

Error Performance Measurement in Packet-switched Networks

draft-mirsky-ippm-epm

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Recap

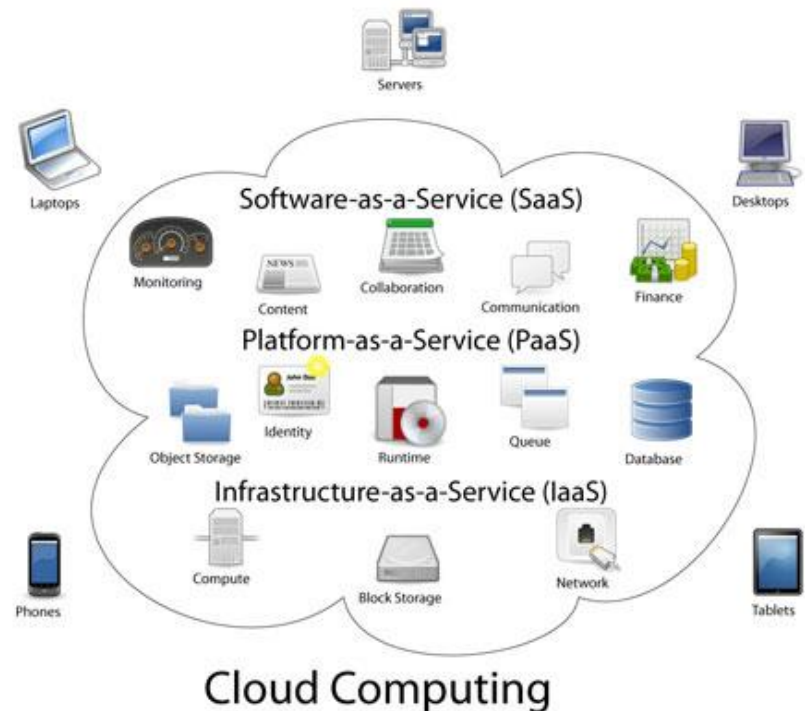
In the Error Performance Measurement, we define several metrics new for packet-switched networks to reflect conformance to a pre-defined set of Service-level Objectives. Among the introduced metrics are Availability and Unavailability as sequence of time intervals conforming (or not) to SLOs.

Updates

- Welcome Liuyan Han and Joel Halpern as co-authors
- Availability of Anything as a Service (XaaS)
- Availability of mobile communication

Anything as a Service

Anything as a service (XaaS) describes a general category of services related to cloud computing and remote access. These services include the vast number of products, tools, and technologies that are delivered to users as a service over the Internet.



Benefits and Challenges of XaaS

- Among the advantages of the XaaS model are:
 - Improving the expense model by purchasing services from providers on a subscription basis rather than buying individual products, and install them on-site, and then link everything together to create networks.
 - Speeding new apps and business processes by quickly adapting to changing market conditions with new applications or solutions.
- But XaaS model also has potential challenges:
 - Possible downtime resulting from issues of internet reliability, resilience, provisioning, and managing the infrastructure resources.
 - Performance issues caused by depleted resources like bandwidth, computing power.
 - Performance issues caused by depleted resources like bandwidth, computing power, inefficiencies of virtualized environments, ongoing management and security of multi-cloud services.

Availability of XaaS

The availability of XaaS is viewed as the ability to access the service over a period of time with pre-defined performance objectives and may be defined as:

$$\text{Availability Average} = \text{MTBF} / (\text{MTBF} + \text{MTRR})$$

where:

- MTBF (Mean Time Between Failures) - mean time between individual component failures. For example, a hard drive malfunction or hypervisor reboot.
- MTTR (Mean Time To Repair) - refers to how long it takes to fix the broken component or the application to come back online.

As MTBF can be considered a constant value in a particular environment, several technical measures can be used to reduce MTRR. For example, use of redundant infrastructure, e.g., web and/or database servers, or introducing a load balancers.

The EPM reflects near-real-time availability of a service as experienced by a user. It also provides valuable data for more accurate and realistic MTBF and MTTR in the environment and simplifies comparison of different solutions that may use redundant servers (web and database), load balancers.

Availability in Mobile Communication

For mobile voice and data services, the definition of service availability, according to Body of European Regulators for Electronic Communications' Common Position on information to consumers on mobile coverage, is understood as follows:

“If the service in that area is available with a pre-specified minimum rate of success. Service availability has the advantage of being more easily understandable for consumers and is expressed as a percentage of the number of attempts to access a given service.”

The definition of the availability in EPM might be considered as the extension that allows regulators, operators, and consumers to compare not only the rate of successfully establishing a connection but the quality of the connection during its lifetime.

Next steps

- Welcome comments, questions
- Contributions, cooperation are most appreciated
- WG adoption?

Thank you