Quick Note 017

MIB file creation for use with SNMP clients

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1   INTRODUCTION

This guide details the steps involved in generating a .MIB file for use with an SNMP client.

This guide has been written for technically competent personnel who are familiar with the use for DIGI hardware and understand the use of SNMP.

Whilst this guide is carried out using the web interface only it is perfectly feasible to carry out each stage at the command line, these commands will be highlighted at the relevant places.

2   VERSION

Version Number	Status
1.0	Published
1.1	Updated and rebranded
1.2	Updated for new web UI

3   SUPPORTED MIBS

As well as the Device Generated MIB, described in this quick note, DIGI Transport devices also support the Sarian-Monitor MIB and a number of standard MIBs.   A list of supported standard MIBs is provided below. The Sarian Monitor MIB has a restricted set of parameters that you can poll any DIGI Transport device with to retrieve statistics relating to WWAN, Config, PPP and System parameters.

The DIGI Transport range of routers supports a number of standard MIBs as well as DIGI Transport MIBs, described above, these MIBs are listed below:

The following standard MIBs are supported:

> SNMP MIB (RFC3418)
>
> Interfaces MIB (RFC2233)*
>
> IP MIB (RFC2011)
>
> IP Forwarding Table MIB (RFC2096)
>
> TCP MIB (RFC2012)
>
> UDP MIB (RFC2013)
>
> VRRP MIB (RFC2787)
>
> SNMP MPD MIB (RFC3412)
>
> SNMP USM MIB (RFC3414)**

* The following groups/tables in RFC2233 are not supported:

> ifXTable, ifStackTable, ifRcvAddressTable

** The following groups/tables in RFC3414 are not supported:

> usmUserTable

DIGI supported MIBs:

> Device Generated MIB
>
> Sarian-Monitor MIB

Please note: The Device Generated MIB described in this Quick Note is a MIB that is specific to the serial number, firmware release, firmware build and model number of the unit it was generated from.   If the firmware is updated a new MIB file will need to be generated. The same MIB file generated on one router, cannot be used on another router, even if the hardware is identical.

4 CONFIGURATION

4.1 Setting up Router Specific ID information

When polling the router, it is possible to have the SNMP application be able to identify the device by a unique name and provide location and contact information.

Navigate to **Configuration > System > Device Identity** and setup the details, but enter information that relates to you:
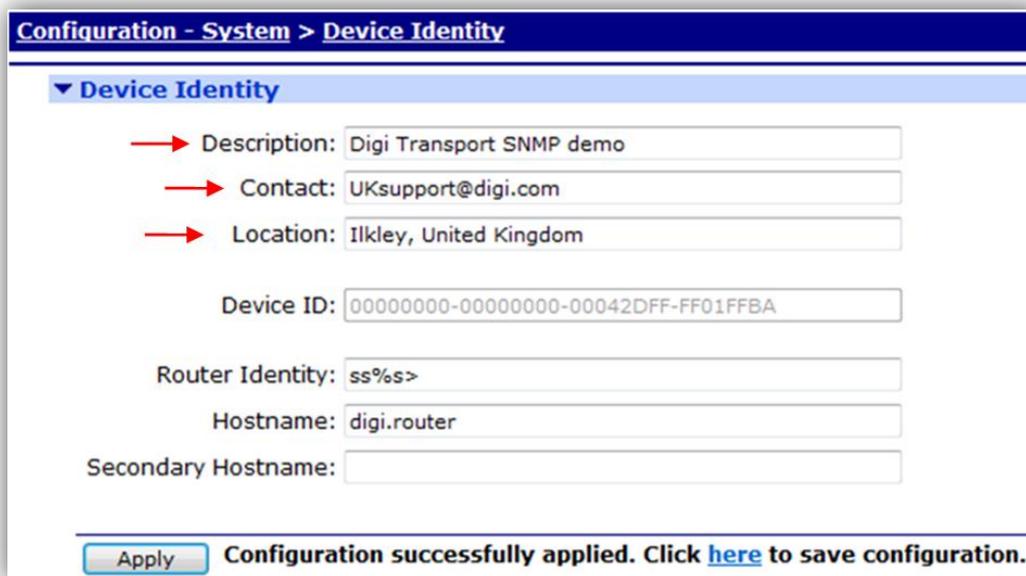

Figure 1: Optional System Information Configuration

Next click 'Apply' at the bottom of the page, and then save the new configuration to flash.
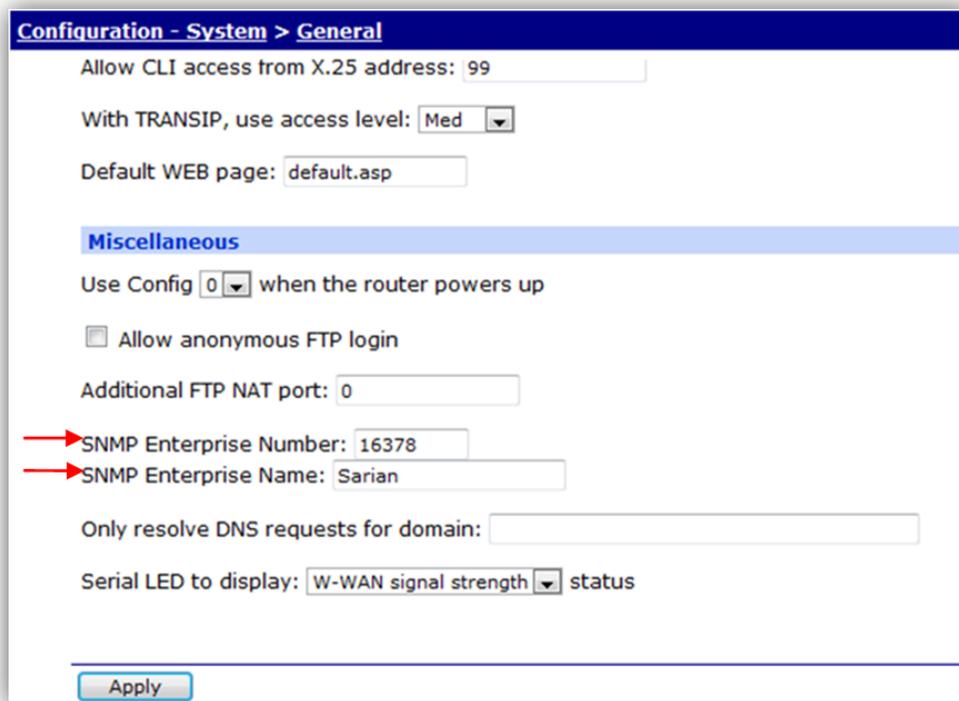
If configuring this option via a terminal session the commands used are listed below:

```
snmp 0 name < Name to identify your router.>
snmp 0 contact <Name of contact>
snmp 0 location <Location of device>
```

Parameter	Setting	Description
Name:	DIGI Transport Router SNMP Demo	Name to identify the router.
Contact:	UKSupport@digi.com	Name of contact.
Location:	Ilkley, United Kingdom	Location of device.

4.2 Setting the SNMP enterprise values.

The first compulsory step in this process is to define the SNMP Enterprise number and name. Navigate to **Configuration > System > General** and complete the relevant fields (highlighted below):

Figure 2: Enterprise number and name entry

Next click 'OK' at the bottom of the page, and then save the new configuration to flash.

If configuring this option via a terminal session the commands used are listed below:

```
cmd 0 ent_nb <enterprise #>
cmd 0 ent_name <enterpriseName>
config 0 save
```

Parameter	Setting	Description
SNMP enterprise number	16378	SNMP enterprise number
SNMP enterprise name	Sarian	SNMP enterprise name

Where <enterprise #> is the SNMP enterprise number and <enterpriseName> is the SNMP enterprise name specific to the installation.

Please note: If the default enterprise number and name shown above is changed <u>and</u> it is intended to use the Sarian-Monitor MIB, the values in the Sarian-Monitor MIB file will also need changing to the details specific to the installation:

```
sarian                  OBJECT IDENTIFIER ::= { enterprises 16378 }
sarian-monitor          OBJECT IDENTIFIER ::= { sarian 10000 }
```

For example if using enterprise number 23134 and enterprise name digitransport change the above to:

```
digitransport            OBJECT IDENTIFIER ::= { enterprises 23134 }
sarian-monitor          OBJECT IDENTIFIER ::= { digitransport 10000 }
```

Then save the file and reload into the SNMP management system.

Please Note: If the enterprise number is changed, the Digi Transport will need to be rebooted for the new value to take effect.

Please Note: Whenever the Enterprise name and Number are changed, these must be identical and consistent across all MIBs generated or loaded into the management system. If the values in either of the DIGI Transport MIBs correspond with other MIB values in the organisation, the responses received may not be correct when polling through the devices via the SNMP management system. Using the defaults above should not lead to any such conflicts.

4.3 Collecting the MIB data from the DIGI Transport

The next step is to get the DIGI Transport to output the MIB data. Navigate to **Administration - Execute a command** page type 'MIBprint' in the text box. Then click 'Execute'.
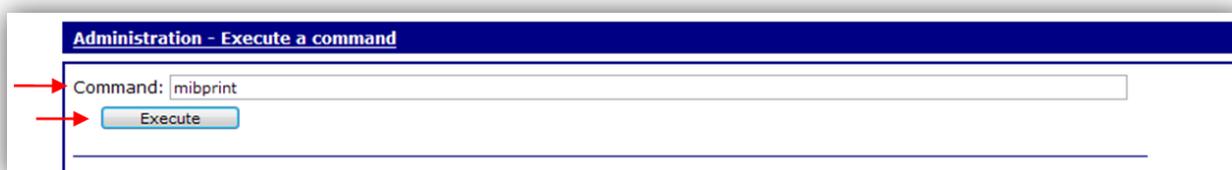

Figure 3: Mibprint example

If connected to a terminal session then the same command can simply be issued. At the command prompt (listed below):

```
mibprint
```

An example of the output received from the web interface when the command has been input is listed below.
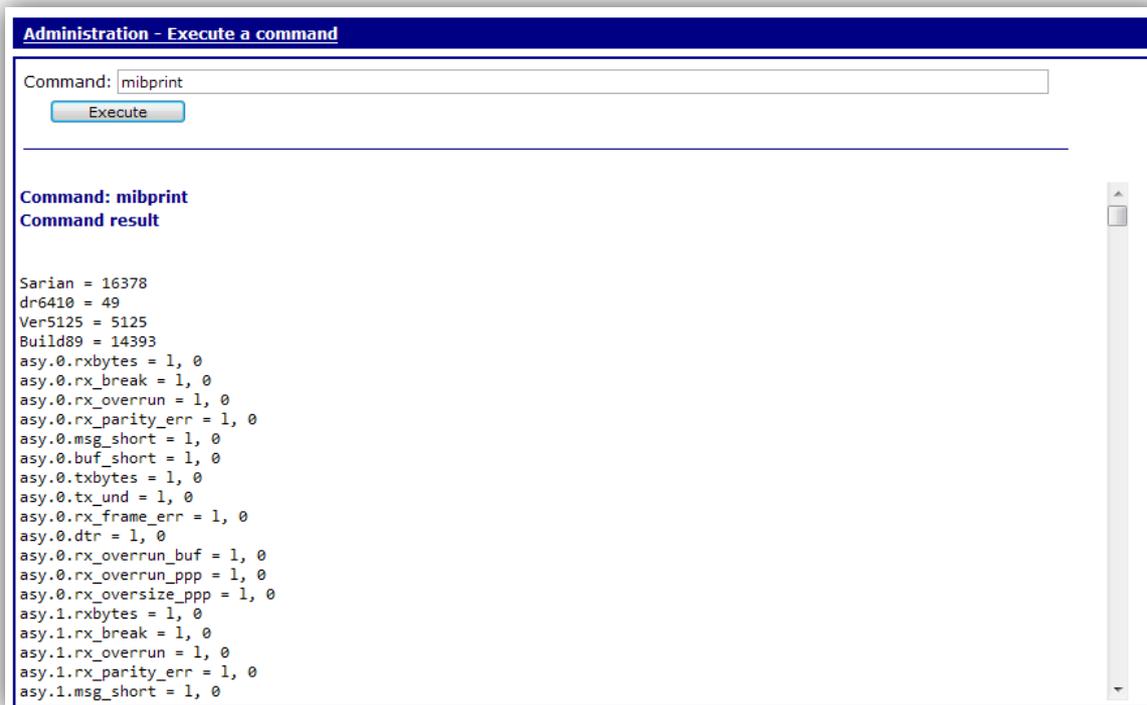

Figure 4: Mibprint output

There is a large output, this should then be copied into a text file, and saved into a folder for use in the next step.

Please note: If using Firefox web browser this is done slightly differently. Right click on the frame containing the output select **This frame → View Frame Source** (as shown below), then copy and paste from the window that is opened.

When pasting the output into a text file, make sure that the output retains its formatting with carriage returns <CR>. If the output is pasted and has wrapping enabled or is all on one line, the rest of this procedure will fail.
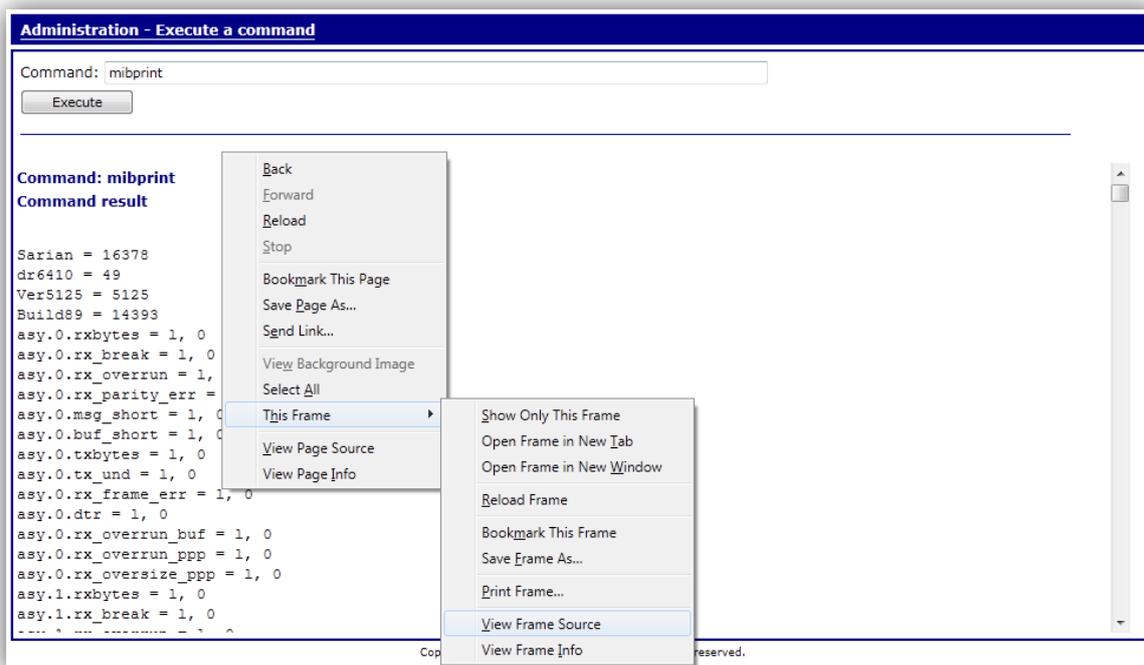
Figure 5: How to save the output

4.4 Generating the MIB file

In order to generate the MIB file from the text file, download the correct MIB.exe file from the DIGI website. This can be found at:

http://transport.digi.com/downloads/mibexe

Please note: There are two versions of the MIB.exe file, MIB1exe.zip and MIB2.exe.zip.

MIB1exe.zip should be used for firmware versions up to 4832

MIB2exe.zip should be used for firmware releases after 4832

There is included in each .zip file a copy of the Sarian-Monitor MIB file that should work for most DIGI Transport devices.

When the zip is downloaded, extract it to the same folder where the text file is saved. Open the command prompt and browse to the folder containing the MIB2exe.exe file and the previously created text file. Use the MIB2exe.exe file to generate the .MIB file from the text file. The command is listed below:

```
MIB2exe.exe <text file name>.txt <new MIB file name>.MIB
```

Where <text file name> is the name of the text file and <new MIB file> is the name of the .MIB file being created. In the example below both values are WR41. An example of the typical output for this can be seen below.
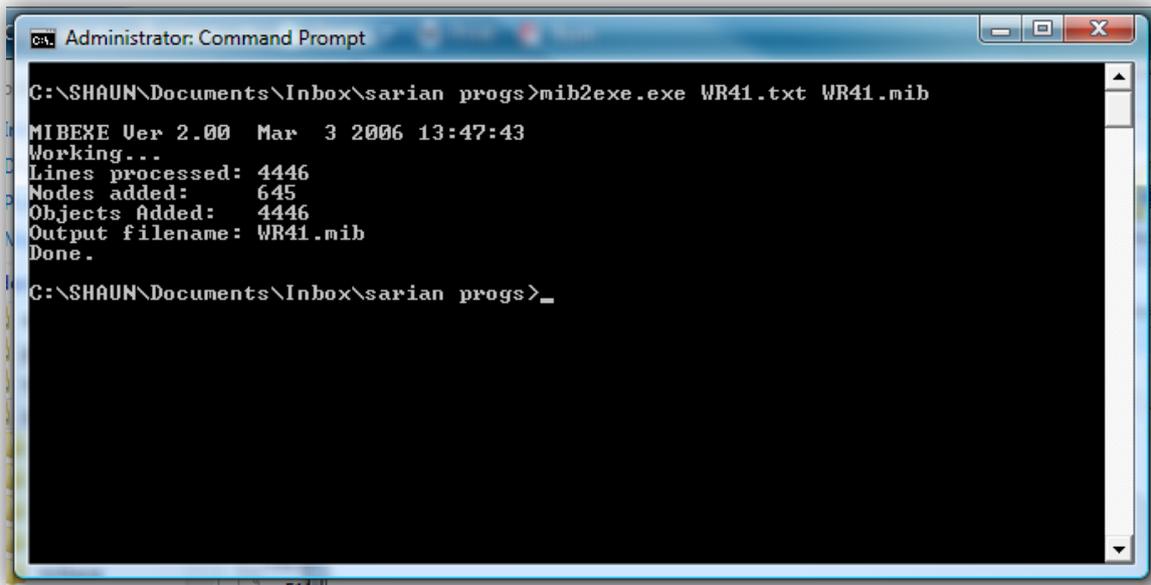
Figure 6: Compile the MIB

This will have generated a .MIB file in the folder in which the MIB2exe.exe and the initial .txt file was stored. This can then be used with an SNMP client.

Please note: The same device with a different firmware revision and/or different features enabled will need a different MIB file creating; this is due to additional features that may be available on different unit and the unique values attributed to firmware version, firmware build and model number that forms part of the initial MIB tree.

5   THE BASICS OF USING MIB FILES WITH SNMP

In order to monitor the device with an SNMP client SNMP users need to be configured. Navigate to **Configure → SNMP → Users → User #**. The below example uses the community name: Public.

Figure 7: Setup the community string

Once this has been set, use a MIB client to poll the DIGI Transport device for required information.

Below is a screenshot of the output of a get for the enterprise name that has been setup for this device.

- In the left hand pane, the tree that the MIB tool has built from the MIB that was generated above.

- In the middle pane, the results of starting the MIB tool and confirming the MIBs that have loaded successfully.

- A query for oid .1.3.6.1.4.1.16378.59.5081.23127.32.1.11.0. is performed.

- The result returned is the value set earlier to 'Sarian'.

- A TeraTerm serial connection to the router running the command 'cmd 0 ent_name' returns the same value 'Sarian' can be seen in the diagram also.

- In the right hand pane, the text of the MIB file. This shows that 'buildzw' is the parent node for 'cmd' and this is the parent node for 'cmd-0' which is where the value 'cmd-0-ent_name' resides.
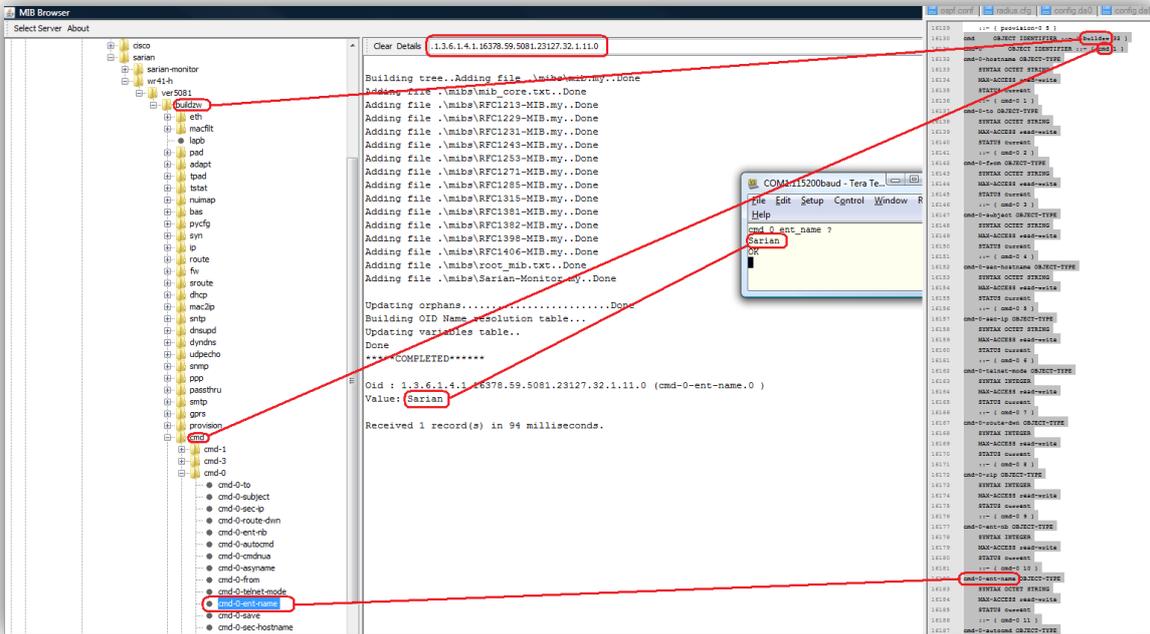

Figure 8: Example polling a device
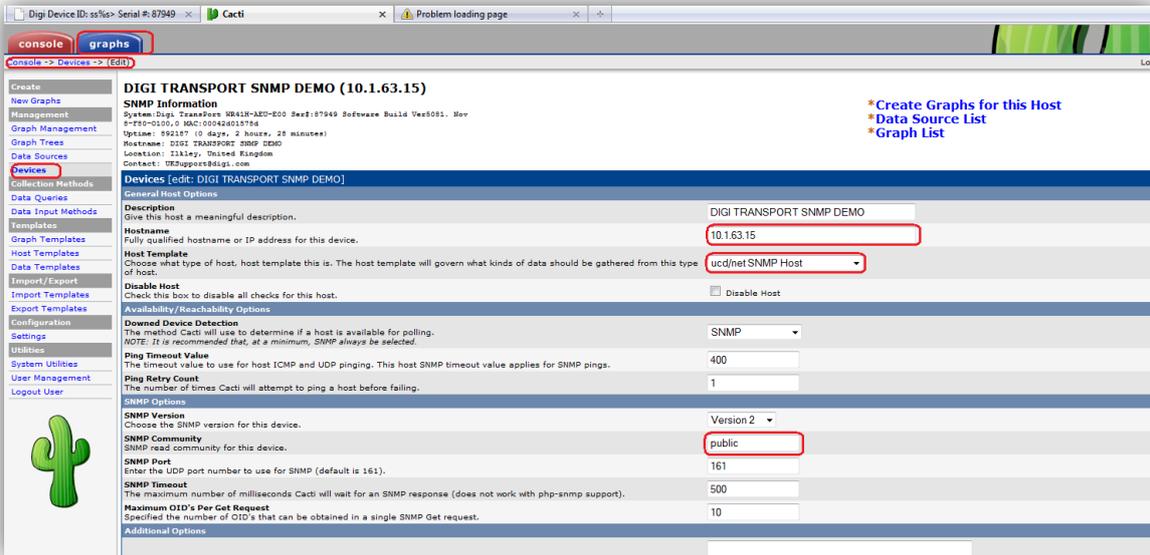
Below is the output seen when using cacti:

Figure 9: Cacti view of a polled device

MIB FILE CREATION FOR USE WITH **SNMP** CLIENTS

Below is the text output from the above screen shot showing the details configured that have been pulled back on the SNMP queries Cacti has done when the unit is added and the device configuration page is accessed (as above):

DIGI TRANSPORT SNMP DEMO (10.1.63.15) SNMP Information
System: Digi TransPort WR41H-AEU-E00 Ser#:87949 Software Build Ver5081. Nov
8-F80-O100,0 MAC:00042d01578d
Uptime: 892187 (0 days, 2 hours, 28 minutes)
Hostname: DIGI TRANSPORT SNMP DEMO
Location: Ilkley, United Kingdom
Contact: UKSupport@digi.com