

Megaco/H.248 R2 Package

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1. Abstract

This document is work in progress and defines the R2 package for the Megaco/H.248 Protocol that can be used to exchange call setup supervisory and control information between a Media Gateway (MG) and a Media Gateway Controller (MGC) to realize Signaling System R2 at a VoIP Gateway. It is intended to satisfy the requirements in [section 12](#) of the Megaco/H.248 protocol [2].

2. Conventions used in this document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC-2119](#) [3].

3. Document Organization

The subsequent portion of this draft is organized into the following major sections:

- * Introduction
- * Assumptions

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- * R2 package
- * Procedures
- * References
- * Author's Address

4. Introduction

Signaling System R2 is used for international/national signaling for both automatic and semiautomatic working. It allows for rapid call set-up by providing sufficient signals in both directions to permit the transmission of numerical and other information relating to the called and calling subscriber lines and to increase routing facilities.

Terminations (signaling trunks) at the MG, implementing signaling system R2 SHOULD realize the R2 package.

The R2 package presented in this draft extends the basic CAS package (bcas) [4]. The bcas package defines the basic properties that need to be supported by a termination in MG to realize any CAS protocol. It also specifies events and signals required to be exchanged between the MGC and MG to execute basic line signaling procedures for any CAS protocol (R2 Signaling System inclusive). The R2 package adds the R2 address signaling parameters in the form of additional properties, events and signals to complete the realization of Signaling System R2 at a VoIP Gateway.

The forward and backward compelled register signaling sequence for exchanging

call setup control information SHALL be executed in the MG. Signaling System R2 defines several numbered (digit) and enumerated (non-digit) components of the call set-up control information. The numbered call setup-up control information components considered in the R2 package are the destination number, source number and country code. The enumerated call set-up control information components considered are echo suppression information, calling subscriber category, discriminating indicator, nature of circuit, subscriber line status and congestion information. Of these, the numbered components and

the following enumerated components - echo suppression information, calling subscriber category, discriminating indicator and nature of circuit, are collectively termed as address parameters as they collectively convey the complete address information required for call set-up in Signaling system

R2.

They are also the components required at the minimum by the outgoing MG in order to start the compelling action. The R2 package defines a "r2addr" signal and event used for exchanging address signaling parameters between MG and MGC.

To gracefully handle time sensitive issues governing the compelling sequence and to keep the MGC transparent of implementation specific compelling at MG, the following simple guidelines have been observed while defining the R2 package.

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- o All numbered address parameters are exchanged as complete digit strings between the MG and MGC containing all the digits. Digit by digit reporting or signaling of numbered address parameters are not allowed between the MG and MGC.
- o It is necessary that the outgoing MG is equipped with all the address parameters before it can start with the outpulsing compelling sequence. The MGC, therefore, sends the address parameters to the outgoing MG as additional parameters in one composite R2 Address signal.
- o The MG behaving as an incoming R2 end, SHALL compel and collect all the address parameters as per the provisioned compelling sequence. Flexibility is there in the package for the MGC to solicit each address parameter as separate events or as a single composite event - the "r2addr" event, where the collected address parameters are ObservedEvents Descriptor parameters to the event.

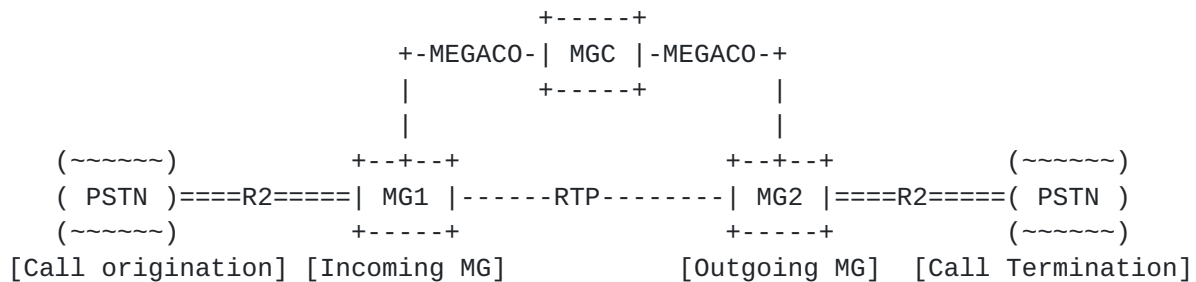
Signals and events related to only basic R2 signaling operation for automatic

or semi-automatic working, have been considered in the R2 package. Variants of R2 signaling MAY define new supervisory (line) and call set-up control (register) signals to introduce features such as re-answering, trunk offering, re-ring, operator break-in etc, to name a few. As there is no single standard mechanism to implement such features (they vary from country to country), they have not been considered in this package. However it is possible to realize such features on the MEGACO interface, by defining additional signals and events in other packages that either extend this basic

R2 package or are to be used in conjunction with this R2 package.

5. Assumptions

- a) As shown in the diagram below, MG can be connected to R2 exchange for R2 compelled signaling, peer MG for media transport and MGC for exchanging R2 signaling information using MEGACO/H.248 with R2 package.



Incoming - Outgoing convention

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This draft uses the following convention for incoming / outgoing MG

- o Incoming MG: R2 exchange initiates the call signaling towards MG.
- o Outgoing MG: MG initiates the call signaling towards R2 exchange.

Hence as shown in the figure above, MG1 is an incoming MG and MG2 is an outgoing MG.

- b) The call agent (MGC) is transparent of the transmission details at the physical layer i.e. the R2 terminations at MG are analogue / digital, one-way / both-ways etc. The MG is therefore assumed to be provisioned with the actual signaling frequencies for inter-register signaling (2-out-of-n in-band multi frequency code with forward and backward compelled signaling) along with their properties such as amplitude, tone duration, cadence etc and also their logical significance. All timers that dictate the inter-register compelling actions are also assumed to be provisioned in the MG.
- c) The MG, behaving as an incoming end, MAY not be provisioned to recognize the "end of pulsing" compelled forward register signal. It is assumed therefore that the incoming MG SHALL detect the end of digit information in called party number based on some digit map. This SHALL also take care of situations where identification of end of digit sequence is through length determination or timeout mechanisms. Calling party number SHALL be compelled till the occurrence of maximum length of calling party number or timeout, specified as package property, or encountering end of pulsing. The MG is assumed to be provisioned with a list of possible country codes. The MG SHALL compel the country code digits based on this provisioned information.

d) The VoIP Gateway (MG and MGC), supporting signaling System R2 on the PSTN side, forms the signaling and media interworking gateway between two very different types of signaling and network. It is therefore assumed that the MG

SHALL either originate or terminate R2 signaling (acting as a true inter-working unit between the PSTN and packet network both in terms of signaling and media) depending on whether it emulates the outgoing or incoming end in the signal path. Under tandem operation, therefore, the MG converts end-to-end R2 signaling to link-by-link signaling and does not allow R2 register signals to pass through it as tones.

## **6. R2 Package**

### **6.1 Package**

Package Name: R2 Package  
Package ID: r2 (To be allocated through IANA)  
Description: This package provides package parameters applicable to terminations supporting compelled R2 register signaling between the Media Gateway and the PSTN network.  
Version: 1  
Extends: bcas

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### **6.2 Properties**

The MG has a provisioned value for all the properties. If unmodified by MGC, the MG uses the provisioned value by default.

Property Name: Source Number Length  
Property id: snl (0x0001)  
Description: Indicates that the calling party digits are to be collected By the MG upto a maximum length as specified by this parameter value.  
Type: integer  
Possible values: 0 and up  
Defined in: TerminationState  
Characteristics: Read/Write  
  
Property Name: Compelling Sequence Keepalive Time  
Property id: cskt (0x0002)

Description: Specifies the time duration for which the incoming MG MAY keep alive the compelling sequence, waiting for the subscriber line status information from MGC.

Type: integer

Possible Values: 0 and up in milliseconds

Defined In: TerminationState

Characteristics: Read

### 6.3 Events

The actual frequency, cadence, duration and amplitude values for the multi-frequency tones that convey the register signaling information on the physical interface are provisioned in the MG.

#### 6.3.1

Event Name: R2 Address

EventID: r2addr (0x0001)

Description: Reports the address parameter collected through compelled register signaling. The address parameter include the destination number, source number identification, the calling subscriber category, controlling information for echo suppression, country code, nature of trunk circuit and discriminating digit information for international calls (whichever is compelled and collected).

EventsDescriptor Parameters: Digit map parameter activated for collection of destination number, specifying a digit map by name (previously configured) or by value.

ObservedEventsDescriptor Parameters:

Parameter Name: Destination Number

ParameterID: di (0x0001)

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Description: The called party number digit string that matched part or all of an alternative sequence specified in the digit map, collected through the compelled register signaling. This is a mandatory ObservedEventsDescriptor parameter.

Type: String of digits returned as a quoted string.

Possible Values: A sequence of the characters "0" through

"9"

Parameter Name: Destination Number Termination Method

ParameterID: dimeth (0x0002)

Description: Indicates the reason for the generation of the

Destination number parameter. This is a mandatory ObservedEventsDescriptor parameter.

Type: enumeration

Possible values:

"UM" (0x0001) Unambiguous match  
"PM" (0x0002) Partial match  
"FM" (0x0003) Full match

Parameter Name: Source Number

ParameterID: si (0x0003)

Description: If present, reports the compelled calling party number digit string.

Type: string of digits returned as a quoted string.

Possible Values: a sequence of the characters "0" through

"9"

Parameter Name: Source Number Termination Method

ParameterID: simeth (0x0004)

Description: If Source Number parameter is reported, indicates the reason for the generation of the same.

Type: enumeration

Possible values:

"EP" (0x0001) End of Pulsing  
"ML" (0x0002) Maximum Length  
"TO" (0x0003) Timeout

Parameter Name: Calling Subscriber Category

ParameterID: sc (0x0005)

Description: If present, reports the compelled calling party subscriber's category.

Type: enumeration

Possible Values:

"NNPS" (0x0001) Non-priority subscriber  
(National Working)  
"NPRS" (0x0002) Priority subscriber (National Working)  
"NMNT" (0x0003) Maintenance equipment (National working)  
"NOPR" (0x0004) Operator call (National Working)  
"NDT" (0x0005) Data transmission (National working)  
"ISOPR" (0x0006) Subscriber or operator without forward  
transfer facility (International

working)

"IOPRF" (0x0007) Operator with forward transfer facility  
(International working)  
"IDT" (0x0008) Data transmission

(International working)  
 "IPRS" (0x0009) Priority subscriber  
 (International working)  
 "NSMTR" (0x000a) Subscriber with meter  
 (National working)  
 "SIDD" (0x000b) Subscriber with IDD

Parameter Name: Echo Suppression Information  
 ParameterID: es (0x0006)  
 Description: If present, conveys the compelled control  
 information on echo suppressors  
 Type: enumeration  
 Possible Values:

"OGRQ" (0x0001) Call requires echo suppressors and  
 outgoing half-echo suppressor has to  
 be inserted  
 "NRQ" (0x0002) Call MAY not require any echo  
 suppressor  
 "OGINS" (0x0003) Call requires echo suppressors and  
 outgoing half-echo suppressor has  
 already been inserted  
 "ICRQ" (0x0004) Call requires incoming echo  
 suppressors to be inserted

Parameter Name: Country Code Information  
 ParameterID: cc (0x0007)  
 Description: If present, conveys the country code (and  
 possibly the area code) digit string collected  
 as a part of the compelled register signaling  
 in international working.  
 Type: string of digits returned as a quoted string.  
 Possible values: A sequence of the characters "0" through

"9"

Parameter Name: Discriminating Indicator  
 ParameterID: disc (0x0008)  
 Description: If present, specifies the compelled information  
 on discriminating digit for automatic working.  
 For semi-automatic working this MAY specify the  
 service language (Language digit) to be used by  
 the operator. For international working MAY  
 serve as a test call indicator also.

Type: enumeration  
 Possible Values:

"DISC"(0x0001) Discriminating digit for automatic  
 working  
 "FR" (0x0002) Language digit French  
 "EN" (0x0003) Language digit English  
 "GR" (0x0004) Language digit German  
 "RU" (0x0005) Language digit Russian



"SP" (0x0006) Language digit Spanish  
"OT" (0x0007) Language digit Other  
"TCI" (0x0008) Call by automatic test equipment

Parameter Name: Nature of circuit  
ParameterID: nac (0x0009)  
Description: If present, reports the compelled information  
on the nature of circuits involved in the  
connection so far viz. inclusion of satellite  
link.  
Type: enumeration  
Possible Values:  
"SATINC" (0x0001) Satellite link included  
"SATNOINC" (0x0002) Satellite link not included

### 6.3.2

Event Name: Called Party Reachability Status  
EventID: cprs (0x0002)  
Description: Reports the line status of the called subscriber, collected  
by the outgoing end through compelled register signaling.  
EventsDescriptor Parameters:  
none defined by this package  
ObservedEventsDescriptor Parameters:  
Parameter Name: Called Party Line Condition  
ParameterID: cplc (0x0001)  
Description: Line conditions of the called subscriber  
Type: enumeration  
Possible Values:  
"UN" (0x0001) Unallocated number  
"SLB" (0x0002) Subscriber line busy  
"SLFC" (0x0003) Subscriber line free, charge  
"SLFNOC" (0x0004) Subscriber line free, no charge  
"S00" (0x0005) Subscriber out of order  
"SIT" (0x0006) Send special information tone  
"NK" (0x0007) Subscriber status not known, set-up  
speech path

### 6.3.3

Event Name: R2 Failure  
EventID: r2f (0x0003)  
Description: Reports abnormal R2 register signaling conditions to MGC  
EventsDescriptor Parameters:  
none defined by this package

ObservedEventsDescriptor Parameters:

Parameter Name: Error Code

ParameterID: ec (0x0001)

Description: Describes the failure reason

Type: enumeration

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Possible Values:

- "ERR" (0x0001) Error in compelling sequence with peer R2 register
- "INC" (0x0002) Information signaled by the MGC is incomplete to continue with the compelling sequence at outgoing MG
- "DISC" (0x0003) Information signaled by the MGC is inappropriate at the compelling stage at MG and hence discarded

6.3.4

Event Name: Destination number

EventID: di (0x0004)

Description: Event to report destination number address parameter to MGC.

EventsDescriptor Parameters: Digit map parameter activated for collection of destination number, specifying a digit map by name (previously configured) or by value.

ObservedEventsDescriptor Parameters:

Parameter Name: Destination number

ParameterID: di (0x0001)

Description: The called party number digit string that matched part or all of an alternative sequence specified in the digit map, collected through the compelled register signaling.

Type: String of digits returned as a quoted string.

Possible Values: A sequence of the characters "0" through

"9"

Parameter Name: Destination number Termination Method

ParameterID: dimeth (0x0002)

Description: Indicates the reason for the generation of the Destination number parameter.

Type: enumeration

Possible values:

- "UM" (0x0001) Unambiguous match
- "PM" (0x0002) Partial match
- "FM" (0x0003) Full match

### 6.3.5

Event Name: Source number  
EventID: si (0x0005)  
Description: Event to report source number address parameter to MGC.  
EventsDescriptor Parameters:  
    none defined by this package  
ObservedEventsDescriptor Parameters:  
    Parameter Name: Source number  
    ParameterID: si (0x0001)

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Description: Reports the compelled calling party number  
                digit string.  
Type: String of digits returned as a quoted string.  
Possible Values: A sequence of the characters "0" through

"9"

Parameter Name: Source Number Termination Method  
ParameterID: simeth (0x0002)  
Description: If Source Number parameter is reported,  
                indicates the reason for the generation of the  
                same.  
Type: enumeration  
Possible values:  
    "EP" (0x0001) End of Pulsing  
    "ML" (0x0002) Maximum Length  
    "TO" (0x0003) Timeout

### 6.3.6

Event Name: Calling Subscriber Category  
EventID: sc (0x0006)  
Description: Event to report calling subscriber category parameter to  
MGC.  
EventsDescriptor Parameters:  
    none defined by this package  
ObservedEventsDescriptor Parameters:  
    Parameter Name: Subscriber Category  
    ParameterID: sc (0x0001)  
    Description: Calling Party's category, as collected through  
                compelled register signaling.  
Type: enumeration  
Possible Values:  
    "NNPS" (0x0001) Non-priority subscriber  
                (National Working)

working)

- "NPRS" (0x0002) Priority subscriber (National Working)
- "NMNT" (0x0003) Maintenance equipment (National working)
- "NOPR" (0x0004) Operator call (National Working)
- "NDT" (0x0005) Data transmission (National working)
- "ISOPR" (0x0006) Subscriber or operator without forward transfer facility (International working)
- "IOPRF" (0x0007) Operator with forward transfer facility (International working)
- "IDT" (0x0008) Data transmission (International working)
- "IPRS" (0x0009) Priority subscriber (International working)
- "NSMTR" (0x000a) Subscriber with meter (National working)
- "SIDD" (0x000b) Subscriber with IDD

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### 6.3.7

Event Name: Echo Suppression Information  
 EventID: es (0x0007)  
 Description: Event to report echo suppression information parameter to MGC.  
 EventsDescriptor Parameters:  
     none defined by this package  
 ObservedEventsDescriptor Parameters:  
     Parameter Name: Echo Suppression Information  
     ParameterID: es (0x0001)  
     Description: Control Information on echo suppressors  
     Type: enumeration  
     Possible Values:  
         "OGRQ" (0x0001) Call requires echo suppressors and outgoing half-echo suppressor has to be inserted  
         "NRQ" (0x0002) Call MAY not require any echo suppressor  
         "OGINS" (0x0003) Call requires echo suppressors and outgoing half-echo suppressor has already been inserted  
         "ICRQ" (0x0004) Call requires incoming echo suppressors to be inserted

### 6.3.8

Event Name: Country Code Information  
 EventID: cc (0x0008)  
 Description: Event to specify country code information parameter to MGC.  
 EventsDescriptor Parameters:  
     none defined by this package  
 ObservedEventsDescriptor Parameters:  
     Parameter Name: Country Code Information  
     ParameterID: cc (0x0001)  
     Description: Country code (and possibly area code)digit  
                     string collected as a part of the compelled  
                     register signaling in international working.  
     Type: string of digits returned as a quoted string.  
     Possible values: A sequence of the characters "0" through

"9"

### 6.3.9

Event Name: Discriminating Indicator  
 EventID: disc (0x0009)  
 Description: Event to specify discriminating indicator parameter to MGC.  
 EventsDescriptor Parameters:  
     none defined by this package

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ObservedEventsDescriptor Parameters:  
     Parameter Name: Discriminating Indicator  
     ParameterID: disc (0x0001)  
     Description: For automatic working this MAY specify that a  
                     discriminating digit is used. For semi-  
                     automatic working MAY specify the service  
                     language (Language digit) to be used by the  
                     operator. For international working MAY serve  
                     as a test call indicator.  
     Type: enumeration  
     Possible Values:  
         "DISC"(0x0001) Discriminating digit for automatic  
                             working  
         "FR" (0x0002) Language digit French  
         "EN" (0x0003) Language digit English  
         "GR" (0x0004) Language digit German  
         "RU" (0x0005) Language digit Russian  
         "SP" (0x0006) Language digit Spanish  
         "OT" (0x0007) Language digit Other  
         "TCI" (0x0008) Call by automatic test equipment

#### 6.3.10

Event Name: Nature of circuit  
EventID: nac (0x000A)  
Description: Event to specify nature of circuit parameter to MGC.  
EventsDescriptor Parameters:  
    none defined by this package  
ObservedEventsDescriptor Parameters:  
    Parameter Name: Nature of circuit  
    ParameterID: nac (0x0001)  
    Description: Reports the nature of circuits involved in the  
                  connection so far viz. inclusion of satellite  
                  link.  
    Type: enumeration  
    Possible Values:  
        "SATINC" (0x0001) Satellite link included  
        "SATNOINC" (0x0002) Satellite link not included

#### 6.3.11

Event Name: Congestion  
EventID: cng (0x000B)  
Description: Event to specify network congestion encountered.  
EventsDescriptor Parameters:  
    none defined by this package  
ObservedEventsDescriptor Parameters:  
    none defined by this package

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## [6.4 Signals](#)

The actual frequency, cadence, duration and amplitude values for the multi-frequency tones that convey the register signaling information are provisioned in the MG.

#### 6.4.1

Signal Name: R2 Address  
SignalID: r2addr (0x0001)  
Description: Composite signal that supplies all the necessary address parameters to start the compelling register signaling at the outgoing MG. All the parameter conveyed in this signal MAY not be actually applied on the termination by the outgoing MG. The MG SHALL transmit only those information that is

relevant to the compelling action configured at the MG.

Signal Type: (BR) Brief

Duration: Provisioned

Additional Parameters:

Parameter Name: Destination number

ParameterID: di (0x0001)

Description: The called party number digits. This parameter SHALL be mandatorily present in the Address signal.

Type: string of digits

Possible Values: a sequence of the characters "0" through

"9"

Parameter Name: Source number

ParameterID: si (0x0002)

Description: The calling party number digits. If the source number is not available at the MGC, this parameter MAY be absent in the Address signal.

Type: string of digits

Possible Values: a sequence of the characters "0" through

"9"

Parameter Name: Calling Subscriber Category

ParameterID: sc (0x0003)

Description: Calling party subscriber's category. If the calling subscriber category is not available at the MGC, this parameter MAY be absent in the signal.

Type: enumeration

Possible Values:

- "NNPS" (0x0001) Non-priority subscriber (National Working)
- "NPRS" (0x0002) Priority subscriber (National Working)
- "NMNT" (0x0003) Maintenance equipment (National working)
- "NOPR" (0x0004) Operator call (National Working)
- "NDT" (0x0005) Data transmission (National working)

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working)

- "ISOPR" (0x0006) Subscriber or operator without forward transfer facility (International working)
- "IOPRF" (0x0007) Operator with forward transfer facility (International working)
- "IDT" (0x0008) Data transmission (International working)
- "IPRS" (0x0009) Priority subscriber (International working)

working)

Parameter Name: Echo Suppression Information

ParameterID: es (0x0004)

Description: Control information on echo suppressors

Type: enumeration

Possible Values:

"OGRQ" (0x0001) Call requires echo suppressors and outgoing half-echo suppressor has to be inserted

"NRQ" (0x0002) Call MAY not require any echo suppressor

"OGINS" (0x0003) Call requires echo suppressors and outgoing half-echo suppressor has already been inserted

"ICRQ" (0x0004) Call requires incoming echo suppressors to be inserted

Parameter Name: Country Code Information

ParameterID: cc (0x0005)

Description: Country code information. If present, conveys the country code (and possibly the area code as well) information digits.

Type: string of digits

Possible Values: a sequence of the characters "0" through

"9"

Parameter Name: Discriminating Indicator

ParameterID: disc (0x0006)

Description: For automatic working MAY specify that a discriminating digit is used. For semi-

automatic

working MAY specify the service language (Language digit) to be used by the operator.

For

international working MAY serve as a test call indicator.

Type: enumeration

Possible Values:

"DISC" (0x0001) Discriminating digit for automatic working

"FR" (0x0002) Language digit French

"EN" (0x0003) Language digit English

"GR" (0x0004) Language digit German

"RU" (0x0005) Language digit Russian

"SP" (0x0006) Language digit Spanish

"OT" (0x0007) Language digit Other

"TCI" (0x0008) Call by automatic test equipment



Parameter Name: Nature of Circuit  
ParameterID: nac (0x0007)  
Description: conveys the nature of circuits involved in the connection so far viz. inclusion of  
satellite link.  
Type: Enumeration  
Possible Values:  
" SATINC " (0x0001) Satellite link included  
" SATNOINC " (0x0002) Satellite link not included

#### 6.4.2

Signal Name: Congestion  
SignalID: cng (0x0002)  
Description: This signal applies the network congestion compelled R2 signal on a termination in the incoming MG. It arises when  
at MGC the call setup attempt fails owing to unavailability  
of resources or encounters network congestion while routing.  
Signal Type: (BR) Brief  
Duration: Provisioned  
Additional Parameters: None

#### 6.4.3

Signal Name: Called Party Reachability Status  
SignalID: cprs (0x0003)  
Description: This signal applies the compelled R2 signal that translates to called subscriber line status information.  
Signal Type: (BR) Brief  
Duration: Provisioned  
Additional Parameters:  
Parameter Name: Called Party Line Condition  
ParameterID: cplc (0x0001)  
Description: Line conditions of the called subscriber  
Type: enumeration  
Possible Values:  
" UN " (0x0001) Unallocated number  
" SLB " (0x0002) Subscriber line busy  
" SLFC " (0x0003) Subscriber line free, charge  
" SLFNOC " (0x0004) Subscriber line free, no charge  
" SOO " (0x0005) Subscriber out of order  
" SIT " (0x0006) Send special information tone

### 6.5 Statistics

none defined by this package

## **7. Procedures**

### **7.1 Termination of Called Party Number digit collection at incoming MG**

MG SHALL collect called party number digits using the digit map specified by MGC. If the MG is provisioned to recognize the "end of pulsing" register signal, this signal together with the digit map SHALL determine the termination condition of the accumulated digits.

During called party number compelling when the MG determines that an unambiguous match has been found with an alternative in the digit map, the MG

SHALL report the collected digits with the Destination Number Termination Method set to "Unambiguous Match". This matching criterion MAY also coincide with the reception of the "end of pulsing" signal.

Digit collection MAY terminate due to completion by timer expiry or the reception of "end of pulsing" signal when an alternative in the digit map has

partially matched. The MG SHALL then report the collected digits with the Destination Number Termination Method set to "Partial Match".

Similarly, Digit collection MAY terminate due to completion by timer expiry or the reception of "end of pulsing" signal after one of the alternative in the digit map has fully matched and there are more digits available, the MG SHALL report all the collected digits with the Destination Number Termination

Method set to "Full Match".

The action taken by the MGC based on the Destination Number Termination Method is left implementation specific.

### **7.2 Termination of Calling Party Number collection at incoming MG**

MG SHALL collect calling party number digit string till the occurrence of any of the event mentioned below.

If MG is provisioned to recognize the end-of-pulsing signal, calling party number collection MAY terminate due to reception of end-of-pulsing signal. In such a case, MG SHALL report all the collected calling party digits with the Source Number Termination Method set to "End of Pulsing".

If the "snl" property is set to a non-zero value, MG collects the calling party number for this maximum number of digits. The MG SHALL report all the collected calling party digits with the Source Number Termination Method set to "Maximum Length".

MG MAY also implement a digit timeout mechanism. The timer value is provisioned at the MG and started the moment calling party number compelling starts. If the digit collection terminates due to this timeout, MG SHALL report all the collected calling party digits with the Source Number Termination Method set to "Timeout".

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The action taken by the MGC based on of the Source Number Termination Method is implementation specific.

### **7.3 Termination of Country Code digit collection at incoming MG**

MG maybe locally provisioned with the list of country codes corresponding to location of the outgoing international R2 register based on which the MG MAY terminate the compelling of the country code digits.

### **7.4 Termination of Compelling Sequence**

R2 signaling imposes severe timing constraints on the compelling sequence executed at the MG. The MGC MAY take a finite time to signal the Called Party

Reachability Status to the incoming MG after the necessary call setup address

information has been compelled and reported to MGC. At this point, the incoming MG MAY

- o Terminate the compelling sequence
- o Keep the compelling sequence alive

If compelling timings are stringent, the incoming MG MAY terminate the compelling sequence without waiting for the call routing status information (Called Party Reachability Status or Congestion signal) being transmitted by the MGC. The MG SHALL transmit a suitable backward register signal that informs the peer R2 register to setup speech-path. The call routing status cannot be therefore signaled through register signaling. In this case, the MGC MAY instruct the MG to transmit the call routing status as inband call progress tones (out of scope of this package), if call routing tones are not already available inband at the MG.

If the compelling timings allow some room for the MG to wait for the call routing status to be signaled, the incoming MG MAY alternately choose to keep



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