



ATIS-1000678.v4.d.2021

***ATIS Supplement A to ATIS-1000678.v4.2020, Lawfully
Authorized Electronic Surveillance (LAES)
for Voice over Internet Protocol and Rich Communications
Services Messaging in Wireline and Broadband
Telecommunications Networks, Version 4***

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ATIS-1000678.v4.a.2021, ATIS Supplement A to ATIS-1000678.v4.2020, *Lawfully Authorized Electronic Surveillance (LAES) for Voice over Internet Protocol and Rich Communications Services Messaging in Wireline and Broadband Telecommunications Network, Version 4*

Is an American National Standard developed by the ATIS **Lawfully Authorized Electronic Surveillance (LAES)** Subcommittee under the **ATIS Packet Technologies and Systems Committee (PTSC)**.

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American National Standard for Telecommunications

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Authorized Electronic Surveillance (LAES) for Voice over
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Messaging in Wireline and Broadband
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Alliance for Telecommunications Industry Solutions

Approved January 5, 2021

American National Standards Institute, Inc.

Abstract

This Supplement provides modifications to ATIS-1000678.v4, *Lawfully Authorized Electronic Surveillance (LAES) for Voice over Internet Protocol and Rich Communication Services Messaging in Wireline and Broadband Telecommunications Networks, Version 4*.

Foreword

The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.

This document is entitled the American National Standard for Telecommunications – Lawfully Authorized Electronic Surveillance (LAES) for Voice over Internet Protocol (VoIP) and Rich Communications Services (RCS) Messaging in Wireline and Broadband Telecommunications Networks. This standard is the result of work by members of the Packet Technologies and Systems Committee (PTSC), working within the PTSC Lawfully Authorized Electronic Surveillance Subcommittee (LAES). This Standard defines the interfaces between a Telecommunication Service Provider (TSP) and a Law Enforcement Agency (LEA) to assist the LEA in conducting lawfully authorized electronic surveillance for VoIP and RCS messaging in wireline and broadband telecommunications networks.

It is not the intent of this document to imply or impact any pending CALEA regulatory decisions related to VoIP. This document provides the mechanisms to perform lawfully authorized electronic surveillance of VoIP subject to the appropriate legal and regulatory environment. Where CALEA is found to be applicable to VoIP, it is intended that a manufacturer or service provider that is in compliance with this document will have “safe harbor” under Section 107 of CALEA, Public Law 103-414, codified at 47 U.S.C. 1001 et seq.

ANSI guidelines specify two categories of requirements: mandatory and recommendation. The mandatory requirements are designated by the word *shall* and recommendations by the word *should*. Where both a mandatory requirement and a recommendation are specified for the same criterion, the recommendation represents a goal currently identifiable as having distinct compatibility or performance advantages.

Suggestions for improvement of this document are welcome. They should be sent to the Alliance for Telecommunications Industry Solutions, PTSC, 1200 G Street NW, Suite 500, Washington, DC 20005.

This standard was processed and approved for submittal to ANSI by the PTSC. Committee approval of this standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard, the PTSC had the following leadership:

- M. Dolly, PTSC Chair (AT&T)
- V. Shaikh, PTSC Vice-Chair (Perspecta Labs)
- G. Myers, PTSC LAES Chair (Counter Link)
- N. Rao, PTSC LAES Vice-Chair (Nokia)

The Lawfully Authorized Electronic Surveillance (LAES) Subcommittee was responsible for the development of this document

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1 Scope & Purpose

The scope of this Supplement is ATIS-1000678.v4.2020, *Lawfully Authorized Electronic Surveillance (LAES) for Voice over Internet Protocol and Rich Communication Services Messaging in Wireline and Broadband Telecommunications Networks, Version 4*.

The purpose of this Supplement is to provide modifications to ATIS-1000678.v4.2020 to address implementation issues. There are four modifications:

1. The definition of Group B in Clause 6.1.13 was incorrect in that the first of two bullet items was not marked as a bullet item.
2. The definition of the “Other” parameter for SHAKEN when there is no SHAKEN validation occurring did not include the value that should be coded in the “Other” parameter.
3. The version numbers in the OIDs in the ASN.1 definition did not get incremented.
4. The imported type TimeStamp in the ASN.1 definition did not have the S capitalized.

Upon publication, this Supplement shall be used in conjunction with ATIS-1000678.v4.2020.

2 Modifications

2.1 Modification of Clause 6.1.13

Modify Clause 6.1.13, *NetworkSignal* Message, as shown below:

6.1.13 NetworkSignal Message

The *NetworkSignal Message* reports signals, tones, or messages initiated, generated, or sent by the VoIP network toward the intercept subject; or signals, tones, or messages reported to the VoIP network as having been initiated, generated, or sent toward the intercept subject.

The NetworkSignal message shall be triggered when the VoIP network initiates, generates, sends, or receives information that indicates the initiation, generation, or sending of:

Group A: Information sent to the intercept subject:

- Alerting toward the intercept subject;
- Other network signaling toward the intercept subject, such as SIP early media and the equivalent of tones (e.g., busy, ringback);
- A call-associated display message toward the intercept subject (e.g., identifying the calling party name and number, providing a message waiting indicator, providing call progress). This includes the eCNAM Extended Name;
- A message toward the intercept subject’s equipment to instruct it to remove tones or visual indicators;

or

Group B: Intercept subject VoIP network receives additional information related to the call (nothing is sent to the intercept **s**ubject):

- Information or signaling is received from another endpoint (i.e., an associate’s device or agent) relating to an intercept subject-initiated call;
- When an STI PASSporT is signed, verified, or attested (in the originating or terminating side).

The NetworkSignal message includes the following parameters:

Table 2.A: NetworkSignal Message Parameters

Parameter	MOC	Usage
CaselIdentity	M	Identifies the Intercept Subject.
IAPSystemIdentity	C	Included to identify the system containing the IAP, when the underlying data carriage does not imply that system.
TimeStamp	M	Identifies the date and time that the event was detected.
CallIdentity	C	Included to uniquely identify a call, call leg, or session within a system, when the network signal is associated with a particular call.
SignaledToPartyIdentity	C	Included to identify the signaled-to party, when the identifier is more specific than the intercept subject identity associated with the CaselIdentity.
AssociateMediaInformation	C	Included to identify the SDP information for an associate, when an associate's media information is being reported. The information need not be reported if reported via other messages (e.g., MediaAndAddressReporting message).
Signal	M	Identifies the signal, tone or message initiated, generated or sent by the VoIP network toward the intercept subject, or the signal, tone or message reported to the VoIP network that was initiated, generated or sent toward the intercept subject. Also identifies a Secure Telephone Identity (STI) PASSporT signature, when provided for authentication, verification, or Divert attestation purposes.
One or more of the following:		
AlertingSignal	C	Included for an alerting signal.
SubjectAudibleSignal	C	Included for an audible tone.
TerminalDisplayInfo	C	Included for a display message, including eCNAM or SHAKEN as described below this table.
Other	C	Included for any other network signal (e.g., "call forwarding", "hold", "retrieve", "refer") that triggers this message. See also eCNAM or SHAKEN description below this table.
AssociateContactAddresses	C	Included when one or more contact addresses are provided by an associate.
EncapsulatedSignalingMessage	C	When a SIP message stimulates the sending of the NetworkSignal message, that SIP message shall be included in the EncapsulatedSignalingMessage parameter. When the use of SHAKEN causes the NetworkSignal message to be triggered, this EncapsulatedSignalingMessage will include the SIP message that contains the SIP Identity header which carries SHAKEN information.

The eCNAM Extended Name [Ref 22], if present, shall be delivered in the TerminalDisplayInfo parameter or the Other parameter based on the following considerations:

- The Extended Name that is actually sent to the intercept subject device is mapped into the callingName subparameter of the terminalDisplayInfo parameter. This would also include the values "Anonymous" and "Unavailable" when needed [Ref 22].
- If the Extended Name available at an IAP in the VoIP network is different from the Extended Name presented to the intercept subject (e.g., truncated) the Extended Name available at an IAP in the VoIP network is mapped to the Other parameter.
- eCNAM Extended Name reporting in other call scenarios, such as call forwarding, is not addressed in this scenario.

If SHAKEN (STIR) [Ref 24] is supported in the originating network the LI reporting of SHAKEN applies in the originating network and likewise if SHAKEN (Verification) is supported in the terminating network, then the LI reporting requirements apply in the terminating network. When the SP network performs SHAKEN validation with signaling resulting from analytics or SHAKEN, these results shall be delivered in the TerminalDisplayInfo parameter or the Other parameter based on the following considerations.

- When the CMS performs SHAKEN validation with signaling resulting from analytics or SHAKEN, the following shall be mapped into the generalDisplay subparameter of the terminalDisplayInfo parameter: "TN-Validation-Passed", "TN-Validation-Failed", or "No-TN-Validation". In addition, the following applies:

- For the case of TN-Validation-Failed, the Other parameter shall be included and coded with the “SHAKEN status code 4xx” or “SHAKEN status code 5xx” when validation fails in a terminating network.
- The Other parameter shall be used to indicate that SHAKEN information is present, **coded as “SHAKEN information is present”**.

6.2 Modification of Annex A

Modify Annex A, *ASN.1 Definitions*, as shown below:

This annex is normative and is considered part of this Standard.

NOTE - This Annex has also been formatted as a separate plaintext file and electronically packaged with this standard.

```

ATIS-LAES-VoIP-Abstract-Syntax-Module
{iso(1) member-body(2) us(840) tia(113737) laes(2) t1(1) t1-678(0) cii(0) common (0) version-6(5) }

DEFINITIONS IMPLICIT TAGS ::=

BEGIN

IMPORTS

CCIdentity, CaseIdentity, TimeStamp, AlertingSignal, AudibleSignal,
TransitCarrierIdentity, RedirectedFromInformation
FROM Laesp-j-std-025-b {iso(1) member-body(2) us(840) tia(113737) laes(2) tr45(0) j-std-025(0) j-std-
025-b(2) version-1(0)};

aTIS-LAES-VoIP-Abstract-Syntax-Module-OID OBJECT IDENTIFIER ::= {iso(1) member-body(2) us(840)
tia(113737) laes(2) t1(1) t1-678(0) cii(0) common (0) version-6(5) }
    -- OID for ATIS-LAES-VoIP-Abstract-Syntax-Module

LAESProtocol ::= SEQUENCE {
    aTIS-LAES-VoIP-Abstract-Syntax-Module-OID [0] OBJECT IDENTIFIER,
    laesMessage [1] LaesMessage
}

LaesMessage ::= CHOICE {
    answer [1] Answer,
    ccClose [2] CCClose,
    ccOpen [3] CCOpen,
    null-4 [4] NULL,
    origination [5] Origination,
    null-6 [6] NULL, -- reserved by J-STD-025-B [Ref 2]
    redirection [7] Redirection,
    release [8] Release,
    servingSystem [9] ServingSystem,
    termAttempt [10] TerminationAttempt,
    -- null-11 [11] NULL,
    confPartyChange [12] ConferencePartyChange,
    connection [13] Connection,
    connectBreak [14] ConnectionBreak,
    dialedDgtExtrn [15] DialedDigitExtraction,
    networkSignal [16] NetworkSignal,
    subjectSignal [17] SubjectSignal,
    directSignalReporting [18] DirectSignalReporting,
    mediaAndAddressReporting [19] MediaAndAddressReporting,
    ccChange [20] CCChange,
    ccUnavailable [21] CCUnavailable,
    surveillanceStatus [22] SurveillanceStatus,
    -- see Annex D of this Standard
    featureManagement [23] FeatureManagement,

```

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```

uuContent                [24] UUContent,
ccEncryptionInfo        [25] CCEncryptionInfo,
...
}

-- Message Definitions

Answer ::= SEQUENCE {
    caseId                [0] CaseIdentity,
    iAPSystemId           [1] IAPSystemIdentity           OPTIONAL,
    timestamp             [2] TimeStamp,
    callId                [3] CallIdentity,
    answering             [4] PartyIdentity           OPTIONAL,
    location              [5] Location                 OPTIONAL,
    answeringMedia        [6] SDP                      OPTIONAL,
    signalingMsg          [7] SET OF EncapsulatedSignalingMessage OPTIONAL
}

CCChange ::= SEQUENCE {
    caseId                [0] CaseIdentity,
    iAPSystemId           [1] IAPSystemIdentity           OPTIONAL,
    timestamp             [2] TimeStamp,
    callID                [3] CallIdentity,
    deliveryIdentifier     [4] DeliveryIdentifier,

    -- Include at least one of the two following parameters:
    subjectMedia          [5] SDP                      OPTIONAL,
    associateMedia        [6] SDP                      OPTIONAL,

    signalingMsg          [7] SET OF EncapsulatedSignalingMessage OPTIONAL
}

CCClose ::= SEQUENCE {
    caseId                [0] CaseIdentity,
    iAPSystemId           [1] IAPSystemIdentity           OPTIONAL,
    timestamp             [2] TimeStamp,
    callID                [3] CallIdentity,
    deliveryIdentifier     [4] DeliveryIdentifier,
    signalingMsg          [5] SET OF EncapsulatedSignalingMessage OPTIONAL
}

CCEncryptionInfo ::= SEQUENCE {
    caseId                [0] CaseIdentity,
    iAPSystemId           [1] IAPSystemIdentity,
    timestamp             [2] TimeStamp,
    callId                [3] CallIdentity,
    cryptoContext         [4] CryptoContext           OPTIONAL,
    key                   [5] OCTET STRING,
    salt                  [6] OCTET STRING           OPTIONAL,
    keyEncoding           [7] ENUMERATED {
        binary (0),
        base64 (1),
        ...
    } OPTIONAL,
    ...
}

CryptoContext ::= CHOICE {
    sRTP
        destIpAddress     [0] SEQUENCE {
            destPort      [0] IpAddress,
            sSRC           [1] OCTET STRING(SIZE(2)),
            sequenceNum    [2] OCTET STRING(SIZE(4))   OPTIONAL,
            tail           [3] INTEGER                 OPTIONAL,
            },
    ...
}

CCOpen ::= SEQUENCE {
    caseId                [0] CaseIdentity,
    iAPSystemId           [1] IAPSystemIdentity           OPTIONAL,
    timestamp             [2] TimeStamp,
    callID                [3] CallIdentity,

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deliveryIdentifier          [4] DeliveryIdentifier,

-- Include at least one of the two following parameters:
subjectMedia              [5] SDP                                OPTIONAL,
associateMedia            [6] SDP                                OPTIONAL,

signalingMsg              [7] SET OF EncapsulatedSignalingMessage  OPTIONAL
}

CCUnavailable ::= SEQUENCE {
  caseId                  [0] CaseIdentity,
  iAPSystemId             [1] IAPSystemIdentity                  OPTIONAL,
  timestamp               [2] TimeStamp,
  callId                  [3] CallIdentity,
  unavailabilityReason    [4] VisibleString                    OPTIONAL,
  signalingMsg            [5] SET OF EncapsulatedSignalingMessage  OPTIONAL
}

Connection ::= SEQUENCE {
  caseId                  [0] CaseIdentity,
  iAPSystemId             [1] IAPSystemIdentity                  OPTIONAL,
  timestamp               [2] TimeStamp,
  callId                  [3] SEQUENCE OF CallIdentity,

-- Include at least one of the following two parameters:
  connectedParties        [4] SEQUENCE OF PartyIdentity          OPTIONAL,
  newParties              [5] SEQUENCE OF PartyIdentity          OPTIONAL,

  connectedMedia          [6] SDP                                OPTIONAL,
  signalingMsg            [7] SET OF EncapsulatedSignalingMessage  OPTIONAL
}

ConnectionBreak ::= SEQUENCE {
  caseId                  [0] CaseIdentity,
  iAPSystemId             [1] IAPSystemIdentity                  OPTIONAL,
  timestamp               [2] TimeStamp,
  callId                  [3] SEQUENCE OF CallIdentity,

-- Include at least one of the following three parameters:
  removedParties          [4] SEQUENCE OF PartyIdentity          OPTIONAL,
  remainingParties        [5] SEQUENCE OF PartyIdentity          OPTIONAL,
  droppedParties          [6] SEQUENCE OF PartyIdentity          OPTIONAL,

  signalingMsg            [7] SET OF EncapsulatedSignalingMessage  OPTIONAL
}

ConferencePartyChange ::= SEQUENCE {
  caseId                  [0] CaseIdentity,
  iAPSystemId             [1] IAPSystemIdentity                  OPTIONAL,
  timestamp               [2] TimeStamp,
  callId                  [3] SEQUENCE OF CallIdentity,

-- Include at least one of the following four parameters:
  communicatingParties    [4] SEQUENCE OF PartyIdentity          OPTIONAL,
  removedParties          [5] SEQUENCE OF PartyIdentity          OPTIONAL,
  joinedParties           [6] SEQUENCE OF PartyIdentity          OPTIONAL,
  droppedParties          [7] SEQUENCE OF PartyIdentity          OPTIONAL,

  signalingMsg            [8] SET OF EncapsulatedSignalingMessage  OPTIONAL
}

DialedDigitExtraction ::= SEQUENCE {
  caseId                  [0] CaseIdentity,
  iAPSystemId             [1] IAPSystemIdentity                  OPTIONAL,
  timestamp               [2] TimeStamp,
  callId                  [3] CallIdentity,
  digits                  [4] VisibleString (SIZE (1..32))
}

DirectSignalReporting ::= SEQUENCE {
  caseId                  [0] CaseIdentity,
  iAPSystemId             [1] IAPSystemIdentity                  OPTIONAL,
  timestamp               [2] TimeStamp,

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    callID                [3] CallIdentity                OPTIONAL,
    direction              [4] MessageDirection,
    location                [5] Location                    OPTIONAL,
    signalingMsg           [6] EncapsulatedSignalingMessage
}

MediaAndAddressReporting ::= SEQUENCE {
    caseId                [0] CaseIdentity,
    iAPSystemId           [1] IAPSystemIdentity            OPTIONAL,
    timestamp              [2] TimeStamp,
    callId                [3] CallIdentity,

    -- Include at least one of the following three parameters:
    subjectMedia           [4] SDP                          OPTIONAL,
    associateMedia         [5] SDP                          OPTIONAL,
    redirectedToPartyMedia [6] SDP                          OPTIONAL,

    subjectContactAddresses [7] PartyIdentity              OPTIONAL,
    associateContactAddresses [8] PartyIdentity            OPTIONAL,
    redirectedToPartyContactAddresses [9] PartyIdentity    OPTIONAL,
    mediaAndAddressReportingCause [10] VisibleString,
    signalingMsg           [11] SET OF EncapsulatedSignalingMessage OPTIONAL
}

NetworkSignal ::= SEQUENCE {
    caseId                [0] CaseIdentity,
    iAPSystemId           [1] IAPSystemIdentity            OPTIONAL,
    timestamp              [2] TimeStamp,
    callId                [3] CallIdentity                OPTIONAL,
    signaledToPartyId     [4] PartyIdentity                OPTIONAL,
    associateContactAddresses [5] PartyIdentity            OPTIONAL,
    associateMedia         [6] SDP                          OPTIONAL,

    -- Include at least one of the following five parameters:
    alertingSignal        [7] AlertingSignal              OPTIONAL,
    subjectAudibleSignal  [8] AudibleSignal                OPTIONAL,
    terminalDisplayInfo   [9] TerminalDisplayInfo          OPTIONAL,
    other                  [10] UTF8String                 OPTIONAL,
    signalingMsg           [11] SET OF EncapsulatedSignalingMessage OPTIONAL
}

Origination ::= SEQUENCE {
    caseId                [0] CaseIdentity,
    iAPSystemId           [1] IAPSystemIdentity            OPTIONAL,
    timestamp              [2] TimeStamp,
    callId                [3] CallIdentity,
    calling                [4] PartyIdentity                OPTIONAL,
    called                 [5] PartyIdentity                OPTIONAL,
    input                  [6] CHOICE {
        userInput          [0] CHOICE {
            generic [0] VisibleString,
            specific [1] PartyIdentity},
        translationInput [1] CHOICE {
            generic [0] VisibleString,
            specific [1] PartyIdentity}
    },
    location                [7] Location                    OPTIONAL,
    transitCarrierId       [8] TransitCarrierIdentity        OPTIONAL,
    subjectMedia           [9] SDP                          OPTIONAL,
    originationCause       [10] VisibleString,
    signalingMsg           [11] SET OF EncapsulatedSignalingMessage OPTIONAL,
    forkedCalls            [12] SET OF ForkedCallInformation OPTIONAL
}

Redirection ::= SEQUENCE {
    caseId                [0] CaseIdentity,
    iAPSystemId           [1] IAPSystemIdentity            OPTIONAL,
    timestamp              [2] TimeStamp,
    callId                [3] CallIdentity,
    newCallId              [4] CallIdentity                OPTIONAL,
    redirectedFrom         [5] PartyIdentity                OPTIONAL,
    redirectedTo           [6] PartyIdentity                OPTIONAL,
    transitCarrierId       [7] TransitCarrierIdentity        OPTIONAL,

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associateMedia                [8] SDP                                OPTIONAL,
redirectedToSystemIdentity    [9] SystemIdentity                        OPTIONAL,
signalingMsg                  [10] SET OF EncapsulatedSignalingMessage  OPTIONAL
}

Release ::= SEQUENCE {
  caseId                      [0] CaseIdentity,
  iAPSystemId                 [1] IAPSystemIdentity                        OPTIONAL,
  timestamp                    [2] TimeStamp,
  callId                      [3] CallIdentity,
  location                    [4] Location                                OPTIONAL,
  cause                       [5] Cause                                OPTIONAL,
  contactAddresses            [6] PartyIdentity                        OPTIONAL,
  signalingMsg                [7] SET OF EncapsulatedSignalingMessage  OPTIONAL
}

ServingSystem ::= SEQUENCE {
  caseId                      [0] CaseIdentity,
  iAPSystemId                 [1] IAPSystemIdentity                        OPTIONAL,
  timestamp                    [2] TimeStamp,
  systemIdentity              [3] SystemIdentity                        OPTIONAL,
  requestId                   [4] CallIdentity                        OPTIONAL,
  registrationType            [5] AddressRegistrationType            OPTIONAL,
  registering                  [6] PartyIdentity                        OPTIONAL,
  requesting                   [7] PartyIdentity                        OPTIONAL,
  registrar                   [8] PartyIdentity                        OPTIONAL,
  requestAddressInfo          [9] CHOICE {
      generic [0] SEQUENCE OF SEQUENCE {
          address [0] PartyIdentity,
          expirationPeriod [1] INTEGER}, -- in seconds
      sip [1] SET OF SipHeader} OPTIONAL,
  responseAddressInfo        [10] CHOICE {
      generic [0] SEQUENCE OF SEQUENCE {
          address [0] PartyIdentity,
          expirationPeriod [1] INTEGER}, -- in seconds
      sip [1] SET OF SipHeader} OPTIONAL,
  failureReason              [11] Cause                                OPTIONAL,
  expirationPeriod           [12] CHOICE {
      generic [0] INTEGER,
          -- for all addresses, in seconds,
      sip [1] SipHeader} OPTIONAL,
  signalingMsg               [13] SET OF EncapsulatedSignalingMessage  OPTIONAL
}

SubjectSignal ::= SEQUENCE {
  caseId                      [0] CaseIdentity,
  iAPSystemId                 [1] IAPSystemIdentity                        OPTIONAL,
  timestamp                    [2] TimeStamp,
  callId                      [3] CallIdentity                        OPTIONAL,
  signalingPartyId            [4] PartyIdentity                        OPTIONAL,
  signaledPartyId            [5] PartyIdentity                        OPTIONAL,
  subjectMedia                [6] SDP                                OPTIONAL,
  signal                      [7] SEQUENCE {
      -- Include at least one of the following three parameters:
      dialedDigits [0] VisibleString (SIZE (1..128))
          OPTIONAL,
      featureKey [1] VisibleString (SIZE (1..128))
          OPTIONAL,
      otherSignalingInformation [2] VisibleString
          (SIZE (1..128))
          OPTIONAL},
  signalingMsg                [8] SET OF EncapsulatedSignalingMessage  OPTIONAL
}

TerminationAttempt ::= SEQUENCE {
  caseId                      [0] CaseIdentity,
  iAPSystemId                 [1] IAPSystemIdentity                        OPTIONAL,
  timestamp                    [2] TimeStamp,
  callId                      [3] CallIdentity,
  calling                     [4] PartyIdentity,
  called                      [5] PartyIdentity                        OPTIONAL,
  associateMedia              [6] SDP                                OPTIONAL,
  redirectedFromInfo          [7] RedirectedFromInformation            OPTIONAL,
}

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        signalingMsg                [8] SET OF EncapsulatedSignalingMessage    OPTIONAL
    }

UUContent ::= SEQUENCE {
    caseId                [0] CaseIdentity,
    iAPSystemId           [1] IAPSystemIdentity                            OPTIONAL,
    timestamp             [2] TimeStamp,
    callId                [3] CallIdentity                                OPTIONAL,
    signalingMsg          [4] SET OF EncapsulatedSignalingMessage
}

-- Parameter Definitions

AddressRegistrationType ::= ENUMERATED {
    unknown                (0),
    registration           (1),
    deregistration        (2),
    registrationAndDeregistration (3)
}

CallIdentity ::= SEQUENCE {
    main                  [0] UTF8String,
    leg                   [1] UTF8String                                OPTIONAL
}

Cause ::= SEQUENCE {
    signalingType         [0] UTF8String,
    cause                 [1] ParameterFormat                            OPTIONAL
}

DeliveryIdentifier ::= CHOICE {
    cccId                 [0] CCCIdentity,
    ccAddress             [1] NULL
}

ForkedCallInformation ::= SEQUENCE {
    forkedCallID         [0] CallIdentity,
    calledParty          [1] PartyIdentity
}

EncapsulatedSignalingMessage ::= OCTET STRING

IpAddress ::= CHOICE {
    ipv4                  [1] OCTET STRING(SIZE(4)),
    ipv6                  [2] OCTET STRING(SIZE(16))
}

Location ::= SET OF SEQUENCE {
    locationType         [0] UTF8String,
    location             [1] UTF8String
}

MessageDirection ::= ENUMERATED {
    fromSubject          (0),
    toSubject            (1),
    unknown              (2),
    ...
}

ParameterFormat ::= CHOICE {
    generic               [0] UTF8String,                                -- generic parameter representation
    sip                  [1] SET OF SipHeader                          -- SIP header representation
}

-- Include those PartyIdentity identification elements necessary to uniquely identify the party
-- known at the point in call or session and are authorized.
-- At least one of the PartyIdentity parameters is required.

PartyIdentity ::= SEQUENCE {
    esn                  [0] VisibleString (SIZE (8))                    OPTIONAL,
    imei                 [1] VisibleString (SIZE (1..15))                OPTIONAL,

```

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```

    tei                [2] VisibleString (SIZE (1..15))                OPTIONAL,
    spid               [3] VisibleString (SIZE (3..20))                OPTIONAL,
    imsi               [4] VisibleString (SIZE (1..15))                OPTIONAL,
    min                [5] VisibleString (SIZE (10))                   OPTIONAL,
    dn                 [6] VisibleString (SIZE (1..15))                OPTIONAL,
    userProvided       [7] VisibleString (SIZE (1..15))                OPTIONAL,
    appearanceId       [8] VisibleString (SIZE (1..15))                OPTIONAL,
    callingCardNum     [9] VisibleString (SIZE (1..20))                OPTIONAL,
    ipAddress          [10] IPAddress                                  OPTIONAL,
    xl21               [11] VisibleString (SIZE (1..15))                OPTIONAL,
    trunkId            [12] VisibleString (SIZE (1..32))                OPTIONAL,
    subaddress         [13] OCTET STRING (SIZE (2..21))                OPTIONAL,
    genericAddress     [14] SEQUENCE OF VisibleString (SIZE (1..32))  OPTIONAL,
    genericDigits      [15] SEQUENCE OF VisibleString (SIZE (1..32))  OPTIONAL,
    genericName        [16] SEQUENCE OF UTF8String                    OPTIONAL,
    port               [17] VisibleString (SIZE (1..32))                OPTIONAL,
    context            [18] VisibleString (SIZE (1..64))                OPTIONAL,
    isdnHighLayer      [19] OCTET STRING (SIZE (2..14))                OPTIONAL,
    isdnLowLayer       [20] OCTET STRING (SIZE (2..14))                OPTIONAL,
    uri                [21] SET OF UTF8String                          OPTIONAL,
    sipHeader          [22] SET OF SipHeader                            OPTIONAL,
    nai                [27] UTF8String                                  OPTIONAL,
    mac802             [28] VisibleString                               OPTIONAL,
    fqdn               [29] UTF8String                                  OPTIONAL
}

```

PortNumber ::= INTEGER

SDP ::= UTF8String

SipHeader ::= UTF8String

-- The following are optional messages:

```

SurveillanceStatus ::= SEQUENCE {
    caseId                [0] CaseIdentity,
    reportingSystemId     [1] IAPSystemIdentity                        OPTIONAL,
    -- include to identify the system reporting the surveillance status,
    -- when the underlying data carriage does not imply that system.
    timestamp             [2] TimeStamp,
    statusEventType       [3] SurveillanceStatusEventType,
    currentStatus         [4] CurrentSurveillanceStatus
}

```

```

CurrentSurveillanceStatus ::= ENUMERATED {
    fullyActive           (0),
    partiallyActive      (1),
    inactive              (2)
}

```

```

SurveillanceStatusEventType ::= ENUMERATED {
    activation            (0),
    deactivation          (1),
    change                (2),
    scheduledReport       (3)
}

```

```

FeatureManagement ::= SEQUENCE {
    caseId                [0] CaseIdentity,
    iAPSystemId          [1] IAPSystemIdentity                        OPTIONAL,
    -- include to identify the system containing the Intercept Access Function,
    -- when the underlying data carriage does not imply that system.
    timestamp             [2] TimeStamp,
    subscriberId         [3] PartyIdentity                            OPTIONAL,
    -- Include to identify the subscriber to the service, when the identifier is
    -- more specific than the intercept subject identity associated with the
    -- CaseIdentity.
    featureId            [4] UTF8String,
    managementType       [5] FeatureManagementType,
    activationInfo        [6] UTF8String                              OPTIONAL,
    -- include to identity information provided for use by a feature
    -- (e.g., forward-to number for call forwarding), when feature activation
}

```

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```
-- was attempted and information was provided for use by the feature.
failureReason          [7] UTF8String          OPTIONAL
-- include to indicate the reason for an unsuccessful feature activation or
-- deactivation, when the feature activation or deactivation was unsuccessful.
}

FeatureManagementType ::= ENUMERATED {
    activation          (0),
    deactivation        (1)
}

IAPSystemIdentity ::= CHOICE {
    string              [1] VisibleString (SIZE (1..15)),
                        -- Used for backwards compatibility with J-STD-025-B.
    iAPSystemIdentityType [2] IAPSystemIdentityType
                        -- Used for reporting IP address formats and reporting multiple identity types.
}

IAPSystemIdentityType ::= SEQUENCE {
    ipv4                [1] OCTET STRING (SIZE(4))          OPTIONAL,
    ipv6                [2] OCTET STRING (SIZE(16))         OPTIONAL,
    fqdn                [3] OCTET STRING                   OPTIONAL,
                        -- Fully Qualified Domain Name and the trailing "." may not be included.
    other               [4] OCTET STRING                   OPTIONAL
}

SystemIdentity ::= IAPSystemIdentity

TerminalDisplayInfo ::= SEQUENCE {
    generalDisplay      [0] VisibleString (SIZE(1..80))    OPTIONAL,
    calledNumber        [1] VisibleString (SIZE(1..40))    OPTIONAL,
    callingNumber       [2] VisibleString (SIZE(1..40))    OPTIONAL,
    callingName         [3] VisibleString                  OPTIONAL,
    originalcalledNumber [4] VisibleString (SIZE(1..40))    OPTIONAL,
    lastRedirectNumber  [5] VisibleString (SIZE(1..40))    OPTIONAL,
    redirectingName     [6] VisibleString (SIZE(1..40))    OPTIONAL,
    redirectingReason   [7] VisibleString (SIZE(1..40))    OPTIONAL,
    messageWaitingNotif [8] VisibleString (SIZE(1..40))    OPTIONAL
}

END -- of ATIS-LAES-VoIP-Abstract-Syntax-Module

CCDeliveryHeaderModule
{iso(1) member-body(2) us(840) tia(113737) laes(2) t1(1) t1-678(0) ccdeliveryheader(1) version-6(5)}

DEFINITIONS IMPLICIT TAGS ::=

BEGIN

IMPORTS

TimeStamp, CaseIdentity
FROM Laesp-j-std-025-b {iso(1) member-body(2) us(840) tia(113737) laes(2) tr45(0) j-std-025(0) j-std-025-b(2) version-1(0)}

CallIdentity, IAPSystemIdentity
FROM ATIS-LAES-VoIP-Abstract-Syntax-Module{iso(1) member-body(2) us(840) tia(113737) laes(2) t1(1) t1-678(0) cii(0) common(0) version-6(5)};

cCDeliveryHeaderModuleOID OBJECT IDENTIFIER ::= {iso(1) member-body(2) us(840) tia(113737) laes(2) t1(1) t1-678(0) ccdeliveryheader(1) version-6(5)}
-- OID for CCDeliveryHeaderModule

CCProtocol ::= SEQUENCE {
    cCDeliveryHeaderModuleOID [0] OBJECT IDENTIFIER,
    ccapdu                    [1] CC-APDU
}

CC-APDU ::= SEQUENCE {
    cCDeliveryHeader [0] CCDeliveryHeader,
```

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```
    payload                [1] OCTET STRING
}

CCDeliveryHeader ::= SEQUENCE {
    correlationInfo        [0] SEQUENCE {
        caseId             [0] CaseIdentity           OPTIONAL,
        iapId              [1] IAPSystemIdentity      OPTIONAL,
        callID             [2] CallIdentity},
    timeStamp              [1] TimeStamp,
    packetDirection        [2] PacketDirection        OPTIONAL,
    sequenceNumber         [3] INTEGER                OPTIONAL,
    payloadType            [4] PayloadType            OPTIONAL,
    -- Required for RCS Messaging Services

    -- The following are used primarily for payloadType fileObject
    msgIdentifier          [5] INTEGER                OPTIONAL,
    chunkNumber            [6] INTEGER (0..2147483647) OPTIONAL,
    lastChunk              [7] BOOLEAN                OPTIONAL,
    contentType            [8] RCSContentType         OPTIONAL,
    ...
}

-- For the following, refer to the OMA WSP Content Type Registry [Ref 32]
RCSContentType ::= CHOICE {
    wellKnownMedia        [0] INTEGER (0..127),
    mediaType              [1] UTF8String
}

PacketDirection ::= ENUMERATED {
    fromSubject            (0),
    toSubject              (1)
}

PayloadType ::= ENUMERATED {
    msrpNoTCP              (0), -- MSRP payload without layer 3 or layer 4 headers
    msrpTCP                 (1), -- MSRP payload with TCP layer
    fileObject              (2), -- Body of a file object
    ...
}

END -- of CCDeliveryHeaderModule
```