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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS
Supplementary services for multimedia

**Common Information Additional Network
Feature for H.323**

ITU-T Recommendation H.450.12

(Formerly CCITT Recommendation)

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Common Information Additional Network Feature for H.323

Summary

This Supplementary Service describes the procedures and the signalling protocol for the Common Information Additional Network Feature in ITU-T H.323 (Packet-based Multimedia Communications Systems) networks.

ANF-CMN enables the exchange of Common Information between ANF-CMN endpoints. This Common Information is a collection of miscellaneous information that relates to the user or equipment at one end of a connection and includes one or more of the following: Feature Identifiers, Party Category.

This Recommendation makes use of the "Generic functional protocol for the support of supplementary services in ITU-T H.323" as defined in ITU-T H.450.1.

Source

ITU-T Recommendation H.450.12 was prepared by ITU-T Study Group 16 (2001-2004) and approved under the WTSA Resolution 1 procedure on 29 July 2001.

FOREWORD

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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.

NOTE

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ITU-T Recommendation H.450.12

Common Information Additional Network Feature for H.323

1 Scope

This Recommendation describes supplementary services the Additional Network Feature Common Information (ANF-CMN), which is applicable to various basic services supported by ITU-T H.323 multimedia endpoints.

ANF-CMN allows the exchange of Common Information between ANF-CMN endpoints.

This Recommendation requires ITU-T H.323 version 2 (1998) or later. Version 2 products can be identified by ITU-T H.225.0 messages containing a **protocolIdentifier** = {itu-t (0) recommendation (0) h (8) 2250 version (0) 2} and ITU-T H.245 messages containing a **protocolIdentifier** = {itu-t (0) recommendation (0) h (8) 245 version (0) 3}.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of the 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.

- ITU-T H.225.0 Version 4 (2000), *Call signalling protocols and media stream packetization for packet-based multimedia communication systems*.
- ITU-T H.245 Version 6 (2000), *Control protocol for multimedia communication*.
- ITU-T H.323 Version 4 (2000), *Packet-based multimedia communications systems*.
- ITU-T H.450.1 (1998), *Generic functional protocol for the support of supplementary services in H.323*.
- ITU-T H.450.2 (1998), *Call transfer supplementary service for H.323*.
- ITU-T H.450.3 (1998), *Call diversion supplementary service for H.323*.
- ITU-T H.450.4 (1999), *Call hold supplementary service for H.323*.
- ITU-T H.450.5 (1999), *Call park and call pickup supplementary services for H.323*.
- ITU-T H.450.7 (1999), *Message waiting indication supplementary service for H.323*.
- ITU-T H.450.9 (2000), *Call completion supplementary services for H.323*.
- ITU-T H.450.10 (2001), *Call offer supplementary service for H.323*.
- ITU-T H.450.11 (2001), *Call intrusion supplementary service for H.323*.

3 Terms and definitions

This Recommendation defines the following terms:

3.1 Endpoint; gatekeeper; gateway; terminal; user: See ITU-T H.323.

3.2 Forward Direction: The direction of the connection from the party invoking ANF-CMN to the other party in the call

3.3 ITU-T H.323 Call: Refer to ITU-T H.323.

- 3.4 Proxy:** An entity that acts on behalf of an endpoint. The proxy may or may not be co-located with the gatekeeper.
- 3.5 Reverse Direction:** The direction opposite to the forward direction.
- 3.6 User A:** Originating user that originated the call or requested the additional network feature.
- 3.7 User B:** The remote user that was initially addressed.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations:

ANF	Additional Network Feature
ANF-CMN	ANF Common Information
APDU	Application Protocol Data Unit
ASN.1	Abstract Syntax Notation one
IE	Information Element
NFE	Network Facility Extension
SDL	Specification and Description Language
SS	Supplementary Service

5 ANF-CMN description

ANF-CMN is an additional network feature that enables the exchange of Common Information between ANF-CMN endpoints. This Common Information is a collection of miscellaneous information that relates to the endpoint or equipment at one end of a connection and includes one or more of the following: Feature Identifiers, Feature Values, or Feature Controls. This information, when received by an ANF-CMN endpoint, can be used for any purpose, e.g. as the basis for indications to the local user or to another network or in order to filter feature requests.

A solicited and an unsolicited service can be offered to an ANF-CMN endpoint (which may be located at either end of a connection).

The solicited service enables the ANF-CMN endpoint to request the Common Information from a peer ANF-CMN endpoint.

The unsolicited service enables an ANF-CMN endpoint to supply Common Information to a peer ANF-CMN endpoint.

These services may be combined and are not mutually exclusive.

5.1 Normal procedures

5.1.1 Activation/deactivation/registration/interrogation

ANF-CMN is permanently activated.

5.1.2 Invocation and operation

The conditions under which ANF-CMN is invoked is an implementation matter. Also, Common Information offered by an endpoint is an implementation matter.

An ANF-CMN endpoint may invoke ANF-CMN at any time during a call

- to send its own Common Information to the peer ANF-CMN endpoint (unsolicited service);
- to request the Common Information of the peer ANF-CMN endpoint (solicited service).

Sending and requesting the Common Information may be combined.

NOTE – Typically, the Common Information is exchanged during the establishment phase of a call and after call rearrangement.

On receiving a request for Common Information, the receiving ANF-CMN user shall respond with its Common Information.

5.2 Exceptional procedures

5.2.1 Invocation and Operation

If no response is received on a request for Common Information (solicited service), the action to be taken shall be implementation dependent.

5.3 Interactions with other supplementary services

5.3.1 Call Transfer (SS-CT)

Common Information relating to the transferred endpoint and the transferred to end point may be sent as part of the transferred call establishment. Otherwise, the information shall be sent subsequent to the transfer.

5.3.2 Call Forwarding Unconditional (SS-CFU)

Common Information relating to the originating end of a call sent at the time of the call establishment request shall, if the call is diverted, be diverted to the ANF-CMN user at the terminating end of the diverted call.

5.3.3 Call Forwarding Busy (SS-CFB)

Clause 5.3.2 shall apply.

5.3.4 Call Forwarding on No Reply (SS-CFNR)

Unsolicited Common Information relating to the originating end of a call sent at the time of the call establishment request shall, if the call is diverted, be diverted to the ANF-CMN user at the terminating end of the diverted call.

A request for solicited Common Information from the originating end of a call sent at the time of the call establishment request shall not, if the call is diverted, be diverted to the ANF-CMN user at the terminating end of the diverted call.

5.3.5 Call Hold

No interaction.

5.3.6 Call Park/Call Pickup

Common Information relating to the parked endpoint and the parked to endpoint may be sent as part of the parking call establishment. Otherwise, it shall be sent subsequent to Call Park.

Common Information relating to the parked endpoint and the unparking endpoint may be sent as part of the unparking call establishment. Otherwise, it shall be sent subsequent to unpark.

5.3.7 Call Waiting

No interaction.

5.3.8 Message Waiting Indication

The SS-MWI Callback call indicator should be sent when placing the Callback Call.

5.3.9 Name Presentation

No interaction.

5.3.10 Completion of Calls on No Reply (SS-CCNR)

No interaction.

5.3.11 Completion of Calls on Busy Station (SS-CCBS)

No interaction.

5.3.12 Call Offer (SS-CO)

No interaction.

5.3.13 Call Intrusion (SS-CI)

If ANF-CMN is included prior to SS-CI invocation, the Call Intrusion Protection Level of the unwanted user is known, therefore the ciGetCIPL.inv and ciGetCIPL.res APDU exchange is not required. Actual SS-CI actions are implementation dependent.

6 Messages and information elements

The APDUs of the operations defined in clause 12 shall be conveyed within ITU-T H.450.1 Supplementary Service APDUs included in User-user information elements, as specified in ITU-T H.450.1.

The operations defined in Abstract Syntax Notation One (ASN.1) in clause 12 shall apply.

When conveying the invoke APDU of the operations defined in clause 12, the destinationEntity data element of the NFE shall contain the value *endpoint*.

When conveying the invoke APDU of operation **cmnInform** the Interpretation APDU shall be included with the value discardAnyUnrecognizedInvokePdu.

When conveying the invoke APDU of operation **cmnRequest**, the Interpretation APDU shall either be omitted or shall be included with the value rejectAnyUnrecognizedInvokePdu.

6.1 Feature Identifier List

The Feature Identifier list provides capability information related to supplementary services. This feature information about a remote user may for example be used by a user to determine the supplementary service set supported.

The Feature Identifier list, when used in forward direction, shall include one or more of the Feature Identifiers listed in Table 1.

Table 1/H.450.12 – Feature Identifiers List in the Forward Direction

Feature Identifiers	Values	Comments
SS-CF rerouting supported	Yes/No	Originating Endpoint supporting Call Forwarding by Rerouting, meaningful only during call establishment
SS-CT rerouting supported	Yes/No	Originating Endpoint supporting Call Transfer Reroute
SS-CH far end Call Hold Supported	Yes/No	Originating endpoint supporting far end Call Hold (acting as a held endpoint)
SS-CP Call Park Supported	Yes/No	Originating endpoint supporting Call Park

The Feature Identifier list, when used in backward direction, shall include one or more of the Feature Identifiers listed in Table 2.

Table 2/H.450.12 – Feature Identifiers in the Backward Direction

Feature Identifiers	Values	Comments
SS-CT rerouting supported	Yes/No	Terminating Endpoint supporting Call Transfer Reroute
SS-CC CCBS supported	Yes/No	Terminating Endpoint supports Call Completion on Busy Subscriber, meaningful only before receipt of ALERTING/CONNECT
SS-CC CCNR supported	Yes/No	Terminating Endpoint supports Call Completion on No Reply, meaningful only before receipt of CONNECT
SS-CO supported	Yes/No	Terminating Endpoint supports Call offer, meaningful only before receipt of ALERTING/CONNECT
SS-CI supported: SS-CI Forced Release available SS-CI Isolation available SS-CI Wait on Busy available SS CI Silent monitor supported SS-CI Conference available	Yes/No Yes/No Yes/No Yes/No Yes/No	Call Intrusion options supported at the Terminating endpoint (i.e. at the wanted user's Endpoint B), meaningful only before receipt of ALERTING/CONNECT for the intruding call
SS-CH far end Call Hold Available	Yes/No	Terminating endpoint supporting far end Call Hold when requested by the Originating endpoint
SS-MWI Call Back Supported	Yes/No	Terminating endpoint supporting Message Waiting Callback, meaningful only before receipt of ALERTING/CONNECT
SS-CP Call Park Supported	Yes/No	Terminating endpoint supporting Call Park

NOTE – The feature Identifier list may also be exchanged during the active phase of the call (e.g. after call rearrangements due to supplementary services). In such a case, the classification in "forward direction" and "backward direction" do not apply and all feature indication are applicable.

6.2 Feature values

6.2.1 SS-CI protection level

The purpose of the SS-CI protection level in ANF-CMN provides for the exchange of protection levels prior to the invocation of SS-CI. This may eliminate the requirement to explicitly exchange this datum following the SS-CI invocation.

This information may be sent in both directions.

6.2.2 Party Category

The purpose of the Party Category is to indicate, to another user, the category of a user involved in a call. An Originating endpoint may include an indication of the calling user category in the SETUP message. A Terminating Endpoint may include an indication of the called endpoint category in a backward message.

Received Party Category information may be used to change the operation at the user's terminal. For example, depending on whether the calling or called party is an extension or an attendant, the internal call handling may invoke different options of a supplementary service related to that call.

6.3 Feature Control

The Feature Control information allows for additional feature control as indicated in Table 3.

Table 3/H.450.12 – Feature Control Information

Feature Identifiers	Values	Comments
SS-CH Do not hold	Yes/No	The sending endpoint shall not be put on hold (neither near end nor far end hold). Applicable in forward and backward direction
SS-CT Do not transfer	Yes/No	The sending endpoint shall not be transferred. Applicable in forward and backward direction
SS-MWI Callback call indicator	Yes/No	Applicable only in SETUP message of a callback call (ITU-T H.450.7)
SS-CI Silent monitor permitted	Yes/No	Applicable in forward or backward direction indicating that this endpoint may be silent monitored (applicable for an endpoint that later on becomes an unwanted endpoint as part of an SS-CI Silent monitoring request)

7 Procedures

The following procedures are a combination of call related signalling.

All ANF-CMN control information is exchanged between User A's endpoint and User B's endpoint.

7.1 Actions at User A's Endpoint

7.1.1 Normal procedures

7.1.1.1 ANF-CMN invocation

To invoke the solicited service of ANF-CMN, i.e. to request common information from the remote side, the Originating endpoint shall send a **CmnRequest invoke APDU**. For invocation during the establishment phase of a call, the APDU may either be sent within a SETUP message or within a FACILITY message using the call reference of that call. However, the FACILITY message shall not be used before the first end-to-end basic call message (i.e. ALERTING, CONNECT, PROGRESS) has been received. For invocation during the active phase of a call, the APDU shall be sent within a FACILITY message using the call reference of that call. Only if the **CmnRequest invoke APDU** is sent in a FACILITY message, timer T1 shall be started. If the **CmnRequest invoke APDU** is sent in a SETUP message, basic call timers provide sufficient protection. In both cases, after sending the **CmnRequest invoke APDU**, the Originating endpoint shall enter the CMN-Wait-Answer state.

In the CMN-Wait-Answer state, upon receipt of a **CmnRequest return result APDU** in a basic call message (e.g. ALERTING, CONNECT, PROGRESS) or in a FACILITY message, the Originating endpoint shall stop timer T1, if running, and enter the CMN-Idle state.

NOTE – The common information contained in the received **CmnRequest** return result APDU should be conveyed to the ANF-CMN user.

To invoke the unsolicited service of ANF-CMN, i.e. to send unsolicited common information to the remote side, the Originating Endpoint shall send a **CmnInform invoke APDU**. For invocation during the establishment phase of a call, the APDU may either be sent within a SETUP message or within a FACILITY message using the call reference of that call. However, the FACILITY message shall not be used before the first end-to-end basic call message (i.e. ALERTING, CONNECT, PROGRESS) has been received. For invocation during the active phase of a call, the APDU shall be sent within a FACILITY message using the call reference of that call.

7.1.2 Exceptional procedures

In the CMN-Wait-Answer state, upon receipt of any message containing a **CmnRequest reject APDU**, the Originating Endpoint shall stop timer T1, if running, and enter the CMN-Idle state, and the call shall continue in accordance with ITU-T H.323 and ITU-T H.225.0.

Upon expiry of timer T1 the Originating Endpoint shall enter the CMN-Idle state and the call shall continue in accordance with ITU-T H.323 and ITU-T H.225.0.

In the CMN-Wait-Answer state, if timer T1 is not running (i.e. the **CmnRequest** invoke APDU was sent in a SETUP message), the receipt of a CONNECT message that does not contain a **CmnRequest return result or reject APDU** shall cause state CMN-Idle to be entered.

If the basic call is cleared, while in the CMN-Wait-Answer state, timer T1 shall be stopped and the CMN-Idle state shall be entered.

NOTE – Failure of ANF-CMN should be indicated to the ANF-CMN user.

7.2 Actions at User B's Endpoint

7.2.1 Normal procedures

Upon receipt of a **CmnRequest invoke APDU** in a SETUP or a FACILITY message, the Terminating Endpoint, if common information is available, shall send a **CmnRequest return result APDU** in order to send the solicited common information to the remote side and remain in the CMN-Idle state. The **CmnRequest return result APDU** may either be sent within a basic call message (e.g. ALERTING, CONNECT, PROGRESS) or within a FACILITY message using the call reference of that call. However, if the **CmnRequest invoke APDU** was received in a SETUP message, the **CmnRequest return result APDU** shall be sent within the CONNECT message, if not already sent.

Upon receipt of a **CmnInform invoke APDU** in any message, the Terminating Endpoint shall remain in the current state.

NOTE 1 – The common information contained in the received **CmnInform** invoke APDU should be conveyed to the ANF-CMN user.

To invoke the solicited service of ANF-CMN in backward direction, the Terminating Endpoint shall send a **CmnRequest invoke APDU**, start timer T1 and enter the CMN-Wait-Answer state. For invocation during the establishment phase of a call, the APDU may either be sent within a basic call message (e.g. ALERTING, CONNECT, PROGRESS) or within a FACILITY message using the call reference of that call. For invocation during the active phase of a call, the APDU shall be sent within a FACILITY message using the call reference of that call.

In the CMN-Wait-Answer state, upon receipt of a **CmnRequest return result APDU** in a FACILITY message, the Terminating Endpoint shall stop timer T1 and enter the CMN-Idle state.

NOTE 2 – The common information contained in the received **CmnRequest** return result APDU should be conveyed to the ANF-CMN user.

To invoke the unsolicited service of ANF-CMN in backward direction, the Terminating Endpoint shall send a **CmnInform invoke APDU**. For invocation during the establishment phase of a call, the APDU may either be sent within a basic call message (e.g. ALERTING, CONNECT, PROGRESS) or within a FACILITY message using the call reference of that call. For invocation during the active phase of a call, the APDU shall be sent within a FACILITY message using the call reference of that call.

NOTE 3 – The **CmnInform** invoke APDU contains the common information provided by the ANF-CMN user.

7.2.2 Exceptional procedures

In the CMN-Wait-Answer state, upon receipt of any message containing a **CmnRequest reject APDU**, the Terminating Endpoint shall stop timer T1 and enter the CMN-Idle state, and the call shall continue in accordance with ITU-T H.323 and ITU-T H.225.0.

Upon expiry of timer T1 the Terminating Endpoint shall enter the CMN-Idle state and the call shall continue in accordance with ITU-T H.323 and ITU-T H.225.0.

If the basic call is cleared, while in the CMN-Wait-Answer state, timer T1 shall be stopped and the CMN-Idle state shall be entered.

NOTE – Failure of ANF-CMN should be indicated to the ANF-CMN user.

8 Primitives

8.1 Common Information Primitives

See Table 4.

Table 4/H.450.12 – Common Information Primitives

Generic Name	Type			
	request	indication	response	confirm
CMNRequest	–	–	PARAMETERS	PARAMETERS
CMNInform	PARAMETERS	PARAMETERS	Not defined	Not defined
NOTE – "–" means no parameters (manufacturer specific parameters may apply).				

8.2 Primitive definitions

The definition of these primitives is as follows:

- the CMNRequest request primitive is used to solicit the common information from the remote end;
- the CMNRequest indication primitive is used to indicate that the far end is requesting the common information;
- the CMNRequest response primitive is used to return the common information to the far end;
- the CMNRequest confirm primitive is used to receive either the common information from the far end or received service failure conditions;
- the CMNInform request primitive is used to provide the unrequested common information to the far end;
- the CMNInform indication primitive is used receive the unrequested common information from the far end.

8.3 Parameter definitions

CMNRequest.request parameters

- None

CMNRequest.indication parameters

- None

CMNRequest.response parameters

- featureList, an indication of supported features and services;
- featureControl, control of specific features;
- partyCategory, the category of the user involved in the call.

CMNRequest.confirm parameters

- Parameters related to service failure conditions:
 - failure indication, e.g. rejection, error, call cleared, timer expiry, etc.;
 - related failure parameters are application defined, but should include information from the related APDU (CMNRequest Reject or CMNRequest Error) if applicable.

- Parameters related to successful operation:
 - featureList, an indication of supported features and services of the remote end;
 - featureControl, control of specific features of the remote end;
 - partyCategory, the category of the user involved in the call at the remote end.

CMNInform request parameters

- featureList, an indication of supported features and services;
- featureControl, control of specific features;
- partyCategory, the category of the user involved in the call.

CMNInform indication parameters

- featureList, an indication of supported features and services of the remote end;
- featureControl, control of specific features of the remote end;
- partyCategory, the category of the user involved in the call at the remote end.

9 Interworking and interactions

9.1 Interworking with an SCN

ANF-CMN may interwork with corresponding services as defined by other standards by means of gateway interworking functions. The specification of detailed gateway interworking procedures is beyond the scope of this Recommendation.

9.2 Protocol interaction between ANF-CMN and other supplementary services

This clause specifies protocol interactions of ANF-CMN with other supplementary services for which ITU-T H.450.x family of Recommendations had been published at the time of publication of this Recommendation. For interactions with supplementary services for which ITU-T H.450.x family of Recommendations are published subsequent to the publication of this Recommendation, see those other ITU-T H.450.x family of Recommendations.

9.2.1 Call Transfer (ITU-T H.450.2)

SsCTreRoutingSupported allows an early indication of support for SS-CT.

ssCTDoNotTransfer indicates that an endpoint will not allow itself to be transferred. The actual actions taken by that endpoint in the case of an attempted call transfer is implementation dependent and may include clearing the call.

NOTE – Common Information may be exchanged between primary endpoint and secondary endpoint during transferred call establishment or subsequent to call transfer. In this case the primary endpoint is considered to be the originating endpoint and the secondary endpoint to be the terminating endpoint.

9.2.2 Call Diversion (ITU-T H.450.3)

9.2.2.1 Call Forwarding Unconditional (SS-CFU)

SsCFreRoutingSupported allows an early indication of support for SS-CFU.

The following interactions shall apply if SS-CFU is supported in accordance with ITU-T H.450.3.

9.2.2.1.1 Actions at a SS-CFU Rerouting Endpoint

When executing SS-CFU, the Rerouting Endpoint, Gatekeeper, or Feature Proxy shall include a CmnRequest invoke APDU (for the ANF-CMN solicited service) and/or a CmnInform invoke APDU (for the unsolicited service) in the SETUP message to the Diverted-to Endpoint if this was included in the SETUP message to the Served User Endpoint.

9.2.2.2 Call Forwarding Busy (SS-CFB)

SsCFreRoutingSupported allows an early indication of support for SS-CFB.

If SS-CFB is supported in accordance with ITU-T H.450.3, the procedures specified in clause 9.2.2.1 of this Recommendation shall apply, with SS-CFU replaced by SS-CFB.

9.2.2.3 Call Forwarding No Reply (SS-CFNR)

SsCFreRoutingSupported allows an early indication of support for SS-CFNR.

Clause 9.2.2.1 shall apply with "SS-CFU" replaced by "SS-CFNR".

9.2.2.4 Call Deflection (SS-CD)

SsCFreRoutingSupported allows an early indication of support for SS-CD.

Clause 9.2.2.1 shall apply with "SS-CFU" replaced by "SS-CD".

9.2.3 Call Hold (ITU-T H.450.4)

ssCHDoNotHold indicates that an endpoint will not allow itself to be held. This refers to both near end hold and far end hold. The actual actions taken by that endpoint in the case of an attempted call hold is implementation dependent and may include clearing the call.

9.2.4 Call Park and Call Pickup (ITU-T H.450.5)

SsCPSupported allows an early indication of support for SS-CP.

9.2.5 Call Waiting (ITU-T H.450.6)

No protocol interaction.

9.2.6 Message Waiting (ITU-T H.450.7)

SsMWICallbackSupported allows an early indication of support for SS-MWI Call Back activation when SS-MWI Activation follows a non-successful call.

SsMWICallbackCall indicates that the SETUP is for a call that is a Callback Call for SS-MWI.

9.2.7 Name Presentation (ITU-T H.450.8)

No protocol interaction.

9.2.8 Call Completion (ITU-T H.450.9)

SsCCBSPossible allows an early indication of support for SS-CCBS.

SsCCNRPossible allows an early indication of support for SS-CCNR.

9.2.9 Call Offer (SS-CO)

SsCOSupported allows an early indication of support for SS-CO.

9.2.10 Call Intrusion (SS-CI)

SsCIForcedReleaseSupported allows an early indication of support for the Forced Release feature of SS-CI.

SsCIIsolationSupported allows an early indication of support the Isolation feature of SS-CI.

SsCIWaitOnBusySupported allows an early indication of support for the Wait on Busy feature of SS-CI.

SsCISilentMonitorSupported allows an early indication of support for the Silent Monitor feature of SS-CI.

SsCIConferenceSupported allows an early indication of support for Conference feature of SS-CI.

SsCIProtectionLevel allows an early indication of the endpoints protection level for SS-CI.

SsCISilentMonitor indicates whether the unwanted endpoint allows for silent monitor. The actual actions taken by that endpoint in the case of an attempted to silent monitor is implementation dependent and may include clearing the call.

10 Gatekeeper actions

In a Gatekeeper Routed Call where the Gatekeeper acts for the endpoint in the execution of supplementary service, all references to the endpoint may be replaced with Gatekeeper.

11 Dynamic description

11.1 Operational model and signal flows

This clause describes some typical message flows for ANF-CMN. The following conventions are used in the figures of this clause.

- 1) The following notation is used:

—————>	Call-related protocol message
SETUP	Message name
Cx	Number of connection x
xxx.inv	Invoke APDU for operation xxx
xxx.rtr	Return result APDU for operation xxx

- 2) The figures show ITU-T H.225.0 messages exchanged between Endpoints involved in ANF-CMN. Only messages relevant to ANF-CMN are shown.
- 3) Only the relevant information content (e.g. remote operation APDUs) is listed below each message name. Information with no impact on ANF-CMN is not shown.
- 4) Some interactions with users are included in the form of symbolic primitives. The actual protocol at the terminal equipment interface is outside the scope of this Recommendation.

11.1.1 Operational model

Figure 1 shows the operational model for Common Information.

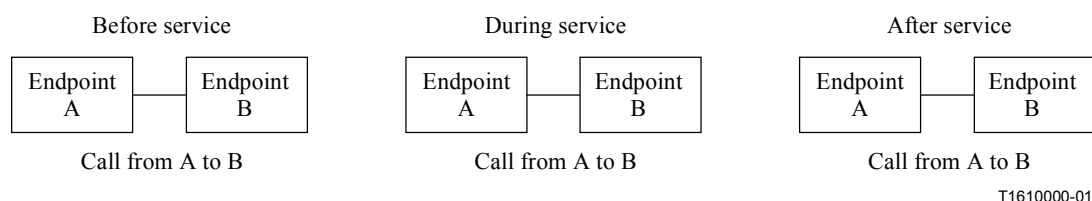


Figure 1/H.450.12 – Operational model for ANF-CMN

11.1.2 Example message sequence for normal operation of ANF-CMN for the solicited service

Figures 2 and 3 show successful ANF-CMN request and response scenarios for the solicited service.

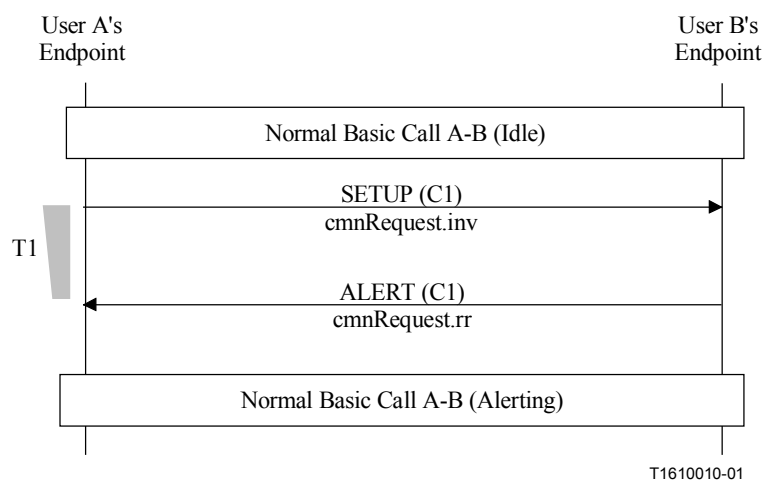


Figure 2/H.450.12 – Example message flow of ANF-CMN (solicited service)

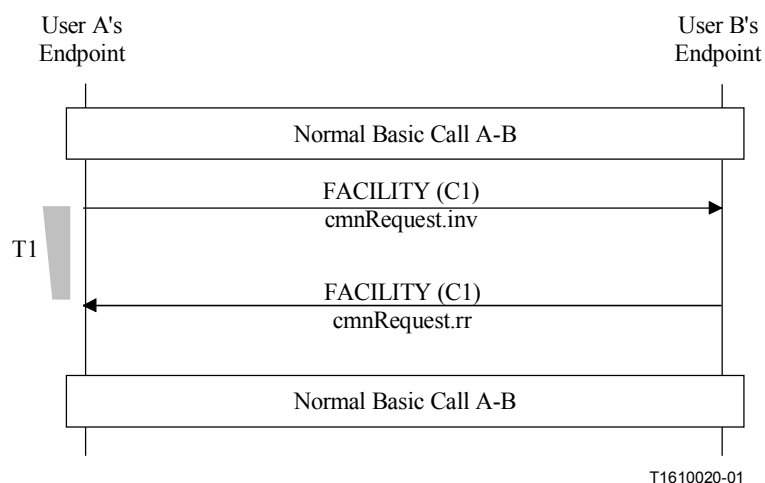


Figure 3/H.450.12 – Example message flow of ANF-CMN (solicited service)

11.1.3 Example message sequence for normal operation of ANF-CMN for the unsolicited service

Figures 4 and 5 show successful ANF-CMN scenarios for the unsolicited service.

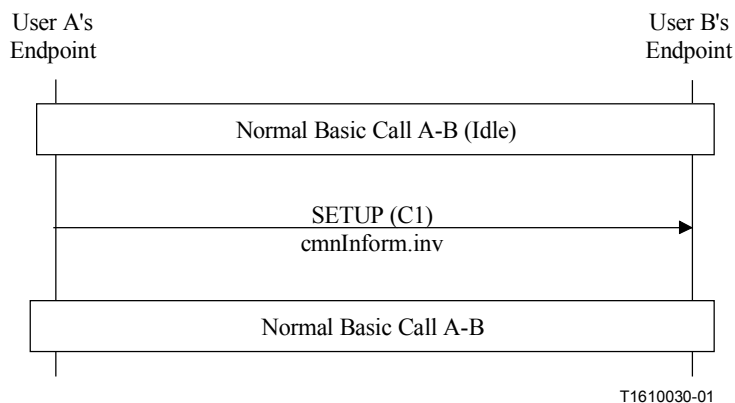


Figure 4/H.450.12 – Example of normal operation of ANF-CMN (unsolicited service)

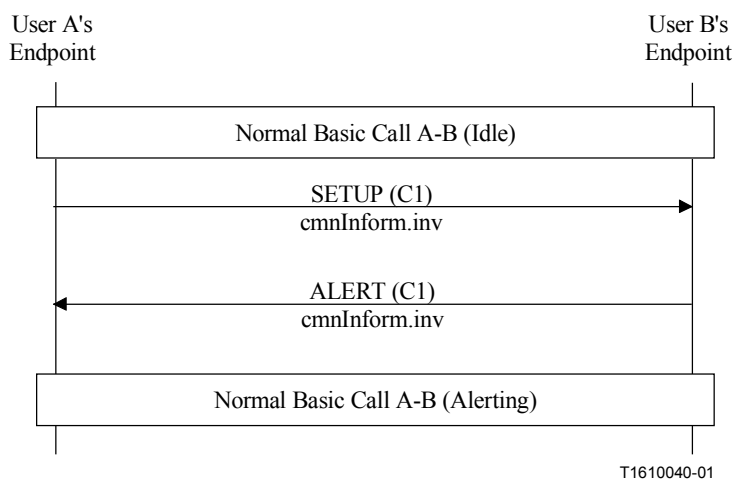


Figure 5/H.450.12 – Example of normal operation of ANF-CMN (unsolicited service)

11.2 Timers

11.2.1 Timer T1

Timer T1 shall operate during the CMN-Wait-Answer state, if the CmnRequest invoke APDU was not sent in a SETUP message. Its purpose is to protect against an absence of response to ANF-CMN invocation for the solicited service.

Timer T1 shall have a value of not less than 30 seconds.

12 Operations in support of Common Information Network service

The operations defined in Abstract Syntax Notation one (ASN.1) below shall apply.

```
Common-Information-Operations
    { itu-t recommendation h 450 12 version1(0) common-information-
      operations(0) }

DEFINITIONS AUTOMATIC TAGS ::=
BEGIN

IMPORTS
    OPERATION, ERROR FROM Remote-Operations-Information-Objects
        { joint-iso-itu-t remote-operations(4)
          informationObjects(5) version1(0) }
    EXTENSION, Extension{ } FROM
        Manufacturer-specific-service-extension-definition
        { itu-t recommendation h 450 1 version1(0) msi-
          definition(18) }
    MixedExtension, undefined FROM Call-Hold-Operations
        { itu-t recommendation h 450 4 version1(0) call-hold-
          operations(0) }

H323CommonInformationOperations      OPERATION ::=
    { cmnRequest      | cmnInform }

cmnRequest      OPERATION ::=
    {
        ARGUMENT      DummyArg OPTIONAL TRUE
        RESULT         CmnArg
        ERRORS         { undefined }
        CODE           local: 84
    }

cmnInform      OPERATION ::=
    {
        ARGUMENT      CmnArg
        RETURN RESULT  FALSE
        ALWAYS RESPONDS FALSE
        CODE           local: 85
    }

CmnArg      ::= SEQUENCE
    {
        featureList      FeatureList      OPTIONAL,
        featureValues     FeatureValues     OPTIONAL,
        featureControl     FeatureControl     OPTIONAL,
        extension         SEQUENCE SIZE (0..255) OF MixedExtension
        OPTIONAL,
        ...
    }

DummyArg      ::= SEQUENCE
    {
        extensionArg     SEQUENCE SIZE (0..255) OF MixedExtension
        OPTIONAL
    }
```

```

FeatureList ::= SEQUENCE
{
    -- indicates capabilities of the endpoint sending -
    -- the FeatureList
    ssCFreRoutingSupported    NULL OPTIONAL, -- Call Forwarding rerouting
                                     -- supported meaningful only in
                                     -- forward direction during call
                                     -- establishment
    ssCTreRoutingSupported    NULL OPTIONAL, -- Call Transfer rerouting
                                     -- supported meaningful both in
                                     -- forward & backward direction
                                     -- during call establishment
    ssCCBSPossible            NULL OPTIONAL, -- CCBS possible meaningful only
                                     -- in backward direction before
                                     -- receipt of ALERTING/CONNECT
    ssCCNRPossible            NULL OPTIONAL, -- CCNR possible meaningful only
                                     -- in backward direction before
                                     -- receipt of CONNECT
    ssCOSupported             NULL OPTIONAL, -- Call Offer supported
                                     -- meaningful only in backward
                                     -- direction during call
                                     -- establishment

    -- Call Intrusion
    ssCIForcedReleaseSupported    NULL OPTIONAL, -- meaningful only in
                                     -- backward direction
    ssCIIsolationSupported        NULL OPTIONAL, -- meaningful only in
                                     -- backward direction
    ssCIWaitOnBusySupported       NULL OPTIONAL, -- meaningful only in
                                     -- backward direction
    ssCISilentMonitoringSupported NULL OPTIONAL, -- meaningful only in
                                     -- backward direction
    ssCIConferenceSupported       NULL OPTIONAL, -- meaningful only in
                                     -- backward direction

    -- Call Hold
    ssCHFfarHoldSupported         NULL OPTIONAL, -- meaningful in both
                                     -- directions

    -- Message Waiting Callback
    ssMWICallbackSupported       NULL OPTIONAL, -- meaningful in backward
                                     -- direction
                                     -- meaningful both in
                                     -- forward & backward
                                     -- direction during call
                                     -- establishment

    -- Call Park
    ssCPCallParkSupported        NULL OPTIONAL, -- meaningful in both
                                     -- directions

    ...
}

FeatureValues ::= SEQUENCE
{
    partyCategory      PartyCategory OPTIONAL,

    ssCIprotectionLevel SSICIProtectionLevel OPTIONAL,
        -- Supplementary Service Call Intrusion Protection level
        -- meaningful both in forward and backward direction; inclusion
        -- indicates support of SS-CI as an unwanted endpoint (forward
        -- direction) or as a Terminating Endpoint (backward direction),
        -- as well as the applicable protection level.

    ...
}

```

```

PartyCategory ::= ENUMERATED
{
    unknown,
    extension,
    attendant,
    emergExt,
    ...
}

SSCIProtectionLevel ::= INTEGER (0..3)

FeatureControl ::= SEQUENCE
{
    ssCHDoNotHold          NULL OPTIONAL, -- meaningful in both directions

    ssCTDoNotTransfer      NULL OPTIONAL, -- meaningful in both directions
    -- Sending endpoint shall not be held

    ssMWICallbackCall      NULL OPTIONAL, -- meaningful only in SETUP
    -- sending endpoint shall not be transferred
    -- indicating a callback call

    ssCISilentMonitorPermitted NULL OPTIONAL, -- unwanted endpoint
    -- allows for
    -- silent monitoring
    -- meaningful in forward and backward direction

    ...
}

END -- of Common-Information-Operations

```

13 Specification and Description Language (SDL) Diagrams for ANF-CMN

The procedures for Common Information signalling entities are described in SDL form in two series:

- Figures 7 through 10 show the procedures where an explicit primitive exchange is performed to respond to a CMNRequest invoke.
- Figures 11 and 12 show the procedure when an explicit exchange is replaced by the processing "Get CMN".

Since H.450.12 procedures are completely symmetrical, only the procedure for Endpoint A is shown in each case.

The SDLs only show ANF-CMN specific information transported on an H.225.0 connection. H.245 procedures (e.g. terminal capability exchange, master/slave determination, opening and closing of logical channels, etc.) are not shown. The following abbreviations are used:

BC	Basic Call
conn	Connection
conf	Confirmation
err	Return error APDU
ind	Indication
inv	Invoke APDU
rej	Reject APDU
res	Return result APDU
sig	Signalling

In case of a conflict between SDLs and the text within the previous clauses, the text shall take precedence.

Specific gatekeeper/proxy SDLs for the model where a gatekeeper/proxy acts on ANF-CMN on behalf of an endpoint are not provided.

The symbols used in the following SDLs are defined in Figure 6 SDL Symbols.

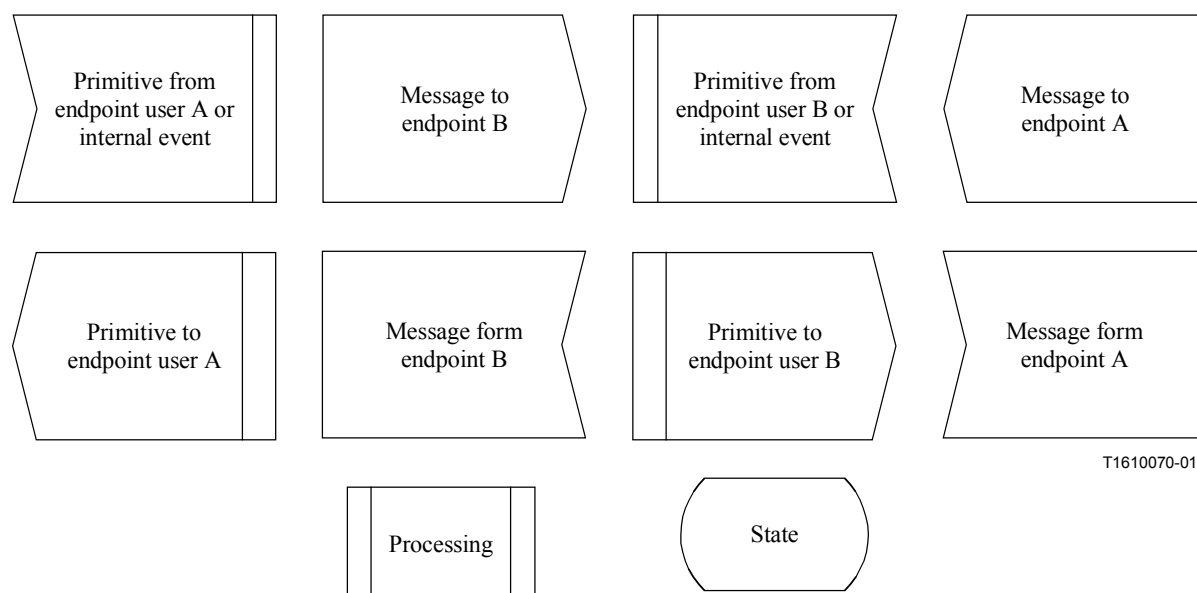


Figure 6/H.450.12 – SDL symbols

13.1 Behaviour of the endpoints using explicit primitive exchange

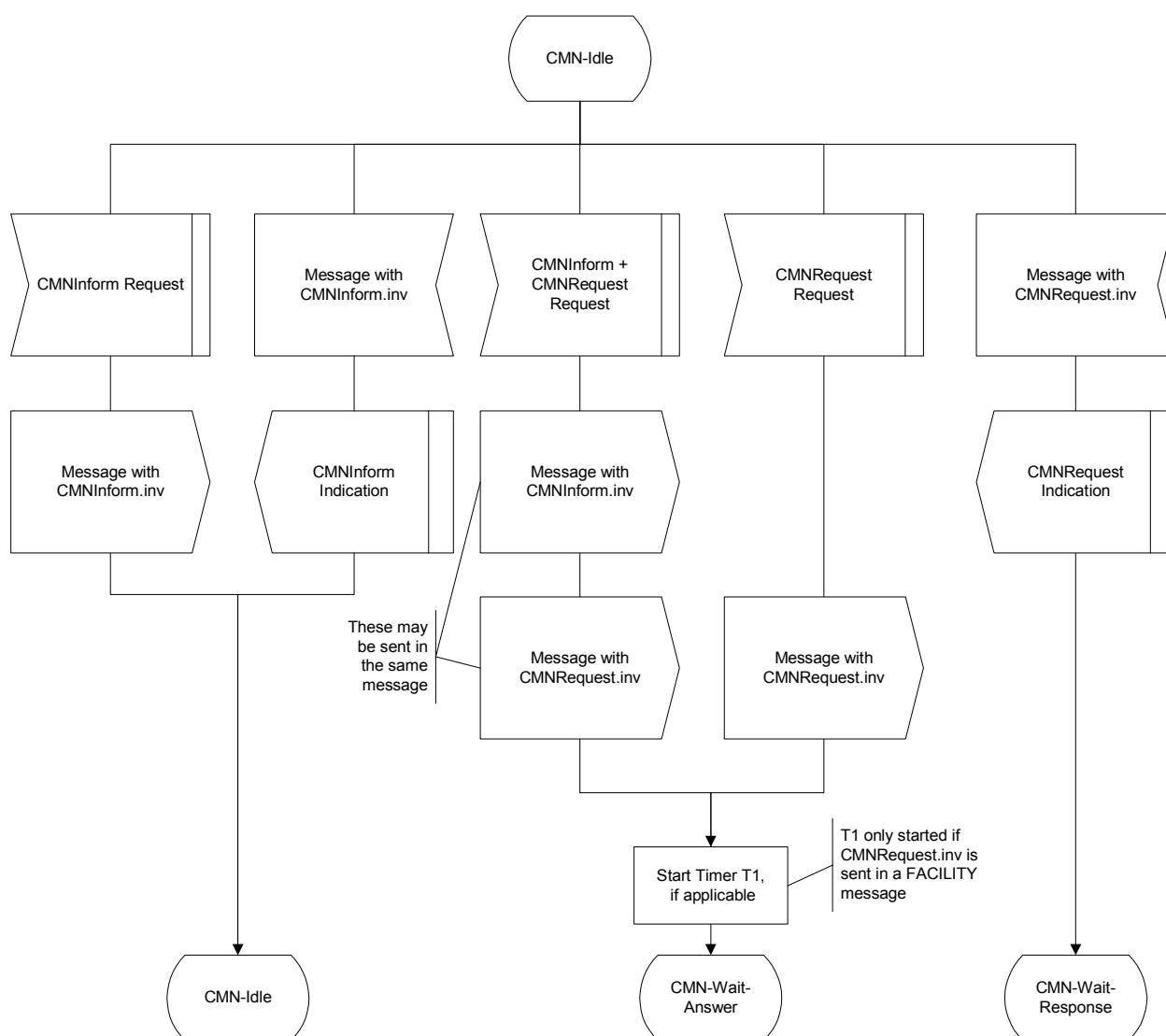


Figure 7/H.450.12 – SDL representation of ANF-CMN at Endpoint A (part 1)

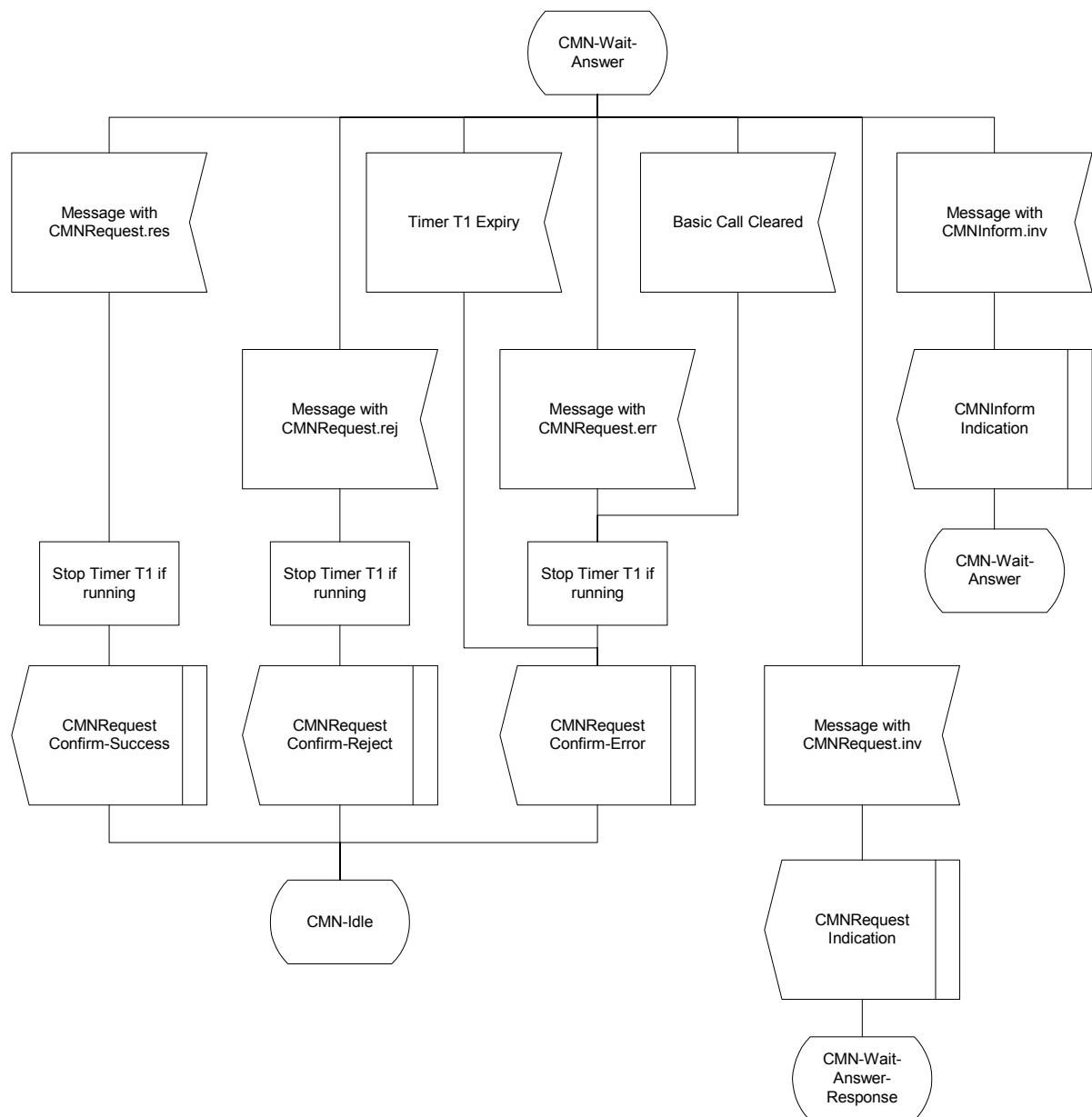


Figure 8/H.450.12 – SDL representation of ANF-CMN at Endpoint A (part 2)

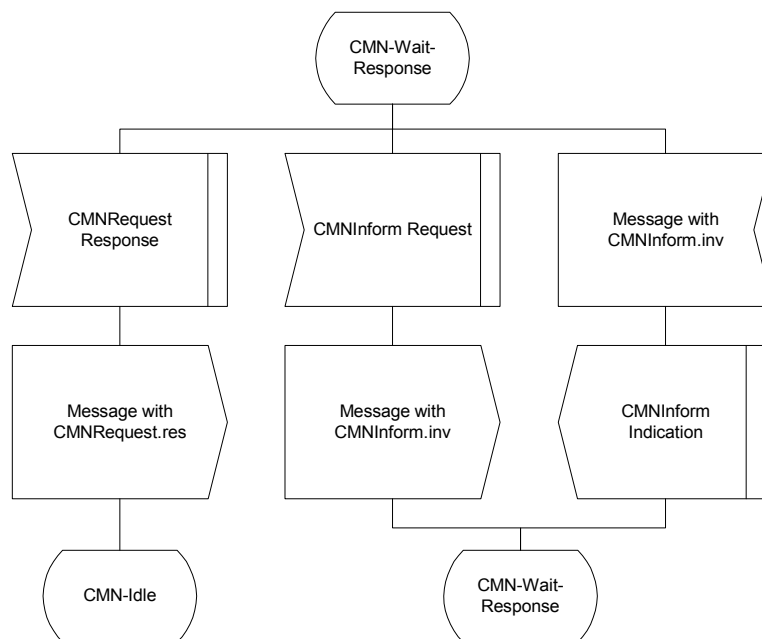


Figure 9/H.450.12 – SDL representation of ANF-CMN at Endpoint A (part 3)

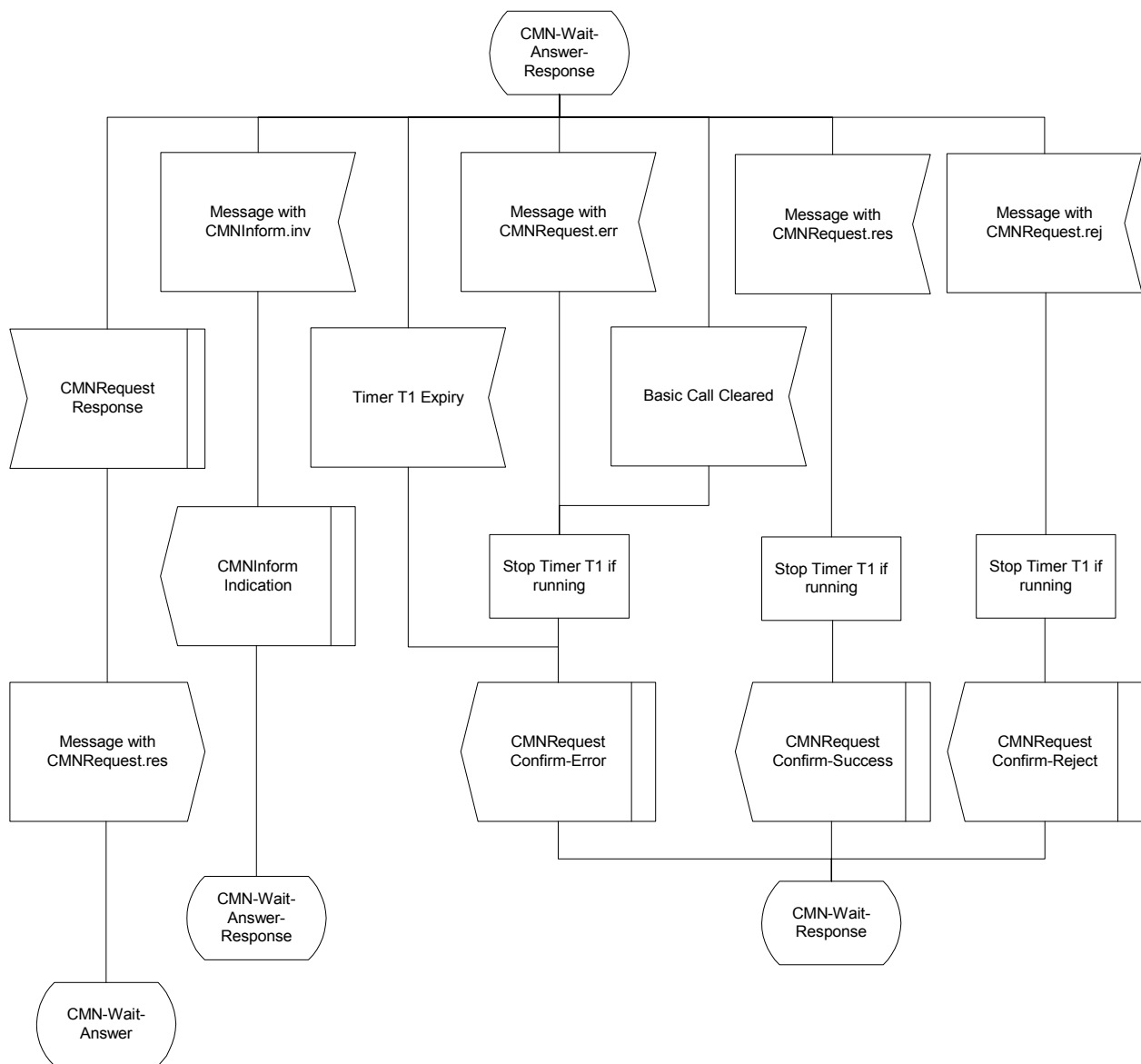


Figure 10/H.450.12 – SDL representation of ANF-CMN at Endpoint A (part 4)

13.2 Behaviour of the Endpoints using implicit application information exchange

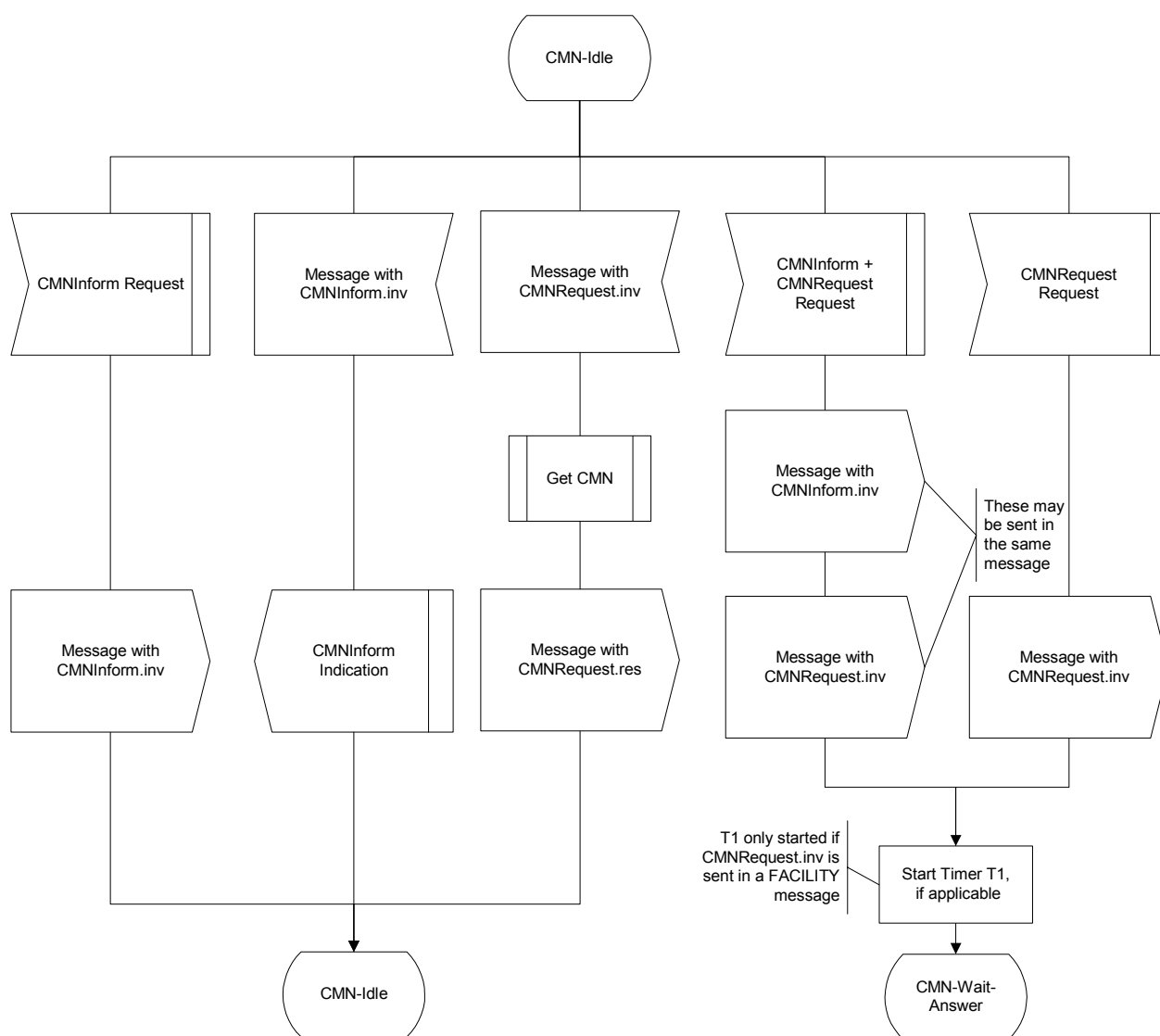


Figure 11/H.450.12 – SDL representation of ANF-CMN at the Endpoint A (*part 1*)

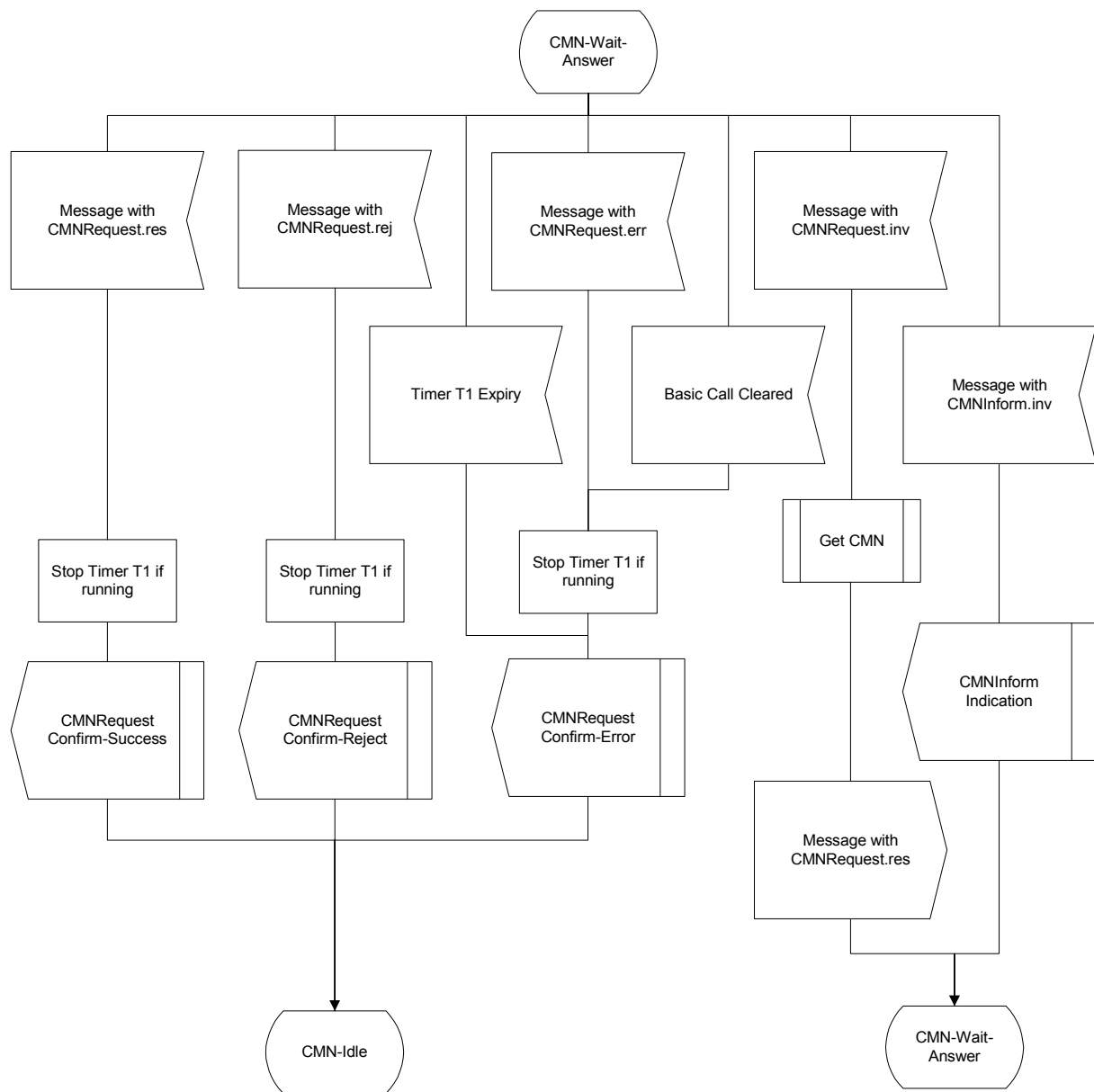


Figure 12/H.450.12 – SDL representation of ANF-CMN at Endpoint A (*part 2*)

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