Tech Note 8 How To Setup Data Logging

red lion®

Abstract:

How to Setup Data Logging in Red Lion devices using Firmware release 3.23/4.23.

Products:

Sixnet Series® RAM RTUs and IndustrialPro SN Routers

Use Case/ Problem Solved:

With the release of firmware 3.23/4.23, Red Lion introduced a new data logging feature on the RAM/SN cellular routers. This new feature will give the ability to log various data points to internal memory (all models) or via an SD Card (RAM 9000 only) that can be later retrieved using HTTP or FTP. This guide is a walk through on formatting the SD Card, data logging setup and data log retrieval. The SD Card can also be used for uploading packages and firmware to the device, keeping config.xml files and storage of stat files.

Required Software:

Microsoft Windows

Required Firmware:

Firmware release 3.23/4.23

Procedure:

Part 1: Formatting an SD Card (RAM 9000 only)

> **Note:** Skip to Part 2 for SN/RAM 6000 routers

In this section, we will be formatting a new SD Card for the purpose of data logging in the RAM 9000 Cellular routers. The RAM is capable of using a standard size SD Card with a maximum capacity of 32 GB. A microSD Card can also be used along with a SD Card adapter.

1. On the front of the device, remove the screw and SD Card cover to get access to the SD Card slot.
2. Insert the SD Card into the slot.
3. Log into the SN/RAM Web UI.
4. Navigate to *Services → SD Card Manager.*

> **Note**: If the SD Card Manager page is already loaded prior to inserting the SD Card, click the [Refresh] button under Browse Entire SD Card.

> **Note:** If the SD Card is not being recognized, try to format the SD Card by placing it a PC and formatting from the host OS such as Windows or MAC OS. If after formatting through a PC and the SD Card is still not being recognized by the SN/RAM device, please contact support.

5. When the SD Card is recognized and mounted, the card will need to be formatted with the RAM's directory structure. Click [Apply Directory Structure] to set up the SD Card.

> **Note:** This will completely erase the contents of the SD Card, be sure to remove any data prior to formatting.

6. A warning window will pop up as a reminder that the directory structure will be applied. Click OK to continue.
7. Once the process is complete, a new window will be available showing the new directory structure. There will be a total of 5 new directories:
   a. *configs* – this directory is used to store config.xml files.
   b. *datalog* – this directory is used to store the IO data logs.
   c. *firmware* – this directory is used to place firmware files for upgrading.
   d. *packages* – this directory is used to place zip packages and patches.
   e. *stats* – this directory is used for storing gatherstat files.

   Files can be downloaded from this page as well as deleting files from the SD Card. Click the appropriate button to perform the desired task.

Browse Entire SD Card

```
[-] sdcard
    [+] configs
    [+] datalog
    [+] firmware
    [+] packages
    [+] stats
```

8. When the SD Card needs to be removed, it is highly recommended to unmount the disk prior to removing from the RAM device. Removing the SD Card without first unmounting the disk could result in a corrupted file

system requiring a reformat of the disk. To unmount the SD Card, click the Safe Unmount button under Unmount SD Card at the top of the SD Card Manager page.

9. Now that the SD Card has been formatted with the correct directory structure, it is now ready for data logging.

Part 2: Setting up Data Logging (all models)

1. Log Setup

    a. Navigate to *Automation → Data Logger.*

    b. At the top of the Data Logger page, there are three buttons: [No Name] , Add and Remove The reason the green button displays **[No Name]** is because the log file has yet to be given a name. Click the cursor into the *Name* field. Type the desired name of the log file.

    c. Once the name is typed into the *Name* field, it will automatically fill in the name into the green button at the top of the page.

    Note: The *Name* field can only be alpha-numeric.

    d. From the *Enable* dropdown, choose whether to enable data logging. Default is *Yes*.

    e. In the *Toggle Enable from IODB* field, choose whether to use an IO register to determine when to start data logging. For example, if in the field, the register DI100 was entered, the RAM will only start to log data points if that register has gone high. Tag names may also be used in this field. If no register is entered, it will start logging immediately.
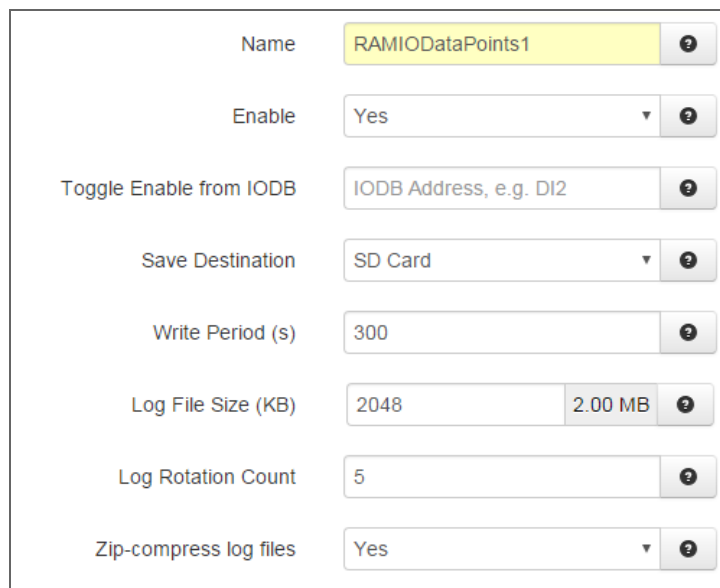
    f. In the *Save Destination* drop down, choose where the data logs should be saved: *SD Card* or *Internal*. If using a RAM/SN 6000 cellular router, data can only be saved to the internal memory.

    g. In the *Write Period (s)* field, enter the time in seconds how often the data should be written to the data log file. For example, if 60 seconds are entered into the field, data points will be written to the data log once every minute. Default is 300 seconds.

    h. In the *Log File Size (KB)* field, enter how large the data file should be before it creates a new file. The maximum a file can be is 10240 KB (or 10 MB) and the smallest is 1 KB. The recommended file size is 2048 KB.

    i. In the Log Rotation Count, choose how many logs will be kept before start rotating out. For example, if 3 is entered, once there are a total of three files that meet the size of the Log File Size entered in the previous step, the oldest file will be overwritten with new data.

    j. In the *Zip-compressed Log files* drop down, choose if the data log files should be compressed or not. This can be beneficial when using an SD Card that has less than a Gigabyte of memory. Default is *Yes.*
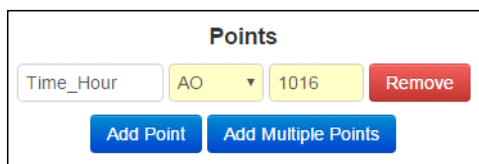
k. Once the data log is set up, we will need to set up which data points to log.

2. Data Points Setup

   a. The right side of the data logger page is where which data points to log can be chosen. There are two ways to enter data points: add a single point or add multiple points. Adding a single data point will only add one data point at a time where adding multiple points will make it much easier to add large blocks of data points at once.

   b. Data points can be entered by their tag name or by using the type and register location. Adding a data points using a tag name will autofill the rest of the fields. When the data point has been entered into its respective field, click **Add Point** and a new data point field will be added.

   c. To enter multiple data points at once, click **Add Multiple Points** .

   d. The *Select Tags* window will pop up.

e. On the left hand side is a window with all the available data points. Select the desired data point by scrolling through the list and clicking the tag or filter for certain data points by entering text into the Filter text box.

f. To review any data points from the *Selected* window, simply click the data point and it will be removed.

g. Once all the data points have been selected, click Select .

h. When all is set, click Apply .
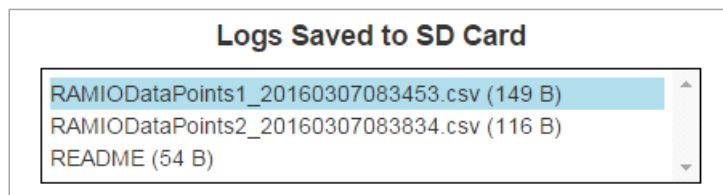
Part 3: Retrieving Data Logs

This section will cover how to download data logs from the RAM/SN cellular device. There are two ways to download data logs. This can be done using the RAM/SN web GUI or via FTP. Both methods will be explained below. Note: There are several places to download data logs from the RAM/SN Web UI, which will be discussed below

1. Download via Web UI - Automation Menu

    a. Log into the RAM/SN web GUI locally over USB or Ethernet or over the cellular link.

    b. Navigate to *Automation – Data Logger.*

    c. At the bottom of the page, click the Show Logs button.

    Logs Saved to SD Card

    RAMIODataPoints1_20160307083453.csv (149 B)
    RAMIODataPoints2_20160307083834.csv (116 B)
    README (54 B)

    d. In *the Logs Saved to SD Card* Window, click the desired log to be downloaded.

    e. Click the Download button at the bottom of the page.

    f. The CSV file will download to the default location on user's PC.

    g. The contents of any file can also be viewed from inside web UI by clicking View at the bottom of the page. The data log can be downloaded from this window as well by clicking Download entire file .

    ### RAMIODataPoints1_20160307083453.csv

Date	Time	Tagname1:Time_Hour	Tagname2:Time_Min	Tagname3:Time_Second
2016/03/07	08:34:55	8	34	54
2016/03/07	08:38:35	8	38	34
2016/03/07	08:43:35	8	43	35
2016/03/07	08:48:35	8	48	35

    Download entire file

    h. Click Remove to remove the data log file from the SD Card.

    i. To return to the configuration page, click Show Config

2. Download via Web UI - Services Menu

    a. Navigate to *Services → SD Card Manager.*

    b. Under the *Browse Entire SD Card* window, expand the contents of the folder "datalog".

Browse Entire SD Card

```
[-] sdcard
    [+] configs
    [-] datalog
        RAMIODataPoints1_20160307083453.csv
        RAMIODataPoints2_20160307083834.csv
        README
    [+] firmware
    [+] packages
    [+] stats
```
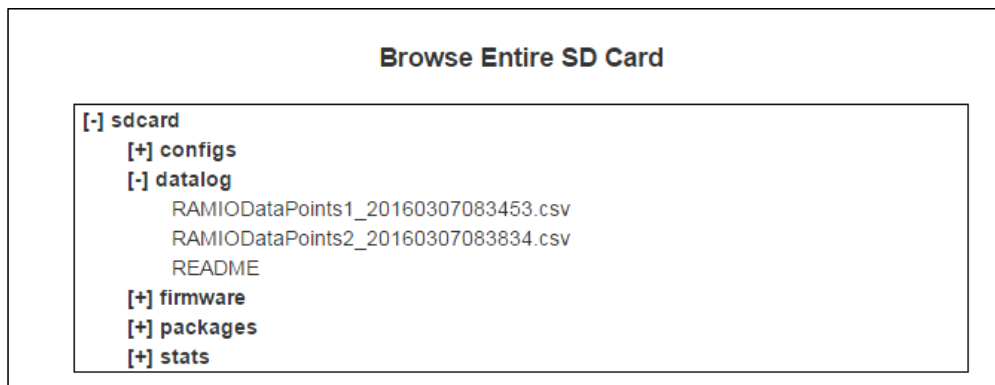
c. Click on the desired file to download. The Selected Files window will pop up displaying the file that will be downloaded to user's PC.

   Note: Only one file can be downloaded at a time.

d. Click *Download* to download to PC.

e. Files maybe deleted from this menu as well by clicking on the file and selecting Delete File(s).
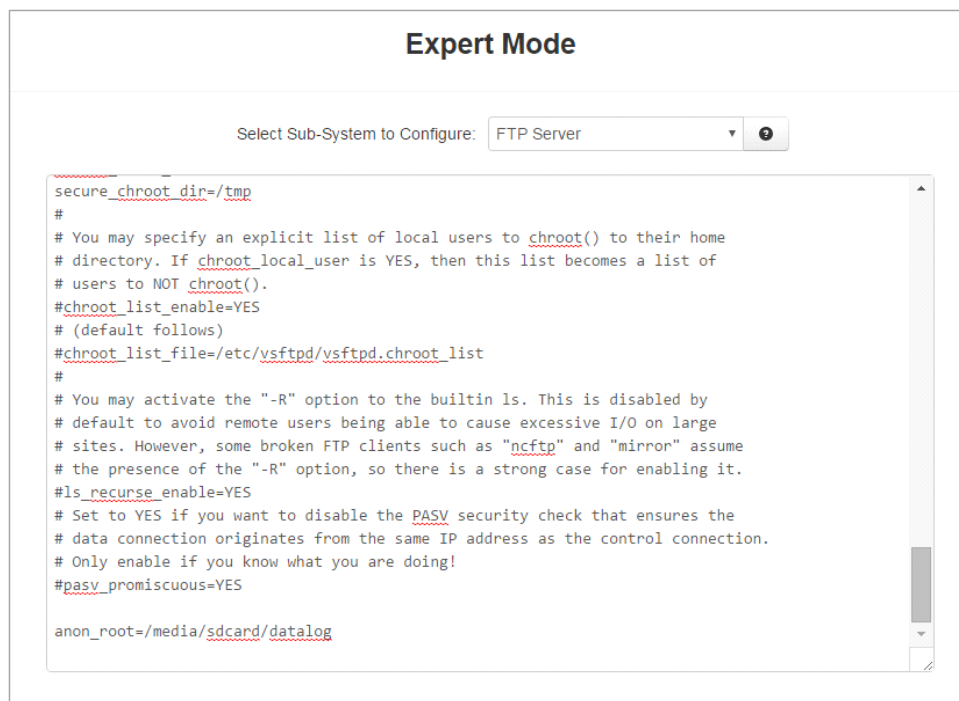
   Note: Multiple files can be deleted at once by clicking on each file.

3. Download via FTP

   a. Log into the RAM/SN web UI.

   b. Navigate to *Advanced → Expert Mode → Configure Sub-System.*

   c. In the *Select Sub-System to Configure* dropdown, choose FTP Server.

Expert Mode

Select Sub-System to Configure: FTP Server ▼ ❷

```
secure_chroot_dir=/tmp
#
# You may specify an explicit list of local users to chroot() to their home
# directory. If chroot_local_user is YES, then this list becomes a list of
# users to NOT chroot().
#chroot_list_enable=YES
# (default follows)
#chroot_list_file=/etc/vsftpd/vsftpd.chroot_list
#
# You may activate the "-R" option to the builtin ls. This is disabled by
# default to avoid remote users being able to cause excessive I/O on large
# sites. However, some broken FTP clients such as "ncftp" and "mirror" assume
# the presence of the "-R" option, so there is a strong case for enabling it.
#ls_recurse_enable=YES
# Set to YES if you want to disable the PASV security check that ensures the
# data connection originates from the same IP address as the control connection.
# Only enable if you know what you are doing!
#pasv_promiscuous=YES

anon_root=/media/sdcard/datalog
```

> **d.** For access to the correct directory, in the FTP Server Config, add the following path:
>
>> anon_root=<directory_of_your_datalog_files>
>> When using SD Card, the path is: /media/sdcard/datalog
>> When using internal memory, the path is: /datalog/
>>> For example, to access the files on the SD Card, at the bottom of the FTP Server config page, add:
>>> anon_root=/media/sdcard/datalog
>
> **e.** After making changes to FTP configuration, click *Save* followed by *Start* at the bottom of the page.
>
> **f.** Open the desired FTP client software, log into the RAM/SN FTP server, and download the desired file.

For more information contact Red Lion Support at 877-432-9908 or email support@redlion.net.