

# Traffic recording

## DESCRIPTION



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# 1 GENERAL

## 1.1 DESCRIPTION

The Traffic Recording function provides various data from the system to be used for system requirements analysis, and will allow administrative personnel to monitor the effectiveness and/or efficiency of the system to pinpoint areas for improvement. Traffic recording data can be output to a printer on request and/or extracted by an external device.

## 1.2 GLOSSARY AND ACRONYMS

For a complete list of abbreviations and glossary, see the description for *ACRONYMS, ABBREVIATIONS AND GLOSSARY*.

## 2 FACILITIES

### 2.1 GENERAL

Traffic recording operation means initiation, collection and processing of traffic data from selected measurement objects in the MX-ONE Service Node during traffic handling. Examples of measurement objects are extensions, routes, extension groups, operator consoles, and so forth.

For each measurement object, there is a unique command to initiate traffic recording for that object. For some commands individuals within a measurement object can also be selected. For example, for the measurement object extensions, individual extension numbers can be entered in a command, which is specified for initiation of traffic recording on extensions.

A measurement number is a unique sequence number that the system assigned to a traffic recording operation when a command is initiated on a measurement object.

### 2.2 MEASUREMENT OBJECTS

Up to 250 separate measurement operations can be simultaneously active. The measuring objects to be included in a measurement operation are specified in advance by entering commands from an I/O terminal. Advance specification means defining the measurement objects, the individuals within a measurement object, and the start and stop dates and times.

A traffic recording operation may include the following measurement objects:

- Voice Extensions, including IP extensions
- Internal group hunting groups (PBX-groups)
- Routes
- External Lines, including IP networking lines
- PBX-Operators
- Dial Tone Delay
- Multi-Party-Unit

### 2.3 INITIATION AND TERMINATION OF TRAFFIC RECORDING

Traffic recording operations are initiated via commands entered from an I/O terminal. Commands specify details of the operation such as the object or the individuals within a measurement object, and the start and stop dates and times. Ending measurements on objects is also accomplished by commands. Once a measurement is ended, any stored data related to that measurement are no longer retrievable.

It is possible to deactivate and subsequently reactivate the traffic recording operations (including congestion supervision) by entering commands. If this facility is not required, it is suggested that it will be deactivated. Traffic Recording (TR) can only be deactivated if no measurement operations are active. Also, all traffic recording commands are disabled when the facility is deactivated (with the exception of a command to reactivate a TR).

## 2.4 CALCULATION OF TRAFFIC VALUE

The traffic intensity value given always refers to the traffic carried. This value is calculated to two decimal places, given in Erlangs, and calculated as follows

Traffic (Erlangs) = Number of seizures / Number of scans

The number of seizures is defined as the number of times in a 15-minute period for which a measurement object was scanned and was found busy.

## 2.5 BUSY HOUR AND TRAFFIC INTENSITY

The term *busy hour* is defined as the latest four consecutive 15-minute periods of the day during which the highest *traffic carried* value is recorded. If there is no traffic recorded, no busy hour information will be given. In this case, the busy hour field will indicate NONE. If the busy hour is to be calculated for a period longer than one day (24 hours), for instance, a whole week, this calculation must be done outside the exchange.

## 2.6 CONGESTION SUPERVISION

Traffic supervision is a continuous function that is performed irrespective of ongoing measurement operations and cannot be deactivated separately. The congestion thresholds for routes can be entered by command from an I/O port. Multiparty units have the thresholds defined in the program and cannot be changed. An alarm will be raised if the congestion supervision value reaches the congestion threshold.

Except for routes the supervision will be performed for the LIM associated with the measurement object.

The congestion value is calculated by:

CSV = Number of failed attempts \* 1000 / Total number of attempts.

## 2.7 CHANGING CONFIGURATION

The traffic recording functions can be affected by the changes made to the measuring devices such as extensions, external lines, or PBX operator consoles. The changes and the effects are described in the following sections.

### 2.7.1 CHANGING LOCATION OF DEVICES

Not relevant.

### 2.7.2 REMOVAL OF INDIVIDUALS

If an individual included in a measurement is removed, the number of individuals reported in the measurement will be decreased.

If the last individual that is concerned with measurement on this object is removed, the measurement will be stopped.

## 2.7.3

## INITIATION OF A NEW INDIVIDUAL

If a traffic recording is initiated for a route and later a new external line is added to that route, the new external line will take part in the measurement. It does not matter whether the route contains any external line or not when the new external line is added.

If traffic recording is initiated for all external lines in the whole node and later a new external line is added to the node, the new external line will take part in the measurement. It does not matter whether the exchange contains or does not contain any external lines when the new external line is added.

If traffic recording is initiated for all external lines in a MX-ONE Service Node and later a new external line is added to the node, the new external line will take part in the measurement, regardless of whether external lines already exist or not.

If traffic recording is initiated for all extensions in the whole MX-ONE Service Node and later a new extension is added to the node, the new extension will take part in the measurement. It does not matter whether the node contains or does not contain any extension when the new extension is added.

If traffic recording is initiated for all extensions in a MX-ONE Service Node and later a new extension is added to the node, the new extension will take part in the measurement. It does not matter whether the node contains or does not contain any extension when the new extension is added.

If traffic recording is initiated for all the IP extensions in the whole Mx-one Service Node, and later a new IP extension is added to the node, the new IP extension will take part in the measurement. It does not matter whether the exchange contains any IP extensions or not when the new IP extension is added.

## 2.7.4

## ADDING NEW INDIVIDUALS

If traffic recording has been initiated for auto initiated service circuits such as multi party unit, ISDN trunk, and so on, the new service circuits will take part in the measurement.

## 2.8

## RETRIEVAL OF DATA

The traffic recording data dumped to the system storage device or in the temporary memory can be retrieved, formatted and printed out. The retrieval and printout of traffic recording data are initiated by I/O commands.

## 2.8.1

## PRINTOUT FORMAT

The following formats are possible for traffic recording data printout:

- Hourly intervals starting every 15 minutes. In addition, the busy hour is presented.

**Example:**

09:00 - 10:00..... 09:15 - 10:15.....

- Every quarter of an hour interval. In addition, the busy hour is presented.

**Example:**

09:00 - 09:15..... 09:15 - 09:30.....

- Presentation of busy hour only.

## 2.8.2

## RETRIEVAL OF DATA FROM EXTERNAL DEVICE

It is possible to use an external device, such as a PC, to pull the traffic recording data from the exchange for storage, post processing, and presentation.

## 2.9

## ALARMS

The traffic recording function will generate alarms in the following situations:

- a) Congestion supervision value exceeded on any monitored device
- b) Error occurred at traffic data dump start
- c) Error occurred during traffic data dump
- d) Recorded data was lost due to traffic data dump failure
- e) Invalid time

## 2.10

## CAPACITIES

The following are the capacities or limitations or both for traffic recording:

- a) Maximum 250 ongoing simultaneous measurements are allowed.
- b) Maximum 1 node in one measurement is allowed.
- c) Maximum 255 extensions in one measurement for a stated series can be included.
- d) Maximum one route can be specified in each measurement.
- e) Double measurements (time overlapping) are not permitted.
- f) The temporary memory contains traffic recording raw data. Whenever it is full or about 11 minutes past midnight, an attempt is made to output these data to the assigned output port or ports. The exact dump time depends on the output buffer availability. If the attempt fails, the temporary memory is over-written by new data.
- g) LCR data are not included as a measurement object in the directory and is not collected by the TR data collection function. LCR can have all of its counters running simultaneously.
- h) The capacity of external storage, if available, is dependent not only on the size of the disk itself but also to the extent that this storage is used for other applications, for example, storing data other than traffic recording data. The data volume for traffic recording data is maximum 50 bytes per measurement per 15-minute period.

## 3 HARDWARE

There is no specific hardware for traffic recording. The system hard disk is used to store traffic recording data.

Only one device can be active for the output file.

## 4 SUMMARY

The traffic recording feature provides the means for gathering, processing, and presenting traffic and traffic-related data. Different objects are measured, including extensions, routes, external lines, and so on.

Measurement initiation and termination as well as data printout are accomplished by command entries. Some objects are also monitored for congestion. This is a continuous activity independent of any other traffic recording operations, with alarms raised if supervision values are exceeded.