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Abstract:

This document outlines the procedure to be followed in conducting and reporting application trials in 6NET.

Keywords: IPv6, Applications, Specifications, Real-time video-conferencing and media streaming, Online games, E-business, Edge services.

Executive Summary

This document outlines the procedure to be followed in conducting and reporting application trials in 6NET. It summarises the approximately 40 applications catalogued and their expected user communities, defines the role of the Trial Coordinator for each relevant application, and outlines the criteria to be used in evaluating and reporting each trial.

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Introduction

The 6NET project is more than just another IPv6 network, and Work Package 5 is key to this difference. We are committed to deploying and testing a significant number of applications over IPv6, and additionally to evaluating and reporting on the results of those tests. By doing so, we intend to show that advanced applications run smoothly over IPv6, and of course to identify any problems and difficulties that need to be corrected. The objective of this document is to describe a systematic framework for these trials and evaluations.

1. Summary of applications to be tested

The applications to be tested as part of WP5 have been identified by the project partners and catalogued in Deliverable D5.1. In addition, a constantly updated catalogue of the applications, with current information, is available on-line as a Web page accessible from both IPv4 and IPv6 through the Related Sites rubric of the 6net website: www.6net.org/related.html. The full catalogue contains approximately 25 items in the category *Real-time video-conferencing and media streaming*, four items (recently reduced to three) in the category *On-line games*, nine items in the category *e-business solutions*, and two items in the category *Edge services for IPv6*. D5.1 contains a description of each application, and a summary sheet for each application summarising its characteristics and indicating which 6NET partners have proposed it.

It is clear that with such a large number (approximately 40) items in the applications catalogue, not all of them can be expected to be part of the final tests and evaluations.

2. Summary of user communities

Deliverables D5.2 and D5.4 between them identify the potential user communities for the applications catalogued in D5.1. In the case of D5.4, which covers *Real-time video-conferencing and media streaming* and *On-line games*, each application has been classified as one of:

- A: Part of Core Set now
- B: Will be added to Core Set later
- C: Limited use
- No: Not part of the Core Set.

The plan is that items classified as A and B will form a core set of applications expected to be in widespread use across 6NET, whereas items in class C will be used only by a few sites. Items labelled “No” will not be considered part of WP5, even if certain sites choose to run them.

Although this classification was not used in D5.2, the on-line catalogue mentioned above also classifies the items in *e-business solutions* and *Edge services for IPv6* in the same way.

In general, the user community in class C is limited to people at a subset of 6NET partner sites, and for classes A and B it is expected to grow outwards from the partner sites to other sites with indirect access to 6NET. There is a noticeable challenge in motivating departments not directly involved in 6NET to participate. Extension to other communities such as Euro6IX and Internet2 is certainly not excluded for individual applications.

3. General principles of each application trial

In order to associate a non-ambiguous meaning to the terms used in this document, the following terminology is defined:

- **Application:** An *Application* is a tool or service that runs on the 6net network. Applications are listed and described on the WP5 Applications website. ‘Status’ and ‘Work in progress’ are shown on the website but no formal reporting about the usage of the Application is required.
- **Trial:** A *Trial* is an Application that complies with the evaluation process defined in section 4 of this deliverable. Formal reporting is required for each Test performed on the Trial.
- **Test:** A *Test* is a session (usually scheduled via the 6net Network Operations Centre - NOC) during which the partners registered as Trial users (or some of them) perform global or specific experiments on the Trial. A coordinator is in charge of reporting the results of each Test through the Test Evaluation Form (TEF) on the WP5 Applications website. A new TEF is created for each Test.

With so many applications involved, a systematic approach to trials and evaluations is essential. The guidelines adopted by WP5 are as follows:

- A named person at a certain partner site is appointed as *Trial Coordinator* for each application classified as A, B or C in the catalogue. This person has the duty and responsibility to manage and report the trial and evaluation process. Naturally, the Trial Coordinator may be the same person already identified as the technical contact for the application, but it is essential to be explicit about the responsibility for the trials.
- For a Class A application, a trial requires a minimum of 3 named users at each of 5 named sites. More users is of course better. The Trial Coordinator is responsible for identifying these sites and users.
- A Class B application should be promoted to Class A, or demoted to Class C, before an official 6NET trial.
- For a Class C application, a trial requires a minimum of 2 named users at each of 2 named sites. The Trial Coordinator is responsible for identifying these sites and users.
- Trials are either defined as continuous between two specific dates, or scheduled at specific dates and time slots. The second case (scheduled) is intended for trials that require some kind of operational guarantee, or that risk interfering with other users. The Trial Coordinator is responsible for communicating with the 6NET NOC as needed for scheduled trials. In either case, the trial should be announced to the 6NET community in advance, preferably via the NOC.
- Trials will be repeated if necessary, when corrections or improvements are made, using the same procedure.

4. Trials summary

The applications described in Deliverable D5.1 and the applications proposed since then are all listed in the WP5 Applications database. The list has been reviewed by the Workpackage to identify which applications should be promoted to the rank of Trial, and which classification (see Section 3) should be assigned to each of them. A question mark following the classification denotes an application that needs further developments prior to qualifying as a trial. The trials are classified as follows.

4.1. Class A Trials

Criteria: minimum of 3 named users at each of 5 named sites.

<u>Name</u>	<u>Category</u>	<u>Class</u>	<u>Summary</u>	<u>Resp.</u>
VideoLAN	Streaming	A	Streaming Video server and player	Surfnnet
RAT	Streaming	A	Robust Audio Tool (audio conferencing)	UCL
VIC	Streaming	A	Video Conferencing Tool	UCL
SCS	Streaming	A	Secure Conference Store of conference information	UCL
SPAR	Streaming	A	SDP Parser Applet (component of SCS)	UCL
TUR	Streaming	A	Trondheim Underground Radio	UNINETT
MCast6	Streaming	A?	Tool for multimedia streaming in a computer network	PSNC
Quake	Gaming	A	Multiplayer FPS action game	Sony
Portals	E-business	A	IBM Websphere Portal Technology	IBM
IRC	E-business	A	Internet Relay Chat	GARR

4.2. Class C Trials

Criteria: minimum of 2 named users at each of 2 named sites.

<u>Name</u>	<u>Category</u>	<u>Class</u>	<u>Summary</u>	<u>Resp.</u>
FreeAMP	Streaming	C	Free unicast/multicast MP3 player	GARR
MPEG4IP	Streaming	C	Streaming video tool suite	Telin
BonePhone	Streaming	C	Internet phone sending and receiving SIP messages	FhG
VOCAL	Streaming	C	SIP-based VoIP client	UoS
OpenH323	Streaming	C	Open source H.323 protocol implementation	CTI
GnomeMeeting	Streaming	C	Open source H323 Linux application	GRNET
NTE	Streaming	C	Network Text Editor	UCL
DVTS	Streaming	C	Application for sending and receiving Digital Video	UCL
MUST	Streaming	C	MBONE Web-interface	GRNET
Multicast Radio	Streaming	C	Multicast Radio	UoS
AMUSE	Streaming	C?	Adaptive MULTimedia Support Environment	Sony
XPilot	Gaming	C?	Network game	UNINETT
Hypermedia LS	E-business	C	Hypermedia Link Services	UoS
Network Storage	E-business	C	Logistical networking	GARR
AWM	E-business	C	Applications Workload Modeler	IBM
Edge Server	Edge Services	C	IBM Edge Server	IBM

5. General principles of evaluation

The Trial Coordinator is responsible for defining the exact evaluation criteria for a given application, and for collecting and reporting the results. Criteria should be clearly separated into

- Objective criteria, such as success/failure, response time, bandwidth consumed, logging of specific bugs and difficulties.
- Any security risks identified during the trials.
- Subjective criteria, specifically user satisfaction.

The Trial Coordinator must record the results of each test through a simple "fill in the blanks" Test Evaluation Form (see Section 6) available from the WP5 Applications website.

Finally, the management of WP5 will collate these individual test results as part of the preparation of various deliverables, especially D5.8 and D5.12.

As a guideline, the evaluation items listed below were identified by WP5. Of course, this list is by no means exhaustive and items specific to each trial will be reported by the Trial Coordinator as appropriate.

General

- Ability to work with IPv6
- IPv6 features are involved
- Dependency on IPv4
- IPv4-v6 simultaneous support
- RFC 2732

Technical

- Dual-stack safe
- Multiple DNS
- Multicast , anycast
- Address selection
- Scoping
- Flow id support

Performance

- Host overhead (vs IPv4) brought by:
 - Application
 - TCP/IP stack
 - DNS resolver

User perception

- Pleasure, satisfaction, friendliness
- Throughput

Administrator perception

- Satisfaction, convenience
- Ease of management

6. Example of Test Evaluation Form

Modify/Add a Test Evaluation Form (TEF)

Welcome back 6net!

[back to overview](#)

Name (Acronym or short name of the application)
<input type="text" value="VideoLAN"/>
Test date Date the test took place (yyyy-mm-dd)
<input type="text" value="2003-03-03"/>
Participants (Parties involved and names/number of people that participated)
<input type="text" value="SURFnet: 2 persons"/> <input type="text" value="TELIN: 2 persons"/>
Goals/description (goal and description of the test)
<input type="text" value="This is the first VideoLAN test. The goal is to establish whether basic IPv6 unicast is supported. A videolan server will be setup at SURFnet, participants from TELIN will try to start a video stream towards their local videolan clients using the telnet interface of the videolan server."/>
Objective Results (e.g. success/failure percentages, avg/min/max response times, ...)
<input type="text" value="The videostream could be started via the telnet interface successfully. After correcting a misconfigured ACL on a router the stream was successfully viewed at TELIN. Unicast IPv6 streaming works for VideoLAN."/>
Subjective Results (e.g. percentage of users dissatisfied/neutral/satisfied)
<input type="text" value="Both TELIN participants reported seeing no hickups of any kind for the 2 MBit test stream. SURFnet reported server CPU load of less than 5 percent."/>
Security Risks (if any)
<input type="text"/>
Comments, lessons learned, and recommended corrective action (if any)
<input type="text" value="Check router ACL beforehand. No further corrective action needed."/>