REPORT OF ETSI TIPHON MEETING #25, JANUARY 14 – 18, 2002, SOPHIA ANTIPOLIS, FRANCE

The following report represents the view of the reporter and is not the official, authorized minutes of the meeting.

ETSI TIPHON Meeting #25, January 14 – 18, 2002, Sophia Antipolis, France

Joint Meeting of Working Group 1 (Requirements) & Working Group 2 (Architecture)

WI-01012, Firewalls and Inter-domain Routing RDS

WI-02007, Application of TIPHON Functional Architecture for Inter-Domain Services

Joint Session of WGs 1, 2, 3, and 5 on QoS Signaling

DTR-02010, IPCablecom

STF Issues and STF Steering Groups for WG1 and WG2

BoF Session on API

Release 4 Deliverables

WI-00004, System Description for Emergency Telecommunications Service

WI-01004 R4, Service and Network Management Framework; Part 1: Overview and Introduction

WI-00003, UMTS Harmonization

WI-02007 R4, Application of TIPHON Functional Architecture for Inter-Domain Services

WI-02009 R4, Architecture and Reference Points Definition

Working Group 3, Call Control

DTS-03016, Protocol Framework Definition; General

DTS-03017, TIPHON Architecture Using H.323

DTS-03018, TIPHON Architecture Using SIP

DTS-03019, TIPHON Architecture Using H.248

DTS-03027, TIPHON Extended Megaco Package (EMP) Specification

DTS-03028, Technology Mapping of TIPHON Reference Point to T2 and I3 to EMP

Other Documents

Working Group 5, Quality of Service (QoS)

Second TIPHON Speech Quality Test Event

RTS-05003[3], End-to-End QoS, Signaling and Control (TS 102 024-3)

DTS-05016, Call Performance Classification (TS 102 0xx-9)

New WI-05017 on QoS in TIPHON Terminals (TR 102 024-10)

WI-05018 on Budget Allocation in Packet Networks (TR 102 024-11)

WI-05020 on IP Telephony Service Availability (TR 102 024-12)

Working Group 6, Verification

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H. van der Veer (Lucent) is the TIPHON Chair. This TIPHON meeting was a meeting of TIPHON Working Groups; there was no Plenary. 25WGTD-002r1 is the proposed schedule for these WG meetings. 25WGTD-012 is the document list for the WG meetings.

J. Pomy (Tenovis GmbH) provided 25WGTD-051 for information: 3G Mobile policy: The case of Japan. This excellent comprehensive case study (released June 25, 2001) on the Japanese mobile communications markets, history and current status was prepared by L. Srivastava <lara.srivastava@itu.int>, Project Manager – New Initiatives, International Telecommunication Union (ITU).

**Joint Meeting of Working Group 1 (Requirements) & Working Group 2 (Architecture)**

A. Martin (BT) served as the WG1 Chair in place of R. Swale (BT); J. Vandenameele (Alcatel Bell) is the WG2 Chair. 25WGTD-001 is the agenda for the combined WG1/WG2 meeting. 25WGTD-006 is the report of the WG1/WG2 meeting.

**WI-01012, Firewalls and Inter-domain Routing RDS**

A revised WI-01012 was not available as a TD to this meeting, although an informal updated draft was displayed for information. WI-01012 (to become TR 101 881) is expected to be completed at the TIPHON 26 plenary in March, 2002.

**WI-02007, Application of TIPHON Functional Architecture for Inter-Domain Services**

A. Aslam (Lucent), the Editor, and P. Sijben (Lucent), the Rapporteur, created DTR-02007 versions 0.8.6 and 0.8.7. 25WGTD-037, DTS-02007 v.0.8.7, Release 3 Guidelines for implementation of inter-domain service capabilities, is a complete rewrite of DTS-02007 using the new structure agreed at TIPHON 24. It describes how the generic information flows, as specified in the TIPHON baseline architecture (DTS-02009) and meta-protocol (DTS-03016), will be used to specify certain inter-domain service capabilities, as required in DTR-01009, SCD: Simple Call.

The services identified in Section 7, Simple call application and services, should now match services supported in TIPHON Release 3. The joint meeting discussed a number of items; the major changes are summarized as follows:

- Section 6, Registration: The structure of registration mechanism was added.
- Several Sections in Chapter 7, Simple Call Application plus Services: Terminology of entities was aligned with the names of the FGs in DTS-02009, e.g., “call server” was replaced by “network functional group.”
- Section 7.6, SCN to IP interworking, was made bi-directional to also cover IP to SCN interworking; SCN to IP call flows were included.
- In the IP Interconnect example covered in Section 7.7.1, “Network Address Translation (NAT),” was replaced by a more restricted “IP address translation” function to reflect the more restricted functionality. The possibility of adding more examples was discussed, but the joint meeting decided against it.
- The terminology in Sections 7.10, Priority calls, and 7.11, Emergency calls, was aligned with the current approach related to priority calls, e.g., authorized call priority service (ACPS).
Section 7.9, Number portability: Text was added, and call flows were added to cover the three cases.

Section 7.4, Billing: Terminology, was aligned with WI-01009, i.e., Event recording. Text was added indicating the principles, as well as a flow diagram. The meta-protocol in R3 does not identify billing events, so this section was not expanded in DTS-02007.

“Media reservation” was changed to “transport reservation.”

A. Aslam created a new version (v.0.9.0) taking into account the changes agreed; this version was approved.

**Joint Session of WGs 1, 2, 3, and 5 on QoS Signaling**

25WGTD-032 (J. Vandenameele, Alcatel) is the report of the first meeting of the NSIS (Next Steps in Signaling) WG at IETF 52. The charter of the NSIS (Next Steps in Signaling) WG can be found at: <http://www.ietf.org/html.charters/nsis-charter.html>. Details of the MIDCOM, NSIS, SDP QoS extension signaling discussion is contained in the WG5 report, 25WGTD-009.

The following two Internet drafts from the IETF address the SDP extensions for e2e perceived QoS. The first (25WGTD-025) provides the framework for the proposal, the second (25WGTD-026) contains the actual changes proposed to the SDP protocol. These drafts build further on the TIPHON QoS model. They also propose to make use of standardized QoS classes in line with those specified by TIPHON for interactive voice. These drafts are proposed as part of a concerted action involving all parts of the TIPHON QoS signaling model.

25WGTD-025 (J. Vandenameele, Alcatel; P. Veenstra, KPN) contains a copy of the Internet draft <draft-bos-mmusic-sdpqos-framework-00.txt>, “A framework for end-to-end user perceived quality of service negotiation,” as submitted to IETF 52.

Internet draft <draft-bos-mmusic-sdpqos-framework-00.txt> describes a framework to negotiate end-to-end the “quality” of a multimedia session “as the end-user wants to perceive it.” It specifies two types of new SDP extensions, through which this UPQoS (user perceived QoS) negotiation is achieved at session signaling level. All session control elements—user agents as well as proxies—involved in the multimedia session setup may participate to the UPQoS negotiation. <draft-bos-mmusic-sdpqos-framework-00.txt> also proposes to specify SDP extensions that allow expression of the UPQoS level per medium stream during the UPQoS negotiation. The first type of SDP extensions characterizes the traffic type of the bearer associated with the medium stream. The second type of SDP extensions characterizes the tolerance/sensitivity level of the service requested by the end-user.

The version of <draft-bos-mmusic-sdpqos-framework-00.txt> contained in 25WGTD-025 incorporates some updates beyond the draft submitted at TIPHON 24 (as 24TD-104). It was discussed during the IETF NSIS WG meeting, but was not discussed during the MMUSIC WG meeting. One of the reasons for this is that it is aimed at the current SDP, and the MMUSIC Chairs do not want to extend SDP, although they would agree with extensions to SDPng. However, work on the SDPng is planned for a later date and will not meet the 3GPP time frame. 25WGTD-025 therefore proposes that a work item be opened within TIPHON covering both the horizontal and vertical interfaces.

25WGTD-026 (J. Vandenameele, Alcatel; P. Veenstra, KPN) contains a copy of the Internet draft <draft-vandenameele-mmusic-sdp-qosext-00.txt>, “SDP extensions for negotiating end-to-end perceived QoS.” The version of this draft has been reworked completely from the draft submitted as 23TD-045 (J. Vandenameele, Alcatel Bell). The proponents intend to submit this draft to the
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IETF as a proposal for extending SDPng. Consequently, it must be adapted since SDPng drafts are required to make use of XML.

25WGTD-043 (J. Horrocks, DTI) lists the following issues that deserve discussion and clarification respecting the use of signaling for supporting the delivery of “guaranteed” levels of voice quality:

1) Will signaling be used separately for each call that is attempted?
2) By how much will the signaling exchanges and their support increase the network processing capacity needed for call establishment?
3) How will the signaling protocol work?
4) Will the QoS signaling apply only at call establishment or also at times during the call? If only at call establishment, how likely are the QoS parameters to vary significantly during the course of a call of typical duration?
5) How will networks know what impairments they are introducing at any point in time?
6) How will the service provider know what networks will be traversed by the call other than the one that the call starts on?
7) How will the service provider effect improvements in quality if the initial responses are inadequate? There is talk about choosing another route, but how will this be done/controlled?
8) How much additional call set-up delay will the QoS signaling add?
9) Will QoS signaling work at all if not all of the networks involved in the call support it?
10) What is envisaged as the interaction with the user for a service supported by QoS signaling if the contracted quality cannot be provided?
11) Will there be implications in changing billing systems and CDR formats?
12) Will the QoS signaling be compatible with RSVP, which is also an end-end protocol, or will they be mutually exclusive alternatives?

**DTR-02010, IPCablecom**

J. Besseyre (ETSI) provided the following parts of DTR-02010, Requirements definition study for convergence of TIPHON, IPCablecom; Architecture, protocol, QoS, and security:

- Part 1: General 25WGTD-014
- Part 2: Architecture 25WGTD-015
- Part 3: Protocol(s) 25WGTD-016
- Part 4: Quality of service 25WGTD-017
- Part 5: Security 25WGTD-018

In discussion, it was emphasized that an RDS technical report for interworking with IPCablecom should do two things: 1) Identify service capabilities required to ensure interworking, and 2) Identify which TIPHON documents need updating. Given the outcome of the RDS for interworking IPCablecom, the identification of further service capabilities relating to IPCablecom may be required in the new WI-01015 R5, Service capabilities for a multimedia call. These items are expected to cover technology mapping for CMS, NCS, QoS mapping with RTS-05003 Part [new?], SDP usage for IPCablecom 30xx (3GPP harmonization), and updates for IPCablecom security in DTS-08005, Methods and protocols for security.

It was agreed that WI-02010 R5 should be updated with architectural changes resulting from consideration of IPCablecom; these will be produced by STF 195. The possibility of WI-02010 R4 remains for further discussion at TIPHON 26.

No further updates were made to WI-02010; no negative comments were received. WI-02010 should go forward for TIPHON approval, providing other WGs are satisfied with any overlapping
work. At TIPHON 24, WI-02010 R5 was created, but it contained only an identical copy of WI-02010 R4; it therefore needs to be checked and revised.

**STF Issues and STF Steering Groups for WG1 and WG2**

25WGTD-053r1 shows the resources for STF Issues and Steering Groups for WGs 1 and 2 planned and allocated for 2002 – 2003. Deliverables must be completed by November 2003. It was suggested that a project plan related to ETSI WPM (work program) should be drafted. The question was raised as to whether TIPHON should include interaction with 3GPP2 in the STF work. It was agreed to produce a TD of the STF conference call times. It was also agreed that any STF issues to be discussed in a conference call requiring participation of WG members should be publicized by normal email exploder a few days before the STF call.

**BoF Session on API**

25WGTD-047r1 (J. Vandenameele, Alcatel Bell) is the agenda of the BoF session on API.

R. Stretch (BT Exact Technologies) presented the Parlay API – Phase 4 Requirements Specification (25WGTD-019). The Parlay API (application programming) is an open, technology-independent, and extensible interface into networking technologies; it is therefore applicable to a number of business and application domains, not just telecommunications network operators. Examples of business domains that may use the Parlay API include third party telephony service providers, interactive multimedia service providers, corporate and small businesses, residential customers, and network operators. All of these businesses have networking requirements, ranging from simple telephony and call routing to call centers, virtual private networks, and fully interactive multimedia.

P. Sijben (Lucent) gave a presentation on incorporating APIs into TIPHON/NGN (25WGTD-039). The following outline summarizes this presentation:

- **Uses of APIs in next generation networks**
  - TIPHON assumes that 1) Service differentiation is key, and 2) New services require low additional investment
  - APIs promise: 1) Easy introduction of new services across many nodes (so APIs are technology to lower the cost for service differentiation), and 2) Allow third parties to offer (parts of) services (create new revenue streams)

- **Place of APIs in the architecture**
  - Multiple (specialized) back-end servers may communicate with the service control logic, each using a subset of the SC-API
  - Service control may use the SC-API on CC-nodes to have call control nodes host a call/session
  - CC-node may (not) have the ability to use particular media servers; other nodes may be employed for that

- **Requirements on service APIs**
  - Low cost (otherwise it defeats the purpose)
  - Technology independent (creating new services per technology is too costly)
  - Secure (should not allow destabilization of the infrastructure)
  - Need to provide: 1) Call/session routing features, 2) Call/session manipulation, and 3) In-call events (tones/announcements, etc.)

- **Requirements on media APIs**
  - Low cost (otherwise it defeats the purpose)
  - Technology independent (creating afresh per technology is too costly)
  - Secure (should not allow destabilization of the infrastructure)
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- Need to provide: In-bearer events (tones/announcements, etc.)
- Suggested way forward
  - First create service capabilities and requirements that demand APIs
  - Architecture was created to cater for APIs and will therefore remain stable
  - Develop extra meta-protocols on reference points (Sx, - call routing, in-call events, call state manipulation [billing?]; SC2, SC2', - call routing, in-call events, call state manipulation [billing?]; Nx - media events)
  - After meta-protocols have been created, map to applicable technologies (PARLAY, OSA, JAIN, etc.)

In discussion of the outcome of the BoF session on APIs, the joint meeting agreed that a meeting with the “Joint API Group, Parlay, ETSI Project OSA (open service architecture), 3GPP CN (core network) 5” would be beneficial. It is necessary to examine the TIPHON Release 5 service definitions against the OSA API specifications to determine whether the required TIPHON capabilities can be supported using APIs defined in the Joint Group. This will depend on the capabilities at different TIPHON layers and on whether or not these will map to APIs. For example, would TIPHON want to open up TIPHON transport primitives for use with APIs? The output from the Joint API Group should be considered in June, when 3GPP R5 is completed. Liaison and/or joint meetings between EP TIPHON and the Joint API Group could begin in the next four to five months to work out what should be done by whom and when. It was not possible at this meeting to draft a statement of intent. A miscellaneous work item covering the philosophy for adopting API was agreed (supported by Alcatel, Lucent, BT, and Marconi). A. Martin (BT) will be the Rapporteur for this work.

Release 4 Deliverables

The joint meeting discussed the new WI-01015, Release 4 Service capabilities for a simple call, carried out by STF 194.

25WGTD-044 is DTS-101 878 v.0.4.1, Release 4 Service capability definition; Service capabilities for supplementary services. It shows proposed work by the STF to define the use of Release 4 operands to support supplementary services. Services shown in bold will be worked on as a test to check whether Release 4 operands can be used successfully.

The joint meeting also considered the SPAR capabilities document, “Development of standards to support open inter-network interfaces and service provider access.” It was felt that these services should be used to test Release 4 operands, as these SPAR capabilities are acceptable to the SPAN12 API group. If there is a need to include other service features coming from the IP service set, the PMC conference call in February should allocate these services to Release 4, (or Release 5 for later).

It was initially agreed to change the WI number for 01015 R4 and R5 to 01009 R4 and R5 and leave 01015 for UMTS only. But it was later decided to leave these work items unchanged, mainly to avoid STF funding/resource complications, as existing numbers are now well distributed.

25WGTD-034 (H. Van der Veer, Lucent) contains a TD from the NGN-IG Group providing the status of work on NGN technical areas. It shows that TIPHON is given lead responsibility for a large number of items in four of the six technical areas:

- Architecture, reference point definition, and control protocols
  - A generic reference model
  - Legacy terminals
  - Heterogeneous network issues
• End-to-end QoS
  – Definition of End-to-end QoS classes for telephony
  – Definition of End-to-end QoS classes for multimedia
  – Specification of how QoS classes are achieved by lower layer mechanisms
  – Negotiation of QoS classes between networks at lower layers
• Service platforms
  – Service provision across multiple networks
  – User presence and user control of customization and profiles (with 3GPP)
• Security
  – Compound security architecture
  – Security protocols and APIs?

The NGN-IG Group asks that the TIPHON WGs review their TD, and consider taking this work on board and report on its progress. (The Table of Contents and Scope completion was delayed until the March 2002 meeting.)

**WI-00004, System Description for Emergency Telecommunications Service**

The joint meeting discussed the Emergency Telecommunications Service (ETS). It was suggested that two work items may be necessary because the current work item identifies a two-part deliverable. Part 1 should be covered by WG1 and Part 2 should be covered by WG2 and possibly by other groups.

25WGTD-054r1 contains the first draft of DTR-00004, TIPHON Release 4; Requirements definition study; Emergency Telecommunications Service (ETS); it provides the Table of Contents and the Scope. DTR-00004 defines a set of functional requirements, objectives, and considerations that support provisioning of ETS in TIPHON networks. It addresses the interface between IP-telephony services and the PSTN for ETS application. It further elaborates on enhanced multimedia services, including Web access and database interactions, instant messaging and presence, email, and broadcast video, that are to be provisioned as part of the future ETS in the packet-based network environment. The scope of ETS includes preferential treatment and security protection of ETS traffic, authentication of authorized users, and service management interactions between the service customer and service provider. (The material for DTR-00004 will be drawn from 24TD-053r1, Emergency telecommunications service in next-generation networks, H. Folts, NCS, TIPHON 24, Sophia Antipolis, November 2001.)

The approach being taken to standardization in TIPHON represents a departure from that used in the past for PSTN, ISDN, and GSM. Its aim is to allow much greater scope for competition through innovation in the design of equipment and services. Its aim is also to provide adequate standardization to facilitate the operation of services across interconnected networks, even networks that use different technologies. DTR-00004 presents the initial core set of service capabilities envisaged to be required to enable service providers to offer emergency telecommunications services on TIPHON networks that may safely interwork with existing PSTN services while enabling more advanced services to be subsequently developed.

**WI-01004 R4, Service and Network Management Framework; Part 1: Overview and Introduction**

WI-01004 R4 (TS 101 303) is related to the Service and network management framework; Part 1: Overview and introduction. STF 194 will begin work on this on February 11, 2002. This work item delivers a service and network management framework for ETSI TIPHON Release 4 (e.g., requirements, information models, management interfaces and information bases). Based on existing general service and network management frameworks, it defines applicable service and
network management requirements, the roles of network management in TIPHON networks, a common terminology, relevant information models for IP telephony manageable elements and a set of related protocols and information bases to communicate network management information. This work must be completed by end of 2002 as it has European funding.

**WI-00003, UMTS Harmonization**

25WGTD-052 (STF 197) is an initial outline for DTS-00003 on TIPHON/UMTS harmonization, fleshed out from previous TIPHON meetings. Consistency of registration solution needs careful working of requirements with 3GPP. There are a number of topics to be covered in association with other bodies. DTS-00003 will act as a placeholder to capture requirements; it may also identify the harmonization achievements in other bodies. DTS-00003 will be edited by STF 197.

**WI-02007 R4, Application of TIPHON Functional Architecture to Inter-Domain Services**

The Editor, A. Aslam (Lucent), presented the contents list of the new deliverable dealing with the Application of TIPHON Functional Architecture to inter-domain services for TIPHON Release 4. The proposal was accepted; it will serve as the first version of the deliverable (TS 101 315).

**WI-02009 R4, Architecture and Reference Points Definition**

J. Holm (Ericsson), the Editor, presented the first draft of the new deliverable TS 101 314 dealing with the architecture and reference points definition for TIPHON Release 4, based on DTS-02009. The R4 deliverable contains a new chapter to cover service and network management. This document incorporates additions and enhancements to TIPHON Release 3 deliverable on Network Architecture and Reference Points to support enhanced telephony calls and emergency calling services for Release 4 (TIPHON TS 101 314). Additions for emergency calling services, improved QoS and enhanced security will be addressed.

P. Sijben (Lucent) introduced two change requests (CR) related to the approved deliverable (DTS-02009, TS 101 314):

- CR001 addresses editorial errors in the definition of the SCx reference points. One editorial error in section 5.2.3 was overlooked. SC2’ in the description will be replaced by SC2. The joint meeting agreed with this change.
- CR002 proposes a summary architecture combining all elements. The joint meeting agreed to the principle of adding it to the deliverable. A number of editorial changes were made to cover all scenarios. It was made bi-directional and the terminology of the introduction was aligned with DTS-02009. The joint meeting agreed with the changes.

J. Holm (Ericsson), the Editor, created a new version including the changes for further processing by the ETSI support staff.

**Working Group 3, Call Control**

R. Brennan (Telxxis LLC) is the WG3 Chair. 25WGTD-008 is the WG3 meeting report. 25WGTD-003r2 is the agenda.

The only STF Action Item for this meeting is to create a permanent document for Release 3 reference diagrams.
S. Cadzow (STF 174), Editor, presented the current draft of DTS-03016 and discussed the actions needed to complete the document for TIPHON Release 3 WG Approval at this meeting. DTS-03016 v.0.10.0 was Approved by WG3; it will proceed towards TB Approval on the mailing list as TS 101 882 under change control. Editorial updates required will be released to the WG3 mailing list in the four weeks following this meeting.

The following change requests from STF 175 for TS 101 882 were submitted:

25WGTD-020 (CR 001) requests that the acronym MPMU (meta-protocol message unit) be changed to M-PDU (meta-protocol data unit). The acronym MPMU hides the essential fact that what are being referred to are protocol data units.

25WGTD-021 (CR 002) requests deletion of the content of clause 4, Role of [the] document, with partial removal to Scope (Clause 1). The reasons for this requested change are as follows:

- Clause 4 should not contain mandates (paragraph 2), in fact this “role” should appear in the Scope and not in clause 4.
- The sentence containing “real world” should be deleted.
- Protocol standards are always abstract so the paragraph saying this should be deleted.
- Figure 2 should be introduced and maybe should even be in DTS-02009. The paragraph following does not help, and some of the terms (e.g., “optimized”) need to be defined if they are to be retained. The real time aspects need to be reinforced.
- Figure 3 should not be in the document but in a guide to standards design.
- The reference to test should not be made.
- The meta-protocols and SAPs exist but are not visible. The visibility is determined in the mapping documents.
- In the last paragraph, “data transfer” should be replaced by “signaling.”
- Requirements should not be placed on the candidates. The fixing of failures in a candidate is for the candidate developer to fix.
- In clauses 4.1 – 4.4, they should either be deleted or rewritten to ensure they only provide requirements on the meta-protocol. In particular 4.3 should be removed.

25WGTD-022 (CR 003) requests identification of meta-protocol stack as core of the framework in clause 5. The reasons for this request are as follows:

- Provide a meta-stack, as TIPHON does have one.
- If a meta-stack diagram exists, the rest of the clause can disappear. Identify fragmentation control as a function of the transport controller.
- The activity chart should be full and complete and moved to DTS-02007 as an informative description.
- The description of reservation on the forward path and commit on the reverse path is too short; it should be extended to be the core description of the framework.

25WGTD-024r1 (CR 004) requests revisions to Annex A (normative): Meta-protocol at reference point R, for the following reasons: In general, Annex A could be moved to a separate document as it does not belong to the “meta-stack.” The following comments apply whether Annex A is moved to a new document or not:

- RpoA (registration point of attachment) implies the existence of TIPHON; the introduction to the Annex should state this more strongly.
- Note 2 should become an EXAMPLE (style type EX, etc.).
25WGTD-041 (CR 005) requests some textual tidying in Annex A of WI-03016 v.0.0.9.

25WGTD-042 (CR 006) requests some textual tidying in Annex B of WI-03016 v.0.0.9.

25WGTD-045 (CR 007) requests the addition of a contextual diagram in Annex A showing the relationship of registrar, registrant, and service point of attachment, to better understand the Annex.

**DTS-03017, TIPHON Architecture Using H.323**

J. Holm (Ericsson), Rapporteur, presented the current draft of DTS-03017 and discussed the actions needed to complete the document for WG Approval as a TIPHON Release 3 deliverable at this meeting. DTS-03017 v.0.3.0 was Approved by WG3; it will proceed towards TB Approval on the mailing list as TS 101 883 under change control. Editorial updates required will be released to the WG3 mailing list in the four weeks following this meeting.

**DTS-03018, TIPHON Architecture Using SIP**

A. Aslam (Lucent), Rapporteur, presented the current draft of DTS-03018 and discussed the actions needed to complete the document for WG approval as a TIPHON Release 3 deliverable at this meeting.

DTS-03018 v0.3.0 was Approved by WG3; it will proceed towards TB Approval on the mailing list as TS 101 884 under change control. Editorial updates required will be released to the WG3 mailing list in the four weeks following this meeting.

**DTS-03019, TIPHON Architecture Using H.248**

P. Sijben (Lucent), Rapporteur, presented the WG-Approved version of TS 101 885 (DTS-03019) and discussed the actions needed to complete the document as a TB-Approved TIPHON Release 3 deliverable at this meeting. TS 101 885 (DTS-03019 v.0.5.5) was referred to the mailing list for TIPHON Release 3 Approval.

25WGTD-048r1 is a WG3 liaison to ITU-T SG16 regarding H.248 data elements. In creating the mapping between the TIPHON meta-protocol TS 101 885 (DTS-03019) and H.248 v.1, WG3 noticed some discrepancies between the two. Noting that SG16 is currently editing H.248 v.2, WG3 details a few additional parameters and asks that SG16 define and include them in H.248 v.2 Annex C:

- **IP Source address and port:** TIPHON seeks to support filtering on source addresses and port for added security.
- **Packet loss:** The TIPHON QoS uses packet loss as one of the three QoS parameters that need to be specified. The other two (delay and jitter) are supported by Annex C.
- **QoS mechanisms:** TIPHON supports a structure to convey QoS mechanism specific parameters. This function is useful to transfer ToS values, RSVP flowspecs, and MPLS labels to the media gateway. TIPHON asks SG16 to consider a placeholder for these values in Annex C so they can be applied to outgoing media flows.
- **Codec-specific parameters:** TIPHON noticed a discrepancy between the richness of codec-specific parameters in H.245 and their absence in Annex C of H.248. TIPHON asks SG16 to consider a place to include these parameters.

J. Holm (Ericsson), Rapporteur, presented the current draft of DTS-03017 and discussed the actions needed to complete the document for WG Approval as a TIPHON Release 3 deliverable at this meeting. DTS-03017 v.0.3.0 was Approved by WG3; it will proceed towards TB Approval on the mailing list as TS 101 883 under change control. Editorial updates required will be released to the WG3 mailing list in the four weeks following this meeting.

**DTS-03018, TIPHON Architecture Using SIP**

A. Aslam (Lucent), Rapporteur, presented the current draft of DTS-03018 and discussed the actions needed to complete the document for WG approval as a TIPHON Release 3 deliverable at this meeting.

DTS-03018 v0.3.0 was Approved by WG3; it will proceed towards TB Approval on the mailing list as TS 101 884 under change control. Editorial updates required will be released to the WG3 mailing list in the four weeks following this meeting.

**DTS-03019, TIPHON Architecture Using H.248**

P. Sijben (Lucent), Rapporteur, presented the WG-Approved version of TS 101 885 (DTS-03019) and discussed the actions needed to complete the document as a TB-Approved TIPHON Release 3 deliverable at this meeting. TS 101 885 (DTS-03019 v.0.5.5) was referred to the mailing list for TIPHON Release 3 Approval.

25WGTD-048r1 is a WG3 liaison to ITU-T SG16 regarding H.248 data elements. In creating the mapping between the TIPHON meta-protocol TS 101 885 (DTS-03019) and H.248 v.1, WG3 noticed some discrepancies between the two. Noting that SG16 is currently editing H.248 v.2, WG3 details a few additional parameters and asks that SG16 define and include them in H.248 v.2 Annex C:

- **IP Source address and port:** TIPHON seeks to support filtering on source addresses and port for added security.
- **Packet loss:** The TIPHON QoS uses packet loss as one of the three QoS parameters that need to be specified. The other two (delay and jitter) are supported by Annex C.
- **QoS mechanisms:** TIPHON supports a structure to convey QoS mechanism specific parameters. This function is useful to transfer ToS values, RSVP flowspecs, and MPLS labels to the media gateway. TIPHON asks SG16 to consider a placeholder for these values in Annex C so they can be applied to outgoing media flows.
- **Codec-specific parameters:** TIPHON noticed a discrepancy between the richness of codec-specific parameters in H.245 and their absence in Annex C of H.248. TIPHON asks SG16 to consider a place to include these parameters.
DTS-03027, TIPHON Extended Megaco Package (EMP) Specification

P. Mart (Marconi), Rapporteur, presented the first draft of DTS-03027 (25WGTD-036) and discussed the actions needed to complete the document for WG Approval. The purpose of this H.248/Megaco package is to extend the currently available standard packages to allow control of quality of service and media firewall functions using the H.248/Megaco protocol. It complements DTS-03019, the Release 3 Megaco technology mapping for reference point N. The text is stable; DTS-03027 v.0.0.3 was referred to the mailing list for WG3 Approval.

DTS-03028, Technology Mapping of TIPHON Reference Point to T2 and I3 to EMP

P. Sijben (Lucent), Rapporteur, presented DTS-03028 v.0.0.2 (25WGTD-038r1), and discussed the actions needed to complete the document for WG Approval. The text is stable; DTS-03028 v.0.0.3 was referred to the mailing list for WG3 Approval.

Other Documents

The following new WI proposals are projected for the TIPHON 26 Plenary:

- 26WGTD-028, SDP extensions for QoS (Release 4)
- 26WGTD-029, SDP profile for TIPHON systems (Release 4)

Working Group 5, Quality of Service (QoS)

M. Buckley (Telchemy) is the WG5 Chair. 25WGTD-049r1 is the agenda. 25WGTD-009 is the WG5 meeting report.

Second TIPHON Speech Quality Test Event

25WGTD-023r1 (H. Klaus, T-Systems Nova GmbH, Berkom; H. Gierlich, HEAD acoustics GmbH) contains a copy of the test specification (v.2.0) for the second ETSI VoIP Quality Test Event, as updated and agreed by the joint WG5/WG6 session at this meeting.

ETSI will organize a second special test event for VoIP speech quality in Sophia Antipolis, France, starting in April 2002. T-Systems Nova GmbH, Berkom, in collaboration with HEAD acoustics GmbH, will perform speech quality measurements on VoIP equipment of different manufacturers.

Speech quality will be measured by instrumental (objective) methods. The tests described in 25WGTD-023r1 are based on the tests carried out during the first ETSI VoIP Quality Test Event in October 2000, as well as in the TIPHON deliverable ETSI TS 101 329-5. The tests to be conducted during the second ETSI VoIP Speech Quality Test Event have been optimized and adapted as appropriate according to the feedback from all participating manufactures after the first test event, concentrating on a more detailed evaluation of specific parameters while optimizing the number of network conditions.

The measurement results will be compared to requirements that are recommended in standards, specifically ETSI TS 101 329-5 or other publications. To ensure consistency of the measurements of the first ETSI Quality Test Event and allow comparisons of results as well, instrumental measures for electrical and acoustical VoIP scenarios will be conducted with TOSQA (Telecommunication Objective Speech Quality Assessment, algorithm of T-Nova Berkom). In addition, instrumental measures will be conducted according to ITU-T Rec. P.862 for those scenarios where P.862 is suitable.
The measurements will be performed for one-way speech transmission as well as double-talk situations. Furthermore, each company will have the possibility in a “free-style” testing block to choose specific test conditions. In addition to the tests, an extra one-half-day tutorial session is held for each manufacturer. Within ETSI, two projects are actively involved in this event: ETSI TIPHON and ETSI STQ look after the improvement of quality aspect in the voice transmission area.

**RTS-05003[3], End-to-End QoS, Signaling and Control (TS 102 024-3)**

25WGTD-040 is TS 102 024-3, End-to-end quality of service in TIPHON systems; Part 3: Signaling and control of end-to-end quality of service.

At TIPHON 24, contribution 24TD-124 was discussed based on the findings resulting from an extensive discussion in ITU-T SG11 about end-to-end QoS service control. Architectural differences between the solutions in BICC and SIP-based solutions were identified pointing to an inconsistency in the QoS signaling requirements in the TIPHON deliverable TS 101 329-3. The results of the discussion in TIPHON 24 (as reflected in 24TD-124r2) were submitted to the December 2001 BICC Rapporteurs (ITU-T SG11) interim meeting in San Antonio. Following the discussion at that meeting, a liaison activity was started in ITU-T between SG11 and SG13.

25WGTD-031 (P. Veenstra, KPN) contains a copy of a SG11 liaison to ITU-T SGs 12 and 13 which informs that a joint session of Questions 8/11 and 9/11 was held to discuss QoS signaling requirements for BICC networks. It concluded that generic QoS issues require a broader consideration than BICC only. For example, network connections that include multiple technologies such as ATM, Frame Relay, MPLS, TDM, and IP require consideration for generic QoS service requirements and the allocation of end-to-end QoS parameters across each network component. 25WGTD-031 also includes a copy of a KPN delayed contribution (prepared for the upcoming SG13 meeting) which intends to clarify the handling of end-to-end QoS control information at the network level (at the bearer control layer) and at the application level (at the call control layer). 25WGTD-031 proposes that WG5 consider this material as part of their work on RTS-05003R4.

**DTS-05016, Call Performance Classification (TS 102 0xx-9)**

At TIPHON 24, WG5 decided to split the existing WI-05016 into two work items to cover call completion performance: one addressing voice only, another addressing multimedia.

25WGTD-027 (J. Vandenameele, Alcatel Bell; P. Veenstra, KPN) contains the new WI sheets for:

- **DTS-05016R4**, TIPHON Release 4; End-to-end quality of service in TIPHON systems; Part 9: Call performance classification (Voice). P. Veenstra (KPN) is the Rapporteur for this WI.
- **DTS-05016R5**, TIPHON Release 5; End-to-end quality of service in TIPHON systems; Part 9: Call performance classification (Multimedia). J. Vandenameele (Alcatel Bell) is the Rapporteur for this WI.

These draft standards specify, respectively, the signaling aspects associated with the control of end-to-end QoS within and between TIPHON domains for VoIP and in a multi-media environment. They define call and media processing parameters, bounds on the values of these parameters, and a possible classification system. The specified parameters apply to session and media flow set-up and close-down as well as to mid-session changes, and include issues of signaling accuracy, signaling latency, and signaling reliability.
25WGTD-027 allocates the WI on voice to Release 4, and the WI on Multimedia to Release 5, noting that it is not now clear what the exact differences between the resulting deliverables will be. 25WGTD-027 also notes that the initial contributions on DTS-05016 submitted at TIPHON 24 (24TD-103 [reference model], 24TD-106r2 [parameter definitions], and 24TD-107 [outline of contents]) apply to both deliverables. Hence, it proposes that this material be used in the first drafts of both deliverables as the starting point.

25WGTD-035r1 (S. Lalli, T. Greco, Telecom Italia) proposes a set of performance parameters for establishing IP telephony service availability parameters. For an IP network that supports multiple services (data, conferencing, video stream, voice, etc.), it is appropriate to consider different availability criteria to define service availability. For example, a network could be unavailable for the voice service but available for data service.

25WGTD-035r1 defines the service availability parameters on the basis of performance parameters and thresholds that:

1) Are evaluated on the basis of IP packets transfer that may be observed at measurement points (MPs) associated with specified functional and jurisdictional boundaries
2) Can be applied to the IP telephony service between two end hosts (SRC and DST), identified by their IP addresses (only the speech bearer capability is considered)
3) Are referring only to the scenario SCN-IP-SCN (the third scenario defined in TR 1-1 300, TIPHON, Description of technical issues)

The reference model defined has to be considered applicable only to evaluate the IP telephony service availability.

Service availability is defined as occurring when the values of a set of selected performance parameters are deemed acceptable. The value of a specific parameter is deemed acceptable if it is greater (or lower) than of a pre-specified threshold. The entirety of these selected parameters and their thresholds is called the available function. The relation between an availability parameter and the threshold(s) defines an outage criterion.

Every time that an outage criterion is verified there is a transition to the unavailable state. The available state is re-entered when all parameters are once again acceptably functioning.

The availability function classifies the total scheduled service time (T) for the IP telephony service into available (accumulated up time) and unavailable (accumulated down time) periods.

The diagram below describes the approach that is followed.
Interaction among network elements availability and the service availability is out of the scope of 25WGTD-035r1. Only the speech bearer capability is considered. The 3.1 kHz audio e 64 kbit/s unrestricted bearer capabilities are for further study.

**New WM-05017 on QoS in TIPHON Terminals (TR 102 024-10)**


When jitter is introduced in a test, it is often simply specified as a single number in ms. 25WGTD-028 asserts that this is insufficient. Since jitter is delay variation, a fixed number of ms cannot specify jitter. In practice, what is often meant with “x ms jitter” is that a jitter generator is used, with a certain probability density function (PDF), e.g., a Gaussian distribution, to generate additional delay with an average value of “x ms.” This information is “implicit” information that needs to be made explicit, for instance when performing QoS tests.

25WGTD-028 proposes to standardize a jitter model, using the following detailed framework to explicitly define jitter:

- A standardized jitter model: A set of (well-defined) parameters that are needed to define jitter
- Standardized jitter profiles: A jitter profile defines values for the parameters of the standardized jitter model
- Standardized jitter data sets: A time sequence of additional delay values that conforms to a specific jitter profile

25WGTD-028 proposes at least the following parameters in the standardized jitter model:

- The probability density function (PDF) and its parameters, as used for generating delay values
- A measure of the autocorrelation of the jitter. Several formulas are known. For example, a time-discrete version can be found at [http://www.itl.nist.gov/div898/handbook/eda/section3/eda35c.htm](http://www.itl.nist.gov/div898/handbook/eda/section3/eda35c.htm)

25WGTD-028 proposes at least the following standardized jitter profiles:

- “Worst case”: Generation of additional delay according to an exponential PDF with average values of 10, 20, and 30 ms. No autocorrelation.
- “Normal autocorrelation”: Generation of additional delay with a given PDF and with “normal values” of autocorrelation (values are for further study, e.g., \( r_{k=1} = 0.5 \)).
- “No jitter”: This is needed to see if the jitter buffer doesn’t add too much delay when jitter is completely absent.

25WGTD-029 (M. Blom, P. Veenstra, J. van Vugt, KPN) proposes that the jitter generation method in 25WGTD-023 be described in more detail. Specifically, it proposes that the algorithm used to generate jitter be described and that the resulting jitter be characterized in terms of PDF and autocorrelation, to better be able to understand the behavior of the dynamic jitter buffers in the systems under test. It also proposes text for inclusion in 25WGTD-023 to describe jitter according to at least three jitter profiles: 1) worst case, 2) normal autocorrelation, and 3) no jitter. The following was accepted and included in 25WGTD-023r1 as Annex A, Evaluation of jitter buffer characteristics:
A1 – Jitter generation: The delay variation (jitter) is generated by NistNet. (A short description of the technical operation of NistNet is proposed to be put here.) Three jitter profiles will be used:

- First, no jitter.
- Second, “worst case (autocorrelation r = 0.3)”. The jitter is distributed (PDF) exponentially, with an average of 20 ms. The jitter has no autocorrelation, meaning all jitter values are picked randomly from the exponential distribution with average 20 ms. A formula for the jitter value for packet i could be:
  \[ Jitter(i) = 20 \times \exp(-20 \times \text{RANDOM}(0-1)) \]
  where \( \text{RANDOM}(0-1) \) returns a random value between 0 and 1 (e.g., 0.345 or 0.876, etc.) for each \( i > 0 \).
- Third, “normal autocorrelation” (\( r = 0.8 \)). The autocorrelation could be introduced by making each packet’s jitter dependent on the last one:
  \[
  \begin{align*}
  Jitter(0) &= 0 \\
  Jitter(i) &= 0.5 \times Jitter(i-1) + 0.5 \times 20 \times \exp(-20 \times \text{RANDOM}(0-1))
  \end{align*}
  \]
  where \( \text{RANDOM}(0-1) \) returns a random value between 0 and 1 (e.g., 0.123 or 0.654, etc.) for each \( i > 0 \).

Note that the PDF as defined here is not an exponential distribution.

With these formulas, jitter traces can be computed once for a large number of \( i \) values. These traces can then be used as input for NistNet (assuming NistNet can use jitter values read sequentially from a trace file).

The formulas above (worst case (autocorrelation \( r = 0.3 \)), normal autocorrelation \( r = 0.8 \)) are meant as an example. Other jitter generation proposals should definitely be considered.


25WGTD-030 (M. Blom, P. Veenstra, J. van Vugt, KPN) proposes that WG5 draft a questionnaire regarding the characteristics of measured jitter, to be filled in by TIPHON members. The results of this questionnaire should be copied to RTR 101 329-6 (Actual measurements); the resulting standardized jitter model and standardized jitter profiles should be made part of TS 101 329-5 (QoS measurement methodologies).

25WGTD-057 is a WG5 liaison to TC AT informing of the following regarding the status of WI-05017:

1) TIPHON decided to refer to ANSI/TIA/EIA-810-A-2000 concerning the requirements for TIPHON terminals. This document may be extended by additional requirements not yet covered by TIA/EIA-810-A.
2) TIPHON will develop an additional document defining the measurement methodology for TIPHON terminals within WI-05008 (QoS measurement methodologies).

**WI-05018 on Budget Allocation in Packet Networks (TR 102 024-11)**

25WGTD-056r1 is WI-05018, Domain by domain performance planning guidelines for end-to-end QoS objectives associated with TIPHON speech QoS classes. This technical report contains a set of design guidelines for TIPHON networks that enable network operator domains to be designed so that the QoS objectives associated with the TIPHON speech QoS classes can be met in a multi-domain environment. D. Mustill (BT) is the Rapporteur for this WI.
WI-05020 on IP Telephony Service Availability (TR 102 024-12)

25WGTD-055 is the new WI-05020, TIPHON Release 4; End-to-end quality of service in TIPHON systems; Part 12: IP Telephony service availability. The scope of this WI is to specify performance parameters for determining IP telephony service availability for an established IP telephony session. The performance parameters refer to IP packet transfer as provided by IP data communication service. S. Lalli (Telecom Italia) is the Rapporteur.

Working Group 6, Verification

K. Sambor (Telekom Austria) and H. Wermescher (Infonova) are the WG6 Co-Chairs. 25WGTD-010 is the WG6 meeting report. 25WGTD-005 is the agenda.

Work on Deliverables

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<thead>
<tr>
<th>TD no.</th>
<th>New WI proposals (to be approved via correspondence)</th>
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<tr>
<td>26TD-032</td>
<td>DTS-06022-1, TIPHON Release 4; Release PICS; Open settlement protocol (OSP); Part 1: Protocol implementation compliance statement (PICS) proforma</td>
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<td>26TD-035</td>
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<td>26TD-036</td>
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<td>26TD-037</td>
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<td>26TD-038</td>
<td>DTS-06024-3, TIPHON Release 4; Technology compliance specifications; Extended Megaco package (EMP); Part 3: Abstract test suite (ATS) and PIXIT proforma</td>
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WG3 discussed the requirements for the profile. It was agreed that some additions to the draft base standard DTS-03004[3] will be useful to clarify these requirements. Mr. Müller agreed to first produce a VISIONng contribution to ascertain whether the requirements of VISIONng can be covered with these proposals. He reported that he has also inquired of a number of OSP protocol vendors which profile they have implemented. WG3 emphasized that the TIPHON OSP profile should take this information into account. It is expected that VISIONng will provide a TD for the March TIPHON meeting related to the OSP profile. A first text of DTS-06010-1 (v.0.0.1) was achieved.

DTS-06010-2, OSP Part 2, Test Suite Structure (TSS) and Test Purposes (TP)

For DTS-06010-2, the current material in DTS-06022-2 can partly be used. Drafts will be elaborated after DTS-06010-1 is stable.
DTS-06010-3, OSP Part 3, Abstract Test Suite (ATS) and PIXIT proforma

For DTS-06010-3, the current ATS in DTS-6022-3 can partly be used. Drafts will be elaborated after DTS-06010-2 is stable.

DTS-06014-2, Security Test Specifications for H.323 Environment

DTS-6014-2 achieved TIPHON Approval at TIPHON 24. Enhancements for parts that were left for further study will be included in a planned revision. A new WI for the revision will be requested in March 2002. Contributions for the enhancements are invited.


Because the “error handling” was changed in DTS-03019, DTS-06017-1 could not be finalized. The draft is stable; the last version is v.0.5.4. It is planned to achieve WG6 Approval of DTS-06017-1 at TIPHON 26.

DTS-06017-2, H.248 Part 2, Test Suite Structure and Test Purposes (TSS & TP) Specification

Because DTS-06017-1 is not ready, it was also not possible to finalize DTS-06017-2. The draft is stable; the last version is v.0.2.2. Finalization is expected in March 2002.

DTS-06017-3, H.248 Part 3, Abstract Test Suite (ATS) and PIXIT Specification

Finalization will be possible when DTS-06017-2 is ready. The draft is stable; the last version is v.0.1.1.

DTS-06020-1, SIP Part 1, Protocol Implementation Conformance Statement (PICS) Proforma

The TIPHON SIP profile, DTS-03018, which will be the “base standard” for DTS-06020-1, is not yet stable. Therefore, only a first text (v.0.0.3) was produced; the real work on DTS-06020-1 was not started. DTS-03018 is expected to be stable in June 2002.

DTS-06020-2, SIP Part 2, Test Suite Structure (TSS) and Test Purposes (TP)

For DTS-06020-2, the current TPs in DTS-06021-2 can be partly used; so a first text for DTS-06020-2 is available.

DTS-06020-3, SIP Part 3, Abstract Test Suite (ATS) and PIXIT Proforma

For DTS-06020-3, the current ATS in DTS-06021-3 can be partly used; so a first text for DTS-06020-3 is available.

DTS-06021-2, Draft IETF SIP RFC 2543bis-04; Part 2: Test Suite Structure and Test Purposes (TSS & TP) Specification

The stable draft (v.1.0.8) was presented; work on this will continue in the interim to TIPHON 26 in March 2002. The result of the March meeting will then be used in the SIPIT Event in April 2002.
Feedback from that event will be taken into account to produce a version that could achieve both WG6 and TIPHON Approval in June 2002.

**DTS-06021-3, Draft IETF SIP RFC2543bis-04; Part 3: Abstract Test Suite (ATS) and PIXIT Specification**

The stable draft (v.1.0.9) will be further elaborated with the aim to achieve WG6 Approval in June 2002.

**DTS-06022-1, OSP Part 1, Protocol Implementation Conformance Statement (PICS) Proforma**

A new WI will be proposed in March at TIPHON 26. An Annex in DTS-03004[3] already contains the current state of a PICS. WG3 agreed with the DTS-03004[3] Rapporteur that this Annex should be used as basis for DTS-06022-1 and deleted in DTS-03004[3].

**DTS-06022-2, OSP Part 2, Test Suite Structure (TSS) and Test Purposes (TP)**

A stable draft (v.0.3.1) is available.

**DTS-06022-3, OSP Part 3, Abstract Test Suite (ATS) and PIXIT Proforma**

A stable draft (v.0.3.1) is available.

**Liaisons/Communications Within TIPHON**

Beside joint WG5/WG6 and WG3/WG6 sessions, some discussions were held between participants in WG6 (test standards) and WG3 (base standards) to align the work as much as possible. An important discussion took place concerning the “TIPHON interoperability initiative.” Preparation concerning the handling of Release 4 extensions for H.225/H.245 will be discussed in WG3 and WG6 at TIPHON 26 in March.

**STF 196**

K. Sambor (Telekom Austria) reported that the following persons form the new STF 196 (Test Specifications for EP-TIPHON) under the leadership of A. Wiles (ETSI):

- **H.225:** J. Kaupp
- **SIP:** F. Aurouet (Acacia)
- **BICC:** M. Juigné
- **H.225, BICC:** P. Schmitting (FSCOM)
- **OSP:** S. Mueller
- **H.248:** J. Winter (Siemens)
- **H.248, SIP:** C. Koppany (Ericsson)
- **H.245, SEC:** J. Wattelet
- **SIP:** T. Vassiliou
### ETSI TIPHON #25 Meeting Roster, January 14 – 18, 2002, Sophia Antipolis, France

<table>
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<tr>
<th>Company/individual</th>
<th>Contact Information</th>
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## Acronym Definitions

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<td>3GPP</td>
<td>Third Generation Partnership Project (ETSI)</td>
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<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
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<tr>
<td>API</td>
<td>Application Programming Interface</td>
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<tr>
<td>AT</td>
<td>Access and Terminals (ETSI TC)</td>
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<tr>
<td>ATM</td>
<td>Asynchronous Transfer Mode</td>
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<td>ATS</td>
<td>Abstract Test Suite</td>
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<td>BICC</td>
<td>Bearer Independent Call Control (ITU-T SG11)</td>
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<td>BoF</td>
<td>Birds of a Feather</td>
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<td>CC</td>
<td>Call Control</td>
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<td>CDR</td>
<td>Call Detail Recording</td>
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<td>CMS</td>
<td>Call Management Server</td>
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<td>CR</td>
<td>Change Request (TIPHON)</td>
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<td>DST</td>
<td>Destination host</td>
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<td>DTR</td>
<td>Draft Technical Report (ETSI)</td>
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<td>DTS</td>
<td>Draft Technical Standard (ETSI)</td>
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<td>E2E</td>
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<td>EIA</td>
<td>Electronic Industry Association</td>
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<td>EMP</td>
<td>Extended Megaco Package</td>
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<td>ETSI</td>
<td>European Telecommunications Standards Institute</td>
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<td>FG</td>
<td>Functional Group</td>
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<td>GSM</td>
<td>Global System for Mobile Communications</td>
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<td>IETF</td>
<td>Internet Engineering Task Force</td>
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<td>IP</td>
<td>Internet Protocol (IETF)</td>
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<td>ISDN</td>
<td>Integrated Services Digital Network</td>
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<td>JAIN</td>
<td>JAVA based APIs for Integrated Networks</td>
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<td>MIDCOM</td>
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<td>NCS</td>
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<td>Next Generation Network Implementation Group</td>
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<td>NSIS</td>
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<td>OSP</td>
<td>Open Settlement Protocol</td>
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<td>open, multi-vendor forum organized to create open, technology independent Application Programming Interfaces (APIs) <a href="http://www.parlay.org">http://www.parlay.org</a></td>
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<td>Profile Initialization for Test Cases</td>
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<td>Quality of Service</td>
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<td>RFC</td>
<td>Designation for an IETF Standard</td>
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<td>Revised Technical Report (ETSI)</td>
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<td>RTS</td>
<td>Revised Technical Specification (ETSI)</td>
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<td>SAP</td>
<td>Service Access Point</td>
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<td>SCD</td>
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<td>SCN</td>
<td>Switched Circuit Network</td>
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<td>SDP</td>
<td>Session Description Protocol</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<td>SDPng</td>
<td>SDP Next Generation</td>
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<td>SIP</td>
<td>Session Initiation Protocol (IETF)</td>
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<td>SPAN</td>
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<td>Specialist Task Force (ETSI)</td>
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<td>STQ</td>
<td>Speech Transmission Quality (ETSI TC)</td>
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<td>TB</td>
<td>Technical Body (ETSI)</td>
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<td>TD</td>
<td>Temporary Document (ITU et al)</td>
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<td>TDM</td>
<td>Time Division Multiplex</td>
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<td>TIA</td>
<td>Telecommunications Industry Association</td>
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<td>TIPHON</td>
<td>Telecommunications and Internet Protocol Harmonization Over Networks (ETSI Project)</td>
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<td>TP</td>
<td>Test Purposes</td>
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<td>UMTS</td>
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<td>Working Group</td>
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<td>WPM</td>
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<td>eXtended Markup Language</td>
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