




Entuity® 16.5

Entuity Integration Module for BMC® Atrium™ CMDB



Entuity Integration for BMC® Atrium™ CMDB exports device and port data sets from Entuity to the BMC Atrium CMDB. The integration uses the Entuity Data Export functionality to export data to a reserved location for Entuity in the CMDB. Reconciliation rules supplied by Entuity are then applied against the exported Entuity data to identify and merge the Entuity data with Atrium production data.

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Contents

1	Entuity Integration for BMC Atrium CMDB	
	About Entuity	7
	Integration Solution	8
	Security	8
	Licensing	8
	Required Linux Red Hat 6 Packages	8
2	Install Entuity Integration for BMC Atrium CMDB	
	Preparing BMC Atrium CMDB for Entuity	10
	Preparing the Entuity Server for Integration	11
	Scheduling the Transfer of Data to BMC Atrium CMDB	11
	Configuring the Integration	12
	Configuring the Entuity Server	13
	Creating the Export Database	14
	Complete the Module Configuration	15
	Populating the Target Data Export Database	15
	Exporting Data to the Intermediate Atrium Database	15
	Viewing the Transferred Data	16
	Using the Integration in Entuity Multi-Server Environments	16
3	Configure Data Export From Entuity	
	Sample Data Export Overview	17
	Device and Port Dataset Definitions	17
	~Atrium Data Export Job	19
4	Export Data to BMC Atrium CMDB	
	Export using atriumExporter	21
	Scheduling atriumExporter	22
	Running atriumExporter from the Command Line	22
	Running atriumExporter to Create the Target Database	22
	Forcing atriumExporter to run a Full Export	23
	atriumExporter Log Messages	23
5	Apply Reconciliation Rule to Integrate Data	
	Entuity BMC Atrium Reconciliation Rules	25

6	Access Entuity Data in BMC Atrium CMDB	
	Viewing Device and Port Details	27
7	Customize Export Data to BMC Atrium CMDB	
	Customized Integration Process Overview	28
	Site Specific Override	29
8	Troubleshooting the Installation	
	Checking the Entuity Configuration	32
	Checking the Entuity License	32
	atriumExporter Failure to Connect to BMC Atrium CMDB	32
	Warnings During Importing of Data to the Intermediate Dataset	32
9	Uninstalling the Integration	
	Removing the integration from Entuity	34
	Removing the integration from BMC Atrium	34
A	Entuity BMC Atrium Configuration Files	
	Data Export Definition	35
	Data Export Samples	36
	Atrium.cfg	38
	Glossary	41
	Index	69

Tables

Table 1	Additional Packages Required with Entuity BMC Integrations	8
Table 2	Device Export Details	17
Table 3	Port Export Details	18
Table 4	Mapping Data Types	26
Table 5	Exported Device Details	35
Table 6	Exported Port Details	36

Figures

Figure 1	Entuity Integration for BMC® Atrium™ CMDB	7
Figure 2	Entuity Integration for BMC Atrium CMDB Module	13
Figure 3	Entuity Integration for BMC Atrium CMDB Configuration	14
Figure 4	atriumExporter --createDatabase	15
Figure 5	atriumExporter Transfers Data	16
Figure 6	Viewing Instance History	16
Figure 7	~Atrium Devices Dataset Definition	18
Figure 8	~Atrium Port Devices Dataset Definition	19
Figure 9	~Atrium Export Job Definition	20
Figure 10	ENTUITY.IMPORT.TOPO Dataset	21
Figure 11	atriumExporter --createDatabase	23
Figure 12	Viewing Rules in Reconciliation Manager	25
Figure 13	Entuity Managed Ports in BMC Atrium CMDB	27
Figure 14	Warning Messages Running atriumExporter	33

1 Entuity Integration for BMC Atrium CMDB

Entuity Integration for BMC® Atrium™ CMDB improves network management decision making, improves workflow efficiency and reduces system administration.

The integration includes an example implementation which links device and interface information collected by Entuity with that collected by BMC Atrium CMDB. It consists of three main components:

- Creation of placeholders for Entuity data in the BMC Atrium CMDB.
- Use of Data Export to export device and port data sets from Entuity.
- Application of Entuity supplied reconciliation rules to the exported data, allowing its addition to BMC Atrium CMDB.

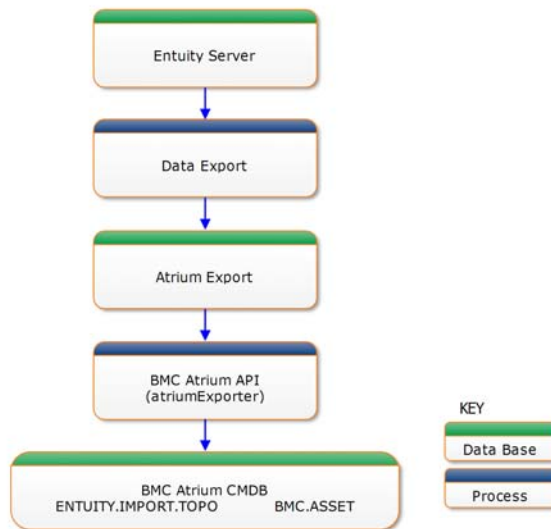


Figure 1 Entuity Integration for BMC® Atrium™ CMDB



The example integration exports device and port details. When developing your own integrations Entuity recommend you first consult Entuity Professional Services.

About Entuity

Entuity® is an out-of-the-box, intelligent software solution that proactively assesses network degradation in real-time, identifying and categorizing problems by severity.

Integration Solution

The integration of Entuity and BMC Atrium CMDB enables data from one or more Entuity servers to be imported and viewed in BMC Atrium CMDB, allowing end-to-end management of complex IT environments.

Entuity integration for BMC Atrium CMDB enriches service management with the ability to import device and port data sets reflecting the network’s actual infrastructure details. For instance, manufacturer name, model, version, serial number, IP address, server name, server location details can all be shared in the BMC Atrium CMDB. This accurate data strengthens a BMC user’s ability to grasp how the network affects the performance of their various other IT support elements such as configuration, event and change management.

Entuity delivers data as BMC Atrium Configuration Items (CI) through Data Export. It places the Entuity data into an import dataset. Reconciliation rules are used to identify and merge this information and relationships into the BMC Atrium production dataset. Users can examine Entuity CIs housed in the Atrium CMDB through the Entuity for specific details about devices and relationship data.

Entuity currently integrates with BMC Atrium CMDB 8.1.00, BMC Atrium CMDB 7.6, BMC Atrium CMDB 2.1. and BMC Atrium CMDB 2.0



The example integration exports device and port details. When developing your own integrations Entuity recommend you first consult Entuity Professional Services.

Security

Entuity integration for BMC Atrium CMDB fuses the Entuity and BMC Atrium CMDB permissions models. You can only export data to a BMC Atrium CMDB server from Entuity when you have the appropriate user permissions.

Licensing

The Entuity integration for BMC Atrium CMDB integration is a licensable module.

Required Linux Red Hat 6 Packages

When running this integration on Linux Red Hat 6 the Entuity server requires 4 additional packages, see *Table 1 Additional Packages Required with Entuity BMC Integrations*.

Linux Red Hat 6 Packages Required with BMC Integrations			
compat-libstdc++-33.i686	glibc.i686	nss-softokn-freebl.i686	libgcc.i686

Table 1 Additional Packages Required with Entuity BMC Integrations

To check if a package is installed, from the server command line you can use the RPM Package Manager (RPM). For example to check if the package glibc.i686 is installed, from the server command line enter:

```
rpm -q glibc.i686
```


When the package is:

- Not installed RPM returns:
`glibc.i686 is not installed`
- Installed RPM returns details, for example:
`glibc-2.12-1.80.el6_3.6.i686`

You can also check all of the packages through one instruction:

```
for i in libgcc.i686 glibc.i686 nss-softokn-freebl.i686  
compat-libstdc++-33.i686; do rpm -q $i ;done
```



You should consult the Red Hat documentation before installing the missing required packages.

You must install any missing packages to the server before using the integration; your system should be registered with Red Hat Network Classic and be set up to receive software updates.

You can use the command line package utility Yellowdog Updater, Modified (YUM) to install missing packages. You can install all packages through one instruction:

```
yum install libgcc.i686 glibc.i686 nss-softokn-freebl.i686  
compat-libstdc++-33.i686
```

2 Install Entuity Integration for BMC Atrium CMDB

Entuity Integration Module for BMC® Atrium™ CMDB requires amendments to both the Entuity and BMC Atrium CMDB installations. Entuity provide a sample integration that exports device and port data from Entuity to BMC Atrium CMDB. The installation and configuration instructions indicate how to implement this sample application.

Before you attempt to install the integration you must have administrator rights and a clear understanding of how the Entuity Integration for BMC Atrium CMDB works. You should always consult the BMC Atrium CMDB user documentation, and consider contacting Entuity Professional Services.



Entuity Support advise that Entuity and BMC Atrium CMDB are installed to different servers to avoid potential resource conflict issues.

Preparing BMC Atrium CMDB for Entuity

For Entuity to successfully export data to BMC Atrium CMDB, BMC Atrium CMDB must be correctly prepared. Entuity Integration for BMC Atrium CMDB requires:

- BMC Atrium Extension Loader.
- Appropriate placeholders for Entuity data in BMC Atrium CMDB. You may have to define new fields within CI, or create new CI definitions. This is only required if an existing field in the Atrium CMDB cannot be used.
- An import dataset called ENTUITY.IMPORT.TOPO within BMC Atrium CMDB.
- Reconciliation rules to identify and merge the data from the import dataset into the production dataset, BMC.ASSET, in BMC Atrium CMDB.
- A federated link to Entuity to allow you to open Entuity in context from within BMC Atrium CMDB.

You can copy the BMC Atrium CMDB server configuration files from the Entuity server to the BMC Atrium CMDB server.

To install the configuration to the BMC Atrium CMDB server:

- 1) Copy the directory `entuity_home/integ/Atrium/extension` to the local file system on the Atrium server.

The extensions folder includes `ExtensionLoader.xml` and the sub-folder `200-EYE` which contains the integration configuration files.

- 2) Run the BMC Atrium Extension Loader.

Access to the loader, and instructions on how to run it, vary depending on your environment and BMC Atrium CMDB version. Consult the BMC documentation for details on using the BMC Atrium Extension Loader.

The loader installs the changes required to the Atrium installation, e.g. schema changes, job definitions, reconciliation rules, federated link definitions, dataset definitions.

For example to install the Entuity extension to a Windows install of Atrium 8.1.00:

- 1) From *atrium_install_folder*\BMC Software\AtriumCore\atriumcore run AtriumCoreMaintenanceTool.
- 2) From the Extensions tab enter the path to the Entuity extension file *ExtensionLoader.xml* and click **Next**.
- 3) Enter the administrator login details.
- 4) Click **Next** to install the Entuity extension.

Preparing the Entuity Server for Integration

After preparing the BMC Atrium CMDB server you can configure the Entuity server to use the sample integration, specifically:

- Scheduling the Transfer of Data to BMC Atrium CMDB
- Configuring the Integration
- Configuring the Entuity Server
- Creating the Export Database.

Scheduling the Transfer of Data to BMC Atrium CMDB

atriumExporter controls the transfer of data from the Data Export database to the BMC Atrium CMDB import database. By amending its configuration files you can schedule *atriumExporter* so it is run automatically by *provost*:

- 1) In *entuity_home/etc/provost_site_specific.conf* uncomment (remove the hash sign (#)) the reference to *provost_atrium_exporter.conf*:

```
!${ENTUITY_HOME}/etc/provost_atrium_exporter.conf
```

provost_atrium_exporter.conf configures *provost* to run *atriumExporter* every day at 03:00:

```
job atriumExporter {
count 1, start @03:00:00, repeat forever, interval 24h, command
'${ENTUITY_HOME}${FPS}integ${FPS}Atrium${FPS}bin${FPS}atriumExporter'
}
```

If you want to schedule *provost* to run *atriumExporter* at a different time than the supplied configuration file then create your own configuration file. This preserves your changes during Entuity upgrades. For example to run *atriumExporter* every 12 hours rename the file to *provost_atrium_exporter_12.conf* and amend its configuration:

- 1) Copy *provost_atrium_exporter.conf*, rename the copy and amend its definition:

```
job atriumExporter {
```

```
count 1, start @03:00:00, repeat forever, interval 12h, command
'${ENTUITY_HOME}/${FPS}integ${FPS}Atrium${FPS}bin${FPS}atriumExporter'
}
```

- 2) In *entuity_home/etc/provost_site_specific.conf* include a reference to the new configuration file:

```
!${ENTUITY_HOME}/etc/provost_atrium_exporter12.conf
```

Configuring the Integration

Through *configure* you can define the location of the Entuity server, the connection to the Data Export database and the connection to the BMC Atrium CMDB server.

Setting the Connection to the Data Export Database

The BMC Atrium Integration page in *configure* includes the Data Export Connection section where:

- *Entuity Server* should be a fully qualified DNS name or an IP address of the Entuity server. The utility will try to resolve the IP address if localhost or loopback address is specified.
- *Database Server*, is the name of the server that holds the Data Export database. You can also enter the database port using the format, *server:port* e.g. *compressor:3306*.
- *Database User*, name of the user account used to manage the Data Export target database.
- *Database Password*, password of the user account used to manage the Data Export target database.
- *Database Name*, the name of the Data Export database, e.g. *AtriumExport*, to which Entuity data is written before it is transferred to BMC Atrium CMDB. When you run *atriumExporter* with the *create database* parameter it uses this value to name the database.

Setting the Connection to the BMC Atrium CMDB Import Dataset

The BMC Atrium Integration page in *configure* includes the Atrium Connection section where:

- *Atrium Server*, name of the Atrium server.
 - *Atrium Port*, when set to 0 the default port is used.
 - *Atrium User*, name of the Atrium user account.
 - *Atrium Password*, password of the Atrium user account.
 - *Atrium Dataset ID*, the name of the import dataset to which the Entuity data is written before reconciliation rules are applied. For the sample integration the dataset is *ENTUITY.IMPORT.TOPO*.
 - *Atrium Dataset Trusted*, when set to:
 - **true**, BMC Atrium CMDB considers the dataset as trusted.
 - **false**, BMC Atrium CMDB does not consider the dataset as trusted.
- trustedDataset* setting should match the setting for the dataset in BMC Atrium CMDB.

Configuring the Entuity Server

- 1) Install an Entuity Integration for BMC Atrium CMDB Integration enabled Entuity license.
- 2) Stop the Entuity server, run `configure` and include the Entuity Integration for BMC Atrium CMDB.

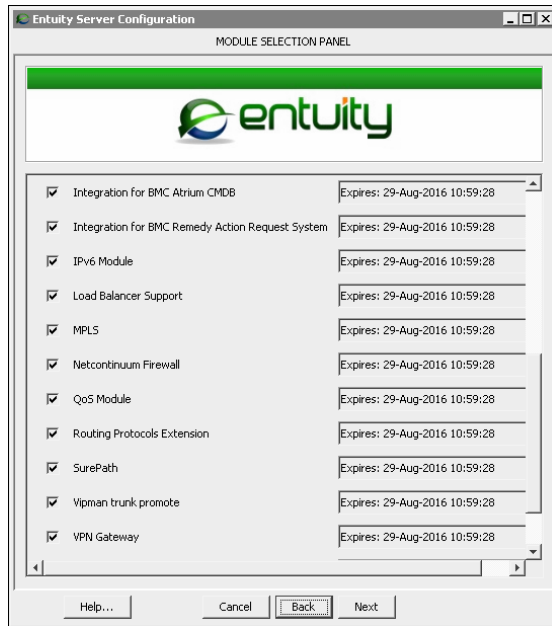


Figure 2 Entuity Integration for BMC Atrium CMDB Module

- 3) Complete the Entuity Integration for BMC Atrium CMDB page.

Figure 3 Entuity Integration for BMC Atrium CMDB Configuration

- 4) Complete configure and start the Entuity server.

Creating the Export Database

Before you run for the first time the Data Export BMC Atrium CMDB job you must have already created the target Data Export database. You can use `atriumExporter` to create the database. Ensure the:

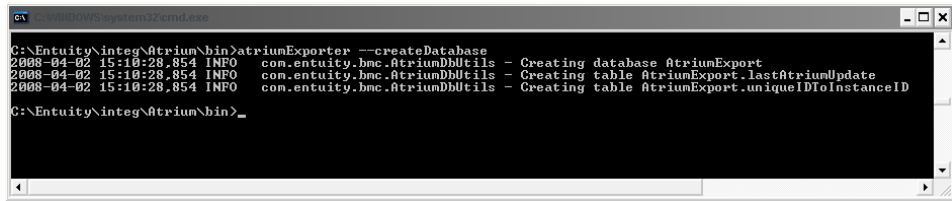
- BMC Atrium CMDB server is running and Entuity is correctly configured to connect to the server.
- Entuity database is running.

If the **AtriumExport** database already exists, if the Entuity database server is not running or if a connection cannot be made to the BMC Atrium CMDB server then `atriumExporter` fails to create the database.

To create the target database, AtriumExport:

- 1) From the command line on the Entuity server navigate to `entuity_home/integ/Atrium/bin`.
- 2) Run `atriumExporter`:

```
atriumExporter --createDatabase
```



```

C:\Entuity\integ\Atrium\bin>atriumExporter --createDatabase
2008-04-02 15:10:28.854 INFO      com.entuity.bmc.AtriumDbUtils - Creating database AtriumExport
2008-04-02 15:10:28.854 INFO      com.entuity.bmc.AtriumDbUtils - Creating table AtriumExport.lastAtriumUpdate
2008-04-02 15:10:28.854 INFO      com.entuity.bmc.AtriumDbUtils - Creating table AtriumExport.uniqueIdToInstanceID
C:\Entuity\integ\Atrium\bin>_

```

Figure 4 atriumExporter --createDatabase

Complete the Module Configuration

As part of the Entuity Integration for BMC Atrium CMDB configuration process Entuity Support recommend you check the flow of information by initiating the first data export and monitoring its progress.

Populating the Target Data Export Database

In the sample integration ~**AtriumExport** is the Data Export job that populates the target database, **AtriumExport**. By default this job is not enabled. You can test the database connection, enable the job and/or run it manually.

To initiate a data export:

- 1) From Entuity click **Administration > Data Export > Jobs**.
- 2) From the Jobs listing page for the ~AtriumExport job click:
 - **View** and from the Data Export Job details page click **Test Connection**. This tests the connection to the Data Export target database, using details entered through Atrium.cfg.
 - **Enabled**. Entuity displays a dialog indicating the export job is scheduled to run.
 - **Run**. Entuity displays a dialog indicating the export job is running.
 - **History**. You can view the success or failure of the export.

Exporting Data to the Intermediate Atrium Database

atriumExporter manages the transfer of data from the Entuity Data Export target database, **AtriumExport**, to the import location, the ENTUITY.IMPORT.TOPO dataset, within the BMC Atrium CMDB server.

To transfer data from the target database to the intermediate dataset:

- 1) From the command line on the Entuity server navigate to *entuity_home/integ/Atrium/bin*.
- 2) Run atriumExporter:


```
atriumExporter
```

atriumExporter reports the progress of the transfer.

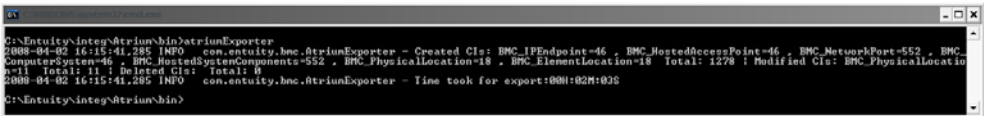


Figure 5 atriumExporter Transfers Data

Viewing the Transferred Data

By default atriumExporter transfers data to the reserved location, the ENTUITY.IMPORT.TOPO dataset. You can use the BMC Atrium CMDB console to identify transferred data.

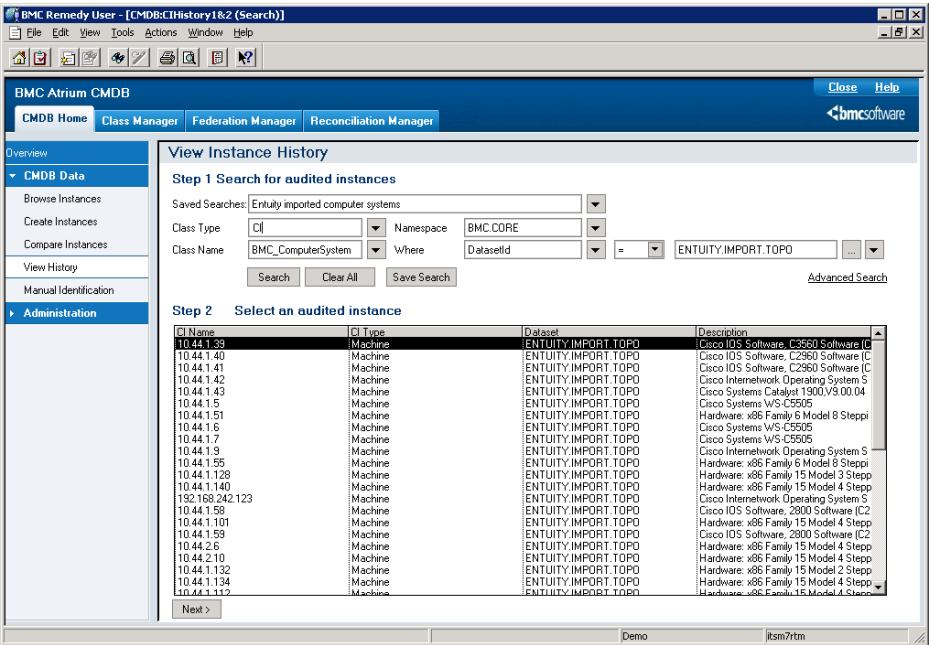


Figure 6 Viewing Instance History

Using the Integration in Entuity Multi-Server Environments

When you want to use Entuity Integration for BMC Atrium CMDB where you have installed more than one Entuity server:

- Install multiple Entuity servers as usual.
- On each server configure the Entuity Integration for BMC Atrium CMDB, ensuring all instances of atriumExporter export to the same BMC Atrium CMDB. The exported data includes the identity of the exporting Entuity server, allowing you to access Entuity, in context, from BMC Atrium CMDB.

3 Configure Data Export From Entuity

Entuity Integration for BMC® Atrium™ CMDB exports data from Entuity using Data Export. The sample configuration includes two datasets for exporting device and port details and one export job for controlling the export of data.

The *Entuity User and System Administrator Guide* includes full details on managing export dataset definitions and jobs.

Sample Data Export Overview

Data Export extracts device and port details from the main Entuity database to a second database, **AtriumExport**. **AtriumExport** is populated through two dataset definitions run by one job.

These datasets and jobs cannot be amended in Entuity, as indicated by the tilde (~) prefix. When the supplied datasets and job do not match your requirements Entuity Support recommend you create new ones, you are also recommended to first consult Entuity Professional Services.

Device and Port Dataset Definitions

During discovery, Entuity creates the data export dataset definitions, and also the defined job. The ~**Atrium Devices** dataset specifies the device attributes to export. The dataset definition specifies the export of these device details:

Attribute	Description
<i>Location</i>	A text description of the physical location of the device that is contained on the device, e.g. Development Cabinet.
<i>Manufacturer</i>	Manufacturer name and is derived by matching the manufacturer number against the first 2500 Private Enterprise Codes compiled by the Internet Assigned Numbers Authority (http://www.iana.org/assignments/enterprise-numbers). Where the manufacturer code is not matched then the first part of the device name is taken, usually this is the manufacturer's name.
<i>Model</i>	Device model.
<i>Name</i>	Device name.
<i>Polled IP Addresses</i>	IP address Entuity uses to poll the device.
<i>Serial Number</i>	Device serial number.
<i>System Description</i>	Manufacturers device description.
<i>Version</i>	Device version number.

Table 2 Device Export Details

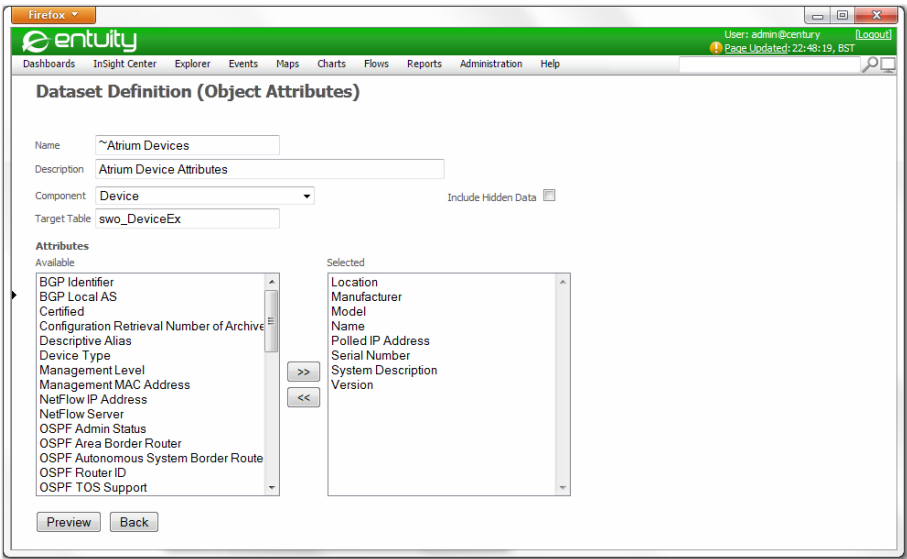


Figure 7 ~Atrium Devices Dataset Definition

The **~Port Devices** dataset definition specifies these port attributes to export:

Attribute	Description
<i>Alias</i>	Port's alias.
<i>Interface Description</i>	Brief description of the port.
<i>Outbound Speed</i>	Port's outbound interface speed, used for example, when Entuity calculates port utilization.
<i>Short Description</i>	Brief description of the port.
<i>Type (IANA)</i>	Indicates the interface type, e.g. ethernet6.
<i>Device -> StormWorks ID</i>	The internal Entuity identifier of the port's device. It is used to maintain the association between port and device in the exported dataset.

Table 3 Port Export Details

Figure 8 ~Atrium Port Devices Dataset Definition

~Atrium Data Export Job

It is through Data Export Jobs that you control what data is exported, where it is exported to and when. By default, Data Export only updates device and port details when they change between running of the export job. Through the data export job you can specify the:

- Datasets to export.
- View against which the dataset definitions are applied.
- Data export job schedule.
- Target database, including connection parameters.
- Target database data management; through backfill how to handle missing data and through ageout the length of time for which data is retained.

~Atrium Export Job includes the two datasets to export and the database to export to. By default the Data Export job is not enabled. When enabled, through the web interface, it:

- Only runs against a single view as specified in its job definition.
- Is scheduled to run each day.
- Checks for any missing data in the target database over the previous two days, and would export it as part of the current job.



~Atrium Export Job cannot be amended in Entuity, as indicated by the tilda (~) prefix. When this job does not match your requirements Entuity recommend you create a new job. Consult the *Entuity System Administrator Guide* for full details on managing Data Export Jobs.

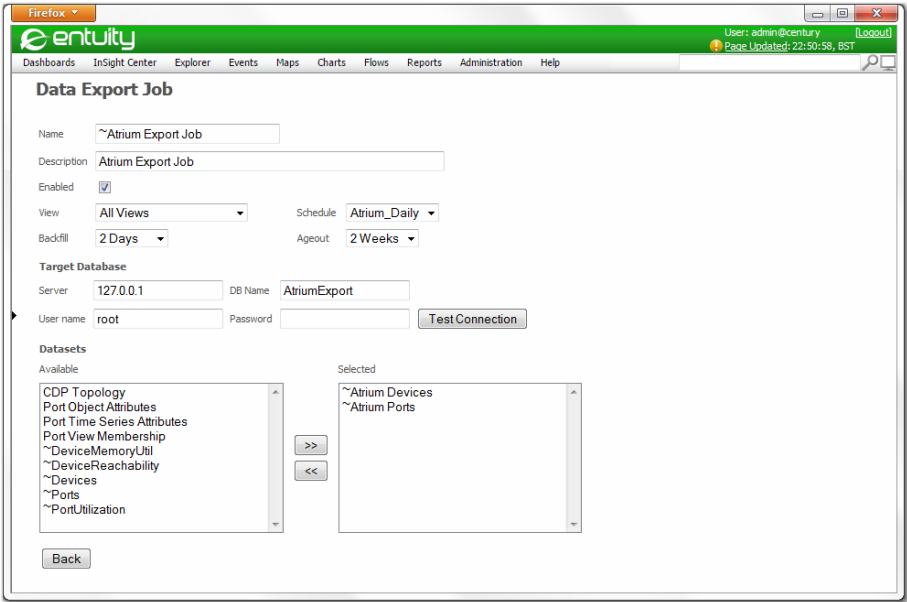


Figure 9 ~Atrium Export Job Definition

4 Export Data to BMC Atrium CMDB

Entuity Integration for BMC® Atrium™ CMDB uses Data Export to export data from the Entuity management database, to its target database, by default **AtriumExport** on the same Entuity server. It is from this database that data is exported to the import dataset on the BMC Atrium CMDB.

The export utility, `atriumExporter`, only exports device and port data that is not already held in the import database on the BMC Atrium CMDB. This minimizes the amount of information forwarded from Entuity to BMC Atrium CMDB, without compromising the integrity of the information held there.

Export using `atriumExporter`

The export utility, `atriumExporter` exports:

- Data from the Data Export database to the import dataset, `ENTUITY.IMPORT.TOPO`, on the BMC Atrium CMDB.
- Data that is new, or has changed since the last successful export, identifying changed data through comparison of timestamps between the two databases.
- The explicitly defined device and port information, and also includes meta data, e.g. internal Entuity identifiers, timestamps.

The screenshot displays the BMC Atrium CMDB web interface for configuring the `ENTUITY.IMPORT.TOPO` dataset. The interface is titled "BMC Atrium CMDB" and "BMC_ComputerSystem". It features a "CI Name*" field with the value "10.44.1.9". Below this, the "CI Attributes" section is visible, containing fields for "InstanceId", "ClassId", "DatasetId", and "Submitter". The "DatasetId" is set to "ENTUITY.IMPORT.TOPO". The "Submitter" is set to "Demo". The "Create Date" is "3/18/2008 9:41:12 AM", and the "Last Modified By" is "Demo". The "Modified Date" is also "3/18/2008 9:41:12 AM", and the "Request Id" is "0000000000000730000000000002136". The interface includes a tabbed menu with "General" selected. The "General" tab contains various fields for configuration, including "TokenId", "SerialNumber", "Category", "Type", "Item", "Model", "ManufacturerName", "VersionNumber", "Confidentiality", "Availability", "Integrity", "ReconciliationIdentity", "CMDBWriteSecurity", "CMDBRowLevelSecurity", "Unrestricted Access", "LastScanDate", "MarkAsDeleted", "OwnerContact", "ReferenceInstance", "AccountID", "History", "Description", "Notes", "OwnerName", "Supported", "Status", "AssignedTo", "AttributeDataSourceList", "NameFormat", "Priority", "TokenFormat", and "FailedAutomaticIdentification". The "Status" is set to "Ordered". The "Priority" is set to "PRIORITY_5". The "FailedAutomaticIdentification" is set to "False".

Figure 10 ENTUITY.IMPORT.TOPO Dataset

You can schedule `atriumExporter` through `provost` and/or run it from the command line.

Scheduling atriumExporter

When scheduling `atriumExporter` consider when the associated Data Export job completes. You do not want `atriumExporter` to run before the Data Export job has completed. The sample configuration runs `atriumExporter` every day at 03:00.

By amending its configuration files you can schedule `atriumExporter` so it is run automatically by `provost`:

- 1) In `entuity_home/etc/provost_site_specific.conf` uncomment (remove the hash sign (#)) the reference to `provost_atrium_exporter.conf`:


```
!${ENTUITY_HOME}/etc/provost_atrium_exporter.conf
```

`provost_atrium_exporter.conf` configures `provost` to run `atriumExporter` every day at 03:00:

```
job atriumExporter {
count 1, start @03:00:00, repeat forever, interval 24h, command
'${ENTUITY_HOME}${FPS}integ${FPS}Atrium${FPS}bin${FPS}atriumExporter'
}
```

Running atriumExporter from the Command Line

To transfer data from the Data Export target database to the BMC Atrium CMDB import dataset:

- 1) From the command line on the Entuity server navigate to `entuity_home/integ/Atrium/bin`.
- 2) Run `atriumExporter`:


```
atriumExporter
```

`atriumExporter` reports the progress of the transfer. When the value of a device or port attribute is absent, but is required as an identity attribute by BMC Atrium CMDB, `atriumExporter` raises an error. (See *Warnings During Importing of Data to the Intermediate Dataset*.)
- 3) When `atriumExporter` completes it provides a summary of the export.

Running atriumExporter to Create the Target Database

Before you run for the first time the Data Export BMC Atrium CMDB job, you must have already created the target Data Export database. You can use `atriumExporter` to create the database, ensure the:

- BMC Atrium CMDB server is running and Entuity is correctly configured to connect to the server.
- Entuity database is running.

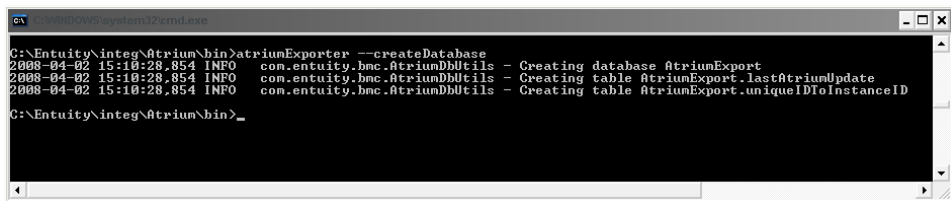
If the AtriumExport database already exists, if the Entuity database server is not running or if a connection cannot be made to a BMC Atrium CMDB server then `atriumExporter` fails to create the database.

To create the target database **AtriumExport**:

- 1) From the command line on the Entuity server navigate to `entuity_home/integ/Atrium/bin`.
- 2) Run `atriumExporter`:

```
atriumExporter --createDatabase
```

`atriumExporter` determines the database name from the value stored in `entuity_home\etc\Atrium.cfg`, and reports to the command line its progress.



```
C:\Entuity\integ\Atrium\bin>atriumExporter --createDatabase
2008-04-02 15:10:28.854 INFO com.entuity.bmc.AtriumDbUtils - Creating database AtriumExport
2008-04-02 15:10:28.854 INFO com.entuity.bmc.AtriumDbUtils - Creating table AtriumExport.lastAtriumUpdate
2008-04-02 15:10:28.854 INFO com.entuity.bmc.AtriumDbUtils - Creating table AtriumExport.uniqueIDtoInstanceID
C:\Entuity\integ\Atrium\bin>_
```

Figure 11 `atriumExporter --createDatabase`

Forcing atriumExporter to run a Full Export

By default `atriumExporter` only exports device and port data that is not already held in the import database on the BMC Atrium CMDB. This minimizes the amount of information forwarded from Entuity to BMC Atrium CMDB, improving the time taken to export data without compromising the integrity of the information held there.

`atriumExporter` includes the `--ignoreTime` option to override this default behavior, allowing the full export of all data in the target database to the import dataset. For example, if the CMDB dataset that Entuity is exporting to is corrupted or deleted, then a full export is required for the integration to continue functioning normally.

To run a full export of the target database to the import dataset:

- 1) From the command line on the Entuity server navigate to `entuity_home/integ/Atrium/bin`.
- 2) Run `atriumExporter`:

```
atriumExporter --ignoreTime
```

atriumExporter Log Messages

`atriumExporter` log messages are logged in `entuity_home\log\atriumExporter.log`, and when run from the command line also displayed to the command line.

When `atriumExporter` successfully completes it provides an export summary:

```
2008-04-03 15:57:29.951 INFO com.entuity.bmc.AtriumExporter -
Created CIs: Total: 0 | Modified CIs: BMC_NetworkPort=552 , BMC_Phys-
```

```
icalLocation=29 , BMC_ComputerSystem=46 , BMC_IPEndpoint=46  Total:
673 | Deleted CIs:  Total: 0
```

```
2008-04-03 15:57:29,951 INFO    com.entuity.bmc.AtriumExporter - Time
took for export:00H:01M:12S
```

where:

- *Created CIs* provides a breakdown of created CIs by type and a total
- *Modified CIs* provides a breakdown of modified CIs by type and a total
- *Deleted CIs* provides a breakdown of deleted CIs by type and a total
- *Time took for export* is the elapsed time of the export.

5 Apply Reconciliation Rule to Integrate Data

Data held in the import dataset, ENTUITY.IMPORT.TOPO, is integrated into the production dataset, BMC.ASSET, after the application of the appropriate reconciliation rules. Entuity supply reconciliation rules with the sample integration, these match the data exported from Entuity to the data in the BMC Atrium CMDB. These rules are supplied as a rule definition file which you should import into the CMDB and then verify.

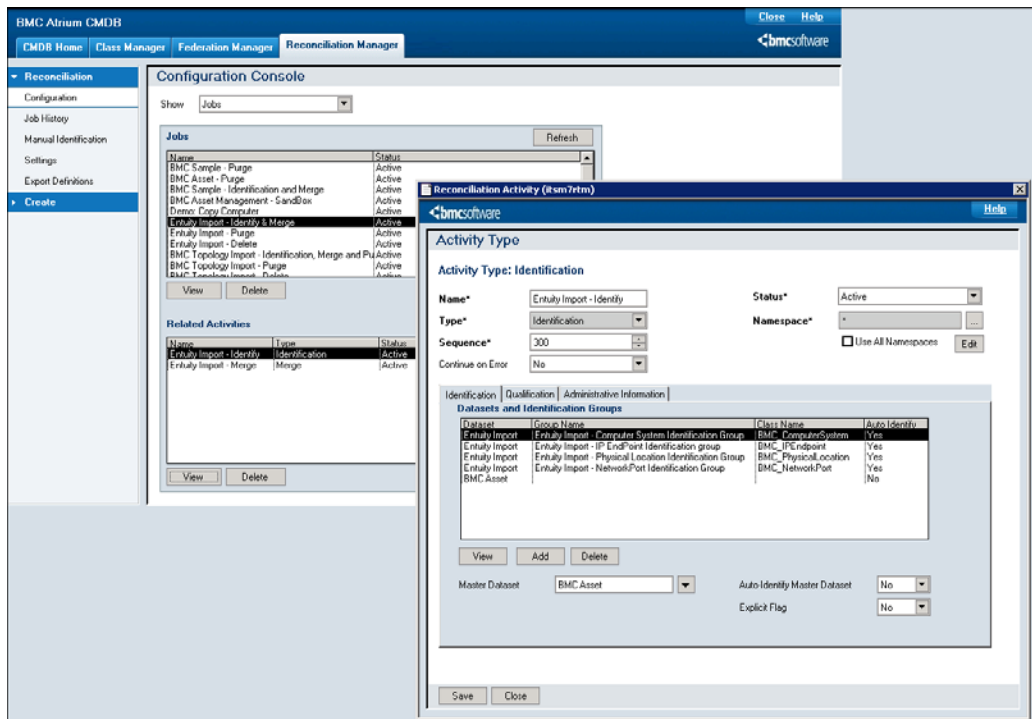


Figure 12 Viewing Rules in Reconciliation Manager

Entuity BMC Atrium Reconciliation Rules

Entuity Integration for BMC® Atrium™ CMDB requires matching of device and port information in Entuity to that held in BMC Atrium CMDB. The reconciliation rules identify the attributes on which the objects can be matched. The rules include weighting factors, which determine how BMC Atrium handles the same information on a managed object from different sources.

Data Type	Compare with	
	Import Dataset	Production Dataset
BMC_ComputerSystem	Name	Name
	NameFormat	NameFormat
BMC_NetworkPort	Name	Name
	SystemName	SystemName
BMC_PhysicalLocation	Name	Name
BMC_IPEndpoint	Name	Name

Table 4 Mapping Data Types

6 Access Entuity Data in BMC Atrium CMDB

Export of data from Entuity to BMC Atrium CMDB eliminates the disjointed, disparate views of multiple data sources by providing a common database. The integration ensures an accurate, up-to-date view into your IT infrastructure components and relationships with automatic change updates to the Atrium CMDB.

Viewing Device and Port Details

Entuity Integration for BMC® Atrium™ CMDB sample integration exports port and device data from Entuity to the designated BMC Atrium CMDB server.

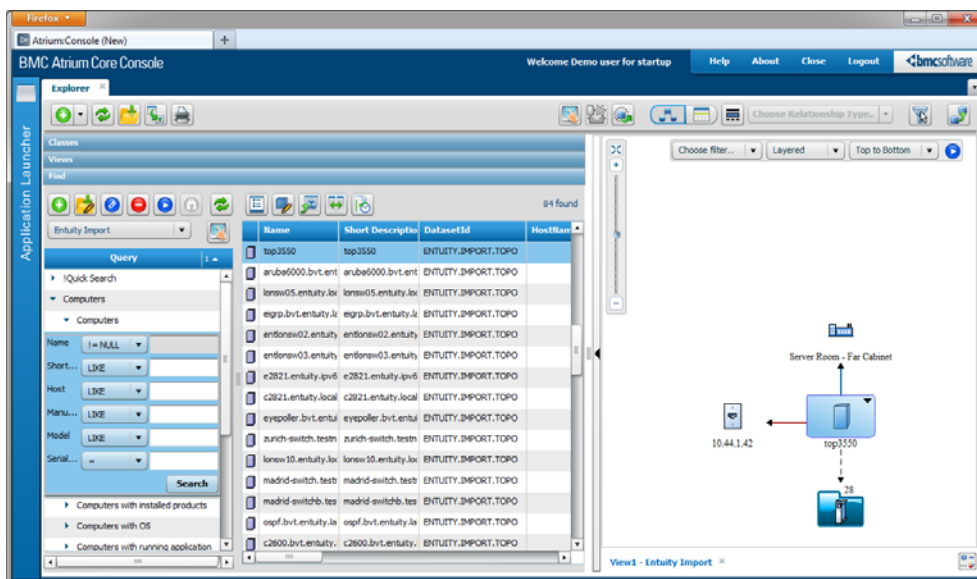


Figure 13 Entuity Managed Ports in BMC Atrium CMDB

The Entuity BMC Atrium default integration includes configuration that allows for context launching of Entuity from BMC Atrium CMDB.

To launch Entuity from BMC Atrium CMDB:

- 1) Highlight the managed object.
- 2) Select **Launch in context > Entuity Eye of the Storm**.

7 Customize Export Data to BMC Atrium CMDB

Entuity includes an example implementation which links device and interface information collected by Entuity with that collected by BMC Atrium CMDB. You can amend this sample, adding new attributes, removing attributes and amending the values of attributes.

Customized Integration Process Overview

If you want to amend the information Entuity exports to BMC Atrium CMDB you must configure both Entuity data export and the BMC Atrium CMDB application context.



You should consult with your Entuity Professional Services representative before amending the Entuity Integration Module for BMC Atrium CMDB.

To customize the default integration:

- 1) Add new attributes to the Data Export Data Sets configuration file:

```
sw_data_export_def_atrium_override.cfg
```

You must edit the override file as the tables provided with the integration are marked as read-only when accessed through the web UI.

- 2) Include the amended data export configuration to the Entuity server set-up. In:

```
sw_data_export_def_site_specific.cfg
```

include:

```
sw_data_export_def_atrium_override.cfg
```

You do not have to run `configure`, wait for Entuity to discover the new configuration.

- 3) Specify the override attributes in a site specific XML file, for example:

```
entuity_home\etc\atrium_applicationContext1_site_specific.xml
```

The name and location of the override file is defined in:

```
entuity_home\integ\Atrium\classes\applicationContext.xml
```

through an import command:

```
<import resource="file:${entuity.home}/etc/atrium_application-Context*_site_specific.xml" />
```

The filename includes a wildcard character, an asterisk(*), which you can replace with 1 or more characters. In this way you could include multiple files through this 1 import command.

4) Drop the AtriumExport database:

```
drop database AtriumExport
```

5) Rebuild AtriumExport database:

```
<entuity_home>\integ\Atrium\bin>atriumExporter.exe -c
```

6) You can manually run or schedule data export to populate the AtriumExport database.

7) When atriumExporter runs (configure through provost_site_specific.conf and provost_atrium_exporter.conf) it forwards data to BMC Atrium CMDB.

Site Specific Override

You can override the attributes in the default integration through a site specific file. The name and location of the override file is defined in the applicationContext.xml file and must conform to the template name (see *Customized Integration Process Overview*).

```
entuity_home\etc\atrium_applicationContext1_site_specific.xml
```

The following example file includes examples of how to remove, amend and add attributes.

The initial part of the XML file is its definition and this must remain unchanged.

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xmlns:util="http://www.springframework.org/schema/util"
       xsi:schemaLocation="http://www.springframework.org/schema/beans
                           http://www.springframework.org/schema/beans/
                           spring-beans-2.0.xsd
                           http://www.springframework.org/schema/util
                           http://www.springframework.org/schema/util/
                           spring-util-2.0.xsd">
```

This section removes a specific attribute that is already defined, the Speed attribute from the portCIDefinition table.

```
<bean factory-bean="portCIDefinition" factory-method="removeAttr-
ByName">

    <constructor-arg value="Speed" />

</bean>
```

This section adds a new attribute, Alias, to the portCIDefinition table. The data export job must also be amended to export the new value. Changing a supplied data export definition can only be achieved through the configuration file.

```
<bean factory-bean="portCIDefinition" factory-method="addAttribute">
```

```

    <constructor-arg>
      <bean class="com.entuity.bmc.CIAttributeValue">
        <property name="name" value="Alias"/>
        <property name="dataExportColumnName" value="swc_alias"/>
      </bean>
    </constructor-arg>
  </bean>

```

This section changes the value of a specific attribute to value defined in the configuration. The example includes different data types.

```

  <bean factory-bean="portCIDefinition" factory-method="getAttrByName">
    <constructor-arg value="Item" />
    <property name="stringValue" value="SOME_STING_VALUE" />
    <property name="intValue" value="33" /> <!-- OR -->
    <property name="longValue" value="5000" /> <!-- OR -->
    <property name="doubleValue" value="66.77" /> <!-- OR -->
  </bean>

```

This section changes a set of mapped attribute for an already attribute.

```

  <bean factory-bean="portCIDefinition" factory-method="getAttrByName">
    <constructor-arg value="PortType" />
    <property name="mapValues">
      - <props>
        <prop key="6">Ethernet</prop>
        <prop key="7">Ethernet</prop>
        <prop key="26">Ethernet</prop>
        <prop key="62">Ethernet</prop>
        <prop key="69">Ethernet</prop>
        <prop key="117">Ethernet</prop>
        <prop key="15">FDDI</prop>
        <prop key="9">Token Ring</prop>
        <prop key="115">Token Ring</prop>
        <prop key="56">Fibre Channel</prop>
        <prop key="default">Unknown</prop>
      </props>
    </property>
  </bean>

```

This section changes the value of a specific BMC class to value defined in the configuration, from BMC_ComputerNetwork to BMC_ComputerSystem.

```
<bean factory-bean="deviceCIDefinition" factory-method="getInstance">  
    <property name="name" value="BMC_ComputerSystem"/>  
</bean>  
</beans>
```

8 Troubleshooting the Installation

Checking the Entuity Configuration

Entuity's configuration files must always be amended with care, preferably with the assistance of your Entuity support contact. Amendments to the configuration should first be applied to a test system. However problems can still occur.

If Entuity fails to start after amending configuration files check the log files for indicators to what has failed:

- 1) From *entuity_home*\log check `systemControl.log` for error and warning messages.

Checking the Entuity License

If Entuity runs but the Entuity Integration for BMC® Atrium™ CMDB features are absent the problem may lie with the license file:

- 1) From the Entuity web UI select **Administration > Entuity Health > License Health**. When Entuity integration for BMC Atrium CMDB is not included to the list of managed objects obtain from your Entuity representative a new license.

atriumExporter Failure to Connect to BMC Atrium CMDB

When running `atriumExporter` the BMC Atrium CMDB must always be running. This is true even when running `atriumExporter` to create the Data Export database. You can check for a failure to connect to the BMC Atrium CMDB through *entuity_home*\log\atriumExporter.log. `atriumExporter` raises an error message similar to:

```
2/04/2008 14:34:27 FATAL com.entuity.bmc.CMDBManager: AR Server login failed. Please check AR server at 127.0.0.1 is running.
```

When BMC Atrium CMDB is running and this error is still raised check the connection details in *entuity_home*\etc\Atrium.cfg are correct. When you must make amendments to the connection details make them to *entuity_home*\install\template\etc, and run `configure`. `configure` creates a new version of *entuity_home*\etc\Atrium.cfg.

Warnings During Importing of Data to the Intermediate Dataset

During the transfer of data to the intermediate dataset, ENTUITY.IMPORT.TOPO, `atriumExporter` may raise warning messages regarding incomplete data. For example, the device location attribute is a value entered by your network administrators. When this value is not entered `atriumExporter` cannot create a CI for that device location and raises a warning that mandatory data is missing.

For example when the location value for a device is missing, `atriumExporter` raises this type of warning message:


```
2008-04-03 15:56:23,592 WARN    com.entuity.bmc.AtriumExporter -
Identity attribute can not be null or empty for a CI definition.
[IdentityAttr=Name, CI=BMC_PhysicalLocation, Namespace=BMC.CORE,
Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=67]
```

You can view these messages:

- from the command line when running atriumExporter from the command line.
- in *entuity_home*\log\atriumExporter.log.

You can:

- Ignore these messages and accept some device information is absent.
- Where the attributes are editable, enter values in Entuity.
- Enter the values on the device, e.g. on the device enter its location.

```
C:\Entuity\integ\Atrium>bin\atriumExporter --ignoreTime
2008-04-03 15:56:23,592 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=67]
2008-04-03 15:56:23,685 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=71]
2008-04-03 15:56:23,685 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=72]
2008-04-03 15:56:23,748 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=74]
2008-04-03 15:56:23,748 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=75]
2008-04-03 15:56:23,749 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=76]
2008-04-03 15:56:23,857 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=81]
2008-04-03 15:56:23,920 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=84]
2008-04-03 15:56:23,920 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=85]
2008-04-03 15:56:23,920 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=86]
2008-04-03 15:56:23,920 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=87]
2008-04-03 15:56:23,920 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=88]
2008-04-03 15:56:24,076 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=93]
2008-04-03 15:56:24,420 WARN    com.entuity.bmc.AtriumExporter - Identity attribute can not be null or empty for a CI definition. [IdentityAttr=Name, C
I=BMC_PhysicalLocation, Namespace=BMC.CORE, Name=null, NameFormat=Location, MarkAsDeleted=null, ParentIdentity=1284]
2008-04-03 15:57:27,951 INFO    com.entuity.bmc.AtriumExporter - Created CIs: Total: 0 ; Modified CIs: BMC.NetworkPort-552 , BMC.PhysicalLocation-27 .
BMC.ComputerSystem-46 , BMC.IPEndpoint-46 , Total: 67 ; Deleted CIs: Total: 0
2008-04-03 15:57:27,951 INFO    com.entuity.bmc.AtriumExporter - Time took for export:00H:01M:12S
```

Figure 14 Warning Messages Running atriumExporter

9 Uninstalling the Integration

Entuity Integration for BMC® Atrium™ CMDB is supplied with Entuity. From Entuity you can remove the integration configuration and from BMC Atrium servers you should remove the access granted to the Entuity server.

Removing the integration from Entuity

To remove the integration from Entuity:

- 1) From Data Export web interface remove any user defined Entuity BMC Atrium data sets and export jobs.
- 2) In *entuity_home*\etc\provost_site_specific.conf comment out the reference to the atriumExporter job configuration file by adding a hash to the start of its line, for example:

```
#!${ENTUITY_HOME}/etc/provost_atrium_exporter.conf
```
- 3) Stop the Entuity server, run `configure` and remove the Entuity BMC Atrium integration module. Only remove the Data Export module when not using it with other modules.
- 4) Restart the Entuity server. The integration is now removed from Entuity.

Removing the integration from BMC Atrium

For each BMC Atrium server you included to the integration you can remove the Entuity BMC Atrium configuration.



Always consult the BMC Atrium documentation when making changes to the Atrium configuration.

Appendix A Entuity BMC Atrium Configuration Files

Data Export Definition

Entuity Integration for BMC® Atrium™ CMDB includes a sample data export definition, which includes a:

- Device dataset, defining the device information exported from Entuity.
- Port dataset, defining the port information exported from Entuity.
- Data export job.

These definitions are supplied through a StormWorks configuration file, `sw_data_export_def_atrium.cfg`, which is included to Entuity during configuration.



These dataset definitions are not editable. To export different device and port details you must create your own dataset definitions.

The Entuity configuration provides all mapping that is necessary to export the Entuity data into Atrium. Data is exported into an import dataset in the Atrium CMDB, and reconciliation rules are used to recognise the same information from other discovery tools placed in the CMDB.

During export Entuity creates a CI for each exported data export record in the export database as specified in the configuration file. Then all the exported StormWorks attributes for a given export record are copied onto the created CI's fields. The file name in CI does not necessary match the attribute name in StormWorks. Therefore, the configuration file has the ability to define the mapping between the fields in CI and attributes in StormWorks.

The example configuration has the following mapping information defined between StormWorks types and Atrium CI definition. The table also shows which StormWorks attribute is mapped to which Atrium CI field name.

Entuity attribute	CI field name	Visibility	CI	Relationship
name	Name	YES	BMC_ComputerSystem	None
sysDescriptor	Description	YES	"	"
devManufacturer	ManufacturerName	YES	"	"
devModel	Model	YES	"	"
devVersion	VersionNumber	YES	"	"
devSerialNumber	SerialNumber	YES	"	"
devPolledIpAddress	Name	YES	"	"

Table 5 Exported Device Details

Entuity attribute	CI field name	Visibility	CI	Relationship
StormWorksID	EntuityIdentity	NO	"	"
eyeServerName	EntuityFederatedLinkPrefix	NO	"	"
sysLocation	Name	YES	BMC_PhysicalLocation	BMC_Element Location
devPolledIpAddress	PolledIPAddress	NO	BMC_IPEndPoint	BMC_HostedAccessPoint

Table 5 Exported Device Details

Entuity attribute	CI field name	Visibility	CI	Relationship
portIndex	Name	YES	BMC_NetworkPort	BMC_HostedSystemComponents
IfType	PortType	YES	"	"
portRefSpeed	Speed	YES	"	"
portDescr	Description	YES	"	"
portAlias	PortAlias	YES	"	"
portShortDescr	ShortDescription	YES	"	"
StormWorksID	EntuityIdentity	NO	"	"
eyeServerName	EntuityFederatedLinkPrefix	NO	"	"

Table 6 Exported Port Details

Data Export Samples

Entuity BMC Atrium includes sample configuration, `sw_data_export_def_atrium.cfg`, that exports device and port information. The configuration includes three components:

- *Device*, defines the device data to export.
- *Port*, defines the port data to export.
- *Job*, it is through the Data Export Job that you control what data is exported, where it is exported to and when.

The configuration shows two datasets one representing all ports and the other representing all devices. The section "TargetTable" on a dataset references the names of the CI that need to be created in CMDB. The fields in CI are mapped in the section "SubItems" as follows:

```
FIELD_NAME#STORMWORKS_VALUE#DATA_TYPE
```

Where

- *FIELD_NAME*, the field name defined in CI.
- *STORMWORKS_VALUE*, value returned from a statement language expression or the StormWorks attribute name.

- **DATA_TYPE**, a supported data type, e.g. string, int, boolean.

Dataset Definitions define what components and their attributes you want to export. With Entuity BMC Atrium two datasets define the exporting of device and port data.

```
[Dataset ~Atrium Devices]
Description=Atrium Device Attributes
DatasetType=ObjectAttributes
TargetTable=swo_DeviceEx
Component=DeviceEx
SubItems=sysLocation devManufacturer devModel name devPolledIpAddr
devSerialNumber sysDescr devVersion
ReportableOverride=0

[Dataset ~Atrium Ports]
Description=Atrium Port Attributes
DatasetType=ObjectAttributes
TargetTable=swo_portEx
Component=portEx
SubItems=portAlias entIndex#portIndex.entIndex#string(16) ifDescr
ifIndex#portIndex.ifIndex#uint32 portOutSpeed portShortDescr ifType
DeviceEx(ref.device).id
ReportableOverride=0
```

It is through Data Export Jobs that you control what data is exported, where it is exported to and when. A data export job specifies the:

- Datasets to export.
- View against which the dataset definitions are applied.
- The data export job schedule.
- The target database, including connection parameters and the executable that connects to the Atrium API.

```
[DataExportJob ~Atrium Export Job]
Description=Atrium Export Job
DbName=AtriumExport
DbUser=
DbPassword=
DbServer=
ViewName=All Views
Backfill=172800
Ageout=1209600
```

```
Schedule=Atrium_Daily
Datasets=~Atrium Devices,~Atrium Ports
IsEnabled=1
```

where:

- *~Atrium Export Job*, identifies the data export job. The tilde indicates the definition cannot be amended in the web interface.
 - *Description*, a meaningful Data Export Job description which is displayed in the web interface.
 - *ViewName*, Entuity view against which the export is run. By entering All Views you can select all available views.
 - *Schedule*, data export schedule. You can run data export jobs on demand or scheduled. Data Export Job schedules are the same as those used for Flex Reports.
When an existing schedule does not meet your requirements use the Flex Report Create Schedule mechanism to create an appropriate one.
- Entuity only runs one Data Export Job at a time. This avoids resource overload and database conflict. The Data Export queue is separate from the other queues, e.g. Flex Reports and a Data Export job can run at the same time.
- *Datasets*, is a comma delimited list of datasets, by default ~Basic Device Data, ~Basic Port Data. The tilde indicates the definition cannot be amended in the web interface.
 - *IsEnabled*, when set to 1 indicates the job is available to run, when set to 0 it is not.

Atrium.cfg

Atrium.cfg specifies the connection from Entuity to the Data Export database, and between the Data Export database and the BMC Atrium CMDB. You should run `configure` to set up the integration and configure `Atrium.cfg`, you should not directly edit the file.

An Entuity installation can have three versions of `Atrium.cfg`. The version in:

- `entuity_home\install\template\etc` is used the first time `configure` runs with the module enabled.
- `entuity_home\etc` is generated by `configure`. This version is used by the Entuity server.
- `entuity_home\etc\bkp` is a backup of the current version of `entuity_home\etc\entuity.cfg` created during `configure`.

Messages and log files are written to the `atriumExporter.log`.

`Atrium.cfg` has three sections:

- `EYE_Connection eyeConnection`, specifies the connection to the Entuity server.
- `Atrium_DataExport_Connection atriumDataExportConnection`, specifies the connection to the AtriumExport database.
- `Atrium_Connection atriumConnection`, specifies the connection to the BMC

Atrium CMDB import database.

```
[EYE_Connection eyeConnection]
eye.server=compressor
```

where:

- *server* should be a fully qualified DNS name or an IP address. The utility will try to resolve the IP address if localhost or loopback address is specified.

```
[Atrium_DataExport_Connection atriumDataExportConnection]
dataexport.dbServer=127.0.0.1
dataexport.dbUser=root
dataexport.dbPassword=
dataexport.dbName=AtriumExport
```

where:

- *dbServer*, is the name of the server which holds the Data Export database. You can also enter the database port using the format, *server:port* e.g. *compressor:3306*.
- *dbUser*, name of the user account used to manage the Data Export target database.
- *dbPassword*, password of the user account used to manage the Data Export target database.
- *dbName*, the name of the Data Export database, e.g. **AtriumExport**, to which Entuity data is written before it is transferred to BMC Atrium CMDB.

```
[Atrium_Connection atriumConnection]
atrium.server=10.44.1.48
atrium.port=0
atrium.user=Demo
atrium.password=
atrium.trustedDataset=true
atrium.datasetId=ENTUITY.IMPORT.TOPO
```

where:

- *server*, name of the Atrium server.
- *port*, when set to 0 the default port is used.
- *user*, name of the Atrium user account.
- *password*, password of the Atrium user account.
- *trustedDataset*, when set to:
 - **true**, BMC Atrium CMDB considers the dataset as trusted
 - **false**, BMC Atrium CMDB does not consider the dataset as trusted

Entuity

- *datasetId*, the name of the import dataset to which the Entuity data is written before reconciliation rules are applied.

Glossary

802.1p

An IEEE standard for providing quality of service (QoS) in 802-based networks. 802.1p uses three bits (defined in 802.1q) to allow switches to reorder packets based on priority level. It also defines the Generic Attributes Registration Protocol (GARP) and the GARP VLAN Registration Protocol (GVRP). GARP lets client stations request membership in a multicast domain, and GVRP lets them register into a VLAN.

AAL (ATM Adaptation Layer)

AAL enhances the service provided by the ATM layer to a level required by the next higher layer. It performs the functions for the user, control and management planes and supports the mapping between the ATM layer and the next higher layer.

Advanced Actions

Advanced Actions, also known as user menus and user actions, are defined through configuration files. Actions may be automatically triggered through Entuity raising an appropriate event, or interactively through advanced action menus, available both from the menu bar and context menus.

Agent

Intelligent management software embedded in a network device. In network management systems, agents reside in all managed devices and report the values of specified variables to management stations.

Antenna / Radio

Each Wireless Access Point has one or more Antennas. Each Antenna is attached to an 802.11 radio within the Access Point. Wireless Hosts communicate with the network via a wireless association with an Antenna/Radio. Each Antenna/Radio can have multiple hosts simultaneously attached. Each Antenna/Radio operates in a chosen 802.11 compatibility mode such as 802.11a, 802.11b or 802.11g. Additionally, each Antenna/Radio has a single SSID assigned. Each Antenna/Radio operates on a chosen radio channel and with a specified transmit power setting, which is measured in mW. Many controller based installations use dynamic optimization algorithms to pick a suitable channel and power setting. Frequent auto-adjustment of these setting indicates that there are problems being encountered with the quality of the wireless communications.

AP (Access Point) / WAP (Wireless Access Point)

A device that has one or more 802.11 radios and Wireless Antennas. For example, laptops, PDAs, connect to a wired LAN through an AP, which is a hardware device or software that acts as a communication hub.

It bridges traffic from wireless attached hosts to/from an Ethernet interface that connects to an access layer switch port. APs provide heightened wireless security and extend the physical range of a wireless LAN. The access layer switch will see the MAC addresses of the individual wireless attached hosts (the MAC address of the wireless NICs) plus the MAC of the Access Point Ethernet interface.

AR System

BMC Remedy Action Request System (AR System) is a framework within which applications are built by AR System administrators. Applications consist of a set of AR System forms that are linked using workflow rules designed for the application. These forms contain fields which Entuity can be configured to populate.

ARs

Entuity integrates with AR System to generate Action Requests (ARs). The sample integration with the Remedy Help Desk includes ARs of the type incident.

ARP

ARP (Address Resolution Protocol) is the layer 2 standard for TCP/IP. It is used to obtain a node's physical address when only its logical IP address is known.

ATM

ATM (Asynchronous Transfer Mode) is a packet-switching technology, that delivers high-speed performance together with a scalable architecture. Its use of small packets (fixed length cells of 53 bytes), provide for low latency so sound and vision arrive together. It can also handle bursty, non time-sensitive data, translating variable length packets to fixed size packets.

Attribute

In Entuity an attribute is a property of an object that is defined through Entuity Configurable Framework. Attribute data can be charted using the Attribute Grapher and is available to Report Builder.

Autonomous Wireless Access Point (AWAP)

A Wireless Access Point (WAP) that embodies all of its necessary control functionality in a self-contained manner. AWAPs are usually connected to switched access layer ports and

can coexist with ordinary wired connections to end user hosts and servers on the same switch. AWAPs do not require wireless controllers and do not interact with them if they exist.

Backbone

The part of a network that acts as the primary path for traffic that is most often sourced from, and destined for, other networks.

BECN (Backward Explicit Congestion Notification)

BECN is a bit in the header of a frame-relay frame that is set when frames are sent on the data path backwards from destination to source. It indicates congestion to the source node.

WAN News combines BECN and FECN values to determine congestion on a data path.

Bandwidth

The upper limit of the rate at which data can be transferred.

BMC Atrium CMDB

The BMC Atrium Configuration Management Database (BMC Atrium CMDB) is a data repository that provides a working model of your enterprise IT infrastructure.

BMC Cell

BMC Impact Manager instance. A cell receives events from Entuity and displays them in the BMC IX.

BMC II Web Services Server

BMC Impact Integration Web Services Server. You can connect to the BMC II Web Services at the end point as defined by the URL format, `http://webServerHostName:webServerPortNumber/webServiceName`, e.g. `http://decade:6080/impactManager`.

BMC IX

BMC IX (BMC Impact Explorer) displays events received from Entuity.

BMC ProactiveNet Performance Management

BMC ProactiveNet Performance Management which receives events from Entuity.

Blackout

Blackout is complete loss of the network, as opposed to a brownout, which is degradation in the performance of the network.

BPDU

Bridge Data Protocol Units are special frames that contain spanning tree information. There are two types of BPDUs, Topology Change Notification (TCN) BPDUs contain topology change information, Configuration BPDUs contain configuration information.

Bridge

A device that interconnects local or remote networks. Bridges form a single logical network, centralizing network administration. They operate at the physical and link layers of the OSI Reference Model.

Brownout

Brownouts, also known as soft faults, are typically caused by cabling faults, faulty transceivers, faulty NIC cards and configuration errors such as duplex/half-duplex mismatches. These problems cause a percentage of the packets traversing that particular area of the network to be corrupted. The total number of packets discarded as a percentage of packets is directly related to the severity of the brownout.

Burst

Burst is the access rate of the physical connection to the Frame Relay carrier network.

Central Server

A central server is an Entuity server trusted by remote Entuity server(s). A user logged into the central Entuity server is able to view information collected by the remote Entuity server(s), according to their user account access rights. A remote Entuity server responds to requests from a trusted central Entuity server, and freely shares information with it.

An Entuity server can be configured to perform both roles, be both a remote and central Entuity Server. This allows administrators to create both hub-n-spoke and fully meshed deployments.

A central Entuity server can also act as a central license server. From it you can allocate, and de-allocate, license credits to its remote servers.

Configuration of central and remote servers is through the Multi-Server Administration area of the Entuity web UI.

CDP (Cisco Discovery Protocol)

CDP is primarily used to obtain protocol addresses of neighboring devices and discover the platform of those devices. CDP can also be used to show information about the interfaces your router uses. CDP is media- and protocol-independent, and runs on all Cisco-manufactured equipment including routers, bridges, access servers, and switches.

Entuity uses CDP as a method when maintaining links on maps and identifying trunk ports.

CI

Within BMC Atrium CMDB a Configuration Item (CI) is a collection of objects related to the specific functionality of a larger system.

CIR

Committed Information Rate is the rate (in bps) that the network agrees to transfer information over a permanent virtual circuit (PVC) in Frame Relay. The CIR applies to the rate of data entering the network.

Cisco IOS IP SLA Operations

Cisco IOS IP SLA Operations are created on devices by Entuity (via SNMP). Entuity currently fully supports DHCP, DNS, HTTP, HTTP Raw, ICMP Echo, ICMP Path Echo, TCP, UDP Echo, UDP Jitter and UDP Jitter VoIP operations. Entuity can also monitor operations other than these ten, for example FTP. The completeness of the returned data depends upon how close the operation's data structure corresponds to Entuity's default representation of the IP SLA operation data structure.

These are the ten fully supported operations:

- DHCP, Verify availability of dynamic IP addresses.
- DNS, DNS server functionality check.
- HTTP, Web page availability.
- HTTP Raw, Web page availability.
- ICMP Echo, Simple connectivity tests.
- ICMP Path Echo, Simple connectivity tests.
- TCP, Connect Application availability.
- UDP Echo, Simple connectivity tests.
- UDP Jitter, Detailed latency measurements (requires IP SLA on both devices).
- UDP Jitter VoIP, Detailed latency measurements (requires IP SLA on both devices).

Client

A computer that requests a service from another. In Entuity the Java client is Component Viewer which requests, for example, information from the Entuity server on the devices on your network.

Collisions

Collisions occur when two transmitters attempt to send data at the same time. The greater the number of collisions the poorer network performance appears.

Component Viewer

Component Viewer is the Entuity Java client, available through the web UI Tools menu. Through it you can quickly scan the network for both current and historical performance

data. It creates an intuitive hierarchy which lets you easily view configuration settings, check status information and launch fault, utilization and traffic volume history graphs.

Context Menus

Context menus are available from the Entuity web UI and Component Viewer. The contents of the menu are dependent on the position of the mouse when you clicked the right button.

Core Ports

Entuity considers core ports, as WAN ports, administratively up ports which have a configured IP addresses (i.e. layer 3 ports) on devices which are routers or have router capability, or trunks and uplinks that are administratively up.

By default the port status event, Port Operationally Down, is only enabled for core ports.

Current Configuration

The device configuration (either startup- or running) currently being processed.

DLCI (Data Link Connection Identifier)

A unique logical identifier assigned to a PVC end point in a frame relay network. It identifies a particular PVC endpoint within a user's access channel therefore allowing multiple connections to many destinations over a single, physical channel.

Data Management Kernel (DMK)

The DMK supports Entuity's intelligent discovery function. It includes out of the box data models for a wide range of managed devices including hundreds of Ethernet switches and routers. These customizable data models define the attributes of each managed element, its possible dependencies in relation to other elements of the network, and the specific details to retrieve for each element. The DMK manages these data models and automatically applies updates and changes to the Entuity database schema.

Data Path

A data direction on each PVC is a data path. For example, a PVC that connects points A and B has two data paths, from A to B and from B to A. WAN News analyzes the data paths separately.

Data Rollup

Data Rollup is a method of taking polled data and bundling it into larger more manageable units, e.g. rolling 24 hourly datapoints into one daily sample. If Entuity generated monthly reports from live polled data then this would cause a significant increase on the processing overhead, i.e. instead of one datapoint for each day there would be hundreds.

DE (Discard Eligibility)

DE is a bit in the header of a frame-relay frame that indicate the frame may be discarded in preference to other frames if congestion occurs. It is usually set by a network node if the user is offering data (frames) at a higher rate than has been negotiated. This maintains the committed quality of service within the network. Frames with the DE bit set are considered to be excess data.

Derived Events

IA derived event is an event derived from an existing event definition. It retains the event identifier of the original definition, unlike a custom event which has its own unique identifier. Derived events are defined as part of an action. They useful for adding additional information to an incoming event, and can also be called from an incident.

Devices

In Entuity devices refers to network devices, for example switches and routers.

Device Support Datasets

Device support datasets define the attributes of each managed element, its device type, its possible dependencies in relation to other elements of the network, and the specific details to retrieve for each element. This comprehensive library streamlines modeling and ultimately shows exactly what you own, where it is deployed and how it is connected.

Datasets are available through these types of vendor files, all have a .vendor extension. These vendor files are, listed in ascending order of priority:

- `newbin.vendor`, which is created in `entuity_home\etc` when Entuity discovers devices with sysoids for which there is not a device support dataset. These generic device support datasets should be considered temporary definitions, and only used until Entuity supply an appropriate vendor file.

Device support datasets in `newbin.vendor` have the lowest priority when Entuity is determining which vendor device definition to use to manage a device type.

- `bin.vendor` has the second lowest priority when Entuity is determining the source of device information. Device support datasets in `bin.vendor` have the second lowest priority when Entuity is determining which of those available to use to manage a device type.
- `exotica` vendor files are installed to `entuity_home\etc\exotica`. Exotica files are only used by Entuity when they are copied to `entuity_home\etc`, either manually or during Entuity configuration, e.g. when selecting a module.

Device support datasets in `exotica` vendor files have the highest priority when Entuity is determining which vendor device definition to use to manage a device type. These files use a simple naming convention, using the vanilla filename, with a plus sign in the filename and identifying name, e.g. `SOLSERV+managed Host.vendor`.

During Entuity upgrades configure identifies and removes `exotica` files from the installation that are now part of the updated `bin.vendor`.

`vendinfo` identifies the vendor device support datasets available to Entuity and the decisions made when more than one vendor file is available for a particular sysoid; which device support dataset Entuity uses to manage that device type (as identified through its sysoid).

Device Types

In Entuity every device has a type, which you can view through the web interface and Component Viewer. The device type is derived from its vendor file information, and helps to determine how Entuity manages a device. Device types include hubs, switches and routers. There are also two Unclassified device types, Basic Management and Ping Only, and also Full Management.

Unclassified device types have two distinct roles:

- Basic Management and Ping-only, is used for those devices Entuity has taken under management at the Basic Management and Ping-only level.
- Full Management, is used for those devices Entuity has taken under management at the Full level but for which there is no vendor file information but Entuity can generate a suitable generic device type. These are uncertified devices.

Domains

Domains and domain filters are terms used within Component Viewer, in fact supplied domains are now only used within Component Viewer to group objects in its Explorer tree, e.g. the routers domain. In the web UI, where you manage views In Entuity, domain filters are referred to by the more apt term view content filters as they determine the type of object that can potentially appear in a view.

DHCP Operation

The IP SLA DHCP operation measures the round trip time (RTT) taken to discover a DHCP Server and obtaining a lease from it. After obtaining an IP Address, Cisco IOS IP SLA releases the IP address that was leased by the server.

The Dynamic Host Configuration Protocol (DHCP) is an Internet protocol for automating the configuration of computers that use TCP/IP. DHCP can be used to automatically assign IP addresses, to deliver TCP/IP stack configuration parameters such as the subnet mask and default router.

Drop Box

Drop box acts as a temporary repository for objects, for example gauges, charts, links, device metrics, that you want to include to new reports, dashboards.

Duplex

A full-duplex link with one telegrapher at each end, transmitting alternately in each direction.

Dynamic Thresholds

Dynamic thresholds enable Entuity to alert the user to deviations from what Entuity's previous polling has established as normal behavior for that hour on that day. Entuity establishes normal behavior for a given attribute on a given port by maintaining the last four weeks worth of polled data, and applying an averaging algorithm.

EIR

The Excess Information Rate (EIR) is the sustainable rate of information in excess of CIR, that the network will deliver if there is available bandwidth. The total information rate is $CIR + EIR$.

Frame Relay allows data rates in excess of the CIR to be successfully used on occasions. It is also possible that the amount of data that can be transferred per measurement interval (T_c) may be limited to less than the burst (or access rate) of the physical connection to the carrier network.

EIR defines how many bits per second beyond the CIR the data rate may be exceeded. This is may be policed by the carrier ingress switch per T_c on a pro-rata basis. This means that although data can be transmitted for periods of time at the burst rate of the physical port it would not be possible to continue transferring data at this rate successfully on a continuous basis if the $CIR + EIR$ were to be less than the burst rate.

Entuity

Entuity is both the name of the network management software and the company producing it. Entuity software is designed for networks of any size and complexity, from the smallest, simplest corporate infrastructure to the largest multinational. Every customer can access the full functionality of our cornerstone solution, incorporating fault, performance and inventory management.

entuity_home

entuity_home is used within the Entuity documentation to indicate the Entuity server's root folder. The root folder is set by Entuity *install*, in Windows environments the default is `C:\Entuity`. You can view its current setting through *destination* in *entuity_home\etc\entuity.cfg*. Within Entuity configuration files it is represented by the variable *ENTUITY_HOME*.

Ethernet

IEEE standard network protocol that specifies how data is placed on and retrieved from a common transmission medium. Forms the underlying transport vehicle used by several upper-level protocols, including TCP/IP and XNS.

Events

Events are alerts and alarms that are generated through Entuity monitoring the network. Event Viewer displays events and they can also be reported on.

Expect

Expect is a Unix automation and testing tool, written by Don Libes as an extension to the Tcl scripting language, for interactive applications such as telnet, ftp, passwd, fsck, rlogin, tip, ssh, and others. It uses Unix pseudo terminals to wrap up subprocesses transparently, allowing the automation of arbitrary applications that are accessed over a terminal. With Tk, interactive applications can be wrapped in X11 GUIs.

Eye of the Storm® (EYE)

Until Entuity 12.5 the software was known as Eye of the Storm (EYE).

Entuity Remedy AR System Integration

The Entuity Remedy AR System integration allows forwarding of event and managed object information from Entuity to one or more AR System servers.

Entuity allows two types of forwarding:

- automatic generation of Action Requests (ARs), derived from Entuity events, to particular application forms on target AR System servers
- interactive generation of Action Requests (ARs), initiated from Entuity. The specified application forms on target AR System servers are opened for editing, with default data populated from the current Entuity managed object(s) or event(s).

Entuity can also pass to AR System a URL identifying the managed object that is the source of the AR. From AR System you can open Entuity's Component Viewer with the focus on the managed object.

Factory Default

The shipped values of event thresholds are the factory defaults. You can amend a factory default, which if done at the root level effectively changes the default value for all objects against which that threshold can be set. For example, if you amend a threshold setting for a device event at the Entuity (system) level, all devices on that server will have a new default value.

FEC

Forwarding Equivalence Class (FEC) is central concept to MPLS. An FEC is a set of packets that a single router forwards to the same next hop, using the same interface and with the same handling (e.g. queuing). The FEC is determined only once, at the ingress to an LSP, rather than at every router hop along the path.

FECN (Forward Explicit Congestion Notification)

FECN is a bit in the header of a frame relay frame that is set to indicate to the destination node that congestion is occurring on the network. WAN News combines BECN and FECN values to determine congestion on a data path.

Filters

Filters in Entuity act by filtering in those objects specified in the filter. There are three types of filters, view, event and Flex Report.

Entuity uses these types of filter:

- View content filters are applied to the views, restricting the components available from a view to those that meet the criteria.
- Event Filters restrict the events available through a view.
- Flex Report filters restrict the data included to the report.

Flow Collector

The Flow Collector is the set of processes within an Entuity Integrated Flow Analyzer responsible for the receiving, processing and storage of flow records.

Administrators can enable/disable an Entuity server's Flow Collector through `configure`, a decision which should be made according to the role the administrator wants the server to perform in the management of the network.

Frame Relay

A fast packet protocol that relies on physical component and higher level software reliability. The network discards any frame with bit errors. Frame relay services include PVCs (Permanent Virtual Circuit) and SVCs (Switched Virtual Circuit).

Full Duplex

A full-duplex link with one telegrapher at each end, transmitting alternately in each direction.

Generic Device Type

Entuity uses the concept of an underlying generic object against which are mapped the characteristics of different device types, e.g. routers, switch, firewalls, BladeCenters. This allows complete management of devices that have characteristics of one or more of the traditional types of devices, e.g. a router with switching capabilities.

Half-Duplex

A type of communication channel using a single circuit which can carry data in either direction but not both directions at once.

Host Identifier

Your Entuity representative requires the host identifier of the Entuity server machine before they can generate your license. The host identifier associates the Entuity license with the physical footprint of the machine. Entuity install and configure programs both display the host identifier, alternatively you can run the command line program `hostIdent` (which is included with the software but is also available from the Support website).

Hot Standby Router Protocol (HSRP)

Hot Standby Router Protocol (HSRP) establishes a framework between network routers to achieve default gateway failover if the primary gateway becomes unavailable in close association with a rapid-converging routing protocol like EIGRP or OSPF. By multicasting packets, HSRP sends its hello messages to the multicast address 224.0.0.2 (all routers) using UDP port 1985, to other HSRP-enabled routers, defining priority between the routers. The primary router with the highest configured priority will act as a virtual router with its own IP and MAC address, which the hosts on the local segment will be configured to use as a gateway to the destination in question. If the primary router should fail, or the link to the destination drop, the router with the next-highest priority would take over communications through alternative routes within seconds, without major interruption to network connectivity.

HSRP and VRRP on some routers have the ability to trigger a failover if one or more interfaces on the router go down. This can be useful for dual branch routers each with a single serial link back to the head end. If the serial link of the primary router goes down, you would want the backup router to take over the primary functionality and thus retain connectivity to the head end.

Hypervisor

A hypervisor, also called virtual machine monitor (VMM), allows multiple operating systems to run concurrently on a host computer. The hypervisor presents to the guest operating systems a virtual operating platform and monitors the execution of the guest operating systems. Multiple instances of a variety of operating systems may share the virtualized hardware resources. Hypervisors are installed on server hardware whose only task is to run guest operating systems.

Infrastructure Ports

Entuity considers infrastructure ports, as:

Entuity considers infrastructure ports, as router ports, as uplinks which are ports connecting routers with switches and as trunk ports which are ports connecting switches together.

- Router ports.
- Uplinks, ports connecting routers with switches.
- Trunk ports, ports connecting switches together.

Interface

This is the entity on a node which is polled, such as a physical port. Nodes are likely to have more than one interface.

IP

In TCP/IP, the standard for sending the basic unit of data, an IP datagram, through the Internet.

IP Link

IP links may be autoDiscovered or created manually. They represents a link of some form at layer 3 or above e.g. a pair of IP addresses, an IP address and a URL.

IP Peering

IP Peering provides visibility into your WAN links, i.e. leased line, Frame Relay DLCIs, ATM VCCs, using subnet masking. It also reflects any manual IP pairings you may have made in Entuity.

ISO

International body that is responsible for establishing standards for communications and information exchange; developed the OSI reference model. ISO is not an acronym, but the Greek word for "equal."

Java Web Start

A technology for simplifying deployment of Java applications. It allows you to download and launch the Entuity client from your Web browser or shortcuts placed on your PC.

Key Metrics Gauge

From Entuity's Explorer you can access the Device and Port Summary pages, both of which display Key Metric graphs. Key metrics vary according to the managed object, e.g. Device CPU utilization, Port Inbound Utilization%.

These graphs are of two forms a:

- green only gauge is used with metrics that do not have thresholds.
- green and red gauge is used with metrics that have thresholds. When the indicator is pointing to the red area then the threshold has been crossed. The relative size of the red and green areas of the gauge is fixed, i.e. the red area does not take a larger or smaller proportion of the total area of the gauge on changes to the threshold level.
You can view the current threshold value by passing the cursor over the data value below the graph.

You can click on each key metric gauge to view a larger graph.

LAP (Lightweight Wireless Access Point)

A low cost Wireless Access Point (WAP) that delegates much of the control functionality usually embodied within an Autonomous WAP to a WC. LAPs are usually connected to switched access layer ports and can coexist with ordinary wired connections to end user

hosts and servers on the same switch. The associations between the LAPs and WCs are negotiated dynamically and can change under fault conditions.

A LAP is an AP that is designed to be connected to a wireless LAN (WLAN) controller (WLC). The LAP provides dual band support for IEEE 802.11a, 802.11b, and 802.11g and simultaneous air monitoring for dynamic, real-time radio frequency (RF) management. In addition, Cisco Aironet 1000 Series LAPs handle time-sensitive functions, such as Layer 2 encryption, that enable Cisco WLANs to securely support voice, video, and data applications.

Entuity Wireless currently supports Cisco LAP, part of the Cisco Unified Wireless Network architecture.

Leased Line

A leased line is a dedicated point-to-point connection over a WAN via a router at the subscriber's premises to the telecommunications provider.

Entuity identifies a leased line, by default, when both of these conditions are true:

- The interface type is either IANAifType 22 (propPointToPointSerial) or 23 (PPP).
- The WAN port is not:
 - A Frame Relay port.
 - An ATM port.
 - An ISDN port. These are identified as having an associated lower layer protocol port (found from the ifStack table) of ifType 81 (ds0). This indicates the port is a layer on top of either basic rate or primary rate ISDN.

Link Layer Discovery Protocol (LLDP)

The IEEE 802.1AB Link Layer Discovery Protocol (LLDP), provides a solution for the configuration issues caused by expanding LANs. It runs over the data link layer and specifically defines a standard method for Ethernet network devices to advertise information about themselves to other nodes on the network and store the information they discover. LLDP is available as a technology link type on the Entuity maps.

Load Balancers

Load balancers are devices that control and optimize traffic flow over your network. For example directing traffic away from over utilized servers to those less utilized, improving mission critical service delivery, providing fail over protection.

Entuity delivers a similar level of fault, performance and inventory management for load balancers as provided for other standard Entuity device types, e.g. routers, switches, hubs. For example device reports include load balancers, you can build your own reports using Flex Reports, device and port events apply and full load balancer details are viewable through Component Viewer.

Entuity currently manages F5 Labs Big IP 6400 Load Balancer. Entuity delivers additional polling of the device ports using F5 lab's propriety MIB, returning additional port identification, port status, port traffic and port utilization data. The full integration of this

additional data within Entuity allows administrators to set up utilization and traffic events against this data.

Log Files

Entuity process messages are written to their individual log files, in *entuity_home/log*. For example, `applicationMonitor` writes to `applicationMonitor.log`. When the log file becomes full, it automatically wraps to another file with up to four versions, e.g. `applicationMonitor.log.1`, `applicationMonitor.log.2`, `applicationMonitor.log.3`.

Management Level

Every device under Entuity management is managed according to its management level, which is set when the device is added to Entuity but can be subsequently amended. Each managed device costs one license object.

These are the management levels:

- Full Management (all interfaces), Entuity manages all interfaces on the device.
- Full Management (management interfaces only), Entuity only manages the management interface.
- Full Management (no interfaces)
- Basic Management Entuity collects only basic system information and the full IP address table via SNMP. This management level is used when Entuity does not have the appropriate device support dataset (vendor file), cannot generate an appropriate dataset or you only want the device placed under basic management. Entuity does not manage any ports or modules on the device.
- Ping Only, devices only under ping management, SNMP data is not collected for these devices.

Managing Agent

Handles requests for information or action from the management station on a node. A protocol links the management station and the Managing Agent; for Entuity users this must be SNMP.

MIB (Management Information Base)

Entuity supports SNMP MIBs only. MIBs are present within nodes on a network, and comprise a logical collection of managed objects arranged in a tree structure. Managing agents on an element use MIBs to store information regarding the element, e.g. the speed at which packets of information are transferred.

All managed objects within a MIB share a common root.

Mobility Controller

An SNMP manageable hardware device, manufactured by Aruba, that controls and coordinates the operation of a group of Aruba Wireless Access Points. In an Aruba wireless network deployment all wireless equipment discovery and real-time monitoring is performed via the Mobility Controllers rather than via SNMP/ping monitoring of the individual Access Points.

Multicast

Network communication between a single sender and multiple receivers.

My Network

Supplied view that contains the entire set of managed object's the user is permitted to view. Different users may have different devices in their My Network view, reflecting their different access permissions.

Node

An SNMP managed device attached to a network, from which data can be retrieved. For example, node devices such as hubs, routers, bridges, or network printers.

OID

An Object Identifier is a sequence of integers that represent the position of an object in the hierarchical structure of objects in a MIB.

OMF (Open Modeling Framework)

Flexible Entuity framework that allows the fast integration and management of new types of managed objects, e.g. new device types. For example, the BladeCenter device type is implemented through the OMF.

OSI Model

A model for networks developed by International Standards Organization (ISO). The network is divided into seven layers, each layer building on the services provided below it.

Packet

Any logical block of data sent over a network; it contains a header consisting of control information such as sender, receiver, and error-control data, as well as the message itself. May be fixed or variable length.

PCR (Peak Cell Rate)

PCR is the maximum short term data throughput supported by an ATM port; the limit to which traffic can burst.

Percentile Utilization

Percentile Utilization indicates that for a defined percent of the time, e.g. 95, port utilization is below this value. It is useful for monitoring the sustained utilization of the port.

The 95th percentile is derived by ordering the utilization data by value, from highest to lowest. Application of a least square fit method removes spikes that would distort the analysis. The top 5% values are discarded, leaving the 95th percentile. This value is calculated for both inbound and outbound utilization.

Policy Group

Entuity licensing is enabled by grouping related types of managed objects into groups. These Policy Groups are then assigned a license credit quota. Before Entuity manages an object it first checks whether the license allows its management and then whether a credit is required. When a license credit is required, Entuity checks that the policy group to which the object's type is associated has available credits. For example, before Entuity manages a device it checks the device licensing policy group for available credits.

Polling

Devices on the network are accessed by the system at regular, pre-defined, intervals in order to retrieve required data. This is referred to as polling the devices.

Polling Engine

The Polling Engine (or Core Management Engine) is the set of processes within an Entuity server responsible for all general network management tasks excluding flow collection (e.g. network discovery, inventory, monitoring, event management).

Administrators can enable/disable an Entuity server's Polling Engine through `configure`, a decision which should be made according to the role the administrator wants the server to perform in the management of the network.

Port

Entuity considers ports as interfaces on network devices, e.g. routers, and as endpoints in communications systems. In IP an upper-layer process that receives information from lower layers. Ports are numbered, and each numbered port is associated with a specific process. For example, SMTP is associated with port 25.

TCP and UDP transport layer protocols used on Ethernet use port numbers to distinguish between (demultiplex) different logical channels on the same network interface on the same computer.

Protocol

A set of formal rules detailing how to transmit data across a network. Example protocols include TCP, UDP and IP.

PVC (Permanent Virtual Circuit)

PVC is a Frame Relay virtual connection providing the user with the equivalent of a physical connection to a destination address, using shared facilities. Virtual circuits can be permanent (PVC) or switched (SVC).

Reachability

Availability Monitor sends an ICMP ping to the management IP address of managed devices, by default every two minutes. Devices that respond are considered reachable, those that do not respond, after the set number of retries, are considered unreachable. When Availability Monitor (`applicationMonitor`) is not running, then the reachability of the device is Unknown for that period, although Entuity maintains the last known state of the device.

Reboot

Entuity uses the device sysuptime to calculate when the device was last rebooted, or more accurately when the device last came up after being rebooted.

Reconciliation Rules

Within BMC Atrium reconciliation rules are applied by the reconciliation engine to improve accuracy and efficiency of maintaining IT environment data in the CMDB. Reconciliation is used to identify and merge CI information and relationship from imported dataset with production dataset.

Remedy Help Desk / Service Desk

Entuity Remedy AR System Integration for Remedy AR System 7.0 includes a sample configuration which integrates with the Remedy Service Desk application.

Remote Server

A remote server is an Entuity server configured to trust another central Entuity server. A user logged into the central Entuity server is able to view information collected by the remote Entuity server(s), according to their user account access rights. A remote Entuity server responds to requests from a trusted central Entuity server, and freely shares information with it.

An Entuity server can be configured to perform both roles, be both a remote and central Entuity Server, allowing administrators to create both hub-n-spoke and fully meshed deployments.

Configuration of central and remote servers is through the Multi-Server Administration area of the Entuity web UI.

Router

A device that routes data between networks. Routers connect multiple LAN segments to each other or to a WAN.

Routers may be equipped to provide frame relay support to the LAN devices they serve. These routers can:

- encapsulate LAN frames in frame relay frames and send those frames to a frame relay switch for transmission across the WAN.
- receive frame relay frames from the WAN, strip the frame relay frame off each frame producing the original LAN frame, and forward it to the end device.

Running-config

The configuration controlling the current operation of a piece of Cisco hardware. This may be different to the start-up config if changes have been made since start-up and the changes have not been saved. The running-config can be saved as the startup-config replacing any previous start-up config. The running config is held in DRAM. If the machine is restarted without the running-config being saved, all changes are lost.

Sample Interval

In Entuity the period between two data samples. This may be between two pollings of a port, or between two rolled up data samples.

SCR (Sustainable Cell Rate)

SCR is the long term data throughput of an ATM port. Traffic can burst above this limit up to the PCR.

Server

Any computer whose function in a network is to provide user access to files, printing, communications, and other services. Servers usually have more memory, more disk storage, and a more advanced processor than a single-user desktop PC.

Where Entuity manages an application, Entuity can manage the application server as a device.

Services

Services is a method of grouping together collections of ports that provide a service and associating with them other ports which use that service. For example, a service maybe e-mail, with one port designated as the provider of the service and all others in the group defined as consumers.

SLA

A Service Level Agreement (SLA) is a set of rules and metrics which can be used to measure the efficiency and performance of an object. That object may be a department, a server, a

network or any other functional component of an organization. If an object adheres to its associated set of rules and metrics, then it can be said to be conforming to its SLA. Similarly, if the object breaches the set of rules and metrics, then this means that it is no longer conforming to its SLA.

SNMP

Standardized method of managing and monitoring network devices on TCP/IP based internets. SNMP defines the formats of a set of network management messages, and the rules by which those messages are exchanged. The network management messages are used to make requests for performing network management functions and to report on events that occur in the network. Also, SNMP defines the allowable data types for MIBs, the way in which MIBs can be structured, and a set of standard objects that can be used in implementing a MIB.

Spanning Tree

Spanning tree provides a vendor neutral technology for visibility into your network. When correctly implemented Entuity discovers bridge links, switch to switch relationships, through polling the Bridge MIB. Complete spanning tree connectivity relies on a contiguous set of Entuity managed devices.

Spare Ports

By default Entuity spare port calculations include ports that have been unused for forty days or more, include ports that have system uptime of less than forty days and are currently unused and exclude ports that have been unused for less than forty days but have a system uptime of forty days or more.

By default Entuity spare port calculations:

- Include ports that have been unused for forty days or more.
- Include ports that have system uptime of less than forty days and are currently unused.
- Exclude ports that have been unused for less than forty days but have a system uptime of forty days or more.

The forty day threshold is configurable through the reporting section of `entuity.cfg`. Entuity distinguishes between physical and virtual ports using interface type. If required System Administrators can amend the virtual port identifier.

SNMP Agent

Management code that resides in the device, controls the operation of the device, and responds to SNMP requests.

SSL

An SSL Certificate consists of a public key and a private key. The public key is used to encrypt information and the private key is used to decipher it. When a browser points to a

secured domain, an SSL handshake authenticates the server and the client and establishes an encryption method and a unique session key. They can begin a secure session that guarantees message privacy and message integrity.

Startup-config

The initial configuration when a piece of Cisco hardware starts-up. If there have been no changes to the configuration since start-up, this will be the same as the running-config. The startup-config is also referred to as the saved config. The startup-config is held in NVRAM.

Static Thresholds

Static threshold settings allow you to configure the trigger points which when crossed cause Entuity to raise events. You can set thresholds against an individual event, a managed object, view or all objects on an Entuity server.

StormWorks

Entuity Configurable Framework is the internal Entuity engine, also known as the Data Management Kernel (DMK). It runs as the **DsKernelStatic** process. Entuity Configurable Framework enables the delivery of functionality through a highly configurable set of core services. The configuration files, found in *entuity_home*\etc, prefixed with **sw_** define and configure Entuity Configurable Framework services.

Entuity assigns all of the objects it manages their own Entuity Configurable Framework identifier. Entuity Configurable Framework identifiers are sequentially assigned, do not consider the object type and are unique within each Entuity server. *StormWorks ID* is visible from the object's web UI Advanced tab, and is used in creating dashboards to the user, for example during Data Export, Map Export, running of Flex Reports.

Stream Attributes

Information Entuity collects from your network is stored within Entuity as an attribute of the managed object, for example a port's name, a port's utilization are stored as attributes. Stream attributes are to maintain a history of a metric, for example Entuity maintains a history of port utilization.

SVG

Scalable Vector Graphics (SVG) is a graphics file format and Web development language based on XML. SVG is used by Entuity's reports to dynamically generate, high-quality graphics from real-time data.

Switch

A switch is a network device that selects a path or circuit for sending a unit of data to its next destination. It is usually simpler and faster than a router, which requires knowledge about the network to determine the route.

A switch may also include the function of the router, a device or program that can determine the route and specifically what adjacent network point the data should be sent to.

SynOptics Network Management Protocol (SONMP)

SONMP is also known as the Nortel Discovery Protocol (NDP), a Data Link Layer network protocol for discovery of Nortel (Avaya and Ciena) devices. It is available as a technology link type for the Entuity maps.

System Capabilities

Entuity determines the switching capability of a device by checking the group dot1dtp, specifically the mandatory scalar value dot1dTpLearnedEntryDiscards. dot1dtp is only present when the device supports transparent bridging, which implies it has Ethernet switching capability.

Entuity determines the routing capability of a device by checking for the ip-forwarding variable from the ip group in the MIB of the device. When ip-forwarding has a value of 1, this implies the device is acting as a gateway and so has routing capability.

Entuity determines whether the device type is hub by comparing its type to device types detailed in the vendor files.

TCP

Connection-oriented protocol that provides a reliable byte stream over IP. A reliable connection means that each end of the session is guaranteed to receive all of the data transmitted by the other end of the connection, in the same order that it was originally transmitted without receiving duplicates.

TCP/IP

Combination of TCP and IP protocols common to many different computer systems and so often used for communication between them.

TFTP

Trivial File Transfer Protocol (TFTP) is a very simple file transfer protocol, with the functionality of a very basic form of FTP. It uses UDP as its transport protocol and has no authentication or encryption mechanisms.

Ticker

Ticker allows you to view real time output at the device and port level, viewing data changes as they occur. You can select to view data activity for one or more client devices or ports.

For monitored:

- Ports you can select from a list of MIB variables the particular variable(s) you want to use to monitor the port. Entuity is supplied with a default number of MIB variables for use with ports and you can also add your own MIB variables to this list.
- Devices you can create your own list of MIB variables on which to monitor the device.

traceroute

Entuity includes two types of traceroute functionality, identified in the Entuity client as TraceRoute from Client and TraceRoute from Server.

TraceRoute from Entuity Client, calls the traceroute utility installed on the Entuity client machine and performs a live traceroute from the Entuity client to the target IP address.

TraceRoute from Entuity Server, uses data collected by `applicationMonitor`. This traceroute information is updated every two minutes, so calling TraceRoute from Server does not initiate a live traceroute but instead interrogates the data returned from the last `applicationMonitor` traceroute.

`applicationMonitor` uses Entuity's own implementation of traceroute functionality. This implementation performs ICMP pings in a similar way to a standard traceroute but with this key difference. When performing a traceroute `applicationMonitor` increments TTL values by one, until the pings reach the edge of an invisible cloud. At this point `applicationMonitor` increase the TTL value to 32. When this results in the ping reaching its target, the response from the target includes the actual number of hops required to reach target.

Traps

Traps can be used by network components to signal abnormal conditions. Entuity can both receive and forward SNMP traps.

Entuity can be configured to:

- Generate events in Event Viewer then traps are received.
- Forward traps to up to six concurrent recipients.



Entuity also supply a more advanced SNMP trap forwarding integration module. Contact your Entuity sales representative for details.

Trivial Change

A difference between a current-configuration file and a previously archived one that is not considered important by the system because it matches a set of rules codified as patterns in an "ignore file". Trivial changes may include comments such as timestamps in a configuration file.

Root Cause Analysis (RCA)

RCA isolates IT related problems using vector differencing. This involves the building of a dependency chain of objects and monitoring the object states in that chain. In the event of

state changes (where each object state change is a vector), differencing the dependency chain state vectors enables Entuity to determine the true cause of the event. Entuity can then raise the appropriate event.

For example, if an application becomes unavailable because a switch has failed then Entuity raises an event relating to the switch failure in Event Viewer. Entuity does not raise events for the application being unavailable as changes in state in the dependency chain are attributed to the switch failure.

Trunk Ports

Trunk ports, i.e. ports connecting switches together.

Entuity identifies a trunk port by:

- reading the MIB.
- **macman** identifying the switch port as having more than ten MAC addresses and also having associated VLANs.
- using CDP Trunk Port Discovery, a CISCO proprietary method.

When one or more of these methods identifies a trunk port, Entuity also considers it as a trunk port.

Unclassified Devices

Entuity managed devices for which Entuity does not have a device support dataset, provided through individual vendor, bin.vendor or newbin.vendor files, are included to Entuity as Unclassified devices under Full Management, or Unclassified devices under Ping-only and Basic Management.

Unclassified generically managed devices use an Uncertified device type, created by Entuity and held in newbin.vendor. These are Entuity managed devices and do incur a license charge. System Administrators should contact their Entuity support representative for a vendor file which would ensure Entuity fully manages these devices.

Unicast

Unicast is network communication between a single sender and a single receiver.

Uplink Detection

Entuity considers an uplink as trunking on a connection to a router or layer 3 switch, which is visible through spanning tree. This technology attempts to link layer 3 with layer 2.

Where links between switches and routers are not done using VLAN trunking and spanning tree then the spanning tree technology will not detect them. This is typically at smaller satellite offices, which do not need the greater port density and much greater speed available from router on a stick and even greater speed available from layer 3 switching.

Uplinks

Ports connecting routers with switches.

Uptime

By default Entuity polls devices every five minutes, retrieving device *sysuptime*. Entuity checks as to whether the device has been continually up since the last poll, and modifies the device's uptime value accordingly.

When *sysuptime* indicates the device has been down during the polling interval but is now up, from *sysuptime* alone Entuity cannot identify for how long the device was down. Entuity takes this unknown time, and adds fifty percent of it to the known uptime value, with the remaining fifty percent considered UNKNOWN. For example where *sysuptime* has a value of two minutes. Entuity cannot determine the state of the device over the first three minutes of the polling interval. Entuity adds ninety seconds to the *sysuptime* value, giving an uptime value of two hundred and ten seconds and records the device state as UNKNOWN for ninety seconds.

Device uptime is visible through Component Viewer, and is used in many reports, e.g. Routing Summary, Switching Summary.

Utilization

In Entuity port utilization is expressed as a percentage of actual traffic volume against the maximum volume that can be handled by the port.

UUID (Universally Unique ID)

A 16 byte value written to a system's planar at manufacturing time to uniquely identify a system across time and space.

Variable Binding

A variable binding, or VarBind, refers to the pairing of the name of a MIB variable to the variable's value. A VarBindList is a simple list of variable names and corresponding values. Some PDUs are concerned only with the name of a variable and not its value (e.g., the GetRequest-PDU). In this case, the value portion of the binding is ignored by the protocol entity. However, the value portion must still have valid ASN.1 syntax and encoding. It is recommended that the ASN.1 value NULL be used for the value portion of such bindings.

VCC (Virtual Channel Connection)

A VCC is an association established at the ATM Layer between two or more endpoints for the purpose of user-user, user-network, or network-network information transfer. The points at which the ATM cell payload is passed to the AAL for processing signify the endpoints of a VCC. Virtual Circuit is a more generic, non-ATM specific term.

VCI (Virtual Channel Identifier)

VPI and VCI together identify a virtual channel link on an ATM interface.

Vendor Files

Entuity identifies the device type of discovered devices by matching their sysoid to that held against the device support datasets. Device support dataset definitions are held in, listed here in order of precedence, individual vendor files, bin.vendor file, newbin.vendor file, and then uncertified file.

vendinfo identifies the vendor information available to Entuity and the decisions made when more than one vendor file is available for a particular sysoid; which vendor device definition Entuity uses to manage that device type.

File Type	Description
individual vendor files	When Entuity does not currently manage a device that you require it to, you can request your Entuity support representative for an appropriate vendor file. Those non-standard definitions are listed in entuity_home/etc/exotica. Only when a vendor file is moved to entuity_home/etc does Entuity use that definition.
bin.vendor file	File includes the default vendor file definition
newbin.vendor file	File includes device type definitions generated by earlier versions of Entuity.
uncertified file	File includes device type definitions created by Entuity, using proliferate with the -g parameter. Devices of this type are considered as Unclassified Devices.

View

All network objects within Entuity are displayed through views. View filters allow you to restrict the displayed objects in the view to the ones you are interested in. You can also use user profiles to control access to different views.

Virtual Channel Links (VCLs)

A VCC consists of the concatenated VCLs. A VCL is a means of unidirectional transport of ATM cells between the points where a VCI value is assigned and the point where the value is translated or removed. The VPI and VCI within the ATM cell header associates each cell with a particular VCL over a given physical link.

Virtual Circuit

A Virtual Circuit is a generic term for an association established between two or more endpoints for the purpose of user-user, user-network, or network-network information transfer. An example would be ATM's VCC.

Virtual Port

Entuity distinguishes between physical and virtual ports using interface type. If required System Administrators can amend the virtual port identifier.

VLAN

A logical association that allows users to communicate as if they were physically connected to a single LAN, independent of the actual physical configuration of the network.

VM Platforms

Entuity currently manages Oracle and VMware VMs through its VM Platform device type. Entuity communicates with VMs and their hypervisors through the VM's SDK. This requires specification of different connection attributes when compared to devices of other types. It also requires that all VMs are added to Entuity with a **Ping Only** management level, as this allows the selection of the VM Platform type and its connection configuration. When adding VMs using autoDiscovery care must be taken to ensure candidate device VMs are always added as **Ping Only**.

VPD (Vital Product Data)

VPD is information about a device that is stored on a computer's hard disk (or the device itself) that allows the device to be administered at a system or network level. Typical VPD information includes a product model number, a unique serial number, product release level, maintenance level, and other information specific to the device type. Vital product data can also include user-defined information, such as the building and department location of the device. The collection and use of vital product data allows the status of a network or computer system to be understood and service provided more quickly.

VPI (Virtual Path Identifier)

VPI identifies a virtual path leg on an ATM interface.

VRF (Virtual Routing and Forwarding)

VRF allows multiple instances of a routing table to co-exist within the same router at the same time. Because the routing instances are independent, the same or overlapping IP addresses can be used without conflicting with each other.

VTP (VLAN Trunk Protocol) Domain

A VTP domain consists of one or more connected switches that share the same VTP domain name. A switch can be configured to be in one and only one VTP domain. The vtpDomainTool generates a view that groups devices and VLANS by this VTP domain name.

Wireless Controller (WC)

A network attached device that coordinates traffic to and from Lightweight Wireless Access Points (LAPs). It provides centralized control over the configuration and dynamic behavior of potentially many LAPs.

Index

A

Access Points [42](#)
 applicationContext.xml [28](#)
 applicationMonitor
 log files [55](#)
 reachability [58](#)
 traceroute [63](#)
 AR System [42](#)
 ARs [42](#)
 atrium_applicationContext*_site_specific.xml [28](#),
[29](#)
 Atrium.cfg [38](#)
 AtriumExport
 creating [14](#)
 atriumExporter [14](#), [21](#), [29](#)
 command line running [22](#)
 create database [23](#)
 failure to connect [32](#)
 full export [23](#)
 log messages [23](#), [32](#)
 running [15](#)
 scheduling [11](#), [22](#)
 uninstalling [34](#)
 atriumExporter.log [23](#), [32](#), [33](#), [38](#)

B

BMC Atrium CMDB
 import dataset [12](#)
 install integration [10](#)
 integration troubleshooting [32](#)
 launch Entuity [27](#)
 supported version [8](#)
 BMC Atrium Extension Loader [10](#)
 BMC Remedy Action Request System (AR System) [42](#)
 BMC.ASSET [10](#), [25](#)

C

CDP

trunk port discovery [44](#)
 configuring Entuity [13](#), [14](#)

D

Data Export [7](#)
 AtriumExport
 connection [12](#)
 create [23](#)
 creating [14](#)
 overview [17](#)
 configuration files [35](#)
 dataset definitions [17](#), [18](#)
 export job [19](#)
 testing [15](#)
 Device Management Level [55](#)
 Device Support Datasets [47](#), [55](#)
 Device Types [48](#)
 device support datasets [47](#)
 Devices
 dataset definitions [17](#)
 IP Address [17](#)
 locating [17](#)
 DMK [46](#)
 DsKernelStatic [61](#)

E

Entuity
 server connection [12](#)
 Entuity Integration for BMC Atrium CMDB
 configuration files [35](#)
 installing [10](#)
 overview [7](#)
 uninstall [34](#)
 Entuity Remedy AR System [50](#)
 entuity_home [49](#)
 ENTUITY.IMPORT.TOPO [10](#), [21](#), [25](#)
 exporting to [15](#)
 Extensions
 BMC Atrium Extension Loader [10](#)

F

F5 Labs Big IP 6400 Load Balancer [54](#)

G

Generically Managed Devices [64](#), [66](#)

I

Identity Attributes
missing [33](#)

IP Addresses
devices [17](#)

K

Key Metrics
gauge [53](#)

L

Layer 2
uplink detection [64](#)

Layer 3
core ports [46](#)
IP Links [53](#)
uplink detection [64](#)

Link Layer Discovery Protocol [54](#)

Linux Red Hat 6
required packages [8](#)

Load Balancer
device support [54](#)

M

Multi-Server Environments [16](#)

N

Not Classified Devices [64](#)

P

Ports
dataset definitions [18](#)

Production Dataset
see *BMC Asset*

Professional Services [7](#), [8](#), [10](#), [17](#), [28](#)

provost
atriumExporter [11](#), [22](#)

provost_atrium_exporter.conf [34](#)
atriumExporter job [11](#), [12](#), [22](#)
provost_site_specific.conf [34](#)
Atrium [11](#), [12](#), [22](#)

R

Reconciliation Rules [7](#), [25](#)

Remedy Help Desk [58](#)

Rollup
trend data [46](#)

S

Service Desk application [58](#)

SSL [60](#)

StormWorks [61](#)
object identifier [18](#)

sw_data_export_def_atrium_override.cfg [28](#)

sw_data_export_def_atrium.cfg [35](#), [36](#)

sw_data_export_def_site_specific.cfg [28](#)

System Capabilities [62](#)

T

traceroute [63](#)

TraceRoute from Client [63](#)

TraceRoute from Server [63](#)

Trunk Ports
CDP discovery [44](#)

Trusted Dataset
configuration [12](#)

U

Uncertified Device [48](#)

Unclassified Device Types [48](#)

V

Vendor Files [66](#)

Virtual Machines
hypervisor [52](#)

Entuity

W

Wireless Access Points [42](#)