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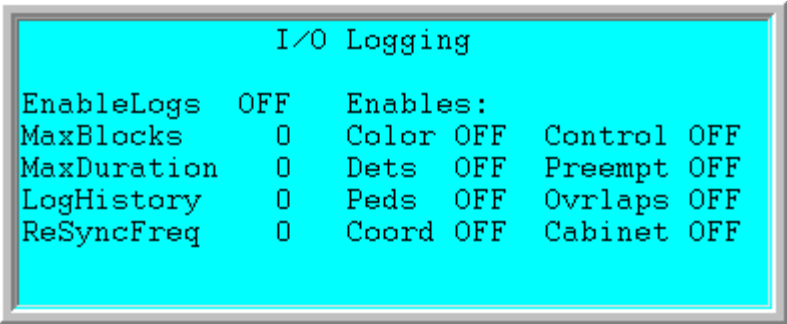
TecNote 1109 - Traffic Signal Performance Measures for the ATC

Automated Traffic Signal Performance Measures are a series of aids that display the high-resolution data from traffic signal controllers. They are a valuable asset management tool, aiding technicians and managers in the control of both traffic signal hardware and traffic signal timing and coordination. They allow analysis of data collected 24 hours a day, 7 days a week, improving the accuracy, flexibility, and performance of signal equipment and the system as a whole. Trafficware provides the Purdue logging facilities that will gather this data and report it to the ATMS.now central system.

Note: This feature is only available utilizing the ATC platform due to RAM storage requirements for this high resolution data.

Version 76.x Logging

The Traffic Signal Performance Logging screen is accessed via MM-1-9-5. The screen is shown below:



Programming parameters are shown below.

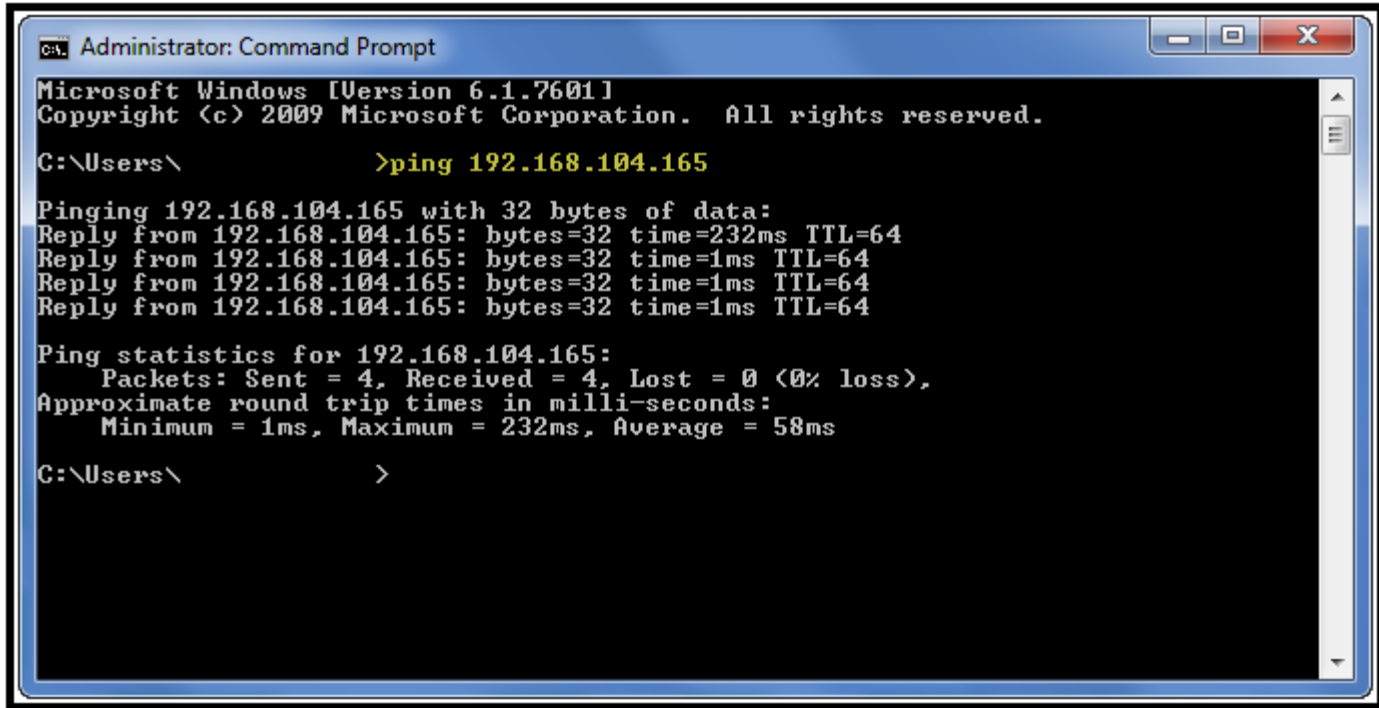
Parameter	Definition	Default Value
EnableLogs	Turns logging on/off	N/A
MaxBlocks	The maximum log file size measured in 100KB "blocks"	0 defaults to 512K Bytes
MaxDuration	The number of minutes before the log file rolls to the next period (synchronized to midnight)	0 defaults to 60 minutes
LogHistory	The number of hours to store log files	0 defaults to 24 hours
ResyncFreq	The number of hours between re-syncing enumeration data	0 defaults to 24 hours
Enables	Enables/disable specific enumeration sets: Color, Control, Detectors, Preemption, Pedestrians, Overlaps, Coordination and Cabinet.	ALL off defaults to ALL on

The spec first developed by Purdue established the listed defaults as the standard requirements. It seemed reasonable that some agencies would want to vary these rates or file sizes, so we added parameters to allow such changes. However, to simplify setup in cases in which the agency wants the specified defaults, we allowed the user to leave ALL parameters at either "0" or "OFF" to cause the system to default to the standard settings as listed above. This means that in order to enable hi-res logging at defined in the Purdue standards, the user only needs to change the "EnableLogs" parameter to "ON".

Manually Retrieving High Resolution Data File via FTP

The most basic way to retrieve this data is via FTP transfer. In fact it is the primary way to retrieve data if you do not have the ATMS.now central system. The Purdue standard requires that the user be able to retrieve a proprietary data format file from the controller via FTP. The standard also requires a file naming convention that indicates the collection date and times of the file.

The first step in retrieving the data file is to insure an Ethernet connection is available to the controller. A pinging of the controller is a good test.. Below is a screen shot of the ping command from the command prompt.

A screenshot of a Windows Command Prompt window titled "Administrator: Command Prompt". The window shows the output of a ping command. The text is as follows:

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\ >ping 192.168.104.165

Pinging 192.168.104.165 with 32 bytes of data:
Reply from 192.168.104.165: bytes=32 time=232ms TTL=64
Reply from 192.168.104.165: bytes=32 time=1ms TTL=64
Reply from 192.168.104.165: bytes=32 time=1ms TTL=64
Reply from 192.168.104.165: bytes=32 time=1ms TTL=64

Ping statistics for 192.168.104.165:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 232ms, Average = 58ms

C:\Users\ >
```

Once you have a good connection, connect to the controllers operating system via the File Transfer Protocol. The ATC uses the Linux operating system.

At the command prompt type FTP followed by the IP address of the local controller that you are logging the High Resolution Data such as FTP 192.168.104.165

Next login into FTP access by entering a username and password that can be given to you by your Trafficware representative.. The directory you start the FTP client from, will be the default directory that the files are saved into.

```

Administrator: Command Prompt - ftp 192.168.104.165

C:\Users\          >cd \High_Res_FTP

C:\High_Res_FTP>ftp 192.168.104.165
Connected to 192.168.104.165.
220 (vsFTPd 2.3.2)
User (192.168.104.165:(none)): NTLM
331 Please specify the password.
Password: XXXXXXXX
230 Login successful.
ftp>
  
```

Once you have the FTP client established on your controller, you will need to change to the location that stores the log file. In linux type: `/f0/logs`. You can confirm you are in the corrector directory by listing the files.

```

Administrator: Command Prompt - ftp 192.168.120.77

ftp>
ftp>
ftp> cd /f0/logs
250 Directory successfully changed.
ftp> dir
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
-rw-r--r-- 1 0 0 206 Jul 02 03:00 TRAF_0000_2014_07_02_0355.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:05 TRAF_0000_2014_07_02_0400.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:10 TRAF_0000_2014_07_02_0405.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:15 TRAF_0000_2014_07_02_0410.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:20 TRAF_0000_2014_07_02_0415.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:25 TRAF_0000_2014_07_02_0420.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:30 TRAF_0000_2014_07_02_0425.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:35 TRAF_0000_2014_07_02_0430.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:40 TRAF_0000_2014_07_02_0435.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:45 TRAF_0000_2014_07_02_0440.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:50 TRAF_0000_2014_07_02_0445.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:55 TRAF_0000_2014_07_02_0450.dat
-rw-r--r-- 1 0 0 206 Jul 02 04:00 TRAF_0000_2014_07_02_0455.dat
226 Directory send OK.
ftp: 1131 bytes received in 0.02Seconds 70.69Kbytes/sec.
ftp>
  
```

Use the GET or MGET command to retrieve the file you are interested in. You can get all the files using a wildcard as well. Both are shown below. The files will be transferred to the working directory on your PC. DO NOT delete the files if you are also collecting the data in the ATMS. The ATMS will delete the files. This implies that you do not want two systems simultaneously going after the data. In this example, the log max duration time was set to 5 minutes, thus creating new logs every 5 minutes.

```

Administrator: Command Prompt - ftp 192.168.120.77

200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
-rw-r--r-- 1 0 0 228 Jul 02 03:00 TRAF_0000_2014_07_02_0355.dat
-rw-r--r-- 1 0 0 230 Jul 02 03:05 TRAF_0000_2014_07_02_0400.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:10 TRAF_0000_2014_07_02_0405.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:15 TRAF_0000_2014_07_02_0410.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:20 TRAF_0000_2014_07_02_0415.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:25 TRAF_0000_2014_07_02_0420.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:30 TRAF_0000_2014_07_02_0425.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:35 TRAF_0000_2014_07_02_0430.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:40 TRAF_0000_2014_07_02_0435.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:45 TRAF_0000_2014_07_02_0440.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:50 TRAF_0000_2014_07_02_0445.dat
-rw-r--r-- 1 0 0 206 Jul 02 03:55 TRAF_0000_2014_07_02_0450.dat
-rw-r--r-- 1 0 0 206 Jul 02 04:00 TRAF_0000_2014_07_02_0455.dat
226 Directory send OK.
ftp: 1131 bytes received in 0.02Seconds 70.69Kbytes/sec.
ftp> get TRAF_0000_2014_07_02_0355.dat
200 PORT command successful. Consider using PASV.
150 Opening BINARY mode data connection for TRAF_0000_2014_07_02_0355.dat (228 bytes).
226 Transfer complete.
ftp: 228 bytes received in 0.00Seconds 228000.00Kbytes/sec.
ftp>
  
```

Manually Concernting a High Resolution Data File to a CSV File

Put the files to be decoded into the same directory as the decoder executable. The default name for the decoder executable is "*PurdueDecoder.exe*". This may be renamed without affecting operation. Trafficware can also provide a batch file named "*GO.bat*" where you can drag the ftp **.dat** file into it to create the **.csv** file.

```

Administrator: Command Prompt

C:\temp>dir *.dat
Volume in drive C is OS
Volume Serial Number is 9095-8B1F

Directory of C:\temp

07/02/2014  03:05 PM                228 TRAF_0000_2014_07_02_0355.dat
               1 File(s)                228 bytes
               0 Dir(s)  531,154,276,352 bytes free

C:\temp>dir *.exe
Volume in drive C is OS
Volume Serial Number is 9095-8B1F

Directory of C:\temp

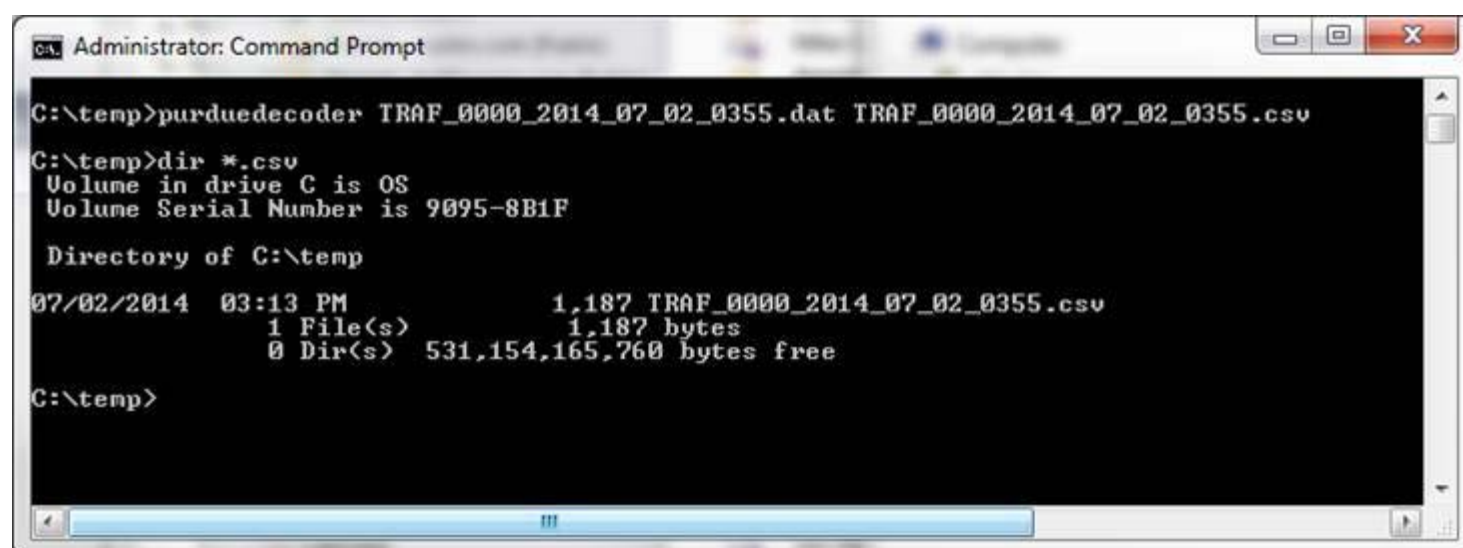
06/09/2014  04:03 PM      1,120,768 PurdueDecoder.exe
               1 File(s)      1,120,768 bytes
               0 Dir(s)  531,154,276,352 bytes free

C:\temp>_
  
```

Running the decoder will indicate the proper usage for the version of decoder you are using.

The current version (and only available version as of this document) has three parameters: *Input file*, *Output file*, and the optional *Byte Swap Setting*. The *Byte Swap Setting* parameter does **NOT** need to be used.

Run the executable with the correct parameters to create the CSV file.



```

Administrator: Command Prompt

C:\temp>purduedecoder TRAF_0000_2014_07_02_0355.dat TRAF_0000_2014_07_02_0355.csv

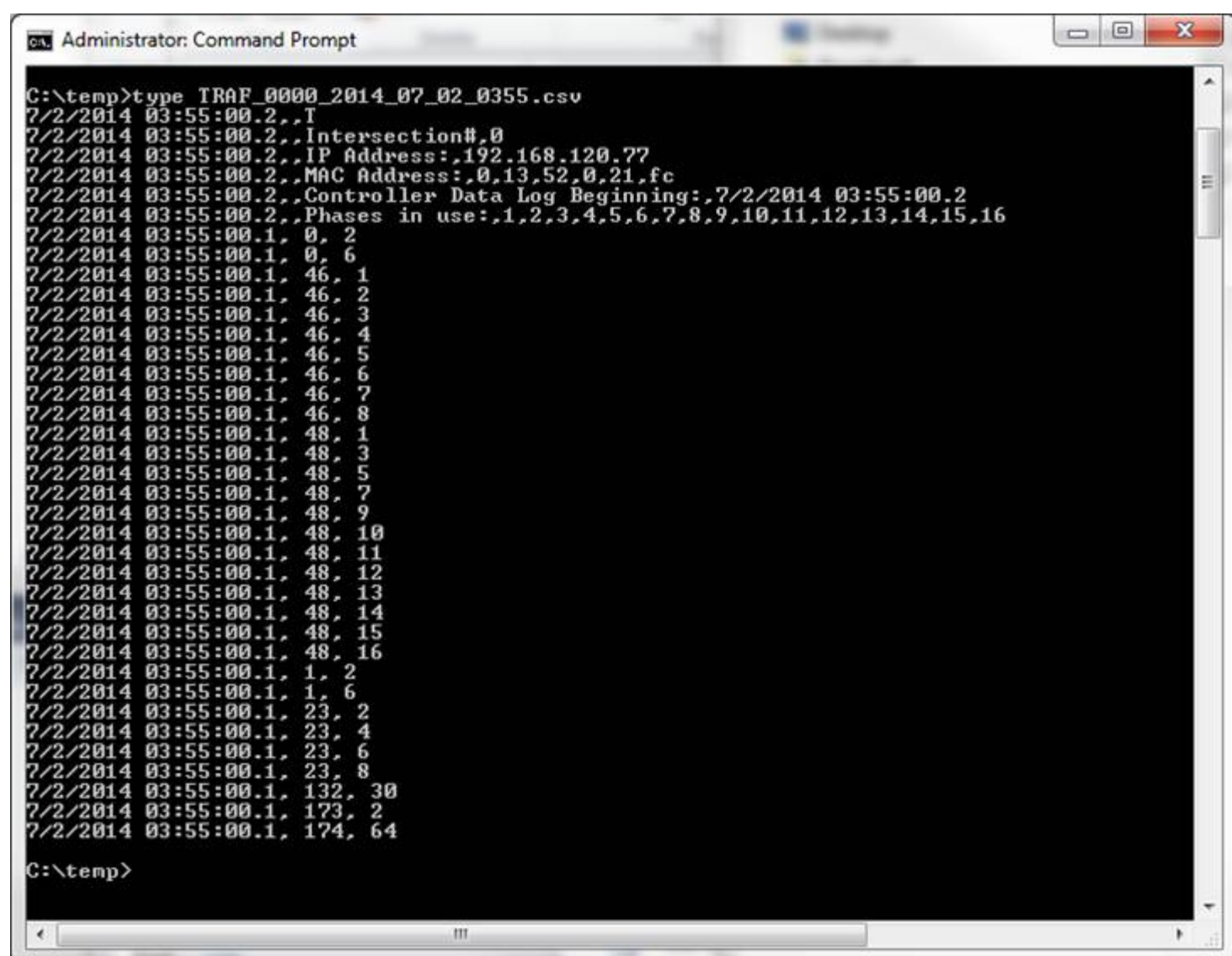
C:\temp>dir *.csv
Volume in drive C is OS
Volume Serial Number is 9095-8B1F

Directory of C:\temp

07/02/2014  03:13 PM                1,187 TRAF_0000_2014_07_02_0355.csv
               1 File(s)                1,187 bytes
               0 Dir(s)  531,154,165,760 bytes free

C:\temp>
  
```

The CSV file will now contain the time stamped enumeration events as shown below.



```

Administrator: Command Prompt

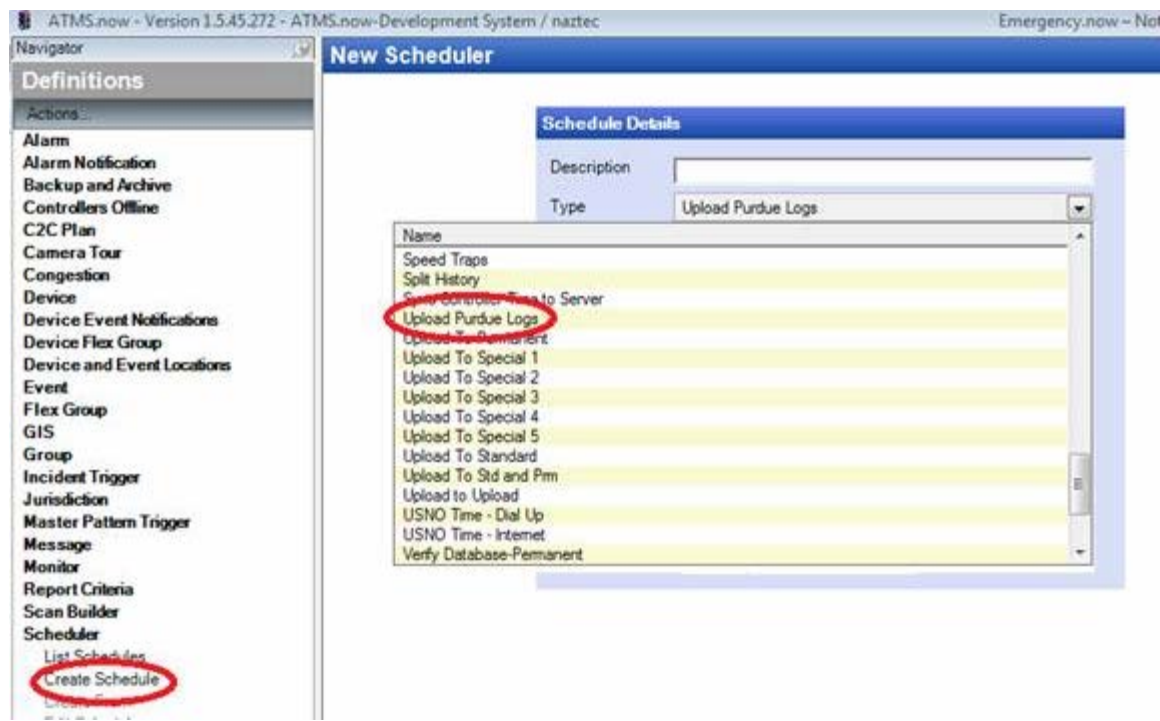
C:\temp>type TRAF_0000_2014_07_02_0355.csv
7/2/2014 03:55:00.2,,T
7/2/2014 03:55:00.2,,Intersection#,0
7/2/2014 03:55:00.2,,IP Address:,192.168.120.77
7/2/2014 03:55:00.2,,MAC Address:,0,13,52,0,21,fc
7/2/2014 03:55:00.2,,Controller Data Log Beginning:,7/2/2014 03:55:00.2
7/2/2014 03:55:00.2,,Phases in use:,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16
7/2/2014 03:55:00.1, 0, 2
7/2/2014 03:55:00.1, 0, 6
7/2/2014 03:55:00.1, 46, 1
7/2/2014 03:55:00.1, 46, 2
7/2/2014 03:55:00.1, 46, 3
7/2/2014 03:55:00.1, 46, 4
7/2/2014 03:55:00.1, 46, 5
7/2/2014 03:55:00.1, 46, 6
7/2/2014 03:55:00.1, 46, 7
7/2/2014 03:55:00.1, 46, 8
7/2/2014 03:55:00.1, 48, 1
7/2/2014 03:55:00.1, 48, 3
7/2/2014 03:55:00.1, 48, 5
7/2/2014 03:55:00.1, 48, 7
7/2/2014 03:55:00.1, 48, 9
7/2/2014 03:55:00.1, 48, 10
7/2/2014 03:55:00.1, 48, 11
7/2/2014 03:55:00.1, 48, 12
7/2/2014 03:55:00.1, 48, 13
7/2/2014 03:55:00.1, 48, 14
7/2/2014 03:55:00.1, 48, 15
7/2/2014 03:55:00.1, 48, 16
7/2/2014 03:55:00.1, 1, 2
7/2/2014 03:55:00.1, 1, 6
7/2/2014 03:55:00.1, 23, 2
7/2/2014 03:55:00.1, 23, 4
7/2/2014 03:55:00.1, 23, 6
7/2/2014 03:55:00.1, 23, 8
7/2/2014 03:55:00.1, 132, 30
7/2/2014 03:55:00.1, 173, 2
7/2/2014 03:55:00.1, 174, 64

C:\temp>
  
```


Setting up High Resolution Data Retrieval in ATMS.now

This section assumes that the controller has been set up to record the data. Access the ATMS.now Client. You must create a new schedule to collect the High Resolution data.

- 1) Go to Definitions->Scheduler-> Create Schedule
- 2) Under the type drop down select the “Upload Purdue Logs” schedule as shown below



- 3) From the schedule details screen, select the controller that you want to collect the data from and setup the data retrieval interval based upon the frequency of High Resolution data updates programmed in the controller.

- 4) When the schedule is executed, ATMS.now will collect the hight resolution data from the controller.
- 5) The High Resolution Data records are inserted into the ATMS database under a table named “**Purdue_Logs**”.
- 6) The structure of the “**Purdue_Logs**” table is shown below.

dbo.PURDUE_LOGS	
Columns	
PID	(bigint, Null)
ID	(int, Null)
DATETIME	(datetime, Null)
ENU	(smallint, Null)
DATA	(nvarchar(100), Null)

Where:

PID	- Table Primary K=Key
ID	- Controller ID
DATETIME	- IS the date and time the record was generated on controller
ENU	- Is the enumeration for data type
DATA	- Data represents comma delaminated values for the record based upon enumeration.

7) Below is a table exemplifying the High Resolution data:

	PID	ID	DATE TIME	ENU	DATA
1	1	211	2014-05-30 01:50:11.000	7	1
2	2	211	2014-05-30 01:50:11.000	7	5
3	3	211	2014-05-30 01:50:11.000	8	1
4	4	211	2014-05-30 01:50:11.000	8	5
5	5	211	2014-05-30 01:50:07.000	9	1
6	6	211	2014-05-30 01:50:07.000	9	5
7	7	211	2014-05-30 01:50:07.000	10	1
8	8	211	2014-05-30 01:50:07.000	10	5
9	9	211	2014-05-30 01:50:08.000	1	2
10	10	211	2014-05-30 01:50:08.000	1	6
11	11	211	2014-05-30 01:50:08.000	11	1
12	12	211	2014-05-30 01:50:08.000	11	5
13	13	211	2014-05-30 01:50:33.000	7	2
14	14	211	2014-05-30 01:50:33.000	7	6
15	15	211	2014-05-30 01:50:33.000	8	2
16	16	211	2014-05-30 01:50:33.000	8	6
17	17	211	2014-05-30 01:50:37.000	9	2
18	18	211	2014-05-30 01:50:37.000	9	6
19	19	211	2014-05-30 01:50:37.000	10	2
20	20	211	2014-05-30 01:50:37.000	10	6

Summary

By properly setting up the logging of the high resolution data and accessing it via ATMS.now, your agency can monitor and tune signal timings.

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