

# Control Telephony Functions

OPERATIONAL DIRECTIONS





## NOTICE

The information contained in this document is believed to be accurate in all respects but is not warranted by Mitel Networks™ Corporation (MITEL®). Mitel makes no warranty of any kind with regards to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The information is subject to change without notice and should not be construed in any way as a commitment by Mitel or any of its affiliates or subsidiaries. Mitel and its affiliates and subsidiaries assume no responsibility for any errors or omissions in this document. Revisions of this document or new editions of it may be issued to incorporate such changes.

No part of this document can be reproduced or transmitted in any form or by any means - electronic or mechanical - for any purpose without written permission from Mitel Networks Corporation.

## TRADEMARKS

The trademarks, service marks, logos and graphics (collectively "Trademarks") appearing on Mitel's Internet sites or in its publications are registered and unregistered trademarks of Mitel Networks Corporation (MNC) or its subsidiaries (collectively "Mitel") or others. Use of the Trademarks is prohibited without the express consent from Mitel. Please contact our legal department at [legal@mitel.com](mailto:legal@mitel.com) for additional information. For a list of the worldwide Mitel Networks Corporation registered trademarks, please refer to the website: <http://www.mitel.com/trademarks>.

© Copyright 2017, Mitel Networks Corporation

All rights reserved



# 1 GENERAL

The “Control Telephony functions” described in these solution level operational directions are functions like CSI, CLI, Priority Disconnect and possibly modified ring cadences for analog telephones. Abbreviated numbers are also used, for the dynamic selection of call priority.

This functionality shall fulfill the UK National Grid Operational Telephony Networks (OTN) requirements, as well as the Irish ESB ditto.

## 1.1 BRIEF DESCRIPTION OF THE FUNCTIONS

### 1.1.1 GENERAL

The “control telephony functions” are a combination of several PBX features, such as CSI/Priority Routing, CLI, Priority Disconnect, Ring signal cadence, and possibly other more standard PBX functions (not described here), such as LCR, CIL and CSTA functions.

### 1.1.2 CALL SERVICE INFORMATION (CALL PRIORITY BASED ON FRL/TCM)

CSI is based on the FRL/TCM categories, and provides a call priority information, both in a single node, and in a private network of appropriate tie-lines.

There are three control call priority (and protection) levels supported; *Emergency*, *Priority* and *Routine*, which use the FRL/TCM values 7, 6 and 5 respectively.

A normal/administrative call will not have any priority (i.e. value 0 is set default). Thus the call priorities can be summarized like this:

| Type of call           | External TCM/CSI (via MFC, CCS) | Protection level (for Priority Disconnect) |
|------------------------|---------------------------------|--|
| Normal call            | 0                               | 0  |
| Administrative call    | 0                               | 0  |
| Routine control call   | 5                               | 5  |
| Priority control call  | 6                               | 6  |
| Emergency control call | 7                               | 7  |

### 1.1.3 CALLING LINE IDENTITY (CLI)

Calling line identity (A-number) shall always be included in CSI calls, and the A-number shall normally be presented to the called B-party.



Normal/Administrator calls will however not get any CLI if the CAS or analog trunks (TL22, TL37) are used. If DPNSS, ISDN or H.323 tie-lines are used, the CLIs are always included, if available from the originator.

#### 1.1.4

### PRIORITY ROUTING OF TRUNK CALLS

FRL/TCM and CSI categories can control the routing and access to external line resources. With the equivalent categories assigned for calling extensions and routes, the routing and access to external line resources can be prioritized. See FRL/TCM documentation for details.

#### 1.1.5

### PRIORITY DISCONNECTION OF TRUNK CALLS

The Priority Disconnect function (new in MX-ONE 6.0 SP2) is controlled by AS parameter 74. Default the function is not enabled, but the AS 74 will enable the function, and then automatic priority disconnection of a lower priority trunk call will be done, if a call with CSI would encounter a trunk congestion situation.

Priority disconnect rules:

- Emergency control calls (CSI 7) are not allowed to be disconnected using Priority Disconnect. Emergency control calls are allowed to disconnect all other call types.
- Priority control calls (6) are allowed to disconnect normal/administrative calls and Routine control calls.
- Routine control calls (5) are allowed to disconnect normal/administrative calls.

#### 1.1.6

### OPTIONAL RING CADENCE CHANGE FOR ATS

If wanted, the ring signal cadence of analog phones can be modified by command (new in MX-ONE 6.0 SP2). This could be to provide a “continuous ring signal” for high priority calls.

With ELU34 boards for the analog telephones, the ring signal would not be fully continuous, but could be up to 25 seconds, with just a few ms interrupts. The number of ATS per board must be limited to 4 if “continuous ringing” is set.

#### 1.1.7

### ABBREVIATED NUMBERS FOR DYNAMIC CSI SELECTION

To get a dynamic selection of call priority (CSI or FRL), three common abbreviated numbers should be defined. Those three numbers should when expanded equal the CSI levels.

The translation shall also include a CSI prefix to determine the type of control call as follows:

- Administrative calls have no CSI prefix
- AA = Routine Control Call
- AB = Priority Control Call
- BB = Emergency Control Call

For example as in the table below:



| ABBR | TRA         | DESCRIPTION                   |
|------|-------------|-------------------------------|
| 105  | AA 7759 105 | Routine control call to ZBE   |
| 125  | AB 7759 105 | Priority control call to ZBE  |
| 135  | 7759 105    | Administrative call to ZBE    |
| 195  | BB 7759 105 | Emergency control call to ZBE |

A caller who dials the abbreviated number 125 will get a call that will be a Priority control call to the number 7759 105.

### 1.1.8

## SUPPORTED TRUNK SIGNALING, SETTINGS

TL22, TL37 MFC tie-lines are supported.

Inter-switch links can be CAS E1 or analog E&M trunks supporting a proprietary MFC signaling protocol based on CEPT-L1 MFC signaling. The standard CEPT-L1 MFC signaling has been enhanced to provide advanced network features such as, A-Party Number Identity, Call Service Information and Network Priority Routing.

The VARC parameter is modified in the RODAx commands, to allow the TL22 and TL37 (to support A-number request/reception), using A7 pulse signal for proprietary additions to request the CLI and convey the CSI.

DPNSS, ISDN, H,323 tie-lines can also be used, but require no specific settings (except possibly FRL/TCM categories for the Priority Routing function).

Inter-working between CAS/analog tie-line and CCS tie-lines is supported.

## 2

## GLOSSARY

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

Here is a list over some common terms used in this document:

### CAS

Channel Associated Signaling (legacy trunk protocols)

### CSI

Call Service Information, a type of call information.

### CCS

Common Channel Signaling trunks, such as DPNSS, DASS, ISDN, H.323, SIP.

### DPNSS

Digital Private Network Signaling System (tie-line protocol defined by BT)

### FRL

Facility Restriction Level, an 8-level (0-7) priority and protection information for route access, which can also be assigned to extensions and routes as calling party, indicating which routes they are allowed to access.



**H.323**

IP Standard defined by ITU-T, here as tie-line protocol.

**ISDN**

Integrated Services Digital Network (defined by ITU-T)

**MFC**

Multi Frequency Compelled (trunk signaling)

**Priority Routing**

A function that will route trunk calls based on a priority information

**Priority Disconnect**

A preemption function that will disconnect used trunk resources for a call of lower priority, and use these trunk resources for a new call, with higher priority.

**TCM**

Traveling Class Mark, basically the same as FRL, but when sent via a tie-line in the private network.

**3****PREREQUISITES**

A private network with appropriate tie-lines supporting the CSI and CLI functions, and connecting ASP 113 systems where the control telephony functionality is wanted shall exist.

Analog telephones shall be initiated.

**4****TOOLS**

I/O terminal(s), for the administration of the functions.

**5****PROCEDURE**

The following procedure must be followed for the initiation of the Call Park Pool:

1. (Optionally) initiate the FRL categories for all relevant extensions, route directions, etc.
2. Initiate the route data (VAR parameters) if MFC trunks (TL22, TL37) are used. If CCS tie-lines are used, no specific settings are required.
3. If Priority Disconnect shall be active, set the AS parameter 74 appropriately.
4. Initiate the abbreviated numbers for the dynamic selection of call priorities.
5. Change to "continuous ring cadence" for analog telephones, if wanted.
6. Verify the settings by printing the relevant data.



## 6 EXECUTION

### 6.1 INITIATE FRL/TCM CATEGORIES

#### 6.1.1 GENERAL

The FRL/TCM categories will control the routing priorities and route access, and indirectly also other related functions.

#### 6.1.2 PREREQUISITES

The “control telephony” FRL/TCM functionality may be used in this network and system.

If the dynamic selection of FRL/CSI on per call basis shall be used, via abbreviated numbers, the fix CoS settings are optional and could be skipped, but both methods can be used simultaneously.

#### 6.1.3 PROCEDURE

1. Initiate the FRL categories for all relevant extensions and routes, via the *EXCCS*, *extension\_profile* and *RODlx* (route direction) commands.
2. Verify the FRL categories by printing the settings.

### 6.2 INITIATE THE ROUTE SIGNALING (IF MFC TRUNKS ARE USED)

#### 6.2.1 GENERAL

The MFC trunk signaling must be appropriately configured for this functionality. Proprietary MFC signaling is used (A7 pulse).

#### 6.2.2 PREREQUISITES

The “control telephony functions” shall be used, in particular the conveying of CSI and CLI data via the used tie-lines.

#### 6.2.3 PROCEDURE

1. Initiate the VARC parameter settings for TL22/TL37 by entering the *RODAI* command, to get the wanted CSI and CLI signaling.
2. Verify by printing the parameters with the command *RODAP*.



## 6.3 INITIATE DEDICATED ABBREVIATED NUMBERS

### 6.3.1 GENERAL

Common (or individual) abbreviated numbers should be initiated, one for each call priority level, to facilitate dynamic selection of call priority. See Operational directions for *ABBREVIATED DIALLING* for details.

### 6.3.2 PREREQUISITES

The “control telephony” FRL/TCM functionality shall be used in this network and system.

Dynamic selection of FRL/CSI on per call basis shall be used, via abbreviated numbers.

### 6.3.3 PROCEDURE

1. Initiate the common abbreviated numbers using the *ADCOI* command. (Individual abbreviated numbers are also possible to use).
2. Verify the defined abbreviated numbers by entering *ADCDP*.

## 6.4 ENABLE THE PRIORITY DISCONNECT FEATURE

### 6.4.1 GENERAL

The Priority Disconnect function will perform an automatic release of a low priority trunk call (usually a normal/administrative call), is a CSI call encounters a trunk resource congestion situation. Default is that the function is inactive.

### 6.4.2 PREREQUISITES

The Priority Disconnect function shall be active in this network and system.

### 6.4.3 PROCEDURE

1. Enable the Priority Disconnect function by entering the command *ASPAC*, setting parameter 74 to allow automatic Priority Disconnect. (Default is that it is disabled).
2. Verify by printing the parameter with the command *ASPAP*.

## 6.5 CHANGE ATS RING CADENCE, IF WANTED

### 6.5.1 GENERAL

Ring signal cadence can be modified by I/O command. The “control telephones at remote nodes” shall when they receive a CSI/control telephony call get a specific ring



signal, indicating that it is a call with higher priority. AS parameter 74 controls the function.

**Note:** The Mitel 6800/6900 SIP phones support a “Bellcore ring cadence”, which can override the internal ring cadence, as a customized ring cadence. This could be used if SIP phones were used instead of analog phones, or if a Terminal Adapter (SIP-Analog) is used.

### 6.5.2 PREREQUISITES

The CSI calls shall get a specific ringing on analog phones.

### 6.5.3 PROCEDURE

1. Change/check the *ASPAC* parameter 74 setting so it allows ring cadence change.
2. Change the ring signal cadence for analog phones by entering the *ring\_cadence -c* command with appropriate cadence (e.g. “continuous ringing”), if it has to deviate from the applications system’s ordinary cadence.
3. Restart all ELUxx boards, by entering the *board\_restart* command, to make the cadence change take effect.
4. Verify by printing the parameter with the command *ring\_cadence -p*.