

# Settings Log Implementation

*Device setting activity*

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Due to the open access available in the local station/IRM system, it is useful to build a log of recent setting actions as another diagnostic tool for analyzing system behavior.

A data stream approach has been used to implement a local settings log. The advantage to this approach is the support already built in for data stream access. For some time, a data stream (#0) has been defined to hold recent network frame activity. A host, wishing to monitor recent network frame activity, uses a periodic request for the data stream contents, processing each new entry it receives. Multiple hosts can monitor the queue without interference—a feature of data streams.

The settings log, using data stream #1, is designed to work in a similar way. The network frame diagnostic page application called NETF was used as a start to build a page application for viewing the setting log data stream contents. The information recorded is the node# of the node issuing the setting log message from the network, the listype#, #bytes of setting data, the channel#, the data value, and the time-of-day the setting was successfully performed, organized as follows:

<i>Field</i>	<i>#bytes</i>
Host making setting	2
Type of setting action (listype#)	1
#bytes of setting data	1
Device being set—channel#, bit#, etc	2
Data value	2
Date/time of setting	8

## *Settings log for Acnet*

In the Acnet system, it is desired to have a log of setting activities directed to Acnet devices. In case of some problem with the accelerator, this Acnet settings log can be a useful diagnostic tool for helping to determine the cause of the problem. Vax console applications have been logging settings they originate via the library routine that provides Acnet setting support for user application programs. Other sources of setting activities have been included in this scheme over time. Since local stations support a small screen display program that includes many attributes of the usual parameter page, and since Linac technicians do use this tool in working with Linac hardware, it is important to also bring such applications into the Acnet settings log scheme, referred to as “settings accountability.”

The data stream described above houses entries that describe settings performed at the target front end level, as opposed to settings initiated at a console level. To fit into the Acnet scheme, it is necessary to record settings that are initiated by relevant applications that run in the local station/IRMs. This is a very different type of settings log than that described above. For this reason, code has been added to the local station’s version of both the parameter and analog descriptor pages to record a special entry in the same data stream. This special entry includes the device name and property mask. By sharing the same data stream, we can get space for the name and property mask by eliminating the time field, which is not used in the Acnet scheme anyway. The adjusted record format is as follows:

<i>Field</i>	<i>#bytes</i>
Target node of setting	2
Type of setting action (listype#)	1
#bytes of setting data	1
Device being set—channel#	2
Data value	2
Analog channel device name	6
Key to indicate format =0xFF	1
Acnet property mask	1

The Key byte has a value that distinguishes this record format from that used for local setting activities, in which this byte of the date/time field would be a value in the range 0x00–0x14, denoting the BCD 15Hz cycle counter.

With these special entries placed into the data stream, a local application has been written that monitors the contents of the data stream for these special entries and builds device setting accountability records for Acnet, delivering them according to the specified protocol for that purpose, designed and implemented by Kevin Cahill. See the document *Settings Log LA* for more details on this local application.

Acnet device names are 8 characters in length, such as L:GR2MID for the mid-tank gradient reading for RF system #2. The local stations use only the last 6 characters in their device names. The two-character prefix is supplied by a parameter to the local application running in that station. To cover the case of a setting that targets a device with a different prefix that is normal for the station running the application, the settings log server, upon finding no device entry in the Acnet database, performs a search for a device that matches the last 6 characters to correct the record.