, then extend it to cover the interconnect chain or perhaps Pay Per View or SMS events.

Ascertain UM makes use of various powerful common features, such as:

- **Network Visualisation** helps model the flow of information through systems and set up the appropriate checks and balances at different stages of the process
- **Configurable Metrics**: allowing permitted users themselves to refine how the KPIs are built, for example to flex the tolerances used. Ascertain now allows for reports to distinguish between different versions of the same KPI over time
- **Traffic Forecasting** allows actuals to be automatically compared to predictions to reveal network problems
- large data warehouse tables can now be built and reported on, using **OLAP Cubes**, so that the scope for drill-down from graphs and reports is greatly extended

Data is extracted from a variety of sources, such as processing logs from core systems (like mediation), remote database queries, emails of information from operators and so on. All data is processed by the Generic Data Loader and recorded in the Audit Database.

The goal is to work with existing data and logs so as not to impact the existing systems. This makes integration much more manageable.

Features and Benefits

Ascertain Usage Monitor simplifies through automation the primary task of the RA task which is to ensure that revenue flows are smooth and error-free. This achieves:

- *at-a-glance trend lines can be viewed at the start of day*, showing a variety of metrics, such as switch call volumes, adjustments, bill run values, etc. that have been processed overnight
- *exception reporting means you can get on with other work*: threshold checks allow specific tolerances to be configured and alarms to be generated only when they are exceeded. Tolerances can be set on any data item, such as percentage of records going into suspense, or total duration of traffic per day. Users can set the thresholds very flexibly to accommodate the different variations that operators have across their systems
- *end-of-month reporting is simplified*: performance indicators can be computed from the data collected and monitored through the dashboard
- *auditors' needs can be met day-in, day-out*: checks confirm the completeness of file processing and that all records are successfully passed from one system to the next in the switch to bill chain. These checks are tailored for each particular operator
- *follow-up can be monitored too*: any audit check failures or trends outside of the set thresholds can generate issues, which can be logged, grouped together appropriately, tracked until resolved. Issues can be filtered by type and severity and routed flexibly, and reported over time and by value

All of this is brought together in a dashboard which delivers a rich combination of graphs, reports, control indicators, KPIs, issues and alerts.

Modules

Ascertain UM 6.0 is made up of the following modules (Figure 1):

- Ascertain Usage Monitor 6.0
- Ascertain Issue Management Module 6.0
- Ascertain Framework 5.0 which comprises the following:
  - Web 5.0
  - Utils 5.0
  - Jobs 5.0
  - Directed Graph Framework 3.0
  - Generic Data Loader 3.0
  - Business Logic Engine 5.0
  - OLAP Reporting Tool 3.0
  - Report Deployment Module 3.0
  - Configurable Wizard Engine 2.0
  - Service Orientated Architecture 2.0

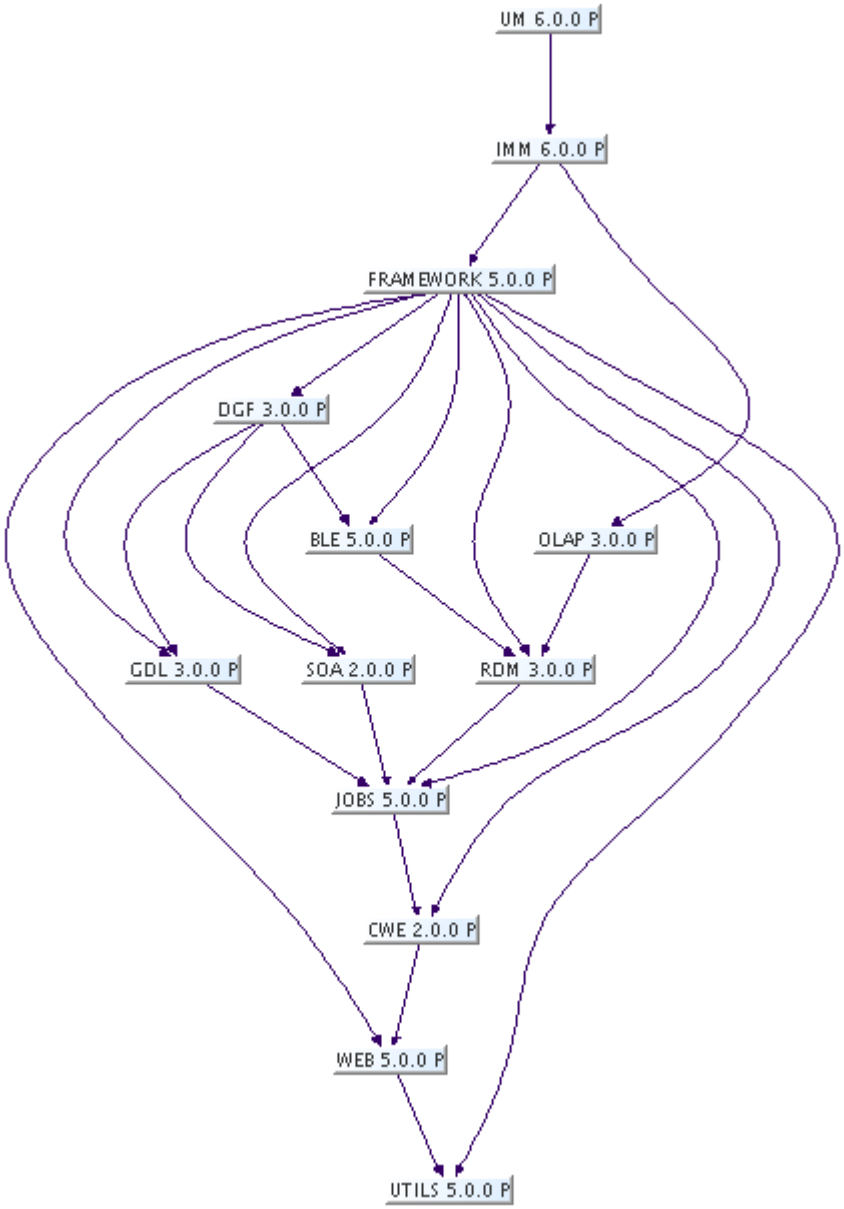

Figure 1 Module Graph showing the Usage Monitor Modules

2 Configure UM

Ascertain Usage Monitor is configurable via the user interface. UM can only be maintained and configured by users with administrative privileges.

The UM configuration screens are accessed via the toolbar by clicking the **Configuration** button Configuration and under the heading **Configuration Navigation** (Figure 2) click **Usage Monitor Configuration**. This opens the **Usage Monitor Configuration** screen (Figure 3).

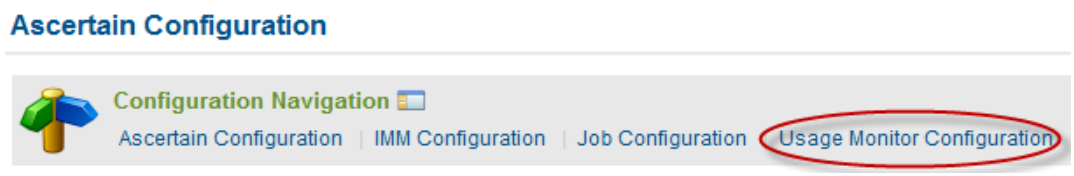

Figure 2 Configuration Navigation menu

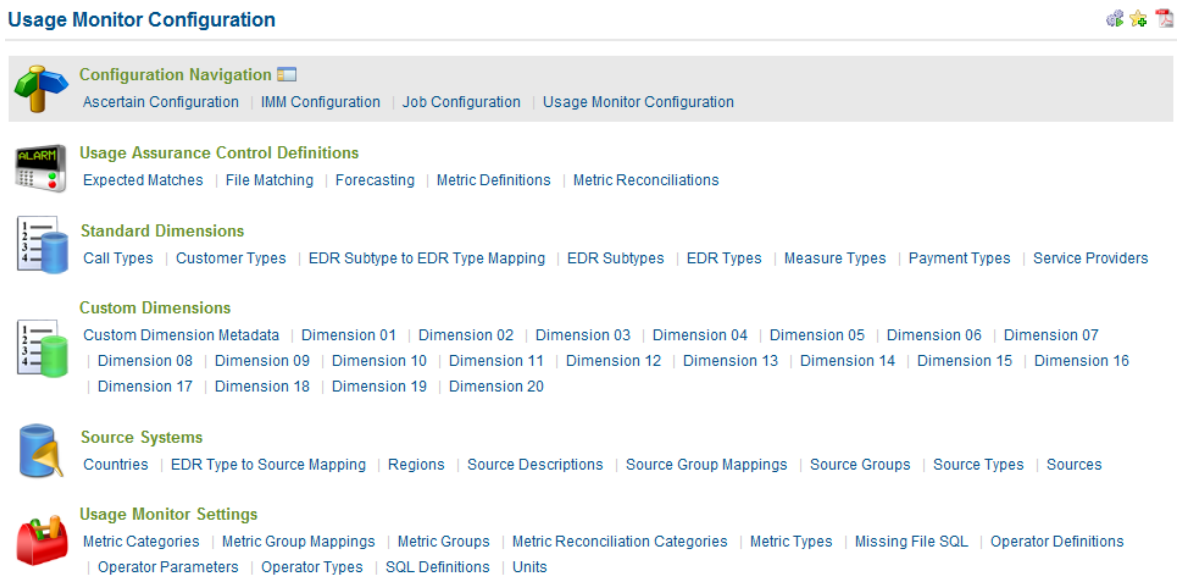

Figure 3 Usage Monitor Configuration screen

The **Usage Monitor Configuration** screen provides the administrator user with the following options which are documented in the subsequent sections:

Menu Item	Description
Usage Assurance Control Definitions	Provides access to the UM control definitions configuration screens. *These screens are documented in the **Usage Monitor User Guide**.*
Standard Dimensions	Provides access to the standard dimensions configuration screens
Custom Dimensions	Provides access to custom dimensions configuration screens
Source Systems	Provides access to source systems configuration screens
Usage Monitor Settings	Provides access to the UM settings configuration screens

Usage Assurance Control Definitions

The **Usage Assurance Control Definitions** menu provides access to the configuration screens for managing the reference data for the various types of UM controls. The menu items (Figure 4) are detailed in the **Usage Monitor User Guide**.

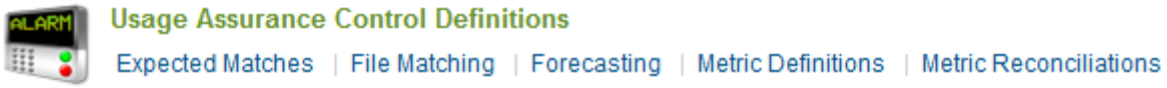

Figure 4 Usage Assurance Control Definitions Menu

The **Usage Assurance Control Definitions** menu provides the user with the following options:

Menu Item	Description
Expected Matches	Displays an editable list of the minimum number of expected matches between records
File Matching	Enables users to configure file matching
Forecasting	Enables users to configure forecasting
Metric Definitions	Enables users to configure metric calculations
Metric Reconciliations	Enables users to configure metric reconciliations

*For further information regarding these menu items see the **Usage Monitor User Guide > UM Menu** section.*

Standard Dimensions

The **Standard Dimensions** menu provides access to the configuration screens for managing the reference data for the various types of dimensions. These dimensions can be used for Ad Hoc reporting. The menu items (Figure 5) are detailed in the following sections.

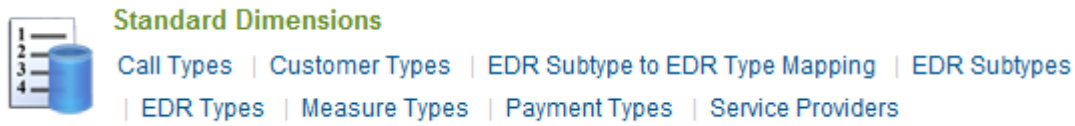

Figure 5 Standard Dimensions Menu

The **Standard Dimensions** menu provides the user with the following options:

Menu Item	Description
Call Types	Displays an editable list of call types
Customer Types	Displays an editable list of customer types
EDR Subtype to EDR Type Mapping	Assigns EDR subtypes to an event direction
EDR Subtypes	Displays an editable list of EDR subtypes and assigns them to types
EDR Types	Displays an editable list of EDR types
Measure Types	Displays an editable list of measure types
Payment Types	Displays an editable list of payment types
Service Providers	Displays an editable list of service providers

Call Types

Usage records are allocated a particular call type as they are loaded into UM. The **Call Types** screen enables the editing or addition of call types to be carried out.

Select **Call Types** from the **Standard Dimensions** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Call Types** screen (Figure 6).

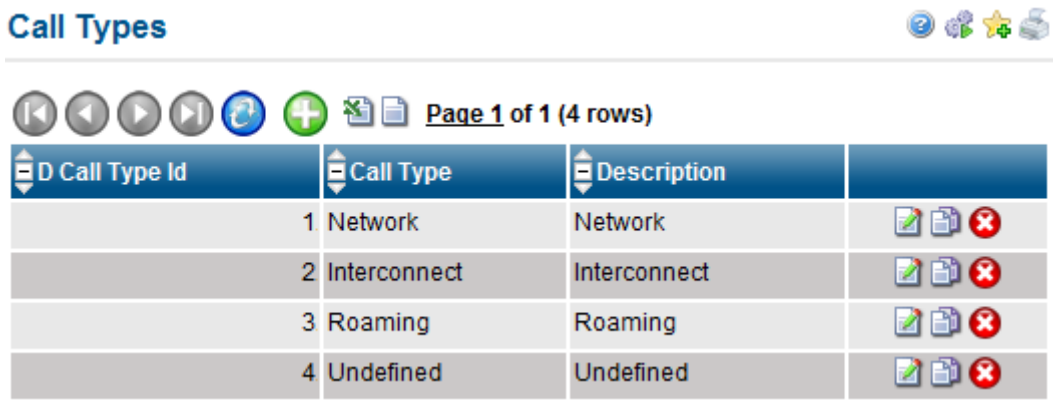

Figure 6 Call Types Screen

The fields on this screen are as follows:

Field Name	Description
D Call Type Id	Call type's database identification number
Call Type	Name of the call type
Description	More detailed description of the call type

Customer Types

Usage records are allocated a particular customer type as they are loaded into UM. The **Customer Types** screen enables the editing or addition of customer types to be carried out.

Select **Customer Types** from the **Standard Dimensions** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Customer Types** screen (Figure 7).

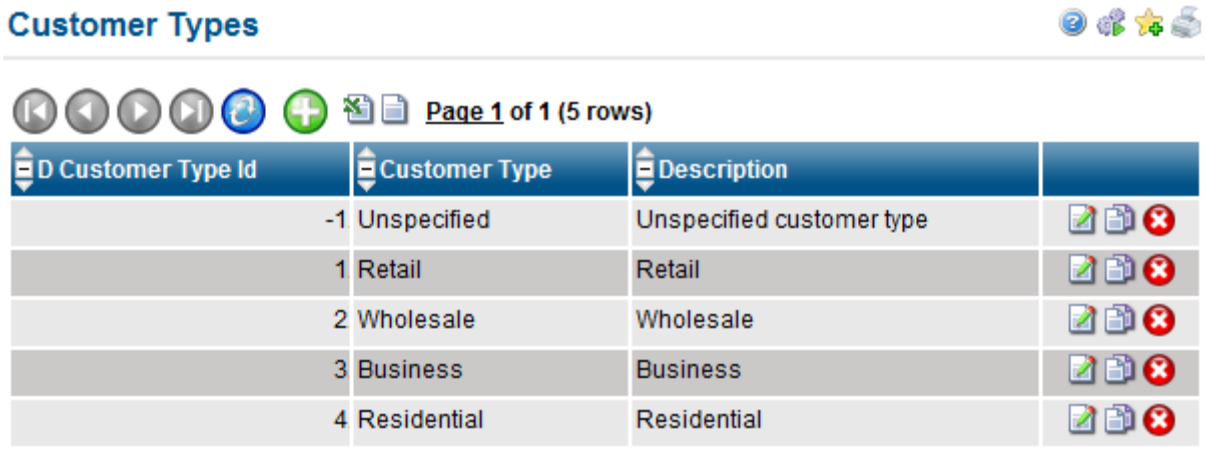

Figure 7 Customer Types Screen

The fields on this screen are as follows:

Field Name	Description
D Customer Type Id	Customer type's database identification number
Customer Type	Name of the customer type
Description	More detailed description of the customer type

EDR Subtype to EDR Type Mapping

This screen maps the EDR Subtypes to the appropriate EDR Direction. This screen enables the editing or addition of mappings to be carried out.

Select **EDR Subtype to EDR Type Mapping** from the **Standard Dimensions** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **EDR Subtype Direction Mapping** screen (Figure 8).

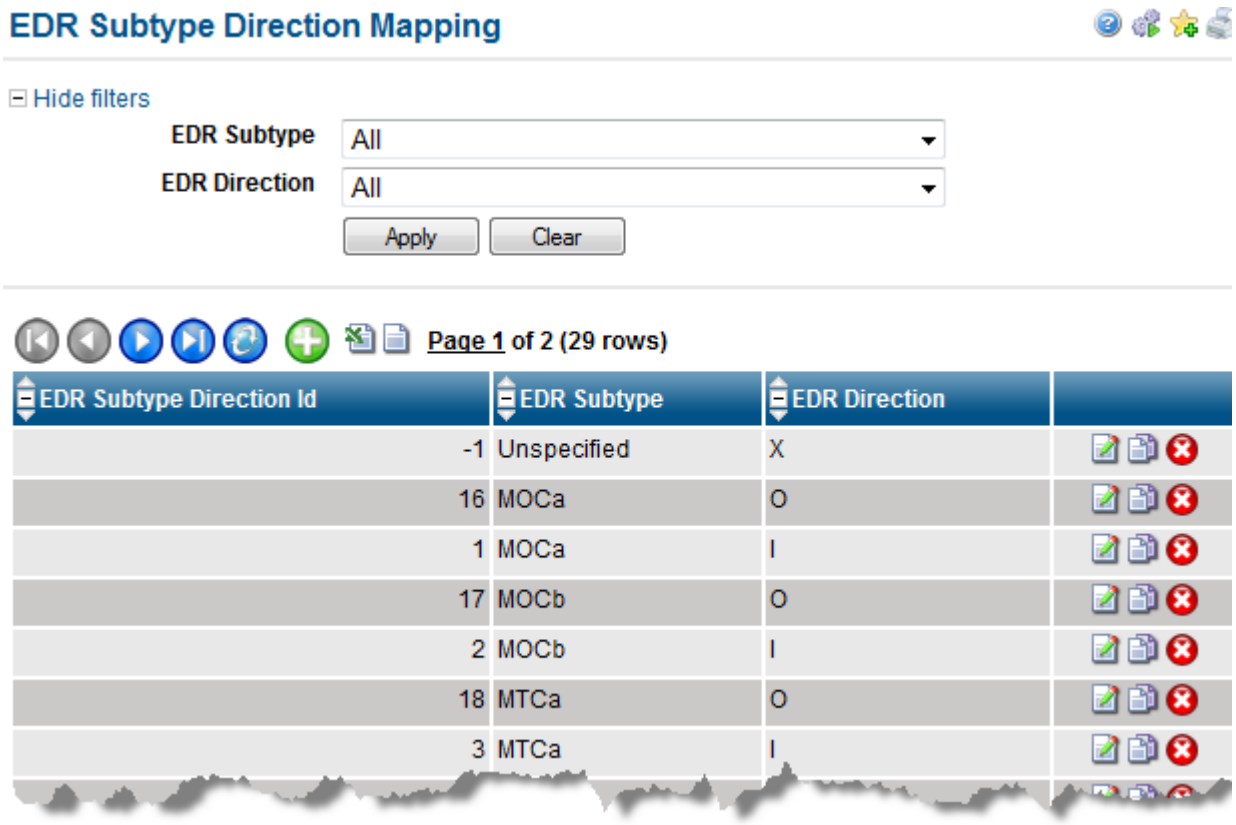

Figure 8 EDR Subtype Direction Mapping Screen

The fields on this screen are as follows:

Field Name	Description
EDR Subtype Direction Id	EDR subtype direction's database identification number
EDR Subtype	Name of the EDR subtype
EDR Direction	Direction of the EDR *I = Incoming* *O = Outgoing* *X = Unspecified*

EDR Subtypes

Event detail record (EDR) subtypes allow a higher granularity of categorisation to exist within a single event detail record type. This screen displays the configured **EDR Subtypes** that can be imported into UM. These are used as dimensions in the Ad Hoc report screens. This screen enables the editing or addition of EDR Subtypes to be carried out.

Select **EDR Subtypes** from the **Standard Dimensions** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **EDR Subtypes** screen (Figure 9).

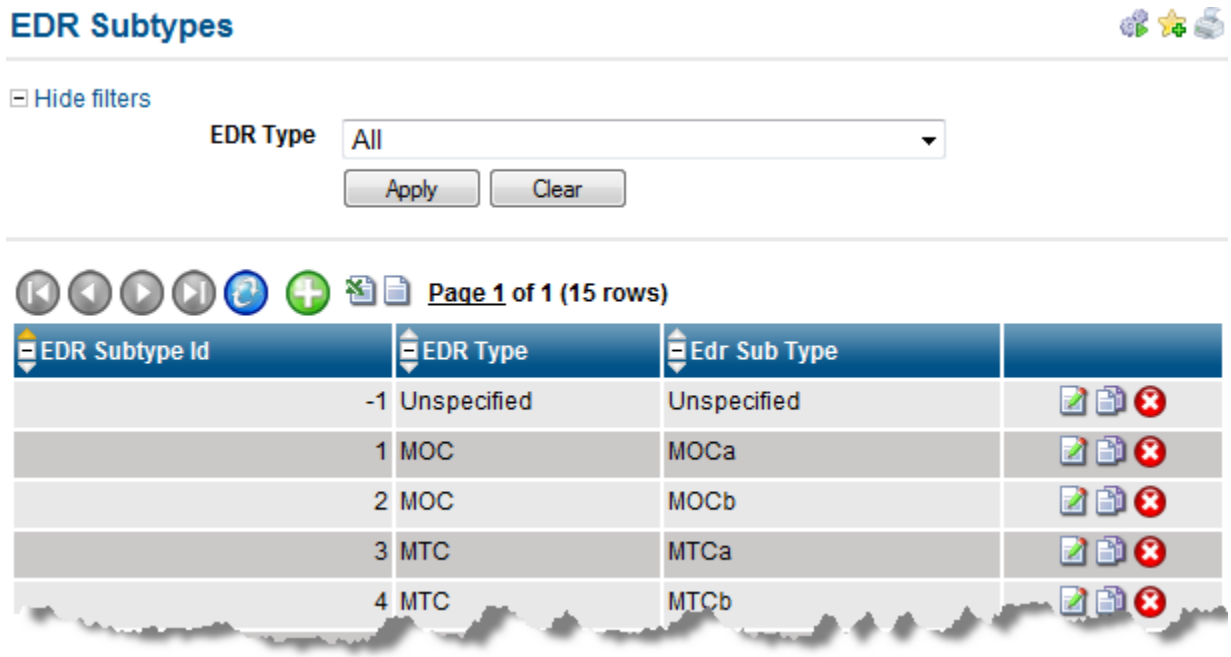

Figure 9 EDR Subtypes Screen

The fields on this screen are as follows:

Field Name	Description
EDR Subtype Id	EDR subtype's database identification number
EDR Type	Name of the EDR Type that the subtype has been assigned to
EDR Subtype	Name of the EDR subtype

EDR Types

Event detail record (EDR) types allow event detail records to be categorised. This screen displays the configured **EDR Types** that can be imported into UM. This screen enables the editing or addition of EDR Types to be carried out.

Select **EDR Types** from the **Standard Dimensions** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **EDR Types** screen (Figure 10).

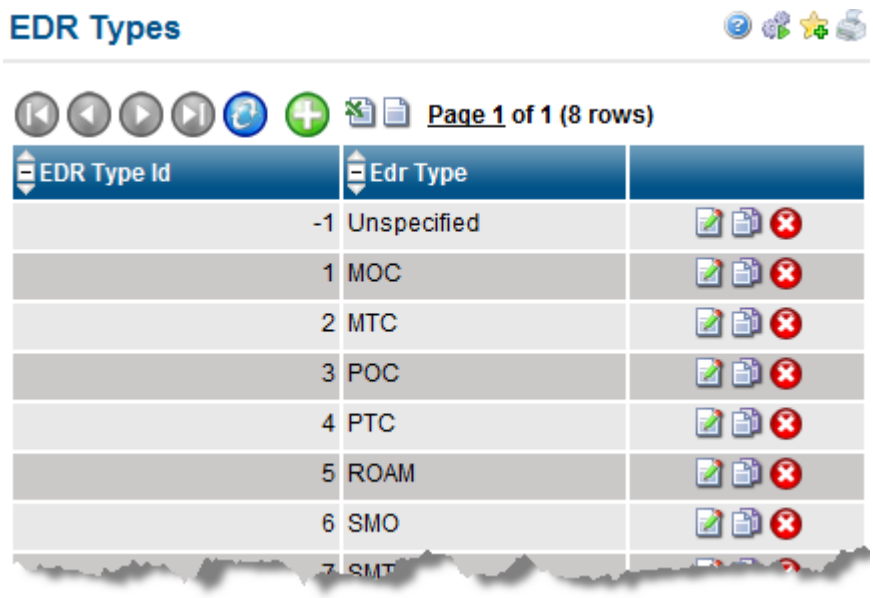

Figure 10 EDR Types Screen

The fields on this screen are as follows:

Field Name	Description
EDR Type Id	EDR type's database identification number
EDR Type	Name of the EDR type

Measure Types

Measure types provide meaning to the data that is imported. This screen displays the configured **Measure Types** that can be imported into UM. These are used as dimensions in the Ad Hoc report screens. This screen enables the editing or addition of Measure Types to be carried out.

Select **Measure Types** from the **Standard Dimensions** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Measure Types** screen (Figure 11).

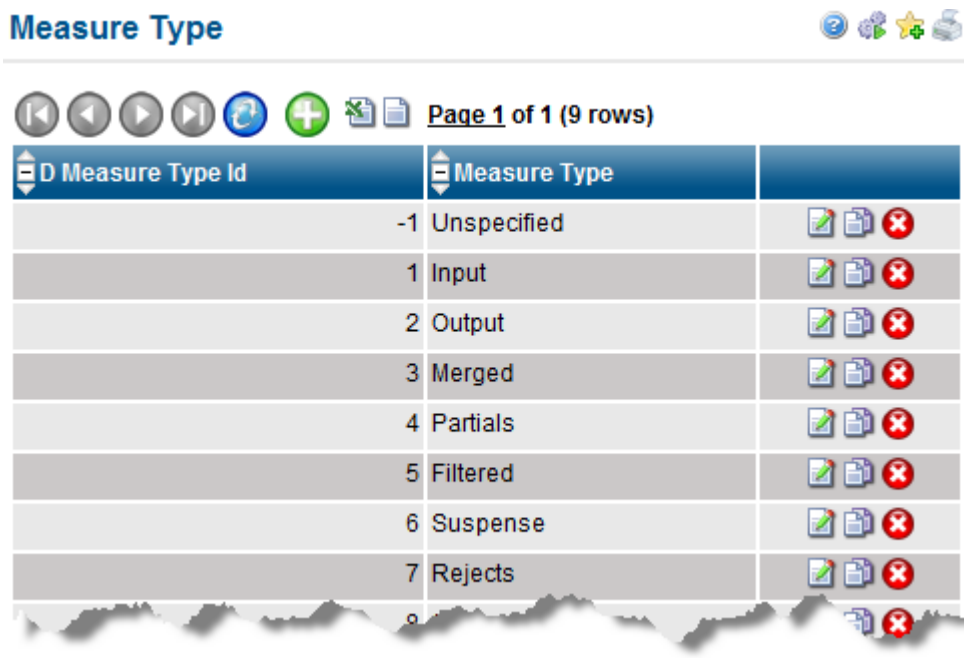

Figure 11 Measure Type Screen

The fields on this screen are as follows:

Field Name	Description
D Measure Type Id	Measure type's database identification number
Measure Type	Name of the measure type

Payment Types

Usage records are allocated a particular payment type as they are loaded into UM. The **Payment Types** screen enables the editing or addition of Payment Types to be carried out.

Select **Payment Types** from the **Standard Dimensions** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Payment Types** screen (Figure 12).

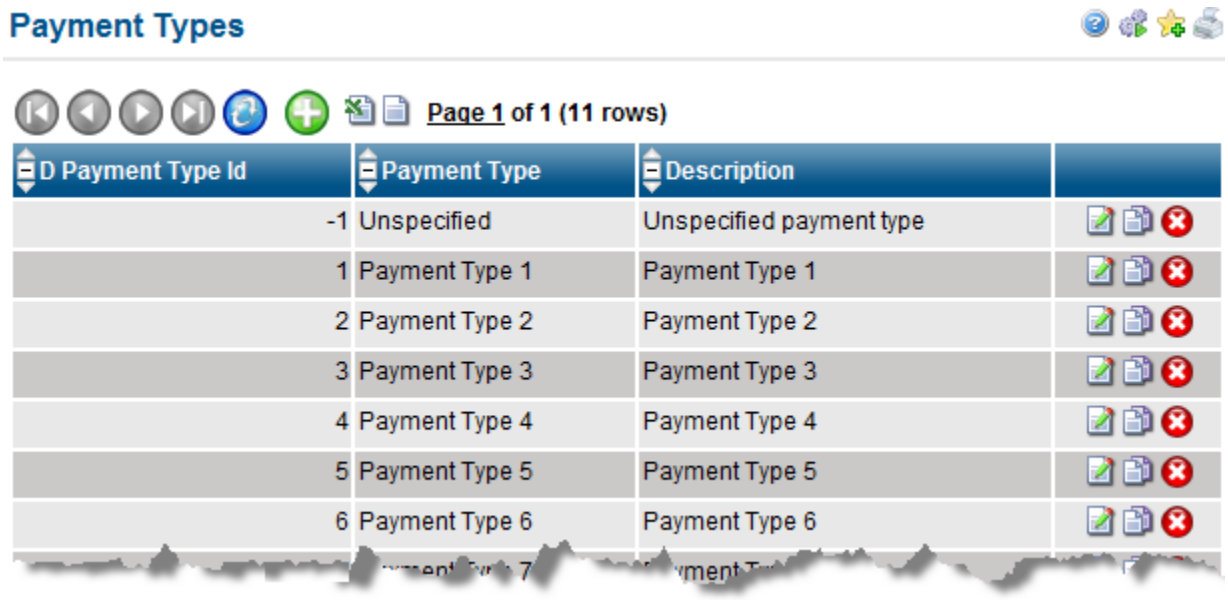

Figure 12 Payment Types Screen

The fields on this screen are as follows:

Field Name	Description
D Payment Type Id	Payment type's database identification number
Payment Type	Name of the payment type
Description	More detailed description of the payment type

Service Providers

Usage records are allocated a particular service provider as they are loaded into UM. The **Service Providers** screen enables the editing or addition of service providers to be carried out.

Select **Service Providers** from the **Standard Dimensions** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Service Providers** screen (Figure 13).

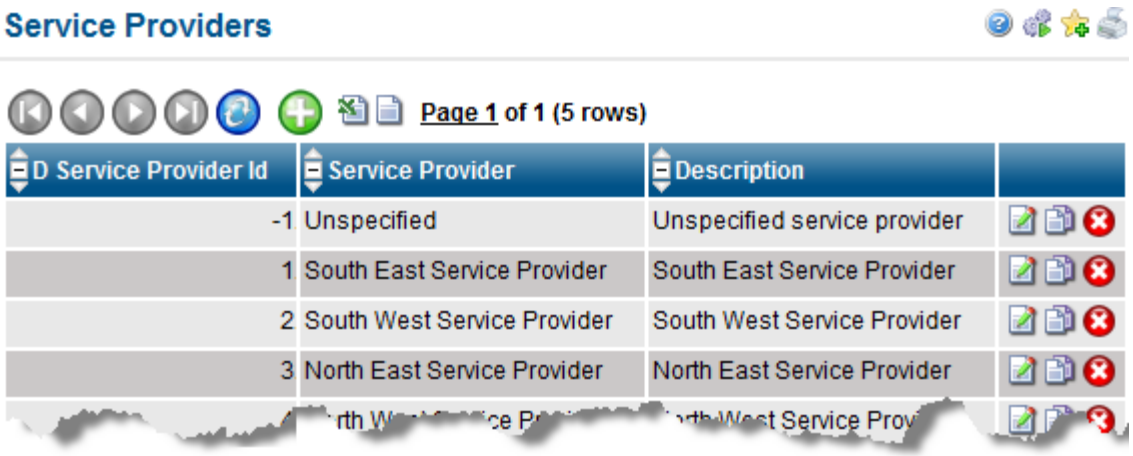

Figure 13 Service Providers Screen

The fields on this screen are as follows:

Field Name	Description
Service Provider Id	Service provider's database identification number
Service Provider	Name of the service provider
Description	More detailed description of the service provider

Custom Dimensions

The **Custom Dimensions** menu provides access to the configuration screens for defining further types of dimensions and managing the associated reference data. These custom dimensions are in addition to those provided by the **Standard Dimensions**. These additional dimensions can be used for Ad Hoc reporting.

Figure 14 Custom Dimension Menu

Custom dimensions reference data can be managed via the items on this menu.

The items on this menu are fully customisable and will vary according to the system requirements.

The **Custom Dimensions** menu provides the user with the following options, which are detailed in the sections below:

Menu Item	Description
Custom Dimension Metadata	Displays the metadata for the custom dimension tables
Dimension 01, 02 etc	Presents a customisable dimension screen

Custom Dimension Metadata

The custom dimensions are database tables and the **Custom Dimension Metadata** screen displays the metadata for each of the custom dimensions that are in use. The **Custom Dimension Metadata** screen enables the editing or addition of metadata to be carried out.

Select **Custom Dimension Metadata** from the **Custom Dimensions** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Custom Dimension Metadata** screen (Figure 15).

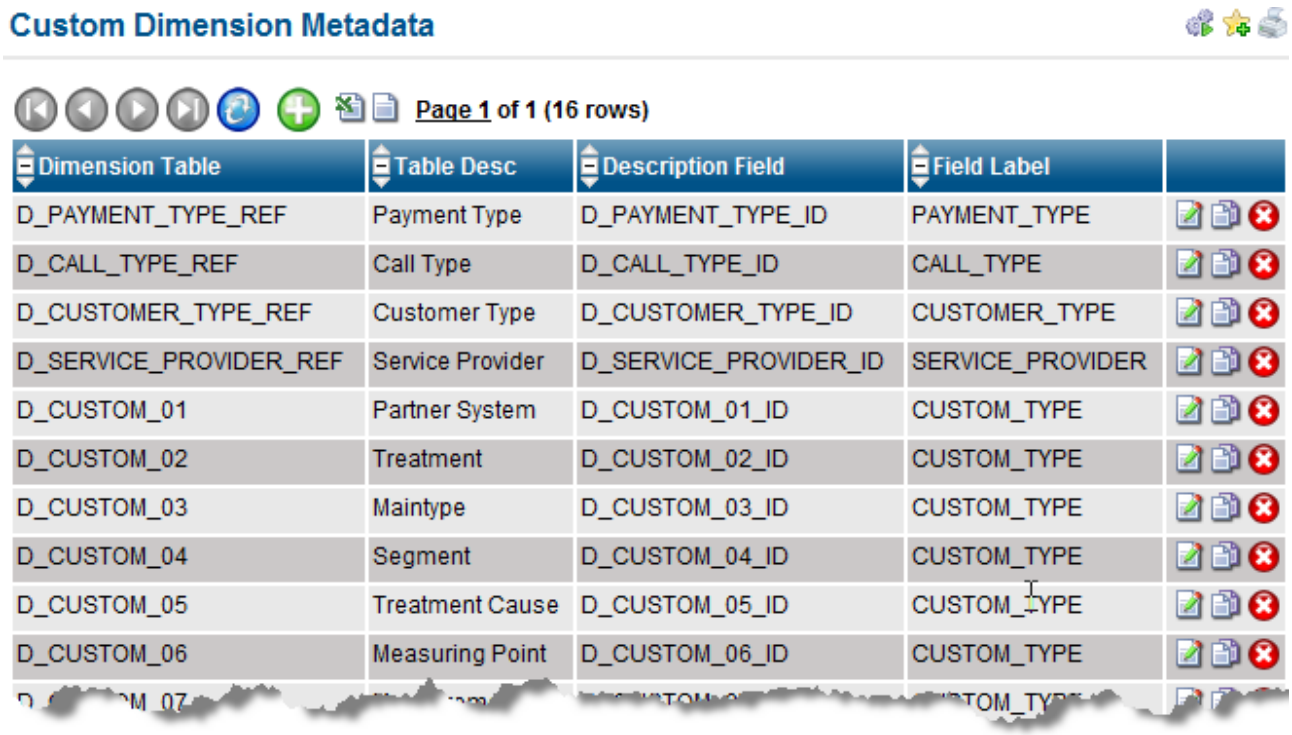

Figure 15 Custom Dimension Metadata Screen

The fields on this screen are as follows:

Field Name	Description
Dimension Table	Name of the custom dimension's database table
Table Desc	Description of the custom dimension table
Description Field	Name of the table's ID field
Field Label	Name of the table's subsequent field, generally a label that defines the ID

Dimension 01, 02 etc

The **Dimensions** screens enable further types of dimensions to be configured, in addition to those provided by the **Standard Dimensions**. Custom dimensions reference data can be managed via the **Dimensions** screens which enable the editing or addition of reference data to be carried out.

Select the required **Dimension** from **Custom Dimensions** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Dimension** screen (Figure 16).

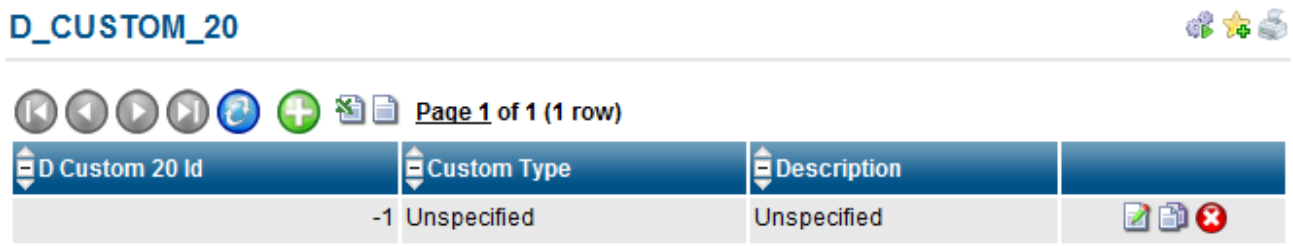

Figure 16 Dimension Screen

The fields on this screen are as follows:

Field Name	Description
D Custom xx Id	The reference data's database identification number
Custom Type	Name of the type of reference data
Description	More detailed description of the reference data

Source Systems

The **Source Systems** menu provides access to the configuration screens for managing the reference data associated with the various types of sources. A source is a reference to a particular source of usage data. The menu items (Figure 17Figure 5) are detailed in the following sections.

Figure 17 Source Systems Menu

The **Source Systems** menu provides the user with the following options:

Menu Item	Description
Countries	Displays an editable list of countries
EDR Type to Source Mapping	Enables the EDR types to be mapped to the appropriate sources
Regions	Displays an editable list of regions
Source Descriptions	Displays an editable list of source descriptions
Source Group Mappings	Enables sources to be assigned to source groups
Source Groups	Displays an editable list of groups
Source Types	Displays an editable list of source types
Sources	Displays an editable list of sources *A source is a reference to a particular source of usage data*

Countries

Countries are associated to sources rather than systems. A country is attached to the data passing through a system and its associated nodes rather than the system itself. In a similar way, a source is attached to data passing through a system. The country that data originates from is dependent upon its source system.

The **Countries** screen enables the editing or addition of countries to be carried out.

Select **Countries** from the **Source Systems** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Countries** screen (Figure 18).

Figure 18 Countries Screen

The fields on this screen are as follows:

Field Name	Description
Country Id	Country's database identification number
Country	Name of the country

EDR Type to Source Mapping

Each different source can produce one or more types of EDRs. This screen enables the EDR types to be assigned to the appropriate sources.

Select **EDR Type to Source Mapping** from the **Source Systems** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **EDR Type to Source Mapping** screen (Figure 19).

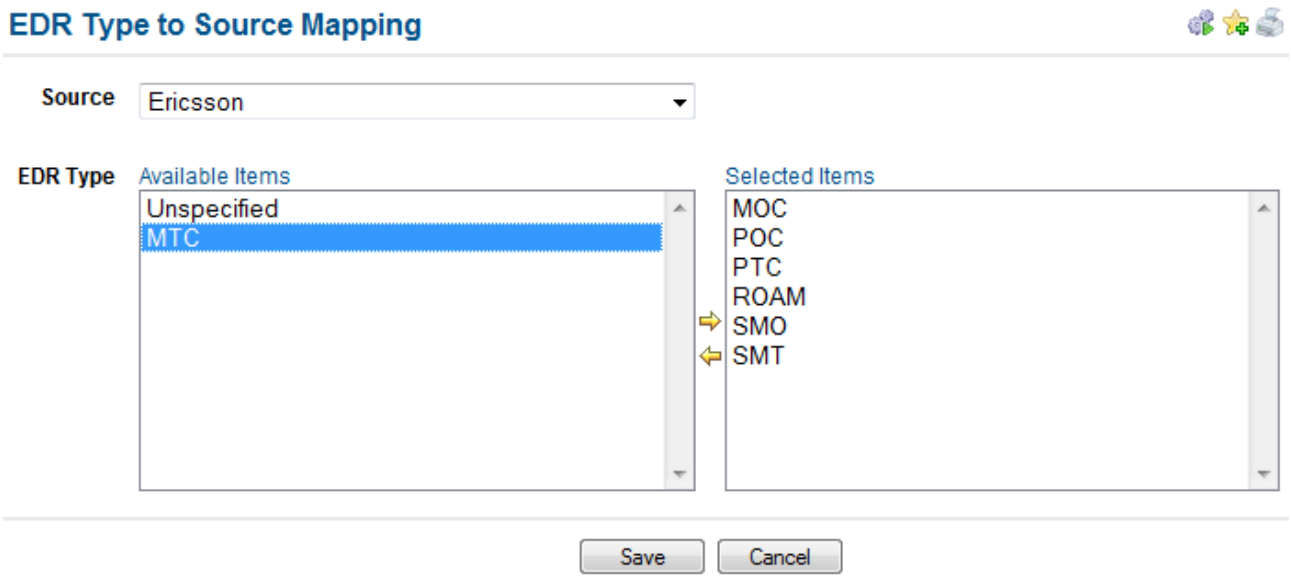

Figure 19 EDR Type to Source Mapping Screen

The **EDR Type to Source Mapping** screen displays the EDR types that each source can produce. This screen contains the following fields:

Field Name	Description
Source	Name of the source
EDR Type - Available	List of all available EDR types
EDR Type - Selected	List of EDR types that the source can produce

Regions

Regions are associated to sources rather than systems. A region is attached to the data passing through a system and its associated nodes rather than the system itself. In a similar way, a source is attached to data passing through a system. The region that data originates from is dependent upon its source system.

The **Regions** screen enables the editing or addition of regions to be carried out.

Select **Regions** from the **Source Systems** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Regions** screen (Figure 20).

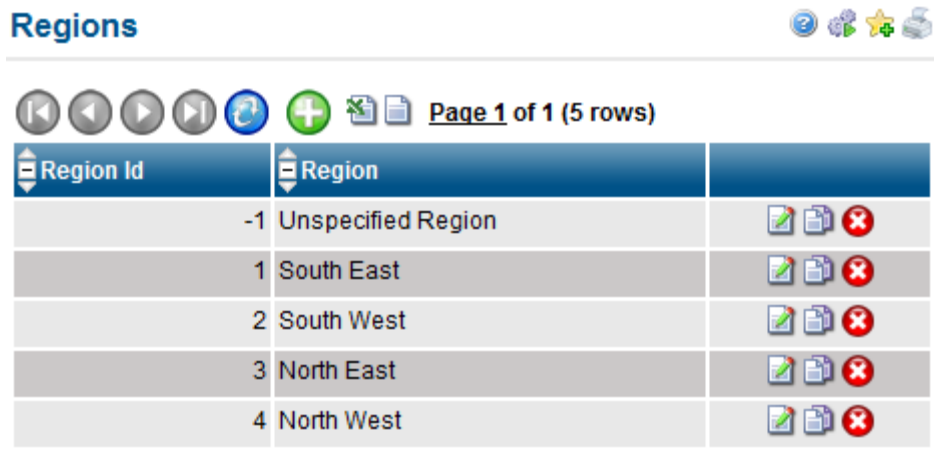

Figure 20 Regions Screen

The fields on this screen are as follows:

Field Name	Description
Region Id	Region's database identification number
Region	Name of the region

Source Descriptions

Each source has one or more mapping entries in the source descriptions screen that allow different descriptions to be used (where necessary) for a specific source depending on the node. This allows for the definition of distinct descriptions for each source for all of the different nodes.

The **Source Descriptions** screen enables the editing or addition of source descriptions to be carried out.

Select **Source Descriptions** from the **Source Systems** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Source Descriptions** screen (Figure 21).

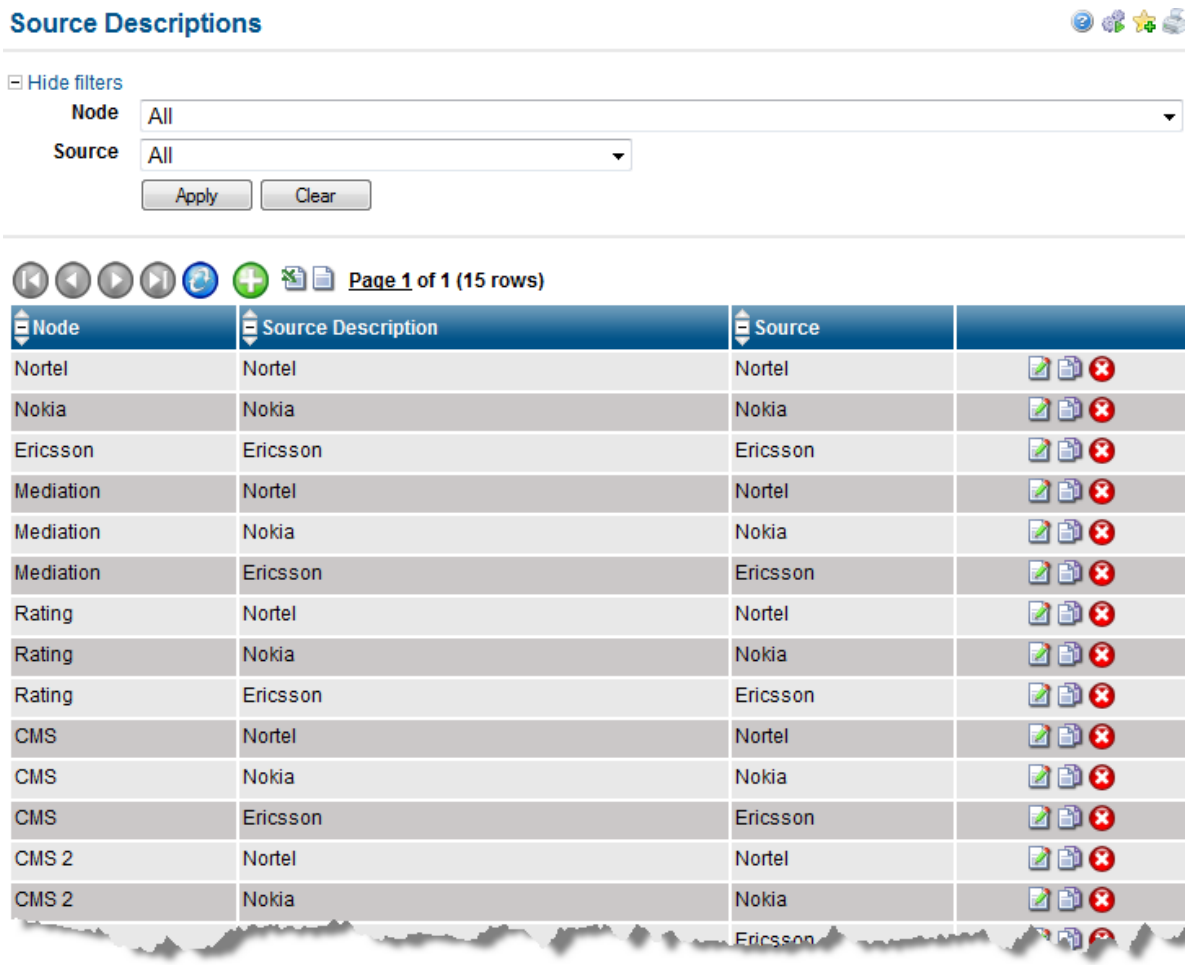

Figure 21 Source Descriptions Screen

The fields on this screen are as follows:

Field Name	Description
Node	Name of the node
Source Description	Name of the source as utilized by the specific node
Source	Name of the source as specified by UM

Source Group Mappings

The **Source Group Mapping** screen is used to assign specific sources to the appropriate source group as specified in the **Source Groups** section.

Select **Source Group Mappings** from the **Source Systems** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Source Group Mappings** screen (Figure 21).

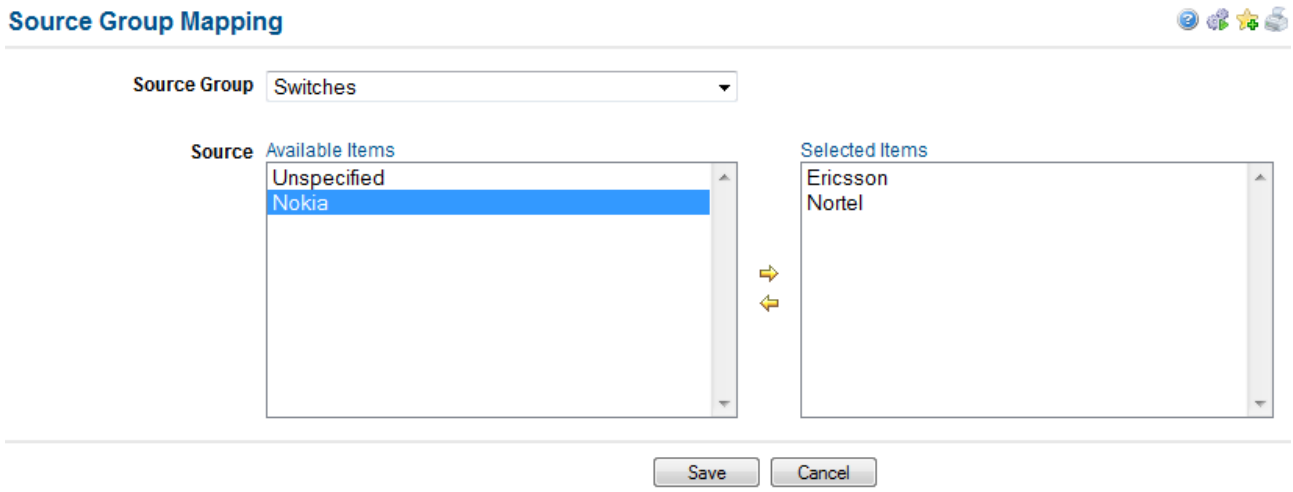

Figure 22 Source Group Mapping Screen

The **Source Group Mapping** screen displays the sources that have been selected for each source group. This screen contains the following fields:

Field Name	Description
Source Group	Drop-down list of all available source groups
Sources - Available	List of all available sources
Sources - Selected	List of sources which have been selected for the displayed group

Source Groups

Source groups are used within UM to gather sources into logical groups which are used for reporting purposes. The groups are defined on this screen and are associated to a source on the **Source Group Mappings** screen. The **Source Groups** screen enables the editing or addition of Source Groups to be carried out.

Select **Source Groups** from the **Source Systems** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Source Groups** screen (Figure 23).

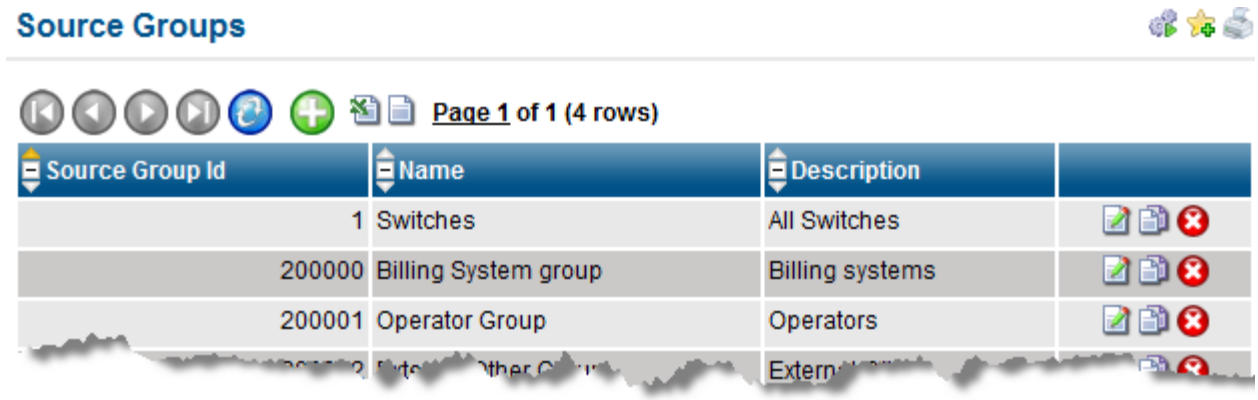

Figure 23 Source Groups Screen

The fields on this screen are as follows:

Field Name	Description
Source Group Id	Source group's database identification number
Name	Name of the source group
Description	Description of the source group

Source Types

Source types are used to group each different type of source together. For example, sources could be combined into 'Switches' or 'Digital TV head ends'. This applying of types is used when defining thresholds and metrics to decide whether they should be valid for an entire source type, or a specific source.

The **Source Types** screen enables the editing or addition of Source Types to be carried out.

Select **Source Types** from the **Source Systems** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Source Types** screen (Figure 24).

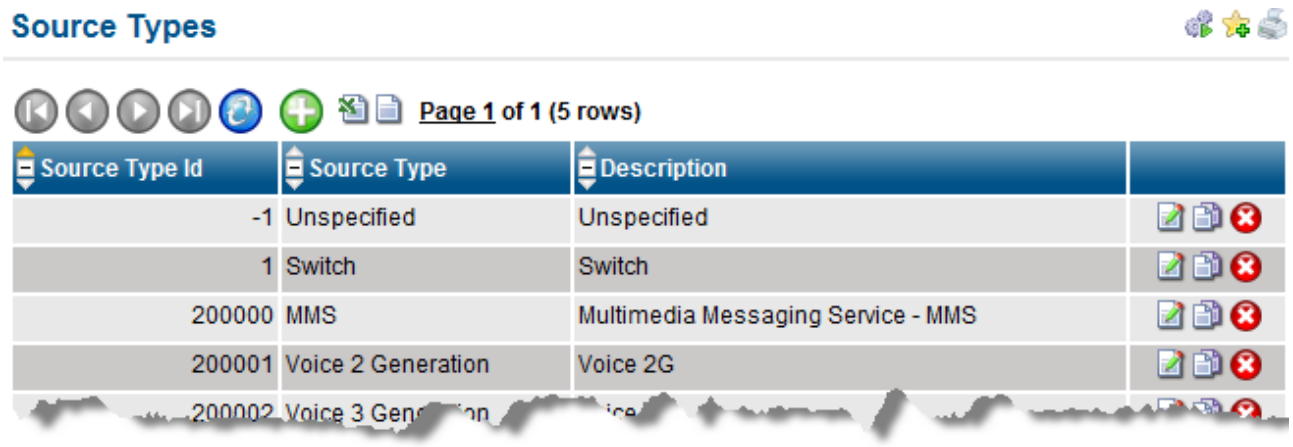

Figure 24 Source Types Screen

The fields on this screen are as follows:

Field Name	Description
Source Type Id	Source Type's database identification number
Source Type	Name of the source type
Description	Description of the source type

Sources

A source is a reference to a particular source of usage data. Examples of such sources include switches and cable television head-ends. Sources are always at a starting edge of a customer network and are the originating point for the usage data.

A source does not have to be modelled as a system, although this is generally the case. Using the sources screen it is possible to reference network elements that are not modelled as systems. This is useful, for example, when a source is referenced in a log file from a system where filtering and details are required regarding the source, but the source is not directly modelled in UM.

The **Sources** screen enables the editing or addition of sources to be carried out.

Select **Sources** from the **Source Systems** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Sources** screen (Figure 25).

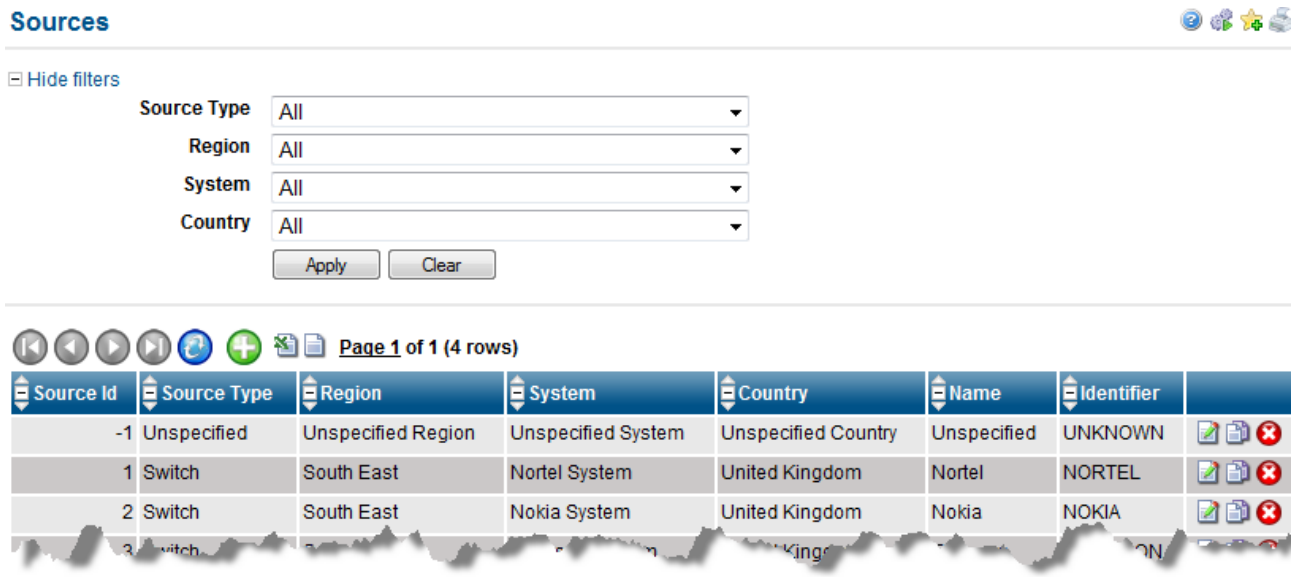

Figure 25 Sources Screen

The fields on this screen are as follows:

Field Name	Description
Source Id	Source's database identification number
Source Type	Name of the source type assigned to the source
Region	Region assigned to the source
System	System assigned to the source
Country	Country assigned to the source
Name	Name of the source
Identifier	Identifier of the source

Usage Monitor Settings

The **Usage Monitor Settings** menu provides access to the configuration screens for managing the usage monitor settings and associated reference data. The metric, operator and SQL definition reference data are configured via the items on this menu. The menu items (Figure 26Figure 5) are detailed in the following sections.

Figure 26 Usage Monitor Settings Menu

The **Usage Monitor Settings** menu provides the user with the following options:

Menu Item	Description
Metric Categories	Displays an editable list of metric categories
Metric Group Mappings	Assigns metrics to metric groups
Metric Groups	Displays an editable list of metric groups
Metric Reconciliation Categories	Displays an editable list of metric reconciliation categories
Metric Types	Displays an editable list of metric types
Missing File SQL	Displays an editable list of missing file SQL
Operator Definitions	Displays an editable list of operator definitions
Operator Parameters	Displays an editable list of operator parameters
Operator Types	Displays an editable list of operator types
SQL Definitions	Displays an editable list of SQL definitions
Units	Displays an editable list of units

Metric Categories

The **Metric Category** screen allows users to edit or add meaningful categories into which they can group the metric definitions they have created.

Select **Metric Categories** from the **Usage Monitor Settings** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Metric Category** screen (Figure 27).

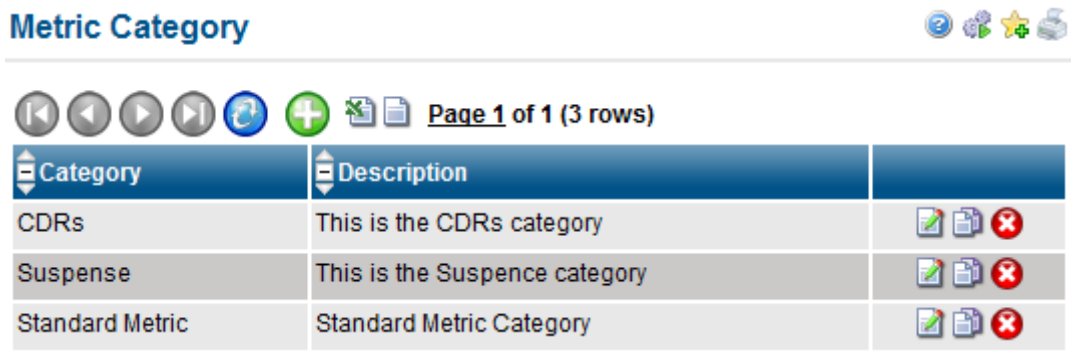

Figure 27 Metric Category Screen

The fields on this screen are as follows:

Field Name	Description
Category	Name of the metric category
Description	More detailed description of the metric category

Metric Group Mappings

The **Metric Group Mappings** screen is used to assign specific metric definitions to the appropriate metric group as specified in the **Metric Groups** section.

Select **Metric Group Mappings** from the **Usage Monitor Settings** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Metric Group Mapping** screen (Figure 28).

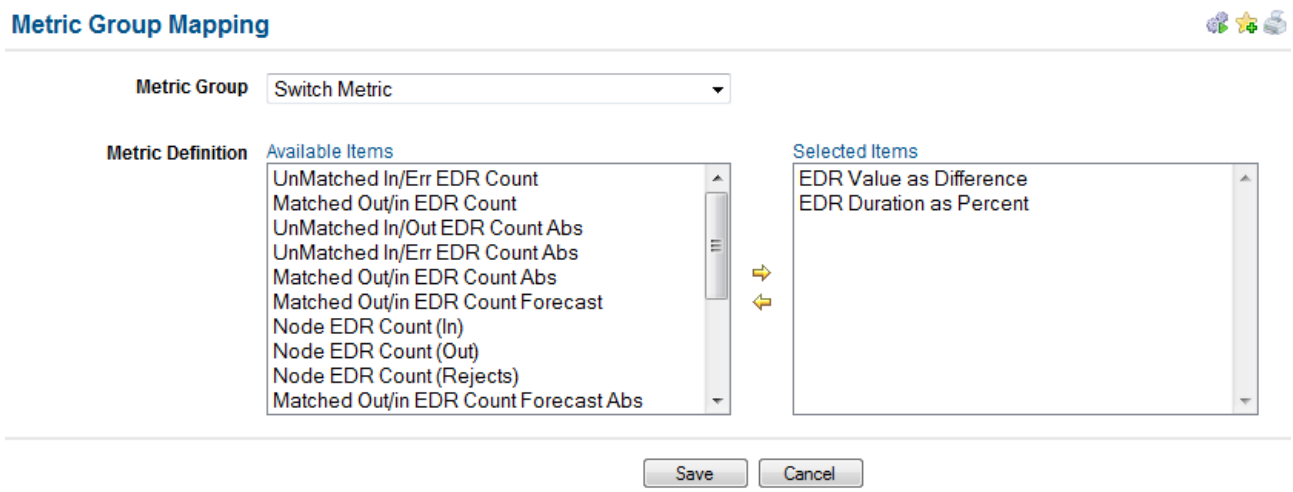

Figure 28 Metric Group Mapping Screen

The **Metric Group Mapping** screen displays the metric definitions that have been selected for each metric group. This screen contains the following fields:

Field Name	Description
Metric Groups	Drop-down list of all available metric groups
Metric Definitions - Available	List of all available metric definitions
Metric Definitions - Selected	List of metric definitions which have been selected for the displayed group

Metric Groups

Metric Groups are optionally used within UM to gather metrics into logical groups which are used for reporting purposes, for example by processing type. The groups are defined on this screen and are associated to a metric on the **Metric Group Mappings** screen.

Select **Metric Groups** from the **Usage Monitor Settings** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Metric Groups** screen (Figure 29).

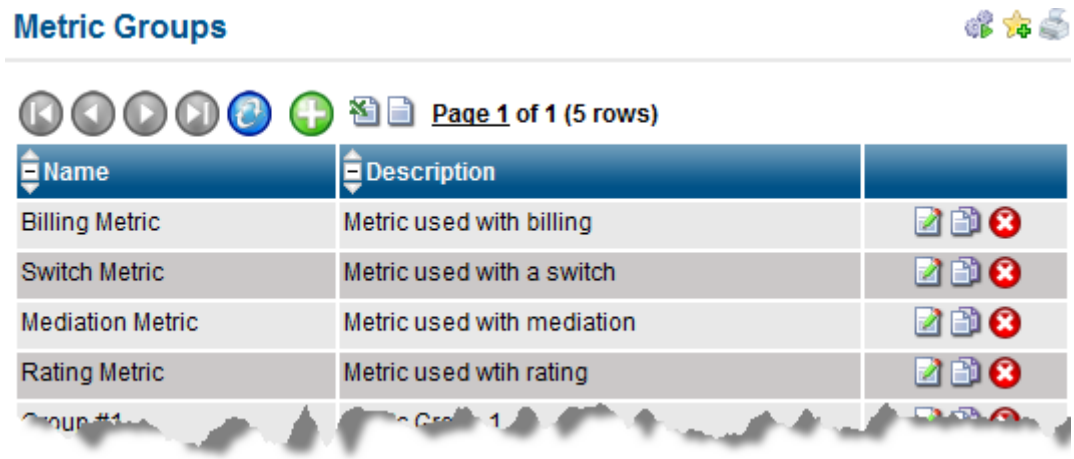

Figure 29 Metric Groups Screen

The fields on this screen are as follows:

Field Name	Description
Name	Name of the metric group
Description	Description of the metric group

Metric Reconciliation Categories

The **Metric Reconciliation Categories** are used within UM to gather metric reconciliations into categories, which are used for reporting purposes. This screen allows users to define meaningful categories or edit existing categories. The categories defined are associated with a reconciliation by the user when the reconciliation is configured.

Select **Metric Reconciliation Categories** from the **Usage Monitor Settings** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Metric Reconciliation Categories** screen (Figure 30Figure 27)

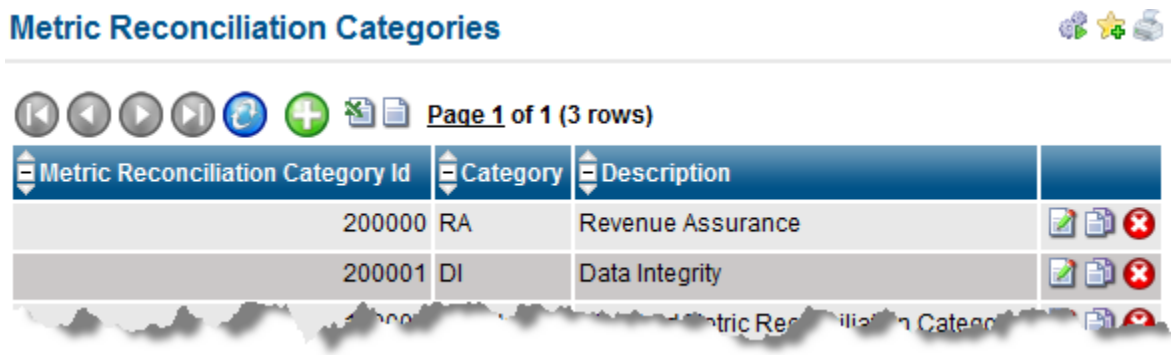

Figure 30 Metric Reconciliation Categories Screen

The fields on this screen are as follows:

Field Name	Description
Metric Reconciliation Category Id	Metric reconciliation category's database identification number
Category	Name of the category
Description	Description of the category

Metric Types

Metric types enable users to classify metric definitions into types that are meaningful. When metric definitions are created a metric type is associated.

The **Metric Types** screen enables the editing or addition of Metric Types to be carried out.

Select **Metric Types** from the **Usage Monitor Settings** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Metric Types** screen (Figure 31).

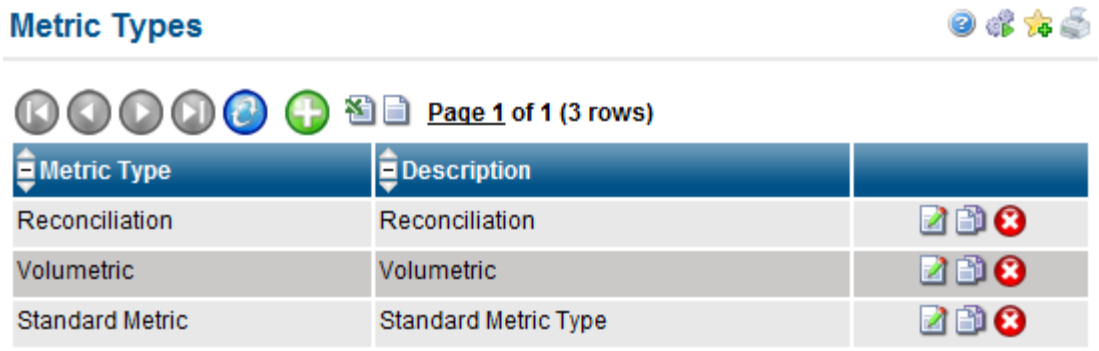

Figure 31 Metric Types Screen

The fields on this screen are as follows:

Field Name	Description
Metric Type	Name of the metric type
Description	More detailed description of the metric type

Missing File SQL

This **Missing File SQL** screen contains the names of the SQL statements that are used to determine the missing predecessor and successor files for a specific edge. The screen enables the editing or addition of names of SQL statements to be carried out.

Select **Missing File SQL** from the **Usage Monitor Settings** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Missing File SQL** screen (Figure 32).

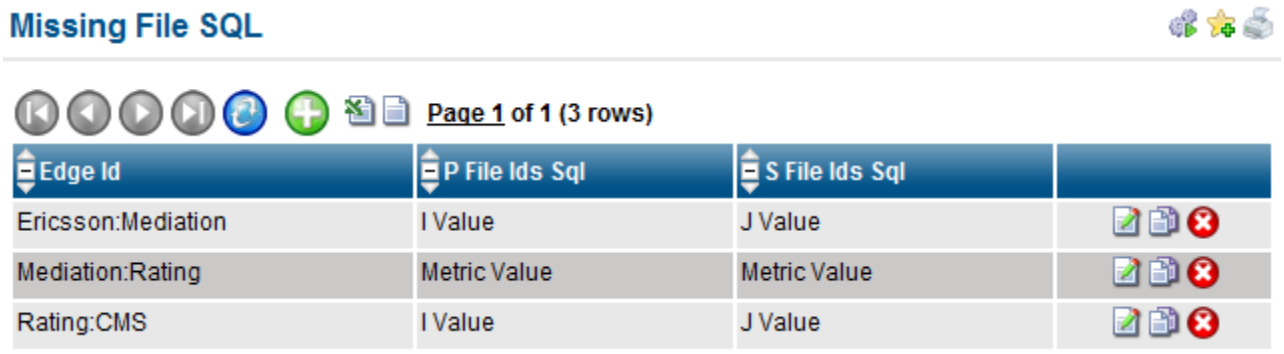

Figure 32 Missing File SQL Screen

The fields on this screen are as follows:

Field Name	Description
Edge Id	Name of the edge used to determine missing files
P File Ids SQL	Name of the SQL statement to identify the predecessor files *The actual SQL statement is defined on the **SQL Definitions** screen*
S File Ids SQL	Name of the SQL statement to identify the successor files *The actual SQL statement is defined on the **SQL Definitions** screen*

Operator Definitions

Operators run specific pieces of code which carry out defined operations. UM uses operators for file matching, metric calculations, metric regeneration and forecasting. The **Operator Definition** screen enables users to manage the information that is used by the operators.

Select **Operator Definitions** from the **Usage Monitor Settings** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Operator Definition** screen (Figure 33Figure 32).

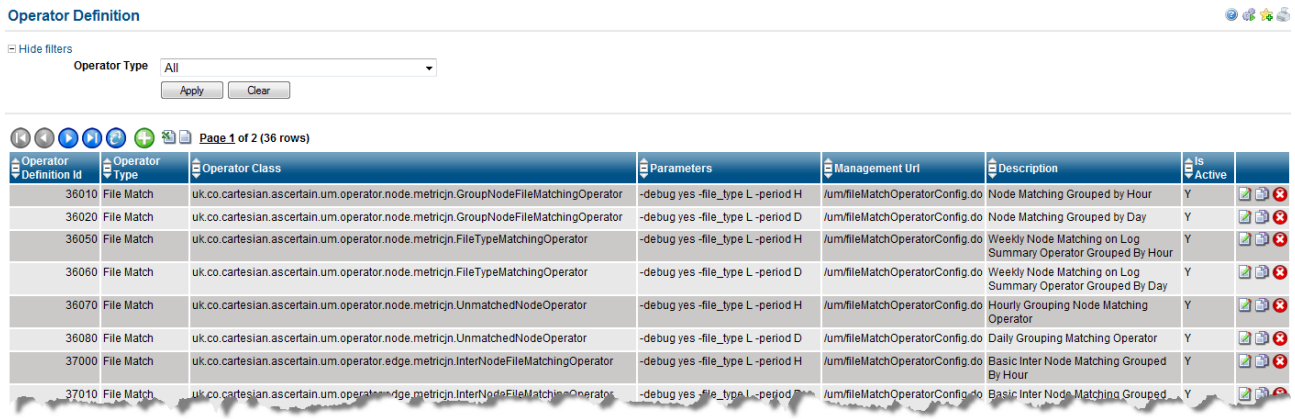

Figure 33 Operator Definition Screen

The fields on this screen are as follows:

Field Name	Description
Operator Definition Id	Operator definition's database identification number
Operator Type	Type of operator *Types are specified in the **Operator Types** section*
Operator Class	Name of the java class that contains the code which is used by the operator to carry out the operation
Parameters	Default parameters that are assigned to an operator *These can be overridden if required when an operator is set up in the various operator management screens*
Management Url	URL of the management screen that uses the defined operator *This is the URL that the config icon opens when it is clicked on the various operator management screens*
Description	Name of the operator *This is the description of the operator that can be viewed via the various operator management screens*
Is Active	Indicates whether the operator is active or not. Y = Yes, N = No

*For further information regarding operators and their parameters see the **UM Operators** section.*

Operator Parameters

The **Operator Parameters** screen enables users to manage the parameters associated with an Operator. The screen shows the available parameters and the default values.

The table OPERATOR_PARAMETER_REF, is used to drive the **Operator Parameters** configuration screens. Rules can be defined as SQL to provide name/value pairs for drop down parameter value selections. Where not appropriate, the parameter can be specified in a free text box.

Select **Operator Parameters** from the **Usage Monitor Settings** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Operator Parameters** screen (Figure 34Figure 32).

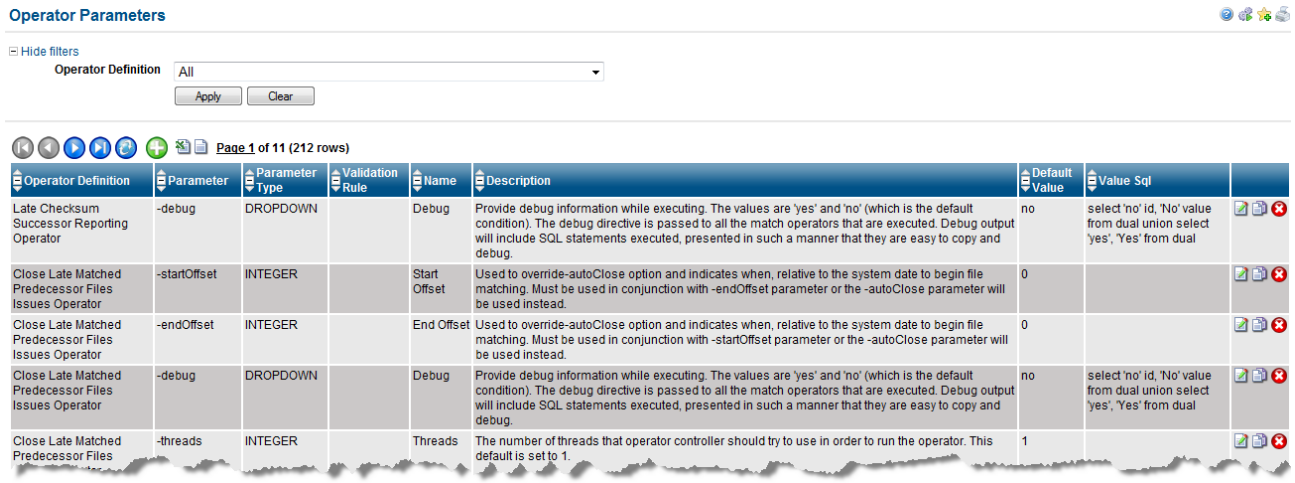

Figure 34 Operator Parameters Screen

The fields on this screen are as follows:

Field Name	Description
Operator Definition	The operator definition
Parameter	The available parameters that are assigned to the operator
Parameter Type	Type of parameter *For example, whether the parameter will be displayed as a dropdown, time, integer etc*
Validation Rule	The rule applied as part of the parameter's validation
Name	Name of the parameter
Description	Description of the values that the parameters can take
Default Value	The default parameter
Value SQL	The SQL used to set the parameter's value

Operator Types

Operators are categorised into specific types, this ensures that when a user is managing a certain area of UM that only the appropriate operators are displayed for use. The types are defined on this screen and are associated to an operator on the **Operator Definitions** screen.

Select **Operator Types** from the **Usage Monitor Settings** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Operator Types** screen (Figure 35Figure 32).

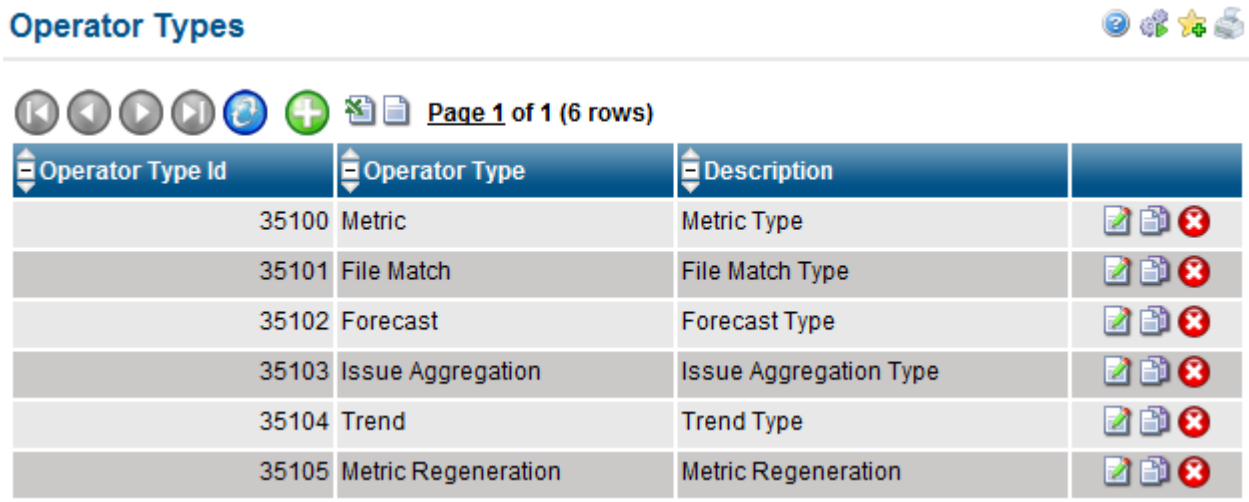

Figure 35 Operator Types Screen

The fields on this screen are as follows:

Field Name	Description
Operator Type Id	Operator type's database identification number
Operator Type	Name of the operator type
Description	Description of the operator type containing any additional necessary information

SQL Definitions

The **SQL Definitions** screen contains all the SQL statements that have been defined for UM. Generally these are used by certain custom file matching, metric and forecasting operators. It can also contain SQL statements used in GDL actions.

The **SQL Definitions** screen enables the editing or addition of new SQL definitions to be carried out.

Select **SQL Definitions** from the **Usage Monitor Settings** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **SQL Definitions** screen (Figure 36Figure 32).

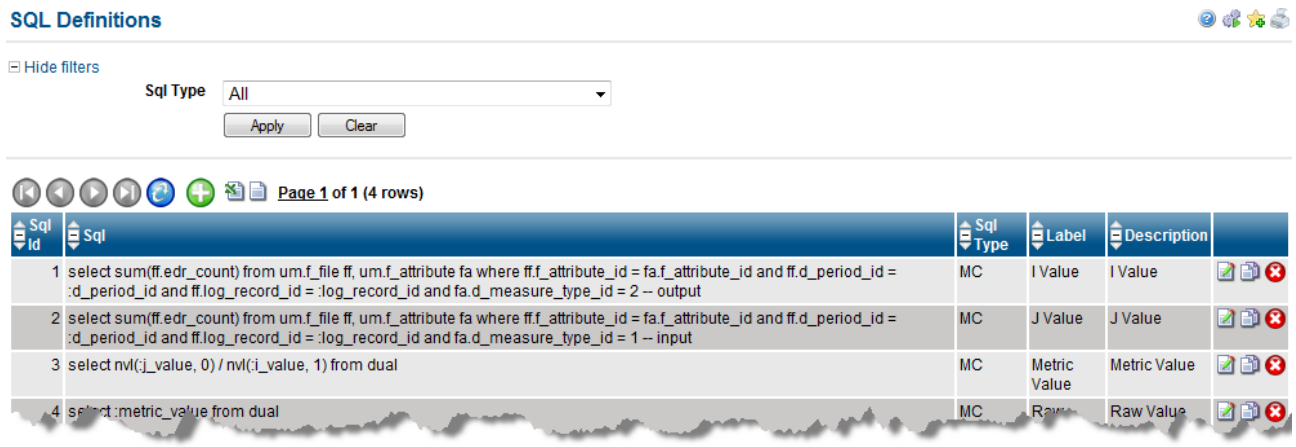

Figure 36 SQL Definitions Screen

The fields on this screen are as follows:

Field Name	Description
SQL Id	SQL Definition's database identification number
SQL	The SQL statement to be used within UM
SQL Type	Type of SQL *The five possible types of SQL are as follows:* *FM = File Matching* *FO = Forecasting* *GDL = Generic Data Loading* *IA = Issue Aggregation* *MC = Metric Calculation*
Label	Name of the SQL statement
Description	Description of what the SQL statement does when it is executed

Units

Units are used to define the measure that each of the calculated metrics represents. For example, if the unit is pounds and the metric calculation is 6 then the metric is £6.

The **Units** screen enables the editing or addition of units to be carried out.

Select **Units** from the **Usage Monitor Settings** menu on the **Usage Monitor Configuration** screen (Figure 3) to open the **Units** screen (Figure 37).

Figure 37 Units Screen

The fields on this screen are as follows:

Field Name	Description
Unit Id	Unit's database identification number
Unit	Name of the unit
Description	Description of the unit

3 UM Dashboard Components

Dashboards are used within Ascertain to supply users with sets of summary information. They provide the facility to group charts, graphs, data tables, reports and images together into a single screen in a number of different layout configurations.

For further information on dashboards and their configuration, refer to following:
Web Admin Guide > Application Navigation > My Dashboards.
Web Admin Guide > Core Configuration > Dashboardable Items

When configuring a dashboard within the Ascertain UM application the following three specific Usage Monitor components are available to insert:

- UM Metric Chart
- UM Metric Reconciliation Chart
- UM Scenario Model Overview

When selecting items for a dashboard within UM the **Edit Dashboard** screen has three additional tabs as shown below (Figure 38). To access the **Edit Dashboard** screen go to the **View** toolbar **> My Dashboards** and click the add icon to open the **Edit Dashboard** screen.

Each tab contains a set of items that can be chosen by the user and dragged onto the dashboard.

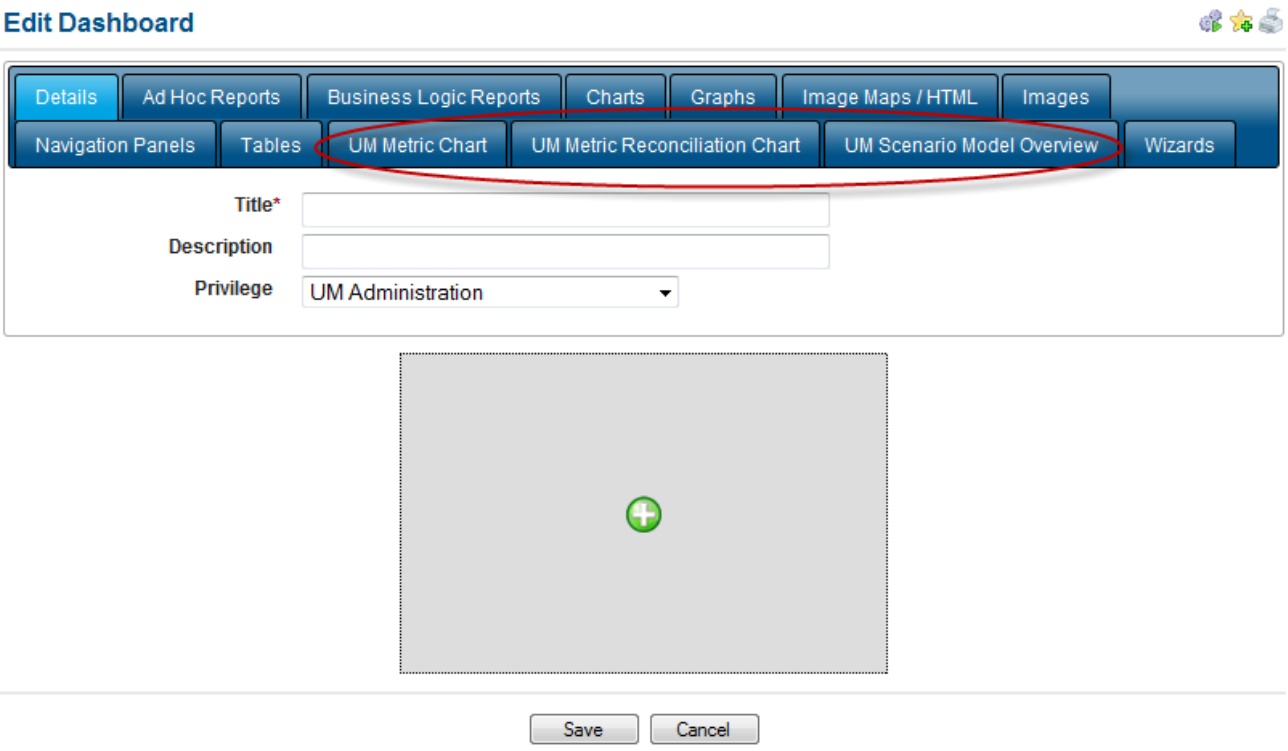

Figure 38 Edit Dashboard Screen with additional UM tabs

This screen enables administrators to add the following types of UM components to a dashboard:

Component	Description
UM Metric Chart	This enables a metric chart to be added to a dashboard *In order to add a specific UM metric chart to a dashboard it must be configured in the **UM Metric Charts** screen*
UM Metric Reconciliation Chart	This enables a metric reconciliation chart to be added to a dashboard *In order to add a specific UM metric reconciliation chart to a dashboard it must be configured in the **UM Metric Reconciliation Charts** screen*
UM Scenario Model Overview	This enables a scenario model overview to be added to a dashboard *In order to add a specific UM scenario model overview to a dashboard it must be configured in the **UM Scenario Model Overview** screen*

UM Dashboardable Items

Ascertain applications have their own standard dashboards which are specifically configured to provide pertinent information. Administrators can also create bespoke dashboards containing screens, reports, charts, graphs and images in order to display additional summaries as required.

Ascertain user dashboards can only be created and maintained by users with dashboard administrative privileges. All the screens used to create new dashboards are accessed via the **Dashboardable Items** sub-menu:

- Click the **Configuration** button on the toolbar and open the configuration side menu by clicking on the icon  next to **Configuration Navigation**.
- Select **Configure UI Components** from the left hand frame **> Dashboardable Items** (Figure 39)

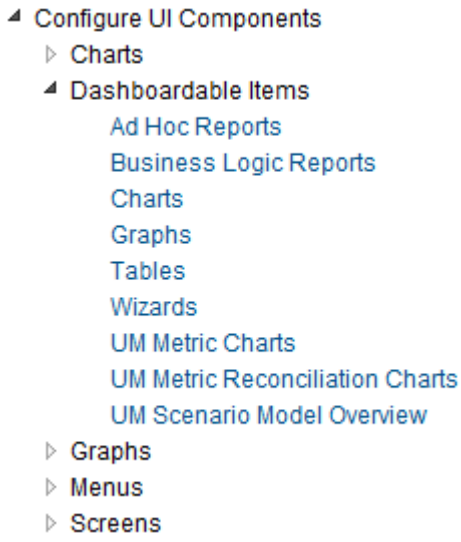

Figure 39 Dashboardable Items sub menu with UM configuration screens

Click the add  or edit  icons on the dashboardable items screens to create new dashboards or edit existing ones.

For further information on dashboard configuration, refer to following:
Web Admin Guide > Core Configuration > Dashboardable Items

UM Metric Charts

The **Dashboard UM Metric Charts** screen (Figure 40) enables administrative users to define which metric charts are available to add to user defined dashboards.

The screen is accessed via **Configuration >**  **> Configure UI Components > Dashboardable Items > UM Metric Charts**

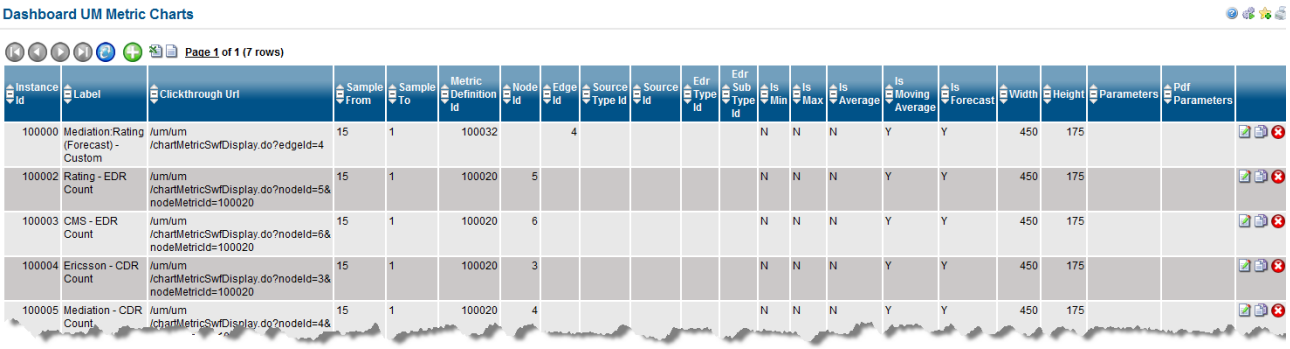

Figure 40 Dashboard UM Metric Charts Screen

The fields on this screen are as follows:

Field	Description
Instance Id	UM metric chart's database identification number
Label	Label of the metric chart to be displayed above the dashboard component
Clickthrough Url	The URL of the screen within the Ascertain application that the user wishes to drill down to from the metric chart on the dashboard
Sample From	Specifies the start of the range of dates viewable in the graph *The sample date is the original date taken from the source data* *This is defined by specifying a number of days before the system date* *If the value displayed is 'MONTH' then the start date will be the beginning of the current month*
Sample To	Specifies the end of the range of dates viewable in the graph *The sample date is the original date taken from the source data* *This is defined by specifying a number of days before the system date* *If the value displayed is 'MONTH' then the start date will be the end of the current month*
Metric Definition Id	Specific identifier of the metric definition to be plotted on the graph
Node Id	Specific node to be plotted for the metric picked *Please note that either a node or an edge must be selected, not both*
Edge Id	Specific edge to be plotted for the metric picked *Please note that either a node or an edge must be selected, not both*
Source Type Id	Source type identifier of the source to the plotted

Field	Description
Source Id	Source to be plotted *It is possible to pick a specific source if required. If no source is specified then all sources will be plotted*
EDR Type Id	Event detail record type *It is possible to pick an EDR type if required. If no EDR type is specified then all sources will be plotted*
EDR Sub Type Id	Event detail record subtype *It is possible to pick an EDR subtype if required. If no EDR sub type is specified then all sources will be plotted*
Is Min	Determines if the Minimum line is displayed *Y = Display the line* *N = Do not display the line*
Is Max	Determines if the Maximum line is displayed *Y = Display the line* *N = Do not display the line*
Is Average	Determines if the Average line is displayed *Y = Display the line* *N = Do not display the line*
Is Moving Average	Determines if the Moving Average line is displayed *Y = Display the line* *N = Do not display the line*
Is Forecast	Determines if the Forecast line is displayed *Y = Display the line* *N = Do not display the line*
Width	Width of the generated chart, in pixels. These are mandatory fields.
Height	Height of the generated chart, in pixels. These are mandatory fields.
Parameters	Extra parameters *Please note that this field is for future use*
Pdf Parameters	Extra parameters to be passed to the PDF renderer *Please note that this field is for future use*

UM Metric Reconciliation Charts

The **Dashboard UM Metric Reconciliation Charts** screen (Figure 41) enables administrative users to define which metric reconciliation charts are available to add to user defined dashboards.

The screen is accessed via **Configuration >**  **> Configure UI Components > Dashboardable Items > UM Metric Reconciliation Charts**

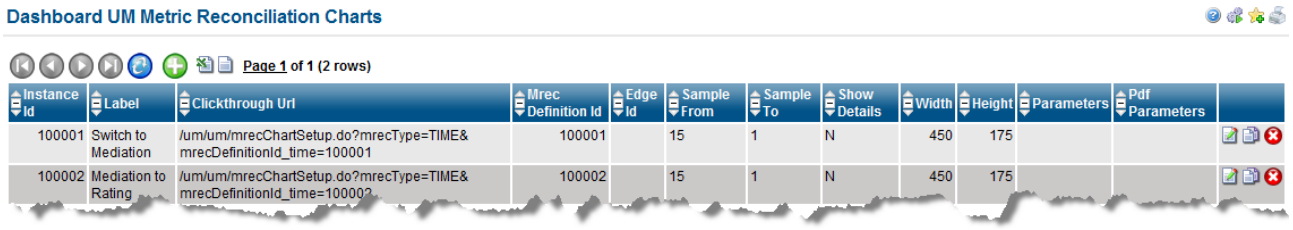

Figure 41 Dashboard UM Metric Reconciliation Charts Screen

The fields on this screen are as follows:

Field	Description
Instance Id	UM metric reconciliation chart's database identification number
Label	Label of the metric chart to be displayed above the dashboard component
Clickthrough Url	The URL of the screen within the Ascertain application that the user wishes to drill down to from the metric reconciliation chart on the dashboard
Metric Reconciliation Id	Specific identifier of the metric reconciliation to be plotted on the graph
Edge Id	Specific edge to be plotted for the metric picked.
Sample From	Specifies the start of the range of dates viewable in the graph *The sample date is the original date taken from the source data* *This is defined by specifying a number of days before the system date* If the value displayed is 'MONTH' then the start date will be the beginning of the current month
Sample To	Specifies the end of the range of dates viewable in the graph *The sample date is the original date taken from the source data* *This is defined by specifying a number of days before the system date* If the value displayed is 'MONTH' then the start date will be the end of the current month
Show Details	Determines whether extra details for specific reconciliations should be displayed. *Y = extra details are displayed* *N = only the Left Hand Side, Right Hand Side and Reconciliation lines are shown*
Width	Width of the generated chart, in pixels. These are mandatory fields.
Height	Height of the generated chart, in pixels. These are mandatory fields.
Parameters	Extra parameters
Pdf Parameters	Extra parameters to be passed to the PDF renderer

UM Scenario Model Overview

The **Dashboard UM Scenario Model Overview** screen (Figure 42) enables administrative users to define which scenario model overview graphs are available to add to user defined dashboards.

The screen is accessed via **Configuration >**  **> Configure UI Components > Dashboardable Items > UM Scenario Model Overview**

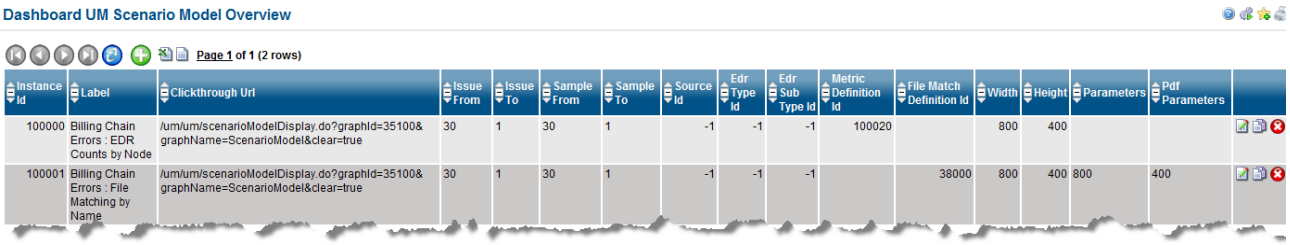

Figure 42 Dashboard UM Scenario Model Overview Screen

The fields on this screen are as follows:

Field	Description
Instance Id	UM scenario model overview's database identification number
Label	Label of the metric chart to be displayed above the dashboard component
Clickthrough Url	The URL of the screen within the Ascertain application that the user wishes to drill down to from the scenario model overview on the dashboard
Issue From	Specifies the start of the issue range reported on in the graph *The issue range is the original date taken from the source data* *This is defined by specifying a number of days before the system date* *If the value displayed is 'MONTH' then the start date will be the beginning of the current month*
Issue To	Specifies the end of the issue range reported on in the graph *The issue range is the original date taken from the source data* *This is defined by specifying a number of days before the system date* *If the value displayed is 'MONTH' then the start date will be the end of the current month*
Sample From	Specifies the start of the range of dates reported on in the graph *The sample date is the original date taken from the source data* *This is defined by specifying a number of days before the system date* *If the value displayed is 'MONTH' then the start date will be the beginning of the current month*
Sample To	Specifies the end of the range of dates reported on in the graph *The sample date is the original date taken from the source data* *This is defined by specifying a number of days before the system date* *If the value displayed is 'MONTH' then the start date will be the end of the current month*

Field	Description
Source Id	Source to be reported on *It is possible to pick a specific source if required. If no source is specified then all sources will be used*
EDR Type Id	Event detail record type *It is possible to pick an EDR type if required. If no EDR type is specified then all sources will be used*
EDR Sub Type	Event detail record subtype *It is possible to pick an EDR subtype if required. If no EDR sub type is specified then all sources will be used*
Metric Definition Id	Specific metric to be reported on *Please note that either a metric definition or a file match definition must be selected, not both. If no metric definition is specified then all metrics will be used*
File Match Definition Id	Specific file match to be reported on *Please note that either a metric definition or a file match definition must be selected, not both. If no file match definition is specified then all file matches will be used*
Width	Width of the generated chart, in pixels
Height	Height of the generated chart, in pixels
Parameters	Extra parameters
Pdf Parameters	Extra parameters to be passed to the PDF renderer

4 UM Operators

This section details the UM operators that are available for use and how to set them up.

File Matching Operators

File Matching Operators for Reconciliation

Basic Filename and Checksum Match Operators

Class names:

```
uk.co.cartesian.ascertain.um.operator.edge.metricjn.ChecksumMatchingOperator
uk.co.cartesian.ascertain.um.operator.edge.metricjn.FilenameMatchingOperator
```

These file matching operators match on nodes for a specified edge. The file matching is performed on properties of a file, for example `ChecksumMatchingOperator` uses check sums and `FilenameMatchingOperator` uses filenames.

Parameter	Description	Mandatory
-edge	The edge specifying the two nodes to run the match against *This can be provided as a comma separated list*	Yes
-match	Principally provided for diagnostics and debugging, this allows for complete control of the matching process by allowing the specific file matching definition to be selected as well as the edge	No
-delay	This specifies, in hours, how long files should remain before being included in matching queries *This value will default to 0, allowing matching to occur on any files present in the candidate queue table*	No
-cap	This specifies the maximum age of records, in days, that are to be included in matching queries *This cap provides a mechanism to exclude records from matching and thereby provide a practical limit on the set of candidate files* *This value defaults to 10 days*	No
-debug	Provide debug information while executing *The values are "yes" and "no" (no is the default condition)* *The debug directive is passed to all the match operators that are executed. Debug output will include SQL statements executed, presented in such a manner that they are easy to copy and debug*	No
-version	Provide version information regarding the job itself and exit *This takes no arguments*	No
-records	The maximum number of records to process at one time, this should be used to tune performance *This default is set to 10000*	No

Parameter	Description	Mandatory
`-latency`	Minimum time in days that a record can be deleted from event start time *Numerical value overriding the automatic deletion of records after they are matched successfully. Used to ensures all possible matches occur before the record is deleted*	No

Late Filename and Checksum Predecessor Reporting Operators

Class names:

```
uk.co.cartesian.ascertain.um.operator.reporting.LateChecksumPredecessor
uk.co.cartesian.ascertain.um.operator.reporting.LateFilenamePredecessor
```

These file matching operators are used to raise issues where late predecessor files have been identified. The command line parameters are:

Parameter	Description	Mandatory
`-edge`	The edge specifying the predecessor files to report on	Yes
`-min`	The minimum minutes to wait before reporting a predecessor file is late	Yes
`-cap`	This specifies the maximum age of records, in days, that are to be included in matching queries *This cap provides a mechanism to exclude records from matching and thereby provide a practical limit on the set of candidate files* *This value defaults to 10 days*	No
`-debug`	Provide debug information while executing *The values are "yes" and "no" (which is the default condition)*	No
`-version`	Provide version information regarding the job itself and exit *This takes no arguments*	No

Late Filename and Checksum Successor Reporting Operators

Class names:

```
uk.co.cartesian.ascertain.um.operator.reporting.LateChecksumSuccessor
uk.co.cartesian.ascertain.um.operator.reporting.LateFilenameSuccessor
```

These file matching operators are used to raise issues where late successor files have been identified. The command line parameters are:

Parameter	Description	Mandatory
`-edge`	The edge specifying the successor files to report on	Yes
`-min`	The minimum minutes to wait before reporting a predecessor file is late	Yes

Parameter	Description	Mandatory
`-cap`	This specifies the maximum age of records, in days, that are to be included in matching queries *This cap provides a mechanism to exclude records from matching and thereby provide a practical limit on the set of candidate files* *This value defaults to 10 days*	No
`-debug`	Provide debug information while executing *The values are "yes" and "no" (which is the default condition)*	No
`-version`	Provide version information regarding the job itself and exit *This takes no arguments*	No

Close Late Matched Predecessor Files Issues Operator

Class name:

`uk.co.cartesian.ascertain.um.operator.cleanser.CloseLatePredecessorIssueOperator`

These file matching operators are used to auto close issues where late predecessor files have been identified. The command line parameters are:

Parameter	Description	Mandatory
`-autoClose`	The maximum number of days to look for late matched predecessors. This gives finer control over reporting since files that have not arrived within a reasonable time are unlikely to be matched *The default is 7 days*	No
`-startOffset`	Used to override `-autoClose` option and indicates when, relative to the system date, to begin file matching *Must be used in conjunction with `-endOffset` parameter or the `-autoClose` parameter will be used instead*	No
`-endOffset`	Used to override `-autoClose` option and indicates when, relative to the system date to end file matching *Must be used in conjunction with `-startOffset` parameter or the `-autoClose` parameter will be used instead*	No
`-debug`	Provide debug information while executing *The values are "yes" and "no" (which is the default condition)*	No
`-version`	Provide version information regarding the job itself and exit *This takes no arguments*	No

Close Late Matched Successor Files Issues Operator

Class name:

`uk.co.cartesian.ascertain.um.operator.cleanser.CloseLateSuccessorIssueOperator`

These file matching operators are used to auto close issues where late successor files have been identified. The command line parameters are:

Parameter	Description	Mandatory
`-autoClose`	The maximum number of days to look for late matched successors. This gives finer control over reporting since files that have not arrived within a reasonable time are unlikely to be matched *The default is 7 days*	No
`-startOffset`	Used to override `-autoClose` option and indicates when, relative to the system date, to begin file matching *Must be used in conjunction with `-endOffset` parameter or the `-autoClose` parameter will be used instead*	No
`-endOffset`	Used to override `-autoClose` option and indicates when, relative to the system date to end file matching *Must be used in conjunction with `-startOffset` parameter or the `-autoClose` parameter will be used instead*	No
`-debug`	Provide debug information while executing *The values are "yes" and "no" (which is the default condition)*	No
`-version`	Provide version information regarding the job itself and exit *This takes no arguments*	No

Unmatched File Cleanup Operator

Class name:

`uk.co.cartesian.ascertain.um.operator.cleanser.UnmatchedFileOperator`

This file matching operator is used to delete records from the file matching queue that are unmatched after some time. This should be used to cleanup the queue in situations where unmatched files are unlikely to be matched. The command line parameters are:

Parameter	Description	Mandatory
`-days`	Specifies that unmatched files older than this should be deleted. For example: `-days 100` = *delete unmatched files older than 100 days*	Yes
`-debug`	Provide debug information while executing *The values are "yes" and "no" (which is the default condition)*	No
`-version`	Provide version information regarding the job itself and exit *This takes no arguments*	No

Basic Time Based File Matching Operators

The following file matchers match files over time and a history is kept for each run to prevent the matcher from running more than once with the same parameters.

*Please note that the `-rerun` parameter is not run from the file matching operator directly. This parameter is actually used by the **Late File Processing Job**, which will automatically invoke all necessary file matching operators applicable to the node/edge.*

Basic Time Based Edge Match

Class name:

`uk.co.cartesian.ascertain.um.operator.node.metricjn.InterNodeFileMatchingOperator`

This file matching operator compares two nodes over time in one day. The nodes to compare are the source and target nodes of an edge.

Parameter	Description	Mandatory
`-edge`	The edge specifying the two nodes to run the match against	Yes
`-time_from`	The lower limit of the time constraint *The time is in the form `HH24:MI:SS` e.g. `-time_from 03:30:00`* *If not present, defaults to `00:00:00`, which is the start of the day*	No
`-time_to`	The upper limit of the time constraint *The time is in the form `HH24:MI:SS` e.g. `-time_to 18:30:00`* *If not present, defaults to `23:59:59`, which is the end of the day*	No
`-debug`	Provide debug information while executing *The values are "yes" and "no" (which is the default condition)*	No
`-version`	Provide version information regarding the job itself and exit *This takes no arguments*	No
`-weekday`	The day of the week to run the match for *Takes a numeric value as follows:* *1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday,* *5 = Thursday, 6 = Friday, 7 = Saturday* *The file matching operator will use the previous instance of this week day (relative to the current day)* *This can be used in conjunction with the **`-offset`** flag*	Yes
`-offset`	A number of additional days to look back relative to the current date. *This should be used to look back further than 7 days, otherwise defaults to 0*	No

Parameter	Description	Mandatory
`-period`	The time period to use for grouping purposes *Permitted values are:* *"H" = Hourly* *"D" = Daily*	No
`-rerun`	Set this flag to "yes" to request a file matcher to re-run a previous file match job. *Regenerating filesets is dependent on filesets having been generated before*	No
`-matchdate`	Specifies the absolute date to run the match for. *Format is YYYYMMDD, e.g. -matchdate 20100724.* *Only one of either* `-weekday` *or* `-matchdate` *can be used.* *This can be used in conjunction with the* `-offset` *flag*	

Basic One Day Node Match

Class name:

`uk.co.cartesian.ascertain.um.operator.node.metricjn.UnmatchedNodeOperator`

This file matching operator matches on a node over time for one day.

Parameter	Description	Mandatory
`-node`	The node to match files for.	Yes
`-time_from`	The lower limit of the time constraint *The time is in the form* `HH24:MM:SS` *e.g.* `-time_from 03:30:00` *If not present, defaults to* `00:00:00`*, which is the start of the day*	No
`-time_to`	The upper limit of the time constraint *The time is in the form* `HH24:MM:SS` *e.g.* `-time_to 18:30:00` *If not present, defaults to* `23:59:59`*, which is the end of the day*	No
`-debug`	Provide debug information while executing *The values are "yes" and "no" (which is the default condition)*	No
`-version`	Provide version information regarding the job itself and exit *This takes no arguments*	No
`-weekday`	The day of the week to run the match for *Takes a numeric value as follows:* *1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday,* *5 = Thursday, 6 = Friday, 7 = Saturday* *The file matching operator will use the previous instance of this week day (relative to the current day)* *This can be used in conjunction with the* `-offset` *flag*	Yes
`-file_type`	Only "T" for Timeslot files or "L" for Log Summary files are permitted values	Yes

Parameter	Description	Mandatory
`-offset`	A number of additional days to look back relative to the current date. *This should be used to look back further than 7 days, otherwise defaults to 0*	No
`-period`	The time period to use for grouping purposes *Permitted values are:* *"H" = Hourly* *"D" = Daily*	No
`-rerun`	Set this flag to "yes" to request a file matcher to re-run a previous file match job. *Regenerating filesets is dependent on filesets having been generated before*	No
`-matchdate`	Specifies the absolute date to run the match for. *Format is YYYYMMDD, e.g. -matchdate 20100724.* *Only one of either* `-weekday` *or* `-matchdate` *can be used.* *This can be used in conjunction with the* `-offset` *flag*	

Basic Time Based Node Match

Class name:

`uk.co.cartesian.ascertain.um.operator.node.metricjn.FileTypeMatchingOperator`

This file matching operator matches files on one node over time across 2 days. The 2 days that will be compared are the last instance of the day specified by `–weekday` parameter and the same day, a week before.

Parameter	Description	Mandatory
`-node`	The node to match files for	Yes
`-time_from`	The lower limit of the time constraint *The time is in the form* `HH24:MM:SS` *e.g.* `–time_from 03:30:00` *If not present, defaults to* `00:00:00`*, which is the start of the day*	No
`-time_to`	The upper limit of the time constraint *The time is in the form* `HH24:MM:SS` *e.g.* `–time_to 18:30:00` *If not present, defaults to* `23:59:59`*, which is the end of the day*	No
`-debug`	Provide debug information while executing *The values are "yes" and "no" (which is the default condition)*	No
`-version`	Provide version information regarding the job itself and exit *This takes no arguments*	No

Parameter	Description	Mandatory
`-weekday`	The day of the week to run the match for *Takes a numeric value as follows:* *1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday,* *5 = Thursday, 6 = Friday, 7 = Saturday* *The file matching operator will start matching using the previous instance of this week day (relative to the current day) against a second date 7 days previous* *This can be used in conjunction with the* `-offset` *flag*	Yes
`-file_type`	Only "T" for Timeslot files or "L" for Log Summary files are permitted values	Yes
`-offset`	A number of additional days to look back relative to the current date. *This should be used to look back further than 7 days, otherwise defaults to 0*	No
`-period`	The time period to use for grouping purposes *Permitted values are:* *"H" = Hourly* *"D" = Daily*	No
`-rerun`	Set this flag to "yes" to request a file matcher to re-run a previous file match job. *Regenerating filesets is dependent on filesets having been generated before*	No
`-matchdate`	Specifies the absolute date to run the match for. *Format is YYYYMMDD, e.g. -matchdate 20100724.* *Only one of either* `-weekday` *or* `-matchdate` *can be used.* *This can be used in conjunction with the* `-offset` *flag*	

Attribute Grouping Node Match Operator

Class name:

`uk.co.cartesian.ascertain.um.operator.node.metricjn.GroupNodeFileMatchingOperator`

This file matching operator matches files on one node by time and weekday. The results will be grouped by some attribute defined by the `-group` parameter.

Parameter	Description	Mandatory
`-node`	The node to match files for	Yes
`-time_from`	The lower limit of the time constraint *The time is in the form* `HH24:MM:SS` *e.g.* `-time_from 03:30:00` *If not present, defaults to* `00:00:00`*, which is the start of the day*	No
`-time_to`	The upper limit of the time constraint *The time is in the form* `HH24:MM:SS` *e.g.* `-time_to 18:30:00` *If not present, defaults to* `23:59:59`*, which is the end of the day*	No

Parameter	Description	Mandatory
`-debug`	Provide debug information while executing *The values are "yes" and "no" (which is the default condition)*	No
`-version`	Provide version information regarding the job itself and exit *This takes no arguments*	No
`-weekday`	The day of the week to run the match for *Takes a numeric value as follows:* *1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday,* *5 = Thursday, 6 = Friday, 7 = Saturday* *The file matching operator will use the previous instance of this week day (relative to the current day)* This can be used in conjunction with the `-offset` flag	Yes
`-file_type`	Only "T" for Timeslot files or "L" for Log Summary files are permitted values	Yes
`-group`	How to group the matching files *Permitted values are:* *filename = name of a file when it comes into the node* *source = source of the file* *sourceType = source type of the file source* *outFilename = name of the file when it moves out of the node*	Yes
`-offset`	A number of additional days to look back relative to the current date. *This should be used to look back further than 7 days, otherwise defaults to 0*	No
`-period`	The time period to use for grouping purposes *Permitted values are:* *"H" = Hourly* *"D" = Daily*	No
`-rerun`	Set this flag to "yes" to request a file matcher to re-run a previous file match job. *Regenerating filesets is dependent on filesets having been generated before*	No
`-matchdate`	Specifies the absolute date to run the match for. *Format is YYYYMMDD, e.g. -matchdate 20100724.* *Only one of either* `-weekday` *or* `-matchdate` *can be used.* *This can be used in conjunction with the* `-offset` *flag*	

Attribute Grouping Edge Match Operator

Class name:

`uk.co.cartesian.ascertain.um.operator.edge.metricjn.GroupedEdgeFileMatchingOperator`

This file matching operator matches files on an edge by time and weekday. The results will be grouped by some attribute defined by the `-group` parameter.

Parameter	Description	Mandatory
-edge	The edge to match files for	Yes
-time_from	The lower limit of the time constraint *The time is in the form* `HH24:MM:SS` *e.g.* `-time_from 03:30:00` *If not present, defaults to* `00:00:00`*, which is the start of the day*	No
-time_to	The upper limit of the time constraint *The time is in the form* `HH24:MM:SS` *e.g.* `-time_to 18:30:00` *If not present, defaults to* `23:59:59`*, which is the end of the day*	No
-debug	Provide debug information while executing *The values are "yes" and "no" (which is the default condition)*	No
-version	Provide version information regarding the job itself and exit *This takes no arguments*	No
-weekday	The day of the week to run the match for *Takes a numeric value as follows:* *1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday,* *5 = Thursday, 6 = Friday, 7 = Saturday* *The file matching operator will use the previous instance of this week day (relative to the current day)* *This can be used in conjunction with the* **-offset** *flag*	Yes
-file_type	Only "T" for Timeslot files or "L" for Log Summary files are permitted values	Yes
-group	How to group the matching files *Permitted values are:* *sourceType = The source type of the file source* *source = The source of the file* *filename = The filename on either side of the edge*	Yes
-offset	A number of additional days to look back relative to the current date. *This should be used to look back further than 7 days, otherwise defaults to 0*	No
-period	The time period to use for grouping purposes *Permitted values are:* *"H" = Hourly* *"D" = Daily*	No
-rerun	Set this flag to "yes" to request a file matcher to re-run a previous file match job. *Regenerating filesets is dependent on filesets having been generated before*	No
-matchdate	Specifies the absolute date to run the match for. *Format is YYYYMMDD, e.g. -matchdate 20100724.* *Only one of either* **-weekday** *or* **-matchdate** *can be used.* *This can be used in conjunction with the* **-offset** *flag*	

EDR Attribute Grouping Node Match Operator

Class name:

`uk.co.cartesian.ascertain.um.operator.node.metricjn.EdrFileMatchingOperator`

This file matching operator matches files on one node by time and weekday. The results will be grouped by the EDR Type attribute defined by the `-group` parameter.

Parameter	Description	Mandatory
`-node`	The node to match files for.	Yes
`-time_from`	The lower limit of the time constraint *The time is in the form* `HH24:MM:SS` *e.g.* `–time_from 03:30:00` *If not present, defaults to* `00:00:00`*, which is the start of the day*	No
`-time_to`	The upper limit of the time constraint *The time is in the form* `HH24:MM:SS` *e.g.* `–time_to 18:30:00` *If not present, defaults to* `23:59:59`*, which is the end of the day*	No
`-debug`	Provide debug information while executing *The values are "yes" and "no" (which is the default condition)*	No
`-version`	Provide version information regarding the job itself and exit *This takes no arguments*	No
`-weekday`	The day of the week to run the match for *Takes a numeric value as follows:* *1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday,* *5 = Thursday, 6 = Friday, 7 = Saturday* *The file matching operator will use the previous instance of this week day (relative to the current day or more if –offset option is specified)* *This can be used in conjunction with the* **`-offset`** *flag*	Yes
`-file_type`	Only "T" for Timeslot files or "L" for Log Summary files are permitted values	Yes
`-group`	How to group the matching files Permitted values are: *edrType = The EDR type of a file when it comes into the node* *edrSubType = The EDR subtype of the file* *edrTypeAndSubType = The EDR type and Sub-type of the file*	Yes
`-offset`	A number of additional days to look back relative to the current date. *This should be used to look back further than 7 days, otherwise defaults to 0*	No
`-period`	The time period to use for grouping purposes *Permitted values are:* *"H" = Hourly* *"D" = Daily*	No

Parameter	Description	Mandatory
`-rerun`	Set this flag to “yes” to request a file matcher to re-run a previous file match job. *Regenerating filesets is dependent on filesets having been generated before*	No
`-matchdate`	Specifies the absolute date to run the match for. *Format is YYYYMMDD, e.g. -matchdate 20100724.* *Only one of either* `-weekday` *or* `-matchdate` *can be used.* *This can be used in conjunction with the* `-offset` *flag*	

Metric Operators

Matched File Metric Operators

Matched File Metric Operator

Class name:

`uk.co.cartesian.ascertain.um.operator.metrics.MatchedFileMetricOperator.java`

Runs metrics on matched file sets. Can be configured to:

- run across a list of edges or a list of nodes (not both)
- use "last value" or "absolute" threshold testing
  - last value: compare the calculated metric value to a previous comparable metric value
  - absolute: compare the calculated metric value to an absolute value
- raise an issue if a threshold has been breached

*The parameters for this operator are specified in the **Metric Operator Parameters** section.*

Matched File Forecast Metric Operator

Class name:

`uk.co.cartesian.ascertain.um.operator.metrics.MatchedFileForecastMetricOperator.java`

Runs metrics on matched file sets. Can be configured to:

- run across a list of edges or a list of nodes (not both)
- test for a threshold breach by comparing the calculated metric value against the forecast value (if one exists)
- raise an issue if a threshold has been breached

*The parameters for this operator are specified in the **Metric Operator Parameters** section.*

Unmatched Metric Operators

Unmatched File Metric Operator

Class name:

`uk.co.cartesian.ascertain.um.operator.metrics.UnmatchedFileMetricOperator.java`

Runs metrics on an un-matched file set. Can be configured to:

- run across a list of nodes
- use "last value" or "absolute" threshold testing
  - last value: compare the calculated metric value to a previous comparable metric value
  - absolute: compare the calculated metric value to an absolute value
- raise an issue if a threshold has been breached

*The parameters for this operator are specified in the **Metric Operator Parameters** section.*

Unmatched File Forecast Metric Operator

Class name:

`uk.co.cartesian.ascertain.um.operator.metrics.UnmatchedFileForecastMetricOperator.java`

Runs metrics on an un-matched file set. Can be configured to:

- run across a list of edges or a list of nodes (not both)
- test for a threshold breach by comparing the calculated metric value against the forecast value (if one exists)
- raise an issue if a threshold has been breached

*The parameters for this operator are specified in the **Metric Operator Parameters** section.*

Metric Operator Parameters

The parameters specified below are used by all of the Metric Operators.

Parameter	Description
-edgeIds	Used to specify the edges against which to execute metrics *This can be presented as a comma separated list of edge IDs*
-nodeIds	Used to specify the nodes against which to execute metrics *This can be presented as a comma separated list of node IDs*
-sets	The number of file sets to read from a database queue table FMO_FILESET_QUEUE
-relative	This is used to determine if the metric tests a threshold against an absolute value or a 'last comparable value' *Takes values 'yes' or 'no', defaults to 'yes'*
-forecast_type	Takes values 'percent' or 'absolute', defaults to 'percent', applies to forecast metric operators only. *percent = take the percentage difference between the forecast and the metric value as the threshold compare value"* *absolute = take the absolute difference between the forecast and the metric value*
-custom_sql_metric	Takes values 'yes' or 'no', defaults to 'no' *If set to 'yes' then the metric calculation is based on sql statements taken from the um.sql_ref table*
-meta_metric	Takes values 'yes' or 'no', defaults to 'no' *If set to 'yes' this indicates that the metric is an aggregated metric – ie the actual metric is a single value derived from the set of individual metrics (eg an average of all the metric values calculated for an edge or node)*
-threads	The maximum number of processor threads used by this operator *If this parameter is not present then the cartesian property uk.co.cartesian.ascertain.um.operator.um_operator_job_threads is used to determine the value*
-show_db_log	Takes values 'yes' or 'no, defaults to 'no' *If set to 'yes' then a link to view the 'database operator log' table is displayed in the operator log*
-debug	Provide debug information while executing *The values are "yes" and "no" (which is the default condition)*
-switch_to_raw	Type of calculation used by percent type metrics *If set to "yes" then the calculation will be J_VALUE/I_VALUE (raw percentage)* *If set to "no" then the calculation will be J_VALUE/I_VALUE - 1 (percentage change)* *The default is "no"*

Forecasting Operators

Linear Regression Operator

Class name:

`uk.co.cartesian.ascertain.um.operator.ForecastsAndTrendsLinearRegressionOperator`

- this forecast calculation provides predictions by generating a straight line fitting the existing source metric data
- the traffic for each daily timeslot is used to generate its own straight line
  - for example 1:00 on Monday is compared to 1:00 on the previous Monday
- these lines are projected into the future to give the forecast

Moving Average Operator

Class name:

`uk.co.cartesian.ascertain.um.operator.ForecastsAndTrendsMovingAverageOperator`

- this forecast calculation smoothes a data series which makes it easier to spot trends in the data
- the traffic for each daily timeslot is averaged to generate a data point
  - for example 1:00 on Monday is averaged with 1:00 on the previous Monday
- these data points are then used to give the forecast

Forecasting Operator Parameters

The parameters specified below are used by all of the Forecast Operators.

Parameter	Description	Mandatory
`-forecast_type`	Type of forecast to calculate *Either "F" of "T", where F=Forecast and T=Trend*	Yes
`-forecast`	Used to specify the forecast to run *Forecast definition id*	Yes
`-forecast_version`	Used to specify the version of the forecast to run *Forecast version id*	Yes
`-date_type`	Type of date to use to calculate the forecast *Either "absolute" or "rolling"* *Absolute = specific date at which the historical sample data will end and the forecast will start* *Rolling = date at which the historical sample data will end and the forecast will start, relative to today's date*	Yes
`-date`	Specific absolute date *Format:* `DY, DD MONTH YYYY` *For example:* `Tue, 24 March 2009`	Yes if `-date_type` is set to absolute

Parameter	Description	Mandatory
`-offset`	Number of days to offset the rolling date by	Yes if `-date_type` is set to rolling
`-sample_size`	Number of weeks worth of historical sample data to use to calculate the forecast *This must be a minimum of 4 weeks*	Yes
`-duration`	Number of weeks to forecast the metric into the future	Yes
`-growth`	Predicted growth for the forecasting data set *This is essentially a scaling factor* *This is a number, for example 1.25 = 25% growth* *This can be set as 1.0 if no growth is required*	Yes
`-metric`	Used to specify the metric against which to execute the forecast *Metric id*	Yes
`-source`	Used to specify the data source for the forecast *Source id*	No
`-edge`	Used to specify the edge against which to execute the forecast *Edge id*	Yes if `-node` is not set
`-node`	Used to specify the node against which to execute the forecast *Node id*	Yes if `-edge` is not set
`-description`	Used to provide a description of the forecast	No

5 UM Job Parameters

Generic File Matching Job

Class Names

uk.co.cartesian.ascertain.um.job.filematching.metricjn.GenericFileMatchingJob

This creates a job to run file matching. This generic job is a superset used to produce three front end matching jobs which are detailed below.

Parameter	Description	Mandatory
-edge	Edge id to run definition on *Must specify* -edge *Note: Null or 0 = All*	Yes
-match	File match definition(s) to run. If none passed then all file match definitions will be processed	No
-delay	"Start Matching Files After" This specifies, in hours, how long files should remain before being included in matching queries *This value will default to 0, allowing matching to occur on any files present in the candidate queue table*	Yes
-cap	"Stop Matching Files After" This specifies the maximum age of records, in days, that are to be included in matching queries *This cap provides a mechanism to exclude records from matching and thereby provide a practical limit on the set of candidate files* *This value defaults to 1 day*	Yes
-latency	"Overmatching Period" The minimum time in days that a record can be deleted from event start time *Numerical value overriding the automatic deletion of records after they are matched successfully. Used to ensures all possible matches occur before the record is deleted*	No
-rerun	Specifies any re-run of time based matching *Options: Force, Yes, No*	No
-threads	Number of processors that can be run in parallel *Default: 4*	Yes

Edge Matching

Class Names

uk.co.cartesian.ascertain.um.job.filematching.metricjn.GenericFileMatchingJob

This creates a job to run edge matching.

Parameter	Description	Mandatory

Parameter	Description	Mandatory
`-edge`	Edge id to run definition on *Must specify* -edge *Note: Null or 0 = All*	Yes
`-match`	File match definition(s) to run. If none passed then all file match definitions will be processed	No
`-delay`	"Start Matching Files After" This specifies, in hours, how long files should remain before being included in matching queries *This value will default to 0, allowing matching to occur on any files present in the candidate queue table*	Yes
`-cap`	"Stop Matching Files After" This specifies the maximum age of records, in days, that are to be included in matching queries *This cap provides a mechanism to exclude records from matching and thereby provide a practical limit on the set of candidate files* *This value defaults to 1 day*	Yes
`-latency`	"Overmatching Period" The minimum time in days that a record can be deleted from event start time *Numerical value overriding the automatic deletion of records after they are matched successfully. Used to ensures all possible matches occur before the record is deleted*	No
`-rerun`	Specifies any re-run of time based matching *Options: Force, Yes, No*	No
`-threads`	Number of processors that can be run in parallel *Default: 4*	Yes

Edge Time Matching

Class Names

`uk.co.cartesian.ascertain.um.job.filematching.metricjn.GenericFileMatchingJob`

This creates a job to run edge matching based on a time period.

Parameter	Description	Mandatory
`-edge`	Edge id to run definition on *Must specify* -edge *Note: Null or 0 = All*	Yes
`-match`	File match definition(s) to run. If none passed then all file match definitions will be processed	No
`-weekday`	The day of the week to run the match for *Takes a numeric value as follows:* *1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday,* *5 = Thursday, 6 = Friday, 7 = Saturday*	Yes

Parameter	Description	Mandatory
-delay	"Start Matching Files After" This specifies, in hours, how long files should remain before being included in matching queries *This value will default to 0, allowing matching to occur on any files present in the candidate queue table*	Yes
-cap	"Stop Matching Files After" This specifies the maximum age of records, in days, that are to be included in matching queries *This cap provides a mechanism to exclude records from matching and thereby provide a practical limit on the set of candidate files* *This value defaults to 1 day*	Yes
-latency	"Overmatching Period" The minimum time in days that a record can be deleted from event start time *Numerical value overriding the automatic deletion of records after they are matched successfully. Used to ensures all possible matches occur before the record is deleted*	No
-offset	A number of additional days to look back relative to the current date. *This should be used to look back further than 7 days, otherwise defaults to 0*	No
-rerun	Specifies any re-run of time based matching *Options: Force, Yes, No*	No
-threads	Number of processors that can be run in parallel *Default: 4*	Yes

Node Matching

Class Names

`uk.co.cartesian.ascertain.um.job.filematching.metricjn.GenericFileMatchingJob`

This creates a job to run node matching.

Parameter	Description	Mandatory
-node	Node id to run definition on *Must specify* -node *Note: Null or 0 = All*	Yes
-match	File match definition(s) to run. If none passed then all file match definitions will be processed	No
-delay	"Start Matching Files After" This specifies, in hours, how long files should remain before being included in matching queries *This value will default to 0, allowing matching to occur on any files present in the candidate queue table*	Yes

Parameter	Description	Mandatory
`-cap`	"Stop Matching Files After" This specifies the maximum age of records, in days, that are to be included in matching queries *This cap provides a mechanism to exclude records from matching and thereby provide a practical limit on the set of candidate files* *This value defaults to 1 day*	Yes
`-latency`	"Overmatching Period" The minimum time in days that a record can be deleted from event start time *Numerical value overriding the automatic deletion of records after they are matched successfully. Used to ensures all possible matches occur before the record is deleted*	No
`-rerun`	Specifies any re-run of time based matching *Options: Force, Yes, No*	No
`-threads`	Number of processors that can be run in parallel *Default: 4*	Yes

Late file issue cleanup

For matching jobs, there are two alternative sets of parameters that can be configured for closing issues caused by late files. These are typically set in the um.file_match_operator_ref table. The parameters control the range of periods to consider when joining issues to records.

The first option is to use –autoClose…This sets the from date to now and looks back autoClose days, defined by parameter value. e.g. -autoClose95 can be set to –autoClose10

The second option is to use –startOffset and –endOffset. This sets the from date to startOffset and looks back endOffset days.

Late File Processing Job

Class Names

`uk.co.cartesian.ascertain.um.job.filematching.LateFileProcessingJob`

This creates a job to re-run the time-based matching jobs when files are loaded late.

Parameter	Description	Mandatory
`-threads`	Number of processors that can be run in parallel *Default: 4*	Yes

Forecast Generation Job

Class Name

`uk.co.cartesian.ascertain.um.job.ForecastsAndTrendsJob`

This creates a job to run forecasting.

Parameter	Description	Mandatory
`-date`	Reference date to use as starting point for forecast. Required for absolute date_type	No
`-date_type`	Type of date window for the forecast to use. *Values: rolling/absolute*	Yes
`-duration`	Duration, in weeks	Yes
`-edge`	Edge to run forecast for *Must specify* `-edge` *or* `-node`*, not both* *Note: _ALL = all*	Yes
`-forecast_type`	Metric or Metric Reconciliation *Values: METRIC/MREC*	Yes
`-metric`	Metric definition id to run forecast for. *Note: 0 = All*	Yes
`-node`	Node to run forecast for *Must specify* `-edge` *or* `-node`*, not both* *Note: _ALL = all*	Yes
`-offset`	Optional offset from reference date if absolute date type used	No
`-sample_size`	Sample size, in weeks	Yes
`-source`	Source to run forecast for *Note: _UNSPECIFIED = all*	No
`-threads`	Number of processors that can be run in parallel *Default: 4*	Yes

Unload Batch job

Class Name

`uk.co.cartesian.ascertain.um.job.metrics.BatchBasedUnloadingJob`

Batch Based Unloading Job: This creates a job to unload a previously loaded batch and prepare data for metric regeneration.

Parameter	Description	Mandatory
`-batchId`	The batch id to unload	Yes
`-regenReason`	Reason for regenerating. *Values: F/M/T (Forecast/Metric/Trend)* *Default: Metric*	No

Load Staging Table Jobs

Load Staged Data

Class Name

`uk.co.cartesian.ascertain.ble.BleJob`

This creates a job to run a set of BLE steps as defined by a BLE container

The job loads the staging tables, checks for changes if files are reloaded and moves files from the fmo_match_queue_staging table to the fmo_match_queue and populates fmo_match_count. For reloaded files, any changes can either be provided by the external system or they will be calculated internally by UM. Y/N flags in the following fields of the staging table are set when files are loaded:

IS_RELOAD	IS_DELTA	Load Type
N	N	Standard
Y	N	Reload - deltas are computed internally by UM
Y	Y	Reload - deltas provided by external system

Field descriptions are as follows:

Field Name	Description
IS_RELOAD	Y/N flag indicates whether the file is reloaded
IS_DELTA	Y/N flag indicates whether a reloaded file contains precomputed changes

Populate D_DAY and D_PERIOD

Class Name

`uk.co.cartesian.ascertain.ble.BleJob`

This creates a job to run a set of BLE steps as defined by a BLE container

The job pre-populates essential day and time period data

Edge or Node Metric Calculation Job

Class Name

`uk.co.cartesian.ascertain.um.job.metrics.MetricCalculationJob`

This creates a job to run metrics for all nodes or edges in the fmo_fileset_queue.

Parameter	Description	Mandatory

Parameter	Description	Mandatory
-edge	Runs all metrics for edges in the fmo_fileset_queue *Must specify* -edge *or* -node*, not both*	Yes
-node	Runs all metrics for nodes in the fmo_fileset_queue *Must specify* -edge *or* -node*, not both*	Yes

Metric Reconciliation Regeneration

Class Name

uk.co.cartesian.ascertain.ble.BleJob

This creates a job to run a set of BLE steps as defined by a BLE container

This creates a job to run regeneration of metric reconciliations.. The job repopulates the metric queue from the metric regeneration queue. Metrics can then be recalculated by the standard metric job

Metric Regeneration

Class Name

uk.co.cartesian.ascertain.ble.BleJob

This creates a job to run a set of BLE steps as defined by a BLE container

The Metric Regeneration job handles the submission of metrics for regeneration

Filter Late Filesets

Class Name

uk.co.cartesian.ascertain.ble.BleJob

This creates a job to run a set of BLE steps as defined by a BLE container

The job processes the filesets produced by the **Late File Processing Job**.

Fileset Reconciliation Jobs

There are four fileset reconciliation jobs as follows.

Fileset Reconciliation

Class Name

uk.co.cartesian.ascertain.um.job.ble.FilesetReconciliationBleJob

This creates a job to run fileset reconciliation which processes everything in the reconciliation queue

Fileset Reconciliation by Definition

Class Name

`uk.co.cartesian.ascertain.um.job.ble.FilesetReconciliationBleJob`

This creates a job to run fileset reconciliation which processes a subset of the queue items based on the chosen definition

Parameter	Description	Mandatory
`-mrec_definition`	The metric reconciliation definitions available for selection against which the reconciliation is run	Yes

Fileset Reconciliation by Definition and Edge

Class Name

`uk.co.cartesian.ascertain.um.job.ble.FilesetReconciliationBleJob`

This creates a job to run fileset reconciliation which processes a subset of the queue items based on the chosen definition and edge

Parameter	Description	Mandatory
`-edge`	Edge id to run definition on *Must specify* -edge *Note: Null or 0 = All*	Yes
`-mrec_definition`	The metric reconciliations available for selection	Yes

Fileset Reconciliation by Edge

Class Name

`uk.co.cartesian.ascertain.um.job.ble.FilesetReconciliationBleJob`

This creates a job to run fileset reconciliation which processes a subset of the queue items based on the chosen edge

Parameter	Description	Mandatory
`-edge`	Edge id to run definition on *Must specify* -edge *Note: Null or 0 = All*	Yes

Volumetric Reconciliation Jobs

There are three volumetric reconciliation jobs as follows.

Volumetric Reconciliation

Class Name

`uk.co.cartesian.ascertain.um.job.ble.MrecBleJob`

This creates a job to run volumetric reconciliation

Parameter	Description	Mandatory
`-mrec_id`	The metric reconciliation definitions available for selection against which the reconciliation is run	Yes
`-num_days`	The number of days to be included in the reconciliation	Yes
`-offset`	A number of additional days to look back relative to the current date. *This should be used to look back further than 7 days, otherwise defaults to 0*	No

Volumetric Reconciliation by Billing Chain

Class Name

`uk.co.cartesian.ascertain.um.job.ble.MrecBleJob`

This creates a job to run volumetric reconciliation which runs all the metric reconciliations for the chosen billing chain

Parameter	Description	Mandatory
`-mrec_graph_id`	The billing chain against which the reconciliation is to be run	Yes
`-num_days`	The number of days to be included in the reconciliation	Yes
`-offset`	A number of additional days to look back relative to the current date. *This should be used to look back further than 7 days, otherwise defaults to 0*	No

Volumetric Reconciliation by Category

Class Name

`uk.co.cartesian.ascertain.um.job.ble.MrecBleJob`

This creates a job to run volumetric reconciliation which runs all the metric reconciliations for the chosen reconciliation category

Parameter	Description	Mandatory
`-mrec_cat_id`	The category against which the reconciliation is to be run	Yes

Parameter	Description	Mandatory
`-num_days`	The number of days to be included in the reconciliation	Yes
`-offset`	A number of additional days to look back relative to the current date. *This should be used to look back further than 7 days, otherwise defaults to 0*	No

Materialized View Job

Class Name

`uk.co.cartesian.ascertain.um.job.MaterializedViewJob`

This creates a job to refresh a materialized view or set of materialized views

Parameter	Description	Mandatory
`-debug`	Adds logging info. *Default: false*	No
`-mv`	List of comma separated materialized views to refresh	No
`-set`	List of comma separated materialized view set numbers to refresh	No

Job Logs

Job logs can be viewed from the **Operations > Job History** screen by clicking on the status of a job. The parameters for the job are shown in the header block. If the job is hierarchical, the sub log files can be viewed via clickable links. Examples of a Matching Job log (Figure 43) and Matching Job sub log (Figure 44) are shown below.

/usr/local/home/[redacted]/data/logs/jobs/20110322.000012.log

```
[2011-03-22 15:51:51] ############################################################
[2011-03-22 15:51:51] # Log File Path:  /usr/local/home/[redacted]/data/logs/jobs/20110322.000012.log
[2011-03-22 15:51:51] # Creation Date:  Tue Mar 22 15:51:51 GMT 2011
[2011-03-22 15:51:51] # Description:    Match: Matching by Filename; Edge - Ericsson:Mediation
[2011-03-22 15:51:51] # Parameters:
[2011-03-22 15:51:51] #         -debug   = yes
[2011-03-22 15:51:51] #         -match   = 38000
[2011-03-22 15:51:51] #         -threads = 1
[2011-03-22 15:51:51] #         -cap     = 365
[2011-03-22 15:51:51] #         -edge    = 3
[2011-03-22 15:51:51] ############################################################
[2011-03-22 15:51:51] Executing : Match: Matching by Filename; Edge - Ericsson:Mediation
[2011-03-22 15:51:51] File Match Definition Id  : 38000
[2011-03-22 15:51:51] File Match Description    : Matching by Filename
[2011-03-22 15:51:51] Operator Definition Id    : 38000
[2011-03-22 15:51:51] Operator Description      : Basic Checksum Match Operator
[2011-03-22 15:51:51] Operator Log File         : operator.00000012.00200002.log
[2011-03-22 15:51:57] Operator Exit Status      : OK
[2011-03-22 15:51:57]
[2011-03-22 15:51:57] Log File closed
```

Figure 43 Matching Job log example

Clicking on the links within the log for a hierarchical job will show the details within the sub logs, an example is shown below:

/usr/local/home/[redacted]/data/logs/operators/operator.00000012.00200002.log

```
############################################################
# Log File Path:        /usr/local/home/[redacted]/data/logs/operators/operator.00000012.00200002.log
# Creation Date:        Thu Feb 17 16:51:42 GMT 2011
############################################################

[2011-02-17 16:51:42] Checksum Matching Operator        : Processing edge "Ericsson:Mediation".
[2011-02-17 16:51:42] Checksum Matching Operator        : Found 2 metric operators for edge "Ericsson:Mediation"
[2011-02-17 16:51:42] Checksum Matching Operator        : rebuilding tables indexes
[2011-02-17 16:51:42] Checksum Matching Operator        : Percent out of date = -0.04347826
[2011-02-17 16:51:42] Checksum Matching Operator        : Gather Stats - dostats false numrows 220 orarows 230
[2011-02-17 16:51:42] Checksum Matching Operator        : Percent out of date = -0.035714287
[2011-02-17 16:51:42] Checksum Matching Operator        : Gather Stats - dostats false numrows 270 orarows 280
[2011-02-17 16:51:42] Checksum Matching Operator        : Edge 3 is NOT a 1:N edge.
[2011-02-17 16:51:42] Checksum Matching Operator        : Preparing to lock records for file match processing.
[2011-02-17 16:51:42] Checksum Matching Operator        : Creating lock table with CREATE TABLE  UM.T_MATCH_LOCK_200002_1_3 AS
    SELECT A.LOG_RECORD_ID,
           0 as RESERVED
    FROM UM.FMO_MATCH_QUEUE A,
         UM.STAGING_BATCH_STATUS SJSA
    WHERE A.BATCH_ID = SJSA.BATCH_ID
    AND SJSA.STATUS = 'S'
    AND EXISTS
    (
        SELECT B.LOG_RECORD_ID
        FROM UM.FMO_MATCH_QUEUE B,
             UM.STAGING_BATCH_STATUS SJSB
        WHERE B.BATCH_ID = SJSB.BATCH_ID
        AND SJSB.STATUS = 'S'
        AND B.OPERATOR_ID = -1
        AND B.THREAD_ID = -1
        AND not exists
        (
            select 'x'
            from um.related_file r
            where r.j_log_record_id = A.log_record_id
            and   r.j_d_period_id = A.D_PERIOD_ID
            and   r.i_log_record_id = B.log_record_id
            and   r.i_d_period_id = B.D_PERIOD_ID
        )
        AND B.NODE_ID = (SELECT I_NODE_ID FROM DGF.EDGE_REF WHERE EDGE_ID = 3)
        AND B.D_PERIOD_ID + (0/24) <  TO_DATE('20110217 16:[redacted]', 'YYYYMMDD HH24:MI:SS')  AND B.D_PERIOD_ID + 365 >  TO_DATE('201102
```

Figure 44 Matching Job sub log example