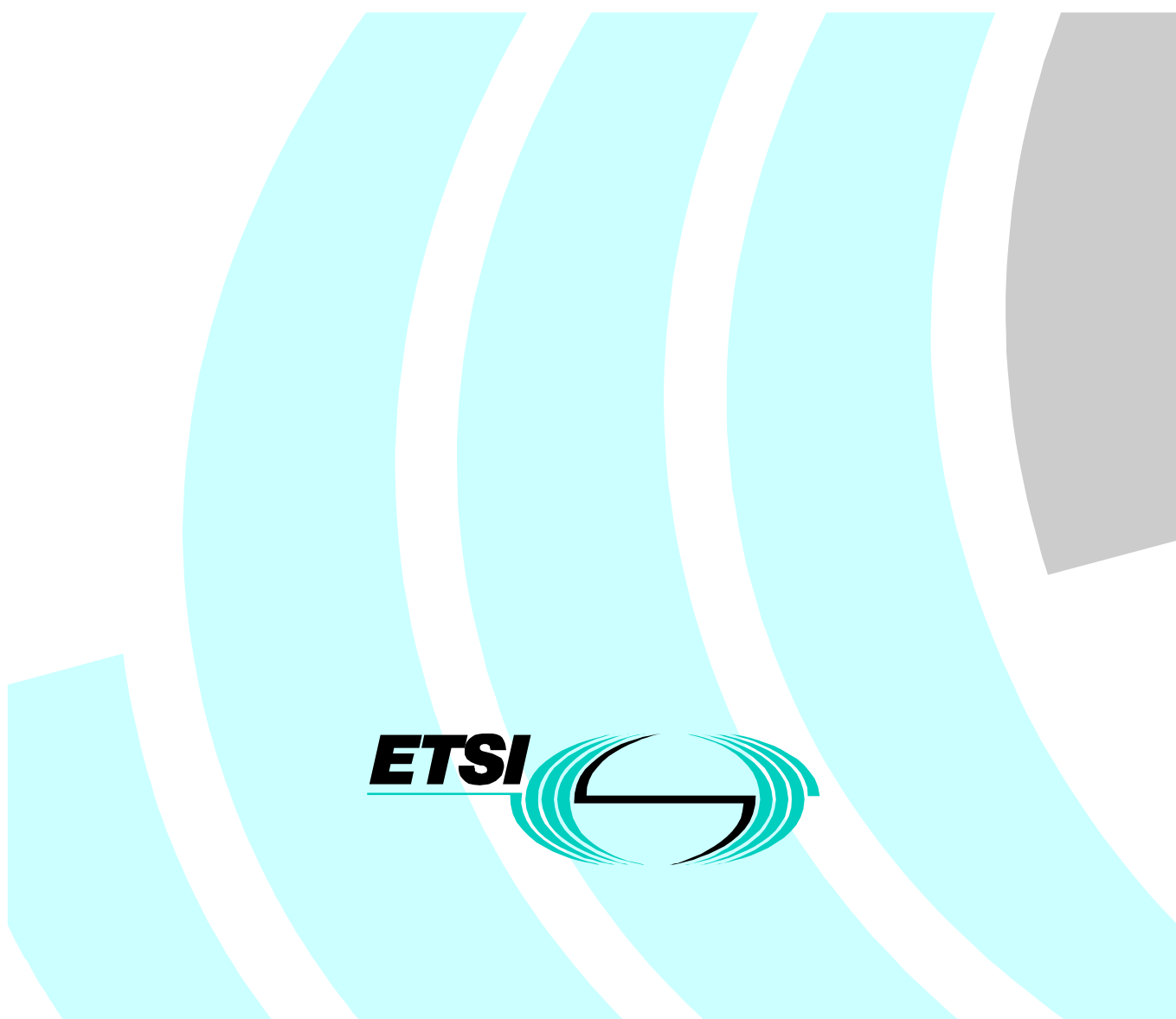# TS 101 335 V1.1.1 (1999-03)

Technical Specification

Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON); Test specifications

ETSI

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Contents

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Foreword

This Technical Specification (TS) has been produced by ETSI Project Telecommunications and Internet Protocol Harmonization over Networks (TIPHON).

1   Scope

The scope of the present document is to define interoperability test specifications for the following scenarios:

- PC to PC;

- PC to Phone;

- Phone to PC;

- Phone to Phone.

2   References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies.

- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1]   TS 101 319: "Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON); Signalling for basic calls from a H.323 terminal to a terminal in a Switched-Circuit Network (SCN)".

[2]   ITU-T Recommendation E.164: "The international public telecommunication numbering plan".

[3]   ITU-T Recommendation G.711: "Pulse code modulation (PCM) of voice frequencies".

[4]   ITU-T Recommendation G.723.1 (1996): "Dual rate speech coder for multimedia communications transmitting at 5.3 and 6.3 kbit/s".

[5]   ITU-T Recommendation H.225.0: "Call signalling protocols and media stream packetization for packet based multimedia communication systems".

[6]   ITU-T Recommendation H.245: "Control protocol for multimedia communication".

[7]   ITU-T Recommendation H.261: "Video codec for audiovisual services at p x 64 kbit/s".

[8]   ITU-T Recommendation H.263: "Video coding for low bit rate communication".

[9]   ITU-T Recommendation H.323: "Packet based multimedia communications systems".

[10]   ITU-T Recommendation T.120: "Data protocols for multimedia conferencing".

[11]   CCITT Recommendation G.728:"Coding of speech at 16 kbit/s using low delay code excited linear prediction".

3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

A	Audio
ACF	Admissions Confirm
ARJ	Admissions Reject
ARQ	Admissions Request
A/V	Audio/Video
D	Data
DCF	Disengage Confirm
DRQ	Disengage Request
DTMF	Dual Tone Multiple Frequency
E.164	[2]
EFR	Enhanced Full Rate
G.711	[3]
G.723	[4]
G.728	[11]
GK	Gatekeeper
H.261	[7]
H.263	[8]
IP	Internet Protocol
LCF	Location Confirm
LRJ	Location Reject
LRQ	Location Request
PC	Portable Computer
QoS	Quality of Service
SCN	Switched Circuit Networks
T.120	[10]

4 Introduction

The present document describes interoperability and compatibility tests for H.323 [9] entities concerning the different TIPHON Scenarios.

These tests are based on end-to-end systems testing "higher level functionality", rather than on specific protocol layers or requirements.

The progression of the test scenarios is intended to allow network and equipment setup to be added to in a sequential manner, and the more complicated scenarios are run.

The present document is not intended to provide an exhaustive testing of all facets of H.323 operation. Specific scenarios were chosen to provide coverage of the more common H.323 commercial deployments.

The test cases specified in this test plan must be performed on many different platforms. Therefore, specific details on *how* to perform each test are not included, only instructions on *what* information must be exchanged are included.

5   Overview

The tests are divided into clause 10 to clause 18.

- Clause 10 contains interoperability tests for scenario 0 , which is the communication between IP network based users.

- Clause 11 contains interoperability tests for scenario 1, which is the communication between IP network based users and SCN based users, in which the call set-up is originated by the IP network user.

- Clause 12 contains interoperability tests for scenario 2, which is the communication between IP network based users and SCN based users, in which the call set-up is originated by the SCN based user.

- Clause.13 contains interoperability tests for scenario 3, which is the communication between SCN based users, using IP based networks for the connection/trunking between the involved users.

- Clause 14 contains interoperability tests for scenario 4, which is the communication between IP network based users, using SCNs for the connection/trunking between the involved users.

- Clause 15 contains interoperability tests for scenarios 0, 1, 2, 3 with Transit Gatekeeper.

- Clause 16 contains interoperability tests for scenarios 0, 1, 2, 3 according to TIPHON Security Profile .

- Clause 17 contains interoperability tests for additional services (e.g. DTMF).

- Clause 18 contains interoperability tests for additional supplementary services.

NOTE: This specification will be expanded to cover more detailed SCN aspects in future versions.

6   Test Strategy

Interoperability testing should be performed after a vendor has completed product and system testing with its own test procedures. To progress interoperability testing, the vendor's test procedures should include those contained in the present document. The purpose of interoperability testing is to test compatibility with other products which use the same TIPHON specifications.

7   Scoring

The scores associated to the individual tests are for informative purposes only allowing the manufactures to asses the progress of their implementations towards full interoperability.

8   Prerequisites

The following prerequisites are taken from TIPHON specifications:

- ITU-T Recommendation H.323 [9] and TS 101 319 [1] shall be used;

- ITU-T Recommendation H.225.0 [5] FastConnect shall be used for all calls;

- ITU-T Recommendation H.245 [6] Tunnelling shall be used whenever H.245 messages are exchanged;

- Gatekeeper Routed Signalling is mandatory, Direct Routed Signalling is optional;

- Originating Terminals and Originating Gateways should always use ARQ (LRQ is optional).

9   Profile Definitions

Although audio currently is the only media type utilized in the TIPHON specification, a complete set of H.323 media types is given for the purpose of compatibility with full H.323 systems.

Profile 1

Audio	Video	Data	Addressing

Audio	Video	Data	Addressing
G.711	*H.261*	**T.120**	**E.164/H.323ID**

Profile 2

Audio	Video	Data	Addressing

Audio	Video	Data	Addressing
G.723	*H.263*	**T.120**	**E.164/H.323ID**

Profile 3

Audio	Video	Data	Addressing

Audio	Video	Data	Addressing
G.728	*H.261*	**T.120**	**E.164/H.323ID**

Profile 4

Audio	Video	Data	Addressing

Audio	Video	Data	Addressing
G.711	*H.263*	**T.120**	**E.164**

Profile 5

Audio	Video	Data	Addressing

Audio	Video	Data	Addressing
G.728	*H.263*	**T.120**	**E.164**

Profile 6

Audio	Video	Data	Addressing

G.722	*H.261*	**T.120**	**E.164**

Profile 7

Audio	Video	Data	Addressing

G.722	*H.263*	**T.120**	**E.164**

Profile 8

Audio	Video	Data	Addressing

GSM Full Rate	*H.263*	**T.120**	**E.164**

Profile 9

Audio	Video	Data	Addressing

GSM EFR	*H.263*	**T.120**	**E.164**

10   Scenario 0: PC to PC

TEST	1.	IP-Host to IP-Host/Single Gatekeeper
This test verifies the TIPHON Scenario-0 service where the Originating Terminal and the Terminating Gateway are registered with the same Gatekeeper.		

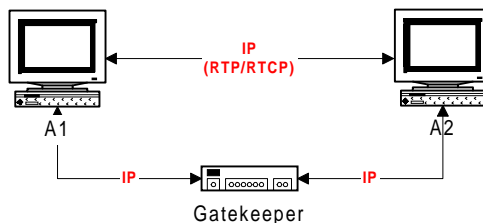- The reference configuration described in figure 1 shall be used:

Figure 1: PC to PC with 1 Gatekeeper

1. Endpoints perform discovery/registration using alias

2. Endpoint A1 calls Endpoint A2

   2.1.   Endpoint A1- sends ARQ to Gatekeeper with alias
   2.2.   Endpoint A1 receives ACF with IP address and contacts Endpoint A2 (optional) or GK (mandatory)

   NOTE: The SETUP message must include the FastStart parameter. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

   2.3.   Endpoint A2 sends ARQ to Gatekeeper and receives ACF

   NOTE: The fast parameter shall be returned in any message up to and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

   2.4.   Gatekeeper has call active

3. Users evaluate media quality (A, A/V; A/V with D)

4. Endpoints terminate call

   4.1.   Both endpoints send DRQ to Gatekeeper
   4.2.   Both endpoints receive DCF
   4.3.   Gatekeeper has call cleared

5. Endpoint A2 calls Endpoint A1

   5.1.   Endpoint A2 sends ARQ to Gatekeeper with alias
   5.2.   Endpoint A2 receives ACF with IP address and contacts Endpoint A1 (optional) or GK (mandatory)

   NOTE: The SETUP message must include the FastStart parameter. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

   5.3.   Endpoint A1 sends ARQ to Gatekeeper and receives ACF

   NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

   5.4.   Gatekeeper has call active

6. Users evaluate media quality (A, A/V; A/V with D)

7. Endpoints terminate call

7.1.   Both endpoints send DRQ to Gatekeeper
7.2.   Both endpoints receive DCF
7.3.   Gatekeeper has call cleared

8.   Endpoint A1 calls Endpoint C (unknown alias)

8.1.   Endpoint A1 sends ARQ to Gatekeeper with alias
8.2.   Endpoint A1 receives ARJ

9.   Endpoint A2 calls Endpoint D (unknown alias)

9.1.   Endpoint A2 sends ARQ to Gatekeeper with alias
9.2.   Endpoint A2 receives ARJ

Table 1: PC to PC with 1 Gatekeeper scoretable

Result:	Score
Failure to discover Gatekeeper (either Directed or Multicast)	0
Failure of either Terminal or Gateway to register with Gatekeeper	0,5
Either Terminal or Gateway registers with Gatekeeper	1
ARQ fails for Caller	2,5
Unknown address does not result in ARJ	3
Registered, ACF received, Terminal and Gateway fail to connect	3,5
Connected, ARQ fails for Gateway	4
Connected, no media exchanged	5
Connected, garbled or broken media	6
Connected, media in only one direction	7
Connected, good Audio in both directions, call clearing failed	8
Connected, good media in both directions, Terminal and Gateway clear call, Gatekeeper does not	9
Connected, good media in both directions, call cleared with wrong reason	9,5
Connected, good media in both directions, call cleared	10

TEST	2.	IP-Host to IP-Host/Two Gatekeepers
This test verifies the TIPHON Scenario-0 service where the Originating Terminal and the Terminating Gateway are registered with different Gatekeepers that maintain trust relationship.		

*   The reference configuration described in figure 2 shall be used:
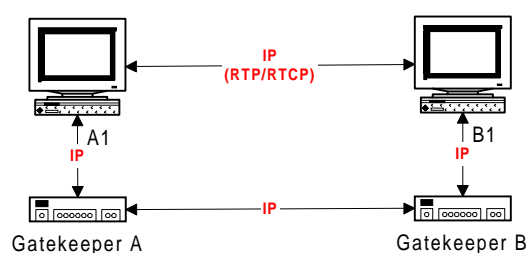
Figure 2: PC to PC with 2 Gatekeepers

1.   Endpoints perform discovery/registration using alias

2.   Endpoint A1 calls Endpoint B1

2.1.   Endpoint A1 sends ARQ to Gatekeeper A
2.2.   Gatekeeper A issues LRQ (uni/multicast) to Gatekeeper B
2.3   Gatekeeper A returns ACF

NOTE: The SETUP message must include the FastStart parameter. Any H.245 signalling used shall occur in
            tunneling mode. (via H.225 channel)

 2.4. Gatekeeper A has call active

 2.5 Endpoint B1 performs ARQ/ACF sequence, returns CONNECT

 NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

 2.6. Gatekeeper B has call active

3. Media is exchanged and quality is evaluated (A, A/V; A/V with D)

4. Endpoints terminate call

 4.1. Both endpoints send DRQ to Gatekeeper

 4.2. Both endpoints receive DCF

 4.3. Gatekeepers have calls cleared

5. Endpoint B1 calls Endpoint A1

 5.1. Endpoint B1 sends ARQ to Gatekeeper B

 5.2. Gatekeeper B issues LRQ (uni/multicast) to Gatekeeper A

 5.3 Gatekeeper B returns ACF

 NOTE: The SETUP message must include the FastStart parameter. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

 5.4. Gatekeeper B has call active

 5.5 Endpoint A1 performs ARQ/ACF sequence, returns CONNECT

 NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

 5.6. Gatekeeper A has call active

6. Media is exchanged and quality is evaluated (A/V; A/V with D)

7. Endpoints terminate call

 7.1. Both endpoints send DRQ to Gatekeeper

 7.2. Both endpoints receive DCF

 7.3. Gatekeepers have calls cleared

8. Endpoint A1 calls Endpoint C (unknown endpoint)

 8.1. Endpoint A1 sends ARQ to Gatekeeper A

 8.2. Gatekeeper A issues LRQ (uni/multicast) to Gatekeeper B

 8.3. Gatekeeper B returns LRJ

 8.4. Gatekeeper A returns ARJ

9. Endpoint B1 calls Endpoint D (unknown endpoint)

 9.1. Endpoint B1 sends ARQ to Gatekeeper B

 9.2. Gatekeeper B issues LRQ (uni/multicast) to Gatekeeper A

 9.3. Gatekeeper A returns LRJ

 9.4. Gatekeeper B returns ARJ

Table 2: PC to PC with 2 Gatekeepers scoretable

Result:	Score
Failure to discover Gatekeeper (either Directed or Multicast)	0
Failure of either Terminal or Gateway to register with Gatekeeper	0,5
Either Terminal or Gateway registers with Gatekeeper	1
Both Terminal and Gateway register, LRQ Fails for	1,5
Unknown address does not result in LRJ	2
ARQ fails for Caller	2.5
Unknown address does not result in ARJ	3
Registered, ACF received, Terminal and Gateway fail to connect	3,5
Connected, ARQ fails for Gateway	4
Connected, no media exchanged	5
Connected, garbled or broken media	6
Connected, media in only one direction	7
Connected, good Audio in both directions, call clearing failed	8
Connected, good media in both directions, Terminal and Gateway clear call, Gatekeeper does not	9
Connected, good media in both directions, call cleared with wrong reason	9,5
Connected, good media in both directions, call cleared	10

11   Scenario 1: PC to Phone

TEST 3.	IP-Host to SCN-Phone/Single Gatekeeper
This test verifies the TIPHON Scenario-1 service where the Originating Terminal and the Terminating Gateway are registered with the same Gatekeeper.	

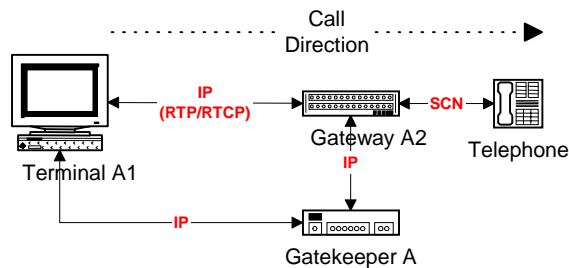- The reference configuration described in figure 3 shall be used:

Figure 3: PC to Phone with 1 Gatekeeper

1. Both Terminal A1 and Gateway A2 shall register with Gatekeeper A

2. Terminal A1 calls phone number which is unknown to Gatekeeper A

2.1.   Terminal A1 sends ARQ to Gatekeeper A
2.2.   Gatekeeper A returns ARJ (reason: unknown number)

3. A1 calls phone number

3.1.   A1 sends ARQ to Gatekeeper A
3.2.   The Gatekeeper A returns ACF

NOTE: The H.225.0 SETUP message must include the FastStart parameter. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

3.3.   Gateway A2 performs ARQ/ACF sequence with Gatekeeper A

NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

3.4.   Gatekeeper A has call active
3.5.   Gateway A2 completes connection with the SCN endpoint and opens media channels

4. Media are exchanged and quality is evaluated

5. Terminal A1 and Gateway A2 finish the call

5.1.   Terminal A1 and Gateway A2 send DRQ to Gatekeeper A
5.2.   Both Terminal A1 and Gateway A2 receive DCF
5.3.   Gatekeeper A has calls cleared

Table 3: PC to Phone with 1 Gatekeeper scoretable

Result:	Score
Failure to discover Gatekeeper (either Directed or Multicast)	0
Failure of either Terminal or Gateway to register with Gatekeeper	0,5
Either Terminal or Gateway registers with Gatekeeper	1
ARQ fails for Caller	2,5
Unknown address does not result in ARJ	3
Registered, ACF received, Terminal and Gateway fail to connect	3,5
Connected, ARQ fails for Gateway	4
Connected, no media exchanged	5
Connected, garbled or broken media	6
Connected, media in only one direction	7
Connected, good Audio in both directions, call clearing failed	8
Connected, good media in both directions, Terminal and Gateway clear call, Gatekeeper does not	9
Connected, good media in both directions, call cleared with wrong reason	9,5
Connected, good media in both directions, call cleared	10

NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel).

TEST	4.	IP-Host to SCN-Phone/Two Gatekeepers
This test verifies the TIPHON Scenario-1 service where the Originating Terminal and the Terminating Gateway are registered with different Gatekeepers.		

* The reference configuration described in figure 4 shall be used:
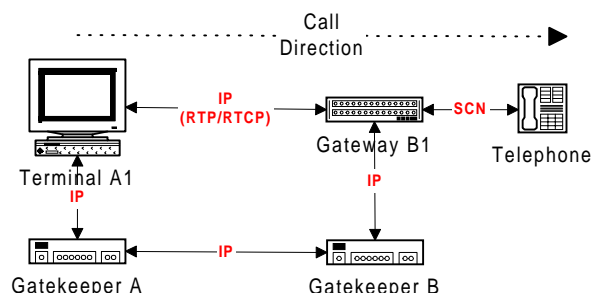
Figure 4: PC to Phone with 2 Gatekeepers

1. Both Terminal A1 and the Gateway B1 shall register with their respective Gatekeeper

2. Terminal A1 calls a phone number which is unknown to the Gatekeeper (s)

2.1.   Terminal A1 sends ARQ to Gatekeeper A
2.2.   Gatekeeper A issues LRQ (uni/multicast) to Gatekeeper B
2.3.   Gatekeeper B returns LRJ (reason: unknown number)
2.4.   Gatekeeper A returns ARJ (reason: unknown number)

3.   Terminal A1 calls a phone number

3.1.   Terminal A1 sends ARQ to Gatekeeper A
3.2.   Gatekeeper A issues LRQ (uni/multicast) to Gatekeeper B
3.3.   Gatekeeper A returns ACF

NOTE: The SETUP message must include the FastStart parameter. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

3.4.   Gatekeeper A has call active
3.5.   Gateway B1 Terminating Gateway performs ARQ/ACF sequence, returns CONNECT

NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

3.6.   Gatekeeper B has call active
3.7.   Media is exchanged and quality is evaluated

4.   Terminal A1 and Gateway B1 finish the call

4.1.   Terminal A1 and Gateway B1 send DRQ to their Gatekeepers
4.2.   Terminal A1 and Gateway B1 receive DCF
4.3.   Gatekeepers have calls cleared

Table 4: PC to Phone with 2 Gatekeepers scoretable

Result:	Score
Failure to discover Gatekeeper (either Directed or Multicast)	0
Failure of either Terminal or Gateway to register with Gatekeeper	0,5
Either Terminal or Gateway registers with Gatekeeper	1
Both Terminal and Gateway register, LRQ Fails for Caller	1,5
Unknown address does not result in LRJ	2
ARQ fails for Caller	2.5
Unknown address does not result in ARJ	3
Registered, ACF received, Terminal and Gateway fail to connect	3,5
Connected, ARQ fails for Gateway	4
Connected, no media exchanged	5
Connected, garbled or broken media	6
Connected, media in only one direction	7
Connected, good Audio in both directions, call clearing failed	8
Connected, good media in both directions, Terminal and Gateway clear call, Gatekeeper does not (note)	9
Connected, good media in both directions, call cleared with wrong reason	9,5
Connected, good media in both directions, call cleared	10

NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel).

12 Scenario 2: Phone to PC

TEST	5.	Phone to IP-Host/Single Gatekeeper
This test verifies the TIPHON Scenario-2 service where the Originating Gateway and the Terminating Terminal are registered with the same Gatekeeper.		

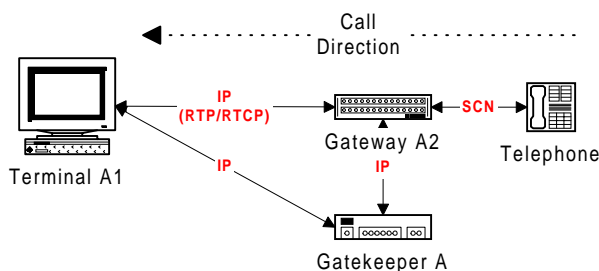- The reference configuration described in figure 5 shall be used:

Figure 5: Phone to PC with 1 Gatekeeper

1. Both Terminal A1 and Gateway A2 shall register with the Gatekeeper A

2. Gateway A2 gets phone number from the SCN Telephone which is unknown to Gatekeeper A

2.1. Gateway A2 sends ARQ to Gatekeeper A
2.2. Gatekeeper A returns ARJ (reason: unknown number)

3. Gateway A2 gets phone number from the SCN Telephone

3.1. Gateway A2 sends ARQ to Gatekeeper A
3.2. Gatekeeper A returns ACF

NOTE: The H.225.0 SETUP message must include the FastStart parameter. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

3.3. Terminal A1 performs ARQ/ACF sequence with Gatekeeper A

NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

3.4. Gatekeeper A has call active
3.5. Terminal A1 completes connection with the SCN endpoint and opens media channels

4. Media are exchanged and quality is evaluated

5. Gateway A2 and Terminal A1 finish the call

5.1. Terminal A1 and Gateway A2 send DRQ to the Gatekeeper
5.2. Both Terminal A1 and Gateway A2 receive DCF
5.3. Gatekeeper A has calls cleared

Table 5: Phone to PC with 1 Gatekeeper scoretable

Result:	Score
Failure to discover Gatekeeper (either Directed or Multicast)	0
Failure of either Terminal or Gateway to register with Gatekeeper	0,5
Either Terminal or Gateway registers with Gatekeeper	1
ARQ fails for Caller	2,5
Unknown address does not result in ARJ	3
Registered, ACF received, Terminal and Gateway fail to connect	3.5
Connected, ARQ fails for Gateway	4
Connected, no media exchanged	5
Connected, garbled or broken media	6
Connected, media in only one direction	7
Connected, good Audio in both directions, call clearing failed	8
Connected, good media in both directions, Terminal and Gateway clear call, Gatekeeper does not (note)	9
Connected, good media in both directions, call cleared with wrong reason	9,5
Connected, good media in both directions, call cleared	10

NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel).

TEST	6.	Phone to IP-Host/Two Gatekeepers
This test verifies the TIPHON Scenario-2 service where the Originating Gateway and the Terminating Terminal are registered with different Gatekeepers.		

- The reference configuration described in figure 6 shall be used:
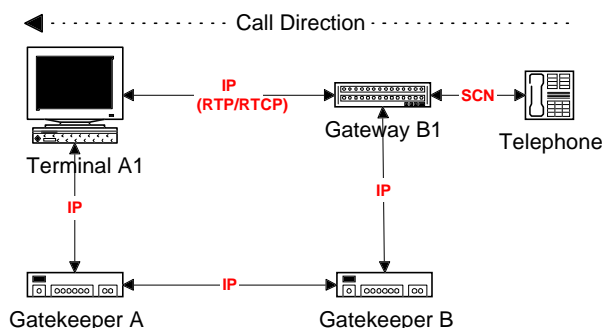
Figure 6: Phone to PC with 2 Gatekeepers

1. Both Gateway B1 and Terminal A1 shall register with their respective Gatekeeper

2. Gateway B1 gets phone number from an SCN Telephone which is unknown to the Gatekeeper(s)

2.1. Gateway B1 sends ARQ to Gatekeeper B
2.2. Gatekeeper B issues LRQ (uni/multicast) to Gatekeeper A
2.3. Gatekeeper A returns LRJ (reason: unknown number)
2.4. Gatekeeper B returns ARJ (reason: unknown number)

3. Gateway B1 gets phone number from the SCN Telephone

3.1. Gateway B1 sends ARQ to Gatekeeper B
3.2. Gatekeeper B issues LRQ (uni/multicast) to Gatekeeper A
3.3. Gatekeeper B returns ACF

NOTE: The H.225.0 SETUP message must include the FastStart parameter. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

3.4.   Gatekeeper B has call active

3.5.   Terminal A1 performs ARQ/ACF sequence, returns CONNECT

NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message.
         Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

3.6.   Gatekeeper B has call active

3.7.   Media is exchanged and quality is evaluated

4.   Gateway B1 and Terminal A1 finish the call

4.1.   Gateway B1 and Terminal A1 send DRQ to their Gatekeepers

4.2.   Gateway B1 and Terminal A1 receive DCF

4.3.   Gatekeepers have calls cleared

Table 6: Phone to PC with 2 Gatekeepers scoretable

Result:	Score
Failure to discover Gatekeeper (either Directed or Multicast)	0
Failure of either Terminal or Gateway to register with Gatekeeper	0,5
Either Terminal or Gateway registers with Gatekeeper	1
Both Terminal and Gateway register, LRQ Fails for Caller	1,5
Unknown address does not result in LRJ	2
ARQ fails for Caller	2,5
Unknown address does not result in ARJ	3
Registered, ACF received, Terminal and Gateway fail to connect	3,5
Connected, ARQ fails for Gateway	4
Connected, no media exchanged	5
Connected, garbled or broken media	6
Connected, media in only one direction	7
Connected, good Audio in both directions, call clearing failed	8
Connected, good media in both directions, Terminal and Gateway clear call, Gatekeeper does not	9
Connected, good media in both directions, call cleared with wrong reason	9,5
Connected, good media in both directions, call cleared	10

NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message.
         Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel).

13   Scenario 3: Phone to Phone

TEST	7.	Phone to Phone/Single Gatekeeper
This test verifies the TIPHON Scenario-3 service where the Originating Gateway and the Terminating Gateway are registered with the same Gatekeeper.		

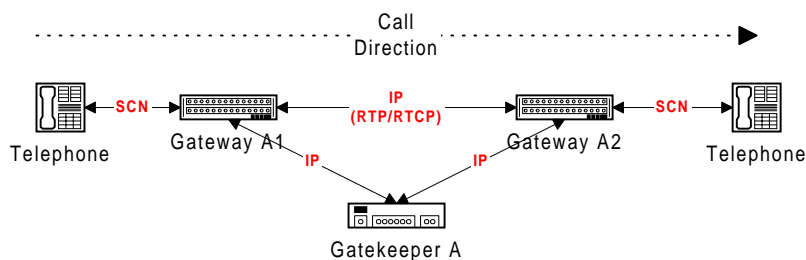- The reference configuration described in figure 7 shall be used:

Figure 7: Phone to Phone with 1 Gatekeeper

1. Both Gateway A1 and Gateway A2 shall register with Gatekeeper A

2. Gateway A1 gets phone number from the SCN Telephone which is unknown to Gatekeeper A

2.1. Gateway A1 sends ARQ to Gatekeeper A
2.2. Gatekeeper A returns ARJ (reason: unknown number)

3. Gateway A1 gets phone number from the SCN Telephone

3.1. Gateway A1 sends ARQ to Gatekeeper A
3.2. Gatekeeper A returns ACF

NOTE: The H.225.0 SETUP message must include the FastStart parameter. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

3.3. Gateway A2 performs ARQ/ACF sequence, returns CONNECT

NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

3.4. Gatekeeper A has call active
3.5. Media is exchanged and quality is evaluated

4. Gateway A1 and Gateway A2 finish the call

4.1. Gateway A1 and Gateway A2 send DRQ to Gatekeeper A
4.2. Gateway A1 and the Gateway A2 receive DCF
4.3. Gatekeeper A has calls cleared

Table 7: Phone to Phone with 1 Gatekeeper scoretable

Result:	Score
Failure to discover Gatekeeper (either Directed or Multicast)	0
Failure of either Terminal or Gateway to register with Gatekeeper	0,5
Either Terminal or Gateway registers with Gatekeeper	1
ARQ fails for Caller	2,5
Unknown address does not result in ARJ	3
Registered, ACF received, Terminal and Gateway fail to connect	3.5
Connected, ARQ fails for Gateway	4
Connected, no media exchanged	5
Connected, garbled or broken media	6
Connected, media in only one direction	7
Connected, good Audio in both directions, call clearing failed	8
Connected, good media in both directions, Terminal and Gateway clear call, Gatekeeper does not	9
Connected, good media in both directions, call cleared with wrong reason	9,5
Connected, good media in both directions, call cleared	10

NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel).

TEST	8.	Phone to Phone/Two Gatekeepers
This test verifies the TIPHON Scenario-3 service where the Originating Gateway and the Terminating Gateway are registered with different Gatekeepers.		

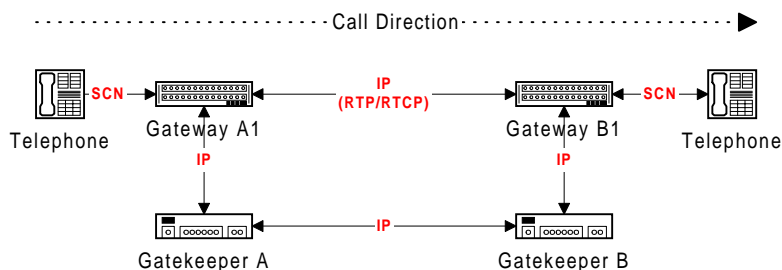- The reference configuration described in figure 8 shall be used:

Figure 8: Phone to Phone with 2 Gatekeepers

1. Both Gateway A1 and Gateway B1 shall register with their respective Gatekeeper

2. The Gateway A1gets phone number from the SCN Telephone which is unknown to the Gatekeeper(s)

2.1. Gateway A1 sends ARQ to Gatekeeper A
2.2. Gatekeeper A issues LRQ (uni/multicast) to Gatekeeper B
2.3. Gatekeeper B returns LRJ (reason: unknown number)
2.4. Gatekeeper A returns ARJ (reason: unknown number)

3. Gateway A1 gets phone number from an SCN Telephone

3.1. Gateway A1 sends ARQ to Gatekeeper A
3.2. Gatekeeper A issues LRQ (uni/multicast) to Gatekeeper B
3.3. Gatekeeper B returns ACF

NOTE: The H.225.0 SETUP message must include the FastStart parameter. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

3.4. Gatekeeper A has call active
3.5. Gateway B1 performs ARQ/ACF sequence, returns CONNECT

NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel)

3.6. Gatekeeper B has call active
3.7. Media is exchanged and quality is evaluated

4. Gateway A1 and Gateway B1 finish the call

4.1. Gateway A1 and Gateway B1 send DRQ to their Gatekeepers
4.2. Gateway A1 and Gateway B1 receive DCF
4.3. Gatekeepers have calls cleared

Table 8: Phone to Phone with 2 Gatekeepers scoretable

Result:	Score
Failure to discover Gatekeeper (either Directed or Multicast)	0
Failure of either Terminal or Gateway to register with Gatekeeper	0,5
Either Terminal or Gateway registers with Gatekeeper	1
Both Terminal and Gateway register, LRQ Fails for Caller	1,5
Unknown address does not result in LRJ	2
ARQ fails for Caller	2.5
Unknown address does not result in ARJ	3
Registered, ACF received, Terminal and Gateway fail to connect	3,5
Connected, ARQ fails for Gateway	4
Connected, no media exchanged	5
Connected, garbled or broken media	6
Connected, media in only one direction	7
Connected, good Audio in both directions, call clearing failed	8
Connected, good media in both directions, Terminal and Gateway clear call, Gatekeeper does not	9
Connected, good media in both directions, call cleared with wrong reason	9,5
Connected, good media in both directions, call cleared	10

NOTE: The fast parameter shall be returned in any message upto and including the H.225 CONNECT message. Any H.245 signalling used shall occur in tunneling mode. (via H.225 channel).

14   Scenario 4: PC to PC using SCN

For further study.

15   Scenarios 0, 1, 2, 3 with Transit Gatekeeper

TEST	**9.**	**IP-Host to Phone/Two Administrative Domains via a Transit Gatekeeper**
This test verifies the TIPHON Scenario-1 service where the Originating Terminal and the Terminating Gateway are registered with different Gatekeepers that do not maintain trust relationship, and need a third party to establish trust. This may also occur when QoS needs to be guaranteed across administrative domains.		

For further study.

TEST Optional	**10.**	**Phone to IP-Host/Two Administrative Domains via a Transit Gatekeeper**
This test verifies the TIPHON Scenario-2 service where the Originating Gateway and the Terminating Terminal are registered with different Gatekeepers that do not maintain trust relationship, and need a third party to establish trust. This may also occur when QoS needs to be guaranteed across administrative domains.		

For further study.

TEST Optional	**11.**	**Phone to Phone/Two Administrative Domains via Transit Gatekeeper**
This test verifies the TIPHON Scenario-3 service where the Originating Gateway and the Terminating Gateway are registered with different Gatekeepers that do not maintain trust relationship, and need a third party to establish trust. This may also occur when QoS needs to be guaranteed across administrative domains.		

For further study.

16 Scenarios 0, 1, 2, 3 according to TIPHON Security Profile

TEST	12.	Scenarios 0, 1, 2, 3 according to TIPHON Security Profile TBD

For further study.

17 Additional Test Services

TEST Optional	13.	Scenarios 0, 1, 2, 3 with Audio before Connect

For further study.

TEST Optional	14.	Scenarios 0, 1, 2, 3 with DTMF in a Call

For further study.

TEST Optional	15.	Scenarios 0, 1, 2, 3 with Overlap sending and receiving

For further study.

18 Additional Supplementary Services

For further study.

History

Document history		
V1.1.1	March 1999	Publication