Avaya Media Processing Server Telephony Reference Manual

Contents

Chapter 1: Preface

Scope

This manual describes how to configure the Avaya Media Processing Server (MPS) to communicate with various types of telephone lines, interfaces, and networks.

This manual covers Interactive Voice Response (IVR) specific issues. It does not explain general telephony concepts and standards.

Although some application programming depends on the type of phone line to which the MPS is connected, this manual does not cover application programming techniques. See the MPS Developer User Guide for this type of information.

> **Important:**
> All references to MPS 3.0 in this document (such as document titles, software versions, and illustrations) apply to all releases of MPS 3.X.

Intended Audience

This manual is intended for those individuals charged with configuring, programming, and maintaining the system at a specific site. The reader should be familiar with telecommunications and computer equipment, their functions and associated terminology. In addition, the reader must be familiar with site-specific power systems, computer systems, peripheral components, and especially the telephone networks and protocols.

Much of the material covered here involves the configuration of basic and critical system parameters. Small errors in the configuration of these parameters can seriously impede the systems performance. Individuals without highly specialized knowledge in this area should not attempt to change the defaults.

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Navigation

- Getting technical documentation on page 10
- Getting product training on page 10
- Getting help from a distributor or reseller on page 10
- Getting technical support from the Avaya Web site on page 10

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How to Use This Manual

This manual uses many standard terms relating to computer system and software application functions. However, it contains some terminology that can only be explained in the context of

the MPS system. Refer to the Glossary of MPS Terminology for definitions of MPS specific terms.

Read this manual from start to finish at least once. When you are familiar with the document, you can use the Table of Contents to locate topics of interest for reference and review.

If you are reading this document online, use the cross-reference links (shown in blue) to quickly locate related topics. Position your cursor over the cross-reference link and click once. Click any point in a Table of Contents entry to move to that topic. Click the page number of any Index entry to access that topic page.

Familiarize yourself with various specialized textual references within the manual Conventions Used in This Manual on page 12

> **Note:**
> Periphonics is now part of Avaya. The name Periphonics, and variations thereof, appear in this manual only in reference to a product (for example, the PERImps package, the perirev command, and so on).

Organization of This Manual

This manual contains separate chapters that describe the telephony protocols available on the MPS. These chapters are as follows:

Chapter 1 — Phone Line Protocols

This chapter introduces the various telephony protocols along with hardware and software overviews.

Chapter 2 — Analog Protocol Configuration

This chapter describes the analog protocols available on the MPS.

Chapter 3 — Digital Protocol Configuration

This chapter describes the digital protocols available on the MPS.

Chapter 4 — ISDN Protocol Configuration

This chapter describes the ISDN protocols available on the MPS.

Chapter 5 — DPNSS Protocol Configuration

This chapter describes the DPNSS protocols available on the MPS.

Chapter 6 — Phone Line Monitoring

This chapter describes how to perform phone line monitoring.

Appendix A — Protocol Configuration Files

This appendix lists the configuration files for each protocol available in the MPS.

Appendix B —M1-IVR Configuration

This appendix lists the Lineside protocol configuration files required for M1-IVR configuration.

Conventions Used in This Manual

This manual uses different fonts and symbols to differentiate between document elements and types of information. These conventions are summarized in the following table.

Table 1: Conventions Used in This Manual

Notation	Description
Normal text	Normal text font is used for most of the document.
important term	The Italics font introduces new terms, highlights meaningful words or phrases, or distinguishes specific terms from nearby text.
system command	This font indicates a system command or its arguments. Enter such keywords exactly as shown (that is, do not fill in your own values).
command, condition and alarm	Command, Condition and Alarm references appear on the screen in magenta text and reference the Command Reference Manual, the MPS Developer User Guide, or the Alarm Reference Manual, respectively. Refer to these documents for detailed information about Commands, Conditions, and Alarms.
file name / directory	This font highlights the names of disk directories, files, and extensions for file names. It also shows what is displayed on a text-based screen (for example, to show the contents of a file.)
on-screen field	This font indicates field labels, on-screen menu buttons, and action buttons.
<KEY NAME>	A term that appears within angled brackets denotes a terminal keyboard key, a telephone keypad button, or a system mouse button.
Book Reference	This font indicates the names of other publications referenced within the document.
cross-reference	A cross-reference appears on the screen in blue. Click the cross- reference to access the referenced location. A cross-reference that refers to a section name accesses the first page of that section.

Notation	Description
	The Note icon identifies notes, important facts, and other keys to understanding.
	The Caution icon identifies procedures or events that require special attention. The icon indicates a warning that serious problems may arise if the stated instructions are not followed implicitly.
	The flying Window icon identifies procedures or events that apply to the Windows operating system only.[1]
	The Solaris icon identifies procedures or events that apply to the Solaris operating system only.[2]

1. Windows and the flying Window logo are either trademarks or registered trademarks of Microsoft Corporation.

2. Solaris® is a registered trademark of The Open Group in the U.S. and other countries.

Solaris and Windows Conventions

This manual depicts examples (command line syntax, configuration files, and screen shots) in Solaris format. Windows specific commands, procedures, or screen shots are shown when required. The following table lists general operating system conventions used with either the Solaris or Windows operating system.

	Solaris	Windows
Environment	$MPSHOME	%MPSHOME%
Paths	$MPSHOME/bin	%MPSHOME%\bin
Command	<command> &	start /b <command>

Two-Button (Windows) vs. Three-Button (Solaris) Mouse

\<SELECT\>	Left button
\<ADJUST\>	Left and Right together
\<MENU\>	Right button

\<SELECT\>	Left button
\<ADJUST\>	Middle button
\<MENU\>	Right button

Trademark Conventions

The following trademark information is presented here and applies throughout for third party products discussed within this manual. Trademarking information is not repeated hereafter.

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Product Nomenclature Changes

The following product names changed with the latest Avaya MPS software release. All other references to the former name with respect to environment variables, directory paths, software package names, and so on remain the same. For example, the PeriProducer product is now

referred to as the Media Processing Server Developer; however, its package name remains PERIppro.

Former Product Name	New Product Name
IVR Software	Media Processing Server Release x.x
PeriProducer	Media Processing Server Developer
PeriView	Media Processing Server Manager
PeriStudio	Media Processing Server Studio
PeriReporter	Media Processing Server Reporter
PeriSQL	Media Processing Server RDB
PeriVXML	Media Processing Server VXML Browser
CTI Suite	Communications Control Toolkit (CCT)
Open Signal Computing and Analysis Resource (OSCAR)	Speech Server

Chapter 2: Phone Line Protocols

This chapter covers:

1. Diagram Conventions

2. Hardware Configuration Overview

3. Phone Line Configuration Overview

4. Span Protocol Configuration Overview

5. Network Synchronization Configuration

Introduction to Phone Line Protocols

The digital protocol hierarchies are presented at the beginning of their respective sections. Whenever possible, all the information necessary to configure a single protocol is in one place. As a result, this manual duplicates some material in several sections. This manual also provides some background information for each hierarchy.

Telephony Hardware Overview

For communications to occur between a caller and an IVR application, the Avaya Media Processing Server (MPS) Product Family uses specialized hardware to interact with callers through a Public Switched Telephone Network (PSTN). Calls arrive from the PSTN to a Private Branch Exchange (PBX) or switch within the calling company, see diagram below.
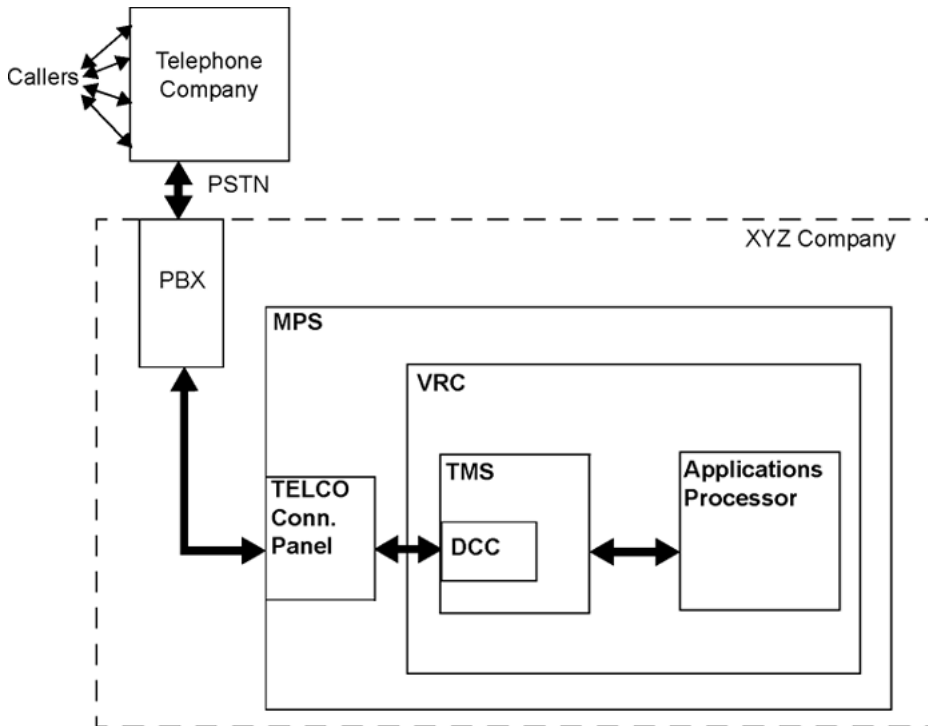
The switch routes the phone lines (spans) of calls to the TELCO Connector Panel on the back of the MPS, through which the lines connect to the front of the Telephony Media Server (TMS), located on the Variable Resource Chassis (VRC), onto the Digital Communications Controller (DCC). Depending on the line a call comes in on, an assigned application begins executing within the Application Processor and begins interacting with the caller.

Telephony Software Overview

The MPS hardware described above contains software processes required to accomplish telephony functions (call answer, call termination, touch-tone generation, call progress detection, etc.). The three main process groups which accomplish these functions are Application Services Environment (ASE), Voice Operating Software (VOS), and Telephony Media Server (TMS).
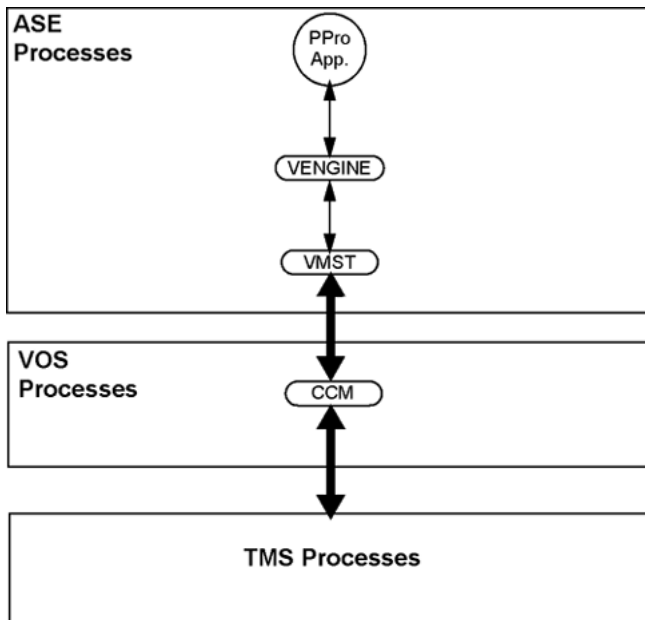
The ASE software process group contains the software required to develop and execute applications.

The VOS software process group comprises the main system software required to run the MPS system.

The TMS software controls the hardware devices used to interface to the telephony system.

Applications written in MPS Developer are executed in the application execution process, VENGINE. The application then communicates with VOS processes through the VENGINE Message Server - Extended, VMST.

The Call Control Manager (CCM) module interacts with the VOS, along with applications, to service each application per phone line for the duration of a call. When an application establishes a connection with the CCM, the CCM configures the phone line specific parameters.

The CCM process is primarily accountable for:

Example

- managing the phone line state dynamic,
- allocating and de-allocating internal and external resources, as well as administering the former,
- command queue management and synchronization,
- element name parsing for play, record and delete requests,
- servicing audio play and record requests,
- data input management (touch-tones, user edit sequences, etc.),
- third party call control (conference management),

- maintaining required information for the "Call Protect" feature, and
- maintaining call statistics.

The VOS processes then apply all the necessary telephone line configuration and application execution resources to the TMS hardware.

Diagram Conventions

Much of the protocol-specific information is given in diagrams. These diagrams are drawn from the perspective of the Telephone Interface Manager (TIM) process, which resides on the TMS motherboard. Actual states and timing differ when looked at from the MPS hardware or network interface perspective. The numbers at the top of each figure show the order in which corresponding events occur. The dotted lines drawn down the diagram mark the periods of time between the events. However, the time between events is not necessarily uniform and the diagrams are not drawn to scale. The indexes refer to the tables below the diagram for an explanation of the event.

When a broken line format is drawn for the network or MPS phone line, it indicates the line state is ambiguous. Such state conditions are ignored by TIM.

The various elements in a typical diagram are explained in the table below:

Table 2: Diagram Conventions

Field	Description
ON and OFF HOOK	Generally refers to the state of the call as seen by the network or MPS, but may have a different specific meaning depending upon the type of connection.
RING ON and OFF	State-of-ring indicator coming into the MPS system on analog or digital lines connected via channel bank equipment.
ORIGIN ON and OFF	Status of the hardware configuration used in DID (RBI) and analog ground start lines.
BIT A (or B) SET and CLEAR (digital only)	Digital signal bits A (and B) used to indicate the state of the line.

The following table explains conventions used in protocol state diagrams:

Table 3: Protocol-Specific Diagram Conventions

Field	Description
Pace timers	The timers in this category either cause an event once they have expired or are turned off by software when certain events occur. The events are indicated by the using timing index and, in some cases,

Field	Description
	the Events line in the diagram. The following symbols are used to show the timer's end state:
	X timer has expired
	/ timer is turned off by the software (an event occurred to disable it)
	-> timer continues
Guard timers	The timers in this category are intended to detect unexpected events or conditions (and act to guard against such events). They are turned off when an event occurs as expected. The end state key is the same as for the Pace Timers.
Events	This shows commands issued or conditions that are generated. Commands have a "|", conditions are in courier bold. Those events that have neither command or condition legend indicate other events worth noting.
Index	Index for event/timer used in the diagrams.
Event	Type of action sequence being performed.
Action	Specific action in the sequence.
Timer	Timer name (actual option used).
Comments	Default values of the timers and other notes.

Hardware Configuration Overview

In most cases, the telephone and voice processing hardware modules (printed circuit boards) are factory configured for proper operation. When hardware configuration is being modified or upgraded, it is normally performed by certified Avaya field staff. Documentation for hardware switch and jumper settings for various modules are not covered here.

Phone Line Configuration Overview

The TIM process controls all configuration and operational behavior of the phone lines in the system. TIM initiates phone line configuration through the use of individual protocol configuration files located in $MPSHOME/common/etc/tms. The naming convention for the protocol configuration files is <protocolname>_proto.cfg (ex. att_winkstart_proto.cfg, fgd_eain_proto.cfg, etc.).

Each protocol configuration file is divided into two main sections, standard parameters and protocol-specific parameters. Standard parameters are identical for all protocols.

Although the proto.cfg files contain standard and parameter-specific information, the tms.cfg and *.cdf (configuration data files) files can also contain standard and parameter-specific information. On system start-up, the following sequence of events occur.

Example

- First, the tms.cfg is read and any parameters defined within it take precedence over the same parameters, if any, defined in either the proto.cfg or *.cdf files.

- Next, the proto.cfg files are read and then the *.cdf files, in that order. In the same manner, any parameters defined in the proto.cfg that were not defined in the tms.cfg take precedence over the *.cdf file.

- Finally, any parameters not previously defined in either the tms.cfg or proto.cfg are set in the *.cdf file.

Parameter settings contained in the <protocolname>_proto.cfg files are intended to be "site" configuration settings and not "application" settings. "Site" configuration settings are those that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard wink duration is considered a "site" configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be configured in the <protocolname>_proto.cfg file.

✳ Note:

Adhering to the above guidelines simplifies configurations and enhances application portability across systems.

Span Protocol Configuration Overview

After proper configuration, each protocol configuration file must be loaded onto either individual or multiple spans. The $MPSHOME/common/etc/tms/tms.cfg file specifies which protocol to load onto which span(s). The following section is an example from the tms.cfg file, illustrating how to specify the protocol for each of the spans.

```
;-----------------------------------------------------------------------------------------------------------------
------------

;TMS Num    PLI      Span    svc-type     VpsNum    Outline    Pool/      Protocol Pkg
            Slot     Num                                       class

;-----------------------------------------------------------------------------------------------------------------
------------
```

LOAD 1	4	1	–	–	–	–	att_winkstart_proto.cfg
LOAD 1	4	2	–	–	–	–	att_winkstart_proto.cfg
LOAD 1	4	3	–	–	–	–	att_winkstart_proto.cfg
LOAD 1	4	4	–	–	–	–	att_winkstart_proto.cfg
LOAD 1	4	5	–	–	–	–	att_winkstart_proto.cfg
LOAD 1	4	6	–	–	–	–	att_winkstart_proto.cfg
LOAD 1	4	7	–	–	–	–	att_winkstart_proto.cfg
LOAD 1	4	8	–	–	–	–	att_winkstart_proto.cfg
LOAD 3	4	1	–	–	–	–	att_winkstart_proto.cfg
LOAD 3	4	2	–	–	–	–	att_winkstart_proto.cfg
LOAD 3	4	3	–	–	–	–	att_winkstart_proto.cfg
LOAD 3	4	4	–	–	–	–	att_winkstart_proto.cfg
LOAD 3	4	5	–	–	–	–	att_winkstart_proto.cfg
LOAD 3	4	6	–	–	–	–	att_winkstart_proto.cfg
LOAD 3	4	7	–	–	–	–	att_winkstart_proto.cfg

```
LOAD 3   4    8       –        –       –       –        att_winkstart_
                                                        proto.cfg
```

Where:

Example

- TMS Num is the number of the TMS within the VRC (1-4).
- PLI Slot is the number of the card slot on the TMS that the DCC/ALI card is plugged into.
- Span Num is the span number for a DCC card. For an analog card (ALI) this field is not applicable and a dash is used.
- svc-type is an ASCII string that is returned to an application to indicate the type of service used (ex: ISDN, CAS, SS7, T1).
- VpsNum is the MPS number, if applicable, that a specific TMS span is plugged into.
- Pool/Class is the class name used to represent a resource pool. For example, if some of the above Pool/Class fields were labelled MCI and others ATT, then to use a particular long distance carrier at different times of the day, based on cost, would simply involve selecting a different resource pool.
- Protocol Pkg is the file containing resources needed to support the requested protocol.

Svc-type, VpsNum, Outline and Pool/class are reserved for future use.

✴ **Note:**

For a full description of the TMS configuration, see the System Reference Manual.

Network Synchronization Configuration

The entire digital network, including all external (or slave) devices operates synchronously (i.e., communicating in a predictable manner). A digital connection from the DCC module, either to the telephone network or to a PBX/ACD system, always operates in a slave timing mode in the overall network. This network synchronization mode requires the DCC modules to derive the clock on which all internal operations occur from the network connection. In a digital connection with multiple span connections, one span must be designated as the primary source of internal timing. Other spans can be designated as secondary sources (in the event of a failure to derive proper timing from the primary source) of timing.

Synclist Configuration Section

The synclist section of the tms.cfg file (located in $MPSHOME/common/etc/tms) defines the source(s) of timing and synchronization for the network. It is a prioritized list that specifies the order in which the TMS(s) try to synchronize with the network.

```
;
; SYNCLIST SECTION
;
; This section is to specify the SYNCLIST for Reference Source A and
; Reference Source B.
;
; Each line can specify the sync list for a particular BPS (Back plane
slot)
; The order in which the sync list is specified will be the order in which
; the TMSs will try to synchronize with the network.
; For example, if the sync has to be obtained from span 5 and then span
2, then
; the REF_SRC line should specify span 5 before span 2 in the list.
;
; NOTE: The Sync List for a particular Reference Source should all be on
the
; SAME CHASSIS. It can exist on more than one BPS, but the order is
important.
;
; In HUBNIC (NICLESS) MODE, if the span list is specified on more than one
BPS,
; only the list specified on the first BPS is used. All others are ignored.
; Also, if both Ref Source A and Ref Source B are being specified in this
mode,
; they have to be on different BPS as a TMS cannot drive both the ref
sources.
; It can either drive RefSrc A or RefSrc B.
;
; Format of the sync command line
;
; [SYNC_LISTS]
; REF_SRC       A/B      Chassis       Bps      Sync S:C:D-Range
; REF_SRC       A        1             1        4:0:1-5
; REF_SRC       B        2             1        4:0:1 4:0:2
;
;
; This is the Section Header that should be specified before
; specifying the individual sync lists
;
[SYNC_LISTS]
;-------------------------------------------------------------------
;           A/B Chassis        Bps     SyncList
;-------------------------------------------------------------------
;
; The following lines are to specify the SYNC List for Ref Source A.
;
REF_SRC    A       1            1        4:0:1     4:0:3-8     4:0:2
REF_SRC    A       1            2        4:0:1-8
REF_SRC    A       1            3        4:0:1     4:0:3       4:0:2
;
```

```
; The following lines are to specify the SYNC List for Ref Source B.
;
REF_SRC    B    2        1       4:0:1-8
REF_SRC    B    2        2       4:0:1-8
;
; An example for HUBNIC Mode
; Two TMS on BPS 1 and 2.
;
;REF_SRC    A    1        1       4:0:1-8
;REF_SRC    B    1        2       4:0:1-8
```

The comments contained in the synclist section provide some recommendations and guidelines for configuring the synclist. The following is an expanded explanation.

The first uncommented line in this section contains the string [SYNC_LISTS], to define the section to the startup scripts. Each subsequent (uncommented) line defines the prioritized list of clocking sources to use. The entries are in tabular format and the required fields on each line are:

Example
- The string REF_SRC
- The reference source being defined (i.e. A or B)
- The chassis number
- The backplane slot (BPS)
- The TMS slot number (or DCC), card, and device number delimited by colons (:).

For example, in the preceding sample, the first uncommented line after the [SYNC_LISTS] line is

```
REF_SRC    A    1    1       4:0:1     4:0:3-8     4:0:2
```

This configuration states that the first timing source to be used for REFCLK_A resides on chassis 1, BPS 1, slot 4, card 0, device 1. The slot, is the slot number as labeled on the front of the TMS. The card number is always 0 (additional numbers are reserved for future enhancement). The device number is the span on the DCC. A range of devices, or spans, can also be specified as shown in the second field (4:0:3-8).

If the current clock source becomes disabled for any reason, the selection process starts at the beginning of the list to obtain a valid source, rather than proceeding to the next specified source in the list. For example, if the source of REFCLK_A is currently span 8 on DCC4, the clock selection process starts checking at DCC4, span 1 (first on the list) and runs through the list, instead of going directly to DCC4 span 2 (last on the list).

Although there are no absolute limitations or rules to building the synclist, there are recommendations for achieving the best degree of failure redundancy.

Example

- In a multiple chassis system, the sources of REFCLK_A and REFCLK_B should be obtained from different chassis.

- In a single chassis system, the sources of REFCLK_A and REFCLK_B should be obtained from different BPSs (TMSs).

- A separate REF_SRC line should be used to define the list of sources from each chassis BPS.

- All available clock sources should be listed.

For testing digital systems for which there is no operating span available or connected, the sync clocks are obtained from oscillators on the TMS motherboard(s). To specify a local oscillator from a TMS, enter "-1" in the <slot>:<card>:<device> fields, as follows:

```
REF_SRC    A    3    1        -1:-1:-1
```

The above statement specifies the source of REFCLK_A as the local oscillator on chassis 3, BPS1 (TMS in chassis 3, slot 1).

If a clock slip occurs during normal operation (i.e., synchronized with the time derived from the primary span), the system attempts to synchronize with the first secondary span listed in the synclist. If this is unsuccessful, it attempts to synchronize with the next listed span (if any) and so on until all specified secondary sources are exhausted. If the system cannot synchronize with any of the specified sources, the system continues to operate with clock slips. Excessive clock slips cause the system to loose synchronization altogether. If this happens, the system generates appropriate alarm messages and exception conditions for application programs.

Chapter 3: Analog Protocol Configuration

This chapter covers:

1. Introduction to Analog Interface

2. Loop Start Telephone Facility

Introduction to Analog Interface

The Analog Line Interface (ALI) board provides a phone line interface to the Avaya Media Processing Server (MPS) 100 for up to 24 analog phone lines. It connects to the Public Switched Telephone Network (PSTN) via an RJ21X connector. The standard analog interface supports common two-wire loop-start circuits. Up to four ALIs can be installed in a Telephony Media Server (TMS), although three is typical since one of the four TMS slots is usually occupied by a Multiple DSP Module (MDM). ALIs cannot be combined with a Digital Communications Controller (DCC) in the same TMS.

✳ Note:

ALI is not available on the Avaya MPS 500 and MPS 1000.

The analog interface employed in the MPS is loop start.

Table 4: Analog Line Interface Hierarchy

Telephone Co. Facility	Interface	Hardware Interface
Loop Start	Standard Loop Start Interface on page 33	ALI
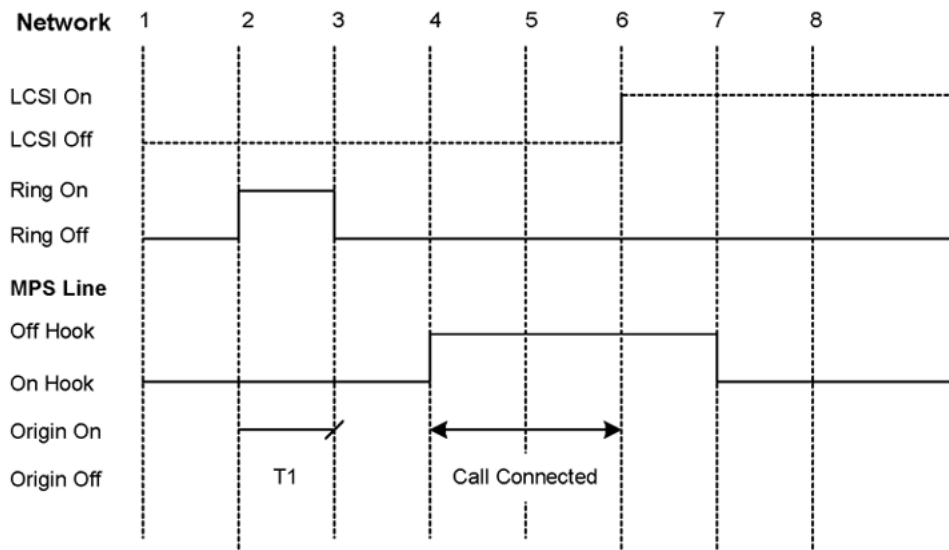
Figure 1: Analog Loop Start Inbound Call with Network Disconnect

Index	State
1	Idle
2	Ring On (T1 - Ring Stop Timer)
3	Ring Off
4	Off Hook
5	Call Connected
6	LCSI On
7	Network Disc
8	Idle
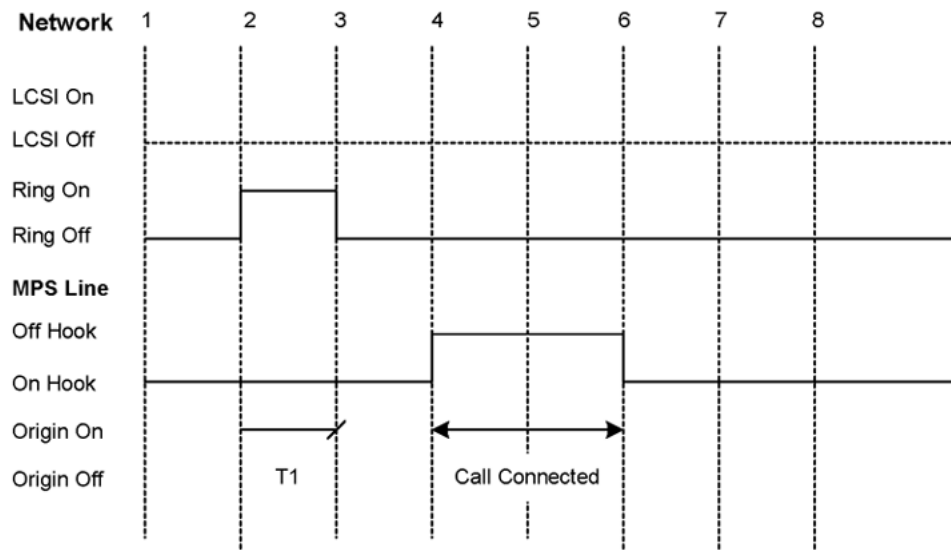
Figure 2: Analog Loop Start Inbound Call with Application Disconnect

Index	State
1	Idle
2	Ring On (T1 - Ring Stop Timer)
3	Ring Off
4	Off Hook
5	Call Connected
6	Application Disc
7	Idle
8	Idle
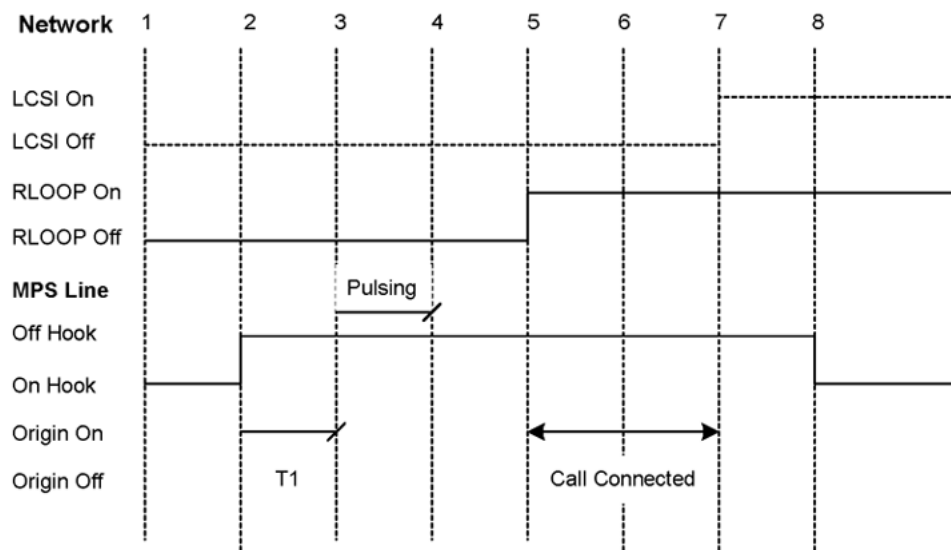
Figure 3: Analog Loop Start Outbound Call with Network Disconnect

Index	State
1	Idle
2	Off Hook (T1 - Dial Tone Guard Timer)
3	Pulsing
4	Idle
5	RLOOP On
6	Call Connected
7	Idle
8	Network Disc
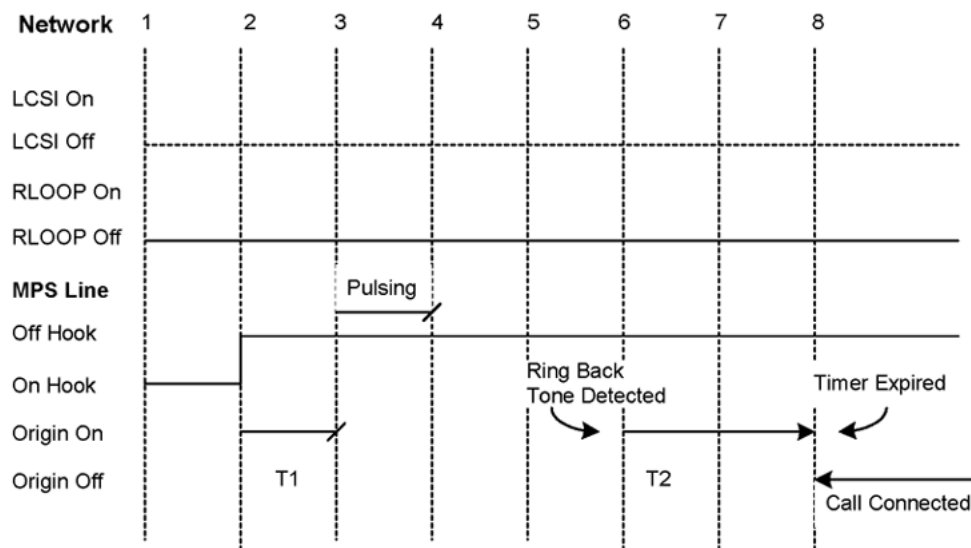
Figure 4: Analog Loop Start Outbound Call with Application Disconnect

Index	State
1	Idle
2	Off Hook (T1 - Dial Tone Guard Timer)
3	Pulsing
4	Idle
5	Idle
6	Ring Back Tone Detected (T2- Ring Back Gone Timer)
7	Idle
8	Call Connected

Loop Start Telephone Facility

Standard Loop Start Interface

This type of analog telephone line interface used in MPS systems, and is typically installed to provide single-line business and residential service.

The ALI is an Avaya hardware interface to the analog loop-start telephone facility. Each ALI can provide up to 24 analog phone lines. Up to four ALIs can be installed in a TMS.

The standard loop start configuration parameters and their default values are described below. These parameters may be changed to meet site-specific requirements.

Loop Start Call Answer/Disconnect Configuration

The physical ringing on the line is detected by the ALI module. This indication is either forwarded to CCM (for relaying it to the application program) or used by the ALI to physically answer the incoming call (based on the ring count received in the previous answer command from the application).

The following commands are available to adjust the call answer/disconnect parameters. In most cases, the default values should require no changes.

Loop Start Protocol Configuration

The parameters listed in the tables below describe how to configure the Analog Loop Start protocol. The Analog Loop Start protocol specific parameters are contained in the anlg_lpstart_proto.cfg file within the $MPSHOME/common/etc/tms directory.

Table 5: Site Specific Parameters

Parameter	Description	Default
TIM_standby_mode	Defines how a line behaves in standby state. Possible values are: lineBUSY, lineNOANSWER, lineINSERVICE, line OUTOFSERV.	lineNOANSWER
TIM_pickup_time	Number of seconds an outbound call remains in the presented state before being terminated by the MPS.	32 seconds

Table 6: Internal Parameters (should not be modified)

Parameter	Description	Default
TIM_answer	Number of rings to wait until inbound call is answered.	1 (answer after first ring)

Parameter	Description	Default
	Values are 0-8, where 0 disables auto-answer.	
TIM_total_call	Total call duration. Specifies the number of seconds a call can remain in the connected state.	0 (forever)
TIM_sby_on_discF	Should line automatically go to its standby mode on disconnect?	TRUE
TIM_CPD_name	Class name of the Call Progress Detector to use. If not set, TMS uses the default CPD.	<none>
TIM_DTMF_name	Class name of the DTMF receiver to use. If not set, TMS uses the default DTMF.	<none>
TIM_PLY_name	Class name of the player to use. If not set, TMS uses the default player.	<none>
TIM_TGEN_name	Class name of the tone generator to use. If not set, TMS uses the default tone generator.	<none>
TIM_R2ENG_name	Class name of the R2 engine to use. If not set, TMS uses the default R2 engine.	<none>

Table 7: Analog Loop Start Protocol Parameters

Parameter	Description	Default
TIM_param_0	On Hook Time (1=10 msec resolution) Specifies the duration that the MPS stays On Hook after a disconnect and before attempting a new call setup.	200 (2 sec)
TIM_param_1	Ring Stop Time (1=10 msec resolution) After this interval expires the protocol interprets this as an abandoned call (i.e. the caller hung up).	1200 (12 secs)
TIM_param_2	Dial Tone Guard Time (1=10 msec resolution) Duration the MPS waits for Dial Tone detection after issuing an Off Hook.	400 (4 secs)
TIM_param_3	Blind Dial Tone Time	200 (2 secs)

Parameter	Description	Default
TIM_param_4	Hook Flash Duration (1=10 msec resolution) Specifies the length of the hook flash pulse.	50 (0.5 secs)
TIM_param_5	Ring Back Gone Time (1=10 msec resolution) Specifies the duration that the MPS waits after detecting that the ring back tone has gone before connecting the call.	500 (5 secs)
TIM_param_6	Release Guard Interval (1=10 msec resolution) Specifies the duration that the MPS waits for LCSI acknowledgement after issuing On Hook.	2000 (20 secs)
TIM_param_7	Blind Off Hook TIme (1=10 msec resolution) Specifies the duration that the MPS waits after outdialing before connecting the call. This is used only if the network provides no call progress indications (i.e. ring back tone).	400 (4 secs)
TIM_param_8	LCSI Flag There maybe situations where a particular switch is incapable of sending LCSI signals. This parameter specifies whether the MPS waits for LCSI indications from the switch or goes directly to standby/idle state after issuing an Off Hook. (0 --> do not wait for LCSI indication; 1 --> wait for LCSI indication)	0

The parameter settings contained in the anlg_lpstart_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard wink duration is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from anlg_lpstart_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

Chapter 4: Digital Protocol Configuration

This chapter covers:

1. Introduction to Digital Interfaces

2. Configuration of T1 Lines

3. Configuration of E1 (CEPT) Lines

4. Configuration of VOIP

5. Inter-Chassis Bridging

Introduction to Digital Interfaces

The digital telephone interface (also known as a T1 Interface) is a common type of interface used for connecting the Avaya Media Processing Server (MPS) Product Family to the telephone network and/or a PBX/ACD system. This interface is used when call processing volume is high. There are often telephone tariff, as well as increased reliability and flexibility benefits associated with digital connections. The digital connection between the MPS and the network or PBX/ACD is also known as a Four- Wire connection. The physical connection for digital interface is often made via a device known as the Channel Service Unit (CSU). The CSU provides network isolation and loopback testing functions. In most cases, when a digital connection is made to a PBX/ACD system, the CSU is omitted. Each digital phone line interface module (also known as a DCC/PLI module) supports up to 8 digital connections. Each digital connection supports 24 channels and said to utilize a DS-1 (Digital Signal - Level 1) circuit. This T1 circuit or the digital facility is also referred to as a span. The words span, T1, DS-1 and digital are all used interchangeably to refer to the digital telephone interface.

Digital Signaling Schemes

Digital systems support various telephone line types via signaling schemes. Many signaling schemes mimic the characteristics of their equivalent analog interfaces. However, there are many signaling schemes that apply only to digital systems. The type of signaling used is a function of the network services that are being utilized and/or the configuration of the PBX/ACD system.

Special Digital Features

There are many special operational functions and features associated with a digital connection. Many of these functions are discussed briefly when the commands dealing with their configurations are described.

T1/E1 Standards

The fundamental difference between T1 and E1 standards are the bit rate and voice data compression schemes (T1 uses U-law with 24 phone lines per span, while E1 uses A-law with 30 phone lines per span). Many countries have developed their own unique digital telephone protocols within T1 or E1 standards. These protocols are rarely compatible with each other. Occasionally, a single country (such as the U.S.) uses multiple implementations of the T1 specification.

For information, see

T1 Protocols

T1 is a digital transmission link with a capacity of 1.544 Mbps. It is the standard for digital telephony in North America. One T1 span normally carries 24 voice channels. The most common method of encoding voice data into a digital bit stream is called Pulse Code Modulation (PCM).

This section covers all T1 phone line protocols according to the hierarchy displayed in the following table. If a specific protocol needs to be configured, move to the appropriate section. Otherwise, follow the hierarchy as it is presented.

Table 8: T1 Protocol Hierarchy

Signaling	Family	Protocol		Protocol Config File
In-Band	R1	FGD EAIN	TR-NPL-000258	`fgd_eain_proto.cfg`
	E&M	Wink-Start	TR-41458	`att_winkstart_proto.cfg`
		E&M Immediate Start		`EandMStart_proto.cfg`

Signaling	Family	Protocol		Protocol Config File
		E&M Delay Dial		`EandMStart_proto.cfg`
	Channel Bank	Line Side T1	Meridian SL-100 Line Side T-1 Interface MSL09 Standard 03.02	`linesideT1_proto.cfg`
		NEC Line Side T1		`NEC_linesideT1_proto.cfg`
		Alternate Channel Bank		`alt_channelbank_proto_cfg`
Out of Band	ISDN	Nortel (NI-1)	A211-1 (SR-NWT-001937)	The following configuration files apply to all ISDN protocols. A configuration of a particular variant is specified in the tms.cfg file tms.cfg File on page 158
		National (NI-2)	SR-NWT-002120	
		ATT	TR41449-TR41459	`UISDN_23B_D_user_proto.cfg/` `UISDN_24B_user_proto.cfg`
		NTT	JT-Q931	
		Hong Kong	HKTA 2015	
	VOIP	H.323	Version 2	`voip_proto.cfg`

 Note:

To configure T1 protocols, the load line for that span must be set to the proto.cfg file in the tms.cfg file. A partial tms.cfg file, shown below, depicts the configuration of spans with protocols.

Signaling Configuration: In-Band vs. Out-of-Band

In a digital connection to the telephone network, all call setup and termination is performed by signal bit change or ABCD-bit signaling.

ABCD-Bit Signaling is a technique used in most of the T1 transmission links where one bit, 'robbed' from each of the 24 channels in every sixth frame, is used for carrying dialing and controlling information. This causes distortions to voice data that are minuscule enough not to be detected. However, these distortions make this signaling method unsuitable other types of data-transmission, such as computer-links, network links, etc. That is why, for data-transmission, the MPS uses ISDN, which dedicates a separate channel to signaling. ISDN vs. Standard Digital Configuration on page 162

Signal bits are special bits in the digital data stream with on/off patterns. These patterns represent logical events between the network and the phone line for call setup and termination. The signaling scheme is often referred to as a network protocol. There are many types of protocols that are available depending upon type of service being utilized. The protocol signaling bits are also referred to as A and B bits. Thus, the signaling scheme is also referred to as an A/B bit protocol. Since protocol signal bits are part of the digital signal that also carries voice, the A/B bit protocol is also referred to as in-band signaling. Since the digital connection is a four wire connection, there are separate A and B bits for the network side and the MPS line side. During signaling, both sides of the A/B bits can be used. Most signaling protocols generally use only A bit changes.

> ✳ **Note:**
> C and D bits are usually not used for T1. They usually follow the A and B bit pattern.

Configuring Signaling Protocols

> ✳ **Note:**
> The words line and channel are used interchangeably in this discussion to refer to a single phone connection in the span. Each span has 24 channel capacity and all 24 channels may or may not be used depending upon the network service.

The various signaling protocols are described using a diagram along with applicable configuration parameters. Generally, a protocol is identified with a name and has some or many signaling parameters associated with it. Since signaling parameters are often common between different protocols, the system has generic defaults for these. However, some parameters may need to be adjusted depending on the protocol.

Generally, the type of network service dictates the signaling protocols that may be used. When the digital connection is exclusively to a PBX/ACD, the type and PBX/ACD configuration dictates the signaling protocol. In the discussion below, all protocols are discussed first, followed by most commonly used network services and associated configuration.

Standard T1 Telephony Parameters

Each protocol used in the MPS has a proto.cfg (protocol configuration) file which contains standard parameters that effect all protocols. All telephony protocols used in the MPS support the following standard parameters.

Table 9: Site-Specific Parameters

Parameter	Description	Default
TIM_standby_mode	Defines how a line behaves in standby state. Possible values are: lineBUSY, lineNOANSWER, lineINSERVICE, line OUTOFSERV.	lineNOANSWER
TIM_pickup_time	Number of seconds an outbound call remains in the presented state before being terminated by the MPS.	32 seconds

Table 10: Internal Parameters (should not be modified)

Parameter	Description	Default
TIM_answer	Number of rings to wait until inbound call is answered. Values are 0-8, where 0 disables auto-answer.	1 (answer after first ring)
TIM_total_call	Total call duration. Specifies the number of seconds a call can remain in the connected state.	0 (forever)
TIM_sby_on_discF	Should line automatically go to its standby mode on disconnect?	TRUE
TIM_CPD_name	Class name of the Call Progress Detector to use. If not set, TMS uses the default CPD.	<none>
TIM_DTMF_name	Class name of the DTMF receiver to use. If not set, TMS uses the default DTMF.	<none>
TIM_PLY_name	Class name of the player to use. If not set, TMS uses the default player.	<none>
TIM_TGEN_name	Class name of the tone generator to use. If not set, TMS uses the default tone generator.	<none>
TIM_R2ENG_name	Class name of the R2 engine to use. If not set, TMS uses the default R2 engine.	<none>

T1 In-Band Signaling

Some protocols transmit A/B bits as part of the digital signal that also carries voice. This is referred to as in-band signaling. The families of in-band protocols are Wink-Start, Channel-Bank, and Feature Group D.

The following table summarizes the use of ABCD-bit signaling in different protocols, and how it corresponds to analog line signaling.

Table 11: Analog Line Counterparts for ABCD-bit Signaling

Protocol	Network Offhook	Network Ring On	Network Ring Off	MPS Offhook	MPS Origin
ATT Wink-Start (Bell Specs)	A set (B ignored)	–	–	A set	A set
Channel Bank Ground Start	A clear	B clear	–	A set	B clear
Feature Group D	A set (B ignored)	–	–	A and B set	A set
Alternate Channel Bank	–	A and B set	A and B clear	A set and B clear	A set and B clear
Line Side T1	A and B clear	A and B set	A and B set	A and B set	A and B set
E&M Start	A and B set	–	–	A and B set	A and B set

 Note:

The in-band signaling commands listed here for T1 Standard Channel Bank, Wink-Start, and Feature Group D protocols may also be used with E1 systems.

In-Band Wink-Start Protocol Family

The Wink-Start protocol family is most commonly used when the MPS is directly connected to the telephone network via a DS-1 circuit. Wink signaling is a handshake mechanism to the telephone network for accepting calls or originating calls. The party that originates a call sets (turns on) signal bit A. The receiving party "winks" back to acknowledge it is ready to receive the outpulsed digits (a wink is a momentary clearing of signal bit A for a duration of approximately 200-240 ms).

Signal bit changes from the network also permit the detection of far end (party) disconnect, and answer supervision during call origination to detect when a call is picked up.

All winking protocols are derived from the original AT&T Specification 41458. For that reason, this document refers to the basic MPS implementation of this protocol as the ATT protocol. It is also called the Bell Specs Protocol.

Implementations of the AT&T Wink-Start specification vary deeply. Some have missing features – some do not even wink. However, answer supervision is always supported. For simplicity, this manual groups all protocols that were derived from the original AT&T Specification, within the Wink-Start Family.

One of the implementations of the Wink-Start protocol family offers an additional utility: Dialed Number Identification Service (DNIS, pronounced 'Dee-nes').

The protocols supported in this protocol family include ATT (Bell Specs - TR41458) on page 43 and DNIS on page 48.

ATT (Bell Specs - TR41458)

The parameters listed in the following table describe how to configure the AT&T Wink Start protocol. These AT&T Winkstart protocol specific parameters are found in the att_winkstart_proto.cfg file found in the $MPSHOME/common/etc/tms directory

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/ Class	Protocol Pkg
LOAD	1	4	1	T1	-	-	line	att_winkstart_proto.cfg

Table 12: T1 ATT Wink-Start Protocol Parameters

Parameter	Description	Default
TIM_param_0	Minimum Wink Duration (10msec resolution) Specifies the minimum acceptable duration for a received wink. Any wink received with a duration less than specified by this parameter will be ignored.	10 (100 msec)
TIM_param_1	Maximum Wink Duration (10msec resolution) Specifies the maximum acceptable duration for a received wink. Any wink received with a duration longer than specified by this parameter will be ignored.	35 (350 msec)
TIM_param_2	Nominal Wink Duration (10msec resolution) Specifies the duration of the wink to send.	25 (250 msec)

Parameter	Description	Default
TIM_param_3	Hit Threshold. (10msec resolution) Bit changes lasting less than this duration will be ignored.	7 (70 msec)
TIM_param_4	Valid Answer Duration (10msec resolution) Answer indications lasting less than this duration are ignored.	7 (70 msec)
TIM_param_5	Valid Disconnect Duration (10msec resolution) Disconnect indications lasting less than this duration are ignored.	7 (70 msec)
TIM_param_6	Hook flash Duration (10msec resolution) Specifies the length of the hook flash pulse.	5 (50 msec)
TIM_param_7	<not used>	<not used>
TIM_param_8	<not used>	<not used>
TIM_param_9	Alerting Interval (10msec resolution) Specifies the full period of the ring back tone (ring on time + ring off time)	400 (4 secs)
TIM_param_10	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	210 (2.1 secs)
TIM_param_11	Wink Guard Timer (10msec resolution) Specifies how long the MPS waits for the far end to send a wink in response to a line seizure.	1000 (10 secs)
TIM_param_12	Blind Timer (10msec resolution) After receiving a wink from the network, the MPS delays by this amount of time before sending DTMS digits to the network.	7 (7 msecs)
TIM_param_13	Outdial Complete Guard Timer (10msec resolution) Maximum amount of time the protocol waits for a response from the internal Tone Generator before abandoning the call.	1500 (15 secs)
TIM_param_14	Ring back ON duration (10msec resolution) This is set to the ON DURATION of the ring back tone + 1 second.	200 (2 secs)
TIM_param_15	Digit Collection Parameter (range 0 to 36) Parameter specifying the amount of indial digits to collect.	0 (do not collect digits)
TIM_param_16	First Digit Timeout (sec resolution) Specifies how long the MPS waits for the first indial digit before abandoning the call.	3 (3 secs)
TIM_param_17	Inter Digit Timeout (sec resolution) Specifies how long the MPS waits for the next indial digit before abandoning the call.	1 (1 sec)

Parameter	Description	Default
TIM_param_18	Ring back Timer (10msec resolution) Specifies the amount of time the MPS will wait for a ring back tone (or an off-hook signal) from the network after sending the DTMF digits to the network.	1500 (15 secs)
TIM_param_19	HookFlash Timer (10msec resolution) Specifies the duration of a hookflash.	50 (0.5secs)
TIM_param_20	HookFlash Auto Connect Timer (10msec resolution) Specifies the timer for simulating a connect after transferring. ✱ **Note:** Should not be modified.	200 (2 secs)

The parameter settings contained in the att_winkstart_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard wink duration is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from att_winkstart_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.
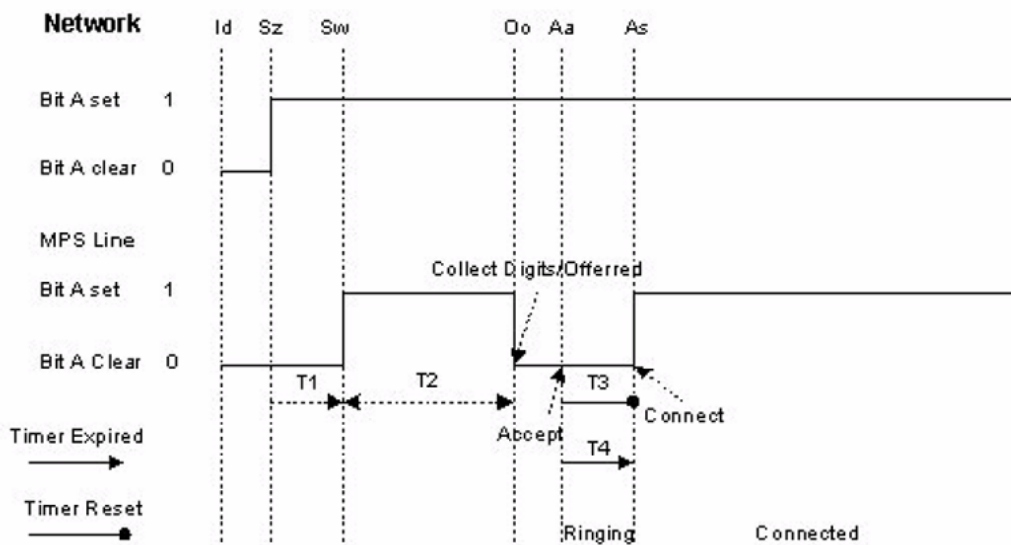
Figure 5: Wink-Start Call Setup Inbound with Wink

Index	State	Action	Index	Timer
Id	Idle	Ready to Answer	T1	Hit Threshold
Sz	Seize	Seizure attempt	T2	Nominal Wink Duration

Sw	Seize/Wink	Seizure Ack. / Wink	T3	Alerting Interval
Oo	Offered	Call Offered	T4	Ring-On Time
Aa	Accept	Call Accepted		
As	Answered	Call Answered		
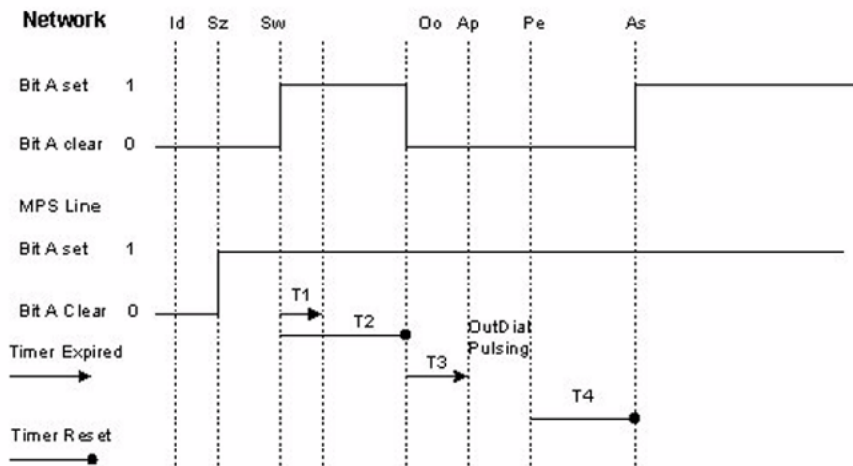
Figure 6: Wink-Start Call Setup Outbound with Wink

Index	State	Action	Index	Timer
Id	Idle	Ready to Answer	T1	Min Wink Duration
Sz	Seize	Seizure attempt	T2	Max Wink Duration
Sw	Seize/Wink	Seizure Ack. / Wink	T3	Outdial Blind Timer
Oo	Offered	Call Offered	T4	Pickup Timer
Ap	Accept	Call Accepted/Outdial Begins		
Pe	Outdial	Outdial Ends		
As	Answered	Call Answered		
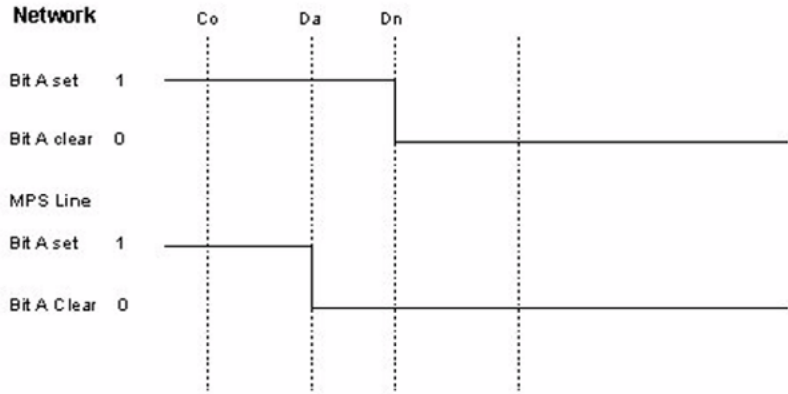
Application Disconnect
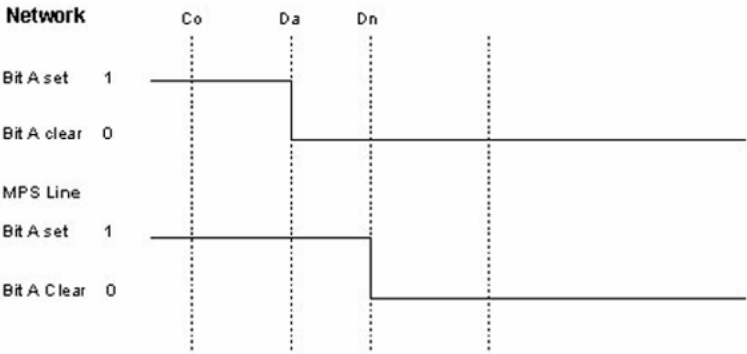
Network Side

Figure 7: Wink-Start Call Disconnect

Index	State	Action
Co	Connected	Call in Connected State
Da	Disconnect	Disconnect Initiated
Dn	Disconnect	Disconnect Acknowledged

DNIS

Dialed Number Identification Service (DNIS) is a service supplied by the telephone network that provides a mechanism to have many telephone numbers serviced by one or more T1 spans.

With this service, a portion of the called telephone number is delivered as a sequence of touch-tone digits (also called indial digits) to a channel during call setup. These indial digits are received by the line and are retrieved by an application program for analysis and further action. The application can decide to accept or reject the call based on the indial digits.

Use the following commands within the att_winkstart_proto.cfg file to configure the characteristics of the indial digits:

Example

- TIM_param_15 enables/disables the collection of DNIS digits and
- TIM_param_16 and TIM_param_17 to specify the amount of time the MPS waits for the first digit and subsequent "inter" digits.

In-Band Channel-Bank Protocol Family

In many configurations, the MPS system is digitally connected either to the telephone network or to a PBX/ACD via a channel bank (a channel bank is generally used to convert up to 24 existing analog telephone connections into a digital connection). In some cases, there is no physical channel bank device but the MPS performs an emulation of a channel bank device.

There are many different types of channel bank devices. The digital line protocols in the MPS support the standard channel bank signaling described in EIA-RS464 (SP-1378) for loop start and ground start lines.

You can configure the channel bank protocol support to support both ground start and loop start lines. Generally, a channel bank contains the same type of lines. However, in some cases, the lines terminating at the channel bank can be a mixture of loop start and ground start lines.

The Channel-Bank Protocol Family consists of:

Example

- Lineside T1
    - Loop Start

- Ground Start
  • Alternate Channel Bank

Standard Channel-Bank Protocol Group (SP-1378A)

The standard channel bank protocols are the most common. When this type of protocol is used to control loop and/or ground start lines, the standard analog ground start and loop start line answer and disconnect parameters, such as lcsi, are not applicable, except for those noted here. The channel banks actually perform the line protocol and the MPS protocol controls and monitors the channel bank signals. The MPS supports the ground start protocol in the Channel-Bank Protocol group.

> ✱ **Note:**
> In addition to T1 protocols, these commands can be issued for E1 protocols.

Lineside T1 Protocol Specific Parameters

The parameters listed in the table below describe how to configure the Lineside T1 protocol. The Lineside T1 protocol specific parameters are contained in the linesideT1_proto.cfg file within the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/Class	Protocol Pkg
LOAD	1	4	1	T1	-	-	line	linesideT1 _proto.cfg

Table 13: Lineside T1 Protocol Parameters

Parameter	Description	Default
TIM_param_0	Outdial Complete Guard Timer (10msec resolution) Maximum amount of time the protocol waits for a response from the internal Tone Generator before abandoning the call.	3000 (30 secs)
TIM_param_1	Ring stop time (10msec resolution) Specifies the duration that the MPS will wait for the Ring Off bit pattern before abandoning the call attempt. (10 msec resolution)	600 (6 secs)
TIM_param_2	Dial Tone guard Time. Specifies the duration that the MPS will wait for dial tone indication from the	400 (4 secs)

Parameter	Description	Default
	network after issuing an Off hook. (10msec resolution)	
TIM_param_3	Blind Dial tone time. In situations where the MPS is not monitoring for call progress indications, the MPS will wait for this amount of time before outdialing after issuing an off hook. (10 msec resolution)	200 (2 secs)
TIM_param_4	Hook flash Duration (10msec resolution) Specifies the length of the hook flash pulse.	50 (0.5 sec)
TIM_param_5	Ring back gone time. Specifies the duration that the MPS will wait after detecting that the ring back tone has gone away before connecting the call. (10 msec resolution)	600 (6 secs)
TIM_param_6	Auto Connect Time. Specifies the duration that the MPS will wait after outdialing before automatically connecting the call. A value of "0" disables this feature. (10 msec resolution)	0 (0 secs)
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	7 (70 msec)
TIM_param_9	Call Progress Monitoring Flag. Flag specifying whether or not the MPS should do call progress monitoring. (1 → monitor CP; 0 → do not monitor CP)	1
TIM_param_10	GroundStart Flag. Flag specifying the configuration. (1 → GroundStart; 0 → LoopStart)	0 (LoopStart)
TIM_param_11	Voice Detect Flag. Flag specifying whether voice detection should be announced in the connected state. (0 → Off; 1 → On)	0 (Off)
TIM_param_12	Number of Indial Digits to collect.	0
TIM_param_13	First Digit Timeout (sec resolution). Specifies how long the MPS waits for the first indial digit before abandoning the call.	5 secs
TIM_param_14	Inter Digit Timeout (sec resolution). Specifies how long the MPS waits for the next indial digit before abandoning the call.	1 sec
TIM_param_15	Alerting Interval (10msec resolution). Specifies the full period of the ring back tone (ring on time + ring off time).	300 (3 secs)

Parameter	Description	Default
TIM_param_16	Alerting Interval (10msec resolution). Specifies the full period of the ring back tone (ring on time + ring off time).	150 (1.5 secs)
TIM_param_17	CPD Dial Disc Flag. Specifies whether to terminate a call if a CPD Dial tone is received.	0 (FALSE)
TIM_param_18	CPD Dial Busy Flag. Specifies whether to terminate a call if a CPD Busy tone is received.	0 (FALSE)

The parameter settings contained in the linesideT1_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard wink duration is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from linesideT1_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.
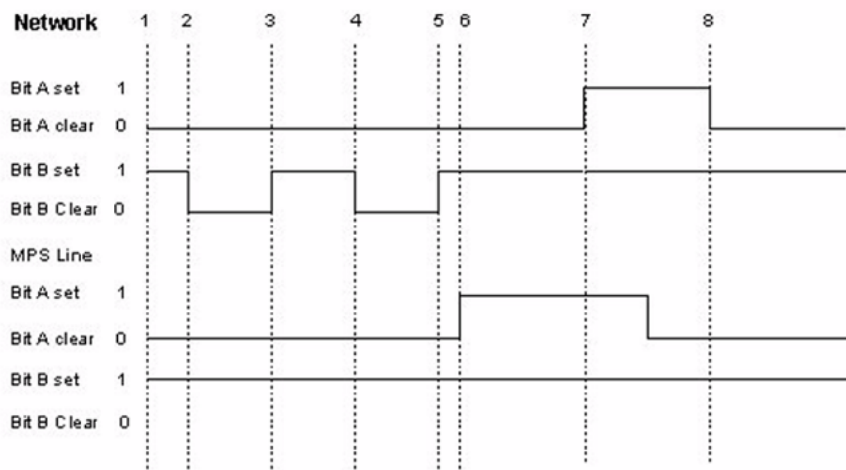
Figure 8: Lineside T1 Call Setup Inbound with Disconnect

Index	State
1	Idle
2	Ring On
3	Ring Off
4	Ring On
5	Ring Off
6	Answer
7	Network Disc

Index	State
8	Idle
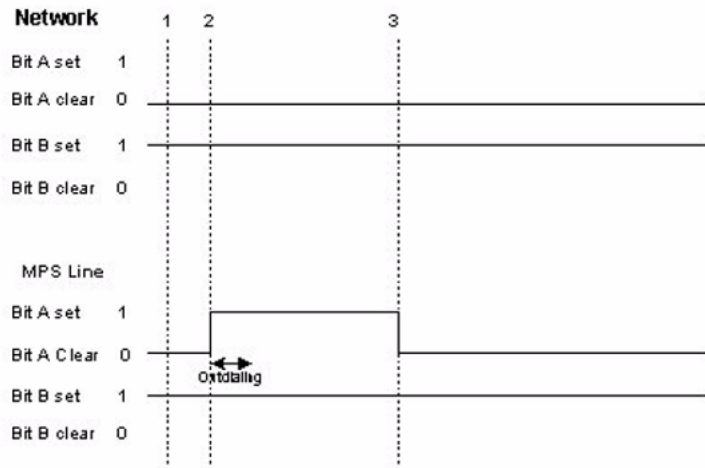
Figure 9: Lineside T1 Call Setup Outbound with Disconnect

Index	State
1	Idle
2	Off Hook
3	Release/Idle

E and M Start Protocol Specific Parameters

The parameters listed in the table below describe how to configure the E&M Start protocol. The E&M Start specific parameters are contained in the EandMStart_proto.cfg file within the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/ Class	Protocol Pkg
LOAD	1	4	1	T1	-	-	line	EandMStart _proto.cfg

Table 14: E and M Start Protocol Parameters

Parameter	Description	Default
TIM_param_0	Delay Dial Signaling Flag Specifies whether to configure as Delay Dial of Immediate Start. (0 → Immediate Start; 1→ Delay Dial)	0
TIM_param_1	Delay Dial Timer (10msec resolution) Specifies the Delay Dial timer. **Note:** Should not be changed.	25 (250 msec)
TIM_param_2	Not Used	-
TIM_param_3	Hit Threshold (10msec resolution) Bit changes lasting less than this duration will be ignored.	7 (70 msec)
TIM_param_4	Not Used	-
TIM_param_5	Not Used	-
TIM_param_6	Not Used	-
TIM_param_7	Not Used	-
TIM_param_8	Not Used	-
TIM_param_9	Alerting Interval (10msec resolution) Specifies the full period of the ring back tone. (ring on time + ring off time)	400 (4 secs)
TIM_param_10	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	210 (2.1 secs)
TIM_param_11	Delay Dial Guard Timer (10msec resolution) Specifies how long to wait for delay dial signaling from the far side.	500 (5 secs)
TIM_param_12	Blind Timer (10msec resolution) The MPS delays by this amount of time after sending an OffHook before sending DTMF digits to the network.	20 (200 msec)
TIM_param_13	Outdial Complete Guard Timer (10msec resolution) Maximum amount of time the protocol waits for a response from the internal Tone Generator before abandoning the call.	1500 (15 secs)
TIM_param_14	Ring back ON duration (10msec resolution) This is set to the ON DURATION of the ring back tone + 1 second.	200 (2 secs)
TIM_param_15	Digit Collection Parameter (range 0 to 36) Parameter specifying the amount of indial digits to collect.	0 (do not collect digits)

Parameter	Description	Default
TIM_param_16	First Digit Timeout (sec resolution) Specifies how long the MPS waits for the first indial digit before abandoning the call.	3 (3 secs)
TIM_param_17	Inter Digit Timeout (sec resolution) Specifies how long the MPS waits for the next indial digit before abandoning the call.	1 (1 sec)
TIM_param_18	Ring Back Timer (10msec resolution) Specifies the amount of time the MPS will wait for a ring back tone (or an off-hook signal) from the network after sending the DTMF digits to the network.	1500 (15 secs)
TIM_param_19	HookFlash Timer (10msec resolution) Specifies the duration of a hookflash.	50 (0.5 sec)
TIM_param_20	HookFlash Auto Connect Timer (10msec resolution) Specifies the timer for simulating a connect after transferring. ✳ **Note:** Should not be changed.	200 (2 secs)
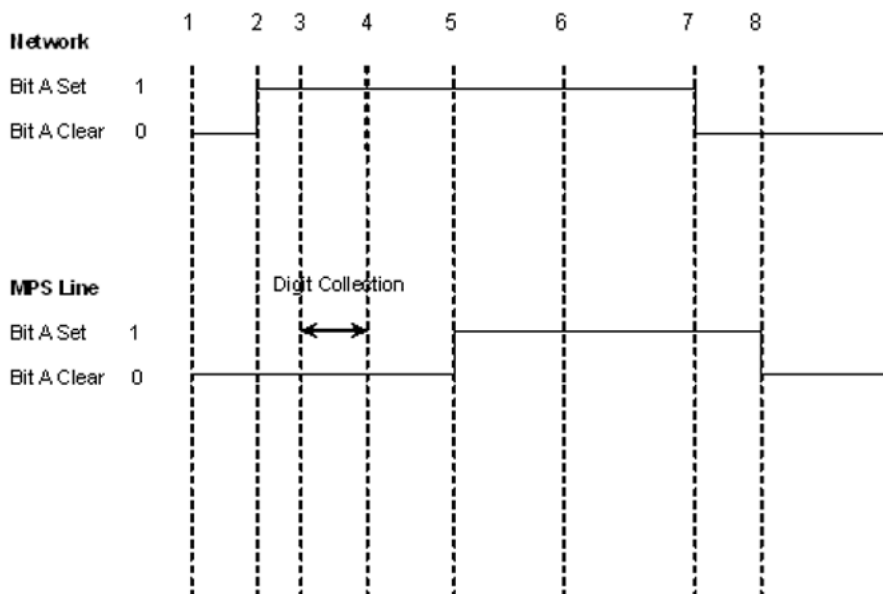
Figure 10: E and M Start Call Setup Inbound User Disconnect

Index	State
1	Idle
2	Off Hook
3	Begin Digit Collection

Index	State
4	Done Digit Collection
5	Answer
6	Connected
7	Release
8	Idle
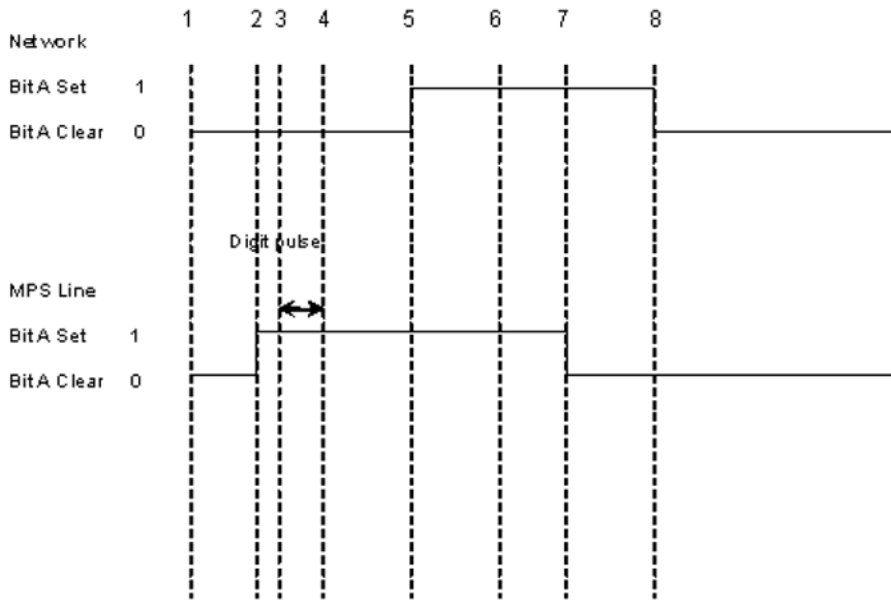
Figure 11: E and M Start Call Setup Outbound with MPS Disconnect

Index	State
1	Idle
2	Off Hook
3	Begin Digit Pulse
4	Done Digit Pulse
5	Answer
6	Connected
7	Release
8	Idle

NEC Lineside T1 Protocol Specific Parameters

The parameters listed in the table below describe how to configure the NEC Lineside T1 protocol. The NEC Lineside T1 specific parameters are contained in the NEC_linesideT1_proto.cfg file within the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/ Class	Protocol Pkg
LOAD	1	4	1	T1	-	-	line	NEC_line sideT1_ proto.cfg

Table 15: NEC Lineside T1 Protocol Parameters

Parameter	Description	Default
TIM_param_0	Outdial Complete Guard Timer (10msec resolution) Maximum amount of time the protocol waits for a response from the internal Tone Generator before abandoning the call.	3000 (30 secs)11
TIM_param_1	Not Used	-
TIM_param_2	Dial Tone Guard Time. Specifies the duration that the MPS will wait for dial tone indication from the network after issuing an off hook. (10msec resolution)	400 (4 secs)
TIM_param_3	Blind Dial Tone Time. In situations where the MPS is not monitoring call progress indications, the MPS will wait for this amount of time before outdialing after issuing an off hook. (10msec resolution).	200 (2 secs)
TIM_param_4	Hook Flash Duration (10msec resolution) Specifies the length of the hook flash pulse.	50 (0.5 sec)
TIM_param_5	Ring Back Gone Time. Specifies the duration that the MPS will wait after detecting the ring back tone has gone away before connecting the call. (10msec resolution)	600 (6 secs)
TIM_param_6	Auto Connect Time. Specifies the duration that the MPS will wait after outdialing before automatically connecting the call. A value of "0" disables this feature. (10msec resolution)	0 (0 sec)
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call. (10msec resolution)	150 (1.5 secs)

Parameter	Description	Default
TIM_param_8	Hit Threshold. Bit changes lasting less than this duration are ignored.	7 (70 msec)
TIM_param_9	Call Progress Monitoring Flag. Flag specifying whether or not the MPS should do call progress monitoring. (1 → monitor CP; 0 → do not monitor CP)	1
TIM_param_10	GroundStart Flag. Flag specifying the configuration. (1 → GroundStart; 0 → LoopStart)	0 (LoopStart)
TIM_param_11	Voice Detect Flag. Flag specifying whether voice detection should be announced in the connected state. (0 → Off; 1 → On)	0 (Off)
TIM_param_12	Alerting Interval (10msec resolution). Specifies the full period of the ring back tone (ring on time + ring off time).	300 (3 secs)
TIM_param_13	Ring Back ON Duration (10msec resolution). This is set to the ON DURATION of the ring back tone + 1 second.	150 (1.5 secs)
TIM_param_14	CPD Disc Flag. Specifies whether to terminate a call if CPD Progress Tones are received.	0 (FALSE)
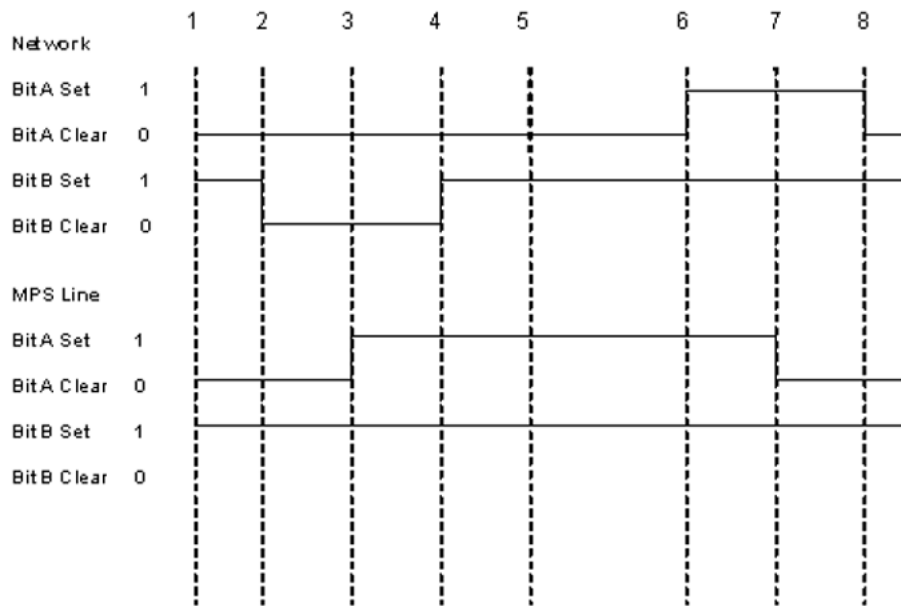
Figure 12: NEC Lineside T1 Call Setup Inbound User Disconnect

Index	State
1	Idle

Index	State
2	Off Hook from Network
3	MPS Answer
4	Answer Ack
5	Connected
6	Network Disc
7	MPS Idle
8	Network Idle
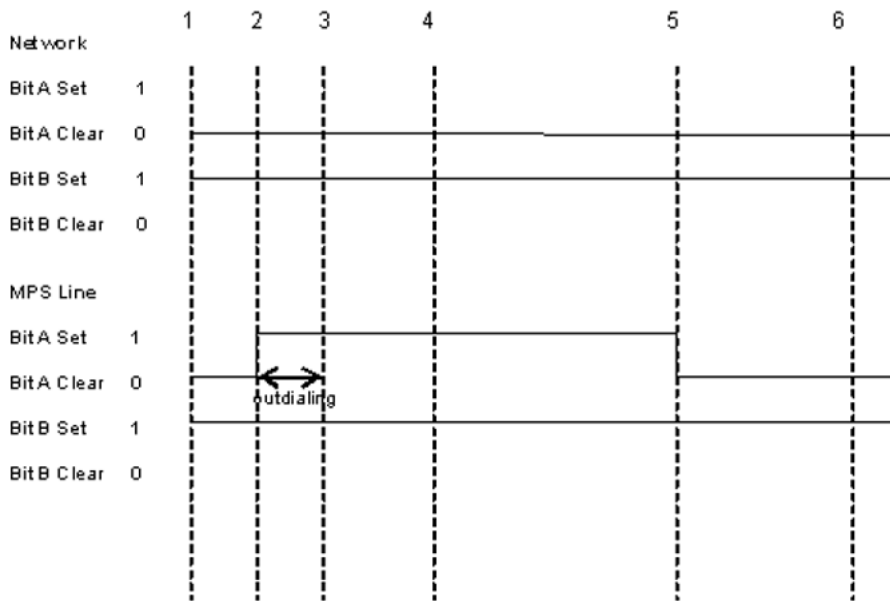
Figure 13: NEC Lineside T1 Call Setup Outbound with MPS Disconnect

Index	State
1	Idle
2	Off Hook
3	Release/Idle
4	Connected
5	Release
6	Idle

Alternate Channel-Bank Protocol Group

These protocols are used only if the channel bank hardware contains line cards that follow the protocol sequences described here. When these protocols are used to control loop start and/ or ground start lines, the standard analog ground start and loop start line parameters are not applicable, except for those noted here. The channel banks actually perform the line protocol and the MPS protocol controls and monitors the channel bank signals.

The alternate Channel-Bank Protocol Group consists of four protocols:

Example

- 2-Wire FXO loop start
- 2-Wire FXO ground start
- Modified 2-Wire FXO loop start
- Modified 2-Wire FXO ground start

⊛ **Note:**

Not currently supported in this release.

The table provides digital signal bit to analog line state correlation.

Alternate Channel Bank Protocol Specific Parameters

The parameters listed in the following table describe how to configure the Alternate Channel Bank protocol. These Alternate Channel Bank protocol specific parameters are found in the alt_ChannelBank_proto.cfg file found in the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/Class	Protocol Pkg
LOAD	1	4	1	T1	-	-	line	alt_Channel Bank_proto. cfg

Table 16: Alternate Channel Bank Protocol Parameters

Parameter	Description	Default
TIM_param_0	Outdial Complete Guard Timer (10msec resolution) Maximum amount of time the protocol waits for a response from the internal Tone Generator before abandoning the call.	3000 (30 secs)
TIM_param_1	Ring stop time (10msec resolution) Specifies the duration that the MPS will wait for the Ring Off bit pattern before abandoning the call attempt. (10 msec resolution)	600 (6 secs)
TIM_param_2	Dial Tone guard Time. Specifies the duration that the MPS will wait for dial tone indication from the network after issuing an Off hook. (10msec resolution)	400 (4 secs)
TIM_param_3	Blind Dial tone time. In situations where the MPS is not monitoring for call progress indications, the MPS will wait for this amount of time before outdialing after issuing an off hook. (10 msec resolution)	200 (2 secs)
TIM_param_4	Hook flash Duration (10msec resolution) Specifies the length of the hook flash pulse.	50 (0.5 sec)
TIM_param_5	Ring back gone time. Specifies the duration that the MPS will wait after detecting that the ring back tone has gone away before connecting the call. (10 msec resolution)	600 (6 secs)
TIM_param_6	Auto Connect Time. Specifies the duration that the MPS will wait after outdialing before automatically connecting the call. A value of "0" disables this feature. (10 msec resolution)	0 (0 sec)
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	7 (70 msec)
TIM_param_9	Call Progress Monitoring Flag. Flag specifying whether or not the MPS should do call progress monitoring. (1 → monitor CP; 0 → do not monitor CP)	1
TIM_param_10	GroundStart Flag. Flag specifying the configuration. (1 → GroundStart; 0 → LoopStart)	0 (LoopStart)

Parameter	Description	Default
TIM_param_11	Voice Detect Flag. Flag specifying whether voice detection should be announced in the connected state. (0 → Off; 1 → On)	0 (Off)
TIM_param_12	Number of Indial Digits to collect.	0
TIM_param_13	First Digit Timeout (sec resolution). Specifies how long the MPS waits for the first indial digit before abandoning the call.	5 secs
TIM_param_14	Inter Digit Timeout (sec resolution). Specifies how long the MPS waits for the next indial digit before abandoning the call.	1 sec
TIM_param_15	Alerting Interval (10msec resolution). Specifies the full period of the ring back tone (ring on time + ring off time).	300 (3 secs)
TIM_param_16	Alerting Interval (10msec resolution). Specifies the full period of the ring back tone (ring on time + ring off time).	150 (1.5 secs)
TIM_param_17	CPD Disc Flag. Specifies whether to terminate a call if Call Progress Tones are received.	0 (Off)
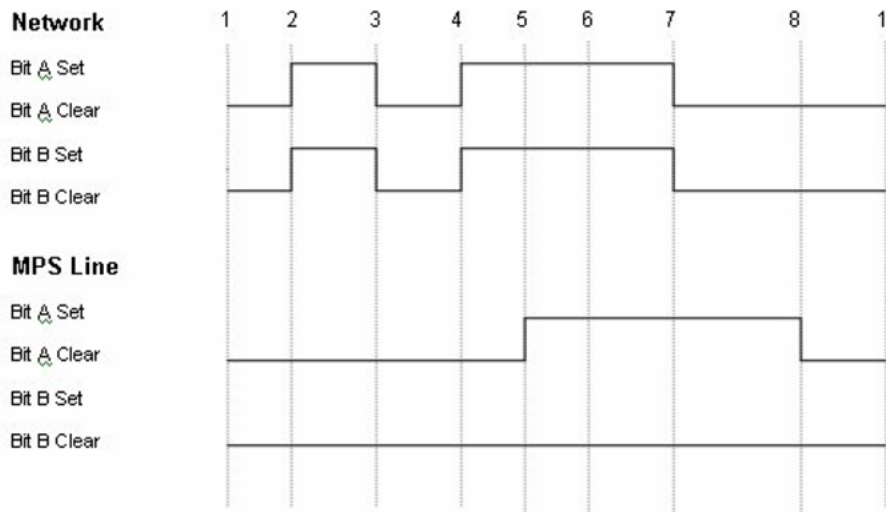
Figure 14: Alternate Channel Bank Call Setup Inbound with Disconnect

Index	State
1	Idle
2	Ring On
3	Ring Off
4	Ring On

Index	State
5	Answer
6	Call Active
7	Network disc
8	Idle
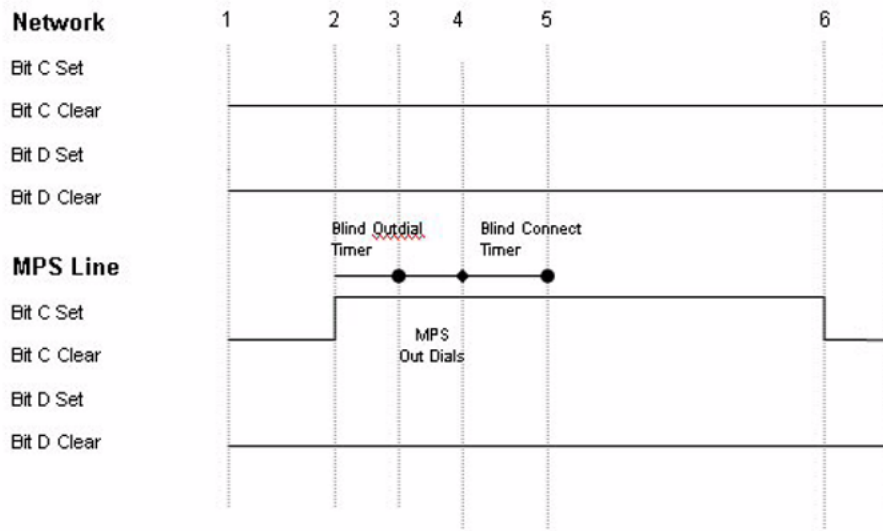
Figure 15: Alternate Channel Bank Call Setup Outbound with Disconnect

Index	State
1	Idle
2	Off hook
3	Begin Out Dial
4	Out Dial complete
5	Call Active
6	Release

In-Band R1 Protocol Family

R1 Protocol Specific Parameters Exchange Access North America (EANA) TR-NPL-000258

The EANA protocol is now supported under the EAIN protocol which is described below.

Feature Group D Protocol Specific Parameters (Exchange Access International)

The parameters listed in the table below describe how to configure the Feature Group D EAIN protocol. The Feature Group D EAIN protocol specific parameters are contained in the fgd_eain_proto.cfg file within the $MPSHOME/common/etc/tms directory.

ANI/DNIS Format

```
<KP><COUNTRY ADD><ST><KP><II DIGITS><ANI><KP><DNIS><ST>
```

Table 17: T1 Feature Group D EAIN Protocol Parameters

Parameter	Description	Default
TIM_param_0	Minimum Wink Duration (10 msec resolution) Specifies the minimum acceptable duration for a received wink. Any wink received with a duration less than specified by this parameter is ignored.	10 (100 msec)
TIM_param_1	Maximum Wink Duration (10 msec resolution) Specifies the maximum acceptable duration for a received wink. Any wink received with a duration longer than specified by this parameter is ignored.	35 (350 msec)
TIM_param_2	Nominal Wink Duration (10 msec resolution) Specifies the duration of the wink to send.	25 (250 msec)
TIM_param_3	Hit Threshold (10 msec resolution) Bit changes, lasting less than this duration are ignored.	7 (70 msec)

Parameter	Description	Default
TIM_param_4	Valid Answer Duration (10 msec resolution) Answer indications, lasting less than this duration are ignored.	7 (70 msec)
TIM_param_5	Valid Disconnect Duration (10 msec resolution) Disconnect indications, lasting less than this duration are ignored.	7 (70 msec)
TIM_param_6	Hook Flash Duration (10 msec resolution) Specifies the length of the hook flash pulse.	5 (50 msec)
TIM_param_7	<not used>	<not used>
TIM_param_8	<not used>	<not used>
TIM_param_9	Alerting Interval (10 msec resolution) Specifies the full period of the ring back tone (ring on time + ring off time).	400 (4 secs)
TIM_param_10	Disconnect Hang Time (10 msec resolution) Amount of time a line must be on-hook before originating a call.	210 (2.1 secs)
TIM_param_11	Wink Guard Timer (10 msec resolution) Specifies how long the MPS waits for the far end to send a wink in response to a line seizure.	1000 (10 secs)
TIM_param_12	Blind Timer (10 msec resolution) After receiving a wink from the network, the MPS delays this amount of time before sending DTMF digits to the network.	7 (7 msecs)
TIM_param_13	Outdial Complete Guard Timer (10 msec resolution) Maximum amount of time the protocol waits for a response from the internal tone generator before abandoning the call.	1500 (15 secs)
TIM_param_14	Ring Back ON Duration (10 msec resolution) This is set to the ON duration of a ring back tone + 1 second.	200 (2 secs)
TIM_param_15	Digit Collection Parameter (0 to 36) Parameter specifying the amount of indial digits to collect.	0 (do not collect digits)
TIM_param_16	First Digit Timeout (sec resolution) Specifies how long the MPS waits for the first indial digit before abandoning the call.	3 (3 secs)
TIM_param_17	Inter Digit Timeout (sec resolution) Specifies how long the MPS waits for the next indial digit before abandoning the call.	1 (1 sec)

Parameter	Description	Default
TIM_param_18	Ring Back Timer (10 msec resolution) Specifies the amount of time the MPS waits for a ring back tone (or an off-hook signal) from the network after sending the DTMF digits to the network.	1500 (15 secs)
TIM_param_19	Prepend II-Digits Flag. Specifies whether to prepend the ANI with any received II-Digits.	1 (TRUE)

The parameter settings contained in the fgd_eain_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard wink duration is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from fgd_eain_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.
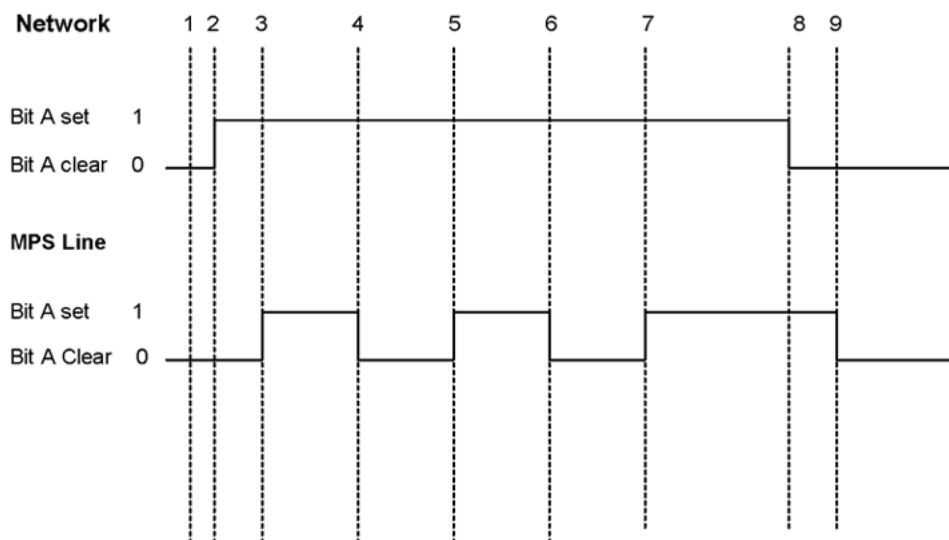
Figure 16: Feature Group D EAIN Call Setup Inbound with Disconnect

Index	State
1	Idle
2	Off Hook
3	Initiate Wink
4	Collect Country Address
5	Initiate Wink
6	Collect ANI/DNIS

Index	State
7	Answer
8	On Hook
9	On Hook
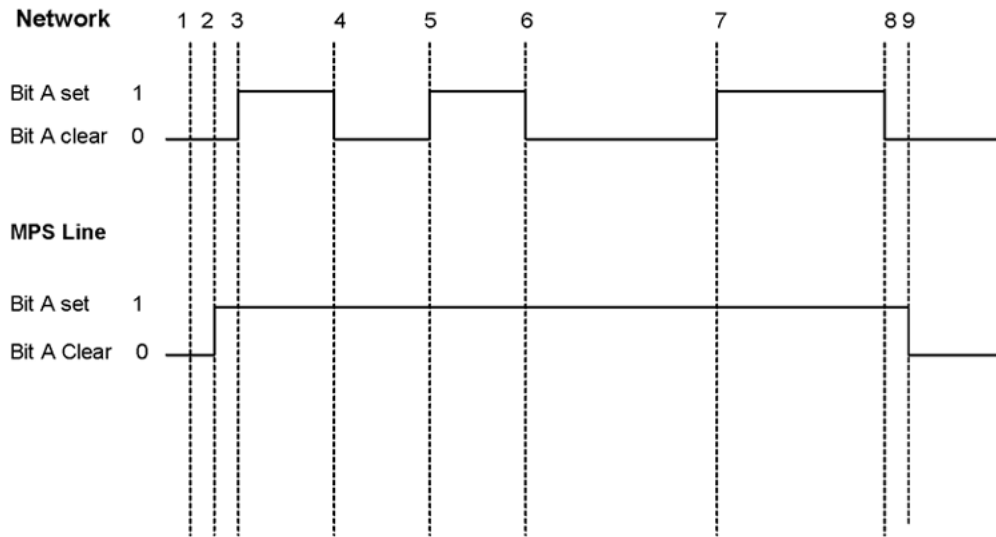
Figure 17: Feature Group D EAIN Call Setup Outbound with Disconnect

Index	State
1	Idle
2	Off Hook
3	Initiate Wink
4	Outdial Country Address
5	Initiate Wink
6	Outdial ANI/DNIS
7	Answer
8	On Hook
9	On Hook

E1 (CEPT) Protocols

E1 or CEPT (Conference of European Postal and Telecommunications) is a major telephony standard used in Europe and parts of Asia. The CEPT standard refers to the PCM-30 (30

channel Pulse Code Modulation) interface protocols that are used in Europe. One E1 span carries 30 voice channels simultaneously with a bit transmission rate of 2.048 Mbps. (Actually, 32 time slots are carried, but two of them are used for signaling and other control functions.)

The CEPT protocol described in this section is the signaling method used between the British Telecommunications United Kingdom (BTUK) telephone network and the MPS system. The other signaling protocols for PCM-30 circuits are based on the CCITT R2 signaling scheme. There are various country-specific versions of R2, which are configured using the parameters described later under R2 signaling. Additional digital signaling protocols currently supported by MPS systems without CEPT capabilities are not valid for use with CEPT.

Table 18: E1 Protocols by Country

Signaling	Group	Country	Protocol Configuration File	Reference
In-Band	Lineside E1		`linesideE1_proto.cfg`	Lineside E1 Protocol Specific Parameters on page 72
	melCAS		`melcas_proto.cfg`	melCAS E1 Protocol Specific Parameters on page 141
	AT&T Definity		`att_definity_proto.cfg`	ATT Definity Protocol Specific Parameters on page 75
	EL7CAS		`el7cas_proto.cfg`	EL7CAS Protocol Specific Parameters on page 78
	Ascom Lineside E1 CAS+		`le1_cas_plus.cfg`	Ascom LE1 CAS Plus protocol parameters on page 81
	MFR2	Saudi	`r2_saudi_proto.cfg`	MFR2 Saudi Protocol Specific Parameters on page 87
		Mexico	`r2_mexico_proto.cfg`	MFR2 Mexico Protocol Specific Parameters on page 91
		Columbia	`r2_columbia_proto.cfg`	MFR2 Columbia Protocol Specific

Signaling	Group	Country	Protocol Configuration File	Reference
				Parameters on page 95
		India	`r2_india_proto.cfg`	MFR2 India Protocol Specific Parameters on page 99
		Australia	`r2_australia_proto.cfg`	MFR2 Australia Protocol Specific Parameters on page 103
		Philippines	`r2_philippines_proto.cfg`	MFR2 Philippines Protocol Specific Parameters on page 107
		Denmark	`r2_denmark_proto.cfg`	MFR2 Denmark Protocol Specific Parameters on page 112
		Finland	`r2_finland_proto.cfg`	MFR2 Finland Protocol Specific Parameters on page 116
		Malaysia	`r2_malaysia_proto.cfg`	MFR2 Malaysia Protocol Specific Parameters on page 120
		Norway	`r2_norway_proto.cfg`	MFR2 Norway Protocol Specific Parameters on page 126
		Singapore	`r2_singapore_proto.cfg`	MFR2 Singapore Protocol Specific Parameters on page 130
		Thailand	`r2_thailand_proto.cfg`	MFR2 Thailand Protocol Specific Parameters on page 135
Out-of-band	ISDN	NET5	`isdn_net5_proto.cfg`	E1 ISDN on page 170

Signaling	Group	Country	Protocol Configuration File	Reference
		DPNSS	`isdn_dpnss_proto.cfg`	DPNSS protocol configuration File on page 276

E1 In-Band Signaling

E1 protocol signaling uses ABCD bits, much like T1 in-band protocols. All CEPT in-band protocols communicate with each other via a CEPT link that has the following format:
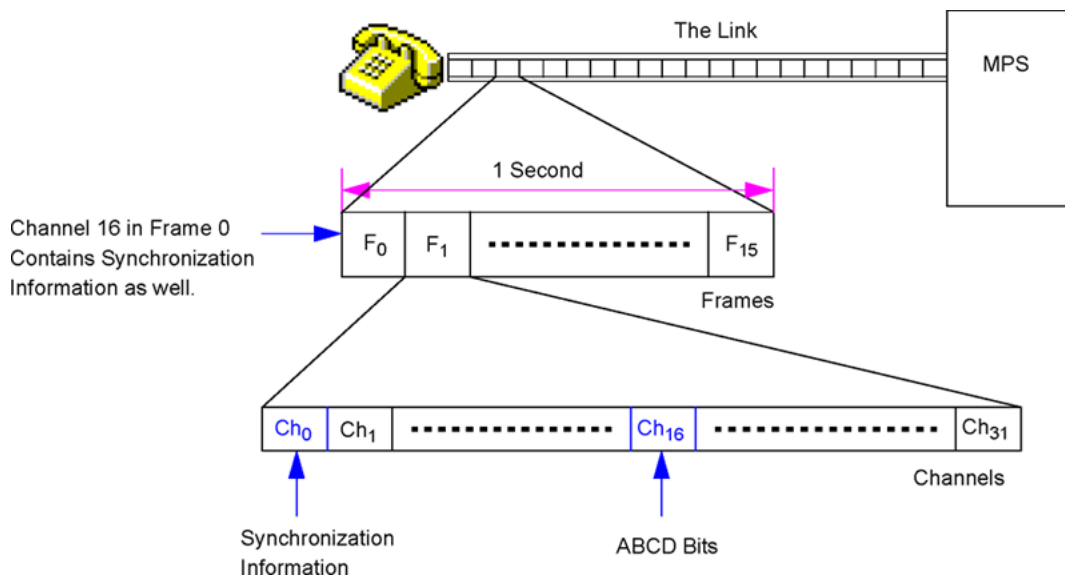
Line Signaling and Register Signaling

Every CEPT in-band protocol consists of line signaling and register signaling. In addition to line signals and register signals, a protocol also has timing supervision. Rarely is it required to change the default timing supervision aspect of the protocol.

> ✳ **Note:**
> Line signaling is used for exchange of line/supervisory signals (e.g., seizure, seizure acknowledge, answer, etc.) between two telephone switches. Register signaling is used for exchange of register signals (also called tones) that consist of address information (called party's number, caller party's number) and line status (e.g., number is not allocated, line is busy, etc.).

The CCITT standard declares two fixed sets of line and register signals and their meanings. However, most often, the meanings of the signals vary by country.

Register signals can be one of the four Direct Dial Indication (DDI) types. The DDI type used in register signaling depends on the protocol group or individual protocol.

DDI Type	Description
DP	Decadic Pulses
DTMF	Dual-Tone Multi frequency
MFR1	Tones are made up of 2 out of n frequencies specified by the CCITT R1 frequency set.
MFR2	Tones are made up of 2 out of n frequencies specified by CCITT R2 frequency set.

Each register signal (tone) has multiple meanings, depending on when it occurs during a call setup. There are two frequency sets used to create register signals.

Register Signal	Description
Forward	Outbound signal that proceeds from the calling party to the called party.
Backward	Inbound signal that proceeds from the called party to the calling party.
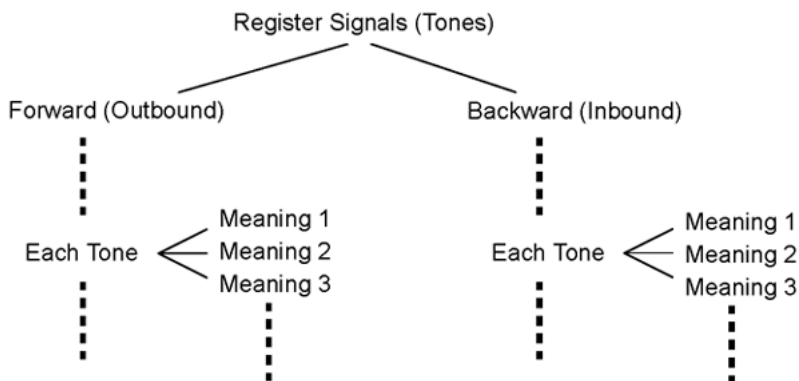
Call Setup Sequence

To setup a call, the incoming and outgoing telephone switches must exchange a series of line and register signals. The following picture shows a typical call setup sequence. Line signals are represented in solid lines, where as register signals are represented in dashed lines.
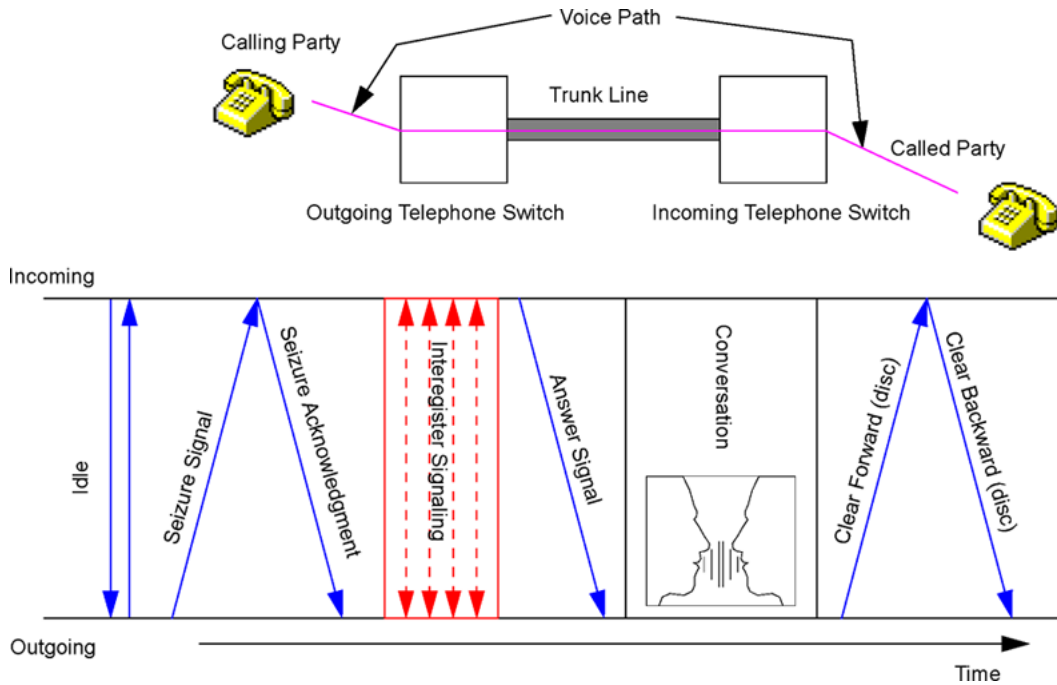
Standard E1 Telephony Parameters

The following parameters are used with all CEPT in-band protocols. Each protocol used in the MPS has a proto.cfg (protocol configuration) file which contains these standard parameters.

Table 19: Site-Specific Parameters

Parameter	Description	Default
TIM_standby_mode	Defines how a line behaves in standby state. Possible values are: lineBUSY, lineNOANSWER, lineINSERVICE, line OUTOFSERV.	lineNOANSWER
TIM_pickup_time	Number of seconds an outbound call remains in the presented state before being terminated by the MPS.	32 seconds

Table 20: Internal Parameters (should not be modified)

Parameter	Description	Default
TIM_answer	Number of rings to wait until inbound call is answered. Values are 0-8, where 0 disables auto-answer.	1 (answer after first ring)
TIM_total_call	Total call duration. Specifies the number of seconds a call can remain in the connected state.	0 (forever)
TIM_sby_on_discF	Should line automatically go to its standby mode on disconnect?	TRUE
TIM_CPD_name	Class name of the Call Progress Detector to use. If not set, TMS uses the default CPD.	\<none\>
TIM_DTMF_name	Class name of the DTMF receiver to use. If not set, TMS uses the default DTMF.	\<none\>
TIM_PLY_name	Class name of the player to use. If not set, TMS uses the default player.	\<none\>
TIM_TGEN_name	Class name of the tone generator to use. If not set, TMS uses the default tone generator.	\<none\>
TIM_R2ENG_name	Class name of the R2 engine to use. If not set, TMS uses the default R2 engine.	\<none\>

Lineside E1 Protocol Family

Lineside E1 Protocol Specific Parameters

The parameters listed in the following table describe how to configure the Lineside E1 protocol. These Lineside E1 protocol specific parameters are found in the linesideE1_proto.cfg file found in the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/Class	Protocol Pkg
LOAD	1	4	1	E1	-	-	line	linesideE1_proto.cfg

Table 21: Lineside E1 Protocol Parameters

Parameter	Description	Default
TIM_param_0	Outdial Complete Guard Timer (10msec resolution) Maximum amount of time the protocol waits for a response from the internal Tone Generator before abandoning the call.	3000 (30 sec)
TIM_param_1	Ring stop time (10msec resolution) Specifies the duration that the MPS will wait for the Ring Off bit pattern before abandoning the call attempt (10 msec resolution)	600 (6 sec)
TIM_param_2	Dial Tone guard Time. Specifies the duration that the MPS will wait for dial tone indication from the network after issuing an Off hook. (10msec resolution)	400 (4 sec)
TIM_param_3	Blind Dial tone time. In situations where the MPS is not monitoring for call progress indications, the MPS will wait for this amount of time before outdialing after issuing an off hook (10 msec resolution)	200 (2 sec)
TIM_param_4	Hook flash Duration (10msec resolution) Specifies the length of the hook flash pulse.	50 (0.5 sec)
TIM_param_5	Ring back gone time. Specifies the duration that the MPS will wait after detecting that the ring back tone has gone away before connecting the call (10 msec resolution)	600 (6 sec)
TIM_param_6	Auto Connect Time. Specifies the duration that the MPS will wait after outdialing before automatically connecting the call. A value of "0" disables this feature. (10 msec resolution)	0 (0 sec)
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 sec)
TIM_param_8	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	7 (70 msec)
TIM_param_9	Call Progress Monitoring Flag. Flag specifying whether or not the MPS should do call progress monitoring (1 → monitor CP; 0 → do not monitor CP)	1

Parameter	Description	Default
TIM_param_10	GroundStart Flag. Flag specifying the configuration. (1 → GroundStart; 0 → LoopStart)	0 (LoopStart)
TIM_param_11	Voice Detect Flag. Flag specifying the configuration. (0 → Off; 1 → On)	0 (Off)
TIM_param_12	CPD Dial Disc Flag. Specifies whether to terminate a call if a CPD Dial tone is received.	0 (FALSE)
TIM_param_13	CPD Dial Busy Flag. Specifies whether to terminate a call if a CPD Busy tone is received.	0 (FALSE)

The parameter settings contained in the linesideE1_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard wink duration is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from linesideE1_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.
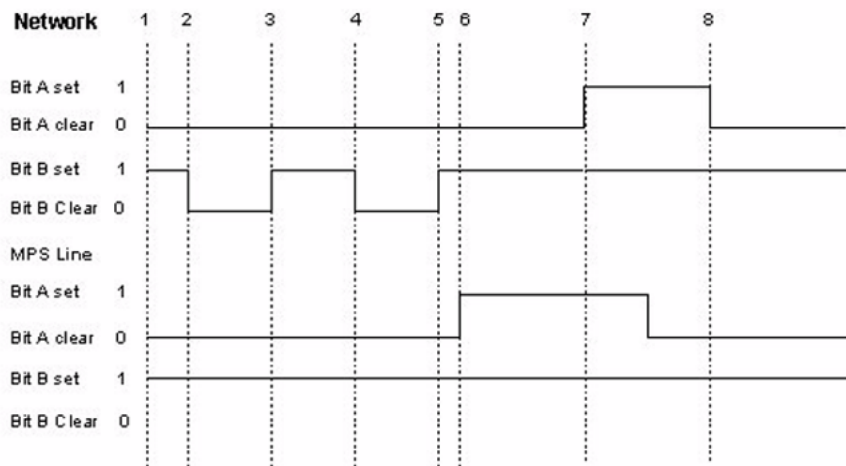
Figure 18: Lineside E1 Call Setup Inbound with Disconnect

Index	State
1	Idle
2	Ring On
3	Ring Off
4	Ring On
5	Ring Off

Index	State
6	Answer
7	Network Disc
8	Idle
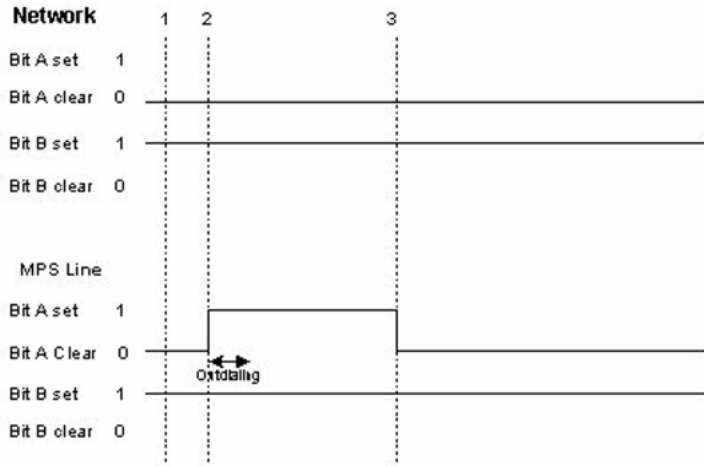
Figure 19: Lineside E1 Call Setup Outbound with Disconnect

Index	State
1	Idle
2	Off Hook
3	Release/Idle

ATT Definity Protocol Specific Parameters

The parameters listed in the following table describe how to configure the AT&T Definity protocol. These AT&T Definity protocol specific parameters are found in the att_Definity_proto.cfg file found in the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/Class	Protocol Pkg
LOAD	1	4	1	E1	-	-	line	att_definity_proto.cfg

Table 22: ATT Definity Protocol Parameters

Parameter	Description	Default
TIM_param_0	Outdial Complete Guard Timer (10msec resolution) Maximum amount of time the protocol waits for a response from the internal Tone Generator before abandoning the call.	3000 (30 sec)
TIM_param_1	Ring stop time (10msec resolution) Specifies the duration that the MPS will wait for the Ring Off bit pattern before abandoning the call attempt (10 msec resolution)	600 (6 sec)
TIM_param_2	Dial Tone guard Time. Specifies the duration that the MPS will wait for dial tone indication from the network after issuing an Off hook. (10msec resolution)	400 (4 sec)
TIM_param_3	Blind Dial tone time. In situations where the MPS is not monitoring for call progress indications, the MPS will wait for this amount of time before outdialing after issuing an off hook (10 msec resolution)	200 (2 sec)
TIM_param_4	Hook flash Duration (10msec resolution) Specifies the length of the hook flash pulse.	50 (0.5 sec)
TIM_param_5	Ring back gone time. Specifies the duration that the MPS will wait after detecting that the ring back tone has gone away before connecting the call (10 msec resolution)	600 (6 sec)
TIM_param_6	Auto Connect Time. Specifies the duration that the MPS will wait after outdialing before automatically connecting the call. A value of "0" disables this feature. (10 msec resolution)	0 (0 sec)
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 sec)
TIM_param_8	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	7 (70 msec)
TIM_param_9	Call Progress Monitoring Flag. Flag specifying whether or not the MPS should do call progress monitoring (1 → monitor CP; 0 → do not monitor CP)	1
TIM_param_10	GroundStart Flag. Flag specifying the configuration. (1 → GroundStart; 0 → LoopStart)	0 (LoopStart)
TIM_param_11	Voice Detect Flag. Flag specifying whether voice detection should be announced in the connected state. (0 → Off; 1 → On)	0 (Off)
TIM_param_12	CPD Disc Flag. Specifies whether to terminate the call upon receiving Call Progress Tones.	0 (FALSE)
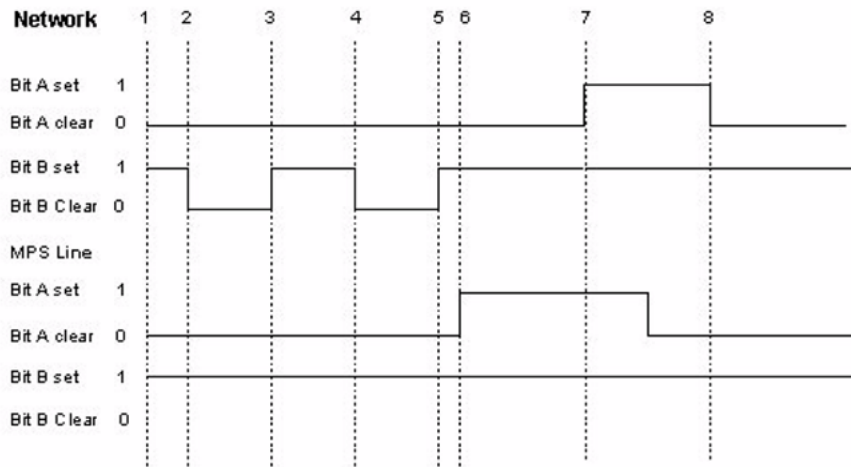
Figure 20: ATT Definity Call Setup Inbound with Disconnect

Index	State
1	Idle
2	Ring On
3	Ring Off
4	Ring On
5	Ring Off
6	Answer
7	Network Disc
8	Idle
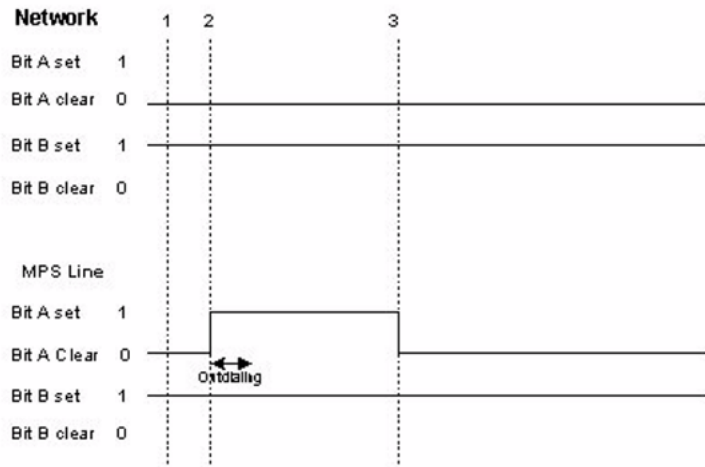
Figure 21: ATT Definity Call Setup Outbound with Disconnect

Index	State
1	Idle
2	Off Hook
3	Release/Idle

EL7CAS Protocol Specific Parameters

The parameters listed in the following table describe how to configure the EL7CAS protocol.
These EL7CAS protocol specific parameters are found in the el7CAS_proto.cfg file found in
the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/Class	Protocol Pkg
LOAD	1	4	1	T1	-	-	line	el7CAS_proto.cfg

Table 23: EL7CAS Protocol Parameters

Parameter	Description	Default
TIM_param_0	Outdial Complete Guard Timer (10msec resolution) Maximum amount of time the protocol waits for a response from the internal Tone Generator before abandoning the call.	3000 (30 sec)

Parameter	Description	Default
TIM_param_1	Ring stop time (10msec resolution) Specifies the duration that the MPS will wait for the Ring Off bit pattern before abandoning the call attempt (10 msec resolution)	600 (6 sec)
TIM_param_2	Dial Tone guard Time. Specifies the duration that the MPS will wait for dial tone indication from the network after issuing an Off hook. (10msec resolution)	400 (4 sec)
TIM_param_3	Blind Dial tone time. In situations where the MPS is not monitoring for call progress indications, the MPS will wait for this amount of time before outdialing after issuing an off hook (10 msec resolution)	200 (2 sec)
TIM_param_4	Hook flash Duration (10msec resolution) Specifies the length of the hook flash pulse.	50 (0.5 sec)
TIM_param_5	Ring back gone time. Specifies the duration that the MPS will wait after detecting that the ring back tone has gone away before connecting the call (10 msec resolution)	600 (6 sec)
TIM_param_6	Auto Connect Time. Specifies the duration that the MPS will wait after outdialing before automatically connecting the call. A value of "0" disables this feature. (10 msec resolution)	0 (0 sec)
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 sec)
TIM_param_8	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	7 (70 msec)
TIM_param_9	Call Progress Monitoring Flag. Flag specifying whether or not the MPS should do call progress monitoring (1 → monitor CP; 0 → do not monitor CP)	1
TIM_param_10	GroundStart Flag. Flag specifying the configuration. (1 → GroundStart; 0 → LoopStart)	0 (LoopStart)
TIM_param_11	Voice Detect Flag. Flag specifying whether voice detection should be announced in the connected state. (0 → Off; 1 → On)	0 (Off)
TIM_param_12	Number of Indial Digits to collect	0
TIM_param_13	First Digit Timeout (sec resolution). Specifies how long the MPS waits for the first indial digit before abandoning the call.	5 sec

Parameter	Description	Default
TIM_param_14	Inter Digit Timeout (sec resolution). Specifies how long the MPS waits for the next indial digit before abandoning the call.	1 sec
TIM_param_15	Alerting Interval (10msec resolution). Specifies the full period of the ring back tone (ring on time + ring off time)	300 (3 sec)
TIM_param_16	Alerting Interval (10msec resolution). Specifies the full period of the ring back tone (ring on time + ring off time)	150 (1.5 sec)
TIM_param_17	CPD Disc Flag. Specifies whether to terminate the call upon receiving Call Progress Tones.	0 (FALSE)
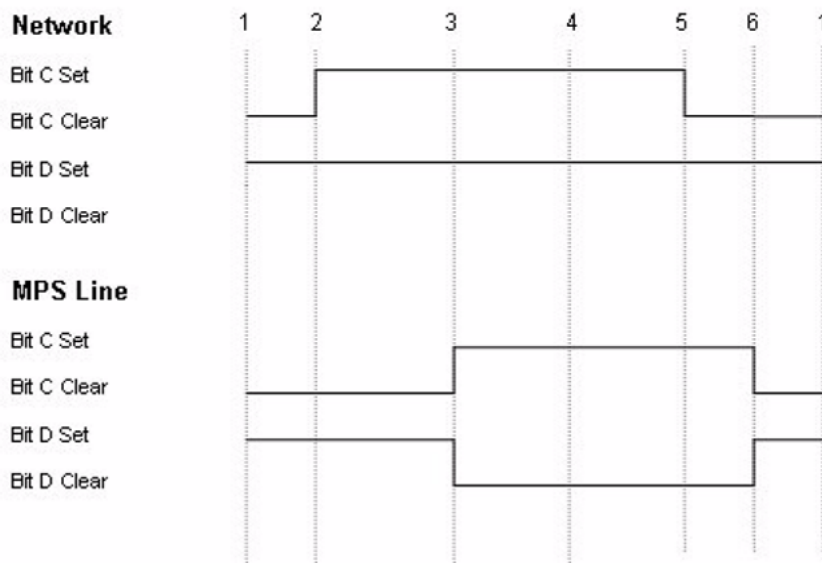
Figure 22: EL7CAS Call Setup InBound with Disconnect

Index	State
1	Idle
2	Network Off Hook
3	MPS Answers
4	Call Active
5	Network Disconnect
6	MPS release
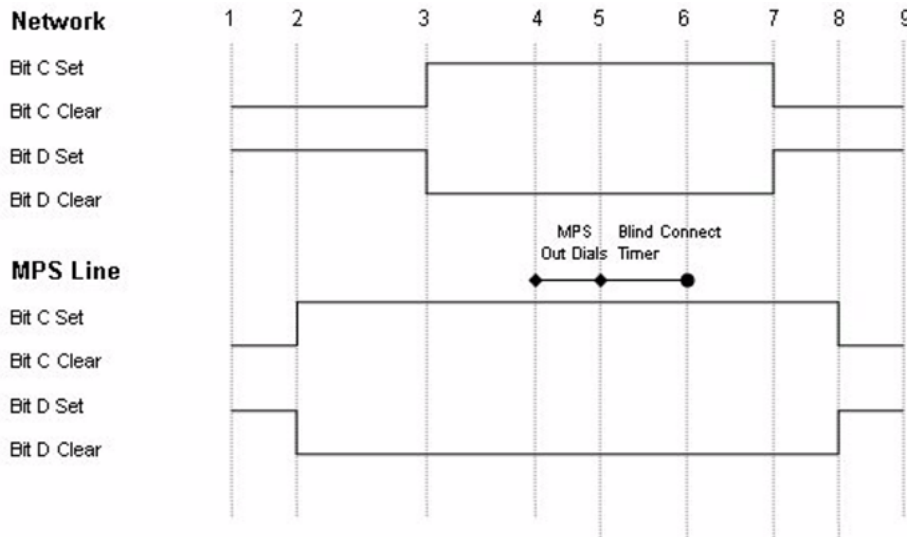
Figure 23: EL7CAS Call Setup OutBound with Disconnect

Index	State
1	Idle
2	MPS Seize
3	Network Seize Ack
4	MPS Out Dial
5	Out Dial Complete
6	Blind Connect
7	Call Active
8	Network Disconnect
9	MPS Release

Ascom LE1 CAS Plus protocol

Ascom LE1 CAS Plus protocol parameters

The parameters listed in the following table describe how to configure the LE1 CAS Plus protocol. The protocol specific parameters are found in the le1_cas_plus_proto.cfg file found

in the $VPSHOME/common/etc/tms directory. An example of the load line as it appears in the tms.cfg file follows:

	DTC Num	DTC Slot	Span Num	svc-type	VpsNum	Outline	Pool/ Class	Protocol Pkg
LOAD	1	4	1	T1	-	-	line	lel_cas_ plus_ proto.cfg

Table 24: Ascom LE1 CAS Plus Protocol Parameters

Parameter	Description	Default
TIM_param_0	Outdial Complete Guard Timer (10 msec resolution) Maximum amount of time the protocol waits for a response from the internal Tone Generator before abandoning the call.	3000 (30 sec)
TIM_param_1	Receive Digit Guard timer Timer used to guard against waiting forever for "digits" (CAS Signals)	25 (250 msec)
TIM_param_2	Nominal Wink Duration (10 msec resolution) Specifies the duration of the wink to send.	12 (120 msec)
TIM_param_3	Ring back gone time. Specifies the duration that the MPS will wait after detecting that the ring back tone has gone away before connecting the call (10 msec resolution)	600 (6 sec)
TIM_param_4	HookFlash Timer (10 msec resolution) Specifies the duration of a hookflash.	50 (0.5 sec)
TIM_param_5	Dial Tone guard Time. Specifies the duration that the MPS will wait for dial tone indication from the network after issuing an off hook. (10 msec resolution)	400 (4 sec)
TIM_param_6	Blind Dial tone time. In situations where the MPS is not monitoring for call progress indications, the MPS will wait for this amount of time before outdialing after issuing an off hook. (10 msec resolution)	200 (2 sec)
TIM_param_7	Disconnect Hang Time (10 msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 sec)
TIM_param_8	Hit Threshold. (10 msec resolution) Bit changes lasting less than this duration will be ignored.	-
TIM_param_9	Call Progress Monitoring Flag. Flag specifying whether or not the MPS should do call progress monitoring (1 → monitor CP; 0 → do not monitor CP)	1

Parameter	Description	Default
TIM_param_10	Auto Connect Time. Specifies the duration that the MPS will wait after outdialing before automatically connecting the call. A value of "0" disables this feature. (10 msec resolution)	150 (1.5 sec)
TIM_param_11	Voice Detect Flag. Flag specifying whether voice detection should be announced in the connected state. (0 → Off; 1 → On)	0
TIM_param_12	NOT USED	
TIM_param_13	NOT USED	
TIM_param_14	NOT USED	
TIM_param_15	Alerting Interval (10 msec resolution). Specifies the full period of the ring back tone (ring on time + ring off time)	300 (3 sec)
TIM_param_16	Ring back ON duration (10 msec resolution). This is set to the ON DURATION of the ring back tone + 1 second.	150 (1.5 sec)
TIM_param_17	CPD Dial Disc Flag. Specifies whether we should terminated the call if a CPD Dial tone is received.	1
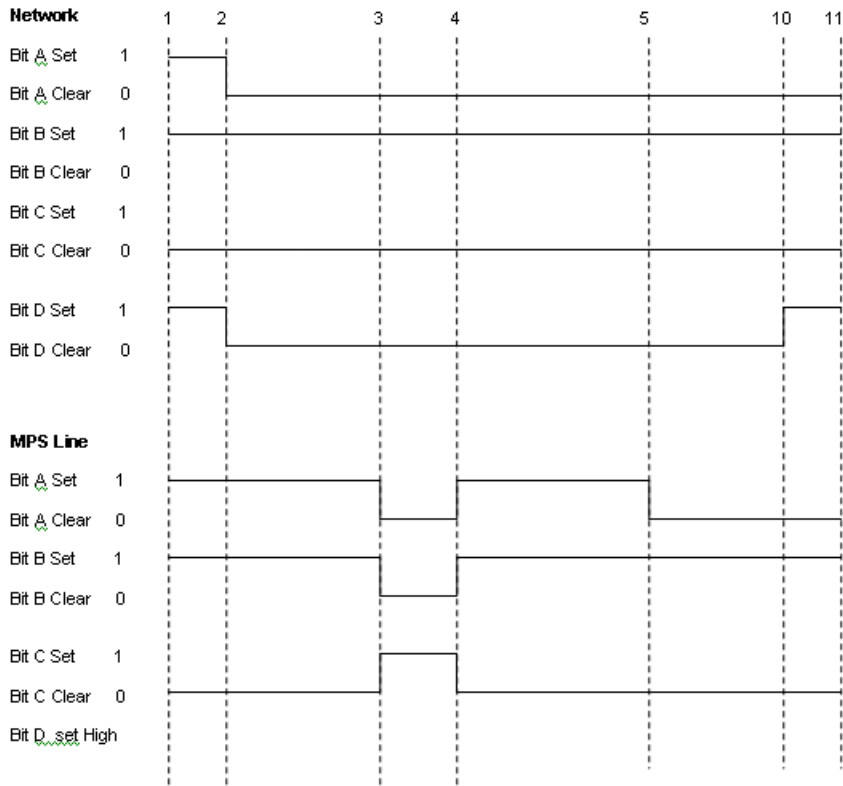
Figure 24: Call Setup InBound – No CLIP

Index	State
1	Idle
2	Ringing
3	Alerting Pulse
4	..
5	Answer
6	Answer Ack

PABX   FP   PP

Idle   Idle   Idle

x:
0=no message waiting
1=message waiting

nn:
10=internal ring signal
00=external ring signal
11=call back ring signal

ringing (11x1 > 01nn)

DECT link setup

CC_SETUP(ringing type)

CC_ALERTING   PP rings.

alerting (1101 > 0011 >1101)

CC_CONNECT   PP answers the call.

actv:
0101=active + no
message waiting
1011=active +
message waiting

off-hook (1101 > 0101)

active (01nn > actv)

Active   Active   Active

Figure 25: Call Setup Inbound with CLIP

mmmm = the foll:

- ABCD=0000 signals digit 0
- ABCD=1000 signals digit 1
- ABCD=0100 signals digit 2
- ABCD=1100 signals digit 3
- ABCD=0010 signals digit 4
- ABCD=1010 signals digit 5
- ABCD=0110 signals digit 6
- ABCD=1110 signals digit 7
- ABCD=0001 signals digit 8
- ABCD=1001 signals digit 9
- ABCD=0111 is an inter digit pattern used to separate identical digits

MFR2 Signaling Specification

MFR2 Saudi Protocol Specific Parameters

The parameters listed in the table below describe how to configure the MFR2 Saudi protocol. The MFR2 Saudi protocol specific parameters are contained in the r2_saudi_proto.cfg file within the $MPSHOME/common/etc/tms directory.

Table 25: E1 MFR2 Saudi Protocol Parameters

Parameter	Description	Default
TIM_param_0	<not used>	<not used>
TIM_param_1	R2 Register Signaling Guard Time (1=10 msec resolution) Specifies the amount of time the MPS waits for register signaling to complete before abandoning the call attempt.	2000 (20 secs)
TIM_param_2	Alerting Interval (1=10 msec resolution) This is set to the period of the ring back tone (i.e. ring on time + ring off time).	400 (4 secs)
TIM_param_3	Ring Back ON duration (1=10 msec resolution) This is set to the duration that a ring back tone stays on + 1 second.	200 (2 secs)
TIM_param_4	Seizure Ack Guard Time (1=10 msec resolution) Specifies how long the MPS waits for the network to send a seizure acknowledge after sending a line seizure.	600 (6 secs)
TIM_param_5	Hit Threshold (1=10 msec resolution) Bit changes lasting less than this duration are ignored.	2 (20 msecs)
TIM_param_6	Play Busy Tone Flag (1=MPS plays busy, 0=Network plays busy) Flag specifying whether the App plays the busy tone (in busy situations) to the caller or connect the call and let the network play the busy tone.	1
TIM_param_7	Disconnect Hang Time (1=10 msec resolution) Amount of time that a line must be on-hook before originating a call.	150 (1.5 secs)

Parameter	Description	Default
TIM_param_8	Retry Interval (1=10 msec resolution) Specifies the interval in which the MPS retries to get an R2 engine resource.	100 (1 sec)
TIM_param_9	Number of called party (DNIS) digits to collect (range 0-36).	7
TIM_param_10	Number of calling party (ANI) digits to collect (range 0-36).	7
TIM_param_11	State of the line as told to the network (LF_CHARGE, LF_NOCHARGE, OUT_OF_ORDER, LINE_BUSY, CONGESTION).	LF_CHARGE
TIM_param_12	<not used>	<not used>
TIM_param_13	Seizure Ack Interval (1=10 msec resolution) Specifies the interval to wait before sending a seizure acknowledge signal.	3 (30 msecs)
TIM_param_14	Clear Back Guard Time (1=10 msec resolution) Specifies duration to wait for release after issuing a clear back to the network.	1000 (10 secs)

The parameter settings contained in the r2_saudi_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard hit threshold is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from r2_saudi_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

MFR2 Saudi
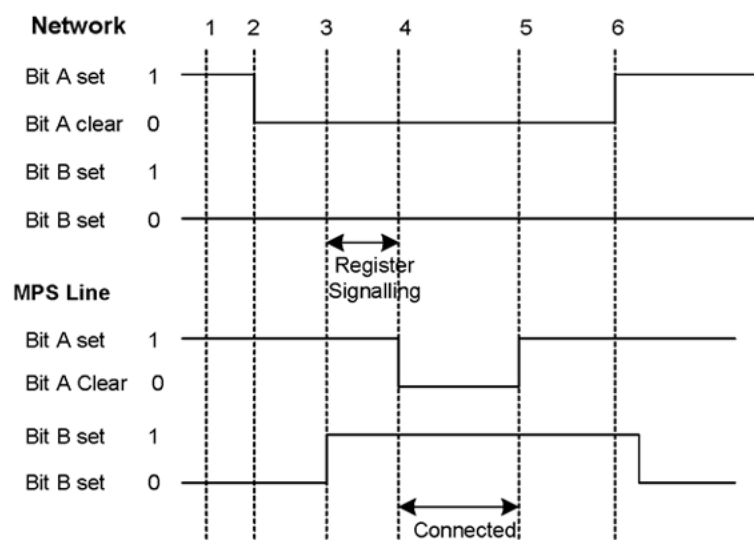
Figure 26: MFR2 Saudi

Index	State
1	Idle
2	Seizure
3	Seizure Ack
4	Answered
5	Clear Back
6	Release

Signaling Tables for MFR2 Saudi

The following tables include Line Signaling for Saudi Arabia as well as Compelled Signaling as per The Ministry of P.T.T., Kingdom of Saudi Arabia.

Table 26: Line Signaling

No.	State of the Circuit	Signaling Code			
		Forward		Backward	
		Af	Bf	Ab	Bb
1	Idle/Release	1	0	1	0
2	Seizure	0	0	1	0
3	Seizure Ack	0	0	1	1
4	Register Signaling	0	0	1	1
5	Answered	0	0	0	1
6	Register Recall	0	0	1	1
7	Clear Forward and line lock out	1	0	0	1
8	Clear Back and return to idle	1	0	1	0
9	Clear Back after No. 6	0	0	1	1
10	Clear Forward and return to idle	1	0	1	0
11	Blocking after No. 1	1	0	1	1
12	Line lock out	1	0	1	1
13	Unblocking and return to idle	1	0	1	0

Table 27: Compelled Signaling

Signal	Group I Signals	Group II Signals
1	Digit 1	Ordinary Subscriber
2	Digit 2	Subscriber with priority
3	Digit 3	Maintenance equipment
4	Digit 4	Spare
5	Digit 5	Trunk Operator
6	Digit 6	Data Transmission
7	Digit 7	Ordinary Subscriber
8	Digit 8	Data Transmission
9	Digit 9	Subscriber with priority
10	Digit 10	Operator
11	Routing to interception services	Coin Box
12	Spare	ISD Coin Box

Signal	Group I Signals	Group II Signals
13	Routing to maintenance equipment	Hotel Metering
14	Spare	Interception Service Operator
15	End of Digits	Calls Transferring Subscriber

Table 28: Compelled Signaling (cont)

Signal	Group A Signals	Group B Signals
1	Send Next Digit (n+1)	Line Free Charge
2	Not Used	Not Used
3	Send Group II and change to Group B	Not Used
4	Not Used	Not Used
5	Not Used	Not Used
6	Not Used	Line Free Charge
7	Not Used	Not Used
8	Not Used	Not Used
9	Spare	Not Used
10	Not Used	Not Used

MFR2 Mexico Protocol Specific Parameters

The parameters listed in the table below describe how to configure the MFR2 Mexico protocol. The MFR2 Mexico protocol specific parameters are contained in the r2_mexico_proto.cfg file within the $MPSHOME/common/etc/tms directory.

Table 29: E1 MFR2 Mexico Protocol Parameters

Parameter	Description	Default
TIM_param _0	<not used>	<not used>
TIM_param _1	R2 Register Signaling Guard Time (1=10 msec resolution) Specifies the amount of time the MPS waits for register signaling to complete before abandoning the call attempt.	2000 (20 secs)
TIM_param _2	Alerting Interval (1=10 msec resolution) This is set to the period of the ring back tone (i.e. ring on time + ring off time).	400 (4 secs)

Parameter	Description	Default
TIM_param _3	Ring Back ON duration (1=10 msec resolution) This is set to the duration that a ring back tone stays on + 1 second.	200 (2 secs)
TIM_param _4	Seizure Ack Guard Time (1=10 msec resolution) Specifies how long the MPS waits for the network to send a seizure acknowledge after sending a line seizure.	600 (6 secs)
TIM_param _5	Hit Threshold (1=10 msec resolution) Bit changes lasting less than this duration are ignored.	2 (20 msecs)
TIM_param _6	Play Busy Tone Flag (1=MPS plays busy, 0=Network plays busy) Flag specifying whether the App plays the busy tone (in busy situations) to the caller or connect the call and let the network play the busy tone.	1
TIM_param _7	Disconnect Hang Time (1=10 msec resolution) Amount of time that a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param _8	Retry Interval (1=10 msec resolution) Specifies the interval in which the MPS retries to get an R2 engine resource.	100 (1 sec)
TIM_param _9	Number of called party (DNIS) digits to collect (range 0-36).	7
TIM_param _10	Number of calling party (ANI) digits to collect (range 0-36).	7
TIM_param _11	State of the line as told to the network (LF_CHARGE, LF_NOCHARGE, OUT_OF_ORDER, LINE_BUSY, CONGESTION).	LF_CHARGE
TIM_param _12	<not used>	<not used>
TIM_param _13	Seizure Ack Interval (1=10 msec resolution) Specifies the interval to wait before sending a seizure acknowledge signal.	3 (30 msecs)
TIM_param _14	Clear Back Guard Time (1=10 msec resolution) Specifies duration to wait for release after issuing a clear back to the network.	1000 (10 secs)

The parameter settings contained in the r2_mexico_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard hit threshold is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from r2_mexico_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

MFR2 Mexico
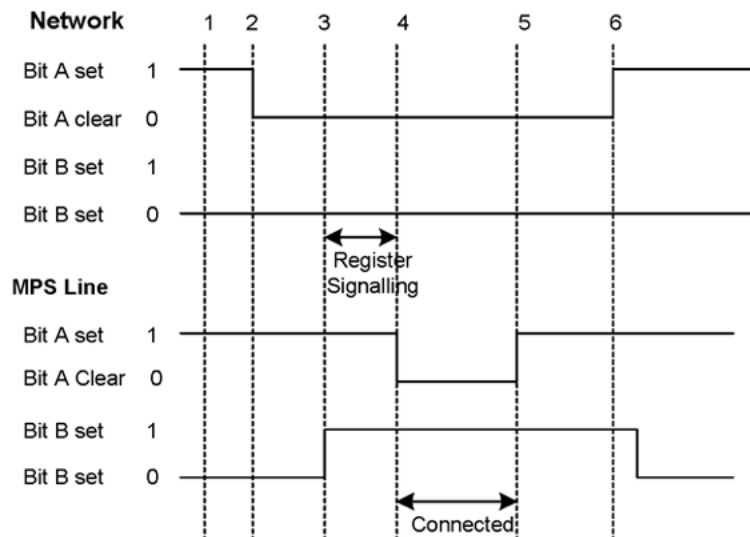
Figure 27: MFR2 Mexico

Index	State
1	Idle
2	Seizure
3	Seizure Ack
4	Answered
5	Clear Back
6	Release

Signaling Tables for MFR2 Mexico

The following tables include Line Signaling for Mexico as well as Compelled Signaling as per Avantel.

Table 30: Line Signaling

Signaling Code	State of the Circuit			
	Forward		Backward	
	Af	Bf	Ab	Bb
Idle/Release	1	0	1	0
Seizure	0	0	1	0
Seizure Ack	0	0	1	1
Addressing	0	0	1	1
Answered	0	0	0	1
Clear Back	0	0	1	1
Clear Forward	1	0	1	1
Unblocking and return to idle	1	0	1	0
Clear Forward	1	0	0	1
Unblocking and return to idle	1	0	1	0
Blocking	1	0	1	1
Line lock out	1	0	1	1
Unblocking and return to idle	1	0	1	0

Table 31: Compelled Signaling

Signal	Group I	Group II	Group III
	DNIS Info	Call Category	CLI Info
1	Digit 1	Operator	Digit 1
2	Digit 2	Normal User	Digit 2
3	Digit 3	Toll Set	Digit 3
4	Digit 4	Spare	Digit 4
5	Digit 5	Spare	Digit 5
6	Digit 6	Maint. Eq.	Digit 6
7	Digit 7	Spare	Digit 7
8	Digit 8	Spare	Digit 8
9	Digit 9	Spare	Digit 9
10	Digit 10/0	Spare	Digit 10/0
11	Spare Interception Service	Spare	Not Used

Signal	Group I	Group II	Group III
	DNIS Info	Call Category	CLI Info
12	Spare Traffic Indication	Spare	Not Used
13	Maint. Eq.	Spare	Not Used
14	Spare	Spare	Not Used
15	End Of Digits	Spare	End Of Digits

Table 32: Compelled Signaling (cont)

Signal	Group A	Group B	Group C
	Control Signals (DNIS)	Line Status	Control Signals (CLI)
1	N+1 Digits	Free, Charge	Send 1st (n+1) Digit of Group C (CLI)
2	Send 1st Digit (B-Number)	Subscriber Line Busy	Send 1st Digit of DNIS Change to Group A
3	Send Group II Change to Group B	Reserved/Busy	Send Category (Grp II) Change to Group B
4	Congestion	Congestion	Congestion
5	Reserved	Reserved LF Nocharge	N+! Digit of DNIS Change to Group A
6	Send Group II Change to Group C	Reserved LF Charge	Repeat Digit (N) of DNIS Change to Group A

MFR2 Columbia Protocol Specific Parameters

The parameters listed in the table below describe how to configure the MFR2 Columbia protocol. The MFR2 Columbia protocol specific parameters are contained in the r2_columbia_proto.cfg file within the $MPSHOME/common/etc/tms directory.

Table 33: E1 MFR2 Columbia Protocol Parameters

Parameter	Description	Default
TIM_param_0	<not used>	<not used>
TIM_param_1	R2 Register Signaling Guard Time (1=10 msec resolution) Specifies the amount of time the MPS waits for register signaling to complete before abandoning the call attempt.	2000 (20 secs)
TIM_param_2	Alerting Interval (1=10 msec resolution) This is set to the period of the ring back tone (i.e. ring on time + ring off time).	400 (4 secs)

Parameter	Description	Default
TIM_param_3	Ring Back ON duration (1=10 msec resolution) This is set to the duration that a ring back tone stays on + 1 second.	200 (2 secs)
TIM_param_4	Seizure Ack Guard Time (1=10 msec resolution) Specifies how long the MPS waits for the network to send a seizure acknowledge after sending a line seizure.	600 (6 secs)
TIM_param_5	Hit Threshold (1=10 msec resolution) Bit changes lasting less than this duration are ignored.	2 (20 msecs)
TIM_param_6	Play Busy Tone Flag (1=App plays busy, 0=Network plays busy) Flag specifying whether the App plays the busy tone (in busy situations) to the caller or connect the call and let the network play the busy tone.	1
TIM_param_7	Disconnect Hang Time (1=10 msec resolution) Amount of time that a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Retry Interval (1=10 msec resolution) Specifies the interval in which the MPS retries to get an R2 engine resource.	100 (1 sec)
TIM_param_9	Number of called party (DNIS) digits to collect (range 0-36).	7
TIM_param_10	Number of calling party (ANI) digits to collect (range 0-36).	7
TIM_param_11	State of the line as told to the network (LF_CHARGE, LF_NOCHARGE, OUT_OF_ORDER, LINE_BUSY, CONGESTION).	LF_CHARGE
TIM_param_12	<not used>	<not used>
TIM_param_13	Seizure Ack Interval (1=10 msec resolution) Specifies the interval to wait before sending a seizure acknowledge signal.	3 (30 msecs)
TIM_param_14	Clear Back Guard Time (1=10 msec resolution) Specifies duration to wait for release after issuing a clear back to the network.	1000 (10 secs)

The parameter settings contained in the r2_columbia_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard hit threshold is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from r2_columbia_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

MFR2 Columbia
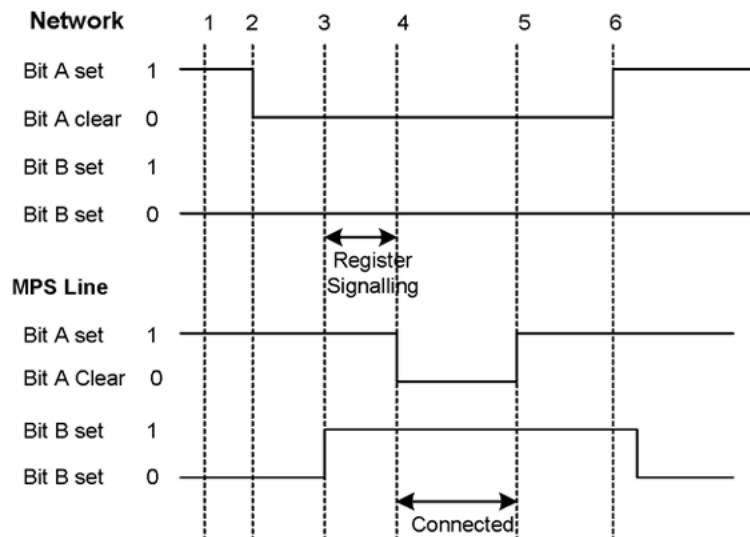
Figure 28: MFR2 Columbia

Index	State
1	Idle
2	Seizure
3	Seizure Ack
4	Answered
5	Clear Back
6	Release

Signaling Tables for MFR2 Columbia

The following tables include Line Signaling for Columbia as well as Compelled Signaling as per Avantel.

Table 34: Line Signaling

State of the Circuit	Signaling Code			
	Forward		Backward	
	Af	Bf	Ab	Bb
Idle/Release	1	0	1	0
Seizure	0	0	1	0
Seizure Ack	0	0	1	1
Addressing	0	0	1	1
Answered	0	0	0	1
Clear Back	0	0	1	1
Clear Forward	1	0	1	1
Unblocking and return to idle	1	0	1	0
Clear Forward	1	0	0	1
Unblocking and return to idle	1	0	1	0
Blocking	1	0	1	1
Line lock out	1	0	1	1
Unblocking and return to idle	1	0	1	0

Table 35: Compelled Signaling

Signal	Group I	Group II	Group III
	DNIS Info	Call Category	CLI Info
1	Digit 1	Operator	Digit 1
2	Digit 2	Normal User	Digit 2
3	Digit 3	Toll Set	Digit 3
4	Digit 4	Spare	Digit 4
5	Digit 5	Spare	Digit 5
6	Digit 6	Maint. Eq.	Digit 6
7	Digit 7	Spare	Digit 7
8	Digit 8	Spare	Digit 8
9	Digit 9	Spare	Digit 9
10	Digit 10/0	Spare	Digit 10/0
11	Spare Interception Service	Spare	Not Used

Signal	Group I	Group II	Group III
	DNIS Info	Call Category	CLI Info
12	Spare Traffic Indication	Spare	Not Used
13	Maint. Eq.	Spare	Not Used
14	Spare	Spare	Not Used
15	End Of Digits	Spare	End Of Digits

Table 36: Compelled Signaling (cont)

Signal	Group A	Group B	Group C
	Control Signals (DNIS)	Line Status	Control Signals (CLI)
1	N+1 Digits	Free, Charge	Send 1st (n+1) Digit of Group C (CLI)
2	Send 1st Digit (B-Number)	Subscriber Line Busy	Send 1st Digit of DNIS Change to Group A
3	Send Group II Change to Group B	Reserved/Busy	Send Category (Grp II) Change to Group B
4	Congestion	Congestion	Congestion
5	Reserved	Reserved LF Nocharge	N+! Digit of DNIS Change to Group A
6	Send Group II Change to Group C	Reserved LF Charge	Repeat Digit (N) of DNIS Change to Group A

MFR2 India Protocol Specific Parameters

The parameters listed in the table below describe how to configure the MFR2 India protocol. The MFR2 India protocol specific parameters are contained in the r2_india_proto.cfg file within the $MPSHOME/common/etc/tms directory.

Table 37: E1 MFR2 India Protocol Parameters

Parameter	Description	Default
TIM_param_0	<not used>	<not used>
TIM_param_1	R2 Register Signaling Guard Time (1=10 msec resolution) Specifies the amount of time the MPS waits for register signaling to complete before abandoning the call attempt.	2000 (20 secs)

Parameter	Description	Default
TIM_param_2	Alerting Interval (1=10 msec resolution) This is set to the period of the ring back tone (i.e. ring on time + ring off time).	400 (4 secs)
TIM_param_3	Ring Back ON duration (1=10 msec resolution) This is set to the duration that a ring back tone stays on + 1 second.	200 (2 secs)
TIM_param_4	Seizure Ack Guard Time (1=10 msec resolution) Specifies how long the MPS waits for the network to send a seizure acknowledge after sending a line seizure.	600 (6 secs)
TIM_param_5	Hit Threshold (1=10 msec resolution) Bit changes lasting less than this duration are ignored.	2 (20 msecs)
TIM_param_6	Play Busy Tone Flag (1=App plays busy, 0=Network plays busy) Flag specifying whether the App plays the busy tone (in busy situations) to the caller or connect the call and let the network play the busy tone.	1
TIM_param_7	Disconnect Hang Time (1=10 msec resolution) Amount of time that a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Retry Interval (1=10 msec resolution) Specifies the interval in which the MPS retries to get an R2 engine resource.	100 (1 sec)
TIM_param_9	Number of called party (DNIS) digits to collect (range 0-36).	7
TIM_param_10	Number of calling party (ANI) digits to collect (range 0-36).	7
TIM_param_11	State of the line as told to the network (LF_CHARGE, LF_NOCHARGE, OUT_OF_ORDER, LINE_BUSY, CONGESTION).	LF_CHARGE
TIM_param_12	<not used>	<not used>
TIM_param_13	Seizure Ack Interval (1=10 msec resolution) Specifies the interval to wait before sending a seizure acknowledge signal.	3 (30 msecs)
TIM_param_14	Clear Back Guard Time (1=10 msec resolution) Specifies duration to wait for release after issuing a clear back to the network.	1000 (10 secs)

The parameter settings contained in the r2_india_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings

that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard hit threshold is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from r2_india_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

MFR2 India
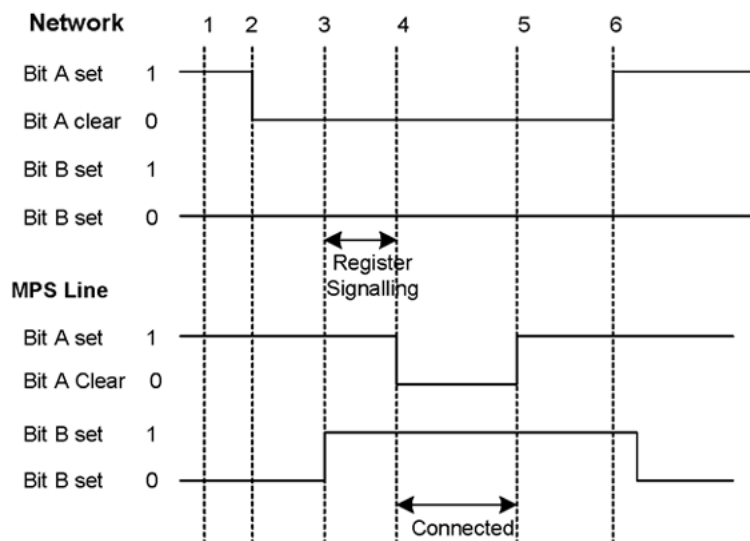
Figure 29: MFR2 India

Index	State
1	Idle
2	Seizure
3	Seizure Ack
4	Answered
5	Clear Back
6	Release

 Note:

The CEPT software was modified to the new specifications for Brazilian MFR2 signaling. The MPS now sends A1 instead of A2 after the first DNIS digit received.

Signaling Tables for MFR2 India

The following tables include Line Signaling for India as well as Compelled Signaling.

Table 38: Line Signaling

No.	State of the Circuit	Signaling Code			
		Forward		Backward	
		Af	Bf	Ab	Bb
1	Idle/Release	1	0	1	0
2	Seizure	0	0	1	0
3	Seizure Ack	0	0	1	1
5	Answered	0	0	0	1
6	Metering	0	0	1	1
8	Clear Back	0	0	1	1
10	Clear Forward	1	0	0 or 1	1
13	Release Guard	1	0	1	0

Table 39: Compelled Signaling

Signal	Group I Signals	Group II Signals
1	Digit 1	Ordinary Subscriber
2	Digit 2	Subscriber with priority
3	Digit 3	Maintenance equipment
4	Digit 4	Spare
5	Digit 5	Trunk Operator
6	Digit 6	Coin Box
7	Digit 7	Spare
8	Digit 8	Spare
9	Digit 9	Spare
10	Digit 10	Spare
11	Spare	Spare
12	Spare	Spare
13	Spare	Spare

Signal	Group I Signals	Group II Signals
14	Spare	Spare
15	End of Digits	Spare

Table 40: Compelled Signaling (cont)

Signal	Group A Signals	Group B Signals
1	Send Next Digit (n+1)	Spare
2	Restart	Changed Number
3	Send Group II and change to Group B	Busy
4	Calling Line ID	Congestion
5	Send Category	Unallotted Number
6	Switch-thru Speech Path	Line Free Charge
7	n-2 digit	Line Free - No Charge
8	n-3 digit	Not Used
9	n-1 digit	Not Used
10	Not Used	Not Used

MFR2 Australia Protocol Specific Parameters

The parameters listed in the following table describe how to configure the MFR2 Australia protocol. These Australia protocol specific parameters are found in the r2_australia_proto.cfg file found in the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	VpsNum	Outline	Pool/ Class	Protocol Pkg
LOAD	1	4	1	E1	-	-	line	r2_australia _proto.cfg

Table 41: E1 MFR2 Australia Protocol Parameters

Parameter	Description	Default
TIM_param_0	<not used>	<not used>
TIM_param_1	R2 register signaling guard time. Specifies the amount of time the MPS waits for the register signaling to complete before	3000 (30 sec)

Parameter	Description	Default
	abandoning the call attempt. (10msec resolution)	
TIM_param_2	Alerting interval. This is set to the period of the ring back tone (i.e. ring on time + ring off time) (10msec resolution)	400 (4 sec)
TIM_param_3	Ring back on duration. This is set to the duration that a ring back tone stays on + 1 sec (10msec resolution)	200 (2 sec)
TIM_param_4	Seizure Ack guard time. Specifies how long the MPS waits for the network to send a seizure acknowledge after sending a line seizure (10msec resolution)	600 (6 sec)
TIM_param_5	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	2 (20msec)
TIM_param_6	Play Busy Tone Flag. Flag specifying whether we (the App) should play the busy tone (in busy situations) to the caller or connect the call and the busy will be played by the network (1- App plays busy; 0 - network plays busy)	1
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Retry interval. Specifies the interval in which the MPS retries to get an R2 engine resource (10msec resolution)	100 (1 sec)
TIM_param_9	Number of called party (DNIS) digits to collect (range 0 - 36)	7
TIM_param_10	Number of calling party (ANI) digits to collect (range 0 - 36)	7
TIM_param_11	State of the line as should be told to the network (LF_CHARGE; LF_NOCHARGE; OUT_OF_ORDER; LINE_BUSY; CONGESTION)	LF_CHARGE
TIM_param_12	Duration of Seizure Ack pulse (10msec resolution)	10 (100msec)
TIM_param_13	Seizure Ack Interval. Specifies the interval to wait before sending a seizure acknowledge signal (10 msec resolution)	3 (30 msecs)

Parameter	Description	Default
TIM_param_14	Clear back guard time. Specifies duration to wait for release after issuing a clear back to the network (10 msec resolution)	1000 (10 sec)

The parameter settings contained in the r2_australia_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard hit threshold is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from r2_australia_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

MFR2 Australia
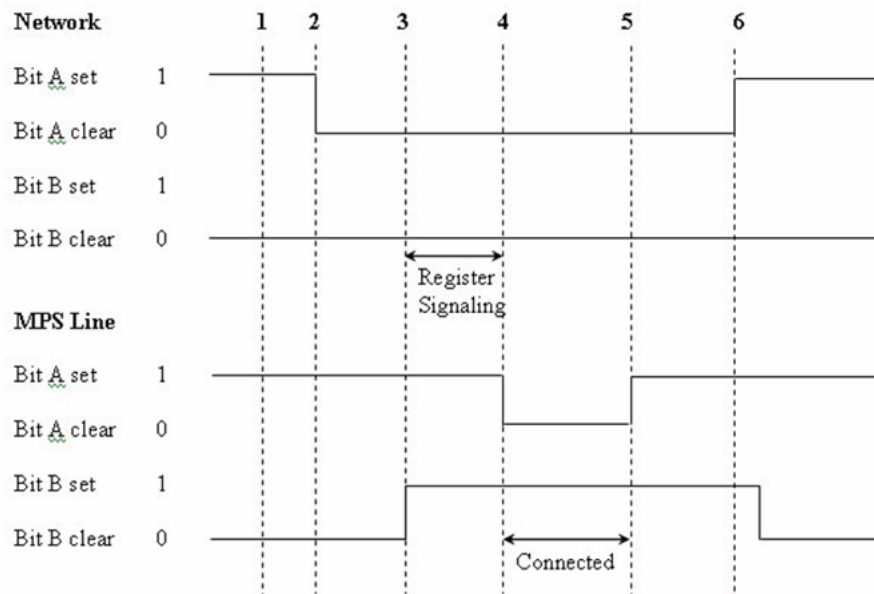
Figure 30: MFR2 Australia

Index	State
1	Idle
2	Seizure
3	Answered
4	Clear Back

Index	State
5	Release

Signaling Tables for MFR2 Australia

Following are the Line Signaling table for Australia as well as the compelled signaling tables:

Table 42: Line Signaling

No.	State of the Circuit	Signaling Code			
		Forward		Backward	
		Af	Bf	Ab	Bb
1	Idle	1	0	1	0
2	Seizure	0	0	1	0
3	Seizure Acknowledge	0	0	1	1
4	Answer/ Re-answer	0	0	0	1
5	Meter	0	0	1	1
6	Clear Back	0	0	1	1
7	Blocking	1	0	1	1
8	Clear Forward	1	0	0/1	1
9	Release Guard	1	0	1	0

Table 43: Compelled Signaling - MFC Forward Signals

Signal	Group I Signals	Group II Signals (Answer to signals A-3 and A-5)
1	Digit 1	Subscriber without priority
2	Digit 2	Subscriber with priority
3	Digit 3	Maintenance equipment
4	Digit 4	Spare
5	Digit 5	Operator
6	Digit 6	Data transmission
7	Digit 7	Subscriber without priority
8	Digit 8	Data transmission
9	Digit 9	Subscriber with priority

Signal	Group I Signals	Group II Signals (Answer to signals A-3 and A-5)
10	Digit 0	Operator
11	Not used	Spare
12	Not used	Spare
13	Not used	Spare
14	Not used	Spare
15	End of Identification	Spare

Table 44: Compelled Signaling - MFC Backward Signals

Signal	Group A Signals	Group B Signals
1	Send Next Digit (n+1)	Spare
2	Send last but one digit (n-1)	Send special information tone
3	Address-complete. Change to Group B-signals	Subscriber line busy
4	Congestion in national n/w	Congestion
5	Send calling party's category	Unallocated number
6	Address complete, charge, setup speech conditions.	Subscriber line free, charge
7	Send last but two digit (n-2)	Subscriber line free, no charge
8	Send last but three digit (n-3)	Subscriber's line out of order
9	Spare	Spare
10	Spare	Spare

MFR2 Philippines Protocol Specific Parameters

The parameters listed in the following table describe how to configure the MFR2 Philippines protocol. These Philippines protocol specific parameters are found in the r2_philippines_proto.cfg file found in the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/Class	Protocol Pkg
LOAD	1	4	1	E1	-	-	line	r2_philippines_proto.cfg

Table 45: E1 MFR2 Philippines Protocol Parameters

Parameter	Description	Default
TIM_param_0	<not used>	<not used>
TIM_param_1	R2 register signaling guard time. Specifies the amount of time the MPS waits for the register signaling to complete before abandoning the call attempt. (10msec resolution)	3000 (30 sec)
TIM_param_2	Alerting interval. This is set to the period of the ring back tone (i.e. ring on time + ring off time) (10msec resolution)	400 (4 sec)
TIM_param_3	Ring back on duration. This is set to the duration that a ring back tone stays on + 1 sec (10msec resolution)	200 (2 sec)
TIM_param_4	Seizure Ack guard time. Specifies how long the MPS waits for the network to send a seizure acknowledge after sending a line seizure (10msec resolution)	600 (6 sec)
TIM_param_5	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	2 (20msec)
TIM_param_6	Play Busy Tone Flag. Flag specifying whether we (the App) should play the busy tone (in busy situations) to the caller or connect the call and the busy will be played by the network (1- App plays busy; 0 - network plays busy)	1
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Retry interval. Specifies the interval in which the MPS retries to get an R2 engine resource (10msec resolution)	100 (1 sec)
TIM_param_9	Number of called party (DNIS) digits to collect (range 0 - 36)	7
TIM_param_10	Number of calling party (ANI) digits to collect (range 0 - 36)	7
TIM_param_11	State of the line as should be told to the network (LF_CHARGE; LF_NOCHARGE; OUT_OF_ORDER; LINE_BUSY; CONGESTION)	LF_CHARGE

Parameter	Description	Default
TIM_param_12	Duration of Seizure Ack pulse (10msec resolution)	10 (100msec)
TIM_param_13	Seizure Ack Interval. Specifies the interval to wait before sending a seizure acknowledge signal (10 msec resolution)	3 (30 msecs)
TIM_param_14	Clear back guard time. Specifies duration to wait for release after issuing a clear back to the network (10 msec resolution)	1000 (10 sec)

The parameter settings contained in the r2_philippines_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard hit threshold is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from r2_philippines_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

MFR2 Philippines
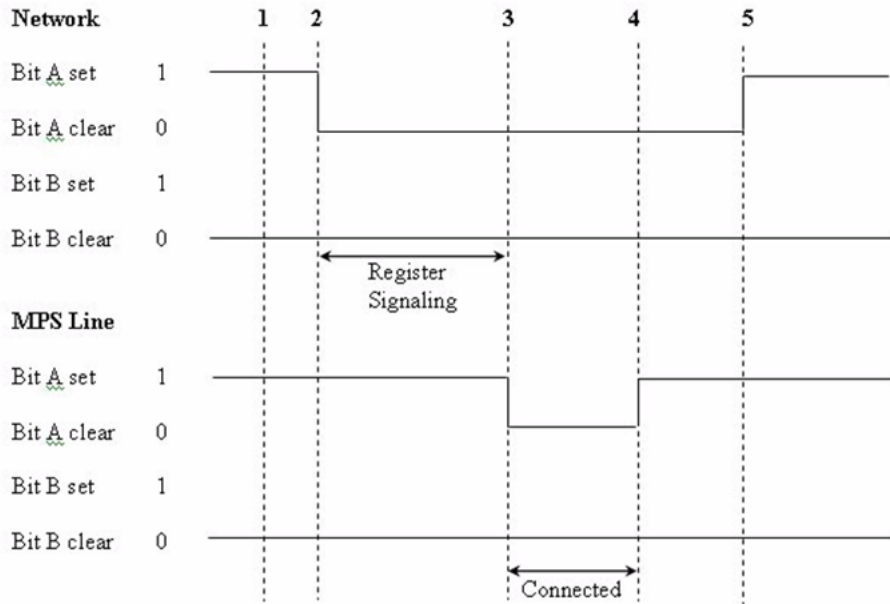
Figure 31: MFR2 Philippines

Index	State
1	Idle
2	Seizure
3	Answered
4	Clear Back
5	Release

Signaling Tables for MFR2 Philippines

Following are the Line Signaling table for Philippines as well as the compelled signaling tables:

Table 46: Line Signaling

No.	State of the Circuit	Signaling Code			
		Forward		Backward	
		Af	Bf	Ab	Bb
1	Idle	1	0	1	0
2	Seizure	0	0	1	0
3	Dialing	0	0	1	0
4	Answer	0	0	0	0
5	Clear Back	0	0	1	0
6	Release	1	0	1	0

Table 47: Compelled Signaling - MFC Forward Signals

Signal	Group I Signals	Group II Signals (Answer to signals A-3 and A-5)
1	Digit 1	Subscriber without priority
2	Digit 2	Subscriber with priority
3	Digit 3	Maintenance equipment
4	Digit 4	Spare
5	Digit 5	Operator
6	Digit 6	Data transmission
7	Digit 7	Subscriber without priority
8	Digit 8	Data transmission
9	Digit 9	Subscriber with priority
10	Digit 0	Operator
11	Not used	Spare
12	Not used	Spare
13	Not used	Spare
14	Not used	Spare
15	End of Identification	Spare

Table 48: Compelled Signaling - MFC Backward Signals

Signal	Group A Signals	Group B Signals
1	Send Next Digit (n+1)	Spare

Signal	Group A Signals	Group B Signals
2	Send last but one digit (n-1)	Send special information tone
3	Address-complete. Change to Group B-signals	Subscriber line busy
4	Congestion in national n/w	Congestion
5	Send calling party's category	Unallocated number
6	Address complete, charge, setup speech conditions.	Subscriber line free, charge
7	Send last but two digit (n-2)	Subscriber line free, no charge
8	Send last but three digit (n-3)	Subscriber's line out of order
9	Spare	Spare
10	Spare	Spare

MFR2 Denmark Protocol Specific Parameters

The parameters listed in the following table describe how to configure the MFR2 Denmark protocol. These Denmark protocol specific parameters are found in the r2_denmark_proto.cfg file found in the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/ Class	Protocol Pkg
LOAD	1	4	1	E1	-	-	line	r2_denmark _proto.cfg

Table 49: E1 MFR2 Denmark Protocol Parameters

Parameter	Description	Default
TIM_param_0	<not used>	<not used>
TIM_param_1	R2 register signaling guard time. Specifies the amount of time the MPS waits for the register signaling to complete before abandoning the call attempt. (10msec resolution)	3000 (30 sec)
TIM_param_2	Alerting interval. This is set to the period of the ring back tone (i.e. ring on time + ring off time) (10msec resolution)	400 (4 sec)

Parameter	Description	Default
TIM_param_3	Ring back on duration. This is set to the duration that a ring back tone stays on + 1 sec (10msec resolution)	200 (2 sec)
TIM_param_4	Seizure Ack guard time. Specifies how long the MPS waits for the network to send a seizure acknowledge after sending a line seizure (10msec resolution)	600 (6 sec)
TIM_param_5	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	2 (20msec)
TIM_param_6	Play Busy Tone Flag. Flag specifying whether we (the App) should play the busy tone (in busy situations) to the caller or connect the call and the busy will be played by the network (1- App plays busy; 0 - network plays busy)	1
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Retry interval. Specifies the interval in which the MPS retries to get an R2 engine resource (10msec resolution)	100 (1 sec)
TIM_param_9	Number of called party (DNIS) digits to collect (range 0 - 36)	7
TIM_param_10	Number of calling party (ANI) digits to collect (range 0 - 36)	7
TIM_param_11	State of the line as should be told to the network (LF_CHARGE; LF_NOCHARGE; OUT_OF_ORDER; LINE_BUSY; CONGESTION)	LF_CHARGE
TIM_param_12	Duration of Seizure Ack pulse (10msec resolution)	10 (100msec)
TIM_param_13	Seizure Ack Interval. Specifies the interval to wait before sending a seizure acknowledge signal (10 msec resolution)	3 (30 msecs)
TIM_param_14	Clear back guard time. Specifies duration to wait for release after issuing a clear back to the network (10 msec resolution)	1000 (10 sec)

The parameter settings contained in the r2_denmark_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard hit threshold

is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from r2_denmark_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

MFR2 Denmark

Figure 32: MFR2 Denmark

Index	State
1	Idle
2	Seizure
3	Seizure Ack
4	Answered
5	Clear Back
6	Release

Signaling Tables for MFR2 Denmark

Following are the Line Signaling table for Denmark as well as the compelled signaling tables:

Table 50: Line Signaling

No.	State of the Circuit	Signaling Code			
		Forward		Backward	
		Af	Bf	Ab	Bb
1	Idle/Release	1	0	1	0
2	Seizure	0	0	1	0
3	Seizure Acknowledgement	0	0	1	1
4	Answered	0	0	0	1
5	Metering	0	0	1	0
6	Clear Back	0	0	1	1
7	Clear Forward	1	0	0/1	0/1
8	Trunk Offering	0	1	1	1
9	Forced Release	0	0	0	0

Table 51: Compelled Signaling - MFC Forward Signals

Signal	Group I Signals	Group II Signals (Answer to signals A-3 and A-5)
1	Digit 1	Ordinary subscriber (national)
2	Digit 2	Not used
3	Digit 3	Not used
4	Digit 4	Not used
5	Digit 5	Operator (national)
6	Digit 6	Data subscriber (national)
7	Digit 7	Ordinary subscriber (international)
8	Digit 8	Data subscriber (international)
9	Digit 9	Not used
10	Digit 0	Not used
11	Not used	Not used
12	Not used	Redirected Call
13	Not used	Call and operator with expanded facility range
14	Not used	Not used
15	Not used	Operator wanting linking (put through to busy number)

Table 52: Compelled Signaling - MFC Backward Signals

Signal	Group A Signals	Group B Signals
1	Send Next Digit (n+1)	Interpreted as B6
2	Send last but one digit (n-1)	Interpreted as B5
3	Change over to reception of B-signals	Subscriber line busy
4	Congestion in the national network	Congestion
5	Send calling party's category	Unallocated number
6	N.D.	Subscriber line free, charge
7	Send last but two digit (n-2)	Interpreted as B6
8	Send last but three digit (n-3)	N.D.
9	Send same digit n	Route the call to the centralized answering service position in the incoming numbering area (national)
10	N.D.	N.D.

> **Note:**
> Signals, "N.D.", are not defined. Receipt of these signals will lead to disconnection.

MFR2 Finland Protocol Specific Parameters

The parameters listed in the following table describe how to configure the MFR2 Finland protocol. These Finland protocol specific parameters are found in the r2_finland_proto.cfg file found in the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/ Class	Protocol Pkg
LOAD	1	4	1	E1	-	-	line	r2_finland _proto.cfg

Table 53: E1 MFR2 Finland Protocol Parameters

Parameter	Description	Default
TIM_param_0	<not used>	<not used>
TIM_param_1	R2 register signaling guard time. Specifies the amount of time the MPS waits for the	3000 (30 sec)

Parameter	Description	Default
	register signaling to complete before abandoning the call attempt. (10msec resolution)	
TIM_param_2	Alerting interval. This is set to the period of the ring back tone (i.e. ring on time + ring off time) (10msec resolution)	400 (4 sec)
TIM_param_3	Ring back on duration. This is set to the duration that a ring back tone stays on + 1 sec (10msec resolution)	200 (2 sec)
TIM_param_4	Seizure Ack guard time. Specifies how long the MPS waits for the network to send a seizure acknowledge after sending a line seizure (10msec resolution)	600 (6 sec)
TIM_param_5	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	2 (20msec)
TIM_param_6	Play Busy Tone Flag. Flag specifying whether we (the App) should play the busy tone (in busy situations) to the caller or connect the call and the busy will be played by the network (1- App plays busy; 0 - network plays busy)	1
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Retry interval. Specifies the interval in which the MPS retries to get an R2 engine resource (10msec resolution)	100 (1 sec)
TIM_param_9	Number of called party (DNIS) digits to collect (range 0 - 36)	7
TIM_param_10	Number of calling party (ANI) digits to collect (range 0 - 36)	7
TIM_param_11	State of the line as should be told to the network (LF_CHARGE; LF_NOCHARGE; OUT_OF_ORDER; LINE_BUSY; CONGESTION)	LF_CHARGE
TIM_param_12	Duration of Seizure Ack pulse (10msec resolution)	10 (100msec)
TIM_param_13	Seizure Ack Interval. Specifies the interval to wait before sending a seizure acknowledge signal (10 msec resolution)	3 (30 msecs)

Parameter	Description	Default
TIM_param_14	Clear back guard time. Specifies duration to wait for release after issuing a clear back to the network (10 msec resolution)	1000 (10 sec)

The parameter settings contained in the r2_finland_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard hit threshold is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from r2_finland_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

MFR2 Finland

Figure 33: MFR2 Finland

Index	State
1	Idle
2	Seizure
3	Seizure Ack
4	Answered

Index	State
5	Clear Back
6	Release

Signaling Tables for MFR2 Finland

Following are the Line Signaling table for Finland as well as the compelled signaling tables:

Table 54: Line Signaling

No.	State of the Circuit	Signaling Code			
		Forward		Backward	
		Af	Bf	Ab	Bb
1	Idle/Release	1	0	1	0
2	Seizure	0	0	1	0
3	Seizure Acknowledgement	0	0	1	1
4	Answered	0	0	0	1
5	Metering	0	0	1	0
6	Clear Back	0	0	1	1
7	Clear Forward	1	0	0/1	0/1
8	Trunk Offering	0	1	1	1
9	Forced Release	0	0	0	0

Table 55: Compelled Signaling - MFC Forward Signals

Signal	Group I Signals	Group II Signals (Answer to signals A-3 and A-5)
1	Digit 1	Ordinary subscriber (national)
2	Digit 2	Subscriber with priority (national)
3	Digit 3	Test equipment (national)
4	Digit 4	Payphone (national)
5	Digit 5	Operator (national)
6	Digit 6	Data subscriber (national)
7	Digit 7	Ordinary subscriber (international)
8	Digit 8	Data subscriber (international)

Signal	Group I Signals	Group II Signals (Answer to signals A-3 and A-5)
9	Digit 9	Subscriber with priority (international)
10	Digit 0	Operator with forward transfer facility (international)
11	Address of a centralized answering service	Redirected call
12	Request not accepted	Spare for national use
13	Address of a test equipment	Digital connectivity required
14	Spare for internal use of tele-administrations	Spare for national use
15	End of identification	Spare for national use

Table 56: Compelled Signaling - MFC Backward Signals

Signal	Group A Signals	Group B Signals
1	Send Next Digit (n+1)	Subscriber line free, malicious call identification
2	Send last but one digit (n-1)	Send special information tone
3	Change over to reception of B-signals	Subscriber line busy
4	Congestion in the national network	Congestion
5	Send calling party's category	Unallocated number
6	Set up speech conditions.	Subscriber line free, charge
7	Send last but two digit (n-2)	Spare
8	Send last but three digit (n-3)	Subscriber line out of order
9	Send calling party's national number	Route the call to the centralized answering service position in the incoming numbering area (national)
10	Spare for the internal use of tele administrations	Subscriber number changed

MFR2 Malaysia Protocol Specific Parameters

The parameters listed in the following table describe how to configure the MFR2 Malaysia protocol. These Malaysia protocol specific parameters are found in the r2_malaysia_proto.cfg file found in the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNu m	Outlin e	Pool/ Class	Protocol Pkg
LOAD	1	4	1	E1	-	-	line	r2_malaysi a _proto.cfg

Table 57: E1 MFR2 Malaysia Protocol Parameters

Parameter	Description	Default
TIM_param_0	<not used>	<not used>
TIM_param_1	R2 register signaling guard time. Specifies the amount of time the MPS waits for the register signaling to complete before abandoning the call attempt. (10msec resolution)	3000 (30 sec)
TIM_param_2	Alerting interval. This is set to the period of the ring back tone (i.e. ring on time + ring off time) (10msec resolution)	400 (4 sec)
TIM_param_3	Ring back on duration. This is set to the duration that a ring back tone stays on + 1 sec (10msec resolution)	200 (2 sec)
TIM_param_4	Seizure Ack guard time. Specifies how long the MPS waits for the network to send a seizure acknowledge after sending a line seizure (10msec resolution)	600 (6 sec)
TIM_param_5	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	2 (20msec)
TIM_param_6	Play Busy Tone Flag. Flag specifying whether we (the App) should play the busy tone (in busy situations) to the caller or connect the call and the busy will be played by the network (1- App plays busy; 0 - network plays busy)	1
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Retry interval. Specifies the interval in which the MPS retries to get an R2 engine resource (10msec resolution)	100 (1 sec)
TIM_param_9	Number of called party (DNIS) digits to collect (range 0 - 36)	7

Parameter	Description	Default
TIM_param_10	Number of calling party (ANI) digits to collect (range 0 - 36)	7
TIM_param_11	State of the line as should be told to the network (LF_CHARGE; LF_NOCHARGE; OUT_OF_ORDER; LINE_BUSY; CONGESTION)	LF_CHARGE
TIM_param_12	Duration of Seizure Ack pulse (10msec resolution)	10 (100msec)
TIM_param_13	Seizure Ack Interval. Specifies the interval to wait before sending a seizure acknowledge signal (10 msec resolution)	3 (30 msecs)
TIM_param_14	Clear back guard time. Specifies duration to wait for release after issuing a clear back to the network (10 msec resolution)	1000 (10 sec)

The parameter settings contained in the r2_malaysia_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard hit threshold is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from r2_malaysia_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

MFR2 Malaysia
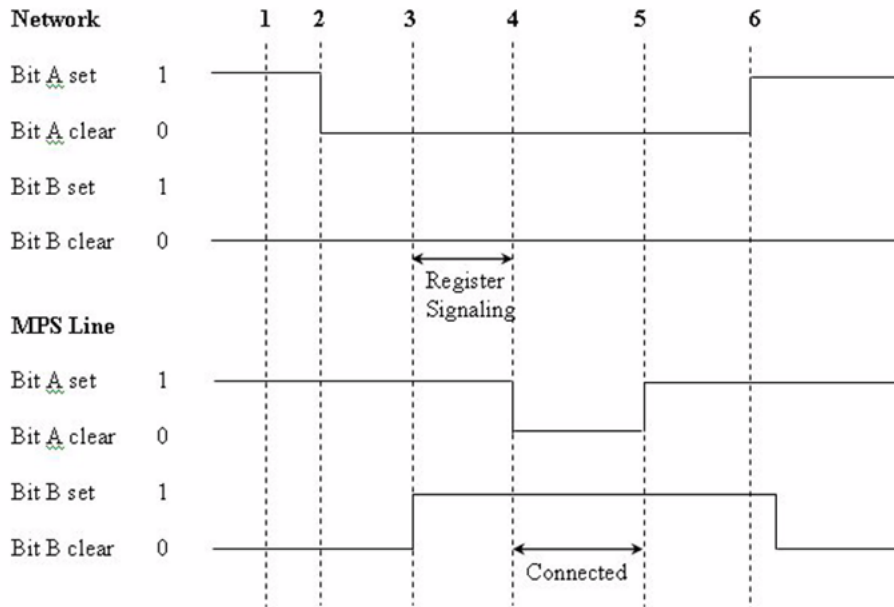
Figure 34: MFR2 Malaysia

Index	State
1	Idle
2	Seizure
3	Answered
4	Clear Back
5	Release

Signaling Tables for MFR2 Malaysia

Following are the Line Signaling table for Malaysia as well as the compelled signaling tables:

Table 58: Line Signaling

No.	State of the Circuit	Signaling Code			
		Forward		Backward	
		Af	Bf	Ab	Bb
1	Idle	1	0	1	0
2	Seizure	0	0	1	0
3	Seizure Acknowledge	0	0	1	1
4	Answer	0	0	0	1
5	Clear Back	0	0	1	1
6	Forced Release	0	0	0	0
7	Clear Forward	1	0	0/1	1
8	Release Guard	1	0	1	0
9	Blocking	1	0	1	1

Table 59: Compelled Signaling - MFC Forward Signals

Signal	Group I Signal for numerical information	Group II Signals indicating the nature of Calling Party	Group III Calling Party's Number in response to second and subsequent A-6 Backward Signal
1	Digit 1	Operator (with trunk offering)	Same as for Group I
2	Digit 2	Ordinary subscriber	
3	Digit 3	CCB Unit free	
4	Digit 4	Multicoin CCB	
5	Digit 5	STD CCB	
6	Digit 6	Test Equipment	
7	Digit 7	Subscriber with Priority	
8	Digit 8	Interception Operator	
9	Digit 9	Data Transmission	
10	Digit 0	Reserved for operator initiated call with forward transfer facility (international)	
11	Access to interception service	Spare	Spare

Signal	Group I Signal for numerical information	Group II Signals indicating the nature of Calling Party	Group III Calling Party's Number in response to second and subsequent A-6 Backward Signal
12	Access to TTB (internal signal in ARM exchanges)	Spare	CLI not available
13	Access to CCB manual assistance	Spare	Spare
14	Access to maintenance equipment	Spare	Spare
15	Access to KMZ (for charging from centralized charging equipment)		End of calling number

Table 60: Compelled Signaling - MFC Backward Signals

Signal	(A) Controlling Signals
A1	Send next digit of called number
A2	Restart (send first digit)
A3	Send nature of calling party, change to B-signals
A4	Congestion
A5	Change to decadic signaling (D-signals)
A6	Send nature of calling party (subsequent repeated A6 signals are used for requesting number of calling subscriber)
A7	Send tariff zone (originating charge area identity)
A8	Send last but one digit (n-1)
A9	Send last but two digit (n-2)
A10 to A15	Spare
	(B) Marking Signals, Indicating condition of Called Subscriber
B1	Called party free, with metering
B2	Called party busy
B3	Number requiring rerouting or interception (or unassigned number)
B4	Congestion or called line occupied by operator offering trunk call
B5	Called party free, without metering
B6	Last party release (for malicious call tracing etc.). B party release
B7 to B16	Spare

Signal	(A) Controlling Signals
	(D) For interworking with step-by-step equipment
D1	Start first digit decadic
D2	Start second digit decadic
D3	Start third digit decadic
D4	Spare
D5	Spare
D6	Spare

MFR2 Norway Protocol Specific Parameters

The parameters listed in the following table describe how to configure the MFR2 Norway protocol. These Norway protocol specific parameters are found in the r2_norway_proto.cfg file found in the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/Class	Protocol Pkg
LOAD	1	4	1	E1	-	-	line	r2_norway _proto.cfg

Table 61: E1 MFR2 Norway Protocol Parameters

Parameter	Description	Default
TIM_param_0	not used>	<not used>
TIM_param_1	R2 register signaling guard time. Specifies the amount of time the MPS waits for the register signaling to complete before abandoning the call attempt. (10msec resolution)	3000 (30 sec)
TIM_param_2	Alerting interval. This is set to the period of the ring back tone (i.e. ring on time + ring off time) (10msec resolution)	400 (4 sec)
TIM_param_3	Ring back on duration. This is set to the duration that a ring back tone stays on + 1 sec (10msec resolution)	200 (2 sec)
TIM_param_4	Seizure Ack guard time. Specifies how long the MPS waits for the network to send a	600 (6 sec)

Parameter	Description	Default
	seizure acknowledge after sending a line seizure (10msec resolution)	
TIM_param_5	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	2 (20msec)
TIM_param_6	Play Busy Tone Flag. Flag specifying whether we (the App) should play the busy tone (in busy situations) to the caller or connect the call and the busy will be played by the network (1- App plays busy; 0 - network plays busy)	1
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Retry interval. Specifies the interval in which the MPS retries to get an R2 engine resource (10msec resolution)	100 (1 sec)
TIM_param_9	Number of called party (DNIS) digits to collect (range 0 - 36)	7
TIM_param_10	Number of calling party (ANI) digits to collect (range 0 - 36)	7
TIM_param_11	State of the line as should be told to the network (LF_CHARGE; LF_NOCHARGE; OUT_OF_ORDER; LINE_BUSY; CONGESTION)	LF_CHARGE
TIM_param_12	Duration of Seizure Ack pulse (10msec resolution)	10 (100msec)
TIM_param_13	Seizure Ack Interval. Specifies the interval to wait before sending a seizure acknowledge signal (10 msec resolution)	3 (30 msecs)
TIM_param_14	Clear back guard time. Specifies duration to wait for release after issuing a clear back to the network (10 msec resolution)	1000 (10 sec)

The parameter settings contained in the r2_norway_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard hit threshold is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from r2_norway_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

MFR2 Norway
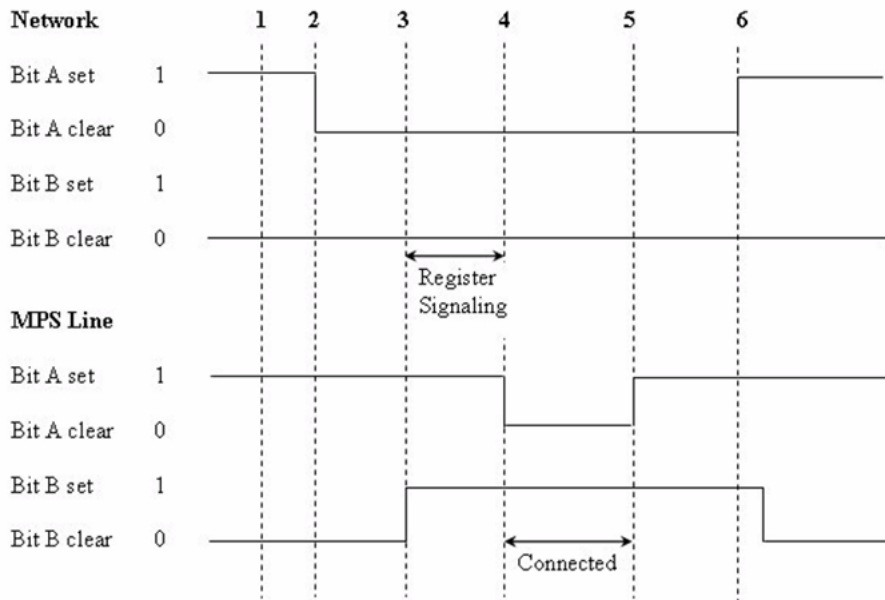
**Figure 35: MFR2 Norway**

Index	State
1	Idle
2	Seizure
3	Seizure Ack
4	Answered
5	Clear Back
6	Release

Signaling Tables for MFR2 Norway

Following are the Line Signaling table for Norway as well as the compelled signaling tables:

Table 62: Line Signaling

No.	State of the Circuit	Signaling Code			
		Forward		Backward	
		Af	Bf	Ab	Bb
1	Idle/Release	1	0	1	0
2	Seizure	0	0	1	0
3	Seizure Acknowledgement	0	0	1	1
4	Answered	0	0	0	1
5	Charging	0	0	0	0
6	Clear Back	0	0	1	1
7	Clear Forward	1	0	0/1	1
8	Release Guard	1	0	1	0
9	Blocking	1	0	1	1

Table 63: Compelled Signaling - MFC Forward Signals

Signal	Group I Signals	Group II Signals (Answer to signals A-3 and A-5)
1	Digit 1	Subscriber without priority
2	Digit 2	Subscriber without priority
3	Digit 3	Subscriber without priority
4	Digit 4	Subscriber without priority
5	Digit 5	Subscriber without priority
6	Digit 6	Subscriber without priority
7	Digit 7	Subscriber without priority
8	Digit 8	Subscriber without priority
9	Digit 9	Subscriber without priority
10	Digit 0	Subscriber without priority

Table 64: Compelled Signaling - MFC Backward Signals

Signal	Group A Signals	Group B Signals
1	Send Next Digit (n+1)	B-subscriber idle
2	Not Used	B-subscriber busy

Signal	Group A Signals	Group B Signals
3	Change over to reception of group B-signals	Not used
4	Congestion	Congestion
5	Not used	Unallocated number
6	Address complete. Through connection of the speech path.	Subscriber line free, charge
7	Send last but two digit (n-2)	Subscriber line free, no charge
8	Send last but three digit (n-3)	Subscriber line out of order
9	N.D.	N.D.
10	N.D.	N.D.

Note:

Signals, "N.D.", are not defined.

MFR2 Singapore Protocol Specific Parameters

The parameters listed in the following table describe how to configure the MFR2 Singapore protocol. These Singapore protocol specific parameters are found in the r2_singapore_proto.cfg file found in the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/Class	Protocol Pkg
LOAD	1	4	1	E1	-	-	line	r2_singapore_proto.cfg

Table 65: E1 MFR2 Singapore Protocol Parameters

Parameter	Description	Default
TIM_param_0	<not used>	<not used>
TIM_param_1	R2 register signaling guard time. Specifies the amount of time the MPS waits for the register signaling to complete before abandoning the call attempt. (10msec resolution)	3000 (30 sec)

Parameter	Description	Default
TIM_param_2	Alerting interval. This is set to the period of the ring back tone (i.e. ring on time + ring off time) (10msec resolution)	400 (4 sec)
TIM_param_3	Ring back on duration. This is set to the duration that a ring back tone stays on + 1 sec (10msec resolution)	200 (2 sec)
TIM_param_4	Seizure Ack guard time. Specifies how long the MPS waits for the network to send a seizure acknowledge after sending a line seizure (10msec resolution)	600 (6 sec)
TIM_param_5	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	2 (20msec)
TIM_param_6	Play Busy Tone Flag. Flag specifying whether we (the App) should play the busy tone (in busy situations) to the caller or connect the call and the busy will be played by the network (1- App plays busy; 0 - network plays busy)	1
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Retry interval. Specifies the interval in which the MPS retries to get an R2 engine resource (10msec resolution)	100 (1 sec)
TIM_param_9	Number of called party (DNIS) digits to collect (range 0 - 36)	7
TIM_param_10	Number of calling party (ANI) digits to collect (range 0 - 36)	7
TIM_param_11	State of the line as should be told to the network (LF_CHARGE; LF_NOCHARGE; OUT_OF_ORDER; LINE_BUSY; CONGESTION)	LF_CHARGE
TIM_param_12	Duration of Seizure Ack pulse (10msec resolution)	10 (100msec)
TIM_param_13	Seizure Ack Interval. Specifies the interval to wait before sending a seizure acknowledge signal (10 msec resolution)	3 (30 msecs)
TIM_param_14	Clear back guard time. Specifies duration to wait for release after issuing a clear back to the network (10 msec resolution)	1000 (10 sec)

The parameter settings contained in the r2_singapore_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard hit threshold is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from r2_singapore_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

MFR2 Singapore
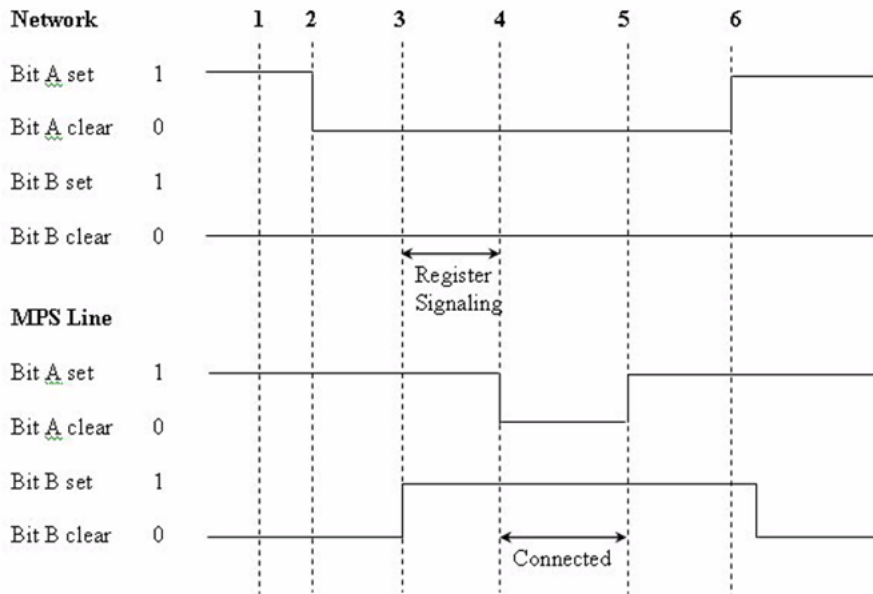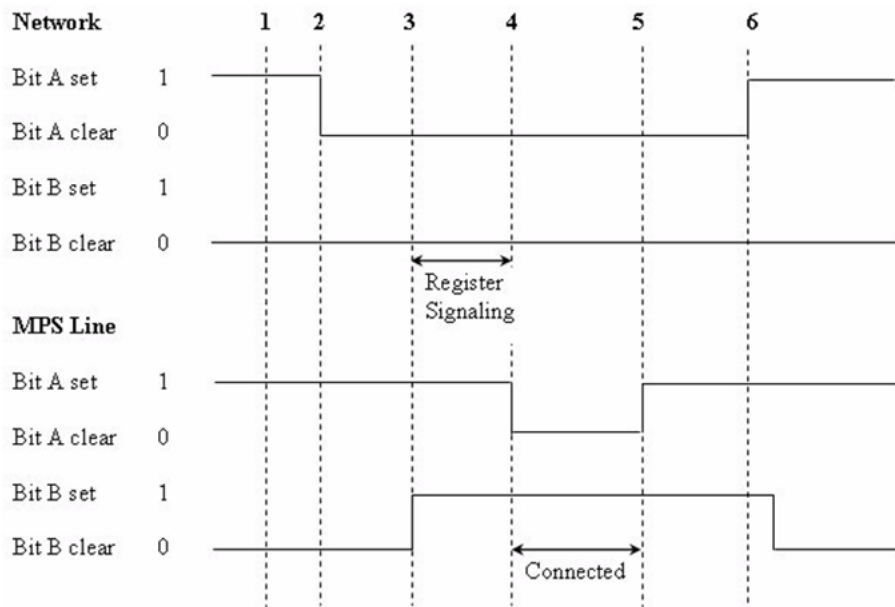

Figure 36: MFR2 Singapore

Index	State
1	Idle
2	Seizure
3	Seizure Ack
4	Answered
5	Clear Back
6	Release

Signaling Tables for MFR2 Singapore

Following are the Line Signaling table for Singapore as well as the compelled signaling tables:

Table 66: Line Signaling

Signal	Signaling Code				
	Forward		Direction of Signaling	Backward	
	Af	Bf		Ab	Bb
1 Idle	1	0	-	1	0
2 Seizure	0→1	0		1	0
3 Seizure Acknowledgement	0	0		1	01
4 Answered/Reanswer	0	0		10	1
5 Clear Back	0	0		01	1
6 Clear Forward	0→1	0	0 or 1 1 1		
7 Hooking	0	0	0→1→0		
8 Metering	0	0	0→1→0		
9 Blocking (Back Busy)	1	0		1	0→1
10 Unblocking	1	0		1	1→0
Af, Bf = Signaling channels in forward direction					
Ab, Bb = Signaling channels in backward direction					
'0' = OFF state					
'1' = ON state					
→ = Transition state					

Table 67: Compelled Signaling - MFC Forward Signals

Signal	Group I Signals	Group II	Group III
1	Digit 1	Operator with trunk offering	Digit 1
2	Digit 2	Ordinary subscriber or operator without trunk offering facility	Digit 2

Signal	Group I Signals	Group II	Group III
3	Digit 3	Payphone (local/STD/ IDD calls)	Digit 3
4	Digit 4	Non-CLI display subscriber	Digit 4
5	Digit 5	Coinafon	Digit 5
6	Digit 6	Test Equipment	Digit 6
7	Digit 7	Line Test Desk	Digit 7
8	Digit 8	Interception Operator	Digit 8
9	Digit 9	Call from transit exchange which normally does not have the calling subscriber number information (e.g. trunk/ gateway)	Digit 9
10	Digit 0	Indication of a transferred call	Digit 0
11	Access to Centralized Interception Service	Fax/Data subscriber	Spare
12	Request by A-X signal Not accepted	Spare	CLI not available
13	Spare	Ordinary subscriber with priority	Spare
14	Spare	Spare	Spare
15	End of called number	Spare	End of calling number

Table 68: Compelled Signaling - MFC Backward Signals

Signal	A Signals	B Signals
1	Send next digit of called number	Called party free, chargeable
2	Send first digit of the called number (restart)	Called party busy
3	Send category of calling subscriber (end of selection) and change over to reception of B-signal	Number requiring re-routing at the originating local exchange or outgoing exchange
4	Congestion	Congestion
5	Spare	Called party free, non-chargeable
6	First A-6 Signal	Last party release

Signal	A Signals	B Signals
	Send category of calling subscriber Subsequent A-6 Signal Send calling subscriber's number	
7	Send tariff zone	Unallocated subscriber number
8	Send (n-1)th digit	Spare
9	Send (n-2)th digit	Spare
10-15	Spare	Spare

MFR2 Thailand Protocol Specific Parameters

The parameters listed in the following table describe how to configure the MFR2 Thailand protocol. These Thailand protocol specific parameters are found in the r2_thailand_proto.cfg file found in the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/Class	Protocol Pkg
LOAD	1	4	1	E1	-	-	line	r2_thailand _proto.cfg

Table 69: E1 MFR2 Thailand Protocol Parameters

Parameter	Description	Default
TIM_param_0	<not used>	<not used>
TIM_param_1	R2 register signaling guard time. Specifies the amount of time the MPS waits for the register signaling to complete before abandoning the call attempt. (10msec resolution)	3000 (30 sec)
TIM_param_2	Alerting interval. This is set to the period of the ring back tone (i.e. ring on time + ring off time) (10msec resolution)	400 (4 sec)
TIM_param_3	Ring back on duration. This is set to the duration that a ring back tone stays on + 1 sec (10msec resolution)	200 (2 sec)
TIM_param_4	Seizure Ack guard time. Specifies how long the MPS waits for the network to send a seizure acknowledge after sending a line seizure (10msec resolution)	600 (6 sec)

Parameter	Description	Default
TIM_param_5	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	2 (20msec)
TIM_param_6	Play Busy Tone Flag. Flag specifying whether we (the App) should play the busy tone (in busy situations) to the caller or connect the call and the busy will be played by the network (1- App plays busy; 0 - network plays busy)	1
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Retry interval. Specifies the interval in which the MPS retries to get an R2 engine resource (10msec resolution)	100 (1 sec)
TIM_param_9	Number of called party (DNIS) digits to collect (range 0 - 36)	7
TIM_param_10	Number of calling party (ANI) digits to collect (range 0 - 36)	7
TIM_param_11	State of the line as should be told to the network (LF_CHARGE; LF_NOCHARGE; OUT_OF_ORDER; LINE_BUSY; CONGESTION)	LF_CHARGE
TIM_param_12	Duration of Seizure Ack pulse (10msec resolution)	10 (100msec)
TIM_param_13	Seizure Ack Interval. Specifies the interval to wait before sending a seizure acknowledge signal (10 msec resolution)	3 (30 msecs)
TIM_param_14	Clear back guard time. Specifies duration to wait for release after issuing a clear back to the network (10 msec resolution)	1000 (10 sec)

The parameter settings contained in the r2_thailand_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard hit threshold is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from r2_thailand_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.
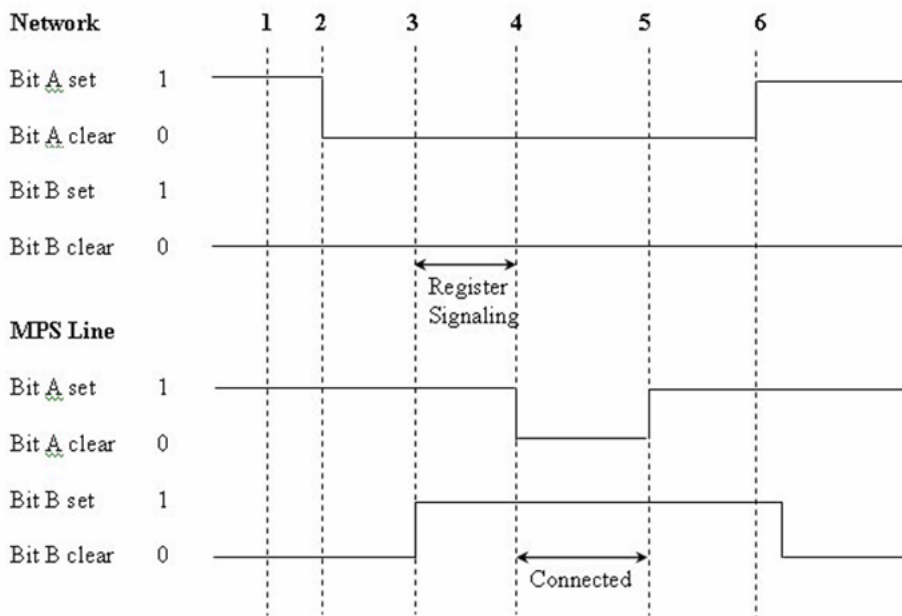
MFR2 Thailand
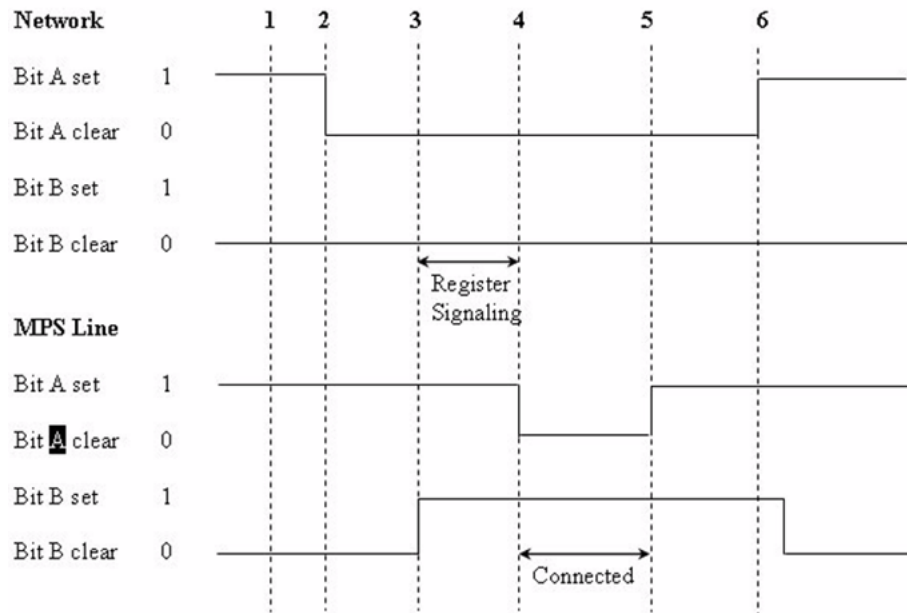
Figure 37: MFR2 Thailand

Index	State
1	Idle
2	Seizure
3	Seizure Ack
4	Answered
5	Clear Back
6	Release

Signaling Tables for MFR2 Thailand

Following are the Line Signaling table for Thailand as well as the compelled signaling tables:

Table 70: Line Signaling

No.	State of the Circuit	Signaling Code				Direction
		Forward		Backward		
		Af	Bf	Ab	Bb	
1	Idle	1	0	1	0	
2	Seized	0	0	1	0	Forward
3	Seized Acknowledged	0	0	1	1	Backward
4	Answered	0	0	0	1	Backward
5	Clear Backward	0	0	1	1	Backward
6	Forced Release	0	0	0	0	Backward
7	Clear Forward	1	0	0 1	1 1	Forward
8	Release Guard	1	0	1	0	Backward
9	Blocking	1	0	1	1	Backward

Table 71: Compelled Signaling - Group I Forward Signals

Signal	
I-1	Digit 1
I-2	Digit 2
I-3	Digit 3
I-4	Digit 4
I-5	Digit 5
I-6	Digit 6
I-7	Digit 7
I-8	Digit 8
I-9	Digit 9
I-10	Digit 0
I-11	Digit *
I-12	Digit #
I-13	Access to maintenance equipment
I-14	Spare
I-15	1) End of Calling Party Number 2) Calling Party Number Not Available

Table 72: Compelled Signaling - Group II Forward Signals

Signal	
II-1	Operator
II-2	Ordinary Subscriber
II-3	Local payphone
II-4	Reserved
II-5	STD-payphone
II-6	Test equipment
II-7	Line test desk
II-8	Intercepted operator
II-9	Reserve for data terminal
II-10	Immediate charge information service
II-11	Spare
II-12	Spare
II-13	Spare
II-14	Spare
II-15	No information about the Calling Party Category

Table 73: Compelled Signaling - Group A Backward Signals

Signal	
A-1	Send next digit of called number (n+1)
A-2	Send first digit of called number
A-3	Send nature of caller and change to group B signals
A-4	Congestion
A-5	Spare
A-6	Send nature of caller and change to group C signals
A-7	Not equipped
A-8	Not equipped
A-9	Not equipped
A-10	Not equipped
A-11	Not equipped
A-12	Not equipped

Signal	
A-13	Not equipped
A-14	Not equipped
A-15	Not equipped

Table 74: Compelled Signaling - Group B Backward Signals

Signal	
B-1	Subscriber's line free, charge
B-2	Subscriber's line busy
B-3	Subscriber's line intercepted
B-4	Congestion
B-5	Subscriber's line free, no charge
B-6	Last party release
B-7	Not equipped
B-8	Not equipped
B-9	Not equipped
B-10	Not equipped
B-11	Not equipped
B-12	Not equipped
B-13	Not equipped
B-14	Not equipped

Table 75: Compelled Signaling - Group C Backward Signals

Signal	
C-1	Send next digit of caller's number
C-2	Send first digit of called number
C-3	Spare
C-4	Congestion
C-5	Send next digit (n+1) of called number
C-6	Spare
C-7	Not equipped
C-8	Not equipped
C-9	Not equipped

Signal	
C-10	Not equipped
C-11	Not equipped
C-12	Not equipped
C-13	Not equipped
C-14	Not equipped

melCAS E1 Protocol Family

melCAS E1 Protocol Specific Parameters

The parameters listed in the table below describe how to configure the melCAS E1 protocol. The melCAS E1 protocol specific parameters are contained in the melcas_proto.cfg file within the $MPSHOME/common/etc/tms directory.

	DTC Num	DTC Slot	Span Num	svc-type	MpsNum	Outline	Pool/ Class	Protocol Pkg
LOAD	1	4	1	E1	-	-	line	melcas_ proto.cfg

Table 76: melCAS E1 Protocol Parameters

Parameter	Description	Default
TIM_param_0	Outdial Complete Guard Timer (10msec resolution) Maximum amount of time the protocol waits for a response from the internal Tone Generator before abandoning the call.	3000 (30 secs)
TIM_param_1	Ring stop time (10msec resolution) Specifies the duration that the MPS waits for the Ring Off bit pattern before abandoning the call attempt. (10 msec resolution)	600 (6 secs)
TIM_param_2	Dial Tone guard Time. Specifies the duration that the MPS waits for dial tone indication from the network after issuing an Off hook. (10msec resolution)	400 (4 secs)

Parameter	Description	Default
TIM_param_3	Blind Dial tone time. In situations where the MPS is not monitoring for call progress indications, the MPS waits for this amount of time before outdialing after issuing an off hook. (10 msec resolution)	200 (2 secs)
TIM_param_4	Hook flash Duration (10msec resolution) Specifies the length of the hook flash pulse.	50 (0.5 sec)
TIM_param_5	Ring back gone time. Specifies the duration that the MPS waits after detecting that the ring back tone has gone away before connecting the call. (10 msec resolution)	600 (6 secs)
TIM_param_6	HookFlash Auto Connect Timer (10msec resolution) Specifies the timer for simulating a connect after transferring ⭐ **Note:** Should not be modified.	100 (1 sec)
TIM_param_7	Disconnect Hang Time (10msec resolution) Amount of time a line must be on-hook before originating a call.	150 (1.5 secs)
TIM_param_8	Hit Threshold. Bit changes lasting less than this duration are ignored. (10msec resolution)	7 (70 msecs)
TIM_param_9	Call Progress Monitoring Flag. Flag specifying whether or not the MPS should do call progress monitoring. (1 → monitor CP; 0 → do not monitor CP)	1
TIM_param_10	CPD Disc Flag. Specifies whether the call is terminated upon receiving Call Progress Tones.	0 (FALSE)
TIM_param_11	Voice Detect Flag. Flag specifying whether voice detection should be announced in the connected state. (0 → Off; 1 → On)	0 (Off)
TIM_param_12	Blind Timer (10msec resolution) In the Earth Calling Mode the MPS delays by this amount of time before sending DTMS digits to the network.	10 (0.1 sec)
TIM_param_13	Connect Ack Guard Timer. Specifies how long to wait for connect Ack after answering the call. (10msec resolution)	50 (0.5 sec)

The parameter settings contained in the melcas_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site

that has a network connection to a particular switch which requires a non-standard wink duration is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from melcas_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.
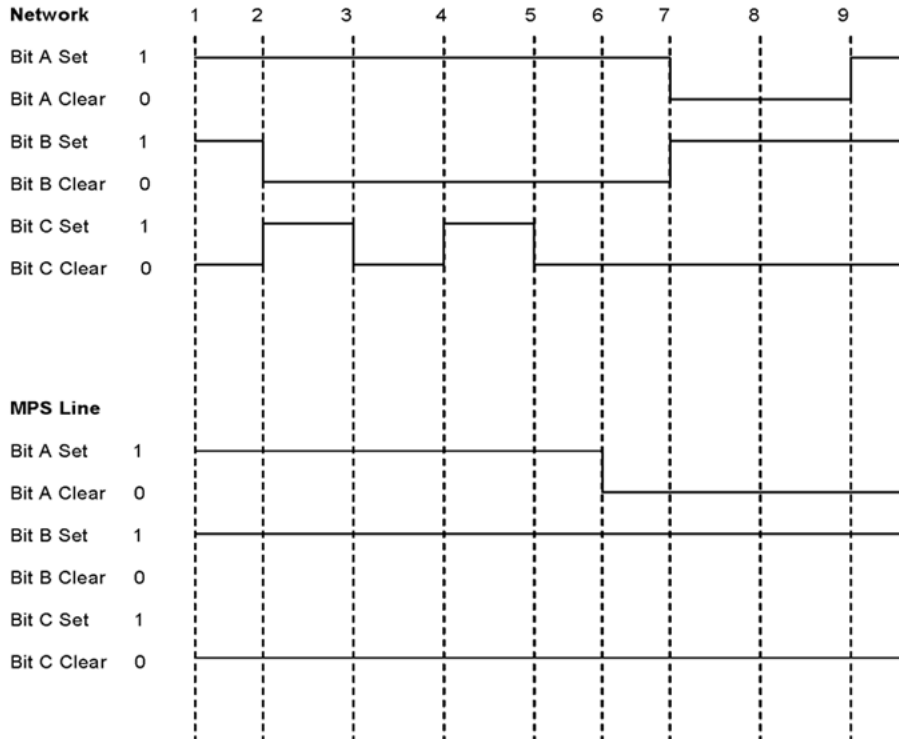

Figure 38: melCAS E1 Call Setup Inbound with Disconnect By User

Index	State
1	Idle
2	Ringing
3	Silence
4	Ringing
5	Silence
6	Answer
7	Answer Ack
8	Connect
9	User Disc
10	MPS Release
11	Idle
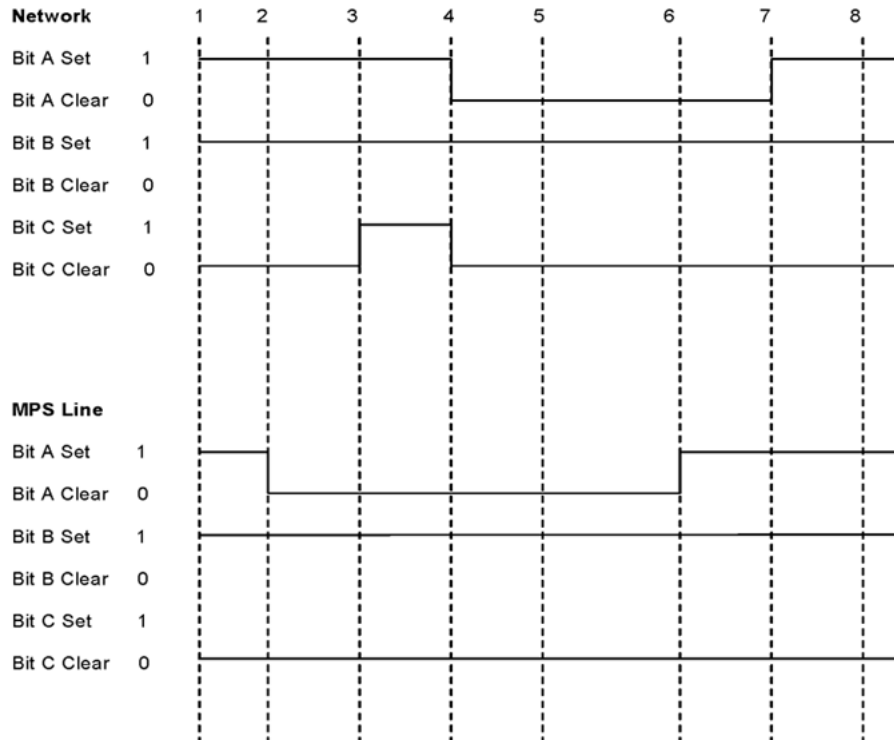
Figure 39: meICAS E1 Call Setup Outbound with MPS Disconnect

Index	State
1	Idle
2	Seize
3	Seize Ack
4	Answer
5	Connect
6	MPS Disc
7	Network Disc
8	Idle

E1 Out-of-Band Signaling

The MPS supports the NET5 protocol for E1 out-of-band signaling (ISDN).

For information on configuring the E1 ISDN protocols, see

VOIP

The MPS architecture provides the implementation of voice or vocabulary transmission over a private or public IP networks. The system is ITU H.323 compliant, and users running H.323 compliant client software can initiate or receive calls. Calls can be made from client to phone, phone to client, or client to client.

The MPS system - VOIP uses a gateway to interface with both T1 and E1 standards. Clients can also interact with the vocabulary driven IVR menus.

The PERIvoip software package is installed on the application processor. PERIvoip allows the MPS system to initiate or receive calls using the H.323 standard for VOIP. PERIvoip installs the H.323 protocol stack software for call control as well as the embedded system RTP/RTCP software used for audio.

Configuration

Configuration of VOIP will require the following:

1. Configuring the VOIP-DCC boot rom (bootptab)

2. Editing the following files:

   a. /opt/vps/common/etc/tms/voip.cfg

   b. /opt/vps/common/etc/gen.cfg

   c. /opt/vps/vpsN/etc/vos.cfg

   d. /opt/vps/common/etc/tms/tms.cfg

   e. /etc/bootptab/

The following diagram shows a typical Voice over IP configuration using the Avaya MPS system. The diagram will be helpful in configuring the VOIP platform.
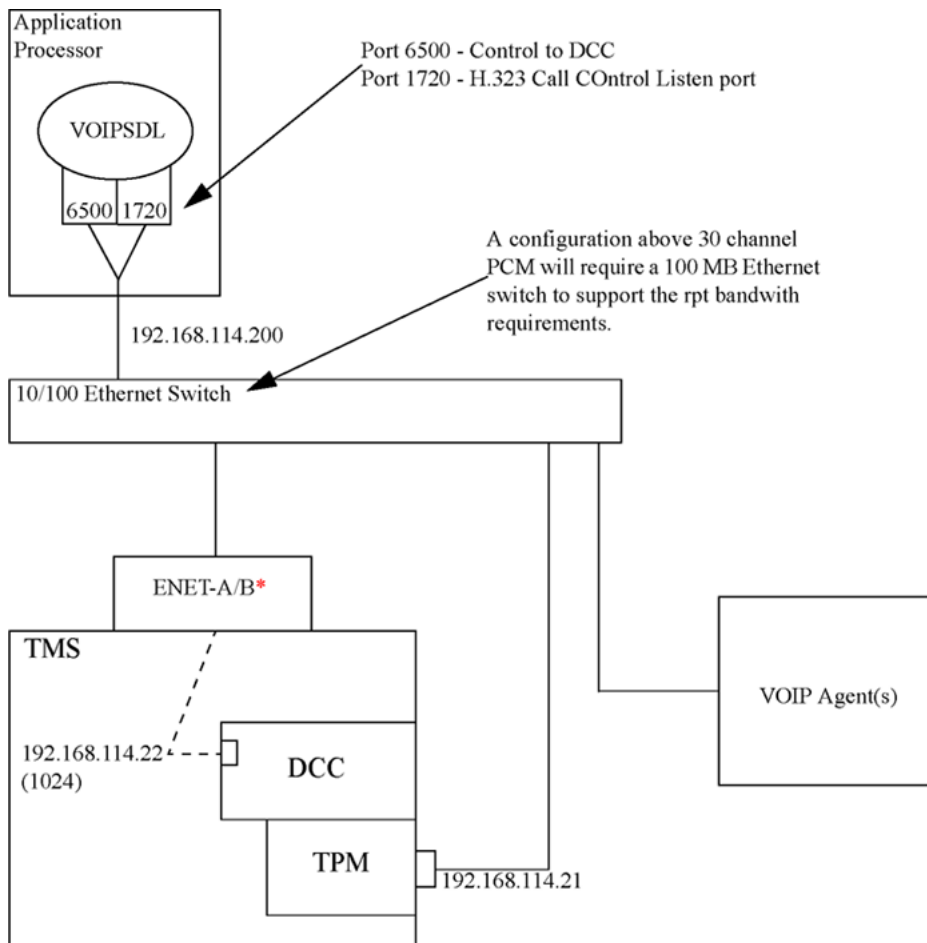
Figure 40: Voice Over IP Configuration

Configuration of bootp deamon

The file etc/bootptab is used by the bootp deamon (bootpd) to reply to boot requests made by the DCCs and TPM cards in a system containing VOIP spans. The configuration of the bootptab entries are inserted as follows:

```
TPM200:\
:sm=255.255.255.0:td=tftpboot:hd=/:bf=ramTPM200.cmp;tp200.ini:ht=ethernet
:
ha=00908f00c733:ip=192.168.114.21:
```

```
dcc:\
:T128="192.168.114.21":sm=255.255.255.0:ht=ethernet:ha=008001a00247:
ip=192.168.114.22:
```

TPM entries

The TPM entries are configured with the following specifications:

sm	Specifies the subnet mask.
td	(Target Directory) Specifies the directory of the boot server to obtain images and initialization files.
bf	Needs to specify the TPM image name (ramTPM200.cmp - TPM 200 card and ram TPM800.cmp for TPM800 card) and initialization file (tp200.ini or tp800.ini).
ht	The hardware address type is set to Ethernet.
ha	The TPM hardware address is obtained by taking the TPM serial number and converting it to hex. This specifies the last for digits of the hardware address. The address is specified as 00908f00XXXX where XXXX is the TPM serial number in hex.
ip	The IP address for the TPM card.

⊛ **Note:**

For systems equipped with TPM-200s, the spanning tree needs to be turned off at the switch for the port to which the TPM200 is connected. Otherwise, the TPM times out and does not load its image file.

DCC Entries

The DCC entries are configured with the following specifications:

sm	The subnet mask.
ha	DCC hardware address that can be obtained from the DCC TIP window.
ip	The IP address for this DCC to use.

⊛ **Note:**

When entries are add to the bootp table, the bootp deamon (bootpd) will read the entries and does NOT need to be restarted.

Hosts File Configuration

Enter the IP addresses used in the boottab file for the TPM and DCC into the /etc/hosts file:

Table 77: Sample /etc/hosts file

```
127.0.0.1localhost
#
#
# The External Network
#
192.168.204.201ny4-apl   aplloghostwww.nodomain.nocom
#
#tms resource cards, private LAN
# IP Addresses associated with chassis nbr 1
#
192.168.114.1tms1
192.168.114.2tms2
192.168.114.3tms3
192.168.114.4tms4
192.168.114.7nic1
192.168.114.8nic2
192.168.114.21tpm200
192.168.114.22dcc
#
#
#
#
192.84.100.1ppp-DialIn
192.84.100.2ppp-DialOut
#
```

Configuring VOIP Call Control

The voip.cfg is stored in the /opt/vps/common/etc/tms directory. It is used to configure the H. 323 stack and DCC to VOIP call control connections.

Table 78: Sample voip.cfg file

```
=======================================================================
; $Id: voip.cfg,v 1.6 2001/05/07 16:45:28 bprechtl Exp $
;
; $Log
;
;
=======================================================================
;
```

```
; voip.cfg
;
[PORT_CONFIG]
;
; configure the port connection
; Listen address/port is the address the outside world sees
;      This is the address that will accept inbound calls. The H.323 stack
;      listens on this connection for inbound call activity.
;      Port 1720 is the standard for H.323 so it should remain there
;      unless specific needs specify otherwise.
;
; sarp address/port is the interface that voipsdl process will listen for
; sarp requests from the dcc's on. If 0 is specified then all SCN
; interfaces will be selected. The port of 30010 is MPS standard.
;
; This address is the server address that will be passed back that the
; dcc will connect to. The HIS port should not be changed. The address
; should be the interface that the dcc is on as well.
;
; dcc port is the port that the voipsdl process will connect back to when
; a connection is made. The DCC port should not be changed.
;
LISTEN_ADDRESS  192.168.211.20
LISTEN_PORT     1720
SARP_ADDRESS    0
SARP_PORT       30010
HIS_ADDRESS     192.168.211.20
HIS_PORT        6500
DCC_PORT        6501
; The place call ip is added here to be able to run a standard inbound
; and outbound call application without having to specify the ip address
; to place the call to. This ip address and port will have precedence
; over IP addresses in the application and the gatekeeper address.
;
;
;OUTCALLIP   192.168.211.40
;OUTCALLPORT 1720
[CONTROL]
; this section will hold the information about the dcc's that are to be
; controlled by this voipsdl process. This section will be parsed until
; the next section is found. Each cntrl statement will specify one DCC to
; be controlled by this SCN.
;
;      DCC     Chassis   Backplane     DTC
;       No     No.       Slot No.    Slot No.
; =======================================
CNTRL   1      0         1             4
CNTRL   2      0         1             2
;
; DCC connection loss recovery level - currently only 0 supported
; 0 - drop all calls
; 1 - maintain connected calls
RECOVERY_LEVEL 0
;
; DCC connection alive timer in seconds. This should not be changed
; minimum level is 10 seconds.
ALIVETIMEOUT 15
; Set the system law
;[PARAMS]
;LAW ulaw
;LAW alaw
;
; The section below are for future WITH THE EXCEPTION of the
```

```
; transport address which needs to be filled in when operating
; in the presence of a gatekeeper. They can be filled in to
; specify the list of aliases that are used by this SCN
;
[ALIASNAMES]
; sets the max alias items that are to be defined here... THIS NEEDS TO
; BE FIRST IN
; this or it will be ignored!
;MAXALAISITEM <number>
;
; configure any alias values that will be registered with the
; gatekeeper - currently only allow up to MAXALIASITEM items defined here
;
; EMAIL <string>
;
; H323ID <string>
;   <string>
;
; PARTY <type> <digitstring>
;
;   <digitstring> contains string of "0123456789#*,"
;
;   <type> is one of
;0    UNKNOWN
;4   PUBLIC UNKNOWN
;5   PUBLIC INTERNATIONAL
;6   PUBLIC NATIONAL
;7   PUBLIC NETWORK SPECIFIC
;8   PUBLIC SUBSCRIBER
;9   PUBLIC ABBREVIATED
;10   PRIVATE UNKNOWN
;11   PRIVATE LEVEL2 REGIONAL
;12   PRIVATE LEVEL1 REGIONAL
;13   PRIVATE ISN SPECIFIC
;14   PRIVATE LOCAL
;15   PRIVATE ABBREVIATED
;16  DATA PARTY - not currently valid for stack
;17  TELEX PARTY- not currently valid for stack
;18  NATIONAL STANDARD PARTY - not currently valid for stack
;
; PHONE <digitstring>
;     <digitstring> of "0123456789#*,"
;
; TRANSPORT <ip addr> <port>
;     <ip_addr> dot address
;     <port> - port number
;
TRANSPORT 192.168.211.20 1720
; channel configuration section - this section is used to
; describe the channel to phone line mapping for voip
; channels. Mapping is configured on a per DCC basis. Each
; DCC is given a number based on the control statement above.
; If no channel mapping is specified for a DCC the mapping will
; set all channels as outbound channels no calls will be presented
; to that DCC. * is used to indicate the any character
; NOTE: In entries with a dash, there is no allowed white space between
; numbers and dash.
; NOTE: The * is not applicable for the span number
[CHAN_MAP]
;
; dccNumber   span   channel/range       DNIS       In/Out
;      ===========================================================
```

```
; map voip span 1 on dcc 1 as outbound span with number
;MAP        1          1           1-30                631-467-0500   O
;
; map all dcc's span one all channels as potential inbound channels
;MAP        *          1           *                   *              I
;
; future - would like the ability to understand alphanumerics also
;MAP        2          1           1                   1-800-FLOWERS  I
```

Configuring the gen.cfg File

The gen.cfg file is in the /opt/vps/common/etc directory and it should include the entry for the voipsdl process to be started by SRP. There should be only one of these processes started per VOIP AP.

Table 79: Sample gen.cfg file

```
#
# NAME        NODE     PORT     is-VOS-CLASS     PRI       COMMAND LINE
#
alarmd        -        -            1             0            alarmd
configd       -        -            1             0            configd
conout        -        -            1             0            conout
rpc.riod      -        -            0             0            rpc.riod
nriod         -        -            1             0            nriod
consoled      -        -            1             0            consoled
voipsdl       -        -            1             0            voipsdl
#
```

Loading VOIP Spans

Loading of the VOIP spans is done in the same way as any span. They are added into the tms.cfg file using the voip_proto.cfg as the configuration file.

There are 30 channels per span in the TPM. The TPM-200 supports two spans, for a total of 60 channels. TPM-800 will support eight spans for a total of 240 channels.

> ✳ **Note:**
>
> For systems equipped with TPM-200s, the spanning tree needs to be turned off at the switch for the port to which the TPM200 is connected. Otherwise, the TPM times out and does not load its image file.

Configuring the vos.cfg File

The vos.cfg file should be modified to inform CCM of the VOIP spans just installed. The example below is a vos.cfg file configured for VOS component #1 (tms1).

Table 80: Sample vos.cfg file

```
#
# NAME       HOST      PORT      PRI      COMMAND LINE
#
trip         -         -         0           trip
tcad         -         -         0           tcad
vmm          -         -         0           vmm
ccma         -         -         0           "ccm -c admin"
ccm          -         -         0           "ccm -c tms -s 1-108"
commgr       -         -         0           commgr
vstat        -         -         0           vstat
#
```

Configuring VOIP DCC

Use a TIP connection to the DCC to modify the setting as shown in the following example.

```
STARTUP MODE
Run Application
NETWORK INTERFACE PARAMETERS
TMS is present
Use Message Exchange to download image
LAN IP address will be obtained from etc/bootptab file
HARDWARE PARAMETERS
Serial channels will use a baud rate of 9600
This board's Ethernet hardware address is 00:80:01:A0:02:47
This board's clock frequency is 40 MHz
This board has 16 MegaBytes of DRAM
SOFTWARE WATCH DOG TIMER STATUS
The watch dog timer is DISABLED and will NOT timeout
MXD BOOT LOADER PARAMETER
The download file will come from the TMS
STARTUP DELAY
Will wait 5 seconds before start up to allow parameter modifications
-------------------------------------------------------------------
The change any of this, press any key within 5 seconds
```

✴ **Note:**

The above setting are correct for a VOIP/DCC bootrom. If the settings are not correct, perform the following steps.

Modifying the DCC bootrom Settings

```
To change any of this, press any key within 5 seconds
(M)odify any of this or (C)ontinue?[M] m
For each of the following questions, you can press <Return> to select the
value shown in the braces, or you can enter a new value.
How should the board boot?
1. pRobe+ standalone mode
2. pRobe+ waiting for host debugger via serial connection
3. pRobe+ waiting for hose debugger via a network connection
4. Run the Application
Which one do you want?[4] 4
NETWORK INTERFACE PARAMETERS
Enter 0 if TMS absent
Enter 1 if TMS present and you'd like to TFTP the image
Enter 2 if TMS present and you'd like to use MXD to get the image
[2] 2
Do you want a LAN interface?[Y] y
BOOTP, RARP or FIXEDIP can obtain this Board's IP.
The default method is TFTP
Enter Y to change the default[N] y
Enter 0 for RARP, 1 for BOOTP, 2 for FIXED[1] 1
New configuration is BOOTP
Use a subnet mask for the LAN interface?[N] n
Should there be a default gateway for packet routing?[N] n
HARDWARE PARAMETERS
Baud rate for serial channels[9600]
Do you want to change the board's clock rate?[N] n
Do you want to change the SWT status?[N] n
Do you want to change the board's Ethernet address?[N] n
ROM BOOTLOADER PARAMETERS:
STARTUP DELAY
How long (in seconds) to delay before starting up?[5]
---------------------------------------------------------------------
STARTUP MODE:
Run Application
NETWORK INTERFACE PARAMETERS:
TMS is present
Use Message Exchange to download image
LAN IP address will be obtained from etc/bootptab file
HARDWARE PARAMETERS:
Serial channels will use a baud rate of 9600
This board's Ethernet hardware address is 00:80:01:A0:02:47
This board's clock frequency is 40 MHz
This board has 16 MegaBytes of DRAM
SOFTWARE WATCH DOG TIMER STATUS:
The watch dog timer is DISABLED and will NOT timeout
MXD BOOT LOADER PARAMETERS:
The download file will come from the TMS
STARTUP DELAY:
Will wait 5 seconds before start up to allow parameter modifications
---------------------------------------------------------------------
(M)odify any of this or (C)ontinue?)[M] c
Writing the modified parameters to the removable EEprom
```

Testing

1. Restart SRP and rest the TMS

2. Monitor the DCC console port, ensuring the following message appears:

```
STARTUP MODE:
Run Application
NETWORK INTERFACE PARAMETERS:
TMS is present
Use Message Exchange to download image
LAN IP address will be obtained from etc/bootptab file
HARDWARE PARAMETERS:
Serial channels will use a baud rate of 9600
This board's Ethernet hardware address is 00:80:01:A0:02:47
This board's clock frequency is 40 MHz
This board has 16 MegaBytes of DRAM
SOFTWARE WATCH DOG TIMER STATUS:
The watch dog timer is DISABLED and will NOT timeout
MXD BOOT LOADER PARAMETERS:
The download file will come from the TMS
STARTUP DELAY:
Will wait 5 seconds before start up to allow parameter
modifications
----------------------------------------------------------------
---------
To change any of this, press any key within 5 seconds
-
Waiting for FPGA startup FLAG
Waiting for MXD message
Ready to receive image on MXD
----------------------------------------------------------------
---------
Obtaining IP and filename from BOOTP
HostIp is 192.168.101.200
This board's IP is 192.168.101.22
Boot image file is
Subnet mask set to: 255.255.255.0
dcc2000_rtp_voip.elf, Release Developmental [01/19/01 12:57:09
PM]
Copyright (c) 2001, Periphonics Corporation
*****************
Audiocodes address is 0xC0A86515
Port is 0x97B
*****************
Trying to connect to AudioCodes
Connected to AudioCodes
SARP CLient started
Got HIS msg
c0a865c8 6500 12345678
Connected!!!
```

3. From the application processor, execute an srp -status command and ensure all processes are running.

```
-> srp -status
NODE:PORT        USER       PID   LINE   STATE        ENTERED
STATE     FLAGS   CMDLINE
ny4-apl:5999     root       407    -     RUNNING      Jan 31
18:13:23         C srp
Component: #common.0,gen/ny4-apl
ny4-apl:32790    root       497    -     RUNNING      Jan 31
18:13:23         C alarmd
ny4-apl:32789    root       498    -     RUNNING      Jan 31
18:13:24         C configd
ny4-apl:32791    root       501    -     RUNNING      Jan 31
```

```
18:13:24            C conout
ny4-apl            root        503    -    RUNNING    Jan 31
18:13:24            rpc.roid
ny4-apl:32792      root        504    -    RUNNING    Jan 31
18:13:24            C nriod
ny4-apl:32796      root        508    -    RUNNING    Jan 31
18:13:24            C consoled
ny4-apl:32975      root        509    -    RUNNING    Jan 31
18:13:24            C voipsdl
Component: #vps.1,vos/ny4-apl
ny4-apl:32800      root        517    -    RUNNING    Jan 31
18:15:05            C trip
ny4-apl:32815      root        538    -    RUNNING    Jan 31
18:16:32            C tcad
ny4-apl:32830      root        543    -    RUNNING    Jan 31
18:16:40            C vmm
ny4-apl:32849      root        549    -    RUNNING    Jan 31
18:13:30            C ccma
ny4-apl:32876      root        568    -    RUNNING    Jan 31
18:16:40            C cmm
ny4-apl:32934      root        580    -    RUNNING    Jan 31
18:13:30            C commgr
ny4-apl:32905      root        588    -    RUNNING    Jan 31
18:13:30            C vstat
Component: #vps.1,ase/ny4-apl
ny4-apl            root        2320   -    RUNNING    Jan 31
18:16:40            C mxvmt
ny4-apl            root        2321   -    RUNNING    Jan 31
18:16:40            C vms
```

Verification

1. From the AP, execute a ping command to the TPM.

2. From the AP, execute a ping command to the VOIP/DCC.

3. From the agent work station, ping the TPM and AP-TO-TMS IS addresses.

Inter-chassis Bridging

Multiple MPS systems can be configured to allow lines from one chassis to bridge with lines from a different chassis, known as Inter-chassis Bridging.

Inter-chassis bridging is only possible for systems that are configured as part of a cluster and are either connected to each other (in a two chassis configuration) or connected to the same ATM (in a 3+ chassis configuration). The theoretical maximum number of systems which can bridge to one another is 16. This number may be lower in practice, limited by the number of available ports on the ATM switch (e.g., only 12 systems can be connected to an individual switch).

⊛ **Note:**

Systems which will use inter-chassis bridging must be configured properly by field service. All systems which will allow inter-chassis bridging must be connected to the same ATM. The

ATM requires additional configuration to allow for inter-chassis bridging. Contact your local field service representative for details regarding your specific installation.

In a two chassis configuration, the systems are typically directly connected:

Connected through VRC back panel

In a 3+ chassis configuration, the systems are typically connected to ATM switches:
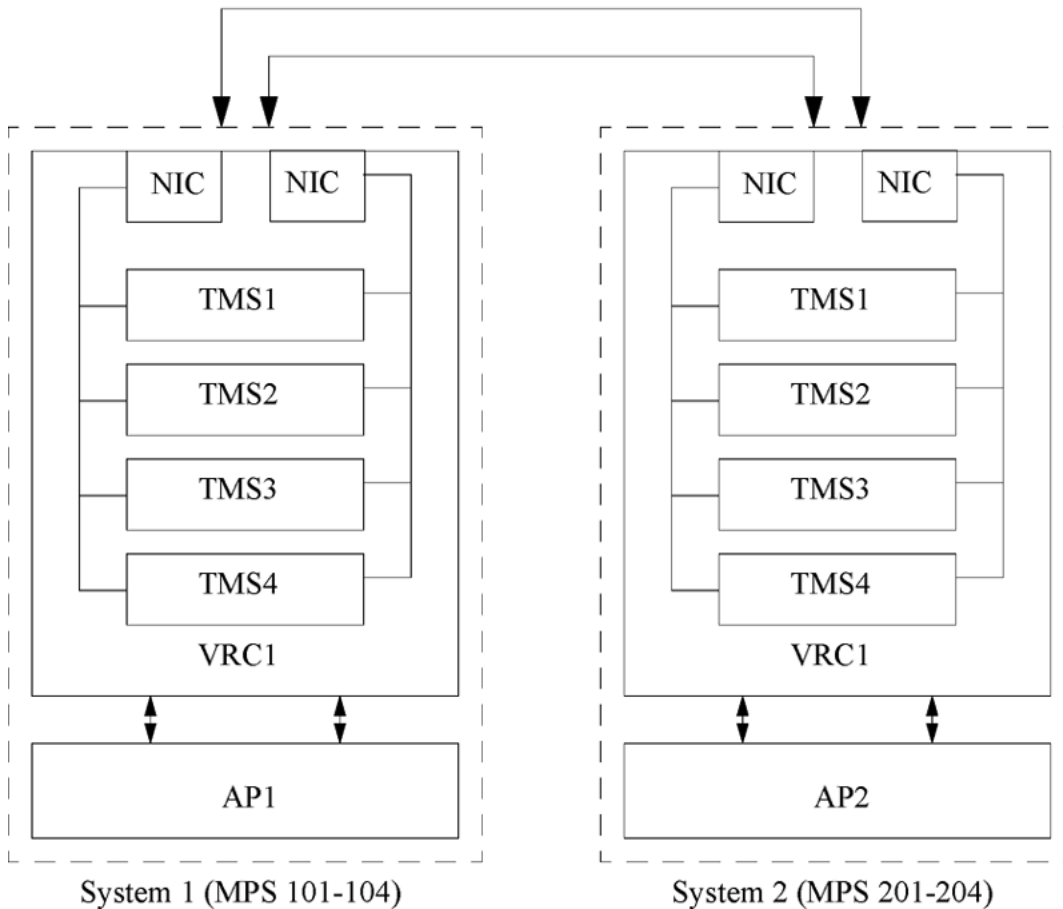
System 1 (MPS 101-104) System 2 (MPS 201-204) System 3 (MPS 301-304)
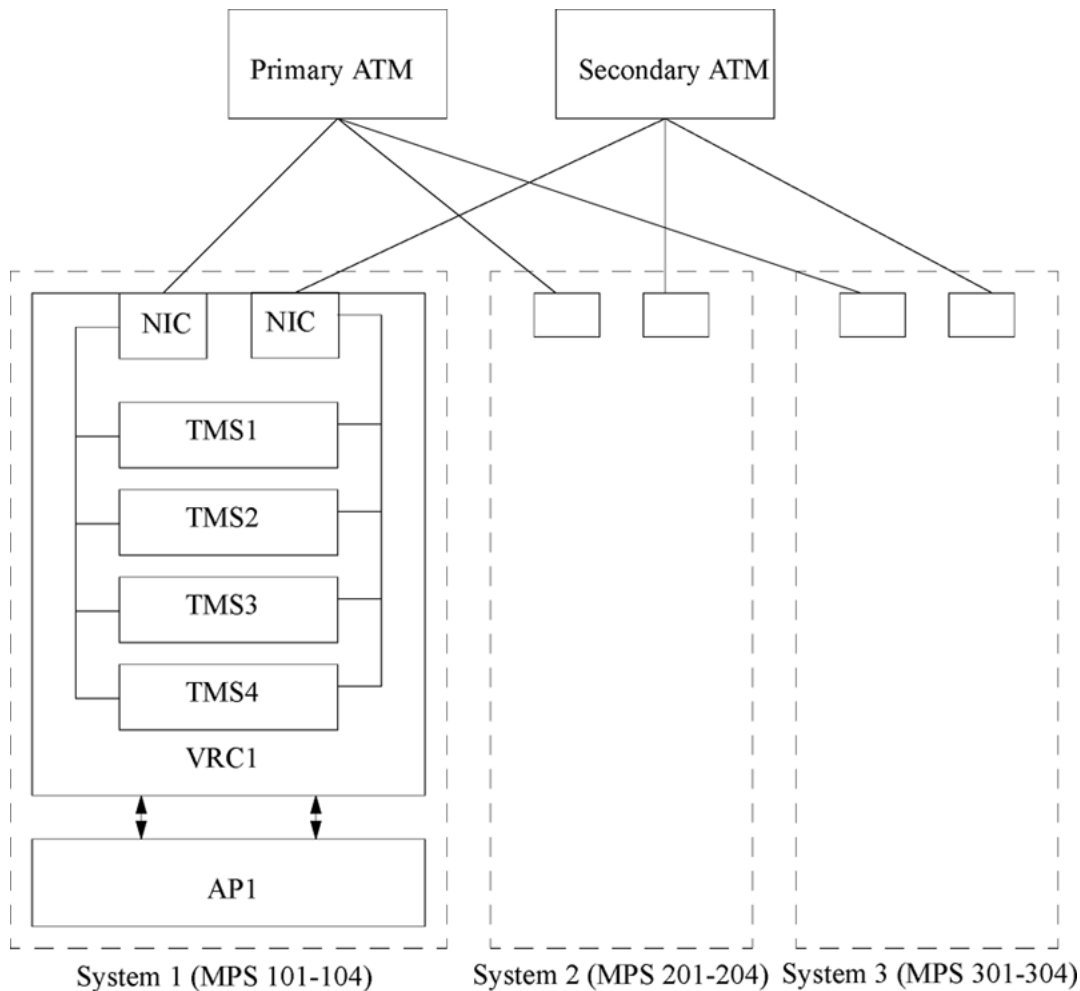
⊛ **Note:**

Configuration using ATMs require special cabling and configuration for the ATMs. This should be done at system installation time by Avaya field service and support.

⊛ **Note:**

Two chassis configurations may be connected to an ATM even though it is not required for inter-chassis bridging. This allows for increasing systems without having to add a switch or change chassis wiring.

Node Configuration

In all inter-chassis bridging configurations, every node requires configuration information about every other node. Specifically, every node needs to share a common information database of host/component names, TMS bindings and configurations, and resource pool configurations.

mpshosts and hosts Files

The hosts and vpshosts files are similar to any multiple-chassis configuration. In the /etc/hosts file, add the hostname and IP address for all Application Processors in the system. In each $MPSHOME/common/etc/mpshosts file, add definitions for all of the other mps and tmscomm components in the cluster:

```
...
# mpshosts for Node 1
# COMP        NODE        TYPE
1             -           tmscomm
2             ap2         tmscomm
101           -           mps
102           -           mps
103           -           mps
104           -           mps
201           ap2         mps
202           ap2         mps
203           ap2         mps
204           ap2         mps
```

```
...
# mpshosts for Node 2
# COMP        NODE        TYPE
1             ap1         tmscomm
2             -           tmscomm
101           ap1         mps
102           ap1         mps
103           ap1         mps
104           ap1         mps
201           -           mps
202           -           mps
203           -           mps
204           -           mps
```

tms.cfg File

Create one $MPSHOME/common/etc/tms/tms.cfg file which had TMS configuration information for all nodes and propagate the file to all individual nodes.

```
[DTCMAP]
;-------------------------------------------------------------------------
; Chassis     Backplane   TMS     Primary       Secondary
;   Num       Slot (BPS)  Num     VOS Comp#     VOS Comp#     Config
```

```
;------------------------------------------------------------------------
BIND 1       1            11     101          -            BasicConfig
BIND 1       2            12     102          -            BasicConfig
BIND 1       3            13     103          -            BasicConfig
BIND 1       4            14     104          -            BasicConfig
BIND 1       7            -      -            -            -
BIND 1       8            -      -            -            -
BIND 2       1            21     201          -            BasicConfig
BIND 2       2            22     202          -            BasicConfig
BIND 2       3            23     203          -            BasicConfig
BIND 2       4            24     204          -            BasicConfig
BIND 2       7            -      -            -            -
BIND 2       8            -      -            -            -
...
;-------------------------------------------------------------------
;     TMS   PLI   Span  svc-type  MpsNum    Outline    Pool/class Protocol
;     Num   Slot  Num                                             Pkg
;-------------------------------------------------------------------
LOAD 11    4     1     T1       -         -          -          X_proto.cfg
...
LOAD 11    4     8     T1       -         -          -          X_proto.cfg
LOAD 12    4     1     T1       -         -          -          X_proto.cfg
...
LOAD 12    4     8     T1       -         -          -          X_proto.cfg
...
LOAD 21    4     1     T1       -         -          -          X_proto.cfg
...
[VPS_LINE_DEF]
;-------------------------------------------
;      MPS      TMS   PLI Slot  Span:channel
;      from:to  Num   Num
;-------------------------------------------
LINE   1:23    11    4         1:1
LINE   24:47   11    4         2:1
...
LINE   1:23    12    4         1:1
...
LINE   1:23    21    4         1:1
[SYNC_LISTS]
;------------------------------------------------------------
; RefSrc   Ch   BPS    SpansList
;------------------------------------------------------------
REF_SRC A  11   1      4:0:1-8
REF_SRC A  11   2      4:0:1-8
...
REF_SRC B  12   1      4:0:1-8
...
REF_SRC A  21   1      4:0:1-8
...
```

⊛ **Note:**

In a two chassis configuration, clocking is typically picked up from each chassis (e.g., clock A from chassis 1 and clock B from chassis 2). In a three (or more) chassis configuration, clocking can be picked up from any two different chassis.

pmgr.cfg file

As with TMS configuration information, the line pool configuration information must be the same for all nodes in the cluster. Create one $MPSHOME/common/etc/pmgr.cfg file which configures pools for ALL nodes and propagate the file to all individual nodes.

```
...
#
#defpool poolname
#
defpool line.in
defpool line.out
defpool line.ref
#
# Configures the resources that belongs in each pool
#
cfgrsrc line.out,phone.1-192.mps.101
cfgrsrc line.in,phone.1-192.mps.102
cfgrsrc line.ref,phone.1-192.mps.103
cfgrsrc line.in,phone.1-192.mps.104
cfgrsrc line.out,phone.1-192.mps.201
cfgrsrc line.in,phone.1-192.mps.202
cfgrsrc line.ref,phone.1-192.mps.203
cfgrsrc line.in,phone.1-192.mps.204
...
```

Chapter 5: ISDN Protocol Configuration

This chapter covers:

1. Introduction to ISDN Protocols

2. System Configuration

3. T1 ISDN Protocols

4. E1 ISDN Protocols

Introduction to ISDN Protocols

An Integrated Services Digital Network (ISDN) telephony environment offers certain services and facilities not available on standard digital (T1/E1) networks, including Automatic Number Identification (ANI), and various call routing and control functions. Avaya Media Processing Server (MPS) Product Family is configured for ISDN operations such that it utilizes standard ISDN functions, with other system functions behaving in the same manner as in a standard digital telephony environment.

The MPS can be configured to work with both North American (T1) and International Standards (E1) for ISDN networks. Information common to both standards is presented in this section. Additional information specific to North American ISDN is presented starting with T1 ISDN on page 164. Specific information about International Standards is presented starting with E1 ISDN on page 170.

> **Note:**
> The following are important considerations regarding the configuration of ISDN in MPS environments:
>
> - The MPS can accept signals in either SF (Super Frame) or ESF (Extended Super Frame) format. When ESF format is used, the standard Channel Service Unit (CSU) on the MPS must be replaced with an ESF-compatible CSU. (For most ISDN sites, the signal framing format is ESF.)
> - The specific communications protocol used for ISDN services is based on CCITT standards Q.921/Q.931. However, due to the carrier/country-specific aspects of telephone networks, there may be differences in the implementation of ISDN services among telephone carriers.

ISDN vs. Standard Digital Configuration

The most significant difference between standard T1/E1 and ISDN connections is the use of signaling for establishing and terminating call connections, and providing related data during and after call setup.

A standard T1 digital interface uses ABCD signaling, where one bit is taken from each of the channels every sixth frame, and is used for carrying dialing and control information. (This is also known as robbed-bit signaling. See Signaling Configuration: In-Band vs. Out-of-Band on page 39 for more information.) Here each telephone channel carries its own signaling data, and the system uses all of the channels on a span for handling calls.

ISDN systems use a channel exclusively for signaling. This channel is referred to as the Data or D-channel. The channels handling telephone calls (referred to as the bearer or B-channels) have their signaling data carried via the D-channel.

The available configurations are as follows:

Table 81: Summary of Available ISDN Configurations

System	Configuration	Description
E1 (31 channels per span)	30B+D	Euro ISDN. Single-span setup with 30 B-channels allocated for voice and data, and one D-channel for signaling.
T1	nB+D	Unified ISDN

ISDN Hardware

For ISDN operations, the MPS must have at least one Digital Communications Controller (DCC) with an E1 or T1 Phone Line Interface (PLI) card. Each DCC can support up to 8 spans or 240 phone lines for E1 ISDN.

System Configuration

In an MPS ISDN installation, the channel numbering scheme depends on the type of ISDN network:

Example

- For T1 systems, there are 24 channels per span and they are numbered as 1-24.

- For E1 and V5.1 systems, there are 32 channels per span. (See Figure 41: Available E1 ISDN Configurations on page 170.)

ISDN Configuration Files

To configure the software for most ISDN installations, certain configuration files have to be modified. Generally, this entails little more than uncommenting some lines and adjusting certain parameter values. Unless the configuration is nonstandard, there is no need to add commands to these files.

Standard Telephony Parameters

The following parameters are used with all protocols. Each protocol used in the MPS has a proto.cfg (protocol configuration) file which contains these standard parameters.

Table 82: Site-Specific Parameters

Parameter	Description	Default
TIM_standby_mode	Defines how a line behaves in standby state. Possible values are: lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV.	lineNOANSWER
TIM_pickup_time	Number of seconds an outbound call remains in the presented state before being terminated by the MPS.	32 seconds

Table 83: Internal Parameters (should not be modified)

Parameter	Description	Default
TIM_answer	Number of rings to wait until inbound call is answered. Values are 0-8, where 0 disables auto-answer.	1 (answer after first ring)
TIM_total_call	Total call duration. Specifies the number of seconds a call can remain in the connected state.	0 (forever)
TIM_sby_on_discF	Should line automatically go to its standby mode on disconnect?	TRUE
TIM_CPD_name	Class name of the Call Progress Detector to use. If not set, TMS uses the default CPD.	<none>
TIM_DTMF_name	Class name of the DTMF receiver to use. If not set, TMS uses the default DTMF.	<none>
TIM_PLY_name	Class name of the player to use. If not set, TMS uses the default player.	<none>
TIM_TGEN_name	Class name of the tone generator to use. If not set, TMS uses the default tone generator.	<none>
TIM_R2ENG_name	Class name of the R2 engine to use. If not set, TMS uses the default R2 engine.	<none>

T1 ISDN

Common Channel (D-Channel) Signaling

A single T1 span contains a total of 24 channels. When configured for common channel signaling, one channel (the D-channel) is set aside to handle the signaling requirements of the others. This makes a total of 23 channels (B-channels) available for voice and data throughput.

A T1 span that is configured as a Primary Rate Interface with a D-channel is known as a 23B +D configuration. A Primary Rate Interface that does not have its own D-channel is known as a 24B (or 24B+0D) configuration.

Shared D-Channel

The signaling capacity of a D-channel is far greater than necessary for managing the 23 B-channels in the same T1 span. Because of this, ISDN networks support a setup called Non-Facility Associated Signaling (NFAS), which allows a single D-channel to control B-channels on other T1 spans. To use NFAS, the spans must be installed at the same site and use identical ISDN signaling specifications.

ISDN nB+D NFAS Configuration

For Unified ISDN (T1) only.

The MPS supports NFAS nB+D configurations from 23B+D up to 191B+D. No backup D channels are currently supported. Configuration of the nB+D option is done in the $MPSHOME/common/etc/tms/tms.cfg file as follows:

Configuration of the nB+D is a 5 step process:

Example

1. Determine which spans have D-Channels and what B-Channels they control. The MPS supports 23B+D up to 191B+D configurations. In a 23B+D configuration a D-Channel controls all the B-channels of that span. This is also known as Primary Rate ISDN (PRI). Other common configurations include 47B+D and 191B+D. In these configurations a single D-Channel controls the B-Channels for 2 spans (47B+D) and a single D-channel controls the B-Channels for 8 spans (191B+D).

2. Determine what the external interface number for the spans are. The external interface number for the span is the identifier that the network equipment uses to identify a span. This is required for all nB+D configurations except Primary Rate (23B+D). For Primary Rate (23B+D) configurations all B-channels are within the current span so no external interface number is required.

3. Specify the *_proto.cfg files in the LOAD specification of the [DTCMAP] Section. There are two proto.cfg files that are used for configuring the Unified ISDN image.

   • uisdn_23B_D_user_proto.cfg --> This file is used for spans that have a D channel.

   • uisdn_24B_user_proto.cfg --> This file is used for spans that don't have a D channel.

In the LOAD line specify one the above proto.cfg files based on whether the span a
D-Channel or not. The following shows examples of different configurations of
LOAD lines.

```
;-----------------------------------------------------------
-----------------------
;TMS       PLI   Span  svc-type  VpsNum  Outline  Pool/
Protocol
;Num       Slot  Num                             class  Pkg
;-----------------------------------------------------------
-----------------------
;
;Example (1) - All spans are 23B+D (PRI)
;
LOAD 1     4     1     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     2     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     3     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     4     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     5     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     6     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     7     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     8     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
;
;Example (2) - All spans are configured into 4 pairs of 47B+D
groups.(NFAS)
;i.e. 1+2, 3+4, 5+6, 7+8
;
LOAD 1     4     1     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     2     ISDN      -       -       -
uisdn_24B_user_proto.cfg
LOAD 1     4     3     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     4     ISDN      -       -       -
uisdn_24B_user_proto.cfg
LOAD 1     4     5     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     6     ISDN      -       -       -
uisdn_24B_user_proto.cfg
LOAD 1     4     7     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     8     ISDN      -       -       -
uisdn_24B_user_proto.cfg
;Example (3) - All spans are configured into 2 groups of 95B+D.
(NFAS)
;i.e. 1+2+3+4, 5+6+7+8
LOAD 1     4     1     ISDN      -       -       -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     2     ISDN      -       -       -
uisdn_24B_user_proto.cfg
LOAD 1     4     3     ISDN      -       -       -
uisdn_24B_user_proto.cfg
LOAD 1     4     4     ISDN      -       -       -
```

```
uisdn_24B_user_proto.cfg
LOAD 1     4     5     ISDN     -     -     -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     6     ISDN     -     -     -
uisdn_24B_user_proto.cfg
LOAD 1     4     7     ISDN     -     -     -
uisdn_24B_user_proto.cfg
LOAD 1     4     8     ISDN     -     -     -
uisdn_24B_user_proto.cfg
;Example (4) - All spans are configured into 1 group of 191B+D.
(NFAS)
;i.e. 1+2+3+4, 5+6+7+8
LOAD 1     4     1     ISDN     -     -     -
uisdn_23B_D_user_proto.cfg
LOAD 1     4     2     ISDN     -     -     -
uisdn_24B_user_proto.cfg
LOAD 1     4     3     ISDN     -     -     -
uisdn_24B_user_proto.cfg
LOAD 1     4     4     ISDN     -     -     -
uisdn_24B_user_proto.cfg
LOAD 1     4     5     ISDN     -     -     -
uisdn_24B_user_proto.cfg
LOAD 1     4     6     ISDN     -     -     -
uisdn_24B_user_proto.cfg
LOAD 1     4     7     ISDN     -     -     -
uisdn_24B_user_proto.cfg
LOAD 1     4     8     ISDN     -     -     -
uisdn_24B_user_proto.cfg
```

4. Specify the DCHANMAP specification in the [ISDN] Section. The DCHANMAP is used to specify which B channels are controlled by a D channel and which ISDN variant will run on that D-Channel.

```
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
; ISDN SECTION
;
; This section is used only when using Unified ISDN. It is used to
; set the a D-Channel Map and to specify the External Interface IDs
; for each span. The D-Channel Map is used to configure which span or
; spans will provide D-Channels and for what spans the D-channels
; are provided and set the Variant of ISDN. The default is one
; D-Channel per span and a Variant of Nortel. The values that can be
; used for Variants are:
;
;               Nortel    - NIS-A211-1
;               National  - SR-NNT-002120
;               ATT       - TR41449 and TR41459
;               NTT       - JT-Q931
;               HongKong  - HKTA 2015
;
;
; If this section is left commented out the default will be Primary
; Rate National ISDN. The SPAN_EXT_ID line assigns an External
; Interface id to the spans. This is only used if the D_Channel Map
; is being set to something other then Default.
;
;
; Format of ISDN SECTION is:
;     (the following example sets the D-Channel on span 1, this
;       D-Channel will be used for all spans (191B+D)).
;
;[ISDN]
;----------------------------------------------------------------
```

```
DTC             PLI     D-Chan                          Switch
;Num            Slot    Span    Spans                   Type
;----------------------------------------------------------------
;DCHANMAP 1     4       1       1,2,3,4,5,6,7,8         Nortel
[ISDN]
;----------------------------------------------------------------
DTC             PLI     D-Chan                          Switch
;Num            Slot    Span    Spans                   Type
;----------------------------------------------------------------
;
;Example (1) - All spans configured as 23B+D. Each running a
;different variant of ISDN.
;
DCHANMAP 1      4       1       1                       Nortel
DCHANMAP 1      4       2       2                       ATT
DCHANMAP 1      4       3       3                       National
DCHANMAP 1      4       4       4                       Nortel
DCHANMAP 1      4       5       5                       ATT
DCHANMAP 1      4       6       6                       National
DCHANMAP 1      4       7       7                       Nortel
DCHANMAP 1      4       8       8                       NTT
;
;Example (2) - All spans configured 4 groups of 47B+D. Each running a
;different variant of ISDN. (NTT does not support NFAS configuration)
;
DCHANMAP 1      4       2       1,2                     Nortel
DCHANMAP 1      4       4       3,4                     ATT
DCHANMAP 1      4       6       5,6                     National
DCHANMAP 1      4       8       7,8                     Nortel
;
;Example (3) - All spans configured 2 groups of 95B+D. Each running a
;different variant of ISDN. (NTT does not support NFAS configuration)
;
DCHANMAP 1      4       4       1,2,3,4                 Nortel
DCHANMAP 1      4       8       5,6,7,8                 ATT
;
;Example (4) - All spans configured 1 group of 191B+D. Running
;Nortel variant of ISDN. (NTT does not support NFAS configuration)
;
DCHANMAP 1      4       8       1,2,3,4,5,6,7,8         Nortel
```

5. Specify the SPAN_EXT_ID specification in the [ISDN] Section. For all configurations except 23B+D (PRI), external interface numbers for the spans can be defined. These are done in the SPAN_EXT_ID section as follows:

```
;----------------------------------------------------------------
;DTC            PLI
;Num            Slot    Span    Interface ID
;----------------------------------------------------------------
SPAN_EXT_ID 1   4       1       10
SPAN_EXT_ID 1   4       2       11
SPAN_EXT_ID 1   4       3       12
SPAN_EXT_ID 1   4       4       13
SPAN_EXT_ID 1   4       5       14
SPAN_EXT_ID 1   4       6       15
SPAN_EXT_ID 1   4       7       16
SPAN_EXT_ID 1   4       8       17
```

Non-Shared D-Channels

For some environments, due to the specifics of the telephone network or the data to be carried by the B-channels, it may not be feasible to share D-channels among multiple T1 spans. The MPS supports a configuration that allows eight separate 23B+D T1spans to coexist on a single card set.

Because the eight T1 spans uses eight distinct D-channels in this configuration, the spans may be configured differently from each other. For example, the first span could be configured with the AT&T 4ESS ISDN variant while the second span could be configured with AT&T 5ESS ISDN variant and the third span could be configured with Nortel DMS100 ISDN variant and so on. Each span will have its own distinct configuration with its own D-channel.

T1 ISDN Protocol Family

UISDN Protocol Specific Parameters

The parameters listed in the table below describe how to configure the UISDN protocol. The UISDN protocol specific parameters are contained in the uisdn_23B_D_user_proto.cfg file within the $MPSHOME/common/etc/tms directory.

Table 84: UISDN Protocol Parameters

Parameter	Description	Default
TIM_param_0	Alerting Interval (RingON + RingOFF) in seconds.	4
TIM_param_1	Ring ON time in seconds.	2
TIM_param_2	Send Call Progress (Ringback) on inbound call TRUE=1, FALSE=0.	TRUE
TIM_param_3	Number of failed call setups allowed before line is put out of service. Call setups fail if no application is attached to the line. Range 0-256.	5
TIM_param_4	Auto proceed flag, if this flag is set, the space will automatically send the signal upon receiving the setup signal from the network	0(off)

The parameter settings contained in the uisdn_23B_D_user_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a

site that has a network connection to a particular switch which requires a non-standard wink duration is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from uisdn_23B_D_user_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

⊛ **Note:**

The above configurations also holds good for 24B_user_proto.config file.

E1 ISDN

A single E1 span contains a total of 31 channels. When configured for common channel signaling, one channel (the D-channel) is set aside to handle the signaling requirements of the others. This makes a total of 30 channels (B-channels) available for voice and data throughout on each span. Each span in the ISDN card set may be configured in this manner, which is referred to as a 30B+D configuration. For 30B+D setups, the D-channel is the 16th on each span. (See figure below.)

E1 ISDN (NET5) does not support Non-Facility Associated Signaling (NFAS). In other words, in NET5, a D channel on a particular span cannot control B-Channels on other spans as can be done in T1 ISDN. Each NET5 span must have its own unique D-Channel.
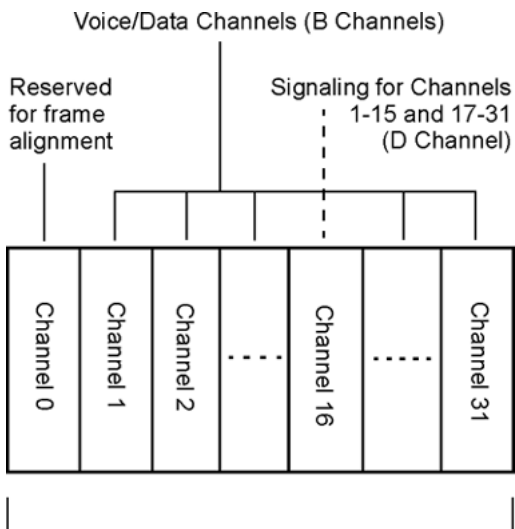
ISDN/E1 Span: 30B+D Configuration

Figure 41: Available E1 ISDN Configurations

⊛ **Note:**
E1 ISDN does not support NFAS

E1 ISDN Protocol Family

ISDN NET5 Protocol Specific Parameters

The parameters listed in the table below describe how to configure the ISDN NET5 protocol. The ISDN NET5 protocol specific parameters are contained in the isdn_net5_proto.cfg file within the $MPSHOME/common/etc/tms directory.

Table 85: ISDN NET5 Protocol Parameters

Parameter	Description	Default
TIM_param_0	Alerting Interval (RingON + RingOFF) in seconds.	4
TIM_param_1	Ring ON time in seconds.	2
TIM_param_2	Send Call Progress (Ringback) on inbound call TRUE=1, FALSE=0.	TRUE
TIM_param_3	Number of failed call setups allowed before line is put out of service. Call setups fail if no application is attached to the line. Range 0-256.	5

The parameter settings contained in the isdn_net5_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard wink duration is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from isdn_net5_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

Chapter 6: DPNSS Protocol Configuration

This chapter covers:

1. Introduction to DPNSS

2. Features of DPNSS

3. DPNSS Protocols

4. DPNSS Carriers

5. Configuration Files

6. DPNSS Limitations

Introduction to DPNSS

Digital Private Network Signaling System No. 1(DPNSS) is a set of codified standards that describe a signaling system for establishing and maintaining simple telephony and data calls.

This Protocol has been defined by British Telecom under British Telecom Network Requirements (BTNR) 188 Section 0-5, Issue 5, December 1989. DPNSS is defined between a Private Branch Exchange (PBX) and an Access Network (AN). DPNSS extends facilities normally available only between extensions on a single PBX to all extensions on PBXs that are connected together in a private network.

A DPNSS network is completely digital, from one end to the other. Voice information is digitized and sent in digital form. Signaling information is sent separately from voice information, using a method called common channel signaling (CCS). In this aspect, it can be compared with ISDN. However, DPNSS and ISDN differ in that DPNSS implements a complete set of features and allows access to virtual channels. Virtual channels allow exchanges between DPNSS nodes without allocating voice channels.

Features of DPNSS

DPNSS describes a wide range of optional supplementary features. Some of them are:

Basic Call

Example

The simple telephony call allows the user to establish a telephony connection.

Call Hold

Example

The Call Hold feature allows the user to place an existing call into a suspended state, with a holding indication being given to the held extension. The user may at any time reconnect to the Held Call, removing any holding indication.

Call Diversion

Example

Call Diversion offers users who are absent or busy the capability of having their calls forwarded to a third party.

Call Transfer

Example

This feature supports call transfers.

Call Redirection

Example

The Redirection Supplementary Service offers, callers awaiting connection or reconnection, the option of being redirected to an alternative destination after a certain time. Redirection

is initiated by the waiting party's PBX, if the call does not progress within a certain time. Additionally, a failed call may be redirected to an alternative destination immediately.

Call Waiting

Example

The Call Waiting supplementary service enables an extension user to request that an indication be given if there is an incoming call when the extension is busy on another call. The Call Waiting service is a called-party service.

DPNSS protocols

DPNSS is based on the International Standards Organization (ISO) established Open Systems Interconnection (OSI) model for communication. In OSI, seven separate levels, or layers, of communication are defined. The first three layers, called the chained layers, are the lowest levels.

The chained layers are: The physical layer (layer 1). This is the electrical and mechanical layer. Protocols for this layer describe, on an electrical and mechanical basis, the methods used to transfer bits from one device to another.

The data link layer (layer 2). This is the layer above the physical layer. Protocols for this layer describe methods for error-free communication between devices across the physical link.

The network layer (layer 3). This is the layer above the data link layer. Protocols for this layer describe methods for transferring information between computers. They also describe how data is routed within and between networks.

Layers higher than these are end-to-end layers. They describe how information is exchanged and delivered end-to-end. They also define process-to-process communication, and describe application-independent user services, user interfaces, applications, etc.

The functionality provided by a layer includes the services and functions of all of the layers below it. A Service Access Point (SAP) is the point at which a layer provides services to the layer directly above it. With each SAP is associated a unique Service Access Point Identifier (SAPI).

OSI Protocol layering model
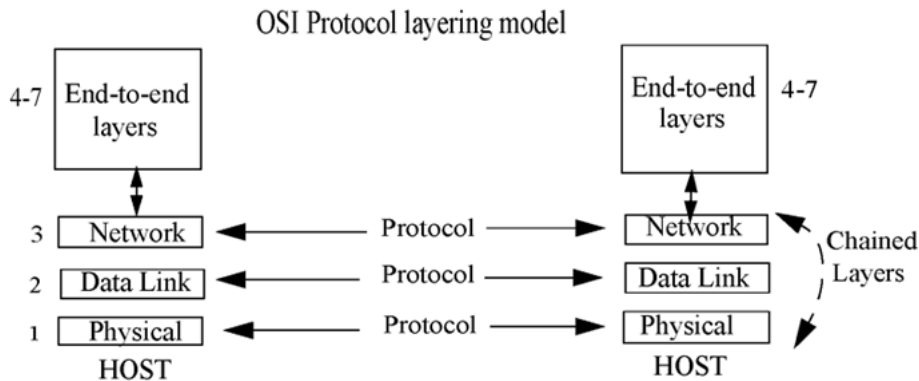
DPNSS carriers

DPNSS is transmitted over standard E1 carriers. These are typically four-wire digital transmission links. Data on an E1 trunk is transmitted in 32 separate channels. Each channel carries information digitized at 64 kbits per second (kbps).

E1 carries 32 channels. The channels are usually used as follows:

Example

- 30 of the 32 channels carry data: voice, audio, data and/or video signals. These channels are called bearer channels (B channels).

- One channel carries signaling information for all B channels. This is called the D channel.

- One channel carries synchronization patterns and alarms.

DPNSS Configuration Files

To configure the software for most DPNSS installations, certain configuration files have to be modified. Generally, this entails little more than uncommenting some lines and adjusting certain parameter values. Unless the configuration is nonstandard, there is no need to add commands to these files.

Standard Telephony Parameters

The following parameters are used with all protocols. Each protocol used in the MPS has a proto.cfg (protocol configuration) file which contains these standard parameters.

Table 86: Site-Specific Parameters

Parameter	Description	Default
TIM_standby_mode	Defines how a line behaves in standby state. Possible values are: lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV.	lineNOANSWER
TIM_pickup_time	Number of seconds an outbound call remains in the presented state before being terminated by the MPS.	32 seconds

Table 87: Internal Parameters (should not be modified)

Parameter	Description	Default
TIM_answer	Number of rings to wait until inbound call is answered. Values are 0-8, where 0 disables auto-answer.	1 (answer after first ring)
TIM_total_call	Total call duration. Specifies the number of seconds a call can remain in the connected state.	0 (forever)
TIM_sby_on_discF	Should line automatically go to its standby mode on disconnect?	TRUE
TIM_CPD_name	Class name of the Call Progress Detector to use. If not set, TMS uses the default CPD.	<none>
TIM_DTMF_name	Class name of the DTMF receiver to use. If not set, TMS uses the default DTMF.	<none>
TIM_PLY_name	Class name of the player to use. If not set, TMS uses the default player.	<none>
TIM_TGEN_name	Class name of the tone generator to use. If not set, TMS uses the default tone generator.	<none>

Parameter	Description	Default
TIM_R2ENG_name	Class name of the R2 engine to use. If not set, TMS uses the default R2 engine.	<none>

The parameter settings contained in the isdn_dpnss_proto.cfg file are intended as "site" configuration settings and not "application" settings. Site configuration settings are settings that are required to support the network requirements of a specific site. For example, a site that has a network connection to a particular switch which requires a non-standard wink duration is considered a site configuration setting. An application that allows a total call time of no more than 35 seconds is an "application" configuration setting and should not be modified from isdn_dpnss_proto.cfg. Adhering to these guidelines simplifies configurations and makes applications more portable across systems.

The parameters listed in the table below describe how to configure the DPNSS protocol. The DPNSS protocol specific parameters are contained in the isdn_dpnss_proto.cfg file within the $MPSHOME/common/etc/tms directory.

Table 88: DPNSS Protocol Parameters

Parameter	Description	Default
TIM_param_0	Alerting Interval (RingON + RingOFF) in seconds.	4
TIM_param_1	Ring ON time in seconds.	2
TIM_param_2	Send Call Progress (Ringback) on inbound call TRUE=1, FALSE=0.	TRUE
TIM_param_3	Number of failed call setups allowed before line is put out of service. Call setups fail if no application is attached to the line. Range 0-256.	5
TIM_param_4	NOCLINAM - Setting this parameter to true will disable sending the CLI parameter in the default NAM message. The default NAM message is sent only if NAM is not provided by the application. TRUE = 1, FALSE = 0.	0
TIM_param_5	LMMY - Setting this parameter to false will disablesending link maintenance messages. TRUE = 1, FALSE = 0.	0

> ✴ **Note:**
> Parameters TIM_param_4 and TIM_param_5 are currently not supported.

Example

A typical isdn_dpnss_proto.cfg

```
; $Id: isdn_dpnss_proto.cfg,v 1.2 2002/07/31 15:35:20 asadiq Exp $
; $Log: isdn_dpnss_proto.cfg,v $
; Revision 1.2  2002/07/31 15:35:20  asadiq
; Added reserved parameters TIM_param_0-3, set resource counts to 0
;
; Revision 1.1  2002/07/31 14:07:06  asadiq
; Initial import
;
; Revision 1.3  2001/05/11 14:57:54  jlevine
; RNDin75698, RNDin75800, RNDin75747, RNDin75866
;
; Revision 1.2  2001/04/12 13:40:58  jlevine
; Added keywords for config tool into comments
;
;================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ===================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=DPNSS ISDN (USER Side)
; %LINES%=30
; %TYPE%=E1
;
; ===================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg
;file. It specifies the information used to load the span. If more
;than one span class section is specified the first one found will
;be used and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = isdn; class name to use for this resource.
CDF = e1_crc4_dpnss.cdf; NOTE: must select either e1_mf or  e1_crc4
;CDF = e1_mf_dpnss.cdf; NOTE: must select either e1_mf or e1_crc4
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional)  to assign to the created line ;resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; Mode definition is done at this level. Each set of configuration
;parameters specifies the values to set the paramters to for mode 0.
;This mode is used as the default mode for a resource. When specified
```

```
;here it will override the system defaults for the resources created.
; There will be one of these sections for each required resource.
;*****************************************************************
[CLASS]
COUNT = 0; number of resources of this class to load
CLASS_NAME = tgen   ; class name to use for this resource.
CDF = tgen_uk.cdf; NOTE: select appropriate call progress set
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0   ; number of resources of this class to load
CLASS_NAME = cpd   ; class name to use for this resource.
CDF = cpd_uk.cdf ; NOTE: select appropriate call progress set
;
; Site-specific params
;
; <none>
```

DPNSS Limitations

Following are the limitations of DPNSS Protocol:

Example

- Single Channel Working is not supported. Successive outgoing calls on the same channel will be rejected.
- Link by Link messages are not supported.

Chapter 7: Phone Line Monitoring

This chapter covers:

1. Resource Set Status Report

2. CCM Status Report

3. CCM Parameter/Timer Report

4. Changing Line Service Status

Introduction to Phone Line Monitoring

The Call Control Manager (CCM) manages phone line states, allocates/de-allocates resources for a phone line, provides command queue management for applications, services audio requests, and maintains call statistics. CCM commands (accessible at a V-shell prompt in a command tool) which monitor phone lines and applications as well as a description and sample output of each are detailed in the sections that follow.

The following table summarizes the most frequently used system monitoring commands.

Command	Description
cx rsetstatus or cx-y rsetstatus	Generates a current resource set status report Resource Set Status Report on page 182.
ccm status	Generates a current process wide status report. Includes the state of each line, the total number of lines available from that process, the number of lines in service, the number of lines that are connected and the% utilization. CCM Status Reports on page 183.
cx status or cx-y status	Generates a current status report for line x or lines x through y. Includes information on line state, type, command queue, etc.
cx repsvcparams or cx-y repsvcparams	Generates a report of all configurable parameters/timers. CCM Parameter/Timer Report on page 185.

Resource Set Status Report

Command - cx rsetstatus or cx-y rsetstatus

Where service type is either phone or admin and service IDs are of the form x or x-y (where x and x-y are specific IDs or ranges of IDs, ex: 1 or 1-10).

Generates a current resource set status report.

Sample output for the command line entry: ccm{phone:25} rsetstatus or c25 rsetst

```
================================================================
CCM-MPS 7 Line 25 RSET Status Report
================================================================
TMS chassis number.........................15
Slot in the chassis where the TMS resides...1
TMS number assigned........................7
Handle to this resource set in TMS.........25
Active Real Time Controls..................0x1861d
- Abort All Resources, except the anchor, to Standby on Disconnect
- Enable player upon generation of LINECLEAR event
- Enable TTS resources upon generation of OFFERED event
- Flush Touch Tone Buffer on CONNECT
- Enable Player upon Touch Tone buffer going empty
- Enable Player upon Recognizer buffer going empty
- Enable TTS resources upon Touch Tone buffer going empty
- Enable TTS resources upon Recognizer buffer going empty
RSET Resource Status
Phone Line -- Anchor Resource
Phone line type.....................T1
Protocol............................Digital.WinkStart.ATT
Phone line direction................OUTBOUND
Span................................2
Port................................1 [Out-Of-Service]
Was port forced Out-Of-Service......NO
TMS Resource Handle
Index in RSET info dstruct....0
Class........................0xa0000
Instance.....................25
Allocation Method...................STATIC
State.............................. (0) "Standby"
Path...............................0
Mode...............................0
Player
TMS Resource Handle
Index in RSET info dstruct....2
Class........................0xb0000
Instance.....................31
Allocation Method...................STATIC
State.............................. (1) "Ready"
Path...............................2
Mode...............................0
DTMF Receiver
TMS Resource Handle
Index in RSET info dstruct....1
Class........................0x70000
Instance.....................32
```

```
Allocation Method...................STATIC
State............................... (0) "Standby"
Path...............................0
Mode...............................0
```

CCM Status Reports

Command: ccm status

Generates a current process wide status report. Includes the state of each line, the total number of lines available from that process, the number of lines in service, the number of lines that are connected and the% utilization. (see sample report below).

Command: cx status or cx-y status

Generates a current status report for lines x or lines x through y. Includes information on process state, type command queue, etc. (see sample report below).

Sample output for the command line entry: ccm status

```
================================================================
CCM-VPS 3 Phone Line 1-192 Status Report
================================================================
Process startup mode.......................CLEAN
Number of Work Threads (WT)...............192
Number of WT which are not READY............0
============================= CCM Phone Line Status
===============================
Mon Feb 18 14:46:58 2002
Logical Lines:
1  rly      2  rly      3  rly      4  rly      5  rly      6
rly      7  rly      8  rly
9  rly     10  rly     11  rly     12  rly     13  rly     14
rly     15  rly     16  rly
17  rly     18  rly     19  rly     20  rly     21  rly     22
rly     23  rly     24  rly
25  rly     26  rly     27  rly     28  rly     29  rly     30
rly     31  rly     32  rly
33  rly     34  rly     35  rly     36  rly     37  rly     38
rly     39  rly     40  rly
41  rly     42  rly     43  rly     44  rly     45  rly     46
rly     47  rly     48  rly
49  rly     50  rly     51  rly     52  rly     53  rly     54
rly     55  rly     56  rly
57  rly     58  rly     59  rly     60  rly     61  rly     62
rly     63  rly     64  rly
65  rly     66  rly     67  rly     68  rly     69  rly     70
rly     71  rly     72  rly
73  rly     74  rly     75  rly     76  rly     77  rly     78
rly     79  rly     80  rly
81  rly     82  rly     83  rly     84  rly     85  rly     86
rly     87  rly     88  rly
89  rly     90  rly     91  rly     92  rly     93  rly     94
rly     95  rly     96  rly
97  rly     98  rly     99  rly    100  rly    101  rly    102
```

```
rly     103  rly     104  rly
105  rly     106  rly     107  rly     108  rly     109  rly     110
rly     111  rly     112  rly
113  rly     114  rly     115  rly     116  rly     117  rly     118
rly     119  rly     120  rly
121  rly     122  rly     123  rly     124  rly     125  rly     126
rly     127  rly     128  rly
129  rly     130  rly     131  rly     132  rly     133  rly     134
rly     135  rly     136  rly
137  rly     138  rly     139  rly     140  rly     141  rly     142
rly     143  rly     144  rly
145  rly     146  rly     147  rly     148  rly     149  rly     150
rly     151  rly     152  rly
153  rly     154  rly     155  rly     156  rly     157  rly     158
rly     159  rly     160  rly
161  rly     162  rly     163  rly     164  rly     165  rly     166
rly     167  rly     168  rly
169  rly     170  rly     171  rly     172  rly     173  rly     174
rly     175  rly     176  rly
177  rly     178  rly     179  rly     180  rly     181  rly     182
rly     183  rly     184  rly
185  rly     186  rly     187  rly     188  rly     189  rly     190
rly     191  rly     192  rly
192 lines, 192 in service, 0 call(s) connected, 100% utilization
========================================================================
========
```

Sample output for the command line entry: cx status or cx-y status

```
================================================================
CCM-MPS 7 Line 1 Status Report
================================================================
CCM Maximum MX protocol version.............1
MX Application Information
MX app. name to use for play lookups...""
Negotiated MX protocol version..........1
MX Application Name:Node................"CallCenter:tmsi07"
MX Application PID.....................16995
MX supplied service handle (hService)...9
ccm_state....................................ANSWER_STATE
prev_ccm_state...............................DISCONNECTED_STATE
Default state between calls.................DISCONNECTED_STATE (NoAnswer)
Disconnect Processing Flags.................0x00
Crnt nbr of msg rsp's/events outstanding....0
Waiting for:
size of VDM Cache Page in bytes.............8192
Max bytes for VMM to load via a single
cache load request.....................32 Kilobytes
Max nbr addr's in single cache load req.....4
State of the DTMF input buffer..............EMPTY
Input type for next Get Input Request.......NONE
SYNCHRONOUS COMMAND QUEUE: (queue size 1)
------------------------
Queued Type Item Description
=========== ================
CURR CMD ---> ANSWER REQ mx_req_id:[9], ccm_trans_id:[656],
ccm_call_flags:[0x0]
```

CCM Parameter/Timer Report

Command: cx repsvcparams or cx-y repsvcparams

Generates a report of all configurable parameters.

Sample output for the command line entry: c1 repsvcparams

```
================================================================
CCM-MPS 7 Line 1 Service Parameter Report
================================================================
General Service Parameters
Time to wait for a rsrc add before fail req...........(rsrcallocgrd) 1s
Current state of Call-flow Verification Mode (CVM) in MX............ 0x0
Automatic CVM enable on connect...........................(autocvm)
0x0Phone Line Parameters
Disconnect guard timer..................................(discguard) 300s
pickup-after-outdial timeout...............................(pickup) 30s
Total call guard timer..................................(totalcall) 600s
Answer parameter...................................................3
Event mask.........................................................
0x0215
CONNECT, LINECLEAR, OFFERED, XFERCMPLT,
Standby
mode....................................................."NoAnswer" (
0)
Standby on Disconnect Flag.........................................TRUE
DTMF Receiver Parameters
Touch tone validation (ON or OFF).......................(dtmfguard) OFF
Non-indial touch tone guard timer.....................(dtmftonedur) 40ms
First character timeout.....................................(first) 10s
Inter character timeout.....................................(inter) 10s
Call Progress Detector (CPD) Parameters
Is an AUTOID request, that is doing FAX detection, pending.......... NO
CPD event mask in TMS.............................................. 0x0
CPD Persistent events............................................. 0x0
Min amt of silence required for SILENCE detection........(cpdminsil)
5000ms
Speech Recognition related parameters
SOS validation period...............................(sosvalidation) 250ms
NOTE- actual validation period is computed as follows:
If dtmfguard is ON then validate SOS for
(sosvalidation + dtmftonedur)ms, otherwise
validate for just (sosvalidation)ms.
Recorder Parameters
Record Mode (sync & async req.)...........................(recmode)
NETWORK based
Milliseconds of data to strip from a recording that is
terminated by a touch tone.........................(ttstrip) 100ms
Milliseconds of data to strip from a recording that is
terminated by a disconnect.......................(discstrip) 0ms
Time to wait to abort on first silence detection..........(firstsil) 0.00s
(sync req only)
Time to wait to abort on end of voice....................(intersil) 0.00s
(sync req only)
Amount of silence required for stripping.................(silstrip) 0.00s
```

```
(sync req only)
Min noise needed to distinguish between voice & silence...(silthresh) 1000
(sync req only)
```

Changing Line Service Status

You may need to bring individual phone lines in and out of service during system operation.

Command: c# inService or c# outOfService

The state of a line brought in service also depends on phone port I/O direction (in/out/bi-directional) and whether or not there is an application currently bound to the line:

		Phone Port Direction		
		In	Out	In/Out
Application State	Bound	In service	In service	In service
	Unbound	Out of service	In service	In service

Once a phone line is forced out of service, it can only be put back into service by the c# inService command or by rebooting the system.

Chapter 8: Protocol Configuration Files

This chapter covers:			
1.	T1 ATT Winkstart Protocol	15.	ATT Definity Protocol
2.	T1 Feature Group D EAIN Protocol	16.	EL17CAS Protocol
3.	T1 Lineside Protocol	17.	R2 Australia Protocol
4.	T1 NEC Lineside Protocol	18.	R2 Denmark Protocol
5.	T1 E&M Start Protocol	19.	R2 Finland Protocol
6.	T1 UISDN Protocol	20.	R2 Malaysia Protocol
7.	E1 ISDN NET5 Protocol	21.	R2 Norway Protocol
8.	E1 MFR2 Saudi Protocol	22.	R2 Philippines Protocol
9.	E1 MFR2 Mexico Protocol	23.	R2 Singapore Protocol
10.	E1 MFR2 Columbia Protocol	24.	R2 Thailand Protocol
11.	E1 MFR2 India Protocol	25.	T1 UISDN_24B Protocol
12.	E1 Lineside Protocol	26.	ISDN DPNSS Protocol
13.	E1 melCAS Protocol		
14.	Analog Loop Start Protocol		

T1 ATT Winkstart Protocol Configuration File

Table 89: The att_winkstart_proto.cfg File

```
;;==================================================================
; $Id: att_winkstart_proto.cfg,v 1.11 2002/06/25 19:28:47 sheik Exp $
;
; $Log: att_winkstart_proto.cfg,v $
; Revision 1.11  2002/06/25 19:28:47  sheik
; commented out PARAM_11 which was incorrectly set
;
; Revision 1.10  2002/01/11 18:08:10  sheik
; added Param-19 - hookflash timer
;
; Revision 1.9  2001/05/02 19:28:18  sheik
```

```
; added -ALL+ to the EvtMaskParam line for CPD
;
; Revision 1.8  2001/04/12 13:40:58  jlevine
; Added keywords for config tool into comments
;
; Revision 1.7  2001/04/02 15:10:29  jlevine
; RNDin74516 - Removed cvs merge conflict
;
; Revision 1.6  2001/03/29 16:05:32  jlevine
; RNDin74383 - Add NISDN to package
;
; Revision 1.5  2000/12/04 20:34:59  sheik
; added comments
;
; Revision 1.4  2000/11/10 16:35:36  sheik
; added TIM parameters
;
; Revision 1.3  2000/10/30 17:01:49  clnroom
; PERItms1-0-0-83-00304release_notes.txt
;
; Revision 1.2  2000/06/15 13:47:42  jake
; Modified comment for PARAM_15
;
;=================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=ATT Winkstart
; %LINES%=24
; %TYPE%=T1
;
; ====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
[SPAN_CLASS]
CLASS_NAME = att_winkstart
CDF = t1_sf_cas.cdf  ; what .cdf to load
STATE_TBL= att_winkstart.bin
;   Site-Specific Params
;
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
```

```
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE


;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
PARAM TIM_CPD_name= "CPD"
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
PARAM TIM_DTMF_name= "DTMF"
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
PARAM TIM_TGEN_name= "TGEN"
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
; If activated, allows the call to be disconnected after a specified number of rings
; Default MAXRINGOFF
;
;PARAM TIM_max_rings =
; Allows for the call to be disconnected upon detect of specific CPD events
; Default - Busy, Reorder and SIT
;
;PARAM TIM_CallCancel_evt_mask =
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; ATT Winkstart Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Min. wink duration (10 msec res.)
;
;PARAM TIM_param_0 =
;
; Max. wink duration (10 msec res.)
;
;PARAM TIM_param_1 =
;
;PARAM TIM_param_7 =
;
; Dialtone guard time (10 msec res.)
;
;PARAM TIM_param_8 =
;
; Dialtone guard time (10 msec res.)
```

```
;
;PARAM TIM_param_8 =
;
; Alerting Interval (10 msec res.)
;
;PARAM TIM_param_9 =
;
; Disconnect Hang time (10 msec res.)
;
;PARAM TIM_param_10 =
;
; Wink guard time (10 msec res.)
;
;PARAM TIM_param_11 =
;
; Blind timer (10 msec res.)
;
;PARAM TIM_param_12 =
;
; Outdial complete guard timer (10 msec res.)
;
;PARAM TIM_param_13 =
;
; Ring On time (10 msec res.)
;
;PARAM TIM_param_14 =
;
; Number of indial digits to collect (0 - 36) default = 0
;
;PARAM TIM_param_15 =
;
; First Character timeout. Number of seconds to wait for first indial digit.
; (1 sec res.) Default 3 sec.
;
;PARAM TIM_param_16 =
;
; Inter Character timeout. Number of seconds to wait for next indial digit.
; (1 sec res.) Default 1 sec.
;
;;PARAM TIM_param_17 =
;
;
; Ringback Guard timer. (10 msec res). default 1500 (15s)
; NOTE The pickup timer is running
; on top of this timer. This timer should always
; be less than pickup timer unless this feature
; is not needed in which case this timer should
; be set to be equal to (or greater than) pickup timer..
;
;PARAM TIM_param_18 =
;
; Hook Flash Timer (10 msec res. Default 0.5 secs)
;
;PARAM TIM_param_19 = 50
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
```

```
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
;
[CLASS]
COUNT = 0           ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF = tgen_us.cdf;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0           ; number of resources of this class to load
CLASS_NAME = cpd ; class name to use for this resource.
CDF = cpd_us.cdf;
;
; Site-specific params
;
PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD_
DIALTONE
```

T1 Feature Group D EAIN Protocol Configuration File

Table 90: The fgd_eain_proto.cfg File

```
;;================================================================
; %M% - Feature Group - D: Exchange Access North American (EANA) Signalling
;================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=Feature Group D: Exchange Access International Signaling (EAIN)
; %LINES%=24
; %TYPE%=T1
;
; ====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
```

```
CLASS_NAME = fgd_eain; class name to use for this span
CDF = t1_sf_cas.cdf ; what .cdf to load
STATE_TBL= fgd_eain.bin; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
PARAM TIM_DTMF_name= "DTMF"
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
PARAM TIM_TGEN_name= "TGEN"
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
; Allows the call to be disconnected after a specified number of rings
; Default MAXRINGOFF
;
;PARAM TIM_max_rings =
; Allows for the call to be disconnected upon detect of specific CPD events
; Default - Busy, Reorder and SIT
;
;PARAM TIM_CallCancel_evt_mask =
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
```

```
; Feature Group - D
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Min. wink duration (10 msec res.)
;
;PARAM TIM_param_0 =
;
; Max. wink duration (10 msec res.)
;
;PARAM TIM_param_1 =
;
; Nominal wink duration (10 msec res.)
;
;PARAM TIM_param_2 =
;
; Hit threshold (10 msec res.)
;
;PARAM TIM_param_3 =
;
; Valid answer duration (10 msec res.)
;
;PARAM TIM_param_4 =
;
; Valid disconnect duration (10 msec res.)
;
;PARAM TIM_param_5 =
;
; Hookflash duration (10 msec res.)
;
;PARAM TIM_param_6 =
;
; Blind dialtone wait time (10 msec res.)
;
;PARAM TIM_param_7 =
;
; Dialtone guard time (10 msec res.)
;
;PARAM TIM_param_8 =
; Alerting Interval (10 msec res.)
;
;PARAM TIM_param_9 =
;
; Disconnect Hang time (10 msec res.)
;
;PARAM TIM_param_10 =
;
; Wink guard time (10 msec res.)
;
PARAM TIM_param_11 = 210
;
; Blind timer (10 msec res.)
;
;PARAM TIM_param_12 =
;
; Outdial complete guard timer (10 msec res.)
;
;PARAM TIM_param_13 =
;
; Ring On time (10 msec res.)
;
;PARAM TIM_param_14 =
;
; Delay before acknowledge wink (10 msec res.) Default: 300msec.
;
```

```
;PARAM TIM_param_15 =
;
; First Character timeout. Number of seconds to wait for first indial digit.
; (1 sec res.) Default 3 sec.
;
;PARAM TIM_param_16 =
;
; Inter Character timeout. Number of seconds to wait for next indial digit.
; (1 sec res.) Default 1 sec.
;
;PARAM TIM_param_17 =
;
; Ringback Guard timer. (10 msec res). default 1500 (15s)
; NOTE The pickup timer is running
; on top of this timer. This timer should always
; be less than pickup timer unless this feature
; is not needed in which case this timer should
; be set to be equal to (or greater than) pickup timer..
;
;PARAM TIM_param_18 =
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;; Get II-Digits Flag
; This flag is set if II-DIgits will be passed in MakeCall VarData
; If II-Digits will be prepended to the ANI, this parameter should
; be set to 0 (or commented out) (default=1)
;PARAM TIM_param_19 = 1
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
;
;[CLASS]
COUNT = 0          ; number of resources of this class to load
CLASS_NAME = DTMF; class name to use for this resource.
CDF = dtmf.cdf;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0          ; number of resources of this class to load
CLASS_NAME = TGEN; class name to use for this resource.
CDF = tgen_us.cdf;
;
; Site-specific params
;
; <none>
```

```
[CLASS]
COUNT = 0            ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_us.cdf; which cdf to use
;
; Site-specific params
;
; Uncomment following line to enable CPD tones
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

T1 Lineside Protocol Configuration File

Table 91: The linesideT1_proto.cfg File

```
;====================================================================
; ; $Id: linesideT1_proto.cfg,v 1.8 2002/07/18 15:36:57 sheik Exp $
;; $Log: linesideT1_proto.cfg,v $
; Revision 1.8  2002/07/18 15:36:57  sheik
; changed PARAM12 default to 0
;
; Revision 1.7  2002/07/09 19:20:44  sheik
; added parameters 12-16
;
; Revision 1.6  2002/05/15 13:51:47  sheik
; added %DESCRIPTION%, %LINES% etc
;
; Revision 1.5  2001/11/27 18:19:08  sheik
; added tim_param_11
;
; Revision 1.2.2.3  2001/10/29 20:23:07  sheik
; added parameter TIM_param_10
;
; Revision 1.2.2.2  2001/07/27 15:56:07  sheik
; modified P6 to be auto connect time
;
; Revision 1.2.2.1  2001/06/06 20:04:06  sheik
; added comments
;
; Revision 1.2.4.2  2001/06/06 20:01:55  sheik
; added comments
;
; Revision 1.2.4.1  2001/06/06 19:47:01  sheik
; original
;
; Revision 1.1  2001/01/12 15:20:49  sheik
; original
;;===================================================================
;; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;; ===================================================================
; The following definitions are used by the config tool (do not remove):
;; %DESCRIPTION%=Line Side T1
; %LINES%=24
; %TYPE%=T1
====================================================================
```

```
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
[SPAN_CLASS]
CLASS_NAME = linesideT1
CDF = t1_sf_cas.cdf   ; what .cdf to load
STATE_TBL= linesideT1.bin
;; Site-Specific Params
;;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
PARAM TIM_CPD_name= "CPD"
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
PARAM TIM_DTMF_name= "DTMF"
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
PARAM TIM_TGEN_name= "TGEN"
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
; If activated, allows the call to be disconnected after a specified number of rings
; Default MAXRINGOFF
;
;PARAM TIM_max_rings =
```

```
; Allows for the call to be disconnected upon detect of specific CPD events
; Default - Busy, Reorder and SIT
;
;PARAM TIM_CallCancel_evt_mask =
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; LineSide T1 Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Outdial Complete Guard timer (10 msec res. Default 30 secs)
;
;PARAM TIM_param_0 = 3000
;
;  Ring Stop Time (10 msec res. default 6 secs). Maximum interval between rings.
After
;  this interval expires protocol interprets this as an abandoned call (ie
;  the caller hung up).
;
;PARAM TIM_param_1 = 600
;
; Dialtone Guard Time (10 msec res. Default 4 secs). Maximum amount of time protocol
; will wait for dialtone before outdialing. Call attempt will fail if dialtone is
not received
; within this interval. This parameter is only used when a CPD resource is available.
;
;
;PARAM TIM_param_2 = 400
;
; Blind Dialtone Time (10 msec res. Default 2 secs). When no CPD is available or CPD
is disabled
; (see P9 below), then this parameter specifies the amount of time to wait after
seizing the line before
; outpulsing the digits.
;
;PARAM TIM_param_3 = 200
;
; Hook Flash Timer (10 msec res. Default 0.5 secs)
;
;PARAM TIM_param_4 = 50
;
; Ringback Stop Time (10 msec res. Default 6 secs). Specifies the maximum amount of
time in
; between ringbacks. After this interval expires the protocol will act as though
answer supervision
; has been received and connect the call.
;
;PARAM TIM_param_5 = 600
; Auto Connect Time (10 msec res. Default 0 secs). Specifies the maximum amount of
time
; the protocol will wait before auto connecting. After this time expires the
protocol will act as though answer
supervision
; has been received and connect the call. A setting of "0" disables this feature.
;
;PARAM TIM_param_6 = 0
;  Wait Hang Time timer (10 msec res. Default 1.5 secs)
;PARAM TIM_param_7 = 150
;
; Hit Threshold (10 msec res. Default 0.07 secs)
;;PARAM TIM_param_8 = 7
;; Use CPD flag Flag specifying whether or not to monitor Call Progress (default 1)
;;PARAM TIM_param_9 = 1
;; Mode of Operation (GroundStart = 1; Loopstart = 0; Default 0)
```

```
;;PARAM TIM_param_10 = 0
;; Voice detection flag (in connected state). Specifies whether the DSP should
announce
; voice detects in the connected state.
;  (0==>Voice detect off; 1==> voice detect on; default 0)
;;PARAM TIM_param_11 = 0
;; Number of indial digits to collect (0 - 36) default = 0
;;PARAM TIM_param_12 = 25
;; First Character timeout. Number of seconds to wait for first indial digit.
; (1 sec res.) Default 5 sec.
;;PARAM TIM_param_13 = 5
;; Inter Character timeout. Number of seconds to wait for next indial digit.
; (1 sec res.) Default 1 sec.
;;PARAM TIM_param_14 = 1
;; Alerting Interval  (10msec res. Default 3 sec)
;;PARAM TIM_param_15 = 300
;; Ring On Time (10msec res. Default 1.5 sec)
;;PARAM TIM_param_16 = 150
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;; R E S O U R C E   C L A S S  D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
;[CLASS]
COUNT = 0          ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF = tgen_us.cdf;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0          ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_us.cdf;
;
; Site-specific params
;
; Uncomment following line to enable CPD tones
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

T1 NEC Lineside Protocol Configuration File

Table 92: The NEC_linesideT1_proto.cfg File

```
;===============================================================
; $Id: NEC_linesideT1_proto.cfg,v 1.1.2.2 2004/04/30 19:31:17 sheik Exp $
;
; $Log: NEC_linesideT1_proto.cfg,v $
; Revision 1.1.2.2  2004/04/30 19:31:17  sheik
; added param14
;
; Revision 1.1.2.1  2004/04/06 18:14:56  sheik
; orig
;
;
;===============================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; =====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=NEC Line Side T1
; %LINES%=24
; %TYPE%=T1
;
; =====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span.  If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
[SPAN_CLASS]
CLASS_NAME = NEClinesideT1
CDF     = t1_sf_cas.cdf ; what .cdf to load
STATE_TBL= NEC_linesideT1.bin
;
; Site-Specific Params
;
;
; Defines how a line should behave when in standby state.
;
;   (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
Total call duration. Specifies the number of seconds a call can remain
```

```
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
PARAM TIM_CPD_name= "CPD"
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
PARAM TIM_DTMF_name= "DTMF"
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
PARAM TIM_TGEN_name= "TGEN"
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
; If activated, allows the call to be dicconnected after a specified number of rings
; Default MAXRINGOFF
;
;PARAM TIM_max_rings =
; Allows for the call to be disconnected upon detect of specific CPD events
; Default - Busy, Reorder and SIT
;
;PARAM TIM_CallCancel_evt_mask =
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; NEC LineSide T1 Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Outdial Complete Guard timer (10 msec res. Default 30 secs)
;PARAM TIM_param_0 = 3000
;
; NOT USED!!
;PARAM TIM_param_1 =
;
; Dialtone Guard Time (10 msec res. Default 4 secs). Maximum amount of time protocol
; will wait for dialtone before outdialing. Call attempt will fail if dialtone is
not received
; within this interval. This parameter is only used when a CPD resource is available.
;
;PARAM TIM_param_2 = 400
;
```

```
; Blind Dialtone Time (10 msec res. Default 2 secs). When no CPD is available or CPD
is disabled
; (see P9 below), then this parameter specifies the amount of time to wait after
seizing the line before
; outpulsing the digits.
;PARAM TIM_param_3 = 200
;
; Hook Flash Timer (10 msec res. Default 0.5 secs)
;PARAM TIM_param_4 = 50
;
; Ringback Stop Time (10 msec res. Default 6 secs). Specifies the maximum amount of
time in
; between ringbacks. After this interval expires the protocol will act as though
answer supervision
; has been received and connect the call.
;PARAM TIM_param_5 = 600
;
; Auto Connect Time (10 msec res. Default 1.5 secs). Specifies the maximum amout of
time
; the protocol will wait before auto connecting. After this time expires the
protocol will act as though answer supervision
; has been received and connect the call. A setting of "0" disables this feature.
;PARAM TIM_param_6 = 150
;
; Wait Hang Time timer (10 msec res. Default 1.5 secs)
;PARAM TIM_param_7 = 150
;
; Hit Threshold (10 msec res. Default 0.07 secs)
;PARAM TIM_param_8 = 7
;
; Use CPD flag Flag specifying whether or not to monitor Call Progress (default 0)
;PARAM TIM_param_9 = 0
;
; Mode of Operation (GroundStart = 1; Loopstart = 0; Default 0)
;PARAM TIM_param_10 = 0
;
; Voice detection flag (in connected state). Specifies whether the DSP should
announce
; voice detects in the connected state.
;   (0==>Voice detect off; 1==> voice detect on; default 0)
;PARAM TIM_param_11 = 0
;
; Alerting Interval  (10msec res. Default 3 sec)
;PARAM TIM_param_12 = 300
;
; Ring On Time (10msec res. Default 1.5 sec)
;PARAM TIM_param_13 = 150
;
; Call Progress Disconnect Flag. Specifies whether or not do Disconnect on CPS
events DialTone,
; Busy and Reorder (0==> Do Not Disconnect; 1==> Disconnect; Default 0)
;PARAM TIM_param_14 = 0
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S  D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional)  to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
```

```
; in CDF file.
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the paramters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
;
[CLASS]
COUNT = 0        ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF = tgen_us.cdf;
;
; Site-specific params
;
; <none>
[claSS]
COUNT = 0        ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_us.cdf;
;
; Site-specific params
;
; Uncomment following line to enable CPD tones
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

T1 E and M Start Protocol Configuration File

Table 93: The EandMStart_proto.cfg File

```
;=================================================================
; $Id: EandMStart_proto.cfg,v 1.1.2.2 2004/09/20 20:46:41 sheik Exp $
;
; $Log: EandMStart_proto.cfg,v $
; Revision 1.1.2.2  2004/09/20 20:46:41  sheik
;  fixed some comments
;
; Revision 1.1.2.1  2004/04/06 18:12:34  sheik
; orig
;
;
;=================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; =====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=EandM Immediate Start and Delay Dial Signaling
; %LINES%=24
; %TYPE%=T1
;
; =====================================================================
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

```
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span.  If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
[SPAN_CLASS]
CLASS_NAME = EandMStart
CDF = t1_sf_cas.cdf ; what .cdf to load
STATE_TBL= EandMStart.bin
;
; Site-Specific Params
;
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
PARAM TIM_CPD_name= "CPD"
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
PARAM TIM_DTMF_name= "DTMF"
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
PARAM TIM_TGEN_name= "TGEN"
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
; If activated, allows the call to be dicconnected after a specified number of rings
```

```
; Default MAXRINGOFF
;
;PARAM TIM_max_rings =
; Allows for the call to be disconnected upon detect of specific CPD events
; Default - Busy, Reorder and SIT
;
;PARAM TIM_CallCancel_evt_mask =
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; E & M Start Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Delay Dial Signaling Flag (0 ==> Immediate Start Signaling; 1 ==> Delay Dial
Signaling; Default 0)
;
;PARAM TIM_param_0 = 0
;
; Delay Dial Timer (10 msec res. Default 200ms)
; Timer used for "delay" dialing
;
;PARAM TIM_param_1 = 200
;
; NOT USED
;
;PARAM TIM_param_2 =
;
; Hit threshold (10 msec res. Default 70ms)
;
;PARAM TIM_param_3 = 7
;
; NOT USED
;
;PARAM TIM_param_4 =
;
; NOT USED
;
;PARAM TIM_param_5 =
;
; NOT USED
;
;PARAM TIM_param_6 =
;
; NOT USED
;
;PARAM TIM_param_7 =
;
; NOT USED
;
;PARAM TIM_param_8 =
;
; Alerting Interval (10 msec res. Default 4s)
;
;PARAM TIM_param_9 = 400
;
; Disconnect Hang time (10 msec res. Default 2.1s)
;
;PARAM TIM_param_10 = 210
;
; OutDial Delay Dial guard time (10 msec res. Default 5s)
;
;PARAM TIM_param_11 = 500
;
; Blind timer (10 msec res. 200ms)
```

```
;
;PARAM TIM_param_12 = 20
;
; Outdial complete guard timer (10 msec res. Default 15s)
;
;PARAM TIM_param_13 = 1500
;
; Ring On time (10 msec res. Default 2s)
;
;PARAM TIM_param_14 = 200;
; Number of indial digits to collect (0 - 36) default = 0
;
;PARAM TIM_param_15 = 0
;
; First Character timeout. Number of seconds to wait for first indial digit.
; (1 sec res.) Default 3 sec.
;
;PARAM TIM_param_16 = 3
;
; Inter Character timeout. Number of seconds to wait for next indial digit.
; (1 sec res.) Default 1 sec.
;
;PARAM TIM_param_17 = 1
;
;
; Ringback Guard timer. (10 msec res). default 1500 (15s)
; NOTE The pickup timer is running
; on top of this timer. This timer should always
; be less than pickup timer unless this feature
; is not needed in which case this timer should
; be set to be equal to (or greater than) pickup timer..
;
;PARAM TIM_param_18 = 1500
;
; Hook Flash Duration Timer (10 msec res. Default 0.5 secs)
;
;PARAM TIM_param_19 = 50
;
;
; Blind Connect Timer (To simulate Connect during a xfer. (10msec res. Default 2s)
; During a xfer, we may need to simulate a Connect as we will not receive
; any bit change from the switch to indicate a Connect.
;
;PARAM TIM_param_20 = 200
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional)  to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the paramters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
;
```

```
[CLASS]
COUNT = 0           ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF = tgen_us.cdf;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0           ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_us.cdf;
;
; Site-specific params
;
PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

T1 UISDN Protocol Configuration File

Table 94: The uisdn_23B_D_user_proto.cfg File

```
;================================================================
; $I$Id: uisdn_23B_D_user_proto.cfg,v 1.2.4.1 2003/01/21 20:21:56 sheik Exp $
; $Log: uisdn_23B_D_user_proto.cfg,v $
; Revision 1.2.4.1  2003/01/21 20:21:56  sheik
; added TIM_PARAM_4
;
; Revision 1.2  2001/07/10 17:06:40  jlevine
; RNDin77808 - Added config files to support Unified ISDN. Enable Unified ISDN
Feature
;
; Revision 1.4  2001/05/11 14:57:54  jlevine
; RNDin75698, RNDin75800, RNDin75747, RNDin75866
;
; Revision 1.3  2001/04/13 13:54:35  jlevine
; RNDin57858 - added isdn ESF config files
;
; Revision 1.2  2001/04/12 13:40:58  jlevine
; Added keywords for config tool into comments
;
; Revision 1.1  2001/03/29 16:05:32  jlevine
; RNDin74383 - Add NISDN to package
;
;================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=Unified ISDN (USER Side) - 23B/D
; %LINES%=23
; %TYPE%=T1
;
```

```
; =====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = unified_isdn; class name to use for this resource.
;CDF     = t1_sf_uisdn_23B_D_user.cdf; NOTE: must select either sf of esf
CDF     = t1_esf_uisdn_23B_D_user.cdf
; The following
; default Parameters for TIM can be overwritten
; by specifying the new parameters here.
;
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
;PARAM TIM_standby_mode= lineNOANSWER
;
; Wait ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
;PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state.
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
```

```
; presented state before being terminated by the TMS.
;
;PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; ISDN Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Alerting Interval (RingON + RingOFF) in seconds. Default 4.
;
PARAM TIM_param_0 =4
;
; Ring ON time in seconds. Default 2.
;
PARAM TIM_param_1 = 2
;
; Send Call Progress (Ringback) on inbound call TRUE = 1 FALSE = 0.
; Default = TRUE
;
PARAM TIM_param_2 = 1
;
; Number of failed call setups allowed before line is put out of service.
; Call setups will fail if no application is attached to the line.
; Default = 5. Range 0-256
;
PARAM TIM_param_3 = 5
; Auto-Proceed Flag. If this flag is set, Hostcomm(T1) will automatically send
; a PROCEEDING upon receiving a SETUP from the network.
; Default = 0 ==> OFF
;
;PARAM TIM_param_4 = 0
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
;********************************************************************;[CLASS]
;COUNT = 24;       number of resources of this class to load
;CLASS_NAME = tgen; class name to use for this resource.
;CDF     = tgen_us.cdf; NOTE: select appropriate call progress set
;
; Site-specific params
;
; <none>
;[CLASS]
;COUNT = 24;       number of resources of this class to load
;CLASS_NAME = cpd; class name to use for this resource.
;CDF     = cpd_us.cdf; NOTE: select appropriate call progress set
;
; Site-specific params
```

```
;
; <none>
```

E1 ISDN NET5 Protocol Configuration File

Table 95: The isdn_net5_proto.cfg File

```
;================================================================
; $$Id: isdn_net5_proto.cfg,v 1.3.6.1 2003/06/09 19:58:00 sheik Exp $
; $Log: isdn_net5_proto.cfg,v $
; Revision 1.3.6.1  2003/06/09 19:58:00  sheik
; comment out the loading of resources
;
; Revision 1.3  2001/05/11 14:57:54  jlevine
; RNDin75698, RNDin75800, RNDin75747, RNDin75866
;
; Revision 1.2  2001/04/12 13:40:58  jlevine
; Added keywords for config tool into comments
;
;================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=Net5 ISDN (USER Side)
; %LINES%=30
; %TYPE%=E1
;
; ====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = isdn;      class name to use for this resource.
CDF    = e1_mf_isdn_net5.cdf; NOTE: must select either e1_mf or e1_crc4
; The following
; default Parameters for TIM can be overwritten
; by specifying the new parameters here.
;
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
;PARAM TIM_standby_mode= lineNOANSWER
;
; Wait ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
```

```
;
;PARAM TIM_answer = 1
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state.
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
;PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; ISDN Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Alerting Interval (RingON + RingOFF) in seconds. Default 4.
;
PARAM TIM_param_0 =4
; Ring ON time in seconds. Default 2.
;
```

```
PARAM TIM_param_1 = 2
;
; Send Call Progress (Ringback) on inbound call TRUE = 1 FALSE = 0.
; Default = TRUE
;
PARAM TIM_param_2 = 1
;
; Number of failed call setups allowed before line is put out of service.
; Call setups will fail if no application is attached to the line.
; Default = 5. Range 0-256
;
PARAM TIM_param_3 = 5
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
;****************************************************************
;[CLASS]
;COUNT = 30          ; number of resources of this class to load
;CLASS_NAME = tgen; class name to use for this resource.
;CDF    = tgen_uk.cdf; NOTE: select appropriate call progress set
;
; Site-specific params
;
;  <none>
;[CLASS]
;COUNT = 30          ; number of resources of this class to load
;CLASS_NAME = cpd; class name to use for this resource.
;CDF    = cpd_uk.cdf; NOTE: select appropriate call progress set
;
; Site-specific params
;
;  <none>
```

E1 MFR2 Saudi Protocol Configuration File

Table 96: The r2_saudi_proto.cfg File

```
;==================================================================
; $$Id: r2_saudi_proto.cfg,v 1.4 2001/09/25 14:53:11 sheik Exp $
; $Log: r2_saudi_proto.cfg,v $
; Revision 1.4  2001/09/25 14:53:11  sheik
; changed CLASS_NAME from r2_saudi_r2 to r2
;
; Revision 1.3  2001/05/02 19:44:39  sheik
; added description for TIM parameters
;
; Revision 1.2  2001/04/12 13:40:58  jlevine
; Added keywords for config tool into comments
;
;==================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ==================================================================
```

```
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=R2 Saudi Arabia
; %LINES%=30
; %TYPE%=E1
;
; =====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = r2_saudi_tim; class name to use for this span
CDF = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= R2_Saudi_Tim.bin; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
```

```
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R2 Saudi Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; <not used>
;
;PARAM TIM_param_0 =
; R2 Signals Timer
;
;PARAM TIM_param_1 =
;
; Alerting Interval
;
;PARAM TIM_param_2 =
;
; Ring On Time
;
;PARAM TIM_param_3 =
;
; Seizeack Timer
;
;PARAM TIM_param_4 =
;
; Hit Threshold
;
;PARAM TIM_param_5 =
;
; Flag used to check whether app should play busy
;
;PARAM TIM_param_6 =
;
; Hang Timer
;
;PARAM TIM_param_7 =
;
; Retry Timer
;
;PARAM TIM_param_8 =
;
; Number of Called Party digits to collect
;
;PARAM TIM_param_9 =
;
; Number of Calling Party digits to collect
;
;PARAM TIM_param_10 =
;
; Specifies Line State
;
;PARAM TIM_param_11 =
;
;  Duration of SeizeAck Pulse
;
;PARAM TIM_param_12 =
;
; Duration to wait before sending SeizeAck Pulse
;
```

```
;PARAM TIM_param_13 =
;
; Clear Forward Timer
;
;PARAM TIM_param_14 =
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
;
;
[CLASS]
COUNT = 0                 ; number of resources of this class to load
CLASS_NAME = r2; class name to use for this resource.
CDF = r2.cdf
STATE_TBL= R2_Saudi_R2.bin;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0                 ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF = tgen_uk.cdf; which cdf to use
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0                 ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_uk.cdf; which cdf to use
;
; Site-specific params
;
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

E1 MFR2 Mexico Protocol Configuration File

Table 97: The r2_mexico_proto.cfg File

```
;================================================================
; $Id: r2_mexico_proto.cfg,v 1.5 2001/09/25 14:54:07 sheik Exp $
; $Log: r2_mexico_proto.cfg,v $
; Revision 1.5  2001/09/25 14:54:07  sheik
; changed CLASS_NAME from r2_maxico_r2 to r2
;
; Revision 1.4  2001/05/02 19:44:29  sheik
; added description for TIM parameters
;
; Revision 1.3  2001/04/12 13:40:58  jlevine
; Added keywords for config tool into comments
;
;================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=R2 Mexico
; %LINES%=30
; %TYPE%=E1
;
; ====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = r2_mexico_tim; class name to use for this span
CDF = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= R2_Mexico_Tim.bin ; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1 ; Total call duration. Specifies the number of seconds a call
can remain
```

```
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R2 Mexico Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; <not used>
;
;PARAM TIM_param_0 =
; R2 Signals Timer
;
;PARAM TIM_param_1 =
;
;  Alerting Interval
;
;PARAM TIM_param_2 =
;
; Ring On Time
;
;PARAM TIM_param_3 =
;
; Seizeack Timer
;
;PARAM TIM_param_4 =
;
; Hit Threshold
;
;PARAM TIM_param_5 =
```

```
;
;Flag used to check whether app should play busy
;
;PARAM TIM_param_6 =
;
; Hang Timer
;
;PARAM TIM_param_7 =
;
; Retry Timer
;
;PARAM TIM_param_8 =
;
;Number of Called Party digits to collect
;
;PARAM TIM_param_9 =
;
;Number of Calling Party digits to collect
;
;PARAM TIM_param_10 =
;
;Specifies Line State
;
;PARAM TIM_param_11 =
;
;Duration of SeizeAck Pulse
;
;PARAM TIM_param_12 =
;
; Duration to wait before sending SeizeAck Pulse
;
;PARAM TIM_param_13 =
;
; Clear Forward Timer
;
;PARAM TIM_param_14 =
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
;
;
[CLASS]
COUNT = 0                ; number of resources of this class to load
CLASS_NAME = r2; class name to use for this resource.
CDF = r2.cdf
STATE_TBL= R2_Mexico_R2.bin;
```

```
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0              ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF = tgen_uk.cdf; which cdf to use
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0              ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_uk.cdf; which cdf to use
;
; Site-specific params
;
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

E1 MFR2 Columbia Protocol Configuration File

Table 98: The r2_columbia_proto.cfg File

```
;=================================================================
; $Id: r2_columbia_proto.cfg,v 1.5 2001/09/25 14:53:54 sheik Exp $
; $Log: r2_columbia_proto.cfg,v $
; Revision 1.5  2001/09/25 14:53:54  sheik
; changed CLASS_NAME from r2_columbia_r2 to r2
;
; Revision 1.4  2001/05/02 19:44:17  sheik
; added description for TIM parameters
;
; Revision 1.3  2001/04/12 13:40:58  jlevine
; Added keywords for config tool into comments
;
;=================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ===================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=R2 Columbia
; %LINES%=30
; %TYPE%=E1
;
; ===================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
```

```
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = r2_columbia_tim; class name to use for this span
CDF = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= R2_Columbia_Tim.bin ; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R2 Saudi Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
```

```
; <not used>
;
;PARAM TIM_param_0 =
; R2 Signals Timer
;
;PARAM TIM_param_1 =
;
; Alerting Interval
;
;PARAM TIM_param_2 =
;
; Ring On Time
;
;PARAM TIM_param_3 =
;
; Seizeack Timer
;
;PARAM TIM_param_4 =
;
; Hit Threshold
;
;PARAM TIM_param_5 =
;
; Flag used to check whether app should play busy
;
;PARAM TIM_param_6 =
;
; Hang Timer
;
;PARAM TIM_param_7 =
;
; Retry Timer
;
;PARAM TIM_param_8 =
;
; Number of Called Party digits to collect
;
;PARAM TIM_param_9 =
;
; Number of Calling Party digits to collect
;
;PARAM TIM_param_10 =
;
; Specifies Line State
;
;PARAM TIM_param_11 =
;   Duration of SeizeAck Pulse
;
;PARAM TIM_param_12 =
;
; Duration to wait before sending SeizeAck Pulse
; ;PARAM TIM_param_13 =
;
; Clear Forward Timer
;
;PARAM TIM_param_14 =
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
```

```
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
;
;
[CLASS]
COUNT = 0               ; number of resources of this class to load
CLASS_NAME = r2; class name to use for this resource.
CDF = r2.cdf;
STATE_TBL= R2_Columbia_R2.bin;
; ; Site-specific params
;
; <none>
[CLASS]
COUNT = 0               ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF = tgen_uk.cdf; which cdf to use
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0               ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_uk.cdf; which cdf to use
;
; Site-specific params
;
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

E1 MFR2 India Protocol Configuration File

Table 99: The r2_india_proto.cfg File

```
;================================================================
; $$Id: r2_india_proto.cfg,v 1.2 2001/11/02 16:46:42 sheik Exp $
; $Log: r2_india_proto.cfg,v $
; Revision 1.2  2001/11/02 16:46:42  sheik
; original
;
; Revision 1.1.2.1  2001/11/02 15:42:26  sheik
; original
;
;
;================================================================
```

```
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=R2 India
; %LINES%=30
; %TYPE%=E1
;
; ====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = r2_india_tim; class name to use for this span
CDF = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= R2_India_Tim.bin; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
```

```
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R2 India Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; <not used>
;
;PARAM TIM_param_0 =
;
; R2 Signals Timer (10msec res. Default 30s)
; Internal Timer specifying the time to wait for inter signaling
; between the R2 Mgr and the TIM Mgr
;
;PARAM TIM_param_1 = 3000
;
; Alerting Interval (10msec res. Default 4s)
;
;PARAM TIM_param_2 = 400
;
; Ring On Time (10msec res. Default 2s)
;
;PARAM TIM_param_3 = 200
;
; Seizeack Timer (10msec res. Default 6s)
;
;PARAM TIM_param_4 = 600
;
; Hit Threshold  (10msec res. Default 20 msec)
;
;PARAM TIM_param_5 = 2
;
; Flag used to check whether app should play busy
; (1=App plays busy; 0=Far side plays busy. Default 1)
;
;PARAM TIM_param_6 = 1
;
; Hang Timer   (10msec res. Default 1.5s)
;
;PARAM TIM_param_7 = 150
;
; Resource Retry Timer  (10msec res. Default 1s)
;
;PARAM TIM_param_8 = 100
;
; Number of Called Party digits to collect (default = 7)
;
;PARAM TIM_param_9 = 7
;
; Number of Calling Party digits to collect (default = 7)
;
;PARAM TIM_param_10 = 7
;
```

```
; Specifies Line State (default = LF_CHARGE)
;
;PARAM TIM_param_11 = LF_CHARGE
;
;  Duration of SeizeAck Pulse  (10msec res. Default 100 msecs)
;
;PARAM TIM_param_12 = 10
;
; Duration to wait before sending SeizeAck Pulse  (10msec res. Default 30 msecs)
;
;PARAM TIM_param_13 = 3
;
; Clear Forward Timer (10msec res. Default 200 msecs)
;
;PARAM TIM_param_14 = 20
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
;
;
;[CLASS]
;COUNT = 0             ; number of resources of this class to load
;CLASS_NAME = r2; class name to use for this resource.
;CDF = r2.cdf
;STATE_TBL= R2_India_R2.bin;
;
; Site-specific params
;
; <none>
;;[CLASS]
;COUNT = 0             ; number of resources of this class to load
;CLASS_NAME = tgen; class name to use for this resource.
;CDF = tgen_uk.cdf; which cdf to use
;
; Site-specific params
;
; <none>
;[CLASS]
;COUNT = 0             ; number of resources of this class to load
;CLASS_NAME = cpd; class name to use for this resource.
;CDF = cpd_uk.cdf; which cdf to use
;
; Site-specific params
;
;PARAM EvtMaskParam=
```

```
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

E1 Lineside Protocol Configuration File

Table 100: The linesideE1_proto.cfg File

```
;==================================================================
; $Id: linesideE1_proto.cfg,v 1.8 2002/05/30 16:14:30 sheik Exp $
;
; $Log: linesideE1_proto.cfg,v $
; Revision 1.8  2002/05/30 16:14:30  sheik
; changed 24 to 30 for %LINES%
;
; Revision 1.7  2002/05/15 13:51:47  sheik
; added %DESCRIPTION%, %LINES% etc
;
; Revision 1.6  2001/11/27 18:18:55  sheik
; added tim_param_11
;
; Revision 1.1.4.5  2001/10/29 21:04:26  sheik
; added parameter TIM_param_10
;
; Revision 1.1.4.4  2001/07/27 15:55:58  sheik
; modified P6 to be auto connect time
;
; Revision 1.1.4.3  2001/07/12 16:42:21  sheik
; changed .cdf file to be e1_mf_cas.cdf
;
; Revision 1.1.4.2  2001/06/06 20:31:29  sheik
; fix typo
;
; Revision 1.1.4.1  2001/06/06 20:04:30  sheik
; original
;
; Revision 1.1.2.2  2001/06/06 20:02:07  sheik
; added comments
;
; Revision 1.2.4.1  2001/06/06 19:47:01  sheik
; original
;; Revision 1.1  2001/01/12 15:20:49  sheik
; original
;;==================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;; =====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=Line Side E1
; %LINES%=30
; %TYPE%=E1
;; =====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
```

```
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
[SPAN_CLASS]
CLASS_NAME = linesideE1
CDF = e1_mf_cas.cdf  ; what .cdf to load
STATE_TBL= linesideE1.bin
;
; Site-Specific Params
;
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
PARAM TIM_CPD_name= "CPD"
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
PARAM TIM_DTMF_name= "DTMF"
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
PARAM TIM_TGEN_name= "TGEN"
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
; If activated, allows the call to be disconnected after a specified number of rings
; Default MAXRINGOFF
;
;PARAM TIM_max_rings =
; Allows for the call to be disconnected upon detect of specific CPD events
; Default - Busy, Reorder and SIT
```

```
;
;PARAM TIM_CallCancel_evt_mask =
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Lineside E1 Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Outdial Complete Guard timer (10 msec res. Default 30 secs)
;
;PARAM TIM_param_0 = 3000
;
;  Ring Stop Time (10 msec res. Default 6 secs). Maximum interval between rings.
After
;  this interval expires protocol interprets this as an abandoned call (ie
;  the caller hung up).
;
;PARAM TIM_param_1 = 600
;
; Dialtone Guard Time (10 msec res. Default 4 secs). Maximum amount of time protocol
; will wait for dialtone before outdialing. Call attempt will fail if dialtone is
not received
; within this interval. This parameter is only used when a CPD resource is available.
;
;
;PARAM TIM_param_2 = 400
;
; Blind Dialtone Time (10 msec res. Default 2 secs). When no CPD is available or CPD
is disabled
; (see P9 below), then this parameter specifies the amount of time to wait after
seizing the line before
; outpulsing the digits.
;
;PARAM TIM_param_3 = 200
;
; Hook Flash Timer (10 msec res. Default 0.5 secs)
;
;PARAM TIM_param_4 = 50
; Ringback Stop Time (10 msec res. Default 6 secs). Specifies the maximum amount of
time in
; between ringbacks. After this interval expires the protocol will act as though
answer supervision
; has been received and connect the call.
;
;PARAM TIM_param_5 = 600
;
; Auto Connect Time (10 msec res. Default 0 secs). Specifies the maximum amount of
time
; the protocol will wait before auto connecting. After this time expires the
protocol will act as though answer supervision
; has been received and connect the call. A setting of "0" disables this feature.
;
;PARAM TIM_param_6 = 0
;
;  Wait Hang Time timer (10 msec res. Default 1.5 secs)
;
;PARAM TIM_param_7 = 150
;
; Hit Threshold (10 msec res. Default 0.07 secs)
;
;PARAM TIM_param_8 = 7
;
; Use CPD flag Flag specifying whether or not to monitor Call Progress (default 1)
;
```

```
;PARAM TIM_param_9 = 1
; Mode of Operation (GroundStart = 1; Loopstart = 0; Default 0)
;
;PARAM TIM_param_10 = 0
;; Voice detection flag (in connected state). Specifies whether the DSP should
announce
; voice detects in the connected state.
;   (0==>Voice detect off; 1==> voice detect on; default 0)
;;PARAM TIM_param_11 = 0
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
; R E S O U R C E   C L A S S   D E F I N I T I O N
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
[CLASS]
COUNT = 0          ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF = tgen_us.cdf;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0          ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_us.cdf;
;
; Site-specific params
;
; Uncomment following line to enable CPD tones
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

E1 melCAS Protocol Configuration File

Table 101: The melcas_proto.cfg File

```
;=================================================================
; $Id: melcas_proto.cfg,v 1.5.2.4 2004/11/04 16:22:40 sheik Exp $
;
; $Log: melcas_proto.cfg,v $
; Revision 1.5.2.4  2004/11/04 16:22:40  sheik
; added param13
```

```
;
; Revision 1.5.2.3  2004/07/27 16:00:00  sheik
; Parameters modified - supporting both Earth Calling and Loop Calling Disconnect
Modes
;
; Revision 1.5.2.2  2004/04/30 19:30:15  sheik
; added param13
;
; Revision 1.5.2.1  2004/04/06 18:24:08  sheik
; modify to relect new defaults for P10
;
; Revision 1.5  2002/05/30 16:14:30  sheik
; changed 24 to 30 for %LINES%
;
; Revision 1.4  2002/05/15 13:51:48  sheik
; added %DESCRIPTION%, %LINES% etc
;
; Revision 1.3  2002/03/05 21:35:56  sheik
; added parameters
;
; Revision 1.2  2001/09/25 20:26:14  sheik
; original
;
; Revision 1.1.2.1  2001/09/25 20:25:22  sheik
; original
;
;================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=MelCas
; %LINES%=30
; %TYPE%=E1
;
; ====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span.  If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
[SPAN_CLASS]
CLASS_NAME = melcas
CDF = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= melcas.bin
;
; Site-Specific Params
;
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
```

```
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
PARAM TIM_CPD_name= "CPD"
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
PARAM TIM_DTMF_name= "DTMF"
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
PARAM TIM_TGEN_name= "TGEN"
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
; If activated, allows the call to be dicconnected after a specified number of rings
; Default MAXRINGOFF
;
;PARAM TIM_max_rings =
; Allows for the call to be disconnected upon detect of specific CPD events
; Default - Busy, Reorder and SIT
;
;PARAM TIM_CallCancel_evt_mask =
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; MelCAS Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Outdial Complete Guard timer (10 msec res. Default 30 secs)
;PARAM TIM_param_0 = 3000
;
;  Ring Interval Guard Timer (10 msec res. Defualt 6 secs). Maximum interval between
rings. After
;  this interval expires protocol interprets this as an abandoned call (ie
;  the caller hung up).
;PARAM TIM_param_1 = 600
;
; Dialtone Guard Time (10 msec res. Default 4 secs). Maximum amount of time protocol
; will wait for dialtone before outdialing. Call attempt will fail if dialtone is
```

```
not received
; within this interval. This parameter is only used when a CPD resource is available.
;PARAM TIM_param_2 = 400
;
; Blind Dialtone Time (10 msec res. Default 2 secs). When no CPD is available or CPD
is disabled
; (see P9 below), then this parameter specifies the amount of time to wait after
seizing the line before
; outpulsing the digits.
;PARAM TIM_param_3 = 200
;
; Hook Flash Timer (10 msec res. Default 0.5 secs)
;PARAM TIM_param_4 = 50
;
; Ringback Stop Time (10 msec res. Default 4 secs). Specifies the maximum amount of
time in
; between ringbacks. After this interval expires the protocol will act as though
answer supervision
; has been received and connect the call.
;PARAM TIM_param_5 = 400
;
; HookFlash Blind Pickup Timer (10msec res. Default 1 sec). Specifies the time that
the MPS will
; wait (after outdialing) before connecting the call. This parameter will be used
only if there
; are no CPD resources available.
;PARAM TIM_param_6 = 100
;
;   Wait Hang Time timer (10 msec res. Default 1.5 secs)
;PARAM TIM_param_7 = 150
;
; Hit Threshold (10 msec res. Default 0.02 secs)
;PARAM TIM_param_8 = 2
;
; Use CPD flag Flag specifying whether or not to monitor Call Progress (default 0)
;PARAM TIM_param_9 = 0
;
; Call Progress Disconnect Flag. Specifies whether or not do Disconnect on CPS
events DialTone,
; Busy and Reorder (0==> Do Not Disconnect; 1==> Disconnect; Default 0)
;PARAM TIM_param_10 = 0
;
; Voice detection flag (in connected state). Specifies whether the DSP should
announce
; voice detects in the connected state.
;   (0==>Voice detect off; 1==> voice detect on; default 0)
;PARAM TIM_param_11 = 0
;
; Blind Timer. In Earth Call Mode, the MPS will wait this long after receiving a
seizeack before outdialing.
; (10 msec res. Default 0.1s)
;PARAM TIM_param_12 = 10
;
; Connect Ack Guard Timer: Timer specifying how long to wait for a ConnectAck bit
change from the
; network before tearing the call down (10 msec res. Default 0.5s)
;PARAM TIM_param_13 = 50
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S  D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
```

```
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional)  to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the paramters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
;
[CLASS]
COUNT = 0          ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF = tgen_uk.cdf;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0          ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_uk.cdf;
;
; Site-specific params
;
; Uncomment following line to enable CPD tones
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

Analog Loop Start Protocol Configuration File

Table 102: The anlg_lpstart_proto.cfg File

```
;================================================================
; $Id: anlg_lpstart_proto.cfg,v 1.6 2002/03/18 19:02:34 sheik Exp $
;
; $Log: anlg_lpstart_proto.cfg,v $
; Revision 1.6  2002/03/18 19:02:34  sheik
; added parameter 10 and 11
;
; Revision 1.3.2.2  2001/11/29 14:38:49  sheik
; added parameter 9
;
; Revision 1.3.2.1  2001/07/20 18:33:50  sheik
; added comments and parameters
;
; Revision 1.4  2001/07/20 18:32:33  sheik
; added comments and parameters
;
; Revision 1.3  2001/04/12 13:40:58  jlevine
; Added keywords for config tool into comments
;
; Revision 1.2  2001/04/10 17:02:03  sheik
; update timer comments
```

```
;
; Revision 1.1  2001/03/28 21:52:02  sheik
; original
;
;
;================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; =======================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=Analog - Loop Start
; %LINES%=24
; %TYPE%=Analog
;
; =================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
[SPAN_CLASS]
CLASS_NAME = anlg_lpstart
CDF = anlg_lpstart.cdf ; what .cdf to load
STATE_TBL= anlg_lpstart.bin
;
; Site-Specific Params

;
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
PARAM TIM_CPD_name= "CPD"
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
PARAM TIM_DTMF_name= "DTMF"
;
```

```
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
PARAM TIM_TGEN_name= "TGEN"
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
; If activated, allows the call to be disconnected after a specified number of rings
; Default MAXRINGOFF
;
;PARAM TIM_max_rings =
; Allows for the call to be disconnected upon detect of specific CPD events
; Default - Busy, Reorder and SIT
;
;PARAM TIM_CallCancel_evt_mask =
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Analog Loopstart Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; On Hook Time (10 msec res.) default 2s
; Specifies the duration that the MPS will stay On Hook after a disconnect
; and before attempting a new call setup.
;
;PARAM TIM_param_0 =
;
;; Ring Stop Time (10 msec res. Default 12 secs). Maximum interval between rings.
After
;  this interval expires protocol interprets this as an abandoned call (ie
;  the caller hung up).
;
;PARAM TIM_param_1 =
;
; Dial Tone Guard Time (10 msec res.) Default 4s
; Duration the MPS will wait for Dial Tone detection after issuing an Off Hook.
;
;PARAM TIM_param_2 =
;
;
; Blind Dial Tone Time (10 msec res.) Default 2s
; The MPS can be configured to OutDial directly without waiting for dial tone
detection.
; This paramter specifies the diration that the MPS will wait before issuing the
OutDial
; Command.
;
;PARAM TIM_param_3 =
;
; Hook Flash Timer (10 msec res. Default 0.5 secs)
;
;PARAM TIM_param_4 =
; Ringback Stop Time (10 msec res. Default 9 secs). Specifies the maximum amount of
```

```
time in
; between ringbacks. After this interval expires the protocol will act as though
answer supervision
; has been received and connect the call.
;
;PARAM TIM_param_5 =
;
; Release Guard Interval (10 msec res.) Default 20s
; Specifies the duration that the MPS will wait for LCSI acknowledgement after
; issuing On Hook.
;
;PARAM TIM_param_6 =
;
;
; Blind Off-Hook Timer (10 msec res.) Default 4s
; Specifies the duration that the MPS will wait after outdialling before auto-
connecting the call.
; This will be used in situations where the switch is incapable of sending RLoop
signals.
;
;PARAM TIM_param_7 =
;
; LCSI Flag
; There maybe situations where a particular switch is incapable of sending LCSI
signals. This
; parameter specifies whether the MPS should wait for LCSI indications from the
switch or go directly
; to standby/idle state after issuing an Off Hook (0 ==> do not wait for LCSI
indication; 1==> wait for LSI indication)
;
;PARAM TIM_param_8 =
;
;; Voice detection flag (in connected state). Specifies whether the DSP should
announce
; voice detects in the connected state.
;   (0==>Voice detect off; 1==> voice detect on; default 0)
;;PARAM TIM_param_9 = 0
;; Use CPD flag Flag specifying whether or not to monitor Call Progress (0==>Do not
use CPD ; 1==>Use CPD: default 1)
;;PARAM TIM_param_10 = 1
;
; Outdial Complete Guard timer (10 msec res. Default 30 secs)
;
;PARAM TIM_param_11 = 3000
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;; R E S O U R C E   C L A S S   D E F I N I T I O N
;; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; .
; .
;
Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created. There will be one of these sections
for each required resource
;;[CLASS]
```

```
;COUNT = 0           ; number of resources of this class to load
;CLASS_NAME = tgen; class name to use for this resource.
;CDF = tgen_us.cdf;
;
; Site-specific params
;
; <none>
;[CLASS]
;COUNT = 0           ; number of resources of this class to load
;CLASS_NAME = cpd; class name to use for this resource.
;CDF = cpd_us.cdf;
;
; Site-specific params
;
; Uncomment following line to enable CPD tones
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

ATT Definity Protocol Configuration File

Table 103: The att_definity_proto.cfg File

```
$Id: att_definity_proto.cfg,v 1.3.2.1 2003/09/12 19:28:35 sheik Exp $
;
; $Log: att_definity_proto.cfg,v $
; Revision 1.3.2.1  2003/09/12 19:28:35  sheik
; fixed LINES to be 30 and TYPE to be E1
;
; Revision 1.3  2002/05/15 13:51:47  sheik
; added %DESCRIPTION%, %LINES% etc
;
; Revision 1.2  2001/12/06 22:08:26  sheik
; original
;
; Revision 1.1.2.1  2001/12/06 21:52:26  sheik
; original
;
;;================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; =====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=ATT Definity
; %LINES%=30
; %TYPE%=E1
;
; =====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
```

```
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
[SPAN_CLASS]
CLASS_NAME = att_definity
CDF = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= att_definity.bin
;
; Site-Specific Params
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
PARAM TIM_CPD_name= "CPD"
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
PARAM TIM_DTMF_name= "DTMF"
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
PARAM TIM_TGEN_name= "TGEN"
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
; If activated, allows the call to be disconnected after a specified number of rings
; Default MAXRINGOFF
;
;PARAM TIM_max_rings =
; Allows for the call to be disconnected upon detect of specific CPD events
; Default - Busy, Reorder and SIT
; ;PARAM TIM_CallCancel_evt_mask =
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

```
;
; Lineside E1 Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Outdial Complete Guard timer (10 msec res. Default 30 secs)
;
;PARAM TIM_param_0 = 3000
;
;  Ring Stop Time (10 msec res. Default 6 secs). Maximum interval between rings.
After
;  this interval expires protocol interprets this as an abandoned call (ie
;  the caller hung up).
;
;PARAM TIM_param_1 = 600
;
; Dialtone Guard Time (10 msec res. Default 4 secs). Maximum amount of time protocol
; will wait for dialtone before outdialing. Call attempt will fail if dialtone is
not received
; within this interval. This parameter is only used when a CPD resource is available.
;
;
;PARAM TIM_param_2 = 400
;
; Blind Dialtone Time (10 msec res. Default 2 secs). When no CPD is available or CPD
is disabled
; (see P9 below), then this parameter specifies the amount of time to wait after
seizing the line before
; outpulsing the digits.
;
;PARAM TIM_param_3 = 200
;
; Hook Flash Timer (10 msec res. Default 0.5 secs)
;
;PARAM TIM_param_4 = 50
;
; Ringback Stop Time (10 msec res. Default 6 secs). Specifies the maximum amount of
time in
; between ringbacks. After this interval expires the protocol will act as though
answer supervision
; has been received and connect the call.
;
;PARAM TIM_param_5 = 600
; Auto Connect Time (10 msec res. Default 0 secs). Specifies the maximum amount of
time
; the protocol will wait before auto connecting. After this time expires the
protocol will act as though answer supervision
; has been received and connect the call. A setting of "0" disables this feature.
;PARAM TIM_param_6 = 0
;
;  Wait Hang Time timer (10 msec res. Default 1.5 secs)
;
;PARAM TIM_param_7 = 150
;
; Hit Threshold (10 msec res. Default 0.07 secs)
;PARAM TIM_param_8 = 7
;
; Use CPD flag Flag specifying whether or not to monitor Call Progress (default 1)
;
;PARAM TIM_param_9 = 1
;
; Mode of Operation (GroundStart = 1; Loopstart = 0; Default 0)
;
;PARAM TIM_param_10 = 0
;
```

```
; Voice detection flag (in connected state). Specifies whether the DSP should
announce
; voice detects in the connected state.
;   (0==>Voice detect off; 1==> voice detect on; default 0)
;
;PARAM TIM_param_11 = 0
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E    C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
[CLASS]
COUNT = 0              ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF = tgen_us.cdf;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0              ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_us.cdf;
;
; Site-specific params
;
; Uncomment following line to enable CPD tones
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

el7Cas Protocol Configuration File

Table 104: The el7Cas_proto.cfg File

```
;$Id: el7Cas_proto.cfg,v 1.1.2.1 2003/09/11 16:24:14 sheik Exp $
;
; $Log: el7Cas_proto.cfg,v $
; Revision 1.1.2.1  2003/09/11 16:24:14  sheik
; orig
;
;
```

```
;==================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; =====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=Ericsson CAS Extension - EL7
; %LINES%=30
; %TYPE%=E1
;
; =====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
[SPAN_CLASS]
CLASS_NAME = el7cas
CDF   = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= el7cas.bin
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
PARAM TIM_CPD_name= "CPD"
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
PARAM TIM_DTMF_name= "DTMF"
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
```

```
PARAM TIM_TGEN_name= "TGEN"
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
; If activated, allows the call to be disconnected after a specified number of rings
; Default MAXRINGOFF
;
;PARAM TIM_max_rings =
; Allows for the call to be disconnected upon detect of specific CPD events
; Default - Busy, Reorder and SIT
;
;PARAM TIM_CallCancel_evt_mask =
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Lineside E1 Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Outdial Complete Guard timer (10 msec res. Default 30 secs)
;
;PARAM TIM_param_0 = 3000
;
; Seize Ack Guard Timer (10 msec res. Default 6s)
;
;PARAM TIM_param_1 = 600
;
; Dialtone Guard Time (10 msec res. Default 4 secs). Maximum amount of time protocol
; will wait for dialtone before outdialing. Call attempt will fail if dialtone is
not received
; within this interval. This parameter is only used when a CPD resource is available.
;
;PARAM TIM_param_2 = 400
;
; Blind Dialtone Time (10 msec res. Default 2 secs). When no CPD is available or CPD
is disabled
; (see P9 below), then this parameter specifies the amount of time to wait after
seizing the line before
; outpulsing the digits.
;
;PARAM TIM_param_3 = 200
;
; Hook Flash Timer (10 msec res. Default 130 msecs)
;
;PARAM TIM_param_4 = 13
;
; Ringback Stop Time (10 msec res. Default 6 secs). Specifies the maximum amount of
time in
; between ringbacks. After this interval expires the protocol will act as though
answer supervision
; has been received and connect the call.
;
;PARAM TIM_param_5 = 600
;
; Auto Connect Time (10 msec res. Default 0 secs). Specifies the maximum amount of
time
; the protocol will wait before auto connecting. After this time expires the protocol
will act as though answer supervision
```

```
; has been received and connect the call. A setting of "0" disables this feature.
;
;PARAM TIM_param_6 = 0
;
;  Wait Hang Time timer (10 msec res. Default 1.5 secs)
;
;PARAM TIM_param_7 = 150
;
; Hit Threshold (10 msec res. Default 0.07 secs)
;PARAM TIM_param_8 = 7
;
; Use CPD flag Flag specifying whether or not to monitor Call Progress (default 1)
;
;PARAM TIM_param_9 = 1
;
; (NOT USED)
;
;PARAM TIM_param_10 = 0
;
; Voice detection flag (in connected state). Specifies whether the DSP should
announce
; voice detects in the connected state.
;   (0==>Voice detect off; 1==> voice detect on; default 0)
;
;PARAM TIM_param_11 = 0
;
;
; Number of indial digits to collect (0 - 36) default = 0
;
;PARAM TIM_param_12 = 25
;
; First Character timeout. Number of seconds to wait for first indial digit.
; (1 sec res.) Default 5 sec.
;
;PARAM TIM_param_13 = 5
;
; Inter Character timeout. Number of seconds to wait for next indial digit.
; (1 sec res.) Default 1 sec.
;
;PARAM TIM_param_14 = 1
;
; Alerting Interval  (10msec res. Default 3 sec)
;
;PARAM TIM_param_15 = 300
;
; Ring On Time (10msec res. Default 1.5 sec)
;
;PARAM TIM_param_16 = 150
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S  D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
```

```
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
;
;[CLASS]
;COUNT = 0              ; number of resources of this class to load
;CLASS_NAME = tgen; class name to use for this resource.
;CDF = tgen_us.cdf;
;
; Site-specific params
;
; <none>
;[CLASS]
;COUNT = 0              ; number of resources of this class to load
;CLASS_NAME = cpd; class name to use for this resource.
;CDF = cpd_us.cdf;
;
; Site-specific params
;
; Uncomment following line to enable CPD tones
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

Ascom LE1 CAS Plus Protocol Configuration File

Table 105: The le1_cas_plus.cfg File

```
;===================================================================
; $Id:  $
;
; $Log:  $
;
;
;===================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; =====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=Ascom LineSide CAS Plus
; %LINES%=30
; %TYPE%=E1
;
; =====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span.  If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
[SPAN_CLASS]
CLASS_NAME     = LE1_CAS_PLUS
CDF           = e1_mf_cas.cdf            ; what .cdf to load
```

```
STATE_TBL = lE1CasPlus.bin
;
; Site-Specific Params
;
;
; Defines how a line should behave when in standby state.
;
; (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode    = lineNOANSWER

;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer          = 1

;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call      = 0

;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF    = TRUE

;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
PARAM TIM_CPD_name       = "CPD"

;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
PARAM TIM_DTMF_name         = "DTMF"

;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name         =

;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;PARAM TIM_TGEN_name         = "TGEN"

;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name       =

;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time     = 32

; If activated, allows the call to be dicconnected after a specified number of
rings
```

```
; Default MAXRINGOFF
;
;PARAM TIM_max_rings =

; Allows for the call to be disconnected upon detect of specific CPD events
; Default - Busy, Reorder and SIT
;
;PARAM TIM_CallCancel_evt_mask =
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; EL7CAS Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Outdial Complete Guard timer (10 msec res. Default 30 secs)
;PARAM TIM_param_0 = 3000
;
; Receive Digit Guard timer (10 msec res. Default 250ms)
;PARAM TIM_param_1 = 25
;
; Nominal Wink Duration (10msec res. Default 120ms)
;PARAM TIM_param_2 = 12
;
; Ring Back Gone timer (10 msec res. Default 6s)
;PARAM TIM_param_3 = 600
;
; Hook Flash Timer (10 msec res. Default 0.5
;PARAM TIM_param_4 = 50
;
; Dial Tone Guard Timer (10msec res. Default 4s)
;PARAM TIM_param_5 = 400
;
; Blind Dial tone timer (10msec res. Default 2s)
;PARAM TIM_param_6 = 200
;
;  Wait Hang Time timer (10 msec res. Default 1.5 secs)
;PARAM TIM_param_7 = 150
;
; Hit Threshold (10 msec res. Default 0.02 secs)
;PARAM TIM_param_8 = 2
;
; Use CPD flag Flag specifying whether or not to monitor Call Progress (default
0)
;PARAM TIM_param_9 = 0
;
; Auto Connect timer (10msec res. Defaupd 1.5s)
;PARAM TIM_param_10 = 150
;
; Voice detection flag (in connected state). Specifies whether the DSP should
announce
; voice detects in the connected state.
;  (0==>Voice detect off; 1==> voice detect on; default 0)
;PARAM TIM_param_11 = 0
;
; NOT USED
;PARAM TIM_param_12 =
;
; NOT USED
;PARAM TIM_param_13 =
;
; NOT USED
;PARAM TIM_param_14 =
;
; Alerting Interval  (10msec res. Default 3 sec)
```

```
;PARAM TIM_param_15 = 300
;
; Ring On Time (10msec res. Default 1.5 sec)
;PARAM TIM_param_16 = 150
;
; Call Progress Disconnect Flag. Specifies whether or not do Disconnect on CPS
events DialTone,
; Busy and Reorder (0==> Do Not Disconnect; 1==> Disconnect; Default 0)
;PARAM TIM_param_17 = 1
;
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional)  to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the paramters to for mode 0. This mode is used as
the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
;

;[CLASS]
;COUNT = 0                     ; number of resources of this class to load
;CLASS_NAME = tgen             ; class name to use for this resource.
;CDF = tgen_us.cdf         ;
;
; Site-specific params
;
; <none>

;[CLASS]
;COUNT = 0                      ; number of resources of this class to load
;CLASS_NAME = cpd          ; class name to use for this resource.
;CDF = cpd_us.cdf          ;
;
; Site-specific params
;
; Uncomment following line to enable CPD tones
;PARAM EvtMaskParam = -
ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD_DIALTONE
```

R2 Australia Protocol Configuration File

Table 106: The r2_australia_proto.cfg File

```
;=============================================================
```

```
; $Id: r2_australia_proto.cfg,v 1.1 2002/08/01 11:17:04 shenoy Exp $
; $Log: r2_australia_proto.cfg,v $
; Revision 1.1  2002/08/01 11:17:04  shenoy
; added cfg file for Australia R2 by vsinghal
;
;
;==================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; =====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=R2 Australia
; %LINES%=30
; %TYPE%=E1
;
; =====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = r2_australia_tim; class name to use for this span
CDF   = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= R2_Australia_Tim.bin; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
```

```
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R2 Australia Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; <not used>
;
;PARAM TIM_param_0 =
;
; R2 Signals Timer (10msec res. Default 30s)
; Internal Timer specifying the time to wait for inter signaling
; between the R2 Mgr and the TIM Mgr
;PARAM TIM_param_1 = 3000
;
; Alerting Interval (10msec res. Default 4s)
;
;PARAM TIM_param_2 = 400
;
; Ring On Time (10msec res. Default 2s)
;
;PARAM TIM_param_3 = 200
;
; Seizeack Timer (10msec res. Default 6s)
;
;PARAM TIM_param_4 = 600
;
; Hit Threshold  (10msec res. Default 20 msec)
;
;PARAM TIM_param_5 = 2
;
; Flag used to check whether app should play busy
; (1=App plays busy; 0=Far side plays busy. Default 1)
;
;PARAM TIM_param_6 = 1
;
; Hang Timer   (10msec res. Default 1.5s)
;
;PARAM TIM_param_7 = 150
;
; Resource Retry Timer  (10msec res. Default 1s)
;
;PARAM TIM_param_8 = 100
;
; Number of Called Party digits (DNIS) to collect (default = 7)
; (range 0 -36)
```

```
;
;PARAM TIM_param_9 = 7
;
; Number of Calling Party digits to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_10 = 7
;
; Specifies Line State (default = LF_CHARGE)
;
;PARAM TIM_param_11 = LF_CHARGE
; Duration of SeizeAck Pulse  (10msec res. Default 100 msecs)
;
;PARAM TIM_param_12 = 10
;
; Duration to wait before sending SeizeAck Pulse  (10msec res. Default 30 msecs)
;
;PARAM TIM_param_13 = 3
;
; Clear Forward Timer (10msec res. Default 10s)
;
;PARAM TIM_param_14 = 1000
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
[CLASS]
COUNT = 12              ; number of resources of this class to load
CLASS_NAME = r2; class name to use for this resource.
CDF = r2.cdf
STATE_TBL= R2_Australia_R2.bin;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0               ; number of resources of this class to load
CLASS_NAME = tgen ; class name to use for this resource.
CDF = tgen_uk.cdf ; which cdf to use
;
; Site-specific params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
; <none>
[CLASS]
COUNT = 0               ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
```

```
CDF = cpd_uk.cdf; which cdf to use
;
; Site-specific params
;
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

R2 Denmark Protocol Configuration File

Table 107: The r2_denmark_proto.cfg File

```
$Id: r2_denmark_proto.cfg,v 1.2 2002/08/01 11:57:25 shenoy Exp $
; $Log: r2_denmark_proto.cfg,v $
; Revision 1.2  2002/08/01 11:57:25  shenoy
; added the header for the file by vsinghal
;
;
;===================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ===================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=R2 Denmark
; %LINES%=30
; %TYPE%=E1
;
; ===================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = r2_denmark_tim; class name to use for this span
CDF = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= R2_Denmark_Tim.bin; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
```

```
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R2 Denmark Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; <not used>
;
;PARAM TIM_param_0 =
;
; R2 Signals Timer (10msec res. Default 30s)
; Internal Timer specifying the time to wait for inter signaling
; between the R2 Mgr and the TIM Mgr
;
;PARAM TIM_param_1 = 3000
;
; Alerting Interval (10msec res. Default 4s)
;
;PARAM TIM_param_2 = 400
;
; Ring On Time (10msec res. Default 2s)
;PARAM TIM_param_3 = 200
;
; Seizeack Timer (10msec res. Default 6s)
;
;PARAM TIM_param_4 = 600
;
; Hit Threshold  (10msec res. Default 20 msec)
```

```
;
;PARAM TIM_param_5 = 2
;
; Flag used to check whether app should play busy
; (1=App plays busy; 0=Far side plays busy. Default 1)
;
;PARAM TIM_param_6 = 1
;
; Hang Timer   (10msec res. Default 1.5s)
;
;PARAM TIM_param_7 = 150
;
; Resource Retry Timer  (10msec res. Default 1s)
;
;PARAM TIM_param_8 = 100
;
; Number of Called Party digits (DNIS) to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_9 = 7
;
; Number of Calling Party digits to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_10 = 7
;
; Specifies Line State (default = LF_CHARGE)
;
;PARAM TIM_param_11 = LF_CHARGE
;
; Duration of SeizeAck Pulse  (10msec res. Default 100 msecs)
;
;PARAM TIM_param_12 = 10
;
; Duration to wait before sending SeizeAck Pulse  (10msec res. Default 30 msecs)
;
;PARAM TIM_param_13 = 3
;
; Clear Forward Timer (10msec res. Default 10s)
;
;PARAM TIM_param_14 = 1000
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
;
;
```

```
[CLASS]
COUNT = 12              ; number of resources of this class to load
CLASS_NAME = r2; class name to use for this resource.
CDF = r2.cdf
STATE_TBL= R2_Denmark_R2.bin;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0               ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF = tgen_uk.cdf; which cdf to use
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0               ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_uk.cdf; which cdf to use
;
; Site-specific params
;
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

R2 Finland Protocol Configuration File

Table 108: The r2_finland_proto.cfg File

```
$Id: r2_finland_proto.cfg,v 1.1 2002/08/01 11:50:35 shenoy Exp $
; $Log: r2_finland_proto.cfg,v $
; Revision 1.1  2002/08/01 11:50:35  shenoy
; added cfg file for Finland R2 by vsinghal
;
;
;==================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; =====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=R2 Finland
; %LINES%=30
; %TYPE%=E1
;
; =====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
```

```
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = r2_finland_tim; class name to use for this span
CDF = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= R2_Finland_Tim.bin; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R2 Finland Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; <not used>
;
```

```
;PARAM TIM_param_0 =
;
; R2 Signals Timer (10msec res. Default 30s)
; Internal Timer specifying the time to wait for inter signaling
; between the R2 Mgr and the TIM Mgr
;
;PARAM TIM_param_1 = 3000
;
; Alerting Interval (10msec res. Default 4s)
;
;PARAM TIM_param_2 = 400
; Ring On Time (10msec res. Default 2s)
;
;PARAM TIM_param_3 = 200
;
; Seizeack Timer (10msec res. Default 6s)
;
;PARAM TIM_param_4 = 600
;
; Hit Threshold  (10msec res. Default 20 msec)
;
;PARAM TIM_param_5 = 2
;
; Flag used to check whether app should play busy
; (1=App plays busy; 0=Far side plays busy. Default 1)
;
;PARAM TIM_param_6 = 1
;
; Hang Timer   (10msec res. Default 1.5s)
;
;PARAM TIM_param_7 = 150
;
; Resource Retry Timer  (10msec res. Default 1s)
;
;PARAM TIM_param_8 = 100
;
; Number of Called Party digits (DNIS) to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_9 = 7
;
; Number of Calling Party digits to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_10 = 7
;
; Specifies Line State (default = LF_CHARGE)
;
;PARAM TIM_param_11 = LF_CHARGE
;
; Duration of SeizeAck Pulse  (10msec res. Default 100 msecs)
;
;PARAM TIM_param_12 = 10
;
; Duration to wait before sending SeizeAck Pulse  (10msec res. Default 30 msecs)
;
;PARAM TIM_param_13 = 3
;
; Clear Forward Timer (10msec res. Default 10s)
;
;PARAM TIM_param_14 = 1000
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
```

```
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
;
;
[CLASS]
COUNT = 12              ; number of resources of this class to load
CLASS_NAME = r2         ; class name to use for this resource.
CDF = r2.cdf
STATE_TBL= R2_Finland_R2.bin;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0               ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF = tgen_uk.cdf; which cdf to use
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0               ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_uk.cdf; which cdf to use
;
; Site-specific params
;
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

R2 Malaysia Protocol Configuration File

Table 109: The r2_malaysia_proto.cfg File

```
$Id: r2_malaysia_proto.cfg,v 1.1 2002/08/01 11:49:08 shenoy Exp $
; $Log: r2_malaysia_proto.cfg,v $
; Revision 1.1  2002/08/01 11:49:08  shenoy
; added cfg file for Malaysia R2 by vsinghal
;
```

```
;
;===================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=R2 Malaysia
; %LINES%=30
; %TYPE%=E1
;
; ====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = r2_malaysia_tim; class name to use for this span
CDF = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= R2_Malaysia_Tim.bin; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
```

```
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R2 Malaysia Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; <not used>
;
;PARAM TIM_param_0 =
;
; R2 Signals Timer (10msec res. Default 30s)
; Internal Timer specifying the time to wait for inter signaling
; between the R2 Mgr and the TIM Mgr
;
;PARAM TIM_param_1 = 3000
;
; Alerting Interval (10msec res. Default 4s)
;
;PARAM TIM_param_2 = 400
;
; Ring On Time (10msec res. Default 2s)
;
;PARAM TIM_param_3 = 200
;
; Seizeack Timer (10msec res. Default 6s)
;
;PARAM TIM_param_4 = 600
;
; Hit Threshold  (10msec res. Default 20 msec)
;
;PARAM TIM_param_5 = 2
;
; Flag used to check whether app should play busy
; (1=App plays busy; 0=Far side plays busy. Default 1)
;
;PARAM TIM_param_6 = 1
;
; Hang Timer    (10msec res. Default 1.5s)
;
;PARAM TIM_param_7 = 150
;
; Resource Retry Timer  (10msec res. Default 1s)
;
;PARAM TIM_param_8 = 100
;
; Number of Called Party digits (DNIS) to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_9 = 7
;
; Number of Calling Party digits to collect (default = 7)
; (range 0 -36)
```

```
;
;PARAM TIM_param_10 = 7
;
; Specifies Line State (default = LF_CHARGE)
;
;PARAM TIM_param_11 = LF_CHARGE
;
; Duration of SeizeAck Pulse  (10msec res. Default 100 msecs)
;
;PARAM TIM_param_12 = 10
;
; Duration to wait before sending SeizeAck Pulse  (10msec res. Default 30 msecs)
;PARAM TIM_param_13 = 3
; ; Clear Forward Timer (10msec res. Default 10s)
;
;PARAM TIM_param_14 = 1000
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
;
;
[CLASS]
COUNT = 12            ; number of resources of this class to load
CLASS_NAME = r2; class name to use for this resource.
CDF = r2.cdf
STATE_TBL= R2_Malaysia_R2.bin;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT =  0            ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF    = tgen_uk.cdf; which cdf to use
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0            ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF    = cpd_uk.cdf; which cdf to use
;
; Site-specific params
;
;PARAM EvtMaskParam=
```

```
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

R2 Norway Protocol Configuration File

Table 110: The r2_norway_proto.cfg File

```
$Id: r2_norway_proto.cfg,v 1.1 2002/08/01 11:51:28 shenoy Exp $
; $Log: r2_norway_proto.cfg,v $
; Revision 1.1  2002/08/01 11:51:28  shenoy
; added cfg file for Norway R2 by vsinghal
;
;
;================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ======================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=R2 Norway
; %LINES%=30
; %TYPE%=E1
;
; ======================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = r2_norway_tim; class name to use for this span
CDF     = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= R2_Norway_Tim.bin; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
```

```
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R2 Norway Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; <not used>
;
;PARAM TIM_param_0 =
;
; R2 Signals Timer (10msec res. Default 30s)
; Internal Timer specifying the time to wait for inter signaling
; between the R2 Mgr and the TIM Mgr
;
;PARAM TIM_param_1 = 3000
;
; Alerting Interval (10msec res. Default 4s)
;
;PARAM TIM_param_2 = 400
; Ring On Time (10msec res. Default 2s)
;
;PARAM TIM_param_3 = 200
;
; Seizeack Timer (10msec res. Default 6s)
;
;PARAM TIM_param_4 = 600
;
; Hit Threshold  (10msec res. Default 20 msec)
;
;PARAM TIM_param_5 = 2
;
```

```
; Flag used to check whether app should play busy
; (1=App plays busy; 0=Far side plays busy. Default 1)
;
;PARAM TIM_param_6 = 1
;
; Hang Timer    (10msec res. Default 1.5s)
;
;PARAM TIM_param_7 = 150
;
; Resource Retry Timer  (10msec res. Default 1s)
;
;PARAM TIM_param_8 = 100
;
; Number of Called Party digits (DNIS) to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_9 = 7
;
; Number of Calling Party digits to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_10 = 7
;
; Specifies Line State (default = LF_CHARGE)
;
;PARAM TIM_param_11 = LF_CHARGE
;
; Duration of SeizeAck Pulse  (10msec res. Default 100 msecs)
;
;PARAM TIM_param_12 = 10
;
; Duration to wait before sending SeizeAck Pulse  (10msec res. Default 30 msecs)
;
;PARAM TIM_param_13 = 3
; Clear Forward Timer (10msec res. Default 10s)
;
;PARAM TIM_param_14 = 1000
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
;
;
[CLASS]
COUNT = 12            ; number of resources of this class to load
CLASS_NAME = r2; class name to use for this resource.
CDF    = r2.cdf
```

```
STATE_TBL= R2_Norway_R2.bin;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0             ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF    = tgen_uk.cdf; which cdf to use
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0             ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF    = cpd_uk.cdf; which cdf to use
;
; Site-specific params
;
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

R2 Philippines Protocol Configuration File

Table 111: The r2_philippines_proto.cfg File

```
$Id: r2_philippines_proto.cfg,v 1.1 2002/08/01 11:52:11 shenoy Exp $
; $Log: r2_philippines_proto.cfg,v $
; Revision 1.1  2002/08/01 11:52:11  shenoy
; added cfg file for Philippines R2 by vsinghal
;
;
;===================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; =====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=R2 Philippines
; %LINES%=30
; %TYPE%=E1
;
; =====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
```

```
CLASS_NAME = r2_philippines_tim; class name to use for this span
CDF     = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= R2_Philippines_Tim.bin; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R2 Philippines Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; <not used>
;
;PARAM TIM_param_0 =
;
; R2 Signals Timer (10msec res. Default 30s)
```

```
; Internal Timer specifying the time to wait for inter signaling
; between the R2 Mgr and the TIM Mgr
;
;PARAM TIM_param_1 = 3000
;
; Alerting Interval (10msec res. Default 4s)
;
;PARAM TIM_param_2 = 400
;
; Ring On Time (10msec res. Default 2s)
;
;PARAM TIM_param_3 = 200
;
; Seizeack Timer (10msec res. Default 6s)
;
;PARAM TIM_param_4 = 600
;
; Hit Threshold  (10msec res. Default 20 msec)
;
;PARAM TIM_param_5 = 2
;
; Flag used to check whether app should play busy
; (1=App plays busy; 0=Far side plays busy. Default 1)
;
;PARAM TIM_param_6 = 1
;
; Hang Timer   (10msec res. Default 1.5s)
;
;PARAM TIM_param_7 = 150
;
; Resource Retry Timer  (10msec res. Default 1s)
;
;PARAM TIM_param_8 = 100
;
; Number of Called Party digits (DNIS) to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_9 = 7
;
; Number of Calling Party digits to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_10 = 7
;
; Specifies Line State (default = LF_CHARGE)
;
;PARAM TIM_param_11 = LF_CHARGE
;
; Duration of SeizeAck Pulse  (10msec res. Default 100 msecs)
;
;PARAM TIM_param_12 = 10
;
; Duration to wait before sending SeizeAck Pulse  (10msec res. Default 30 msecs)
;
;PARAM TIM_param_13 = 3
;
; Clear Forward Timer (10msec res. Default 10s)
;
;PARAM TIM_param_14 = 1000
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
```

```
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
;
;
[CLASS]
COUNT = 12              ; number of resources of this class to load

CLASS_NAME = r2; class name to use for this resource.
CDF     = r2.cdf
STATE_TBL= R2_Philippines_R2.bin;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0               ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF     = tgen_uk.cdf; which cdf to use
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0               ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF     = cpd_uk.cdf; which cdf to use
;
; Site-specific params
;
;PARAM EvtMaskParam=
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

R2 Singapore Protocol Configuration File

Table 112: The r2_singapore_proto.cfg File

```
$Id: r2_singapore_proto.cfg,v 1.1 2002/08/01 11:53:15 shenoy Exp $
; $Log: r2_singapore_proto.cfg,v $
; Revision 1.1  2002/08/01 11:53:15  shenoy
; added cfg file for Singapore R2 by vsinghal
;
;
```

```
;=================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; =====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=R2 Singapore
; %LINES%=30
; %TYPE%=E1
;
; =====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = r2_singapore_tim; class name to use for this span
CDF    = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= R2_Singapore_Tim.bin; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;   (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
```

```
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R2 Singapore Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; <not used>
;
;PARAM TIM_param_0 =
;
; R2 Signals Timer (10msec res. Default 30s)
; Internal Timer specifying the time to wait for inter signaling
; between the R2 Mgr and the TIM Mgr
;
;PARAM TIM_param_1 = 3000
;
; Alerting Interval (10msec res. Default 4s)
;
;PARAM TIM_param_2 = 400
;
; Ring On Time (10msec res. Default 2s)
;PARAM TIM_param_3 = 200
;
; Seizeack Timer (10msec res. Default 6s)
;
;PARAM TIM_param_4 = 600
;
; Hit Threshold  (10msec res. Default 20 msec)
;
;PARAM TIM_param_5 = 2
;
; Flag used to check whether app should play busy
; (1=App plays busy; 0=Far side plays busy. Default 1)
;
;PARAM TIM_param_6 = 1
;
; Hang Timer   (10msec res. Default 1.5s)
;
;PARAM TIM_param_7 = 150
;
; Resource Retry Timer  (10msec res. Default 1s)
;
;PARAM TIM_param_8 = 100
;
; Number of Called Party digits (DNIS) to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_9 = 7
;
; Number of Calling Party digits to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_10 = 7
```

```
;
; Specifies Line State (default = LF_CHARGE)
;
;PARAM TIM_param_11 = LF_CHARGE
;
; Duration of SeizeAck Pulse  (10msec res. Default 100 msecs)
;
;PARAM TIM_param_12 = 10
;
; Duration to wait before sending SeizeAck Pulse  (10msec res. Default 30 msecs)
;
;PARAM TIM_param_13 = 3
;
; Clear Forward Timer (10msec res. Default 10s)
;
;PARAM TIM_param_14 = 1000
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
;
;
[CLASS]
COUNT = 12            ; number of resources of this class to load
CLASS_NAME = r2; class name to use for this resource.
CDF    = r2.cdf
STATE_TBL= R2_Singapore_R2.bin;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0            ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF    = tgen_uk.cdf; which cdf to use
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0            ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF    = cpd_uk.cdf; which cdf to use
;
; Site-specific params
;
;PARAM EvtMaskParam=
```

```
-ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE+evtCPD
_DIALTONE
```

R2 Thailand Protocol Configuration File

Table 113: The r2_thailand_proto.cfg File

```
; $Id: r2_thailand_proto.cfg,v 1.1 2002/08/01 11:53:46 shenoy Exp $
; $Log: r2_thailand_proto.cfg,v $
; Revision 1.1  2002/08/01 11:53:46  shenoy
; added cfg file for Thailand R2 by vsinghal
;
;
;================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; ======================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=R2 Thailand
; %LINES%=30
; %TYPE%=E1
;
; ======================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = r2_thailand_tim; class name to use for this span
CDF = e1_mf_cas.cdf ; what .cdf to load
STATE_TBL= R2_Thailand_Tim.bin; state table to load
;
; Site-Specific Params
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
PARAM TIM_standby_mode= lineNOANSWER
;
; What ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state. 0 = forever
;
PARAM TIM_total_call = 0
```

```
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R2 Thailand Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; <not used>
;
;PARAM TIM_param_0 =
;
; R2 Signals Timer (10msec res. Default 30s)
; Internal Timer specifying the time to wait for inter signaling
; between the R2 Mgr and the TIM Mgr
;
;PARAM TIM_param_1 = 3000
;
; Alerting Interval (10msec res. Default 4s)
;
;PARAM TIM_param_2 = 400
;
; Ring On Time (10msec res. Default 2s)
;PARAM TIM_param_3 = 200
;
; Seizeack Timer (10msec res. Default 6s)
;
;PARAM TIM_param_4 = 600
;
; Hit Threshold  (10msec res. Default 20 msec)
;
;PARAM TIM_param_5 = 2
;
; Flag used to check whether app should play busy
```

```
; (1=App plays busy; 0=Far side plays busy. Default 1)
;
;PARAM TIM_param_6 = 1
;
; Hang Timer    (10msec res. Default 1.5s)
;
;PARAM TIM_param_7 = 150
;
; Resource Retry Timer   (10msec res. Default 1s)
;
;PARAM TIM_param_8 = 100
;
; Number of Called Party digits (DNIS) to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_9 = 7
;
; Number of Calling Party digits to collect (default = 7)
; (range 0 -36)
;
;PARAM TIM_param_10 = 7
;
; Specifies Line State (default = LF_CHARGE)
;
;PARAM TIM_param_11 = LF_CHARGE
;
; Duration of SeizeAck Pulse  (10msec res. Default 100 msecs)
;
;PARAM TIM_param_12 = 10
;
; Duration to wait before sending SeizeAck Pulse  (10msec res. Default 30 msecs)
;
;PARAM TIM_param_13 = 3
;
; Clear Forward Timer (10msec res. Default 10s)
;
;PARAM TIM_param_14 = 1000
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the tms.cfg files.
;
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
;
; Parameters specified here will override any parameters specified
; in CDF file.
;
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
;
; There will be one of these sections for each required resource.
;
;
[CLASS]
COUNT = 12             ; number of resources of this class to load
CLASS_NAME = r2; class name to use for this resource.
CDF    = r2.cdf
```

```
STATE_TBL= R2_Thailand_R2.bin;
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0             ; number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF        = tgen_uk.cdf; which cdf to use
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0             ; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF   = cpd_uk.cdf; which cdf to use
;
; Site-specific params
;
;PARAM EvtMaskParam= -ALL+evtCPD_RINGBACK+evtCPD_REORDER+evtCPD_BUSY+evtCPD_VOICE
+evtCPD
_DIALTONE
```

T1 UISDN_24B Protocol Configuration File

Table 114: The uisdn_24B_user_proto.cfg File

```
$Id: uisdn_24B_user_proto.cfg,v 1.2.4.1 2003/01/21 20:21:57 sheik Exp $
; $Log: uisdn_24B_user_proto.cfg,v $
; Revision 1.2.4.1  2003/01/21 20:21:57  sheik
; added TIM_PARAM_4
;
; Revision 1.2  2001/07/10 17:06:40  jlevine
; RNDin77808 - Added config files to support Unified ISDN. Enable Unified ISDN
Feature
;
; Revision 1.4  2001/05/11 14:57:54  jlevine
; RNDin75698, RNDin75800, RNDin75747, RNDin75866
;
; Revision 1.3  2001/04/13 13:54:35  jlevine
; RNDin57858 - added isdn ESF config files
;
; Revision 1.2  2001/04/12 13:40:58  jlevine
; Added keywords for config tool into comments
;
; Revision 1.1  2001/03/29 16:05:32  jlevine
; RNDin74383 - Add NISDN to package
;
;===================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; =======================================================================
; The following definitions are used by the config tool (do not remove):
;
```

```
; %DESCRIPTION%=Unified ISDN (USER Side) - 24B
; %LINES%=24
; %TYPE%=T1
;
; ====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N   C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = unified_isdn; class name to use for this resource.
;CDF     = t1_sf_uisdn_24B_user.cdf; NOTE: must select either sf of esf
CDF      = t1_esf_uisdn_24B_user.cdf
; The following
; default Parameters for TIM can be overwritten
; by specifying the new parameters here.
;
; Defines how a line should behave when in standby state.
;
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
;PARAM TIM_standby_mode= lineNOANSWER
; Wait ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
;PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state.
;
PARAM TIM_total_call = 0
;
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
```

```
; presented state before being terminated by the TMS.
;
;PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; ISDN Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;; Alerting Interval (RingON + RingOFF) in seconds. Default 4.
;
PARAM TIM_param_0 =4
;
; Ring ON time in seconds. Default 2.
;
PARAM TIM_param_1 = 2
; Send Call Progress (Ringback) on inbound call TRUE = 1 FALSE = 0.
; Default = TRUE
;
PARAM TIM_param_2 = 1
;
; Number of failed call setups allowed before line is put out of service.
; Call setups will fail if no application is attached to the line.
; Default = 5. Range 0-256
;
PARAM TIM_param_3 = 5
; Auto-Proceed Flag. If this flag is set, Hostcomm(T1) will automatically send
; a PROCEEDING upon receiving a SETUP from the network.
; Default = 0 ==> OFF
;
;PARAM TIM_param_4 = 0
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
;********************************************************************
;[CLASS]
;COUNT = 24;        number of resources of this class to load
;CLASS_NAME = tgen; class name to use for this resource.
;CDF    = tgen_us.cdf; NOTE: select appropriate call progress set
;
; Site-specific params
;
; <none>
;[CLASS]
;COUNT = 24;        number of resources of this class to load
;CLASS_NAME = cpd; class name to use for this resource.
;CDF    = cpd_us.cdf; NOTE: select appropriate call progress set
;
; Site-specific params
```

```
;
; <none>
```

DPNSS protocol configuration File

Table 115: The isdn_dpnss_proto.cfg File

```
;=================================================================
; $Id: isdn_dpnss_proto.cfg,v 1.2 2002/07/31 15:35:20 asadiq Exp $
; $Log: isdn_dpnss_proto.cfg,v $
; Revision 1.2  2002/07/31 15:35:20  asadiq
; Added reserved parameters TIM_param_0-3, set resource counts to 0
;
; Revision 1.1  2002/07/31 14:07:06  asadiq
; Initial import
;
; Revision 1.3  2001/05/11 14:57:54  jlevine
; RNDin75698, RNDin75800, RNDin75747, RNDin75866
;
; Revision 1.2  2001/04/12 13:40:58  jlevine
; Added keywords for config tool into comments
;
;=================================================================
;
; This file is used to define the set of resources required to load
; in order to perform a particular protocol.
;
; =====================================================================
; The following definitions are used by the config tool (do not remove):
;
; %DESCRIPTION%=DPNSS ISDN (USER Side)
; %LINES%=30
; %TYPE%=E1
;
; =====================================================================
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N  C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
;
[SPAN_CLASS]
CLASS_NAME = isdn; class name to use for this resource.
CDF    = e1_crc4_dpnss.cdf; NOTE: must select either e1_mf or e1_crc4
;CDF    = e1_mf_dpnss.cdf; NOTE: must select either e1_mf or e1_crc4
; The following
; default Parameters for TIM can be overwritten
; by specifying the new parameters here.
;
; Defines how a line should behave when in standby state.
;    (lineBUSY, lineNOANSWER, lineINSERVICE, lineOUTOFSERV)
;
;;
PARAM TIM_standby_mode= lineNOANSWER
```

```
; Wait ring to answer an inbound call on. Values are 0-8. 0
; disables auto-answer.
;
;PARAM TIM_answer = 1
;
; Total call duration. Specifies the number of seconds a call can remain
; in the connected state.
;
PARAM TIM_total_call = 0
; Should line automatically go to its standby mode on disconnect?
;
PARAM TIM_sby_on_discF= TRUE
;
; Class name of the call progress detector to use. If not
; set TMS uses the default cpd.
;
;PARAM TIM_CPD_name=
;
; Class name of the dtmf receiver to use. If not
; set TMS uses the default dtmf.
;
;PARAM TIM_DTMF_name=
;
; Class name of the player to use. If not
; set TMS uses the default player.
;
;PARAM TIM_PLY_name=
;
; Class name of the tone generator to use. If not
; set TMS uses the default tgen.
;
;PARAM TIM_TGEN_name=
;
; Class name of the R2 engine to use. If not
; set TMS uses the default r2eng.
;
;PARAM TIM_R2ENG_name=
;
; Number of seconds that an outbound call can remain in the
; presented state before being terminated by the TMS.
;
;PARAM TIM_pickup_time= 32
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; ISDN Protocol Params
;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Alerting Interval (RingON + RingOFF) in seconds. Default 4.
;
PARAM TIM_param_0 =4
;
; Ring ON time in seconds. Default 2.
;
PARAM TIM_param_1 = 2
;
; Send Call Progress (Ringback) on inbound call TRUE = 1 FALSE = 0.
; Default = TRUE
;
PARAM TIM_param_2 = 1
;
; Number of failed call setups allowed before line is put out of service.
; Call setups will fail if no application is attached to the line.
; Default = 5. Range 0-256
;
```

```
PARAM TIM_param_3 = 5
;
; NOCLINAM - Setting this parameter to true will disable sending
; the CLI parameter in the default NAM message. The default NAM
; message is sent only if NAM is not provided by the application.
; TRUE = 1 FALSE = 0.
;
PARAM TIM_param_4 =0
;
; LMMY - Setting this parameter to false will disable sending
; link maintenance messages. TRUE = 1 FALSE = 0
;
PARAM TIM_param_5 = 0
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; R E S O U R C E   C L A S S   D E F I N I T I O N
;
; This section is used to define the protocol specific resources that
; should be loaded. This will allow additional dtmf,cpd,tgen,
; r2 resources to be loaded as well the ones specified in the proto.def
; files.
; This section specifies the configuration definition file (CDF) to use
; and the class name (optional) to assign to the created line resources.
; If the class name is specified here it will override any class name
; specified in the CDF file.
; Parameters specified here will override any parameters specified
; in CDF file.
; Mode definition is done at this level. Each set of configuration parameters
; specifies the values to set the parameters to for mode 0. This mode is used as the
; default mode for a resource. When specified here it will override
; the system defaults for the resources created.
; There will be one of these sections for each required resource.
;*******************************************************************
[CLASS]
COUNT = 0;             number of resources of this class to load
CLASS_NAME = tgen; class name to use for this resource.
CDF    = tgen_uk.cdf; NOTE: select appropriate call progress set
;
; Site-specific params
;
; <none>
[CLASS]
COUNT = 0; number of resources of this class to load
CLASS_NAME = cpd; class name to use for this resource.
CDF = cpd_uk.cdf; NOTE: select appropriate call progress set
;
; Site-specific params
;
; <none>
```

Chapter 9: M1-IVR Configuration

This chapter covers:

1. LineSide T1 Protocol

2. LineSide E1 Protocol

Lineside Protocols Supported on the MPS

Lineside T1 Protocol

A single TMS on the MPS can support up to 8 spans of 24 channels each using Robbed Bit (A/B) signaling. The MPS supports a Framing/Coding combination of either D4(SF)/AMI or ESF/B8ZS. Both LoopStart and GroundStart signaling are supported. The default Framing/ Coding configuration is D4(SF)/AMI and the default signaling is LoopStart. The distance to CPE is 0-133ft.

To ensure proper functionality, the LineSideT1 (switch) and the MPS should be configured as follows:

Super Frame Configuration in Loopstart Mode [D4(SF)/AMI/ Loopstart]

LinesideT1 Switch Configuration

The LineSideT1 switch should be configured for a Framing/Coding combination of D4(SF)/ AMI. The mode should be set to Loopstart. The above is achieved by setting the appropriate Dip Switches on the LineSideT1 Card.

MPS Configuration

The MPS should be configured as follows:

To configure the MPS with LineSideT1 protocol (for a single span), make the following entry in the tms.cfg file.

```
;-----------------------------------------------------------------------
------------

;TMS Num    PL   Span    svc-type        VpsNum  Outlin  Pool/   Protocol
           I    Num                              e       class   Pkg
           Sl
           ot


;-----------------------------------------------------------------------
------------

LOAD 1     4    1       -               -       -       -       linesideT1_pr
                                                                oto.cfg
```

Note:
No other configuration is necessary as the MPS defaults to a Framing/Coding combination of D4(SF)/AMI with the mode set to Loopstart.

Super Frame Configuration in Groundstart Mode [D4(SF)/AMI/Groundstart]

LinesideT1 Switch Configuration

The LineSideT1 switch should be configured for a Framing/Coding combination of D4(SF)/AMI. The mode should be set to Groundstart. The above is achieved by setting the appropriate Dip Switches on the LineSideT1 Card.

MPS Configuration

Follow the instructions in section 1.1.2. In addition, complete the following:

To configure the MPS for GroundStart signaling, make the following modification to the linesideT1_proto.cfg file:

```
Mode of Operation (GroundStart = 1; Loopstart = 0; Default 0)
;
;PARAM TIM_param_10 = 0
PARAM TIM_param_10 = 1
```

Extended Super Frame Configuration in Loopstart Mode [ESF/B8ZS/Loopstart]

LinesideT1 Switch Configuration

The LineSideT1 switch should be configured for a Framing/Coding combination of ESF/B8ZS. The mode should be set to Loopstart. The above is achieved by setting the appropriate Dip Switches on the LineSideT1 Card.

MPS Configuration

The MPS should be configured as follows:

To configure the MPS with LineSideT1 protocol (for a single span), make the following entry in the tms.cfg file. ;

```
;-----------------------------------------------------------------------
------------
```

;TMS Num	PL I Sl ot	Span Num	svc-type	VpsNum	Outlin e	Pool/ class	Protocol Pkg

M1-IVR Configuration

```
;------------------------------------------------------------------
-----------

LOAD 1      4   1      CAS          -      -      -      linesideT1_pr
                                                        oto.cfg
```

To configure the MPS for a Framing/Coding combination of ESF/B8ZS, make the following modification to the linesideT1_proto.cfg file.

```
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; S P A N  C L A S S
;
; the span class is a special class of resource for the proto.cfg file.
; it specifies the information used to load the span. If more than
; one span class section is specified the first one found will be used
; and subsequent specifications will be ignored
[SPAN_CLASS]
CLASS_NAME = linesideT1
;CDF = t1_sf_cas.cdf  ; what .cdf to load
CDF = t1_esf_cas.cdf  ; what .cdf to load   add this line
STATE_TBL= linesideT1.bin
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

> ✱ **Note:**
> No configuration is necessary on the MPS for Loopstart as this is the default mode of operation.

Super Frame Configuration in Groundstart Mode

LinesideT1 Switch Configuration

The LineSideT1 switch should be configured for a Framing/Coding combination of ESF/B8ZS. The mode should be set to Groundstart. The above is achieved by setting the appropriate Dip Switches on the LineSideT1 Card.

MPS Configuration

Follow the instructions in section 1.3.2. In addition, complete the following:

282 Avaya Media Processing Server Telephony Reference Manual   August 2010

To configure the MPS for GroundStart signaling, make the following modification to the linesideT1_proto.cfg file: ; ; Mode of Operation (GroundStart = 1; Loopstart = 0; Default 0) ; ;PARAM TIM_param_10 = 0 PARAM TIM_param_10 = 1 add this line

Lineside E1 Protocol

A single DTC on the MPS can support up to 8 spans of 30 channels each using Robbed Bit (A/B) signaling. The MPS supports a Framing/Coding combination of MF(FAS)/HDB3. The MPS does not support CRC-4 framing for LinesideE1. Both LoopStart and GroundStart signaling are supported. The default signaling is LoopStart. The distance to CPE is 0-133ft.

To ensure proper functionality, the LineSideE1 (switch) and the MPS should be configured as follows:

Non-CRC4(MF/FAS) Configuration in Loopstart Mode [MF(FAS)/HDB3/Loopstart]

LinesideE1 Switch Configuration

The LineSideE1 switch should be configured for a Framing/Coding combination of FAS/HDB3. The mode should be set to Loopstart. The above is achieved by setting the appropriate Dip Switches on the LineSideE1 Card.

MPS Configuration

The MPS should be configured as follows:

To configure the MPS with LineSideE1 protocol (for a single span), make the following entry in the tms.cfg file. ;

```
;------------------------------------------------------------------------
-----------
```

;TMS Num	PLI Slot	Span Num	svc-type	VpsNum	Outline	Pool/ class	Protocol Pkg
;--- ------------							
LOAD 1	4	1	CAS	-	-	-	linesideE1_proto.cfg

;

⊛ **Note:**

No other configuration is necessary as the MPS defaults to a Framing/Coding combination of MF/HDB3 with the mode set to Loopstart.

Non-CRC4(MF/FAS)Configuration in Groundstart Mode [MF(FAS)/HDB3/Groundstart]

LinesideE1 Switch Configuration

The LineSideE1 switch should be configured for a Framing/Coding combination of FAS/ HDB3. The mode should be set to Groundstart. The above is achieved by setting the appropriate Dip Switches on the LineSideE1 Card.

MPS Configuration

Follow the instructions as above. In addition, complete the following:

To configure the MPS for GroundStart signaling, make the following modification to the linesideE1_proto.cfg file:

```
;
; Mode of Operation (GroundStart = 1; Loopstart = 0; Default 0)
;
```

```
;PARAM TIM_param_10 = 0
PARAM TIM_param_10 = 1 add this line
```

Index