GENERAL REPORT

SIGTRAN PLUGTESTS PARTICIPANTS
Hosted by the ETSI Plugtests™ Service

ZNIIS Premises (Moscow, Russia)
16 -20 April 2007

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1.   GENERAL MEETING INFORMATION

The SIGTRAN event took place in the TechnoPark ZNIIS premises. ZNIIS or Central Science Research Telecommunication Institute is located on the 1-st proezd Perova polya, 8, Moscow.

2.   AGENDA

Time	Monday	Tuesday	Wednesday	Thursday	Friday
09:30 10:00	9:30 registration onwards	Testing	Testing	Testing	Testing
10:00 11:00	Material set-up				
11:00 12:00	Welcome session				
12:00 13:00	Material set-up				
13:00 14:00	LUNCH				
14:00 15:00	Testing	Testing	Testing	Testing	Testing
15:00 16:00					
16:00 17:30		Excursion over the Moscow city			Tear Down
17:30 18:00	Feedback Session		Feedback Session	Feedback Session	
18:00 19:00	---		---	---	---
19:00 22:00	---	Dinner	---	---	---

3.   ROOM PLAN

Hall №2 of TechnoPark ZNIIS

4.   LIST OF PARTICIPANTS

1. Adax – Barry Nagelberg

2. ARICENT – Ravi Jagdish Sharma

3. Cisco Systems – Alexander Felizhanko

4. Dialogic Corporation – Stephen Hill

5. Dialogic Corporation – Gareth Kiely

6. Emerson – Colin Cameron

7. Linkbit Inc. – Sveta Glushkova

8. Linkbit Inc. – Michael Sukhar

9. Sitronics Telecom Solutions – Jiri Lukes

10. Sitronics Telecom Solutions – Slavomir Ondko

11. Sitronics Telecom Solutions – Oleg Taborovets

12. Tekelec – Mark Erickson

13. Tekelec – Mark Davidson

14. Ulticom – Yann Jaouen

15. Ulticom – Pascal Linares

16. Nortel Networks – Konstantin Savin

5.   TEST NETWORK ACCESS

The test network consisted of one router and the DNS server, which were PCs working on FreeBSD. It was configured to allow delay and/or discard packets and also limit the bandwidth.

Testbed Network
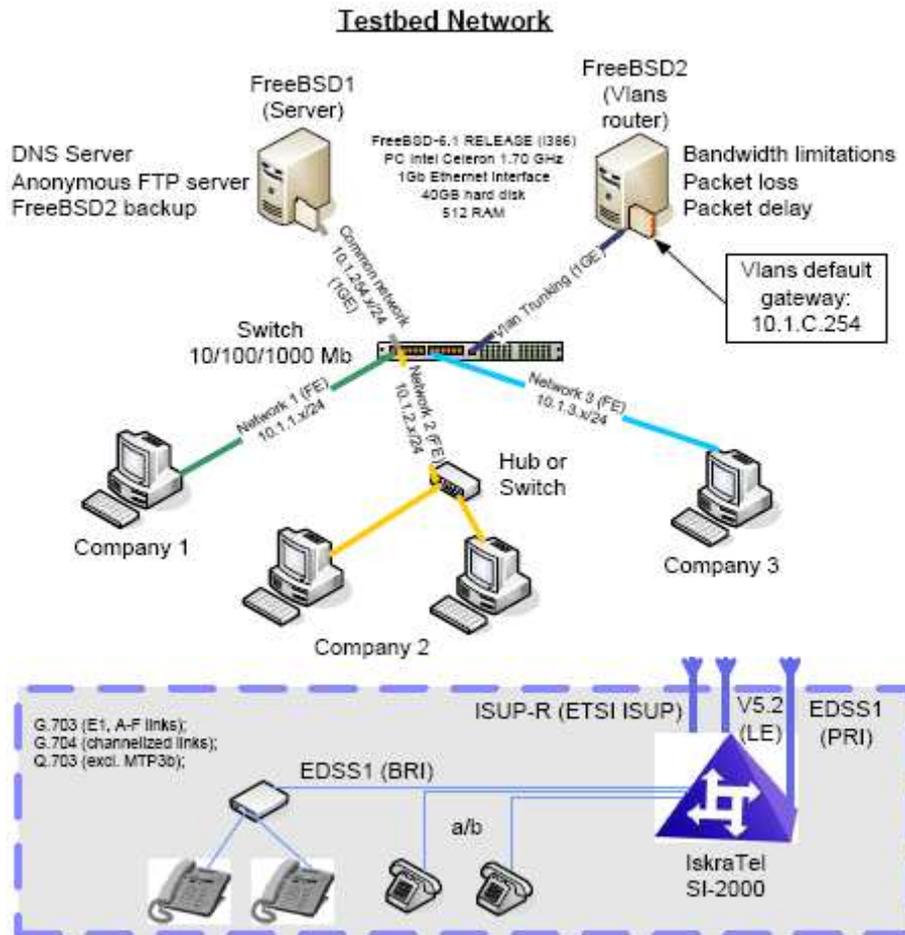
Each company was assigned one Ethernet port for the test network. Each company had an IPv4 network with prefix 10.1.C.0/24, where C is a number from 1 to 22. C represented the company network code. The following codes were used:

Company	Name	Code	Socket	IP Network
Adax	adax.testbed	1		10.1.1.0/24
ARICENT	Aricent.testbed	2		10.1.2.0/24
Cisco Systems	cisco.testbed	3		10.1.3.0/24
Dialogic Corporation	dialogic.testbed	4		10.1.4.0/24
Emerson	emerson.testbed	5		10.1.5.0/24
Linkbit Inc.	linkbit.testbed	6		10.1.6.0/24
Nortel Networks	nortel.testbed	7		10.1.7.0/24
Sitronics Telecom Solutions	sitronics.testbed	8		10.1.8.0/24
Tekelec	tekelec.testbed	9		10.1.9.0/24
Ulticom	ulticom.testbed	10		10.1.10.0/24

The router did only run IPv4. Each company could use the IP addresses from 10.1.C.1 to 10.1.C.253 as they like. Especially they could connect multiple hosts.

6.   FINAL REPORT OF THE SIGTRAN PLUGTESTS EVENT

Report for Day 1:

Protocols tested:
M2PA - 3 implementations
M2UA - 2 implementations
M3UA - 7 implementations
SUA - 3 implementations

Issues raised during testing:

****
Issue 1 - How to handle an M3UA registration request (REG_REQ) msg received without a Network Appearance (NA) param.
****

Example: An M3UA SGP is configured with multiple SS7 networks. The SGP receives a REG_REQ msg without the optional NA param. How should the SGP handle the registration request? The problem is that the SGP doesn't know to which SS7 network to apply the routing information.

Some implementations are returning REG_RESP msg with Registration Status = Error - Invalid Network Appearance.
Some implementations are returning REG_RESP msg with Registration Status = Error - Invalid Routing Key.

The consensus of the group is that while RFC 4666 has tried to address this issue, in the description of the "Network Appearance" param of the REG_REQ msg, there is still a lot of confusion. In this section, the RFC states
that:

<snip>
.....If the
Network Appearance is not specified and the Routing Key applies to all Network Appearances, then this Routing Key MUST be the only one registered for the association.
<snip>

There were several problems identified with this statement:
a. It is not clear how the SGP can possibly know whether or not "the Routing Key applies to all Network Appearances".

b. Even if the SGP can somehow discern whether or not "the Routing Key applies to all Network Appearances", it is not stated what the SGP should do if the Routing Key DOES NOT apply to all Network Appearances.

****
Issue 2 - How should M3UA/SUA handle an SCTP INIT chunk in which the number of inbound/outbound streams is specified as 1?
****

Some implementations accept this and allow the assoc to come up and be used.
Some implementations are not responding at all.
Some implementations are responding with an INIT_ACK chunk with OUT_OF_RESOURCES error code.
Some implementations are allowing the assoc to come up but are then aborting the assoc.

The M2PA spec (RFC 4165) addresses this most clearly by stating that "The association SHALL contain two streams in each direction."

The consensus of the group is that the M3UA/SUA specs are unclear about how to handle this. Based on the stream usage restrictions stated in section 1.4.7. (SCTP Stream Mapping), the group feels that the intention of M3UA/SUA is probably to state something like "The association SHALL contain at least two streams in each direction."

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Issue 3 - IPSP issues in SUA
****

For Double-Exchange: How should an implementation handle an ASP-ACTIVE msg if it has not yet sent ASPUP?

For Single-Exchange:

a. How should an implementation handle an ASPUP msg if it is not yet ready to go up, for example if it is not completely configured?

b. Is it OK for the server to send ASPUP?

Report for Day 2:

Protocols tested:
M2PA - 6 implementations
M3UA - 6 implementations
SUA - 5 implementations

There was one issue raised at the Day 2 wrap-up:

For M2PA proving, a suggestion was made that the M2PA RFC should contain a standard criteria for evaluating the health of an M2PA link based on the results of the proving.

This issue actually came up in a fielded implementation, not at the Plugtests. A customer using M2PA links reported that there were problems in their network. After extensive and time-consuming trouble-shooting, it was determined that one of the M2PA links was using a problematic IP connection, which was causing a lot of SCTP re-transmissions.

A post-mortem of the entire affair indicated that a lot of time and trouble could have been saved if the user had been informed immediately, i.e. at the time that the link was brought up, that there were problems at the SCTP layer.

The issue with the M2PA RFC is that it delegates, to the relevant MTP2 specs, the details of evaluating the health of the link, such as error rate monitoring. Section 4 (Procedures) states that:

<snip>
   Except as modified in this document, M2PA SHOULD follow the
   requirements of the applicable MTP2 specification. These may include
   [Q.703] or [T1.111]. The same standard MUST be followed on both ends
   of the M2PA link.
<snip>

However the MTP2 error rate monitoring details aren't readily transferable to SCTP. So the suggestion is being made that it would be helpful if the M2PA RFC itself would specify a standard criteria for evaluating the health of an M2PA link based on the results of the proving. Such criteria would probably be based on the SCTP retransmission rate.

The consensus of the group here is that this is a good idea.

Report for Day 3:

Protocols tested:
M2PA - 5 implementations
M3UA - 6 implementations
M2UA - 2 implementations
SUA - 2 implementations

There was one issue raised at the Day 3 wrap-up:

Some ASP implementations are not resending the ASP-Active msg, after not receiving the ASP-Active-Ack from the SGP. This behaviour is of course allowed by RFC 4666. The RFC states that:

<snip>
"If the ASP does not receive a response to an ASP Active message within T(ack), the ASP MAY restart T(ack) and resend ASP Active messages until it receives an ASP Active Ack message."
<snip>

However the consensus within the group is that such behaviour is not very logical, and that it would be helpful if the "MAY"
in the text above would be replaced with "SHOULD".

Report for Day 4:

Protocols tested:
M2PA - 4 implementations
M3UA - 7 implementations
M2UA - 5 implementations
SUA - 5 implementations

There was one issue raised at the Day 4 wrap-up. The issue is a case of non-interoperability that has been observed between 2 fielded implementations, and has already been discussed on the mailing list (see "Question related with DAUD Message" from Jan 31 - Feb 2 2007).

The specific issue that was raised on the mailing list concerns one implementation sending 1024 instances of the same parameter in a DAUD msg, and another implementation not prepared to accept so many instances of the same parameter.

The broader issue is that there is no specified limit on the size of an xUA message, or a limit on the number of times a single parameter may be repeated in a msg. In order to protect itself from running out of memory resources, each implementation is setting ad-hoc limits on what it is willing and able to receive. By their nature, these ad-hoc limits are all different, and we have wound up with non-interoperability issues.

The lack of response from the xUA editors on this issue has been disapointing, and there is concern among the group that this issue isn't being addressed. Several options to address this issue were suggested during the wrap-up meeting:

1. Allow unlimited repetition of individual parameters, but set an upper limit on the total size of a non-data msg. The suggested limit is 8096 bytes.

2. Add functionality to the specs to allow the xUA endpoints to negotiate the max non-data msg size during startup.

3. Use the maximum transmission unit (MTU) size obtained via SCTP "Path MTU Discovery" to set the limit on the total size of a non-data msg.

Report for Day 5:

Protocols tested:
M2PA - 3 implementations
M2UA - 3 implementations
M3UA - 6 implementations
SUA - 2 implementations

Issues raised during testing:
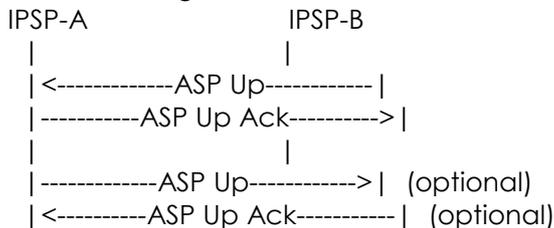*******
Issue 1 - There is a contradiction in the M3UA spec regarding the use of the ASPUP msg in Double Exchange mode.
****

Section 4.3.4.1.2. (IPSP Considerations (ASP Up)) states that:
" ... when using the IPSP DE model, an interchange of ASP Up
   messages from each end MUST be performed."

However section 5.6.2 shows that the 2nd exchange is optional:
5.6.2. Double Exchange
```
            IPSP-A                   IPSP-B
              |                        |
              | <-------------ASP Up------------ |
              | -----------ASP Up Ack---------->  |
              |                   |
              | -------------ASP Up------------> |   (optional)
              | <----------ASP Up Ack----------- |   (optional)
```

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Issue 2 - There is a contradiction in the M3UA spec regarding the use of the "Invalid Routing Context" error code.
****

Section 3.8.1. (Error) states:
"   The "Invalid Routing Context" error is sent if a message is received
   from a peer with an invalid (unconfigured) Routing Context value.
   For this error, the invalid Routing Context(s) MUST be included in
   the Error message."

However section 4.3.4.3. (ASP Active Procedures) states the opposite:
"   - If the RC parameter is not included in the ASP Active message and
      there are no RKs defined, the peer node SHOULD respond with and
      ERROR message with the Error Code "Invalid Routing Context".

****
Issue 3 - There is a contradiction between the M3UA spec and the other specs regarding the port number.
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M3UA states that implementations MAY use a port number other than the IANA port number, while the other xUA specs are silent on this matter.

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Issue 4 - Alternate personalities
****
There is a fielded M3UA implementation that is behaving alternately as either an SPG or an ASP, on the same IP address and port number. This was discussed in the group and the consensus is that this is very confusing behaviour in terms of interoperability. The group feels that it would be helpful if a definitive statement forbidding such alternate personalities would be added to the spec.