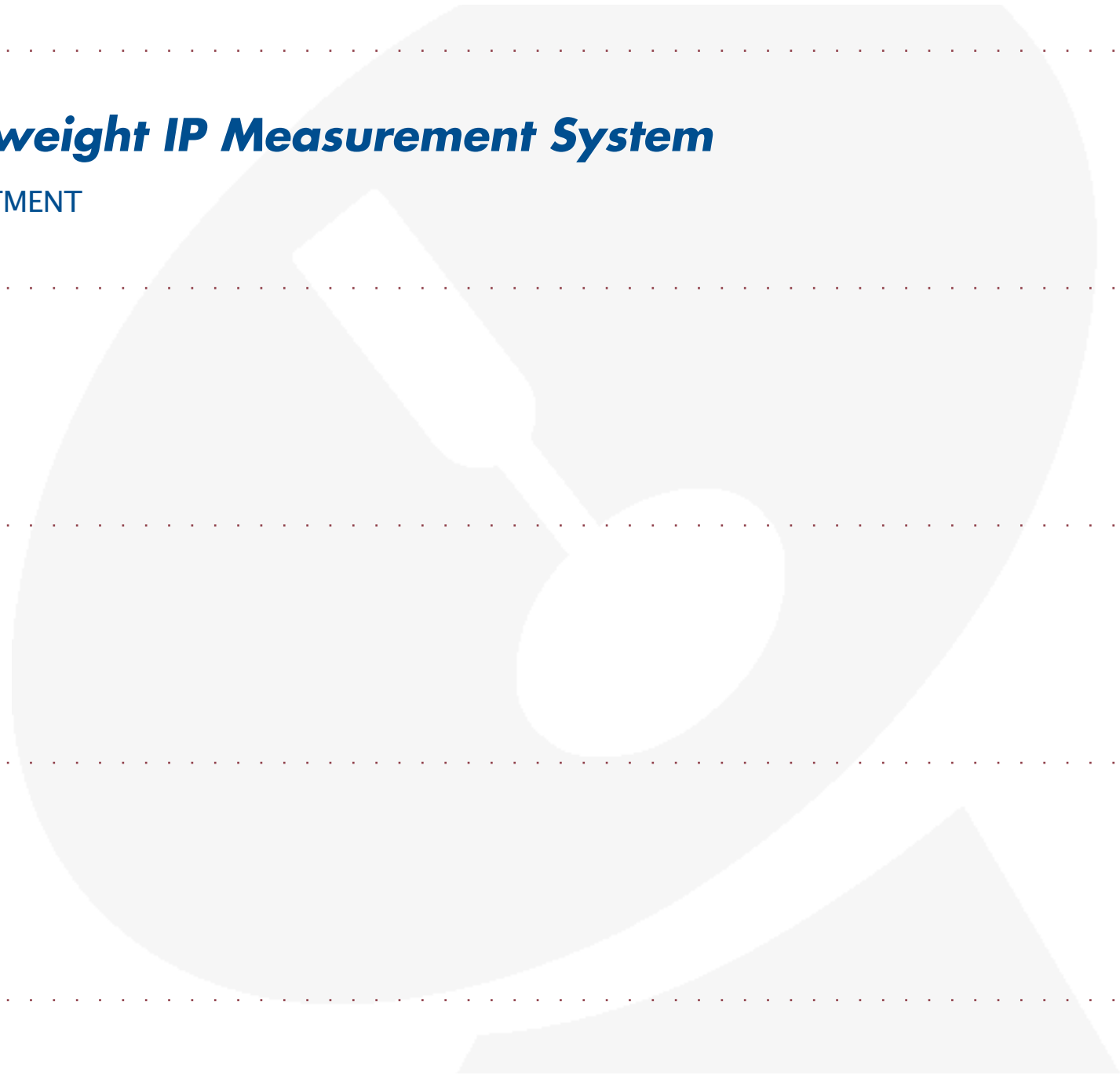


LIMS Lightweight IP Measurement System

TELECOM DEPARTMENT

tecsidel



LIMS *Lightweight IP Measurement System*

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Presentation

✓ **Prototype:**

Lightweight Internet Measurement System

✓ **Functionality:**

The growing utilization of the IP protocol to **implement novel communications services**, such as voice (VoIP), telephony (ToIP), television (IPTv) and multimedia coverage requires networks to give excellent and sustained quality.

To guarantee those requirements, network parameters need to be **measured precisely and constantly**. The calculation of quality indicators. The most important parameters are the availability of connections to IP nodes, latency (the time delay between nodes), jitter (variability in the latency between consecutive packets) and bandwidth (bits per second in both directions).

This system was designed to be used by telecom operators, big companies and any other **organization with an extensive IP network**. It deploys low cost probes at key points to allow continuous real time measurement of network quality parameters.

Features

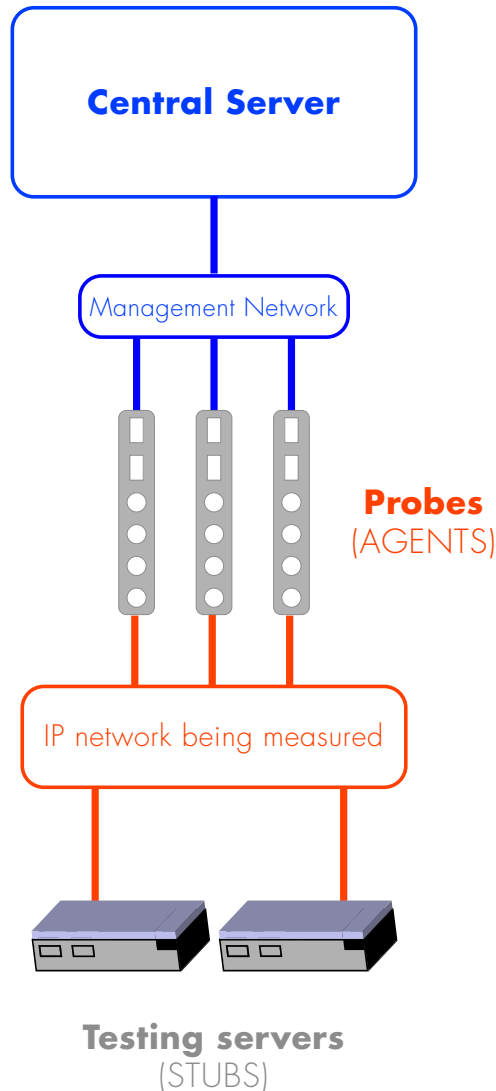
- ✓ A solution based on a light ad-hoc development, **structured in a LEAs** (Linux Embedded Applications Systems) environment to obtain, collect, store and present **active quality measurements on user access** by means of probes and their testing servers.

- ✓ **Ready to comply with Spanish ministerial order:**
 - **ITC/912/2006 (Quality Order)**
 - Data for reports to **Internet Access** users
 - in compliance with the **Norma ETSI EG 202 057/4** Standard
 - and further criteria developed by the **GT3**
 - in regards to parameters: **-% of successful user accesses, -% of failed data transmissions,**
 - **Data transmission speed attained.**

Systems elements

1. **IP Network:** entity object of the measurements to be made (SUT, System Under Test). Comprises equipment and cabling, belonging to one or more owners.
2. **Terminal Points (PT):** dedicated elements from which the measurements are launched and taken.
3. **Reference Points (PR):** network elements used as recipient or sender of the IP packet exchanges on which the measurements are based. The types given below may be considered:
 - a. *Specific reference point:* one of this system's typical servers, used specifically for taking certain measurements. It can be implemented by the same HW that is used for TP, or by using the same HW as the CS.
 - b. *Standard reference point:* a pre-existing server, with standard protocols.
4. **Agents (AG):** probes placed on the Terminal Points that execute network quality parameter measurements and send the results to the central server.
5. **Stubs (ST):** configurable elements situated in the specific Reference Points that intervene in the network quality parameter measurements by responding to stimuli sent by the agents.
6. **Central Server (CS):** basically, it is the repository of the TP configurations and the measurements they provide.

Composition of the technological platform



Hardware

CS: Sun Fire V440

ST: Sun Fire V100

AG: Vortex 86-6076L2/EB-303

Software

CS: Solaris 10, Oracle, ISSBO

ST: Solaris 10

AG: Linux 2.4, FW IPCop

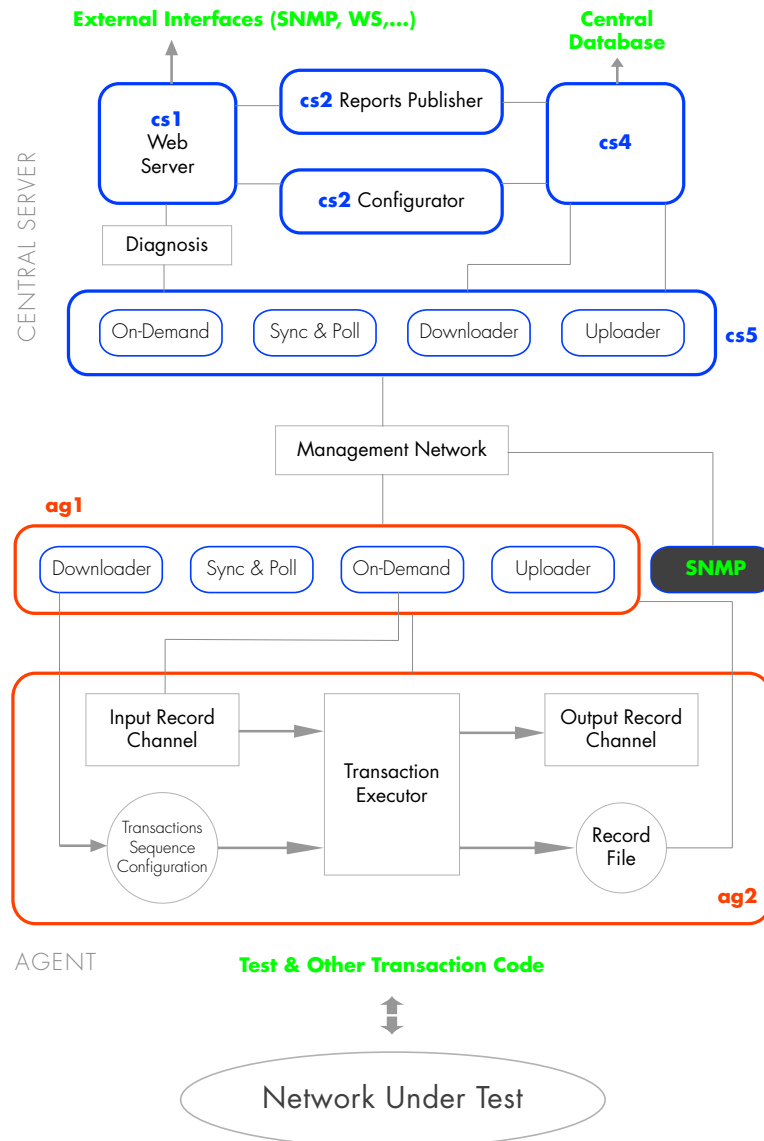
Application

CS: NUC + PAM (Reports / PRC PL/SQL)

ST: NUC + PAM (Transaction Stub)

AG: NUC + PAM (Test Transaction Code)

Technological platform application nucleus



In the central server

cs1: Web portal, based on ISSBO

cs2: reporting manager, based on ISSBO

cs3: configuration manager

cs4: Oracle DB manager

cs5: manager of communication with the probes, reusing software components developed in Tecsidel for our own OSS solutions

In the probes

ag1: manager of communication with the central server

ag2: manager of measurement execution

In the testing server

st1: manager of communication with the central server

Notable LIMS features

1. Simple probe maintenance

Based on LEAs (Linux Embedded Applications Systems) devices, they are last generation (200 Mhz, 128 MB RAM, 1/2 GB of Non Volatile Flash RAM), small, robust, and easy to install and manage.

2. Firewalling software in the probes

They prevent attacks and intrusions.

3. Open UNIX and POSIX standard environment

It allows the product to evolve in a flexible and independent manner.

4. Low volume of investment

As a distinctive factor, it is worth mentioning the low volume of investment required to increase your number of probes, thanks to the low cost of purchasing their HW, easy transportation and installation due to their reduced size, zero cost of their SW base, and having no software agent cost.

5. Turnkey solution

Includes server equipment, probes and deployment.

6. Ministerial Order parameters (ETSI EG 202 057)

Regulation of service quality, specific QoS parameters for Internet access services.

Comments on measurement

% Successful user accesses

- obtained IP+DNS resolution
- initial status
- 10s timer for dedicated access, 60 for dialup

% Failed transmission attempts

- synchronized with speed test
- timing instant before entering the information on the network
- success if the file is complete and error-free (additional verification) within the timer

Transmission speed

- download file size
- x4 speed Nominal
- incompressible, 30s timer
- Nom. 56kbps dialup speed.

Contact info

CONTACT

info.lims@tecsidel.es

Tel: 91 353 08 10 Fax: 91 353 08 81

Enrique Jardiel Poncela, 6 - 3º planta

28016 Madrid

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