

I n t e r n a t i o n a l T e l e c o m m u n i c a t i o n U n i o n

**ITU-T**

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

**H.323**  
**Amendment 2**  
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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS  
Infrastructure of audiovisual services – Systems and  
terminal equipment for audiovisual services

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Packet-based multimedia communications systems  
**Amendment 2: New Annex M4 – Tunnelling of  
narrowband signalling syntax (NSS) for H.323**

ITU-T Recommendation H.323 (2003) – Amendment 2



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# **ITU-T Recommendation H.323**

## **Packet-based multimedia communications systems**

### **Amendment 2**

#### **New Annex M4**

### **Tunnelling of narrowband signalling syntax (NSS) for H.323**

#### **Summary**

The purpose of this annex is to give guidance on tunnelling narrowband signalling syntax (NSS) over H.323 networks.

This annex requires H.323 and H.225.0 versions 4 or later.

#### **Source**

Amendment 2 to ITU-T Recommendation H.323 (2003) was approved on 13 January 2005 by ITU-T Study Group 16 (2005-2008) under the ITU-T Recommendation A.8 procedure.

#### **History**

|     |                      |            |
|-----|----------------------|------------|
| 1.0 | H.323                | 1996-11-11 |
| 2.0 | H.323                | 1998-02-06 |
| 3.0 | H.323                | 1999-09-30 |
| 4.0 | H.323                | 2000-11-17 |
| 5.0 | H.323                | 2003-07-14 |
| 5.1 | H.323 (2003) Amend.1 | 2005-01-08 |
| 5.1 | H.323 (2003) Amend.2 | 2005-01-13 |

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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# ITU-T Recommendation H.323

## Packet-based multimedia communications systems

### Amendment 2

#### New Annex M4

#### Tunnelling of narrowband signalling syntax (NSS) for H.323

##### M4.1 Scope

The purpose of this annex is to give guidance on how the generic tunnelling mechanism described in 10.4/H.323 can be used to tunnel NSS over H.323 networks. Other groups in ITU-T are ultimately responsible for the NSS procedures themselves. Information on NSS can be found in ITU-T Rec. Q.1980.1.

##### M4.2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- ITU-T Recommendation Q.1980.1 (2004), *Narrowband Signalling Syntax (NSS) – Syntax definition*.
- ITU-T Recommendation H.225.0 (2003), *Call signalling protocols and media stream packetization for packet-based multimedia communication systems*.

##### M4.3 H.225.0 Endpoint procedures

Endpoints supporting tunnelling of NSS information shall use the procedures of 10.4/H.323. Endpoints shall identify NSS using the **tunnelledProtocolObjectID** structure. The **subIdentifier** may be used to identify the revision of the NSS variant, e.g., "2004". See Table M4.1.

**Table M4.1/H.323 – NSS identified by tunnelledProtocolObjectID**

| Standard                   | tunnelledProtocolObjectID                    | subIdentifier |
|----------------------------|--|---------------|
| ITU-T Rec. Q.1980.1 (2004) | {itu-t (0) recommendation (0) q (17) 1980 1} | "2004"        |

H.225.0 messages tunnel the entire NSS message, unchanged, starting with the Version (VER) parameter, and ending with two sequential pairs of carriage return-line feed (0xD0xA) octets. The text content of the NSS messages is encoded as an OCTET STRING in the **H323-UU-PDU.tunnelledSignallingMessage.messageContent**. Since the text encoding of NSS messages is what is tunnelled, the integrity of the NSS messages is fully preserved.

For example, the NSS IAM message can be tunnelled in a H.225.0 SETUP message, and the NSS ANM message can be tunnelled in an H.225.0 CONNECT message. For other messages, it is possible that there is no corresponding H.225.0 message (e.g., in the case of an NSS IDR message)

or the corresponding message is not available because it has already been sent. In those cases, the NSS message may be tunnelled in an H.225.0 FACILITY message.

A single NSS call should be tunnelled in a single H.323 call.

Some information elements in the H.225.0 message may have been modified by the H.323 network and the gateway receiving the tunnelled NSS message may need to override the corresponding NSS parameters.

Table M4.2 is indicative only and illustrates an example of the mapping between NSS messages and H.225.0 messages.

**Table M4.2/H.323– Mapping between NSS messages and H.225.0 messages**

| NSS message        | H.225.0 message   |
|--------------------|---|
| IAM                | SETUP   |
| SAM                | INFORMATION   |
| CPG                | CALL PROCEEDING, ALERTING, PROGRESS, NOTIFY or FACILITY |
| ACM                | CALL PROCEEDING, ALERTING, PROGRESS, NOTIFY or FACILITY |
| ANM, CON           | CONNECT   |
| REL                | RELEASE COMPLETE  |
| All other messages | FACILITY  |

#### **M4.4 Gatekeeper procedures**

A gatekeeper participating in a call where NSS tunnelling is used between the endpoints should pass along tunnelled NSS messages unchanged unless it intends to terminate the NSS tunnel. This may be the case when a gatekeeper is offering NSS services.

#### **M4.5 RAS procedures for direct-routed calls**

In the case of direct-routed calls, the H.323 Endpoint may wish to exchange NSS messages with the Gatekeeper. The H.323 Endpoint may send any or all NSS messages to the Gatekeeper tunnelled in RAS messages.

A RAS message shall tunnel the entire NSS message, unchanged, starting with the Version (VER) parameter, and ending with two sequential pairs of carriage return-line feed (0xD0xA) octets.

For example, the NSS IAM message may be tunnelled in RAS ARQ and ACF messages, and the NSS REL message may be tunnelled in RAS DRQ and DCF messages. Other NSS messages may be tunnelled in RAS SCI and SCR messages. Table M4.3 is indicative only and illustrates an example of the mapping between NSS messages and RAS messages.

**Table M4.3/H.323 – Mapping between NSS messages and RAS messages**

| NSS message        | RAS message |
|--------------------|-------------|
| IAM                | ARQ, ACF    |
| REL                | DRQ, DCF    |
| All other messages | SCI, SCR    |

### M4.5.1 RAS Protocol Tunnel feature

The NSS messages shall be encapsulated in a Protocol Tunnel parameter in the RAS messages. The Protocol Tunnel parameter shall be coded in the genericData parameter in the request parameter of the H.225.0 RasMessage.

The GenericData parameter indicates the Protocol Tunnel feature and contains a Protocol Tunnel parameter.

Table M4.4 defines the RAS Protocol Tunnel feature.

**Table M4.4/H.323 – RAS Protocol Tunnel feature**

|                           |  |
|---------------------------|--|
| Feature name:             | RAS Protocol Tunnel  |
| Feature Description:      | This feature allows NSS messages to be tunnelled in RAS messages |
| Feature identifier type:  | Standard   |
| Feature identifier value: | 1000   |

### M4.5.2 RAS Protocol Tunnel parameter

Table M4.5 defines the RAS Protocol Tunnel parameter.

**Table M4.5/H.323 – RAS Protocol Tunnel parameter**

|                             |  |
|-----------------------------|--|
| Parameter name:             | Protocol Tunnel  |
| Parameter description:      | This encapsulates the NSS message sent in a RAS message. The content is a raw field consisting of the ASN.1 PER encoded RasTunnelledSignallingMessage as specified in the ASN.1 below. |
| Parameter identifier type:  | Standard   |
| Parameter identifier value: | 1  |
| Parameter type:             | Raw  |
| Parameter cardinality:      | Once and only once   |

### M4.5.3 Protocol Tunnel ASN.1 definition

The Protocol Tunnel definition used within the GenericData is shown below.

```
RAS-PROTOCOL-TUNNEL DEFINITIONS AUTOMATIC TAGS ::=
BEGIN

IMPORTS
    TunnelledProtocol,
    NonStandardParameter
    FROM H323-MESSAGES;

RasTunnelledSignallingMessage ::=          SEQUENCE
{
    tunnelledProtocolID  TunnelledProtocol,          -- tunnelled signalling protocol ID
    messageContent       SEQUENCE OF OCTET STRING,    -- sequence of entire message(s)
    tunnellingRequired   NULL OPTIONAL,
    nonStandardData     NonStandardParameter OPTIONAL,
    ...
}

END
```

#### **M4.5.4 Description of ASN.1 types and fields**

**tunnelledProtocolID** – This contains the identifier of the tunnelled signalling protocol.

**tunnellingRequired** – If this field is present, the call shall only proceed if tunnelling is supported.

**messageContent** – This is the tunnelled signalling message content.



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