

**Title:** Network management related documents from ETSI TIPHON meeting #15  
**Source:** S5 secretary (michael.sanders@etsi.fr)  
**Agenda item:** Any other business  
**Document for:** information

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**Category:** Information from a related committee

**Document Summary:** This document contains several documents from the ETSI TIPHON meeting #15 which took place on the 4 - 8 October, 1999. The full report of that meeting is not yet available.

In summary, a new work item was approved at that meeting called "Network Management Framework". This will be split up into two deliverables, one for the requirements (managed by TIPHON working group 1) and one for the detailed specification (managed by TIPHON working group 3).

15TD62r1 Detailed work item description  
15TD65r2 Summary work item description including time scales.  
15TD13r2 TIPHON WG1 report from meeting #15  
15TD15r4 TIPHON WG3 report from meeting #15

**Specification(s) involved:** none

**Other information:** Meeting documents and further information about ETSI TIPHON can be found at: <http://www.etsi.org/tiphon>

**Source:** CLARENT CORPORATION

**Title:** Network Management – Framework Proposal for Tiphon networks & New work item

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|                      |                 |          |
|----------------------|-----------------|----------|
| <b>Document for:</b> | Decision:       | <b>X</b> |
|                      | Discussion:     | <b>X</b> |
|                      | Meeting Report: |          |
|                      | Liaison:        |          |
|                      | Information:    |          |

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## 1. Introduction

This document outlines a proposal for the definition of a network management framework for ETSI Tiphon. This contribution was initiated by a working group formed by Telia AB in March 1999 with Clarent Corporation, Inter-Tel Inc. and Nokia IP Telephony.

Based on the current ETSI Tiphon architecture, this framework shall be built on existing specifications when appropriate. It shall consider input from various working groups including:

- ETSI Tiphon working groups, in particular requirements, QoS and security
- TIPIA: OAM&P requirements
- ITU-T:
  1. ITU-T Telecommunication Management Network model (ITU-T TMN recommendation M.30 and related recommendations),
  2. ITU-T SG-16 on the H.323 multimedia MIB (ITU-T H.341),
  3. ITU-T SG2 on Network Management for IP services.
- TeleManagement Forum:
  1. The SMART TMN Telecom Operations Map which is the common model for telecommunications operations process, and
  2. The SMART TMN Technology Integration Map which shows the relationship between the various elements of the operation map.
- IETF: the activities of several IETF working groups on Network Management and MIBs

The network management framework shall consist of:

1. A common definition of the roles of network management (requirements)
2. A common terminology for VoIP network management aspects
3. A common information model for IP Telephony network & entities, modular and extensible
4. A common set of protocols to communicate network management data

This structure initially allows for immediate service providers' needs to be addressed (e.g. Telia, TIPIA) while permitting the framework to be extended in the future as the architecture evolves.

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## 2. Motivation and Problem Definition

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As multi-vendor networks are widely deployed for IP Telephony services, the needs for managing VoIP network elements in a standard manner are growing. Fault and Performance management are considered to be the primary issue in the management of VoIP networks today. Configuration, auditing, provisioning and network traffic management are next on the list of network managers.

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## 3. Decision/Action Requested

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It is proposed to create a new work item on network management. The deliverables will be:

1. A TIPHON framework for network management of IP Telephony networks, based on existing general frameworks
2. A set of common information models for IP telephony network elements along with Tiphon MIBs in the case of SNMP.
3. An agreement on the protocols to be used for conveying this information

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## 4. Discussion

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This section positions the proposed work item in the TMN model and proposes a baseline.

The positioning of this work item proposal compared to the ITU-T TMN [16] model is clear. We will define a TIPHON-specific network management framework which "fits" into the TMN Network Management and Element Management Layers.

The **TMN model consists of four layers**: business management, service management, network management and element management (see figure). The idea being that management decisions at each layer are different but interrelated.

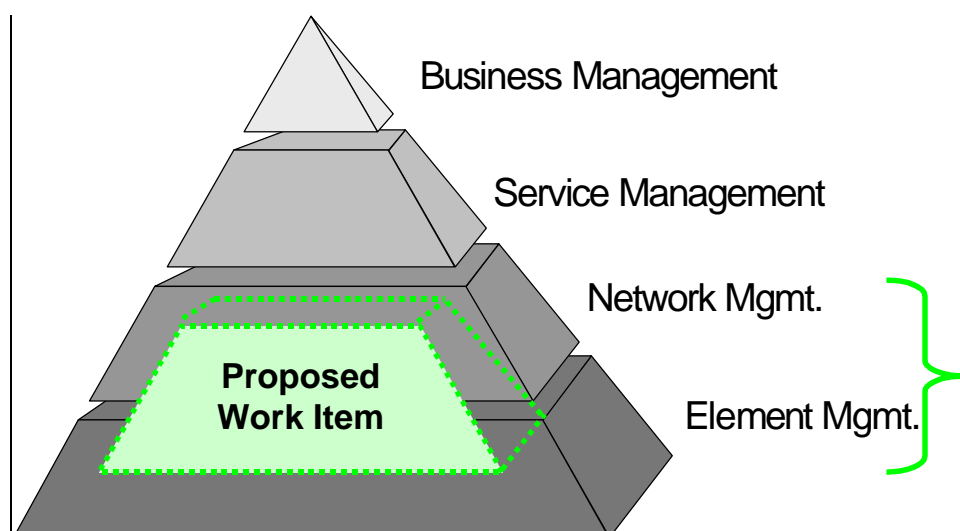
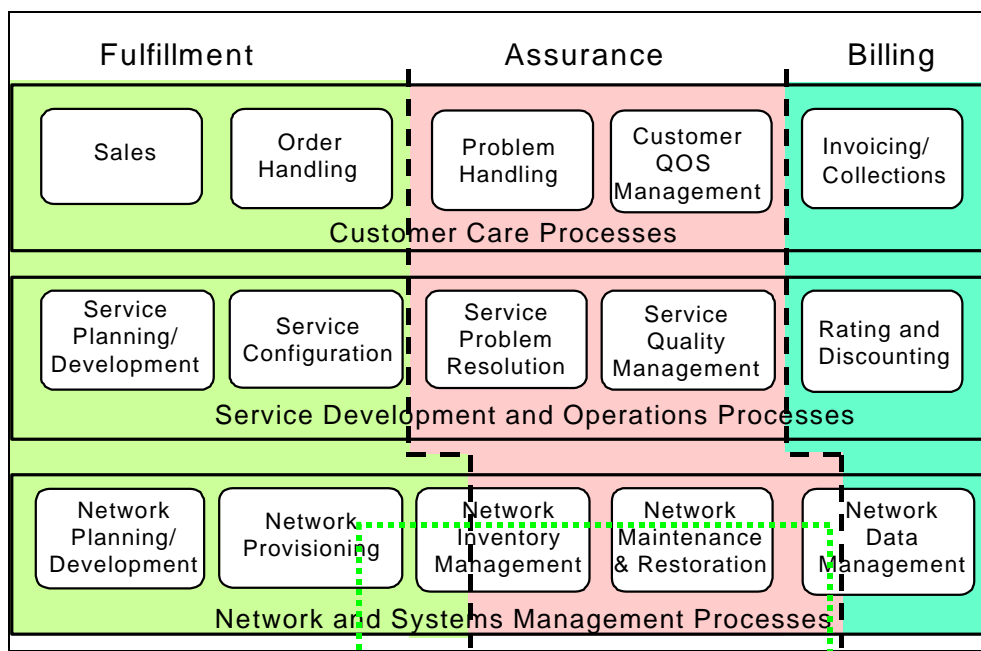


Figure 1: Basic TMN Model & Proposed Framework

Network management is "a key integration layer between the Element Management Layer and the Service Management Layer". Network Management has its own responsibilities; for example,

network fault management. As stated in the TeleManagement Forum documents [17] and [18], much of the interface is through Element Management.

Moreover, the TeleManagement Forum (TMF) illustrates end-to-end business processes [18]: from the customer interface management process to the network data management process.



**Figure 2: TMF Processes Breakdown**

Our work item proposal deals with 4 main Network and Systems Management Processes:

1. **Network Provisioning:** This process encompasses the **configuration of the network**, to ensure that network capacity is ready for provisioning of services. It carries out network provisioning, as required, to fulfil specific service requests, and **configuration changes to address network problems**.
2. **Network inventory management process:** This process encompasses anything to do with physical equipment and the administration of this equipment. The process is involved in the installation and acceptance of equipment, with the physical **configuration of the network**, but also with handling of spare parts and the repair process. Software upgrades are also a responsibility of this process.
3. **Network Maintenance and restoration:** This process encompasses maintaining the operational quality of the network, in accordance with required network performance goals. Network maintenance activities can be preventative (such as scheduled routine maintenance) or corrective. Corrective maintenance can be in response to faults or to indications that problems may be developing (proactive). This process **responds to problems**, initiates tests, **does analysis to determine the cause and impact of problems**, and notifies Service Management of possible effects on quality.
4. **Network Data Management:** This process encompasses the collection of usage data and events for the purpose of **network performance** and **traffic analysis**.

As a consequence, we propose the following for discussion:

### **1. To develop the TIPHON Network Management Framework within the TMN layered model**

The Tiphon Network Management Framework deals with 2 layers of the TMN Model [16]: the Network Management and Element Management layers.

### **2. To adopt the IETF SNMP as a baseline for Network Manager to Network Element interactions**

As specified by the TMF (reference [17] – conclusions), the technology used to control network resources may rely on SNMP/MIBs.

The SNMP Management Framework presently consists of the following main components:

- **An overall architecture**, described in RFC 2571 [1].
- **Mechanisms for describing and naming objects and events for the purpose of management.** The current version of this Structure of Management Information (SMI) is SMIv2 and is described in RFC 2578 [5], RFC 2579 [6] and RFC 2580 [7].
- **Message protocols for transferring management information.** The first version of the SNMP message protocol is called SNMPv1 and described in RFC 1157 [8]. A second version of the SNMP message protocol is called SNMPv2c and described in RFC 1901 [9] and RFC 1906 [10]. The third version of the message protocol is called SNMPv3 and described in RFC 1906 [10], RFC 2572 [11] and RFC 2574 [12].
- **Protocol operations for accessing management information.** The first set of protocol operations and associated PDU formats is described in RFC 1157 [8]. A second set of protocol operations and associated PDU formats is described in RFC 1905 [13].
- **A set of fundamental applications** described in RFC 2573 [14] and the view-based access control mechanism described in RFC 2575 [15].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the mechanisms defined in the SMI.

### **3. To base the information models on functional entities, and not physical “boxes”**

This follows the directions of ETSI Tiphon WG2 where the architecture layers include functional blocks with information flows. It is also in accordance with the ITU-T H.341 recommendation.

This allows our work to evolve quicker as the architecture changes. This modular approach allows implementations to choose the best MIBs given their roles.

The current TELIA SPIT working group has initial draft of a Node MIB (covers functional elements of a gateway), Call MIB, Host MIB, T1/E1 MIB for VoIP gateways, RTP/RTCP MIB (based on IETF Internet Draft).

### **4. To establish our work priorities on Fault, Performance, Configuration, Accounting and Security (ISO FCAPS)**

We propose that ETSI adopt the ISO definition of the network manager's role. The ISO (International Standards Organisation) defines the role of the network manager as concerned with the management of **f**aults, **c**onfiguration, **a**ccounting, **p**erformance and **s**ecurity on a network (**FCAPS**).

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## **5. Definitions**

*This section includes generic definitions for FCAPS. See references for SNMP definitions.*

Faults:

Physical failure (e.g. hard disks, network cards, power supplies etc), software failure (e.g. bugs causing crashes, virus activity etc), admin failure (e.g. accidental deletion of user directories, misconfiguration issues), problems caused by failures in configuration, accounting, performance and security management.

Configuration:

Addresses and names of machines, directory structures, users and groups of users, user profiles, network protocols, disk formats, software installations, security levels, Supplementary Services, provisioning of new equipment, routing information.

Accounting:

Auditing logging, printing, use of disk space, use of processor time, billing, call related information (for e.g. use of telephony resources, signalling protocols), etc. Often associated with security management.

Performance:

Processor utilisation, call related metrics (BHCA), network speed, performance of the traffic in the network, QoS, speech quality bottlenecks generally. Often associated with configuration management. Poor performance may be associated with faults or be perceived as a fault.

Security:

Authentication, Non-repudiation, integrity, confidentiality, logging access, limiting rights, preventing viruses, physical and logical access control.

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## **6. References**

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1. Harrington, D., Presuhn, R., and B. Wijnen, "An Architecture for Describing SNMP Management Frameworks", RFC 2571, Cabletron Systems, Inc., BMC Software, Inc., IBM T. J. Watson Research, April 1999 (Obsoletes RFC 2271)
2. Rose, M., and K. McCloghrie, "Structure and Identification of Management Information for TCP/IP-based Internets", RFC 1155, Performance Systems International, Hughes LAN Systems, May 1990
3. Rose, M., and K. McCloghrie, "Concise MIB Definitions", RFC 1212, Performance Systems International, Hughes LAN Systems, March 1991
4. M. Rose, "A Convention for Defining Traps for use with the SNMP", RFC 1215, Performance Systems International, March 1991
5. Case, J., McCloghrie, K., Perkins, D., Rose, M., J. Schoenwaelder, S. Waldbusser, "Structure of Management Information for Version 2", RFC 2578, SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, April 1999.
6. Case, J., McCloghrie, K., Perkins, D., Rose, M., J. Schoenwaelder, S. Waldbusser, "Textual Conventions for SMI Version 2", RFC 2579, SNMP Research, Inc., Cisco Systems,

- Inc., Dover Beach Consulting, Inc., International Network Services, April 1999.
7. Case, J., McCloghrie, K., Perkins, D., Rose, M., J. Schoenwaelder, S. Waldbusser, "Conformance Statements for SMI Version 2", RFC 2580, SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, April 1999.
  8. Case, J., Fedor, M., Schoffstall, M., and J. Davin, "Simple Network Management Protocol", RFC 1157, SNMP Research, Performance Systems International, Performance Systems International, MIT Laboratory for Computer Science, May 1990.
  9. Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Introduction to Community-based SNMPv2", RFC 1901, SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.
  10. Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Transport Mappings for Version 2 of the Simple Network Management Protocol (SNMPv2)", RFC 1906, SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.
  11. Case, J., Harrington D., Presuhn R., and B. Wijnen, "Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)", RFC 2572, SNMP Research, Inc., Cabletron Systems, Inc., BMC Software, Inc., IBM T. J. Watson Research, April 1999.
  12. Blumenthal, U., and B. Wijnen, "User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)", RFC 2574, IBM T. J. Watson Research, April 1999.
  13. Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Protocol Operations for Version 2 of the Simple Network Management Protocol (SNMPv2)", RFC 1905, SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.
  14. Levi, D., Meyer, P., and B. Stewart, "SNMP Applications", RFC 2573, SNMP Research, Inc., Secure Computing Corporation, Cisco Systems, April 1999.
  15. Wijnen, B., Presuhn, R. and K. McCloghrie, "View-based Access Control Model for the Simple Network Management Protocol (SNMP)", RFC 2575, April 1999.
  16. ITU-T TMN M.30 recommendations
  17. SMART TMN Technology Integration Map, TeleManagement Forum, GB909, Issue 1.1, October, 1998
  18. SMART TMN Telecom Operations Map, TeleManagement Forum, GB910, Issue 1.0 evaluation, October, 1998



## New Work Item

Form to be used when proposing new Work Items for adoption onto the ETSI Work Programme.

### Work Item details:

|  |  |  |
|--|--|--|
| <b>Which Technical Body is responsible?</b><br>choose from this list: (TCs in this list)<br>or from this list: TIPHON<br>or from this list: (other TBs in this list)<br>or enter name if not in either list:   |  | <b>Working Group:</b> WG1 & WG3<br><b>Subgroup (if any):</b> |
| <b>WI reference number (if known):</b><br>part<br><i>(number will be allocated by Secretariat if not shown)</i>  | <b>Will an STF be requested?</b> <input type="checkbox"/><br>STF number (if known):<br><b>EC mandate number (if relevant):</b> BC-   |  |
| <b>Working title:</b><br>ETSI Tiphon - Network Management Framework  | <b>Scope of work to be undertaken:</b><br>This work item delivers a service and network management framework for ETSI Tiphon [requirements, information models, management interfaces and information bases].<br>Based on existing general service & network management frameworks, it defines: <ul style="list-style-type: none"> <li>• Service and Network Management Requirements</li> <li>• The roles of network management in TIPHON networks, a common terminology, information models for IP telephony manageable elements and a set of protocols &amp; information bases to communicate network management information.</li> </ul> |  |
| <b>Rapporteur (named individual person):</b><br>name: Jean-François Mulé<br>organisation: CLARENT CORP.<br>postal address: 700 Chesapeake Drive<br>postcode: 94063<br>city: Redwood City<br>country: USA<br>e-mail: jfmule@clarent.com<br>phone: +1 650 481-2835<br>fax: +1 650 817-3950 | <b>Supporting ETSI Member organisations:</b><br><b>(name at least four)</b><br>Telia AB<br>Clarent Corporation<br>Inter-Tel, Inc.<br>Nokia Corporation<br>Certis [CGI]   |  |

### Deliverable document details:

|   |   |
|---|---|
| <b>What type of document will be produced?</b><br>choose from list: TR & TS<br>or enter explicitly:<br>Proposed Harmonized Standard? <input type="checkbox"/> | <b>Is it a new document or a revision of an existing one?</b><br>New<br><b>If a revision, state the deliverable (e.g. ETS 300 987 ed 1) being revised:</b><br>edition / version |
| <b>Formal title of deliverable:</b> ; ; ;<br>Part :   |   |

### Work schedule:

| Milestone  | Target date  |
|--|--|
| Date of creation of this Work Item                   | Oct-4-1999 <i>(file saved 09/24/99 6:45 PM)</i>              |
| Date Work Item approved by Technical Body            | already approved? <input type="checkbox"/>                   |
| Start of work date:                                  | 9-24-99 already started? <input checked="" type="checkbox"/> |
| Progress milestones (optional):<br>title             | <i>Proposed Timeline (to be discussed)</i>                   |
| ToC and Scope text available                         | Oct-8-1999   |
| First complete draft available.                      | Nov-24-1999  |
| WG approval of version 1                             | Dec-7-1999   |
| TB approval  | Dec-10-1999  |
| Draft received by ETSI Secretariat                   | Jan-17-2000  |
| Publication  | Feb-17-2000  |
| Target date for approval of deliverable by WG:       | Dec-7-1999   |
| Target date for approval of deliverable by TC or EP: | Dec-10-1999  |
| <b>For EN deliverables only:</b>                     |  |
| Is draft EN to be approved by OAP or TAP?            | OAP  |



**Source:** John Horrocks**Title:** Report of WG 1**Notice:** Please DELETE inappropriate sentence:

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| Decision:       | X |
| Discussion:     |   |
| Meeting Report: | X |
| Liaison:        |   |
| Information:    |   |

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**• Work on Deliverables :**

| Progress on WG1 Deliverables |               | Goals  | Achieved ? | Last Version |
|------------------------------|---------------|--|------------|--------------|
| 01003                        |               | WG approval  | No         | 0.1.3        |
| TD nb                        | Title/Subject | New WI proposals (to be approved at closing plenary) |            |              |
|                              | none          |  |            |              |

*Other formal goals...none*

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**• Contributions :**

The following documents were considered :

| TD nb | SOURCE          | DOCUMENT TITLE   |
|-------|-----------------|--|
| 045   | Certis          | Requirements for Operation, Administration, Maintenance and Provisioning of telephony service over a TIPHON network. |
| 033   | STF             | Notes and criticism of TIPHON based upon construction of OSP   |
| 060   | Telekom Austria | Proposed change for the Release Plan   |
| 080   | STF             | Coexistence of iNOW and TIPHON Equipment   |
| 097   | Siemens         | Numbering requirements for scenario 3  |
| 110r1 | DTI             | What services  |

The following documents were NOT considered due to *lack of time* : NONE

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**• Liaisons - NO FORMAL**

Ayse Dilber to ensure that the recommendations on TIPHON iNOW compatibility are passed to iNOW and discussed at the IMTC meeting in November

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- **Stf Action Items**

| Action   | Priority (*) |
|--|--------------|
| Update tables in 01003 by adding cross references<br>(*): <i>High, Medium, Low</i> | 1.1.1.1 High |

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## 2. Opening

The meeting was chaired by John Horrocks in the absence of Lucas Klostermann, who welcomed the participants.

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## 3. Co-ordination within TIPHON

WG1 discussed the role for 01003 and the lessons learned from Release 2 and makes the following recommendations/suggestions to the Plenary:

- there needs to be better co-ordination between the different working groups
- at the start of each Release a detailed list should be drawn up of the functionality to be added
- each Group should produce a detailed work programme description for developing its subset of these functions
- priority in meetings should be given to contributions that help to develop these functions, compared to more general contributions or contributions related to later features
- a presentations about progress by WGs at a mid-point plenary (say after coffee on Wednesday) could maximise communications between groups
- a recommended format should be introduced for reporting by WG chairmen. Items, issues and results should be referred to by names rather than numbers for ease of comprehension.

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## 4. Services

John Horrocks introduced td110r1, proposing that Tiphon needed to decide explicitly whether it is defining a new form of telephony or developing methods for IP networks to support the existing family of telephone services. It appeared that the latter is the preference of the PMC and WG4, and John reported that WG4 would put a proposal to this effect to the plenary. Consequently WG1 would need to revise 01003, and especially the releases, to clarify the relationship to the various telephony services (geographically numbered telephony, freephone, premium rate, UPT etc).

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## 5. Releases

The proposal to introduce Releases for Tiphon specifications was strongly endorsed and needs to be related to the various telephony services. The table for the releases from TR 101 300 was revised t be as follows:

|   |       |  |
|---|-------|--|
| 1 | 12/98 | Scenario 1, inter-technology-domain basic telephony call, only suitable for a very basic demonstration   |
| 2 | 12/99 | Scenario 1-4, inter-domain basic call telephony with basic features (e.g. CLI) supports geographic [and shared cost type services] Real time fax/data<br>Best effort (in controlled environment)<br>Basic security (profiles for encryption & authentication of some parts of the signalling)<br>Basic OA&M (OSP, inter domain settlement)<br><br>aimed at TIPIA demonstrator, the absence of some OAM issues prevents public service, can only be used in a private domain. |
| 3 | 12/00 | User Mobility, terminal mobility and mobile radio access<br>QoS signalling/firewall control<br>More security (authentication for most entities, repudiation and integrity ) (will be expanded after further threat analysis)<br>More OAM<br>Enhanced features, service mechanisms and benchmark services<br>INAP compatibility with IN (incl freephone etc)<br>carrier selection, carrier re-selection<br>number portability   |
| 4 | 12/01 | iNow terminal profile<br>Multimedia  |

The support of SIMs by terminals remains to be allocated.

Michael Welser reported that the proposed modification in td060 had already been included in this new table.

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## **6. Revision of 01003**

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A new draft was produced that:

- makes the document more focused as a list of requirements contained in Release 2
- moves material on business models to an informative annex
- adds in the releases table
- clarifies further the references to services
- removes requirements relevant for later realises than release 2.
- includes Steve Moore's amendment
- includes notes for Lucas to consider about revising the format of the tables, including adding cross references to the clauses in the specifications where the individual requirements are given

A significant amount of work is required to complete this deliverable for approval in December. The STF have been asked to add the cross references to the tables after discussion with Lucas. A new draft will then be circulated for comment and approval within WG1 by email correspondence.

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## **7. Notes and criticism of TIPHON based upon construction of OSP**

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Paper td033 was not presented because the issue had been addressed already by WG3.

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## **8. Report on TIPHON requirements expansion**

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Paper 31 was not circulated or discussed because its text has not been agreed by the PMC. However Scot Cadzow (its author) reported that all the concerns has been overtaken by the amendments that would be made to the draft of 01003.

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### **9. INOW compatibility**

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Jan Elliger presented td80 which compares the functionality of Tiphon with that of iNOW and identifies several incompatibilities that need attention.

The meeting asked Jan to produce a single document (for the plenary) with a tabular summary of the differences between Tiphon and iNOW with recommendations for the actions to be taken by each group to resolve these incompatibilities. The recommendations for Tiphon should identify in which Release the action should be taken. Ayse Dilber would ensure that the recommendations are passed to iNOW and discussed at the IMTC meeting in November. Decisions on changes would need to be taken by the relevant plenary

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### **10. Addition of a section on Management**

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Peter Fellows presented 15td045 which outlined the approach to be taken to adding management requirements into 01003. This proposal to use the TMN model of layers, processes and methodologies was warmly welcomed by the members.

The meeting asked Peter to prepare text based on this contribution to be pasted into 01003 and to clarify the relationship to the work of the TMF (was NMF). Peter prepared this text and it will be circulated on the WG1 exploder. The following members agreed to examine it and provide comments:

- Scott Cadzow
- Ayse Dilber
- Mr Houde
- Graham Travers

The text will be used in the version of 01003 to support Release 3.

The meeting noted that a small group is preparing a work item on the implementation of management, in which Peter Fellows would participate and agreed that the work on implementation should be controlled carefully to address the requirements identified by WG1.

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### **11. Amendment proposed by Steve Moore**

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TD097 was presented by the chairman on behalf of Steve Moore. The meeting agreed to the addition of requirements under scenario 3 for the conveyance of the calling line identity and the connected line identity. The chairman would add the necessary changes to the next draft.

**Source:** WG3 Chair  
**Title:** WG3 Meeting Report  
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**Document for:**

|                 |          |
|-----------------|----------|
| Decision:       |          |
| Discussion:     |          |
| Meeting Report: | <b>X</b> |
| Liaison:        |          |
| Information:    |          |

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**1. GOALS OF THE MEETING**

**Deliverables:**

- 03004: Correct Published Deliverable, Re-submit as ES.  
*1<sup>st</sup> version of TS 101 321.*
- 03004.2: Progress Deliverable.  
*2<sup>nd</sup> version of TS 101 321.*
- 03009: Progress Deliverable.  
*Inter-working between H.450 and QSIG/DSS1 Supplementary Services.*
- 03010: Progress Deliverable.  
*API and a protocol for control of PEEs by a GK.*
- 03011: Progress Deliverable.  
*Phase III Signalling.*

**General:**

Decide on a direction for TIPHON management technologies, based on the TMN model, the IETF/SG16 model (e.g. H.341 and the RTP MIB), or another model.

**2. MEETINGS:**

WG3 has met twice, on Tuesday morning and Wednesday afternoon. In addition we will have a Network Management specific meeting on Wednesday Night in one of the 1<sup>st</sup> floor drafting rooms (next to the terminal room).

### 3. OUTLINE OF MEETING RESULTS

#### 3.1 Work on deliverables:

| Progress on Deliverable                | Goals | Achieved? | Last Version |
|--|-------|-----------|--------------|
| 03004: Correct errors & resubmit as ES |       | Yes       | 1.4.3        |
| 03004.2: Progress Deliverable          |       | Yes       | 2.0.5        |
| 03009: Progress Deliverable            |       | No        | -            |
| 03010: Progress Deliverable            |       | No        | -            |
| 03011: Progress Deliverable            |       | Yes       | 1.0.3        |

| TD      | Title/Subject  | New WI proposals<br>(to be approved at closing plenary)   |
|---------|--|---|
| TD-65r2 | Network Management Framework                         | This document specifies a network management framework for ETSI Tiphon. Based on existing general network management frameworks, it defines: <ul style="list-style-type: none"> <li>the roles of network management in IP telephony networks</li> <li>a common terminology</li> <li>information models for IP telephony manageable elements</li> <li>a set of protocols &amp; information bases to communicate network management information.</li> </ul> |
| TD-135  | Global IP-Telephony Database System (GIDS) protocols | This TS defines all interfaces required to manage and query a GIDS. The interfaces comprise at least: <ul style="list-style-type: none"> <li>an Interface between the Administrative BES and the Gatekeeper supporting the functionality required for managing and querying the GIDS;</li> <li>an Interface between the AD-BES and the GIDS. This interface can also be used between GK and the GIDS.</li> </ul>  |

#### 3.2 Contributions:

| The following documents were considered : |  |  |
|---|--|--|
| TD #                                      | SOURCE   | DOCUMENT TITLE   |
| 27  | IMTC   | from IMTC iNOW inviting TIPHON members to participate in the September iNOW meeting.                                 |
| 33  | STF114, Scott W CADZOW   | Notes and criticism of TIPHON based upon construction of OSP   |
| 40  | Lucent Technologies  | Mobility States for the Mobile H.323 Terminals   |
| 41  | Lucent Technologies  | Mobility Agents in TIPHON Reference Architect Mobility Agents in TIPHON Reference Architect                          |
| 44  | STF114, Scott W CADZOW   | Making OSP wider in scope by publishing as ES or EN  |
| 45  | Certis   | Requirements for Operation, Administration, Maintenance and Provisioning of telephony service over a TIPHON network. |
| 53  | OeFEG  | Finding Destinations on TIPHON Networks (Routing, Digit Translation, E.164/IP Resolution)                            |
| 62  | Clarent  | Network Management – Framework Proposal for Tiphon networks & New work item.   |
| 63  | Nokia  | Use of alternate gatekeepers   |
| 65 and 65r2                               | Telia AB, Clarent Corporation, Inter-Tel, Inc., Nokia IP Telephony | New Work Item: Network Management Framework  |

|   |                                   |   |
|---|-----------------------------------|---|
| 66  | STF114                            | Call for Comments on draft ETSI Signature Standard  |
| 68  | STF114                            | iNOW! Inter-domain Telephony V2.1   |
| 69  | STF114                            | iNOW! Implementers Guide  |
| 70  | STF114                            | iNOW! Terminal Profile  |
| 74  | Transnexus                        | Comments on RTS 101 321 version 2.0.2   |
| 75  | Transnexus                        | Binary XML for TS 101 321   |
| 76  | Transnexus                        | Capability Exchange for TS 101 321  |
| 77  | Transnexus                        | Additional Usage Reporting for TS 101 321   |
| 79  | Nokia                             | Called party gatekeeper resolution  |
| 80  | STF114                            | Coexistence of iNOW and TIPHON Equipment  |
| 83  | AT&T, Clarent                     | Establishment of media channels for TIPHON Compliant Systems – Comments on DTS03005                   |
| 93  | TIPIA                             | Liaison statement from TIPIA to TIPHON concerning a new WI for a simple set of GIDS protocols.        |
| 94  | Siemens AG                        | H.450.1 Interworking with QSIG  |
| 99  | ECMA TC32                         | Liaison from ECMA TC32 to IMTC and ETSI EP TIPHON on the issue of mandatory and Optional Audio Codecs |
| 101   | L.M. Ericsson Telefonaktiebolaget | Registration procedures clarifications  |
| 102   | L.M. Ericsson                     | ISUP transparency   |
| 111   | TIPIA                             | IVR Activation  |
| 114   | TeleManagement Forum              | Smart TMN Telecom Operations Map<br>SMART TMN Technology Integration Map                              |
| 123   | Nortel Networks, Lucent, Siemens  | Tunnelling of signalling messages in H.225.0  |
| 124   | Nortel Networks, Lucent, Siemens  | Applicability of signalling tunnelling mechanism to QSIG  |
| <i>NOTE: All documents for WG3 were considered.</i> |                                   |   |

### 3.3 Liaisons:

| <b>INCOMING</b> |                       |   |                      |
|-----------------|-----------------------|---|----------------------|
| TD nb.          | From                  | Subject/Title   | Action requested(*)  |
| 27              | IMTC                  | Invitation from IMTC iNOW inviting TIPHON members to participate in the September iNOW meeting.       | none                 |
| 93              | TIPIA                 | Liaison statement from TIPIA to TIPHON concerning a new WI for a simple set of GIDS protocols.        | none                 |
| 99              | ECMA                  | Liaison from ECMA TC32 to IMTC and ETSI EP TIPHON on the issue of mandatory and Optional Audio Codecs | none                 |
| <b>OUTGOING</b> |                       |   |                      |
| TD no.          | Destination           | Subject/Title   | Action requested (*) |
| 145             | WAP Forum             | Use of binary XML in ETSI TIPHON 03004.2  | Send Liaison         |
| 146             | SG16 Wp2<br>Q.13/Q.14 | Result of WG3 drafting session on ISUP and QSIG Tunnelling  | Send Liaison         |

### 3.4 Action Items for STF114

| Action  | Priority (*) |
|---|--------------|
| Requirements Tracking: Compare requirements (WG1) and ability of service providers to deploy them (using WG3 deliverables), report any limitations & create solutions where applicable. | high         |
| Create solutions (in the form of TDs) to TIPHON or IMTC iNOW AG (which will have to be approved by TIPHON) regarding Interoperability between iNOW and TIPHON profiles.                 | medium       |

| Action   | Priority (*) |
|--|--------------|
| Create a TD showing trends in TIPHON work: # TDs for each deliverable (taking into account multiple companies with a single TD), revisions of each deliverable, # people at each meetings, # of TDs at each meeting, spread of contributions/WG (how many for each WG) for each meeting, spread of contributions/Subject for cross-WG issues. Extend 10td42. | medium       |

(\*) : High, Medium, Low

#### **4. DOCUMENT PRESENTATIONS:**

Contributors are requested to make sure they are physically present (aliases and proxies not allowed) during the WG3 session(s) to present, discuss and dissect their documents – otherwise your document will not be considered.

#### **5. APPROVAL OF THE AGENDA**

The agenda was approved with one change: TDs 111, 123 and 124 were added to the list of documents to be considered.

#### **6. RESULTS OF MAILING-LIST DISCUSSIONS**

No action required.

#### **7. ALLOCATIONS OF DOCUMENTS FOR WORKING GROUP WG3 (30 DOCUMENTS):**

27, 33, 40, 41, 44, 45, 53, 62, 63, 65, 66, 68, 69, 70, 74, 75, 76, 77, 79, 80, 83, 93, 94, 99, 101, 102, 111, 114, 123, 124

#### **8. DISCUSSION OF CONTRIBUTIONS:**

##### **8.1 03011 Related (Signalling for Phase 3):**

##### **40:** Mobility States for the Mobile H.323 Terminals (*Lucent Technologies*)

This contribution specifies the mobility state diagram for the roaming H.323 terminal.

Was presented and noted.

- There was some confusion whether if the “H.323 Terminal” mentioned is a full H.323 terminal as it presumes some dedicated TIPHON link-layer capabilities, where normal TIPHON equipment never presumes anything but the availability of an IP link.
- There are also issues with re-inventing in TIPHON mechanisms that are available in Mobile-IP and 802.11 (wireless Ethernet).

##### **41:** Mobility Agents in TIPHON Reference Architect Mobility Agents in TIPHON Reference Architect (*Lucent Technologies*)

This contribution identifies and describes two new functional entities that are essential to support mobility in the TIPHON architecture. This contribution also proposes that the two identified entities be added to the TIPHON reference architecture and that their description presented in this contribution be incorporated into the DTS/TIPHON-07003 document.

Was presented and noted.

- the model presented in TD-40 and TD-41 assumes that the TIPHON systems are changed to support special Link layer procedures.
- In general, TD-40 and TD-41 break the TIPHON axiom that everything is above the IP layer, and therefore cannot be accepted without effectively changing the TIPHON terms-of-references.

##### **53:** Finding Destinations on TIPHON Networks (Routing, Digit Translation, E.164/IP Resolution) (*OeFEG*)

This document analyses the requirements for routing of calls on IP Telephony (IPT) networks. Starting point are the existing requirements in DTR 1003 for addressing and routing and in DTS 4003 on numbering, and the numbering options for users on IP terminals as identified in DTR 4004. Additional general requirements for E.164/IP resolutions are identified (target WG1).

WG3 should define or identify the protocols to be used for these reference points.



**Was presented and noted. The delegates are requested to study the issue and provide contributions as necessary.**

**It was noted that many national routing & number-translation issues have to be considered.**

**63:** Use of alternate gatekeepers (*Clarent*)

**Accepted text in revised TD-63r1 – editor will integrate.**

**79:** Called party gatekeeper resolution (*Nokia*)

We request that TIPHON-compliant systems be required to use called endpoint signalling in the case where gatekeeper-routed signalling is used and endpoints are registered to different gatekeepers.

**Accepted – but changed “SHALL” to a “SHOULD” to insure that this is not the only call signalling scenario, only the recommended one.**

**83:** Establishment of media channels for TIPHON Compliant Systems –  
Comments on DTS03005 (*AT&T, Clarent*)

In ETSI DTS 3005 [1], sections § 5.4.2.3 and 5.4.3.4 on the establishment of media channels, TIPHON-compliant systems are required to support fast-start and H.245 Tunnelling (encapsulation of H.245 messages in H.225.0 messages). While the authors of this contribution strongly support these requirements, we believe that in order to support multi-vendor interoperability the following must also be supported by TIPHON:

- TIPHON-compliant systems shall also support the capability to fallback to H.245 signalling
- TIPHON-compliant systems shall also support the establishment of separate H.245 channels.

**Presented and Noted – no changes are needed in the deliverable as the issue is already covered in the current deliverables (03005 and 03011).**

**101:** Registration procedures clarifications (*L.M. Ericsson Telefonaktiebolaget*)

**Keep-Alive issue:** Accepted as a note about RRQ and KeepAlive message not being the same, and EndPoints shall not reuse RRQ messages to send KeepAlive messages as that may confuse the GK.

**Anonymous Registration issue:** Not accepted, as this is a service requirement issue (e.g. Handling Emergency Services calls) and not a protocol issue.

**111:** IVR Activation (TIPIA)

Which decision criteria is given in the Gateway for initiating the IVR? Solutions where different “ports” of the Gateway should be used for the different cases would not be acceptable for Service Operators, because they would have to use different “trunks” between the local exchange and the Gateway. This is not an economic solution.

**Was presented and noted, we request the delegates to consider the problem and suggest solutions as TDs to future TIPHON meetings.**

**8.2 03011 Related** (Signalling for Phase 3): *End to End Tunnelling of ISUP and QSIG*

The following documents were presented and considered regarding tunnelling of ISUP and QSIG:

**102:** ISUP transparency (*L.M. Ericsson*)

When inter-working with SCN a network to network protocol is required. The H.225.0 does not include such a protocol when interworking with PSTN or GSM. The next possible version of the H.225.0 that may include ISUP is the version 4.

Since the TIPHON project uses the H.323 version 2 (i.e. also H.225.0 version 2) as the base for the basic call protocol a special TIPHON extension is required. This document suggests such extensions.

**Request from the floor to use CryptoTokens and not ClearTokens for all protocol tunnelling.**

**Two other contributions will be submitted to SG16: one from Lucent, Nortel Networks, Alcatel and Siemens (TD-123 and TD-124), and another from BT (not available as a TD).**

**Presented and Noted.**

**116:** [Corporate networks – Signalling interworking between QSIG and H.323 – Call transfer supplementary service \(ECMA\)](#)

**Presented and Noted.**

**117:** [Corporate networks – Signalling interworking between QSIG and H.323 – Call diversion supplementary services \(ECMA\)](#)

**Presented and Noted.**

**123:** Tunnelling of signalling messages in H.225.0 (*Nortel Networks, Lucent, Siemens*)

**Presented and Noted.**

**124:** Applicability of signalling tunnelling mechanism to QSIG (*Nortel Networks, Lucent, Siemens*)

**Presented and Noted.**

- All ~~five~~<sup>three</sup> contributions has been briefly presented, and a drafting session was held Thursday morning with the purpose of create a single paper with a TIPHON position and procedures.
- This document may be submitted to SG16 for consideration pending TIPHON member approval in the closing plenary. If this document is submitted to SG16, TIPHON may, pending negative SG16 response regarding the TIPHON document, WG3 may add the procedures in the document to 03011 at TIPHON 16.
- The document created by the drafting group is available as TD-146.

### 8.3 03004.2 Related (Version 2 of OSP):

The following documents were presented and considered regarding 03004 and 03004.2:

**33:** Notes and criticism of TIPHON based upon construction of OSP (*STF114, Scott W CADZOW*)

To take action to ensure that TIPHON is a robust interoperable standard. This to be achieved through rigid restriction of options in each of the TIPHON deliverables.

**Was presented and noted, and will be integrated into version 1 of OSP, with the exception of the limitation of what SSL crypto-suites.**

**44:** Making OSP wider in scope by publishing as ES or EN (*STF114, Scott W CADZOW*)

An ES or EN publication of OSP will enhance the viability of OSP in the market.

**Accepted – 03004 (version 1) will be resubmitted as an ES for ETSI general vote after correcting the errors noted in TD-33.**

**66:** Call for Comments on draft ETSI Signature Standard (STF114)

The aim of this document is to provide specifications so as to allow for full compatibility of secure business transactions with regard to electronic signatures.

Was presented and Noted – 03004.2 may refer to ETSI ES 201 733

**74:** Comments on RTS 101 321 version 2.0.2 (*Transnexus*)

To take action to ensure that TIPHON is a robust interoperable standard. This to be achieved through rigid restriction of options in each of the TIPHON deliverables.

**Accepted – editor will integrate.**

**75:** Binary XML for TS 101 321 (*Transnexus*)

This contribution proposes an informative annex to TS 101 321 (the Open Settlement Protocol). The annex documents the use of the Wireless Application Forum Binary XML Content Format Specification, Version 1.2 as an optional method for encoding OSP messages.

**Accepted – editor will integrate. The editor and contributor are requested to check that the binary XML references and use is compliant with the latest XML specs.**

**The 03004 Editor will write a liaison to the WAP Forum about our use of Binary XML.**

**76:** Capability Exchange for TS 101 321 (*Transnexus*)

This contribution includes a suggested enhancement to version 2.0.2 of RTS 101 321 (OSP). The enhancement defines a means by which two systems communicating with OSP can exchange their respective capabilities (such as, for example, protocol versions supported). WG3 is requested to discuss these suggestions and, as appropriate, incorporate them into a new draft of RTS 101 321.

**Accepted – editor will integrate.**

**77:** Additional Usage Reporting for TS 101 321 (*Transnexus*)

This contribution includes suggested enhancements to version 2.0.2 of RTS 101 321 that define a standard way to report a richer set of usage information. WG3 is requested to discuss these suggestions and, as appropriate, incorporate them into a new draft of RTS 101 321.

**Accepted – editor will integrate.**

- 03004 (version 1) will be corrected using TD-33, and republished as an ES by the Editor and the Technical Officer (approved by WG3 with the changes in TD-44).
- 03004.2 will be ready for a section-by-section review TIPHON 16 meeting and an attempt will be made for a WG level approval.

**8.4 03010 Related (Firewall/NAS Control Requirements):**

No documents are available to advance the work.

**8.5 03009 Related (Interworking between H.450 and QSIG/DSS1):**

**94:** H.450.1 Interworking with QSIG (*Siemens AG*)

This is the first draft of one of a series of ECMA standards on supplementary service interworking between QSIG and H.323. This particular draft covers generic procedures (H.450.1 and QSIG-GF). The series of ECMA standards relates to Tiphon WI 03009.

**The contribution was presented and noted (for information and comments).**

**8.6 IMTC iNow AG Related**

The following documents were presented and considered regarding TIPHON/iNow interoperability:

**68:** iNOW! Inter-domain Telephony V2.1 (*STF114*)

**Was presented and noted.**

**69:** iNOW! Implementers Guide (*STF114*)

**Was presented and noted.**

**70:** iNOW! Terminal Profile (*STF114*)

**Was presented and noted.**

**80:** Coexistence of iNOW and TIPHON Equipment (*STF114*)

This paper contains a description of the iNOW! Profiles and an analysis, whether iNOW! Compliant Equipment can coexist and work together with TIPHON equipment. The first part of this document focuses on iNOW! Terminals, the second part on the iNOW! Inter-domain Telephony Profile.

This paper should be a basis for further discussions. As there is actually work going on in TIPHON and the IMTC iNOW! Activity Group this document is only valid in the moment of publication.

**Was presented and noted.**

The main two issues with TIPHON/iNow interoperability are:

- Use of a limited-syntax H.323 Annex F (SET) terminal in the iNow Terminal Specifications (as presented in TD-70). Annex F is not H.323 compliant, but rather only H.323 "Compatible".
- Use of H.225.0 Annex G for Clearinghouse Communications, where TIPHON systems use 03004 for this purpose. A mistake in TD-80 was pointed out: TIPHON systems do not use 03004 for Inter-domain communications – H.225.0 Annex G is used for this purpose, so interoperability is effected only when communicating with a Clearinghouse.

### 8.7 Management Interfaces:

WG3 held a special session on Network Management on Wednesday night (after the RIPE presentation) and the following documents were presented and considered:

- 45:** Requirements for Operation, Administration, Maintenance and Provisioning of telephony service over a TIPHON network. (*Certis*)
- 62:** Network Management – Framework Proposal for Tiphon networks & New work item. (*Clarent*)
- 65r2:** New Work Item: Network Management Framework (*Telia AB, Clarent Corporation, Inter-Tel, Inc., Nokia IP Telephony*)
- 114/TeL-Ops:** Smart TMN Telecom Operations Map (*TeleManagement Forum*)
- 114/TechMap:** SMART TMN Technology Integration Map (*TeleManagement Forum*)

- Compatibility or Interoperability with H.341 is considered to be "nice to have", and is not a requirement.
- There was consensus that the TIPHON network management should be based on the TMN structure.
- A new WI is introduced in TH-65r2, this WI will be divided into two main sections, one on Requirements (under WG1) and the other on Protocols (under WG3). TDs directed at this WI will have to specify which section they are targeted for.
- The STF expressed an opinion that this work will compliment work done by ETSI TC-TMN, and will not compete with that group.

### 8.8 Future Work:

No documents were provided that relates to future work.

## 9. LIAISONS AND EXTERNAL ACTIVITIES

### 9.1 Report on related IETF WGs and ITU-T study groups / questions:

No action required.

### 9.2 Incoming Liaisons:

- 27:** Invitation from IMTC iNOW inviting TIPHON members to participate in the September iNOW meeting.

IMTC iNOW! is an industry forum that specified a minimum set of features and functionality to ensure gateway to gateway, and gatekeeper to gatekeeper interoperability using approved standards.

As such it specifies:

- H.225.0 Annex G support (Inter-domain signalling)

- the minimum set of standard codecs for voice and fax all iNOW compliant gateways have to support (G729a, G723.1, T38)
- A standard set of cause codes that works across brand of equipment (Q931, H323)
- Required time synchronisation (NTP)
- DTMF and MF encoding support

**Presented and Noted (meeting is in the past and in addition was cancelled). No Action on the part of WG3 is necessary.**

**93:** Liaison statement from TIPIA to TIPHON concerning a new WI for a simple set of GIDS protocols.

TIPIA proposes to create a new WI for the specification of a simple set of Global IP-Telephony Database System (GIDS) protocols.

**Presented and Noted. Mr. Klaus Sambor of PTA has created a new WI request for the closing plenary. This WI is available as TD-135. No Action on the part of WG3 is necessary.**

**99:** Liaison from ECMA TC32 to IMTC and ETSI EP TIPHON on the issue of mandatory and Optional Audio Codecs

ECMA TC32 have considered the draft profile for H.323 terminals published by the IMTC/iNOW! Activity Group at their September meeting.

The concept of profile for ensuring interoperability is commonly accepted by the industry as long as undue costs are not hidden by mandatory choices.

**ECMA TC32 propose** to only keep G.711 as a mandatory codec, and to accept G.72x, GSM and AMR codecs as optional ones. This is to be considered in all the current iNOW specifications (Terminal, Test, Interoperability profile).

**Presented and Noted. A question was raised whether TIPHON needs to send a liaison to IMTC iNOW AG requesting the Terminal Profile to support GSM, but there was no consensus to do so.**

**No Action on the part of WG3 is necessary.**

### 9.3 Outgoing Liaisons:

**145:** Use of binary XML in ETSI TIPHON 03004.2 (TRANSNEXUS LLC)

To be sent to the WAP Forum.

**146:** Result of WG3 drafting session on ISUP and QSIG Tunnelling (WG3)

To be sent to SG16 WP2 Q.13/Q.14

## 10. STATUS OF DELIVERABLES / WORK-ITEMS

### 10.1 Project-Approved / Published / Stopped Work-Items

| Working Title | ETSI Title | Status  | Description   |
|---------------|------------|---|---|
| DTS/03001     | TS 101 318 | Published (18/08/1998)  | Using GSM speech codecs within ITU-T Recommendation H.323   |
| DTS/03002     | TS 101 319 | Published (29/12/1998)  | Signalling for basic calls from an H.323 terminal to a terminal in an SCN (Scenario 1)                        |
| DTS/03003     | TS 101 320 | Deliverable integrated into DTS/03005 – will not be published separately. | Call control flows for basic calls from a H.323 terminal to PSTN/ISDN/GSM terminal involving multiple domains |
| DTS/03004     | TS 101 321 | Published (31/12/1998)  | Protocol for Inter-domain pricing, authorisation and usage exchange.  |
| DTS/03006     | TS 101 323 | Approved by the project at the TIPHON-13 meeting.                         | Interoperable Security Profiles   |
| DTS/03005     | TS 101 322 | Approved by the project on the mailing list July 18 <sup>th</sup> , 1999  | Signalling for basic calls and inter domain calls, between an H.323   |

|             |   |  |  |
|-------------|---|--|--|
|             |   | between the TIPHON-13 and TIPHON-14 meetings.                                      | Terminal and a Terminal in the SCN Phase II (Scenario 1 + Scenario 2)  |
| DTS/03007   | - | Stopped at TIPHON 14 due to the fact that the ITU SG16 has taken on the work.      | Packratization and code-points for the TIA/EIA IS-641 Enhanced Full-Rate Speech Codec  |
| DTS/03004.2 | - | First Text at TIPHON 13 meeting.   | Protocol for Inter-domain pricing, authorisation and usage exchange revision 2.<br>Edited by Richard                         |
| DTS/03008   | - | First Text at TIPHON 13 meeting.   | Security; Studies into the Impact of lawful interception.  |
| DTS/03009   | - | Outline and Table of Contents at the TIPHON 14 meeting.                            | Interworking between H.450 and QSIG/DSS1   |
| DTR/03010   | - | Outline and table-of-contents scheduled to be available for the TIPHON 14 meeting. | Requirements for a Protocol and an API that allows a Gatekeeper to control Policy Enforcements Elements.                     |
| DTS/03011   | - | Outline and Table of Contents at the TIPHON 14 meeting.                            | Signalling for basic calls and inter domain calls between H.323 and SCN terminals, TIPHON Phase 3 (Scenarios 0,1,2,3 and 4). |
| DTR/03012   | - | First Text at TIPHON 15  | Threat Analysis  |
| DTR/03013   | - | First Text at TIPHON 15  | Lawful Interception; Internal LI Interfaces.   |

## 10.2 Current Work-Items

| Working Title | ETSI Title | Status                           | Description  |
|---------------|------------|----------------------------------|--|
| DTS/03004.2   | -          | First Text at TIPHON 13 meeting. | Protocol for Inter-domain pricing, authorisation and usage exchange revision 2.<br>Edited by Richard                         |
| DTS/03008     | -          | First Text at TIPHON 13 meeting. | Security; Studies into the Impact of lawful interception.  |
| DTS/03009     | -          | Draft at the TIPHON 15 meeting.  | Interworking between H.450 and QSIG/DSS1   |
| DTR/03010     | -          | Draft at the TIPHON 15 meeting.  | Requirements for a Protocol and an API that allows a Gatekeeper to control Policy Enforcements Elements.                     |
| DTS/03011     | -          | Draft at the TIPHON 15 meeting   | Signalling for basic calls and inter domain calls between H.323 and SCN terminals, TIPHON Phase 3 (Scenarios 0,1,2,3 and 4). |
| DTR/03012     | -          | First Text at TIPHON 15          | Threat Analysis  |
| DTR/03013     | -          | First Text at TIPHON 15          | Lawful Interception; Internal LI Interfaces.   |

## 11. PROGRESSION OF DELIVERABLES / LIST OF STUDY TOPICS

Contributions are solicited on the following (but not limited to) subjects:

- Identification of scenarios (0..4) calls at call-setup, implications when no identification is possible.
- Phase 3 issues, addressing both GRC and DRC and transported (e.g. Half-Interworking), must demonstrate seamless interworking with Scenario 1 and 2.
- Analysis of interworking cases where the TIPHON acts as a public network (scenarios 1 & 2) – this relates to 12td27.

- Analysis of interworking of scenario 3 between foreign networks (e.g. SS7 to TIPHON to QSIG/GSM and others, and vice-versa) where the TIPHON public transit network has to mediate the call.
  - Applicability of ITU-T H.341 (and/or other management solutions) for the management functions of TIPHON systems.
  - User and Terminal Roaming procedures, which required User Identification, Home Network Identification, assorted security mechanisms and accounting functions (specifically reconciliation).
  - H.323 call signalling procedures and/or changes to enable user and terminal mobility (for scenario 1 and 2 hand-over when the IP terminal changes addresses during a call).
  - Contributions directed at all Active Deliverables.
  - Finding Destinations on TIPHON Networks as per 15td53.
  - ISUP and QSIG tunnelling issues.
- 

## **12. ANY OTHER BUSINESS**

There were none.

## **13. CLOSURE OF THE MEETING**

The meeting was closed.