Minutes of WG-LLT meeting, Dresden, 4/10/1998

TERENA WORKING GROUP ON LOWER LAYER TECHNOLOGIES

Minutes of the WG-LLT meeting held on the 4th October 1998 at the Hotel Mercure Newa, Dresden, Germany.

Kevin Meynell - Issue 3

PRESENT

Name	Organisation	Country
Zlatica Cekro	VUB/ULB	Belgium
David Crochemore	RENATER	France
Tiziana Ferrari	INFN Bologna	Italy
Joao Nuno Ferreira	FCCN	Portugal
Christoph Graf	DANTE	-
Aram Hayzapetyan	YerPHI	Armenia
Avgust Jauk	ARNES	Slovenia
Olav Kvittem (Chair)	Uninett	Norway
Simon Leinen	SWITCH	Switzerland
Ladislav Lhotka	CESNET/USB	Czech Republic
Olivier Martin	CERN	Switzerland
Kevin Meynell (Sec)	TERENA	-
Antonio Pinizzotto	IAT-CNR	Italy
Victor Reijs	SURFnet	The Netherlands
Esther Robles	RedIRIS	Spain
Vladimir Smotlacha	CESNET	Czech Republic
Pavel Smrha	CESNET/UWB	Czech Republic
Robert Stoy	RUS/DFN	Germany
Daniel Sturm	CESNET	Czech Republic
Andrei Sukhov	SamaraNet	Russia
Marc Thoelen	Univ. Limburg	Belgium
Celestino Tomas	RedIRIS	Spain
Jean-Marc Uze	RENATER	France

Apologies were received from:

Mauro Campanella   INFN Milano   Italy
Guenther Schmittner   JKU/ACOnet   Austria

1. APPROVAL OF MINUTES

    The minutes of the final TF-TEN meeting held on the 2nd and 3rd of
    July 1998 were approved.

2. STATUS OF QUANTUM & TEN-155

    Christoph clarified the relationship between QUANTUM and TEN-155.
    QUANTUM was the name of the project submitted to the European
    Commission by a consortium of NRNs, whilst TEN-155 was the name of
    the network. QUANTUM would also consist of a test programme similar
    to TF-TEN.

    A map of NRN access capacities to TEN-155 was displayed. These
    ranged from 155 through 34 to 10 Mbps. Most lines were STM-1s, with
    the remainder being E3s, and every NRN with the exception of Belnet
    and NORDUnet would be using ATM as an access protocol. The backbone
    would also be running ATM to provide both an IP and managed
    bandwidth service. Initially only PVCs would be used, but it was
    hoped that signalling could eventually be used.

    The QUANTUM Test Programme (QTP) was still being determined. Each
    NRN could decide whether to participate although it would be more
    difficult for those NRNs that were not using ATM. Around 10% of the
    TEN-155 bandwidth would be reserved for research purposes and it
    would be possible to establish an overlay network similar to that
    used for TF-TEN. Projects within the EU Telematics Programme could
    also apply for bandwidth, although they would be charged for this.
    The charging mechanism however, still needed to be worked out.

    Initial experiments over TEN-155 were scheduled to commence on 1
    December and would involved tests by mathematicians. The next phase
    was reserved for QTP activities, and in the final phase, other
    projects would come on to the network.

    Olav asked what switches would be used in the TEN-155 backbone.
    Christoph replied that Unisource planned to use Lucent switches.
    Unfortunately, these had failed two acceptance test, and if they
    failed a third later in the week, they would be rejected. It was
    known that Cisco LS-1010s could fulfil the requirements, but these
    were too expensive. In any case, it was the problem of Unisource,

not QUANTUM.

Olav also asked when TEN-155 was scheduled to start. Christoph said deployment would commence in November with the production service planned to start in December. Having said this, a contract had not yet been signed with the European Commission (although this was expected in the next couple of months). He added the TEN-34 contract had been extended from June until December.

3. NATIONAL ACTIVITIES

Olav asked each NRN to provide an update on their current activities and future plans.

3.1 Czech Republic

Ladislav reported little had changed since the last TF-TEN meeting. They were still experiencing funding difficulties, although they interested in taking part in the QTP. It was particularly important to investigate QoS issues because they were currently running LANE on the CESNET backbone.

3.2 Slovenia

Avgust reported their activities were hampered by the national PTT that still had monopoly on telecommunications. They were quite slow at providing high-speed links, and ATM was only available between 17 major towns. Even then, this was only used for leased line emulation. Nevertheless, they were interested in taking part in the QTP as they had suitable infrastructure in Ljubljana.

He added they were currently preparing the ground to use the infrastructure of utility companies as soon as the monopoly of the PTT was abolished on 1 January 2001.

3.3 Portugal

Joao reported they had negotiated free access to a JAMES-type research network run by Portugal Telecom. This network consisted of seven nodes and supported a virtual VP network, and a virtual signalled network. This project was due to start in January 1999.

Unfortunately, Portugal would initially only have access to TEN-155 via satellite at 10 Mbps. This meant it would be impossible to participate in the early QUANTUM tests. Hopefully they would obtain an ATM connection in March 1999 that would allow them to join in the experiments.

3.4 The Netherlands

Victor reported a few more ATM experiments would be conducted before most of the ATM network was dismantled. These included IP over lossy ATM, VBR overbooking and IP configuration on ATM. The backbone network was being migrated to IP over STM-1, and would eventually be upgraded to STM-4C.

CAR had been introduced on connections to the US in order to provide certain institutions with reserved bandwidth in multiples of 128 Kbps. No performance issues had arisen as yet, but only basic tests had been conducted. An MoU had also been signed with the Internet2 consortium and a Call for Tender had been issued for a 155 Mbps connection to the STARTAP.

The Dutch government was currently discussing the SURFnet 5 proposal for the GigaPort Project. This was planned to start in 1999 and would run for four years. There were two aspects to this: GigaWorks was an applications development programme in conjunction with industry, whilst GigaNet aimed to establish a 2.4 Gbps research network interconnecting SURFnet and telematics institutes. The activity plan for this would be written in English.

Victor was asked whether he could circulate the URL of the activity plan on the mailing list.

ACTION 981004-1: Victor Reijs

3.5 Italy

Tiziana said they were currently undertaking acceptance tests of the new backbone; Milan, Roma, Bologna and Naples were being connected by 34 Mbps lines. 155 Mbps lines were still not available so sites had to apply for multiple 34 Mbps if they needed additional bandwidth. There were plans to extend this backbone in 1999.

Cisco Stratacom and LS-1010 switches were being used in the backbone to offer ATM with CBR VPs. A managed IP service was also being offered, but there were no plans to use signalling. Government and private research institutes would be allowed to conduct testing over this network.

INFN was also taking part in the 6Bone and they were investigating video-on-demand and QoS issues (RSVP, ATM and MPLS). Other research projects included MONARC (distributed databases) and CONDOR (distributed job processing between workstation farms). Finally, they hoped to obtain funding from the EU Fifth Framework Programme for an optical switching project. This meant they would be looking

for partners in industry and other research institutes.

3.6 CERN

Olivier reported CERN was looking to connect to Abilene in the US and might be interested in participating in the QTP. It was mainly a question of bandwidth and human resources.

They were also investigating video-on-demand and reflector technology as they believed this worked better than multicasting. Other developments included VRVCS which provided a Web interface to the Mbone tools (unicast mode).

3.7 Belgium

Zlatica said she was not representing Belnet, but could report with respect to VUB/ULB. Belnet did not have a test network, nor would it have an ATM connection to TEN-155. This meant it would be difficult for VUB/ULB to participate in the QTP, although they were looking at alternative service providers. Nevertheless, they could conduct some high-speed tests on-site as they were installing a 1.25 Gbps network using the Ascom ATMLightRing 1250 System and Cisco LS1010 switches. ATMLightRing is a ring-based ATM backbone network that uses optical cell-based transmission equipment and permits nodes to be up to 60 km apart.

3.8 Switzerland

Simon reported the SWITCH NG project had been approved. The backbone topology had been finalised and would be provided by diAx which was a subsidiary of the power distribution companies. diAx would provide an ATM service running at 155 Mbps, and SWITCH would operate the IP service. Every institution would have access to both the native ATM and managed IP services.

They were also thinking about the evolution of the network over the next two years. It was hoped the network would be upgraded to 622 Mbps and would implement partial mesh UBR. In reality, it might be advisable to use a full mesh as it was unclear how well some switches handled congestion. At the same time, they would be testing IPv6 and were looking for peering agreements with other IPv6 networks.

Unfortunately, there was still little interest in native ATM applications except for the Telepoly project. This was very high quality videoconferencing equipment based on the K-NET CellStack A/V codecs that was being developed by the Swiss Polytechnics (distributed institutions). It currently used 60-70 Mbps and they hoped to offer this to other institutions.

3.9 Germany

Robert reported that DFN had procured a 2.4 Gbps test network between Munich and Erlangen which had recently been extended to Berlin. They were also hoping to bring Stuttgart onto this.

RUS had a local testbed for the EDISON project which investigated QoS, IPv6 and IP multicasting. A MAN running at 622 Mbps was also being established in the Stuttgart area that would utilise WDM equipment from Bosch.

3.10 Spain

Celes reported they were currently using the ATM VP service of Telefonica to interconnect seventeen regions in Spain. In two or three months they would be moving to E3 connections, but still using ATM. Unfortunately, the US connections were still overloaded.

They were currently investigating ISABEL (a high-bandwidth videoconferencing application), IPv6 and RSVP, but would be unable to participate in the QTP until April 1999.

3.11 France

Jean-Marc reported they were working on three main projects. They had just issued a Call for Tender for a 155 Mbps connection to the US, including 45 Mbps to STAPTAP. This would hopefully become available in December.

RENATER II was also planned for mid-1999 and they had issued a Call for Tender in June. This would interconnect twenty-five regions in a proposed star topology initially at 155 Mbps, and later at 622 Mbps. Both native ATM and IP would be offered, with multiple VPNs being run over the ATM, and differentiated services being provided over IP. Native multicasting and IPv6 would be progressively introduced, and the backbone may use MPLS if production equipment became available in time.

The SAFIR project interconnected nine research centres with 10 Mbps VPs for testing purposes. This was primarily being used to obtain experience of running multiple VPNs over ATM, but was also used to test PNNI, MPOA, NHRP and Telephony over IP. The contract for this had recently been extended to add more sites and increase the amount of bandwidth available. They were also trying to obtain SDH or dark fibre to Eastern France in order to test WDM.

3.12 Russia

Andrei reported the financial crisis in Russia meant it was difficult to find funding at the present time. Nevertheless, SamaraNet had managed to obtain grants from NATO and other agencies to enable them to build a 155 Mbps ATM network for academic and scientific purposes. They were currently looking to upgrade the connections with external networks.

3.13 Norway

Olav reported they had just put a new ATM backbone into service. This used PVCs and mainly ran at speeds between 50 and 123 Mbps, with remote sites getting 15-30 Mbps. Unfortunately, it would be difficult to connect to the QUANTUM test network as they obtained their international connectivity through NORDUnet (who would not be using ATM). Alternatives were being investigated, but it really depended on the cost of an access link to Stockholm.

4.   DECISION ON NEW TASK FORCE(S)

Christoph said the meeting needed to recommend how the QTP should be conducted, and whether a new task force should replace the TF-TEN. Participants needed to consider that the QTP produced deliverables for the European Commission and had to remain manageable and relevant to TEN-155. On the other hand, some participants might wish to undertake activities that were not defined in the QTP.

The intention was that activities in the QTP would be undertaken by volunteers and would not be restricted to QUANTUM members. The QUANTUM consortium however, had contractual obligations which made it important that the Project Manager came from DANTE (who managed the QUANTUM Project).

The proposed QTP activities were then displayed for discussion.

The meeting generally agreed with the activity list, but asked whether changes could be made. Christoph said this was only a draft document although the QUANTUM Policy Committee (QPC) needed to approve the final programme.

Olav said he disliked the idea of an external committee controlling the activities of a voluntary group, and felt there must be some freedom to decide the programme. Christoph understood these concerns, but said the QUANTUM consortium had to retain some control to ensure their contract with the European Commission was fulfilled.

Olav asked about the membership of the QPC. Christoph was unsure exactly who sat on the committee, but it was essentially comprised

of representatives from each member of the QUANTUM consortium. He added that Howard Davies would be the manager of the QTP.

Victor and others said they had little interest in just working on the QTP. This meant a structure had to be defined that would accommodate other activities.

Kevin therefore outlined three possible formats. The first option would be to form totally separate groups for the QTP and non-QTP activities. The second option would be similar to the first, but in recognition of the fact that both groups would have a similar membership, they should hold joint meetings. The final option was to form a joint TERENA/QUANTUM group similar to TF-TEN to work on all activities.

The first option was unanimously rejected on the grounds that both groups would have the same participants and would duplicate effort. The second option was considered, but again rejected on the grounds that effort might be duplicated. As a result, the third option was accepted as the way forward, provided certain conditions could be agreed.

It was recommended that a new task force should formed under the auspices of TERENA in order to ensure autonomy from QUANTUM. Nevertheless, QTP activities would be conducted as a major activity if assurances were received that all the deliverables would be placed in the public domain.

It was accepted that DANTE must have management control over the activities of the QTP and, in recognition of this, they were offered the Chair of the new task force with the proviso that sufficient time would be spent on non-QTP activities. Christoph thought this would be acceptable to DANTE so long as the focus of the task force did not move too far away from the QTP. He then offered to take on this role and the meeting was very pleased to accept his candidature.

TERENA was asked to provide the secretarial support for the task force. This would include the Meeting Secretary and the mailing list. The WWW pages however, would be the responsibility of DANTE as they already had to produce WWW pages for the QUANTUM Project.

The meeting asked for assurances that the new task force would be party to all relevant technical information in the QUANTUM Project. During TEN-34, information had sometimes been withheld from the TF-TEN on confidentiality grounds and participants were told to contact their managers if they needed access to this. In practice, managers were always forthcoming with such information and it simply wasted time. As members of the new task force would almost certainly

be representing NRNs anyway, this somewhat bureaucratic obstacle
should be removed.

The QTP activity list was modified slightly for clarification
purposes and potential participants were agreed as follows:

* RSVP - Simon Leinen (Leader), Tiziana Ferrari, Olav Kvittem,
  Victor Reijs, Celestino Tomas.

* Multicasting (IP and ATM) - Robert Stoy (Leader), Tiziana
  Ferrari, Ladislav Lhotka, Victor Reijs, Celestino Tomas.

* Differentiated Services - Tiziana Ferrari (Leader), Avgust Jauk,
  Simon Leinen, Victor Reijs, Robert Stoy, Celestino Tomas,
  Jean-Marc Uze.

* RSVP to ATM SVC Mapping - Tiziana Ferrari (Leader), Simon Leinen,
  Celestino Tomas.

* IP Version 6 - Telebit (Leader), Tiziana Ferrari, Olav Kvittem,
  Simon Leinen, Victor Reijs, Robert Stoy, Celestino Tomas.

* 155 Mbps ATM Performance - DANTE (Leader).

* ATM Signalling - Guenther Schmittner (Leader), Robert Stoy,
  Jean-Marc Uze.

* Policy Control (IP and ATM) - Victor Reijs (Leader), Zlatica
  Cekro, Tiziana Ferrari, Simon Leinen, Celestino Tomas, Jean-Marc
  Uze.

* Route Monitoring - Simon Leinen (Leader), Jean-Marc Uze.

* Flow-based Monitoring Analysis - Simon Leinen (Leader), Victor
  Reijs, Jean-Marc Uze).

* QoS Monitoring - Tiziana Ferrari (Leader), Olav Kvittem, Victor
  Reijs, Robert Stoy, Celestino Tomas, Jean-Marc Uze.

The group also proposed additional activities that were not included
in the QTP:

* MPLS - Jean-Marc Uze (Leader), Tiziana Ferrari, Simon Leinen,
  Ladislav Lhotka, Celestino Tomas.

* VPNs - Victor Reijs (Leader), Robert Stoy, Celestino Tomas,
  Jean-Marc Uze.

* WDM - Victor Reijs (Leader), Tiziana Ferrari, Jean-Marc Uze.

* STM-1 vs STM-4(C) - Victor Reijs (Leader), Simon Leinen.

    Christoph was asked to produce a policy document summarising these
    technical recommendations that could be presented to the QPC. He
    agreed to do this.

    ACTION 981004-2: Christoph Graf

    It was also agreed that each activity leader would produce an
    experiment proposal for further discussion.

    ACTION 981004-3: All activity leaders

    Victor raised the question of how the activities would be
    written-up. Obviously the results of the QTP activities would form a
    deliverable to the European Commission, but this did not apply to
    other activities. It was agreed these results would be published as
    a TERENA Technical Report.

    Olav asked whether the new task force should retain the 'TF-TEN'
    title, or whether a new title should be used. It was agreed this
    issue should be discussed on the mailing list if and when the task
    force was ratified by QUANTUM and TERENA.

    Finally, Jean-Marc asked why Telebit A/S were a member of the
    QUANTUM consortium. Christoph replied that EU projects were supposed
    to include a partner from industry.

5. DATE OF NEXT MEETING

    The first meeting of the new task force will be held on the 5th and
    6th of November 1998 at the DANTE Offices in Cambridge, UK.

6. ANY OTHER BUSINESS

    Kevin mentioned that TERENA currently had a vacancy for a Project
    Development Officer. Further information was available from:

        http://www.terena.nl/info/jobs/

OPEN ACTIONS

    981004-1 Victor Reijs to send URL of GigaPort Activity Plan to the
              mailing list.

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981004-2   Christoph Graf to produce policy document summarising the
           technical recommendations of the WG-LLT.

981004-3   All activity leaders to produce experiment proposals.
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