ABOUT CALL LOGGING

WHAT IS CALL LOGGING?

Practically every telephone system (sometimes referred to as a PBX or switch) will have a CIL (Call Information Logging) port, sometimes referred to by its American counterpart, SMDR (Station Message Detail Recording). This is a V24 interface (25 pin D type connector) through which call information is output. This usually takes the form of a string of ASCII text giving details about the calls handled by the PBX.

An example of the basic type of output is as follows:

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30051423    2547       001 023    901727564738     136
30051439    001 002    2645                        197     9
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Each line represents a call.

Date & Time	Party 1 (Extn or Line)	Party 2 (Line or Extn)	Number Dialled	Duration (seconds)	Answer Delay
30051423	2547	001 023	901727564738	136	
30051439	001 002	2645		197	9

The first line shows an outgoing call. It was made on the 30th May and completed at 14:23 hrs. Extension number 2647 picked up the receiver and dialled 9 to make an external call. The switch connected this extension to line number 23 that belongs to trunk group 1. The number was dialled (01727564738) and the extension remained connected to the line for 136 seconds, or 2 minutes and 16 seconds.

The second line shows an incoming call received by line number 2 of trunk group 1. In this case the line is shown in the second column before the extension number and there are no dialled digits. The call lasted for 3 minutes and 17 seconds. The call rang on the operators console for 9 seconds before being answered.

As soon as the extension hangs up, this information is sent by the switch to the CIL port and translated in the call logger.

The output varies between one PBX manufacturer and another and, often, between one level of software and another. Each has to have a separate translation table in the call logger.

Other information that might be output includes:

- queue time - the time between the call being received by the switch and the call being visible to the operator;
- extension ring time - the time taken for the extension to be answered after being extended by the operator;
- the calling line ID (CLI) - the telephone number of the person dialling into the PBX;

and so on. To find out what information is available from your own telephone system you will be able to consult the PBX manuals or speak with your maintainer. Some switches, eg the Meridian, offer a choice of output, however, any changes made to the output would have to be confirmed with the **focom limited** Help Desk or data could be lost.

Once all the individual calls have been processed and collated, the result can provide much more than a list of calls. It can be used to:

- check response times;
- whether there are sufficient lines available to handle the volume of traffic;
- trends over designated periods;

and so on. Now we are in the realms of real Traffic Management.

WHAT IS TRAFFIC MANAGEMENT?

In a nutshell, traffic management is about providing an efficient service to your users at the right cost.

Within these bounds there are questions to be asked. What is an efficient level of service for your type of company? If you have a product to sell, then keeping enough incoming lines available is vital, a lost call could mean a lost sale. If our business involves contacting the public, then you must be able to offer enough outgoing lines for your staff, or they will be unable to work. Making all lines bothway is not the answer to the problem. Say, for example, there is a message on the Reuters screen that a hurricane is on its way and transport is likely to grind to a standstill. The first thing anyone will do is reach for the phone to tell their friends and relations and make alternate plans. The unaccustomed surge of outgoing traffic is likely to jam any PBX. If all lines allowed bothway traffic, the company would be unable to receive any incoming calls. An extreme example, but it did happen.

What has to be decided is the grade of service (g.o.s.) That you want to offer. A 10% g.o.s., i.e. potential loss of ten calls in one hundred, may be acceptable if you are the kind of company that people will always call again. If you are involved in Sales you would probably accept a 2% g.o.s., or 1 in 50, as being acceptable. Once you have decided on the g.o.s. Level you need to achieve, finding out what your g.o.s. Level actually is, needs the help of traffic reports.

Traffic reports will show you how much traffic is being generated during the busiest times of the day (known as the Busyhour). Over a period a pattern will emerge that can be taken as the average. From this figure the Erlang can be calculated and this, along with the g.o.s. You require, will give you the number of lines you need in order to achieve your target. For a fuller description of this process see the Traffic Summary Report (Tutorial page 0 and Sample Reports page 0). See also *What Is An Erlang?* on the next page.

Providing a good g.o.s. Requires a high expenditure on lines and switch equipment. Many companies recover these costs by charging their users for the telephone service. Direct links between buildings have an annual cost which can be broken down into monthly charges on the internal bills and costed to departments. These annual charges are called *Fixed Costs*. There are also the *Variable Costs* generated by the use of the system, i.e. the telephone calls and *Nonrecurring Costs* such as the provision of a telephone extension.

These costs can be amalgamated in LUMBERJACK reports (Fixed Costs on page 0 of the Reference section). The cost of an extension:

• Telephone instrument	25.00	
• PBX card position	225.00	
• Installation and connection to PBX services	150.00	£400.00 non-recurring or variable cost

To this figure is added the cost of calls

• Maintenance	80.00	
• Internal telephone directory	20.00	£100.00 annual fixed cost

WHAT IS AN ERLANG?

In order to gauge the number of telephone lines you need to carry the traffic you generate, a formula has been devised. This is known as the Erlang after the man who came up with the formula. It looks like this:

E = (c x t) / T

c = the number of calls in the given period

t = the average length of these calls (minutes)

T = the given period (minutes).

Typically, this formula is used with the Busyhour as set out below. However, the time period selected may be any length as long as it is consistent throughout the calculation.

If you were set the task of carrying out a manual exercise to establish the number of lines you needed to carry all traffic over the public network into and out of your telephone system, you would have to take the following steps:

1. Run a daily report on all incoming and outgoing traffic and count up the number of calls in each hour, stepping forward by one minute at each stage, i.e. between 09:00 hrs and 09:59 hrs, then between 09:01 and 10:00, then 09:02 and 10:01, and so on.
2. At the end of the week, take the results to establish your average busiest hour (Busyhour) for the week.
3. Using the Busyhour, insert the figures into the formula above. ***T*** will be 60 representing the number of minutes in the calculation period. The result is the Erlang for that week.
4. Once you have collected several weeks worth of data, you would take the average Erlang and look up in a book of tables to find out how many lines you need for the grade of service (g.o.s.) you had selected. (See *What Is Traffic Management* for explanation of g.o.s.). The lost the g.o.s., say 2% (1 in 50) the more lines you will need to be certain of carrying the offered traffic, than if you were using a higher g.o.s. of say 10% (1 in 10).

Ideally, you should not base your judgement on anything less than three months data as work loads fluctuate from week to week and have considerable affect on telephone traffic.

Fortunately for you, you have LUMBERJACK, and the Traffic Summary Report will do all this for you (see Sample Reports, Page 0). Just set it up and pop it in the Scheduler, note the results each week and you will be able to keep a vigilant eye on the traffic trends. You will be one jump ahead of the complaints when staff start to experience congestion, or you could be in for a bonus if you are able to tell the Finance Director that you have too many lines.

To see the Erlangs in greater detail, use the Traffic Breakdown Report, which will show the Erlangs throughout the day for the selected interval.

GLOSSARY

CIL	Call Information Logging (UK Generic Term)
CILE	Call Information Logging Equipment
SMDR	Station Message Data Record (US generic term for CIL)
TTY	Teletypewriter
I/O Port	Input / Output Port
PBX	Private Branch Exchange - (also PABX but since all modern switches are automatic, the 'A' is invariably dropped. Manual PBXs (PMBX) needed an operator to connect extensions to any call.
Switch	Telephone system
PSTN	Public Switched Telephone Network, ie the public telephone exchange
CLI	Calling Line ID (usually from a private network)
OLI	Originating Line ID (usually from a private network)
Node ID	The number of a PBX on your network
Extended	A call received by the operator is put through or 'extended' to an extension
DDI	Direct Dialling In
DISA	Direct Inward System Access
ACD	Automatic Call Distribution

SIGNALLING TERMS

DPNSS	Digital Private Netwrok Signalling System
DASS2	Digital Access signalling System
CAS	Channel Associated Signalling
ATM	Asynchronous Transfer Mode
PCM	Pulse Code Modulation

CONNECTIONS

Megastream	BT name for a 32-channel PCM link. Data is sent across this link at 2Mb per second. Known as the E1 standard
Kilostream	BT name for a single channel link. Data can be carried at various speeds
Q931	A signalling protocol running across an E1 bearer circuit