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Adva Optical Metro Ethernet 2.1.1.0 Technology Pack User's Guide

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Contents

Preface

This manual describes the Netcool/Proviso Adva Optical Metro Ethernet Technology Pack, focusing on the Adva Optical Metro Ethernet environment. Specifically, the manual describes the reports for displaying information about the devices and technologies that operate in the Adva Optical Metro Ethernet environment. The manual also describes the data collection model, properties, resources, collection formulas, and metrics that the Adva Optical Metro Ethernet Technology Pack provides to create the associated reporter sets.

Audience

The audiences for this manual are the network administration engineers at IBM customer sites who will install, configure, and use the Adva Optical Metro Ethernet Technology Pack as part of their Netcool/Proviso installation. IBM Professional Services engineers may also find this manual useful.

To install and use the Adva Optical Metro Ethernet Technology Pack, you should have a working knowledge of the following subjects:

- Netcool/Proviso DataMart
- TCP/IP networks
- Telecom network management
- Administration of the operating system

The audiences should also be familiar with the specific technology that the Adva Optical Metro Ethernet Technology Pack deals with, in this case Adva Optical Metro Ethernet.

Organization

This guide is organized as follows:

- Chapter 1, *Introduction*

  Provides a general introduction to technology packs.

- Chapter 2, *Supported Reports*

  Provides information about the reports that the Adva Optical Metro Ethernet Technology Pack provides for each device operating in the Adva Optical Metro Ethernet environment.

- Chapter 3, *Devices and Services*

  Describes the devices and services that the Adva Optical Metro Ethernet Technology Pack supports.

- Chapter 4, *Element and Sub-Element Properties*

Describes the properties that the Adva Optical Metro Ethernet Technology Pack discovers during the inventory process.

- Chapter 5, *Sub-Element Grouping Rules*

  Describes the sub-element collection grouping rules and the NOC reporting grouping rules that the Adva Optical Metro Ethernet Technology Pack defines.

- Chapter 6, *Defined Resources*

  Provides information about the elements and sub-elements that the Adva Optical Metro Ethernet Technology Pack defines in the Proviso database.

- Chapter 7, *SNMP Collection Formulas*

  Provides information about the SNMP collection formulas that the Adva Optical Metro Ethernet Technology Pack provides for devices operating in the Adva Optical Metro Ethernet environment that use an SNMP Agent.

- Chapter 8, *Discovery Formulas*

  Provides information about the Discovery formulas that the Adva Optical Metro Ethernet Technology Pack provides for devices operating in the Adva Optical Metro Ethernet environment.

- Appendix A, *Configuration*

  Describes how to configure the Adva Optical Metro Ethernet Technology Pack.

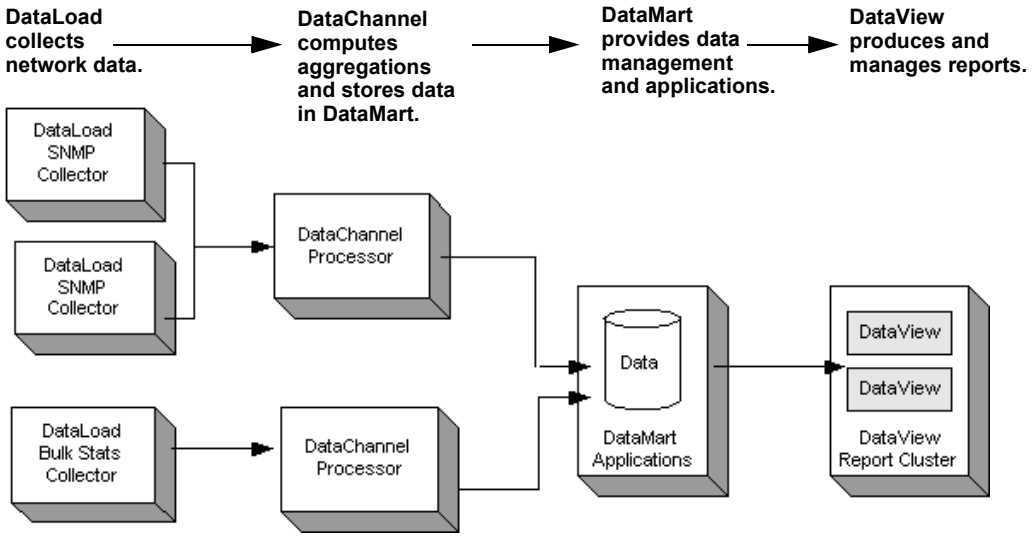
The Netcool/Proviso Product Suite

Netcool/Proviso is made up of the following components:

- **Netcool/Proviso DataMart** is a set of management, configuration and troubleshooting GUIs that the Netcool/Proviso System Administrator uses to define policies and configuration, as well as verify and troubleshoot operations.
- **Netcool/Proviso DataLoad** provides flexible, distributed data collection and data import of SNMP and non-SNMP data to a centralized database.
- **Netcool/Proviso DataChannel** aggregates the data collected through Netcool/Proviso DataLoad for use by the Netcool/Proviso DataView reporting functions. It also processes on-line calculations and detects real-time threshold violations.
- **Netcool/Proviso DataView** is a reliable application server for on-demand, web-based network reports.
- **Netcool/Proviso Technology Packs** extend the Netcool/Proviso system with service-ready reports for network operations, business development, and customer viewing.

The following figure shows the different Netcool/Proviso modules.

Figure 1: Netcool/Proviso Modules



Netcool/Proviso Documentation

Netcool/Proviso documentation consists of the following:

- release notes
- configuration recommendations
- user guides
- technical notes
- online help

The documentation is available for viewing and downloading on the infocenter at:
http://publib.boulder.ibm.com/infocenter/tivihelp/v8r1/index.jsp?topic=/com.ibm.netcool_proviso.doc/welcome.htm

Chapter 1: Introduction

This chapter discusses the following topics:

Overview

Netcool/Proviso Technology Packs are individually installed modules that contain discovery, grouping, collection, and reporting instructions created by Technology Pack developers or Professional Services personnel for a specific network technology or network equipment provider, such as Adva Optical Metro Ethernet.

Once installed, a Technology Pack "programs" Netcool/Proviso to inventory and group specific network resources, perform mathematical calculations on raw or aggregated data streams collected from these resources, and produce key performance monitoring metrics that are stored on the Netcool/Proviso database. Reporter sets designed for each Technology Pack query the database for this information and display the results on a web portal in the form of specialized report tables, graphs, and charts.

This chapter provides an overview of how Technology Packs work with Netcool/Proviso to collect, process, load, and report data from a network environment.

How is the Data Collected?

Inventory

After a Netcool/Proviso Technology Pack has been installed, an inventory process must be run so that the Technology Pack's target network resources can be identified and modeled within Netcool/Proviso as sub-elements. Sub-elements must be created before data from any network resource can be collected, processed, and stored in the database.

How sub-elements are discovered depends on whether the target resources are SNMP resources or non-SNMP resources:

- For SNMP network resources, a Technology Pack provides a discovery formula. Discovery formulas are used to evaluate network resources, determine which resources become sub-elements, and set values for items defined as properties in the formula. Once all the sub-elements have been discovered and created in the database, the inventory process organizes the sub-elements according to the grouping rules provided by a

Technology Pack. The grouping rules use the properties and values defined within inventory formulas or adaptor design files to filter the sub-elements into their appropriate collection or reporting groups.

- For non-SNMP network resources, a Technology Pack provides a Bulk Adaptor Design File. Bulk Adaptor Design Files define how data fields that reside in files generated by network resources are used to create sub-elements and set values for items defined as properties.

During the database synchronization phase of the inventory process, the list of discovered sub-elements is compared to what exists in the database. Newly discovered sub-elements are assigned a resource identifier (RID) and timestamp, and the database uses both items to create a new entry for the sub-element to reflect the known state of the network inventory.

Collection

Following the completion of the inventory process, Netcool/Proviso is ready to collect performance data for a Technology Pack's target network resources. A Technology Pack provides Netcool/Proviso with collection formulas that instruct a DataLoad collector residing in a DataChannel to collect specific types of performance data against a particular sub-element.

The types of collection formulas applied to the data depend on whether the sub-element is an SNMP resource or non-SNMP resource:

- For SNMP network resources, a Technology Pack provides SNMP collection formulas. SNMP collection formulas instruct the SNMP Collector to take the data gathered during a specified collection interval, perform some mathematical operation on the data, and output the result as a performance metric.
- For non-SNMP network resources, a Technology Pack provides Bulk collection formulas. A Bulk collection formula, unlike an SNMP collection formula, has no executable instructions. A Bulk collection formula consists of a metric name that is mapped by the Bulk Adaptor Design File to a statistic that resides in the input file generated by a network resource.

Either type of collection formula outputs a metric and corresponding unique metric identifier (MID) that are passed along the DataChannel to the Complex Metric Engine for processing.

How is the Data Processed and Loaded into the Database?

The Complex Metric Engine (CME) is a component in the DataChannel that performs calculations on data gathered by the SNMP or Bulk collectors deployed in a network. These calculations include the following:

- Pre-defined formulas that are provided by a Technology Pack
- User-defined formulas created using the CME Formula API
- Time aggregations for sub-elements

In addition to performing calculations on the data stream in the DataChannel, the CME also buffers and sorts metric records according to their RIDs and MIDs to optimize how the data and metrics are stored in the database.

CME Operation

The CME is designed to work with data that is gathered over the space of one hour. Within that hour, there are several distinct phases that characterize the operation of the CME:

- *Loading Phase*
- *Building Phase*
- *Processing Phase*
- *Output Phase*

Loading Phase

During the beginning of each hour, the CME creates a new network configuration model based on the inventory structure that exists in the database at that time. This model is used as a snapshot of the network environment and serves as the basis for all metric processing for the entire duration of the hour. At the end of the hour, the CME polls the database for any changes that have been made to the inventory and creates a new network configuration model for the next hour.

As the CME reloads its configuration hourly, any metrics produced by sub-elements following the last polling period are rejected by the CME until the beginning of the next hour.

Building Phase

Once the current configuration model has been built, the CME creates a table of sub-elements and metrics that are expected for the current hour. The CME uses the RIDs and MIDs to build the table and determine which metrics should be arriving from the collectors. The table also specifies how resources are related, and determines if there are any CME formulas that must be applied to a sub-element's metrics once the data is gathered.

Processing Phase

Whenever new data arrives at the CME, it is evaluated and stored in the appropriate table location, along with any Resource Aggregation information. Once the input and processing dependencies for a metric in the table have been met, the CME processes the metrics and stores the data until the end of the hour.

Output Phase

At the end of the current hour, the CME outputs everything in memory to the Hourly and Daily Loaders. The data sent to the database loaders includes the sorted data for the current hour, and resource and group aggregations for each of the processing periods up to the current time. The Hourly Loader computes group and resource aggregations, while the Daily Loader creates metric statistics and inserts the data into the database.

How is the Data Reported?

The data collected, processed, and stored in the database by Netcool/Proviso is organized and output for customers using reporter sets that are designed by developers and Professional Services personnel for a specific Technology Pack.

A Technology Pack reporter set is a related group of reports that provide performance information on a specific set of devices or resources that exist in a network. Each report consists of a series of queries that retrieve related sub-elements and their corresponding metrics from the database using the RIDs and MIDs assigned during the inventory and collection processes. The retrieved results are then organized within the report and are displayed on a web portal in the form of tables, graphs, and charts.

A Technology Pack provides a variety of reports and charts, including:

- Resource Summary Reports (RSTs) (sometimes referred to as Resource Summary Tables) aggregate data across time for an individual sub-element and define the statistics that are relevant for a measure of its network performance.
- Group Summary Reports (GSTs) (sometimes referred to as Group Summary Tables) aggregate data across both time and sub-elements, and define the statistics that are relevant for a measure of network performance for a group of resources.
- Detail Charts (DCs) display raw data for a metric that has been aggregated for an individual sub-element over a particular period of time.
- Dashboards display a series of abbreviated tables and charts that provide an overall summary of the metrics collected for the target network resource supported by the Technology Pack.
- Timeseries charts present time series information, where the x axis is time and the y axis is the data value.
- TopN reports list the N highest values during a specified time range for a specific metric.
- Resource Distribution charts (often referred to as pie charts) show the distribution of resources across specific ranges. Typically, a legend for the Resource Distribution chart appears in the report.
- Resource Over Threshold Tables (RTTs) display a list of resources that have violated their threshold for a specific metric. Typically, users navigate to an RTT from a Group Summary Table (GST), using the threshold overflow cell navigation link.
- Ratio charts show the relationship of a single metric among different resources or a single resource among different metrics.

Chapter 2: Supported Reports

This chapter discusses the following topics:

Overview

The Adva Optical Metro Ethernet Technology Pack supplies a set of reports suitable for displaying information about the devices and activity associated with the Adva Optical Metro Ethernet environment.

Reports contain metrics that are generated by the formulas that this technology pack provides. Metric names are the same as the names of the formulas that generate them. For information about a metric that is listed for a particular report, see the description of the associated formula in the collection formula chapter of this guide.

This chapter includes information to help you navigate to a particular report on the DataView portal. This navigation path is the same as the path where the report has been deployed through the DataMart Resource Editor. Note, however, that some reports are not explicitly deployed on the portal navigation path. You can display such a report by "drilling down" to it from other reports.

For information about understanding report types, creating reports, configuring reports, viewing and working with reports, and deploying reports, see the *Netcool/Proviso DataView User's Guide*. This Technology Pack User's Guide assumes an understanding of the report-related topics discussed in the *Netcool/Proviso DataView User's Guide*.

Report Reference

The following pages provide a reference of the reports that this technology pack provides. The reference pages have the following sections:

- **Description**. Describes the purpose and content of the report.
- **Reporter Set**. The reporter set that the report belongs to.
- **Tables and Charts**. The types of tables and charts in this report. For each listed table or chart type, this section shows how many of the given type that the technology pack implements out of the total that the stylesheet provides. For example:

  Tables: Resource Summary Table (1 of 2 implemented)

  Charts: Resource Distribution Chart (2 of 2 implemented)

In cases where the stylesheet information is not available for a given report, only the number of tables or charts actually implemented is shown.

- **Metrics Used in Reports**. The collection formulas that provide metrics for the report.
- **Navigation Path**. The navigation path to use to select the report on the DataView portal.

  Some reports are not accessed directly from a DataView portal navigation path. You can access such reports by drilling down from another report. If you want to make the report available on the navigation path, you can use the DataMart Resource Editor to deploy it.
- **Drills Down To**. One or more reports that can be accessed by drilling down from a table or chart in the report.
- **Drilled Down From**. One or more reports from which you can drill down to reach the report.

Reporter Sets

A reporter set contains a group of reporters that together provide information about a specific technology or a vendor device. Technology pack developers use the Reporter Set Wizard to choose the type of template upon which to base the reporter set.

Specifically, the Adva Optical Metro Ethernet Technology Pack uses reporter sets as the framework for defining the reports that display in meaningful ways on a WWW portal the collected information about the devices and technologies that operate in the Adva Optical Metro Ethernet environment.

See the *Netcool/Proviso DataView User's Guide* for more information about reporter sets and the Reporter Set Wizard.

Reporter Set Tree

This technology pack provides the reporter sets listed below. The list presents the reporter sets as they appear in the DataView Navigator tree structure:

```
AP Adva Optical Metro Ethernet
...Port
......UNI
......WAN
...ESA Probe
...Metro Ethernet Dashboard
```

Reports

This technology pack provides the following reports:

- Ethernet Port Drops and Discards Details
- Ethernet Port Drops and Discards Summary Group
- Ethernet Port Drops and Discards Summary Resource
- Ethernet Port Jitter Probe Egress Negative Details
- Ethernet Port Jitter Probe Egress Positive Details
- Ethernet Port Jitter Probe Ingress Negative Details
- Ethernet Port Jitter Probe Ingress Positive Details
- Ethernet Port Jitter Probe Summary Group
- Ethernet Port Jitter Probe Summary Resource
- Ethernet Port Latency Probe Delay Egress Oneway Details
- Ethernet Port Latency Probe Delay Ingress Oneway Details
- Ethernet Port Latency Probe Delay Round Trip Details
- Ethernet Port Latency Probe Delay Summary Group
- Ethernet Port Latency Probe Delay Summary Resource
- Ethernet Port Latency Probe Error Details
- Ethernet Port Latency Probe Loss Details
- Ethernet Port Latency Probe Sequence Details
- Ethernet Port Latency Probe Summary Group
- Ethernet Port Latency Probe Summary Resource
- Ethernet Port Optical Environment Details
- Ethernet Port Optical Environment Summary Group
- Ethernet Port Optical Environment Summary Resource
- Ethernet Port Throughput Details
- Ethernet Port Throughput Summary Group
- Ethernet Port Throughput Summary Resource
- Metro Ethernet Overview
- WAN Uplink Optical Environment Details
- WAN Uplink Optical Environment Summary Group
- WAN Uplink Optical Environment Summary Resource
- WAN Uplink Port Throughput Details
- WAN Uplink Port Throughput Summary Group
- WAN Uplink Port Throughput Summary Resource

The reports in this technology pack are described on the following pages.

Ethernet Port Drops and Discards Details

Description

AP Adva Optical Metro Ethernet - Per UNI Port QoS (DE Dropped) - Detail Chart

Reporter Set

UNI

Tables and Charts

Charts: Resource Time Series Chart (8 of 8 implemented) - Real-Time support

Metrics Used in Report

Egress DE Dropped Frames

Egress DE Frames

Egress Discarded Frames

Egress Tail Drop (Frames)

Ingress DE Dropped Frames

Ingress DE Frames

Ingress Discarded Frames

Ingress Tail Drop (Frames)

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Drops and Discards Summary Resource

Ethernet Port Drops and Discards Summary Group

Description

AP Adva Optical Metro Ethernet - Per UNI Port QoS Summary - GST

Reporter Set

UNI

Tables and Charts

Tables: Group Summary Table (2 of 2 implemented)

Charts: Resource Distribution Chart (0 of 4 implemented)

Metrics Used in Report

- Egress DE Dropped Frames
- Egress DE Frames
- Egress Discarded Frames
- Egress Tail Drop (Frames)
- Ingress DE Dropped Frames
- Ingress DE Frames
- Ingress Discarded Frames
- Ingress Tail Drop (Frames)

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > Ethernet Port

Drills Down To

- Ethernet Port Drops and Discards Summary Resource

Drilled Down From

None.

Ethernet Port Drops and Discards Summary Resource

Description

AP Adva Optical Metro Ethernet - Per UNI Port QoS (DE Frames) Summary - RST1

Reporter Set

UNI

Tables and Charts

Tables: Resource Summary Table (2 of 1 implemented)

Charts: Resource Distribution Chart (0 of 2 implemented)

Metrics Used in Report

Egress DE Dropped Frames

Egress DE Frames

Egress Discarded Frames

Egress Tail Drop (Frames)

Ingress DE Dropped Frames

Ingress DE Frames

Ingress Discarded Frames

Ingress Tail Drop (Frames)

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > Ethernet Port > %(Element.NAME)

Drills Down To

Ethernet Port Drops and Discards Details

Drilled Down From

Ethernet Port Drops and Discards Summary Group

Ethernet Port Jitter Probe Egress Negative Details

Description

AP Adva Optical Metro Ethernet - Port Jitter Probe Egress Negative - Detail Chart.

Reporter Set

ESA Probe

Tables and Charts

Charts: Resource Time Series Chart (5 of 9 implemented) - Real-Time support

Metrics Used in Report

Egress Negative Jitter Maximum

Egress Negative Jitter Minimum

Egress Negative Jitter Number

Egress Negative Jitter Sum

Egress Negative Jitter Variance

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Jitter Probe Summary Resource

Ethernet Port Jitter Probe Egress Positive Details

Description

AP Adva Optical Metro Ethernet - Port Jitter Probe Egress Positive - Detail Chart.

Reporter Set

ESA Probe

Tables and Charts

Charts: Resource Time Series Chart (5 of 9 implemented) - Real-Time support

Metrics Used in Report

Egress Positive Jitter Maximum

Egress Positive Jitter Minimum

Egress Positive Jitter Number

Egress Positive Jitter Sum

Egress Positive Jitter Variance

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Jitter Probe Summary Resource

Ethernet Port Jitter Probe Ingress Negative Details

Description

AP Adva Optical Metro Ethernet - Port Jitter Probe Ingress Negative - Detail Chart.

Reporter Set

ESA Probe

Tables and Charts

Charts: Resource Time Series Chart (5 of 9 implemented) - Real-Time support

Metrics Used in Report

Ingress Negative Jitter Maximum

Ingress Negative Jitter Minimum

Ingress Negative Jitter Number

Ingress Negative Jitter Sum

Ingress Negative Jitter Variance

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Jitter Probe Summary Resource

Ethernet Port Jitter Probe Ingress Positive Details

Description

AP Adva Optical Metro Ethernet - Port Jitter Probe Ingress Positive - Detail Chart.

Reporter Set

ESA Probe

Tables and Charts

Charts: Resource Time Series Chart (5 of 9 implemented) - Real-Time support

Metrics Used in Report

Ingress Positive Jitter Maximum

Ingress Positive Jitter Minimum

Ingress Positive Jitter Number

Ingress Positive Jitter Sum

Ingress Positive Jitter Variance

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Jitter Probe Summary Resource

Ethernet Port Jitter Probe Summary Group

Description

AP Adva Optical Metro Ethernet - Port Jitter Probe Summary - GST.

Reporter Set

ESA Probe

Tables and Charts

Tables: GroupSummary (4 implemented)

Metrics Used in Report

Egress Negative Jitter Maximum

Egress Negative Jitter Minimum

Egress Negative Jitter Number

Egress Negative Jitter Sum

Egress Negative Jitter Variance

Egress Positive Jitter Maximum

Egress Positive Jitter Minimum

Egress Positive Jitter Number

Egress Positive Jitter Sum

Egress Positive Jitter Variance

Ingress Negative Jitter Maximum

Ingress Negative Jitter Minimum

Ingress Negative Jitter Number

Ingress Negative Jitter Sum

Ingress Negative Jitter Variance

Ingress Positive Jitter Maximum

Ingress Positive Jitter Minimum

Ingress Positive Jitter Number

Ingress Positive Jitter Sum

Ingress Positive Jitter Variance

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > ESA Probes

Drills Down To

Ethernet Port Jitter Probe Summary Resource

Drilled Down From

None.

Ethernet Port Jitter Probe Summary Resource

Description

AP Adva Optical Metro Ethernet - Port Jitter Probe Summary - RST.

Reporter Set

ESA Probe

Tables and Charts

Tables: ResSummary (4 implemented)

Metrics Used in Report

Egress Negative Jitter Maximum

Egress Negative Jitter Minimum

Egress Negative Jitter Number

Egress Negative Jitter Sum

Egress Negative Jitter Variance

Egress Positive Jitter Maximum

Egress Positive Jitter Minimum

Egress Positive Jitter Number

Egress Positive Jitter Sum

Egress Positive Jitter Variance

Ingress Negative Jitter Maximum

Ingress Negative Jitter Minimum

Ingress Negative Jitter Number

Ingress Negative Jitter Sum

Ingress Negative Jitter Variance

Ingress Positive Jitter Maximum

Ingress Positive Jitter Minimum

Ingress Positive Jitter Number

Ingress Positive Jitter Sum

Ingress Positive Jitter Variance

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > ESA Probes > %(Element.NAME)

Drills Down To

Ethernet Port Jitter Probe Egress Negative Details

Ethernet Port Jitter Probe Egress Positive Details

Ethernet Port Jitter Probe Ingress Negative Details

Ethernet Port Jitter Probe Ingress Positive Details

Drilled Down From

Ethernet Port Jitter Probe Summary Group

Ethernet Port Latency Probe Delay Egress Oneway Details

Description

AP Adva Optical Metro Ethernet - Port Latency Probe Egress Oneway Delay - Detail Chart

Reporter Set

ESA Probe

Tables and Charts

Charts: Resource Time Series Chart (5 of 9 implemented) - Real-Time support

Metrics Used in Report

Egress Delay Variance

Egress Oneway Delay Average

Egress Oneway Delay Maximum

Egress Oneway Delay Minimum

Egress Oneway Delay Sum

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Latency Probe Delay Summary Resource

Ethernet Port Latency Probe Delay Ingress Oneway Details

Description

AP Adva Optical Metro Ethernet - Port Latency Probe Ingress Oneway Delay - Detail Chart

Reporter Set

ESA Probe

Tables and Charts

Charts: Resource Time Series Chart (5 of 9 implemented) - Real-Time support

Metrics Used in Report

Ingress Delay Variance

Ingress Oneway Delay Average

Ingress Oneway Delay Maximum

Ingress Oneway Delay Minimum

Ingress Oneway Delay Sum

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Latency Probe Delay Summary Resource

Ethernet Port Latency Probe Delay Round Trip Details

Description

AP Adva Optical Metro Ethernet - Port Latency Probe Round Trip Delay - Detail Chart

Reporter Set

ESA Probe

Tables and Charts

Charts: Resource Time Series Chart (5 of 9 implemented) - Real-Time support

Metrics Used in Report

Round Trip Delay Average

Round Trip Delay Maximum

Round Trip Delay Minimum

Round Trip Delay Sum

Round Trip Delay Variance

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Latency Probe Delay Summary Resource

Metro Ethernet Overview

Ethernet Port Latency Probe Delay Summary Group

Description

AP Adva Optical Metro Ethernet - Port Latency Probe Delay Summary - GST

Reporter Set

ESA Probe

Tables and Charts

Tables: GroupSummary (3 implemented)

Metrics Used in Report

Egress Delay Variance

Egress Oneway Delay Average

Egress Oneway Delay Maximum

Egress Oneway Delay Minimum

Egress Oneway Delay Sum

Ingress Delay Variance

Ingress Oneway Delay Average

Ingress Oneway Delay Maximum

Ingress Oneway Delay Minimum

Ingress Oneway Delay Sum

Round Trip Delay Average

Round Trip Delay Maximum

Round Trip Delay Minimum

Round Trip Delay Sum

Round Trip Delay Variance

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > ESA Probes

Drills Down To

Ethernet Port Latency Probe Delay Summary Resource

Drilled Down From

None.

Ethernet Port Latency Probe Delay Summary Resource

Description

AP Adva Optical Metro Ethernet - Port Latency Probe Delay Summary - RST

Reporter Set

ESA Probe

Tables and Charts

Tables: ResSummary (3 implemented)

Metrics Used in Report

Egress Delay Variance

Egress Oneway Delay Average

Egress Oneway Delay Maximum

Egress Oneway Delay Minimum

Egress Oneway Delay Sum

Ingress Delay Variance

Ingress Oneway Delay Average

Ingress Oneway Delay Maximum

Ingress Oneway Delay Minimum

Ingress Oneway Delay Sum

Round Trip Delay Average

Round Trip Delay Maximum

Round Trip Delay Minimum

Round Trip Delay Sum

Round Trip Delay Variance

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > ESA Probes > %(Element.NAME)

Drills Down To

Ethernet Port Latency Probe Delay Egress Oneway Details

Ethernet Port Latency Probe Delay Ingress Oneway Details

Ethernet Port Latency Probe Delay Round Trip Details

Drilled Down From

Ethernet Port Latency Probe Delay Summary Group

Ethernet Port Latency Probe Error Details

Description

AP Adva Optical Metro Ethernet - Port Latency Probe Error - Detail Chart

Reporter Set

ESA Probe

Tables and Charts

Charts: Resource Time Series Chart (4 of 8 implemented) - Real-Time support

Metrics Used in Report

Egress Erred Packets

Egress Sync Errors

Ingress Erred Packets

Ingress Sync Errors

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Latency Probe Summary Resource

Ethernet Port Latency Probe Loss Details

Description

AP Adva Optical Metro Ethernet - Port Latency Probe Loss - Detail Chart

Reporter Set

ESA Probe

Tables and Charts

Charts: Resource Time Series Chart (6 of 8 implemented) - Real-Time support

Metrics Used in Report

Egress Loss Percentage

Egress Lost Packets

Egress Packets

Ingress Loss Percentage

Ingress Lost Packets

Ingress Packets

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Latency Probe Summary Resource

Metro Ethernet Overview

Ethernet Port Latency Probe Sequence Details

Description

AP Adva Optical Metro Ethernet - Port Latency Probe Sequence - Detail Chart

Reporter Set

ESA Probe

Tables and Charts

Charts: Resource Time Series Chart (4 of 8 implemented) - Real-Time support

Metrics Used in Report

Late Packets

Lost Packets

Out of Sequence Errors

Sequence Gaps

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Latency Probe Summary Resource

Ethernet Port Latency Probe Summary Group

Description

AP Adva Optical Metro Ethernet - Port Latency Probe Summary - GST

Reporter Set

ESA Probe

Tables and Charts

Tables: GroupSummary (3 implemented)

Metrics Used in Report

Egress Erred Packets

Egress Loss Percentage

Egress Lost Packets

Egress Packets

Egress Sync Errors

Ingress Erred Packets

Ingress Loss Percentage

Ingress Lost Packets

Ingress Packets

Ingress Sync Errors

Late Packets

Lost Packets

Out of Sequence Errors

Sequence Gaps

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > ESA Probes

Drills Down To

Ethernet Port Latency Probe Summary Resource

Drilled Down From

None.

Ethernet Port Latency Probe Summary Resource

Description

AP Adva Optical Metro Ethernet - Port Latency Probe Summary - RST

Reporter Set

ESA Probe

Tables and Charts

Tables: ResSummary (3 implemented)

Metrics Used in Report

Egress Erred Packets

Egress Loss Percentage

Egress Lost Packets

Egress Packets

Egress Sync Errors

Ingress Erred Packets

Ingress Loss Percentage

Ingress Lost Packets

Ingress Packets

Ingress Sync Errors

Late Packets

Lost Packets

Out of Sequence Errors

Sequence Gaps

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > ESA Probes > %(Element.NAME)

Drills Down To

Ethernet Port Latency Probe Error Details

Ethernet Port Latency Probe Loss Details

Ethernet Port Latency Probe Sequence Details

Drilled Down From

Ethernet Port Latency Probe Summary Group

Ethernet Port Optical Environment Details

Description

AP Adva Optical Metro Ethernet - Per UNI Port Optical Environment - Detail Chart

Reporter Set

UNI

Tables and Charts

Charts: Resource Time Series Chart (3 of 9 implemented) - Real-Time support

Metrics Used in Report

Laser Bias Current

Received Power

Transmitted Power

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Optical Environment Summary Resource

Ethernet Port Optical Environment Summary Group

Description

AP Adva Optical Metro Ethernet - Per UNI Port Optical Environment - GST

Reporter Set

UNI

Tables and Charts

Tables: Group Summary Table (1 of 2 implemented)

Charts: Resource Distribution Chart (0 of 4 implemented)

Metrics Used in Report

Laser Bias Current

Received Power

Transmitted Power

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > Ethernet Port

Drills Down To

Ethernet Port Optical Environment Summary Resource

Drilled Down From

None.

Ethernet Port Optical Environment Summary Resource

Description

AP Adva Optical Metro Ethernet - Per UNI Port Optical Environment

Reporter Set

UNI

Tables and Charts

Tables: Resource Summary Table (1 of 1 implemented)

Charts: Resource Distribution Chart (0 of 2 implemented)

Metrics Used in Report

Laser Bias Current

Received Power

Transmitted Power

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > Ethernet Port > %(Element.NAME)

Drills Down To

Ethernet Port Optical Environment Details

Drilled Down From

Ethernet Port Optical Environment Summary Group

Ethernet Port Throughput Details

Description

AP Adva Optical Metro Ethernet - Per UNI Port Throughput - Detail Chart

Reporter Set

UNI

Tables and Charts

Charts: Resource Time Series Chart (6 of 8 implemented) - Real-Time support

Metrics Used in Report

Egress Broadcast Frames

Egress Frames

Egress Multicast Frames

Egress Throughput (bps)

Egress Unicast Frames

Ingress Throughput (bps)

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

Ethernet Port Throughput Summary Resource

Metro Ethernet Overview

Ethernet Port Throughput Summary Group

Description

AP Adva Optical Metro Ethernet - Port Throughput Summary - GST

Reporter Set

UNI

Tables and Charts

Tables: Group Summary Table (1 of 2 implemented)

Charts: Resource Distribution Chart (0 of 4 implemented)

Metrics Used in Report

- Egress Broadcast Frames
- Egress Frames
- Egress Multicast Frames
- Egress Throughput (bps)
- Egress Unicast Frames
- Ingress Throughput (bps)

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > Ethernet Port

Drills Down To

- Ethernet Port Throughput Summary Resource

Drilled Down From

None.

Ethernet Port Throughput Summary Resource

Description

AP Adva Optical Metro Ethernet - Per UNI Port Throughput Summary

Reporter Set

UNI

Tables and Charts

Tables: Resource Summary Table (1 of 1 implemented)

Charts: Resource Distribution Chart (0 of 2 implemented)

Metrics Used in Report

Egress Broadcast Frames

Egress Frames

Egress Multicast Frames

Egress Throughput (bps)

Egress Unicast Frames

Ingress Throughput (bps)

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > Ethernet Port > %(Element.NAME)

Drills Down To

Ethernet Port Throughput Details

Drilled Down From

Ethernet Port Throughput Summary Group

Metro Ethernet Overview

Description

AP Adva Optical Metro Ethernet - Dashboard

Reporter Set

Metro Ethernet Dashboard

Tables and Charts

Tables: TopN (5 of 9 implemented)

Charts: TopN (5 of 9 implemented)

Metrics Used in Report

- Egress Loss Percentage
- Egress Throughput (bps)
- Ingress Loss Percentage
- Ingress Throughput (bps)
- Round Trip Delay Average

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet

Drills Down To

- Ethernet Port Latency Probe Delay Round Trip Details
- Ethernet Port Latency Probe Loss Details
- Ethernet Port Throughput Details

Drilled Down From

None.

WAN Uplink Optical Environment Details

Description

AP Adva Optical Metro Ethernet - Uplink (Gig-E) Optical Environment Stats - Detail Chart

Reporter Set

WAN

Tables and Charts

Charts: Resource Time Series Chart (3 of 9 implemented) - Real-Time support

Metrics Used in Report

Laser Bias Current

Received Power

Transmitted Power

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

WAN Uplink Optical Environment Summary Resource

WAN Uplink Optical Environment Summary Group

Description

AP Adva Optical Metro Ethernet - Uplink (Gig-E) Optical Environment Stats - GST

Reporter Set

WAN

Tables and Charts

Tables: Group Summary Table (1 of 2 implemented)

Charts: Resource Distribution Chart (0 of 4 implemented)

Metrics Used in Report

Laser Bias Current

Received Power

Transmitted Power

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > WAN Port

Drills Down To

WAN Uplink Optical Environment Summary Resource

Drilled Down From

None.

WAN Uplink Optical Environment Summary Resource

Description

AP Adva Optical Metro Ethernet - Uplink (Gig-E) Optical Environment Stats - RST

Reporter Set

WAN

Tables and Charts

Tables: Resource Summary Table (1 of 1 implemented)

Charts: Resource Distribution Chart (0 of 2 implemented)

Metrics Used in Report

Laser Bias Current

Received Power

Transmitted Power

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > WAN Port > %(Element.NAME)

Drills Down To

WAN Uplink Optical Environment Details

Drilled Down From

WAN Uplink Optical Environment Summary Group

WAN Uplink Port Throughput Details

Description

AP Adva Optical Metro Ethernet - Uplink (Gig-E) Traffic (PB enabled) - Detail Chart

Reporter Set

WAN

Tables and Charts

Charts: Resource Time Series Chart (6 of 8 implemented) - Real-Time support

Metrics Used in Report

Egress Bitrate

Egress Broadcast

Egress Bytes

Egress Multicast

Egress Unicast

Ingress Bitrate

Navigation Path

This report is not deployed on the portal navigation path during the initial configuration of the technology pack. To display this report, drill down to it from another report or deploy it with the DataMart Resource Editor.

Drills Down To

None.

Drilled Down From

WAN Uplink Port Throughput Summary Resource

WAN Uplink Port Throughput Summary Group

Description

AP Adva Optical Metro Ethernet - Uplink (Gig-E) Throughput (PB enabled) - GST

Reporter Set

WAN

Tables and Charts

Tables: Group Summary Table (1 of 2 implemented)

Charts: Resource Distribution Chart (0 of 4 implemented)

Metrics Used in Report

Egress Bitrate

Egress Broadcast

Egress Bytes

Egress Multicast

Egress Unicast

Ingress Bitrate

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > WAN Port

Drills Down To

WAN Uplink Port Throughput Summary Resource

Drilled Down From

None.

WAN Uplink Port Throughput Summary Resource

Description

AP Adva Optical Metro Ethernet - Uplink (Gig-E) Traffic (PB enabled) Summary

Reporter Set

WAN

Tables and Charts

Tables: Resource Summary Table (1 of 1 implemented)

Charts: Resource Distribution Chart (0 of 2 implemented)

Metrics Used in Report

Egress Bitrate

Egress Broadcast

Egress Bytes

Egress Multicast

Egress Unicast

Ingress Bitrate

Navigation Path

Navigation path on the DataView portal:

NOC Reporting > Adva Optical Metro Ethernet > WAN Port > %(Element.NAME)

Drills Down To

WAN Uplink Port Throughput Details

Drilled Down From

WAN Uplink Port Throughput Summary Group

NOTES

Chapter 3: Devices and Services

This chapter discusses the following topics:

Overview

This chapter provides a summary of the Adva Optical Metro Ethernet device technology and the associated Management Information Bases (MIBs), which the Adva Optical Metro Ethernet Technology Pack is designed to support.

> ***Note:*** *The Adva Optical Metro Ethernet Technology Pack operates with Adva Optical Metro Ethernet devices running Version 3.4.1 of the operating system.*

Summary of Device Technology

Metro Ethernet Services using Ethernet technology deliver cost-effective, high-speed connectivity for metropolitan-area network (MAN) and wide-area network (WAN) applications. This simple, easy-to-use technology appeals to customers who are already using Ethernet throughout their local-area networks (LANs). Metro Ethernet Services provide scalable bandwidth in flexible increments with simplified management and faster, lower-cost provisioning.

The Adva Optical Metro Ethernet Technology Pack is designed to work with the Adva Optical Metro Ethernet by reporting on the following categories of metrics:

- LAN Port
- WAN Port
- ESA Probes

> ***Note:*** *It is impractical and beyond the scope of this Technology Pack User's Guide to provide exhaustive descriptions and explanations of the Adva Optical Metro Ethernet technology. See the documentation that ships with the previously listed devices and associated services for detailed information on the devices' and services' capabilities and features.*

Supported MIBs

The Adva Optical Metro Ethernet Technology Pack uses the following MIBs for inventory and data collection:

- ethernetServices.my
- ethernetServicesPB.my
- covEsa.my

NOTES

Chapter 4: Element and Sub-Element Properties

This chapter discusses the following topics:

Overview

A **Netcool/Proviso property** is an attribute or characteristic of an element or sub-element. Typically, a Netcool/Proviso Technology Pack uses an inventory process to collect information generated by the devices, interfaces, and services operating in the technology environment it supports.

A technology pack uses Netcool/Proviso properties for some or all of the following purposes:

- To organize information in reports
- To display values in reports
- To construct names such as sub-element names, sub-element instance names, and sub-element labels

The Netcool/Proviso properties associated with sub-elements appear in the **Properties** list (**Sub-Element** view) of the Netcool/Proviso DataMart Resource Editor. See the *Netcool/Proviso DataMart Configuration Guide* for more information on the Resource Editor.

Adva Optical Metro Ethernet Device Element Properties

The Adva Optical Metro Ethernet Technology Pack defines the following properties for the elements it creates:

Element Property	Description
`ipAddress`	The IP address of the network device on which the SNMP Agent is running.
`ipName`	The IP name of the network device to which the SNMP Agent element maps. The `ipName` property might have the same value as the `ipAddress` property.
`physAddress`	The physical address of the network device to which the SNMP Agent element maps. For example, `6.8.0.32.192.84.250`.

Element Property	Description
sysDescr	A string that identifies the manufacturer of or some other information about the network device to which the SNMP Agent element maps. For example, "Cisco Systems ws-C5000".
sysName	A string that identifies the name of the computer or server to which the SNMP Agent element maps. For example, "MIMC_Agent#2 Server MIMIC2".

Adva Optical Metro Ethernet Device Sub-Element Properties

The following pages provide a reference of the properties that this technology pack provides. The reference pages have the following sections:

- **Description**. The description of the property.
- **Captured in Discovery Formulas**. The discovery formulas that capture the property.
- **Used in CME Formulas.** The Complex Metric Engline formulas that use the property as input.
- **Used in Reports**. The reports in which this property is used.
- **Used in Grouping Rules**. Indicates whether the property is used by the NOC Reporting or Sub-Element Collect grouping rules to organize and filter data.

The following pages describe the sub-element properties used in this technology pack.

Element.NAME

Description

The Name of the Element.

Captured in Discovery Formulas

None.

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

NOC Reporting

Element.STATE

Description

This property indicates if an element is active or not. The value should be ON for collection and discovery to occur.

Captured in Discovery Formulas

None.

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

NOC Reporting

Sub-Element Collect

EsaProbeHistoryIndex

Description

An arbitrary integer index value used to uniquely identify this ESA Probe History entry.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

EsaProbeId

Description

A unique identifier to distinguish the ESA Probe.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

LanPort

Description

An integer index value used to uniquely identify this Ethernet Services interface within the ethernetPBPortSvcTable.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

LanPortHistoryIndex

Description

An arbitrary integer index value used to uniquely identify the Ethernet Services history statistics entry.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

LanPortStatsIndex

Description

An arbitrary integer index vlaue used to uniquely identify the Ethernet Services statistics entry.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MECustomerName

Description

The name of the customer.

Captured in Discovery Formulas

LanPort

WanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEEsa_DestinationIP

Description

A variable that specifies the Reflector's destination IP Address. This IP Address is used in the IP header of the ESA Probe generated packets as the destination address.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

Ethernet Port Jitter Probe Egress Negative Details

Ethernet Port Jitter Probe Egress Positive Details

Ethernet Port Jitter Probe Ingress Negative Details

Ethernet Port Jitter Probe Ingress Positive Details

Ethernet Port Latency Probe Delay Egress Oneway Details

Ethernet Port Latency Probe Delay Ingress Oneway Details

Ethernet Port Latency Probe Delay Round Trip Details

Ethernet Port Latency Probe Error Details

Ethernet Port Latency Probe Loss Details

Ethernet Port Latency Probe Sequence Details

Used in Grouping Rules

None.

MEEsa_ProbePacketInterval

Description

Specifies the interval (in milliseconds) between packet generation. A non-zero value must be specified.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEEsa_ProbePackets

Description

Specifies the number of packets within a sample run for ESA traffic generation. A non-zero value must be specified.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEEsa_ProbePacketSize

Description

Specifies the fixed-length frame size (in bytes) for ESA traffic generation. A default value of 64 bytes is used unless otherwise specified.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEEsa_ProbePortId

Description

This object has the same value as ifIndex for Ethernet Port, on which the service to be monitored resides.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

Ethernet Port Jitter Probe Egress Negative Details

Ethernet Port Jitter Probe Egress Positive Details

Ethernet Port Jitter Probe Ingress Negative Details

Ethernet Port Jitter Probe Ingress Positive Details

Ethernet Port Latency Probe Delay Egress Oneway Details

Ethernet Port Latency Probe Delay Ingress Oneway Details

Ethernet Port Latency Probe Delay Round Trip Details

Ethernet Port Latency Probe Error Details

Ethernet Port Latency Probe Loss Details

Ethernet Port Latency Probe Sequence Details

Used in Grouping Rules

NOC Reporting

Sub-Element Collect

MEEsa_ProbePriority

Description

Specifies the Priority Value for esaProbePrioMapMode as TOS/DSCP.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEEsa_ProbeStorageType

Description

The type of storage configured for this entry.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEEsa_Protocol

Description

Protocol used in ESA Probe messages. Note that an udpEcho protocol can be used for standard ESA - in other words the reflector can be any node running the UDP Echo service (in this case only round-trip delay time metrics are available). The icmpTimestamp protocol can be used for enhanced ESA (in this case the reflector must be a Covaro node). Round-trip delay time as well as one-way-jitter metrics are available with this enhanced ESA.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

Ethernet Port Jitter Probe Egress Negative Details

Ethernet Port Jitter Probe Egress Positive Details

Ethernet Port Jitter Probe Ingress Negative Details

Ethernet Port Jitter Probe Ingress Positive Details

Ethernet Port Latency Probe Delay Egress Oneway Details

Ethernet Port Latency Probe Delay Ingress Oneway Details

Ethernet Port Latency Probe Delay Round Trip Details

Ethernet Port Latency Probe Error Details

Ethernet Port Latency Probe Loss Details

Ethernet Port Latency Probe Sequence Details

Used in Grouping Rules

None.

MEEsa_ServiceType

Description

Specifies whether or not to use VLAN tagged or untagged ESA traffic generation on the Probe.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

Ethernet Port Jitter Probe Egress Negative Details

Ethernet Port Jitter Probe Egress Positive Details

Ethernet Port Jitter Probe Ingress Negative Details

Ethernet Port Jitter Probe Ingress Positive Details

Ethernet Port Latency Probe Delay Egress Oneway Details

Ethernet Port Latency Probe Delay Ingress Oneway Details

Ethernet Port Latency Probe Delay Round Trip Details

Ethernet Port Latency Probe Error Details

Ethernet Port Latency Probe Loss Details

Ethernet Port Latency Probe Sequence Details

Used in Grouping Rules

None.

MEEsa_SourceIP

Description

Specifies the Probe's source IP Address. This IP Address is used as the source address in the IP header of the ESA Probe generated packets.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

Ethernet Port Jitter Probe Egress Negative Details

Ethernet Port Jitter Probe Egress Positive Details

Ethernet Port Jitter Probe Ingress Negative Details

Ethernet Port Jitter Probe Ingress Positive Details

Ethernet Port Latency Probe Delay Egress Oneway Details

Ethernet Port Latency Probe Delay Ingress Oneway Details

Ethernet Port Latency Probe Delay Round Trip Details

Ethernet Port Latency Probe Error Details

Ethernet Port Latency Probe Loss Details

Ethernet Port Latency Probe Sequence Details

Used in Grouping Rules

None.

MEEsa_VlanId

Description

Specifies the monitored service's VLAN tag. It is valid if esaProbeSvcType is specified as VLAN tagged.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEEsa_VlanPriority

Description

Specifies the monitored service's VLAN priority. It is valid if esaProbeSvcType is specified as VLAN tagged.

Captured in Discovery Formulas

ESAProbes

Used in CME Formulas

None.

Used in Reports

Ethernet Port Jitter Probe Egress Negative Details

Ethernet Port Jitter Probe Egress Positive Details

Ethernet Port Jitter Probe Ingress Negative Details

Ethernet Port Jitter Probe Ingress Positive Details

Ethernet Port Latency Probe Delay Egress Oneway Details

Ethernet Port Latency Probe Delay Ingress Oneway Details

Ethernet Port Latency Probe Delay Round Trip Details

Ethernet Port Latency Probe Error Details

Ethernet Port Latency Probe Loss Details

Ethernet Port Latency Probe Sequence Details

Used in Grouping Rules

None.

MESiteName

Description

The Name of the Site.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEUNI_CBS

Description

This object allows configuration of the Commited Burst Size (CBS) on the Ethernet port. It is only applicable in connection-oriented TLS mode.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

Ethernet Port Drops and Discards Details

Ethernet Port Throughput Details

Used in Grouping Rules

None.

MEUNI_CIR

Description

Enables configuration of the Commited Information Rate(CIR) on the Ethernet port. This object is only applicable in connection-oriented TLS mode.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

Ethernet Port Drops and Discards Details

Ethernet Port Throughput Details

Used in Grouping Rules

None.

MEUNI_EBS

Description

This object allows SNMP management entities to set the Excess Burst Size (EBS) of the Ethernet Service Port, when the port is in connection-oriented TLS mode.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

Ethernet Port Drops and Discards Details

Ethernet Port Throughput Details

Used in Grouping Rules

None.

MEUNI_EgressCBS

Description

This object allows configuration of the Egress Commited Burst Size (CBS) on Ethernet port. It is only applicable in connection-oriented TLS mode and is valid only if ethernetPBPortSvcEgressRateLimitingEnabled is TRUE.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEUNI_EgressCIR

Description

This object is applicable only for connection-oriented TLS mode.It allows for configuration of the Egress Commited Information Rate (CIR) on Ethernet port. It is valid only if ethernetPBPortSvcEgressRateLimitingEnabled is TRUE.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEUNI_EgressEBS

Description

This object allows SNMP management entities to set the Excess Burst Size (EBS) of the Ethernet Service Port, when the port is in connection-oriented TLS mode. This object is valid only if ethernetPBPortSvcEgressRateLimitingEnabled is TRUE.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEUNI_EgressEIR

Description

This object is applicable only for connection-oriented TLS mode. It allows for configuration of the Egress Peak Information Rate(EIR) on Ethernet port. It is valid only if ethernetPBPortSvcEgressRateLimitingEnabled is TRUE.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEUNI_EIR

Description

This object allows SNMP management entities to set the Excess Information Rate (EIR) of the Ethernet Service Port, when the port is in connection-oriented TLS mode.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

Ethernet Port Drops and Discards Details

Ethernet Port Throughput Details

Used in Grouping Rules

None.

MEUNI_InterfaceType

Description

Specifies a transparent (TLS) service or VLAN/priority classified service (TVLS). This object is only applicable when ethernetPBPortSvcPortMode is connection-oriented.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

Ethernet Port Drops and Discards Details

Ethernet Port Optical Environment Details

Ethernet Port Throughput Details

Used in Grouping Rules

None.

MEUNI_PortID

Description

An integer index value used to uniquely identify the Ethernet Services interface. This object has the same value as ifIndex for Ethernet Port.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

Ethernet Port Drops and Discards Details

Ethernet Port Optical Environment Details

Ethernet Port Throughput Details

Used in Grouping Rules

NOC Reporting

Sub-Element Collect

MEUNI_PortMode

Description

This object allows SNMP management entities to indicate whether the Ethernet Service Port is connected or not.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEUNI_PortSpeed

Description

This object allows configuration of the port speed. Speed-auto enables auto-negotiation and advertises all speeds (10M Half Duplex, 10M Full Duplex, 100M Half Duplex, 100M Full Duplex). Speed-auto with specific settings enables auto-negotiation for that specific speed/duplexicity only (for example, speed-auto-10M-half is auto negotiation enabled with advertisement for 10M Half Duplex).

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEUNI_Priority

Description

This object specifies the port Priority on the Ethernet port.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEUNI_PrioVID

Description

This object specifies the Priority VLAN Id on the Ethernet port.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEUNI_TaggedFrames

Description

This object determines whether Port supports Tagged Frames. It is not applicable in connection-less port mode.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEUNI_VlanId

Description

This object is only applicable for a connection-oriented, TVLS service. It specifies the port VLAN Id on Ethernet port.

Captured in Discovery Formulas

LanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEVendorName

Description

The Name of the Vendor.

Captured in Discovery Formulas

LanPort

WanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

MEWAN_InterfaceType

Description

Specifies the Type of Ethernet Media.

Captured in Discovery Formulas

WanPort

Used in CME Formulas

None.

Used in Reports

WAN Uplink Optical Environment Details

WAN Uplink Port Throughput Details

Used in Grouping Rules

None.

MEWAN_PortId

Description

This object has the same value as ifIndex for Ethernet WAN Port. An integer index value used to uniquely identify this Ethernet WAN interface.

Captured in Discovery Formulas

WanPort

Used in CME Formulas

None.

Used in Reports

WAN Uplink Optical Environment Details

WAN Uplink Port Throughput Details

Used in Grouping Rules

NOC Reporting

Sub-Element Collect

STATE

Description

Indicates whether the entry is active.

Captured in Discovery Formulas

None.

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

NOC Reporting

Sub-Element Collect

WanPort

Description

An integer index value used to uniquely identify an Ethernet WAN interface.

Captured in Discovery Formulas

WanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

WanPortHistoryIndex

Description

An arbitrary integer index value used to uniquely identify the Ethernet WAN statistics history entry.

Captured in Discovery Formulas

WanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

WanPortStatsIndex

Description

An arbitrary integer index value used to uniquely identify the Ethernet WAN statistics entry.

Captured in Discovery Formulas

WanPort

Used in CME Formulas

None.

Used in Reports

None.

Used in Grouping Rules

None.

NOTES

Chapter 5: Sub-Element Grouping Rules

This chapter discusses the following topics:

Overview

Typically, a Netcool/Proviso Technology Pack defines sub-element grouping rules. Grouping rules organize and filter networking data into a structure that makes it easier to collect data on thousands or millions of resources.

Sub-element grouping rules organize data in tree structures. Each folder (branch) in the tree is associated with a rule or condition. If a sub-element property satisfies the rule or condition associated with a folder in the grouping tree, the sub-element is placed in the folder. The sub-element is then tested against the rule or condition in the next folder below. If the sub-element passes that test, it is tested against the rule or condition in the next folder, and so on.

The Adva Optical Metro Ethernet Technology Pack uses some of its Netcool/Proviso properties to define sub-element grouping rules. Grouping rule names appear in the **Name** field (**Rule Sub-Element** view) of the Netcool/Proviso DataMart Rule Editor. For information on how to use the Netcool/Proviso DataMart Rule Editor, see the *Netcool/Proviso DataMart Configuration Guide*.

The Rule Editor contains two grouping rule trees — the NOC reporting tree and the sub-element collect tree. The following sections describe the filtering rules and conditions in these trees.

NOC Reporting Grouping Rules

The NOC reporting tree provides the framework that allows users to navigate to reports.

The following illustration is a portion of the NOC Reporting tree as it appears in the DataMart Rule Editor. The shaded branches represent the Adva Optical Metro Ethernet portion of the tree:

```
NOC Reporting
                Adva Optical Metro Ethernet
                                              WAN Port
                                                                %(Element.NAME)
                                              Ethernet Port
                                                                %(Element.NAME)
                                              ESA Probes
                                                                %(Element.NAME)
```

The branches are described as follows:

Branch Name	Description
Adva Optical Metro Ethernet	Type: Static. Purpose: Organization only (contains all Adva Optical Metro Ethernet sub-elements).
WAN Port	Type: Rule. Purpose: Filter by condition. `[%(MEWAN_PortID) IS NOT NULL]`
Ethernet Port	Type: Rule. Purpose: Filter by condition. `[%(MEUNI_PortID) IS NOT NULL]`
ESA Probes	Type: Rule. Purpose: Filter by condition. `[%(MEEsa_ProbePortId) IS NOT NULL]`
%(Element.NAME)	Type: Rule. Purpose: Groups the collected controller card sub-elements according to name.

Sub-Element Collect Grouping Rules

The sub-element collection tree organizes the requests that collect metrics from sub-elements.

The following illustration is a portion of the Sub-Element Collect tree as it appears in the DataMart Rule Editor. The shaded branches represent the Adva Optical Metro Ethernet portion of the tree:

```
Adva Optical Metro Ethernet
                                Port
                                       WAN
                                       UNI
                                       ESA Probes
```

The branches are described as follows:

Branch Name	Description
Adva Optical Metro Ethernet	Type: Static. Purpose: Organization only (contains all Adva Optical Metro Ethernet sub-elements).
Port	Type: Static. Purpose: Organization only (contains all Port sub-elements).

Branch Name	Description
WAN	Type: Rule. Purpose: Filters by condition: `[%(MEWAN_PortId) IS NOT NULL]` Contains Adva Optical Metro Ethernet WAN sub-elements.
UNI	Type: Rule. Purpose: Filters by condition: `[%(MEUNI_PortID) IS NOT NULL]` Contains Adva Optical Metro Ethernet UNI sub-elements.
ESA Probes	Type: Rule. Purpose: Filters by condition: `[%(MEEsa_ProbePortId) IS NOT NULL]` Contains Adva Optical Metro Ethernet ESA Probes sub-elements.

Chapter 6: Defined Resources

This chapter discusses the following topics:

Overview

A **Netcool/Proviso resource** is a network element or sub-element, such as a router or a hub. Typically, an IBM Technology Pack defines a set of Netcool/Proviso elements, sub-elements, and properties that map to specific devices and services operating in a network. These resources allow IBM support engineers to:

- Configure (using the Netcool/Proviso DataMart Request Editor) data collection requests for the sub-elements associated with each Technology Pack
- View (using the Netcool/Proviso DataMart Resource Editor) sub-elements and sub-element groups associated with each Technology Pack

Adva Optical Metro Ethernet Technology Pack Resources

The Adva Optical Metro Ethernet Technology Pack provides the following Netcool/Proviso resources for the devices, services, and interfaces that the Adva Optical Metro Ethernet device manages:

Resource	Description
Element	The name that identifies the Adva Optical Metro Ethernet technology being monitored. This name is typically the IP address where the associated SNMP Agent is running. Example: `hqccm.canalst.dev.mycorp.com` In the Netcool/Proviso DataMart Resource Editor, element names appear in the name column on the Element tab.

Resource	Description
Sub-element	An element has one or more sub-elements for statistics that apply to the Adva Optical Metro Ethernet technology. The sub-element name identifies a sub-element that resides in the database. Sub-element names are often used in reports to identify specific entities. The sub-element name is constructed from the element name plus the instance name. Example: `hqccm.canalst.dev.mycorp.com_SqlDb<5>` In the Netcool/Proviso DataMart Resource Editor, sub-element names appear in the **name** column on the Sub-Element tab.
Sub-element instance	A sub-element instance name is constructed from a shorthand name for the sub-element type plus an identifier. Example: `SqlDb<5>` In the Netcool/Proviso DataMart Resource Editor, sub-element instance names appear in the **instance** column of the Sub-Element tab.
Sub-element label	A sub-element label is often used in reports to identify a particular instance of a sub-element. A sub-element label is constructed from a shorthand name for the sub-element type plus a filename. Example: `SqlDatabase: "pubs"` In the Netcool/Proviso DataMart Resource Editor, sub-element labels appear in the **label** column on the Sub-Element tab.
Sub-element family	This technology pack groups the sub-elements it creates into the following families: • Adva In the Netcool/Proviso DataMart Resource Editor, family names appear in the **fam** column on the Sub-Element tab.

Sub-Element Types

The Adva Optical Metro Ethernet Technology Pack creates the following kinds of sub-elements:

- *LAN Ports (Customer facing UNI Ports)*
- *WAN Ports (Up link ports)*
- *Latency and Jitter Probes per COS-VLAN-Port (UNI-N)*

Tables of Sub-Element Types

The tables in this section describe the kinds of Adva Optical Metro Ethernet sub-elements that this technology pack manages. Note the following about the tables:

- The Naming Structure row defines how sub-element names, sub-element labels, and sub-element instance names are constructed. The following typeface conventions are used:
  - — MIB object names are presented in bold type (for example, **cdspCardIndex**).
  - — Adva Optical Metro Ethernet Technology Pack property names are presented in monospace type (for example, `DSPCard`)

— References to element names, instance names, and other variables are presented in italic type (for example, *ElementName*_<*InstanceName*>.

- The Properties row lists the Adva Optical Metro Ethernet Technology Pack properties associated with the particular sub-element type. For descriptions of the properties, see the chapter on element and sub-element properties.

LAN Ports (Customer facing UNI Ports)

Family	Adva
Naming Structure	**Sub-element name:** ElementName_LanPort<*LanPortIndex*>LandPortStatsIndex<*LanStatsIndex*>LanPortHistoryIndex<*LanStatsHistoryIndex*> **Instance name:** LanPort<*LanPortIndex*>LanPortStatsIndex<*LanStatsIndex*>LanPortHistoryIndex<*LanStatsHistoryIndex*> **Label:** LanPort: <*LanPortIndex*>

Properties	`LanPort`
	`LanPortStatsIndex`
	`LanPortHistoryIndex`

Comments	`ElementName` is the name of the element. `LanPortIndex` is an integer index value used to uniquely identify the Ethernet Services interface. `LanStatsIndex` is an arbitrary integer index value used to uniquely identify the Ethernet Services statistics entry. `LanStatsHistoryIndex` is an arbitrary integer index value used to uniquely identify the Ethernet Services history statistics entry.

WAN Ports (Up link ports)

Family	Adva
Naming Structure	**Sub-element name:** ElementName_WanPort<*ethernetPBWanIndex*>WanPortStatsIndex<*ethernetPBWanStatsIndex*>WanPortHistoryIndex<*ethernetPBWanStatsHistoryIndex*> **Instance name:** WanPort<*ethernetPBWanIndex*>WanPortStatsIndex<*ethernetPBWanStatsIndex*>WanPortHistoryIndex<*ethernetPBWanStatsHistoryIndex*> **Label:** WanPort: ethernetPBWanIndex

Properties	`WanPort`
	`WanPortStatsIndex`
	`WanPortHistoryIndex`

Comments	`ElementName` is the name of the element. `ethernetPBWanIndex` is an integer index value used to uniquely identify the Ethernet WAN interface. `ethernetPBWanStatsIndex` is an arbitrary integer index value used to uniquely identify the Ethernet WAN statistics entry. `ethernetPBWanStatsHistoryIndex` is an arbitrary integer index value used to uniquely identify the Ethernet WAN statistics history entry.

Latency and Jitter Probes per COS-VLAN-Port (UNI-N)

Family	Adva
Naming Structure	**Sub-element name:** ElementName_EsaProbeId<*EsaProbeId*>EsaProbeHistoryIndex<*EsaProbeHistoryIndex*> **Instance name:** EsaProbeId<*EsaProbeId*>EsaProbeHistoryIndex<*EsaProbeHistoryIndex*> **Label:** EsaProbeId: *EsaProbeId*
Properties	`EsaProbeId` `EsaProbeHistoryIndex`
Comments	`ElementName` is the name of the element. `EsaProbeId` is an unique identifier to distinguish the ESA Probe. `EsaProbeHistoryIndex` is an arbitrary integer index value used to uniquely identify the ESA Probe History entry.

NOTES

Chapter 7: SNMP Collection Formulas

This chapter discusses the following topics:

Overview

The Adva Optical Metro Ethernet Technology Pack provides SNMP collection formulas specific to the associated network devices and technologies on which it operates. These SNMP collection formulas are installed with the Adva Optical Metro Ethernet Technology Pack.

Data Collection

This technology pack uses SNMP collection to gather data about Adva Optical Metro Ethernet devices and services. With SNMP collection, data is gathered from objects in standard and vendor-specific MIBs.

Formulas and Metrics

After the network data is collected, Netcool/Proviso processes the data and generates the metrics that are stored in the DataMart database and used in DataView reports. This processing is performed by the formulas described in this chapter.

A metric has the same name as the formula that generates it.

Metrics are categorized according to the type of process used to calculate the metric, as follows:

- SNMP — Data collected from MIB objects and processed by formulas included with this technology pack. Formulas that generate SNMP metrics are listed in this chapter in the Syntax section of the reference pages.
- Generic — A metric whose database location is mapped to multiple formulas. This allows the formulas to store the metrics they generate against a single database ID, allowing the metrics to appear in a single DataView report.
- CME — Metrics that are produced by calculations that the Netcool/Proviso Complex Metric Engine (CME) performs, using other metrics and sub-element properties as inputs.

Note: *Generic and CME formulas may not be included in this technology pack.*

Metrics may appear in DataView reports as raw data, or they may be further processed by the Complex Metric Engine — for example, to produce data aggregations over time. To learn where the metrics generated by the formulas in this chapter are used, see the chapter on supported reports in this guide.

This chapter is a reference of the formulas that the Adva Optical Metro Ethernet Technology Pack provides. The chapter lists formulas alphabetically.

Formula Reference

The following pages provide a reference of the formulas that this technology pack provides. The reference pages have the following sections:

- **Type**. The source of data for the formula being described — for example, SNMP (collect).
- **Description**. The description of the formula.
- **Syntax**. The formula that generates the metric from the collected SNMP data.

  After this formula processes the data, the resulting metric can be used in Netcool/Proviso DataView reports and in calculations of other metrics.

  See the *Netcool/Proviso SNMP Formula Language Guide* for detailed information about the syntax used to write SNMP collection formulas.
- **Formula Input**. This section appears with CME formulas only. It shows the variables that the CME formula uses as input, and the property or formula that supplies a variable's value. In the following example, the formula `Egress Octets Forwarded` is the source of the value of the input variable *EgressOct*:

  Input: EgressOct
  Source: Egress Octets Forwarded (Formula)
- **Generic Database Alias**. A database location where the metric generated by a formula can be stored.

  Typically, generic metrics serve as repositories in the database for mixed data collected from a particular kind of sub-element — for example, low- and high-capacity interfaces. Storing mixed data against a generic metric ID allows you to display the different kinds of data in a single report.
- **Path**. The path where the referenced SNMP collection formula is defined in the Netcool/Proviso database.

  You view the formula tree through the Formula Selector dialog of the Netcool/Proviso Formula Editor. To display this dialog, click **File > Load** in the Formula Editor.
- **MIB**. One or more MIBs that supply data to the referenced SNMP formula.

Egress Bitrate

Type

SNMP (collection)

Description

The average bit rate transmitted over a specific interval in the egress direction, based on Bytes Sent. If there is link down during the interval, the bin is not accessible.

Syntax

```
Dim I1 AS Integer Default * NAME WanIndex;
Dim I2 AS Integer Default * NAME WanStatsIndex;
Dim I3 AS Integer Default * NAME WanHistoryIndex;
ethernetPBWanHistoryABRTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > WAN

MIB

etherServicesPB.my

Egress Broadcast Frames

Type

SNMP (collection)

Description

The Broadcast Frames Sent in the egress direction.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryBFTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Egress Broadcast

Type

SNMP (collection)

Description

The Broadcast Frames Sent in the egress direction. If there is link down during the interval, the bin is not accessible.

Syntax

```
Dim I1 AS Integer Default * NAME WanIndex;
Dim I2 AS Integer Default * NAME WanStatsIndex;
Dim I3 AS Integer Default * NAME WanHistoryIndex;
ethernetPBWanHistoryBFTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > WAN

MIB

etherServicesPB.my

Egress Bytes

Type

SNMP (collection)

Description

The Bytes Sent in the egress direction. If there is link down during the interval, the bin is not accessible.

Syntax

```
Dim I1 AS Integer Default * NAME WanIndex;
Dim I2 AS Integer Default * NAME WanStatsIndex;
Dim I3 AS Integer Default * NAME WanHistoryIndex;
ethernetPBWanHistoryBSTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > WAN

MIB

etherServicesPB.my

Egress DE Dropped Frames

Type

SNMP (collection)

Description

Only applicable when Port is in Connection-oriented, TLS mode. The number of Frames Marked Yello and Discarded in the egress direction.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryFMYDTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Egress DE Frames

Type

SNMP (collection)

Description

Only applicable when Port is in Connection-oriented, TLS mode. The number of Frames Marked Yello in the egress direction.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryFMYTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Egress Delay Variance

Type

SNMP (collection)

Description

Transmitted packets in Variance of one way delay from source to destination in history interval.

Syntax

```
Dim I1 As DisplayString Default * NAME esaProbeId;

Dim I2 As Integer Default * NAME esaProbeHistoryIndex;

(esaProbeHistorySumOfSqOnewayP2RDelay.%I1.%I2 -
(esaProbeHistorySumOnewayP2RDelay.%I1.%I2 *
esaProbeHistorySumOnewayP2RDelay.%I1.%I2))/distrib((esaProbeHistoryP2RPkts.%I1.%
I2 - 1), ">0:*");
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Discarded Frames

Type

SNMP (collection)

Description

Only applicable when Port is in Connection-oriented, TLS mode. The number of Frames Marked Red and Discarded in the egress direction.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryFMRDTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Egress Erred Packets

Type

SNMP (collection)

Description

The total number of Packets in the history interval, for which there was a problem in transmission.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryP2RErredPkts.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Frames

Type

SNMP (collection)

Description

The average bit rate transmitted over a specific interval in the egress direction, based on EtherStats Octets.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryUFTx.%I1.%I2.%I3 +
ethernetPBPortSvcHistoryMFTx.%I1.%I2.%I3 +
ethernetPBPortSvcHistoryBFTx.%I1.%I2.%I3;
#ethernetPBPortSvcHistoryFSTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Egress Loss Percentage

Type

SNMP (collection)

Description

The number of Lost Pkts in percentage from probe to reflector in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
100 * esaProbeHistoryP2RLostPkts.%I1.%I2 /
distrib(esaProbeHistoryP2RPkts.%I1.%I2, ">0:*");
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Lost Packets

Type

SNMP (collection)

Description

The number of Lost Pkts from probe to reflector in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryP2RLostPkts.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Multicast Frames

Type

SNMP (collection)

Description

The Multicast Frames Sent in the egress direction.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryMFTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Egress Multicast

Type

SNMP (collection)

Description

The Multicast Frames Sent in the egress direction. If there is link down during the interval, the bin is not accessible.

Syntax

```
Dim I1 AS Integer Default * NAME WanIndex;
Dim I2 AS Integer Default * NAME WanStatsIndex;
Dim I3 AS Integer Default * NAME WanHistoryIndex;
ethernetPBWanHistoryMFTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > WAN

MIB

etherServicesPB.my

Egress Negative Jitter Maximum

Type

SNMP (collection)

Description

The maximum negative one-way jitter from source to destination in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMaxNegP2RJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Negative Jitter Minimum

Type

SNMP (collection)

Description

The minimum negative one-way jitter from source to destination in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMinNegP2RJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Negative Jitter Number

Type

SNMP (collection)

Description

The total number of negative one-way jitters from source to destination in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryNumNegP2RJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Negative Jitter Sum

Type

SNMP (collection)

Description

The total sum of negative one-way jitters from source to destination in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistorySumNegP2RJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Negative Jitter Variance

Type

SNMP (collection)

Description

Transmitted packets in Variance of negative one-way jitters from source to destination in the history interval.

Syntax

```
Dim I1 As DisplayString Default * NAME esaProbeId;

Dim I2 As Integer Default * NAME esaProbeHistoryIndex;

(esaProbeHistorySumOfSqNegP2RJitter.%I1.%I2 -
(esaProbeHistorySumNegP2RJitter.%I1.%I2 *
esaProbeHistorySumNegP2RJitter.%I1.%I2))/distrib((esaProbeHistoryR2PPkts.%I1.%I2
- 1), ">0:*");
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Oneway Delay Average

Type

SNMP (collection)

Description

The average one-way source to destination delay (in milliseconds) across all packets received in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryAvgOnewayP2RDelay.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Oneway Delay Maximum

Type

SNMP (collection)

Description

The maximum one-way source to destination delay (in milliseconds) across all packets received in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMaxOnewayP2RDelay.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Oneway Delay Minimum

Type

SNMP (collection)

Description

The minimum one-way source to destination delay (in milliseconds) across all packets received in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMinOnewayP2RDelay.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Oneway Delay Sum

Type

SNMP (collection)

Description

The sum total of one-way delay from source to destination in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistorySumOnewayP2RDelay.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Packets

Type

SNMP (collection)

Description

The total number of Transmitted Packets in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryP2RPkts.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Positive Jitter Maximum

Type

SNMP (collection)

Description

The maximum positive one-way jitter from source to destination in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMaxPosP2RJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Positive Jitter Minimum

Type

SNMP (collection)

Description

The minimum positive one-way jitter from source to destination in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMinPosP2RJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Positive Jitter Number

Type

SNMP (collection)

Description

The total number of positive one-way jitters from source to destination in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryNumPosP2RJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Positive Jitter Sum

Type

SNMP (collection)

Description

The total sum of positive one-way jitters from source to destination in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistorySumPosP2RJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Positive Jitter Variance

Type

SNMP (collection)

Description

Transmitted packet Variance of positive one-way jitters from source to destination in the history interval.

Syntax

```
Dim I1 As DisplayString Default * NAME esaProbeId;

Dim I2 As Integer Default * NAME esaProbeHistoryIndex;

(esaProbeHistorySumOfSqPosP2RJitter.%I1.%I2 -
(esaProbeHistorySumPosP2RJitter.%I1.%I2 *
esaProbeHistorySumPosP2RJitter.%I1.%I2))/distrib((esaProbeHistoryR2PPkts.%I1.%I2
- 1), ">0:*");
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Sync Errors

Type

SNMP (collection)

Description

The number of Synchronization Errors from probe to reflector in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryP2RSyncErrs.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Egress Tail Drop (Frames)

Type

SNMP (collection)

Description

Only applicable when Port is in Connection-oriented, TLS mode. The Frames Tail Dropped in the egress direction.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryFTDTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Egress Throughput (bps)

Type

SNMP (collection)

Description

The average bit rate transmitted over a specific interval in the egress direction, based on EtherStats Octets.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryABRTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Egress Unicast Frames

Type

SNMP (collection)

Description

The Unicast Frames Sent in the egress direction.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryUFTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Egress Unicast

Type

SNMP (collection)

Description

The Unicast Frames Sent in the egress direction If there is link down during the interval, the bin is not accessible.

Syntax

```
Dim I1 AS Integer Default * NAME WanIndex;
Dim I2 AS Integer Default * NAME WanStatsIndex;
Dim I3 AS Integer Default * NAME WanHistoryIndex;
ethernetPBWanHistoryUFTx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > WAN

MIB

etherServicesPB.my

Ingress Bitrate

Type

SNMP (collection)

Description

The average bit rate received over the specific interval in the ingress direction. If there is link down during the interval, the bin is not accessible. This counter is valid for all modes of the ethernet interface. In case of transparent

In case of transparent ethernet service, this counter is based on RMON etherStatsOctets.

Syntax

```
Dim I1 AS Integer Default * NAME WanIndex;
Dim I2 AS Integer Default * NAME WanStatsIndex;
Dim I3 AS Integer Default * NAME WanHistoryIndex;
ethernetPBWanHistoryABRRx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > WAN

MIB

etherServicesPB.my

Ingress DE Dropped Frames

Type

SNMP (collection)

Description

Only applicable when Port is in Connection-oriented, TLS mode. The number of Frames Marked Yello and Discarded in the ingress direction.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryFMYDRx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Ingress DE Frames

Type

SNMP (collection)

Description

Only applicable when Port is in Connection-oriented, TLS mode. The number of Frames Marked Yello in the ingress direction.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryFMYRx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Ingress Delay Variance

Type

SNMP (collection)

Description

Received packets in Variance of one-way delay from destination to source in the history interval

Syntax

```
Dim I1 As DisplayString Default * NAME esaProbeId;

Dim I2 As Integer Default * NAME esaProbeHistoryIndex;

(esaProbeHistorySumOfSqOnewayR2PDelay.%I1.%I2 -
(esaProbeHistorySumOnewayR2PDelay.%I1.%I2 *
esaProbeHistorySumOnewayR2PDelay.%I1.%I2))/distrib((esaProbeHistoryR2PPkts.%I1.%
I2 - 1), ">0:*");
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Discarded Frames

Type

SNMP (collection)

Description

Only applicable when Port is in Connection-oriented, TLS mode. The number of Frames Marked Red and Discarded in the ingress direction.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryFMRDRx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Ingress Erred Packets

Type

SNMP (collection)

Description

The total number of Received Packets in the history interval, which had protocol errors or timestamp synchronization problems.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryR2PErredPkts.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Loss Percentage

Type

SNMP (collection)

Description

The number of Lost Pkts (as a percentage) from reflector to probe in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
100 * esaProbeHistoryR2PLostPkts.%I1.%I2 /
distrib(esaProbeHistoryR2PPkts.%I1.%I2, ">0:*");
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Lost Packets

Type

SNMP (collection)

Description

The number of Lost Pkts from reflector to probe in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryR2PLostPkts.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Negative Jitter Maximum

Type

SNMP (collection)

Description

The maximum negative one-way jitter from destination to source in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMaxNegR2PJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Negative Jitter Minimum

Type

SNMP (collection)

Description

The minimum negative one-way jitter from destination to source in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMinNegR2PJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Negative Jitter Number

Type

SNMP (collection)

Description

The total number of negative one-way jitters from destination to source in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryNumNegR2PJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Negative Jitter Sum

Type

SNMP (collection)

Description

The total sum of negative one-way jitters from destination to source in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistorySumNegR2PJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Negative Jitter Variance

Type

SNMP (collection)

Description

Received packets in Variance of negative one-way jitters from destination to source in the history interval.

Syntax

```
Dim I1 As DisplayString Default * NAME esaProbeId;

Dim I2 As Integer Default * NAME esaProbeHistoryIndex;

(esaProbeHistorySumOfSqNegR2PJitter.%I1.%I2 -
(esaProbeHistorySumNegR2PJitter.%I1.%I2 *
esaProbeHistorySumNegR2PJitter.%I1.%I2))/distrib((esaProbeHistoryR2PPkts.%I1.%I2
- 1), ">0:*");
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Oneway Delay Average

Type

SNMP (collection)

Description

The average one-way destination to source delay (in milliseconds) across all packets received in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryAvgOnewayR2PDelay.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Oneway Delay Maximum

Type

SNMP (collection)

Description

The maximum one-way destination to source delay (in milliseconds) across all packets received in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMaxOnewayR2PDelay.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Oneway Delay Minimum

Type

SNMP (collection)

Description

The minimum one-way destination to source delay (in milliseconds) across all packets received in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMinOnewayR2PDelay.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Oneway Delay Sum

Type

SNMP (collection)

Description

The sum total of one-way delay from destination to source in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistorySumOnewayR2PDelay.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Packets

Type

SNMP (collection)

Description

The total number of Received Packets in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryR2PPkts.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Positive Jitter Maximum

Type

SNMP (collection)

Description

The maximum positive one-way jitter from destination to source in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMaxPosR2PJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Positive Jitter Minimum

Type

SNMP (collection)

Description

The minimum positive one-way jitter from destination to source in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMinPosR2PJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Positive Jitter Number

Type

SNMP (collection)

Description

The total number of positive one-way jitters from destination to source in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryNumPosR2PJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Positive Jitter Sum

Type

SNMP (collection)

Description

The total sum of positive one-way jitters from destination to source in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistorySumPosR2PJitter.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Positive Jitter Variance

Type

SNMP (collection)

Description

Received packets in variance of positive one-way jitters from destination to source in the history interval.

Syntax

```
Dim I1 As DisplayString Default * NAME esaProbeId;

Dim I2 As Integer Default * NAME esaProbeHistoryIndex;

(esaProbeHistorySumOfSqPosR2PJitter.%I1.%I2 -
(esaProbeHistorySumPosR2PJitter.%I1.%I2 *
esaProbeHistorySumPosR2PJitter.%I1.%I2))/distrib((esaProbeHistoryR2PPkts.%I1.%I2
- 1), ">0:*");
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Sync Errors

Type

SNMP (collection)

Description

The number of Synchronization Errors from reflector to probe in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryR2PSyncErrs.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Ingress Tail Drop (Frames)

Type

SNMP (collection)

Description

Only applicable when Port is in Connection-oriented, TLS mode. The number of Frames Tail Dropped (FTD) in the ingress direction.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryFTDRx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Ingress Throughput (bps)

Type

SNMP (collection)

Description

Average bit rate received over the specific interval in the ingress direction.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryABRRx.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Laser Bias Current

Type

SNMP (collection)

Description

Laser Bias Current retrieved from the SFP. Applicable only if the media type is fiber.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryLBC.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Laser Bias Current

Type

SNMP (collection)

Description

Laser Bias Current retrieved from the SFP.

Syntax

```
Dim I1 AS Integer Default * NAME WanIndex;
Dim I2 AS Integer Default * NAME WanStatsIndex;
Dim I3 AS Integer Default * NAME WanHistoryIndex;
ethernetPBWanHistoryLBC.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > WAN

MIB

etherServicesPB.my

Late Packets

Type

SNMP (collection)

Description

The total number of Late Arrival Packets in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryLatePkts.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Lost Packets

Type

SNMP (collection)

Description

The total number of Lost Packets in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryLostPkts.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Out of Sequence Errors

Type

SNMP (collection)

Description

The total number of out of sequence errors across all packets received in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryOutOfSeqErrs.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Received Power

Type

SNMP (collection)

Description

Received Optical Power retrieved from the SFP. Applicable only if the media type is fiber.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryOPR.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Received Power

Type

SNMP (collection)

Description

Received Optical Power retrieved from the SFP.

Syntax

```
Dim I1 AS Integer Default * NAME WanIndex;
Dim I2 AS Integer Default * NAME WanStatsIndex;
Dim I3 AS Integer Default * NAME WanHistoryIndex;
ethernetPBWanHistoryOPR.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > WAN

MIB

etherServicesPB.my

Round Trip Delay Average

Type

SNMP (collection)

Description

The average round-trip delay (in milliseconds) across all packets received in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryAvgRoundTripDelay.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Round Trip Delay Maximum

Type

SNMP (collection)

Description

The maximum round-trip delay (in milliseconds) across all packets received in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMaxRoundTripDelay.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Round Trip Delay Minimum

Type

SNMP (collection)

Description

The minimum round-trip delay (in milliseconds) across all packets received in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistoryMinRoundTripDelay.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Round Trip Delay Sum

Type

SNMP (collection)

Description

The total sum of round trip delay (in milliseconds) in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistorySumRoundTripDelay.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Round Trip Delay Variance

Type

SNMP (collection)

Description

The Variance of the Round Trip Delay in history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;

Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;

(esaProbeHistorySumOfSqRoundTripDelay.%I1.%I2 -
(esaProbeHistorySumRoundTripDelay.%I1.%I2 *
esaProbeHistorySumRoundTripDelay.%I1.%I2))/distrib((esaProbeHistoryP2RPkts.%I1.%
I2 - 1), ">0:*");
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Sequence Gaps

Type

SNMP (collection)

Description

The total number of sequence gaps across all packets received in the history interval.

Syntax

```
Dim I1 AS DisplayString Default * NAME esaProbeId;
Dim I2 AS Integer Default * NAME esaProbeHistoryIndex;
esaProbeHistorySeqGaps.%I1.%I2;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Esa

MIB

covEsa.my

Transmitted Power

Type

SNMP (collection)

Description

Transmit Optical Power retrieved from the SFP. Applicable only if the media type is fiber.

Syntax

```
Dim I1 AS Integer Default * NAME PortSvcIndex;
Dim I2 AS Integer Default * NAME PortSvcStatsIndex;
Dim I3 AS Integer Default * NAME PortSvcHistoryIndex;
ethernetPBPortSvcHistoryOPT.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > UNI

MIB

etherServicesPB.my

Transmitted Power

Type

SNMP (collection)

Description

Transmit Optical Power retrieved from the SFP.

Syntax

```
Dim I1 AS Integer Default * NAME WanIndex;
Dim I2 AS Integer Default * NAME WanStatsIndex;
Dim I3 AS Integer Default * NAME WanHistoryIndex;
ethernetPBWanHistoryOPT.%I1.%I2.%I3;
```

Generic Database Alias

None.

Formula Editor Path

AP > Specific > SNMP > Adva > Port > WAN

MIB

etherServicesPB.my

Chapter 8: Discovery Formulas

This chapter discusses the following topics:

Overview

A discovery formula (also called an inventory formula) allows Netcool/Proviso to recognize resources specific to the target devices and technologies supported in the Adva Optical Metro Ethernet environment so that information can then be collected on those resources. A discovery formula runs during the **inventory** process - the process of discovering and analyzing the network. Discovery formulas for some network interfaces and devices (for example, Frame Relay) are already included with Netcool/Proviso DataMart.

The Adva Optical Metro Ethernet Technology Pack provides discovery formulas specific to the devices and technologies that operate in the Adva Optical Metro Ethernet environment. This user guide discusses the discovery formulas that the Adva Optical Metro Ethernet Technology Pack provides.

Netcool/Proviso Discovery Formula Tree

The Adva Optical Metro Ethernet Technology Pack provides a formula tree where the SNMP discovery formulas are defined in the Netcool/Proviso database. On the following pages, the path that is defined for each formula reflects that formula's location in the formula tree. You can access this directory using the Netcool/Proviso DataMart Formula Selector. See the *Netcool/Proviso DataMart Configuration Guide* for more information.

Discovery Formula Structure

A discovery formula typically has three sections:

- **Instance variable declaration**. Instance variables represent the input values for a formula. The following line is an example of an instance variable declaration:

  ```
  Dim I1 AS Integer Default * NAME RTTMonIndex;
  ```

- **Temporary variable definition**. Temporary variables hold the result of an SNMP query. These variables can then be used as parameters in subsequent queries. The following line is an example of a temporary variable definition:

  ```
  V01=OIDINST(rttMonCtrlAdminStatus.%I1==1, once);
  ```

- **Results line**. The last line in the formula returns the formula result. The results line includes a sub-element instance string and a set of sub-element properties.

See the *Netcool/Proviso SNMP Formula Language Guide* for detailed information about the syntax used to write discovery formulas.

The Results Line

The discovery formula results line has four fields. Fields are delimited by a double-bar (| |):

- Field 1 specifies the sub-element instance string transmitted to each collection formula when the specified sub-element is deployed for collection. The instance string for a given sub-element appears in the **instance** field (**Sub-Element** view) of the Netcool/Proviso DataMart Resource Editor.
- Field 2 specifies the custom label of a sub-element. The custom label for a given sub-element appears in the **label** field (**Sub-Element** view) of the Netcool/Proviso DataMart Resource Editor.

  The custom label may also display in reports that show statistics for a sub-element. The custom label typically displays under some Name, Device Name, or some similar column.
- Field 3 defines the property list (as name/value pairs). The property list for a given sub-element appears in the **Property** and **Value** columns (**Sub-Element** view) of the Netcool/Proviso DataMart Resource Editor.
- Field 4 is an optional field that, if specified, contains the invariant of the sub-element. The invariant is used during the synchronization process to detect a change of element properties, including the instance string (the first field).

  Note: *The results line must appear as a single line in the formula.*

ESAProbes

Type

SNMP (discovery)

Description

Formula to discover the Ethernet Services Assurance (ESA) Probes

Syntax

```
Dim I1 AS DisplayString Default * NAME EsaProbeId;
Dim I2 AS Integer Default * NAME EsaProbeHistoryIndex;
V01 = OIDVAL(esaProbeSrcIpAddress.%I1);
V02 = OIDVAL(esaProbeDestIpAddress.%I1);
V03 = OIDVAL(esaProbeProtocol.%I1 format clean);
V04 = OIDVAL(esaProbePortIfIndex.%I1);
V05 = OIDVAL(esaProbeSvcType.%I1 format clean);
V06 = OIDVAL(esaProbeVlanId.%I1);
V07 = OIDVAL(esaProbeVlanPrio.%I1);
V08 = OIDVAL(esaProbePrioVal.%I1);
V09 = OIDVAL(esaProbeNumPkts.%I1);
V10 = OIDVAL(esaProbePktSize.%I1);
V11 = OIDVAL(esaProbePktInterval.%I1);
V12 = OIDVAL(esaProbeStorageType.%I1 format clean);
V99 = OIDVAL(filter(esaProbeHistoryIndex.%I1.%I2 == 1));
%V99 index "EsaProbeId<%I1>EsaProbeHistoryIndex<%I2>||EsaProbeId:
%I1||MEEsa_SourceIP<%V01>MEEsa_DestinationIP<%V02>MEEsa_Protocol<%V03>MEEsa_Prob
ePortId<%V04>MEEsa_ServiceType<%V05>MEEsa_VlanId<%V06>MEEsa_VlanPriority<%V07>ME
Esa_ProbePriority<%V08>MEEsa_ProbePackets<%V09>MEEsa_ProbePacketSize<%V10>MEEsa_
ProbePacketInterval<%V11>MEEsa_ProbeStorageType<%V12>||";
```

Formula Editor Path

Alias Instance and Label Inventory > AP > Adva

MIB

covEsa.my

LanPort

Type

SNMP (discovery)

Description

Formula to discover the Adva Optical ME FSP 150CCF-825 Ports

Syntax

```
Def UseQuotedStrings no;
Dim I1 AS Integer Default * NAME LanPortIndex;
Dim I2 AS Integer Default * NAME LanPortStatsIndex;
Dim I3 AS Integer Default * NAME LanPortHistoryIndex;
V01 = OIDVAL(ethernetPBPortSvcCircuitName.%I1 format clean);
V02 = OIDVAL(ethernetPBPortSvcIfIndex.%I1);
V03 = OIDVAL(ethernetPBPortSvcPortMode.%I1 format clean);
V04 = OIDVAL(ethernetPBPortSvcPortSpeed.%I1);
V05 = OIDVAL(ethernetPBPortSvcType.%I1 format clean);
V06 = OIDVAL(ethernetPBPortSvcPortVlanId.%I1);
V07 = OIDVAL(ethernetPBPortSvcPortPriority.%I1);
V08 = OIDVAL(ethernetPBPortSvcPrioVID.%I1);
V09 = OIDVAL(ethernetPBPortSvcTaggedFramesEnabled.%I1);
V10 = OIDVAL(ethernetPBPortSvcCIR.%I1);
V11 = OIDVAL(ethernetPBPortSvcEIR.%I1);
V12 = OIDVAL(ethernetPBPortSvcCBS.%I1);
V13 = OIDVAL(ethernetPBPortSvcEBS.%I1);
V14 = OIDVAL(ethernetPBPortSvcEgressCIR.%I1);
V15 = OIDVAL(ethernetPBPortSvcEgressEIR.%I1);
V16 = OIDVAL(ethernetPBPortSvcEgressCBS.%I1);
V17 = OIDVAL(ethernetPBPortSvcEgressEBS.%I1);
#V18 = OIDVAL(ethernetPBPortSvcCTagVlanId.%I1);
V99 = OIDVAL(filter(ethernetPBPortSvcHistoryIndex.%I1.%I2.%I3 == 1));
%V99 index "LanPort<%I1>LanPortStatsIndex<%I2>LanPortHistoryIndex<%I3>||LanPort:
%I1
||MEVendorName<Adva>MECustomerName<Unspecified>MESiteName<%V01>MEUNI_PortID<%V02
>MEUNI_PortMode<%V03>MEUNI_PortSpeed<%V04>MEUNI_InterfaceType<%V05>MEUNI_VlanId<
%V06>MEUNI_Priority<%V07>MEUNI_PrioVID<%V08>MEUNI_TaggedFrames<%V09>MEUNI_CIR<%V
10>MEUNI_EIR<%V11>MEUNI_CBS<%V12>MEUNI_EBS<%V13>MEUNI_EgressCIR<%V14>MEUNI_Egres
sEIR<%V15>MEUNI_EgressCBS<%V16>MEUNI_EgressEBS<%V17>||";
```

Formula Editor Path

Alias Instance and Label Inventory > AP > Adva

MIB

etherServicesPB.my

WanPort

Type

SNMP (discovery)

Description

Formula to discover the Uplink (WAN) interfaces of the FSP 825CC

Syntax

```
Def UseQuotedStrings no;
Dim I1 AS Integer Default * NAME ethernetPBWanIndex;
Dim I2 AS Integer Default * NAME ethernetPBWanStatsIndex;
Dim I3 AS Integer Default * NAME ethernetPBWanHistoryIndex;
V01 = OIDVAL(ethernetPBWanSfpVendorName.%I1);
V02 = OIDVAL(ethernetPBWanIfIndex.%I1);
V03 = OIDVAL(ethernetPBWanMediaType.%I1 format clean);
V04 = OIDVAL(filter(ethernetPBWanHistoryIndex.%I1.%I2.%I3 == 1));
%V04 index "WanPort<%I1>WanPortStatsIndex<%I2>WanPortHistoryIndex<%I3>||WanPort:
%I1||MEVendorName<%V01>MECustomerName<Unspecified>MEWAN_PortId<%V02>MEWAN_Interf
aceType<%V03>||";
```

Formula Editor Path

Alias Instance and Label Inventory > AP > Adva

MIB

etherServicesPB.my

NOTES

Appendix A: Configuration

This appendix explains how to configure the Adva Optical Metro Ethernet Technology Pack and consists of the following topics:

Overview

The Adva Optical Metro Ethernet Technology Pack is a MIB-based, SNMP pack, and its configuration is relatively straightforward.

Before You Begin

Before configuring the Adva Optical Metro Ethernet Technology Pack, ensure that you:

- Have the following software and documentation (corresponding to your version of Netcool/Proviso):
  - The release notes for the current technology pack release.
  - The *Netcool/Proviso Installation Guide.*
  - The *Netcool/Proviso Upgrade Guide* (if performing an upgrade).
  - The *Netcool/Proviso DataMart Configuration Guide.*

    Important: *You will need to refer to this guide in order to create an inventory profile and initiate a discovery.*

  - Access to the Netcool/Proviso DataMart server.
  - An X Window server on the DataMart server.

    Note: *(Pre-443 Netcool/Proviso) If there is no graphics card on the DataMart server, you can install the Xvfb virtual frame buffer package to provide X Window services, as described in the Netcool/Proviso Installation Guide.*

— Access to the SilverStream server.

— Access to the DataChannel server.

- Have completed the following tasks:

  — Reviewed the release notes for the current technology pack.

  Important: *Release notes contain important information you need to consider before installing a technology pack. They also contain information on specific patches that need to be installed before you configure a technology pack.*

  — Installed the current version of the Netcool/Proviso components, as described in the *Netcool/Proviso Installation Guide*.

  — Installed the Adva Optical Metro Ethernet Technology Pack.

  Note: *Installation instructions for a technology pack can be found in the Appendices of the Netcool/Proviso Installation Guide (covers core and technology packs).*
  Upgrade instructions for a technology pack can be found in Chapter 3 of the Netcool/Proviso Upgrade Guide (covers core and technology packs).

  — Configured at least one DataChannel.

  — Configured an SNMP Collector subchannel.

Configure the Technology Pack

To configure the Adva Optical Metro Ethernet Technology Pack, follow these steps:

Important: *Localization is now done automatically during installation of the technology pack and requires no manual steps to configure.*

1. Load the DataMart environment.

   To load the shell with the DataMart environment, follow these steps:

   1-a. Log in to the DataMart server as `pvuser`.

   1-b. Change your working directory to the DataMart home directory (`/opt/datamart`, by default), using the following command:

   ```
   cd /opt/datamart
   ```

   1-c. Load the shell with the DataMart environment, by sourcing the `dataMart.env` file, as follows:

   ```
   . /opt/datamart/dataMart.env
   ```

   Note: *After you load the DataMart environment into the shell, the PVMHOME variable is set to the DataMart home directory, /opt/datamart by default. These instructions assume that this variable has been set.*

2. Activate data collection requests.

   During installation of the technology pack, all predefined data collection requests are promoted to the database and set to inactive (that is, **idle** displays in the **Active** column of the Netcool/Proviso DataMart Request Editor). You need to activate these predefined data collection requests using the Request Editor.

   To set data collection requests to active, follow these steps:

2-a. Change your working directory to `$PVMHOME/bin` (`/opt/datamart/bin`, by default) on the DataMart server.

2-b. Invoke the DataMart GUI by entering the following command and pressing **Enter**:

```
pvm
```

2-c. Click the **Configuration** tab, then click **Request Editor** to open the Request Editor.

2-d. Click the **Collection** tab.

2-e. Click **Refresh**.

The predefined data collection requests are loaded into the Request Editor from the database.

2-f. Click the **Inactive** button in the **Filter** group box to display only idle requests.

2-g. In the **Sub-Element Groups** pane, select all idle data collection requests in the following group or groups:

```
Root->Sub-Element Collect->Adva Optical Metro Ethernet
```

2-h. Click the **Active** box under **Details**. The Request Editor toggles the idle setting for these data collection requests from **idle** to **active** in the **Active** column.

2-i. Click **Save**.

3. Merge the technology pack's sub-element inventory text files.

Sub-element inventory control rules for the Adva Optical Metro Ethernet Technology Pack are contained in the file `adva_ethernet_inventory_subelements.txt`, which is installed in the following directory on the DataMart server:

```
$PVMHOME/APFiles/adva_ethernet/datamart/conf
```

You must merge the contents of this file with the file `inventory_subelements.txt` located in `$PVMHOME/conf` (`/opt/datamart/conf`, by default) on the DataMart server:

To merge the sub-element inventory control rules for the Adva Optical Metro Ethernet Technology Pack, follow these steps:

3-a. Change your working directory to `$PVMHOME/conf` by entering the following command:

```
cd $PVMHOME/conf
```

3-b. Copy `adva_ethernet_inventory_subelements.txt` to the `$PVMHOME/conf` directory, by entering the following command:

```
cp $PVMHOME/APFiles/adva_ethernet/datamart/conf/adva_ethernet_inventory_subelements.txt .
```

3-c. Make a backup copy of the `inventory_subelements.txt` file by entering the following command:

```
cp inventory_subelements.txt inventory_subelements.txt.ORIG
```

3-d. Append the contents of `adva_ethernet_inventory_subelements.txt` to `inventory_subelements.txt`, by entering the following command:

```
cat adva_ethernet_inventory_subelements.txt >> inventory_subelements.txt
```

Important: *Ensure that you use two forward brackets (>>); otherwise, the original contents of inventory_subelements.txt will be overwritten.*

3-e. Perform a `diff` on the backed-up file and the appended file to ensure that the merge succeeded, as shown in the following example:

```
diff inventory_subelements.txt inventory_subelements.txt.ORIG
```

4. (Requires the *Netcool/Proviso DataMart Configuration Guide*) Run the initial SNMP inventory and initiate a discovery.

   An inventory collects data about the network resources that the technology pack monitors. After you install an SNMP technology pack, you must create an inventory profile using the **Inventory Tool Wizard** and then initiate a discovery by executing the inventory profile using the **Inventory Tool**.

   Running the initial inventory against SNMP objects is an intricate task and unfortunately beyond the scope of this configuration appendix. For instructions on using the **Inventory Tool Wizard** to create an inventory profile and the **Inventory Tool** to execute the inventory profile, see the *Netcool/Proviso DataMart Configuration Guide*.

5. Deploy reports.

   After the technology pack installation completes, the rules for the new device are automatically loaded into the database. The inventory process uses those rules to group elements and sub-elements. You must manually deploy (auto-group) the reports by associating them with groups in the DataMart Resource Editor's NOC Reporting tree.

   To deploy the Adva Optical Metro Ethernet Technology Pack reports, follow these steps:

   5-a. Open the Netcool/Proviso DataMart Resource Editor.

   5-b. Click the **ReportSEGroup** tab.

   5-c. Move the cursor to the left pane and scroll up to select any group under the **SUB-ELEMENTS->NOC Reporting** tree.

   5-d. Right-click and select the **AutoGrouping** option from the menu. The **AutoGrouping** option places the reports in dynamically generated groups created during inventory.

   5-e. Click **Yes** to continue.

   5-f. Click **Close** to exit the message box, or click **Details** to view a description of any errors.

   5-g. (Optional) You can also deploy reports on a regular basis by creating a cron entry that makes use of the `inventory` CLI command and the `-reportGrouping` option. This option instructs the inventory command to run the report grouping rules and update the deployed reports stored in the database. Report grouping rules must first have been created before this option can be used. For information on creating report grouping rules, see the *Netcool/Proviso DataMart Configuration Guide*.

   The following example shows a cron entry that periodically performs the deploy report operation:

   ```
   0 * * * * . /opt/datamart/dataMart.env && inventory -noX -reportGrouping
   ```

   See the *Netcool/Proviso Command Line Interface Guide* for more information about the `inventory` command.

Other Tasks and Considerations

This section contains information on the following topics:

- *Verifying Resources*

Verifying Resources

Use the Netcool/Proviso DataMart Resource Editor to determine if the technology pack's resources (elements, sub-elements, properties, and so forth) were successfully discovered and created in the database during inventory.

See the *Netcool/Proviso DataMart Configuration Guide* for information on using the Netcool/Proviso DataMart Resource Editor.

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JDOM 1.0

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Regex 1.1a

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Sieve of Erastothenes

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