

BoF on "QoS, LBE, IP Premium, other"
Tuesday, 4 June 2002
University of Limerick, Limerick
Ireland

Draft Minutes, issue 2
Valentino Cavalli
17 June 2002

Participants

Artur Binczewski	PSNC
Thomas Brunner	SWITCH
Mauro Campanella	INFN-GARR
Valentino Cavalli	TERENA
Tim Chown	University of Southampton / UKERNA
Jordi Domingo-Pascual	Polytechnic University of Catalunya
Larry Dunn	Cisco
Rubén Ferreiroa García	CESGA
Kaisa Haapala	CSC/Funet
Olav Kvittem	UNINETT
Ladislav Lhotka	CESNET
Maja Matijasevic	University of Zagreb
Ludek Matyska	CESNET/Masaryk University
Juergen Rauschenbach	DFN-Verein
Victor Reijs	HEANet
Piotr Sasiedzki	Silesian University of Technology /POL-34
Roberto Sabatino	DANTE
Stanislav Shalunov	Internet2
Ben Teitelbaum	Internet2
Jean-Marc Uzé	Juniper Networks
Wilfried Woeber	UniVie – AConet

Apologies

Julio Orozco	ENST Bretagne/IRISA
Tiziana Ferrari	INFN-CNAF

Premium IP service on GÉANT

Mauro briefed the audience about the Premium IP service being implemented in Europe and targeting to GÉANT and European NRENs. The design aimed at a service implementation in a reasonable timescale with a practical approach using parameters common to both ITU and IETF. GÉANT core routers have been configured for Premium IP, tests have been done in conjunction with the SEQUIN project with a number of H.323 users in Italy, Greece, Switzerland and Germany. Juniper routers were configured acting also as policers. The experiments were performed with a combination of Premium configured links (about 85%) and the remaining 15% largely overprovisioned. There was no congestion (explicitly defined as no packet loss) as far as the instrumentation could detect. Additional measurement tests are currently ongoing with the IST projects AQUILA and MOICANE. SEQUIN also defined how to measure performance of the various Premium IP metrics.

Mauro said that given the similar Diffserv mechanisms Premium IP and LBE can coexist, the only additional requirement for Scavenger is having a separate hardware queue.

A few things still need to be done for Premium IP on GÉANT like distributing knowledge to the NRENs and monitoring the infrastructure. They still need to use hardware suited for line speed and not all NREN backbones are ready yet.

Premium IP service on Abilene

Ben said that Internet2 suspended the development effort on the Premium IP service on Abilene mainly due to a number of deployment problems, some of which specific to the equipment being used and some specific to the service itself. He acknowledged that Premium IP would be the best solution if only had economic sense to engineer it. Besides that there are some architecture questions that maybe have not been addressed by the Europeans. Two documents capture what they have learned.

Internet 2 has adopted a practical attitude, for a number of reasons.

- A large amount of performance problems are not related to the network but to bad configuration and application bugs. Additionally, among network-related performance problems, many are not congestive. They are doing a lot of work in getting those bugs out of the system.
- Having multiple shapers within a specific class is not seen as a functionality.
- Having to police at every interface makes it very hard to manage. SCAVENGER requires DSCP transparency through the network.
- Service verification is difficult
- There are so many intimidating problems when dealing with accounting, billing SLS, etc.
- In the US, the vast majority of performance problems are not due to congestion, hence, they are emphasizing other approaches to increasing performance, including measures taken in the end-to-end performance initiative and fixing bugs of faulty applications.

Mauro clarified the difference between the Premium IP service model as tackled by the Europeans and Internet2. The goal in Europe is less ambitious than in the US, not aiming at solving the full spectrum of problems, but substantially at finding a way to have a working implementation in the European scale. One of the goals is to replace the Managed Bandwidth Service. The amount of reservation is not expected to be very high. With MBS they had 2-3 reservation requests at a time amounting to around 30-40 per year. They are not trying to sell this as a business model but want to use it in a research environment, that has less strict requirements. Moreover, there is a real motivation in Europe because there is congestion at NRENs networks. So, there are two different perspectives to compare and the implementation models are totally different. They consider a good model to deploy Diffserv at a more limited scale than it was aimed at in the US.

Scavenger

A global DSCP value is used throughout the Internet2 network and Stanislav said they want to enable domains to support the Scavenger service. This is implemented with a separate queue given a very small link share, typically 1% in order to create a thin virtual network capable of increasing the capacity of BE class traffic. It is deployed all over the Abilene network mainly for propagandistic purpose because they actually have no congestion. The service is primarily designed for TCP traffic and suited to non-interactive Bulk applications.

Roberto said it was not clear to him that there was a user requirement for scavenger and asked if there was any feedback from the users. Stanislav and Ben said that this was very positive from two categories of users, those who are already policing, like scientists from high-energy physics and Astrophysics as well as those users whose traffic is charged on a per-bit basis. In addition, with scavenger, application no longer need to guess the network

utilization or look at MRTG graph if they want to play nice: they simply need to mark their traffic.

Discussion and conclusions

Ben said they made wide area tests with Scavenger and does not need to be deployed everywhere but only at bottleneck points. He acknowledged that its value is limited to specific users, as mentioned before, however it is a virtually no cost solution to be applied in case of per-bit pricing or congestion. The GÉANT team had concerns about its rationale in Europe and was wondering about what can be done in collaboration with the US. Tim suggested to start performing some tests with TF-NGN but Mauro still did not see any user case where Scavenger is useful. Ben and Stanislav replied that it is quite useful at congestion points, like access networks as is the case in Europe, when making network backups or sending bulk data, for instance and again, at no cost.

Mauro explained that there are some technical concerns about how to adopt a common DSCP value. Stanislav suggested that code point 001000 should be adopted by GÉANT as well if there are no reasons for not using it. Ben remarked the increasing function of DSCP values. It is important that Internet2 and GÉANT pick up a common code point. Without a common code point interoperation would be a nightmare. At a minimum GÉANT should be transparent to Scavenger.

The agreed conclusions were:

- Adopt a common DSCP value,
- Allow Transparent DSCP on GÉANT so that Scavenger traffic is not discarded,
- Let the NRENs and the end user to decide
- Suggest to IETF that some DSCP values should have a global not local, validity.