



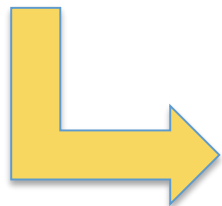
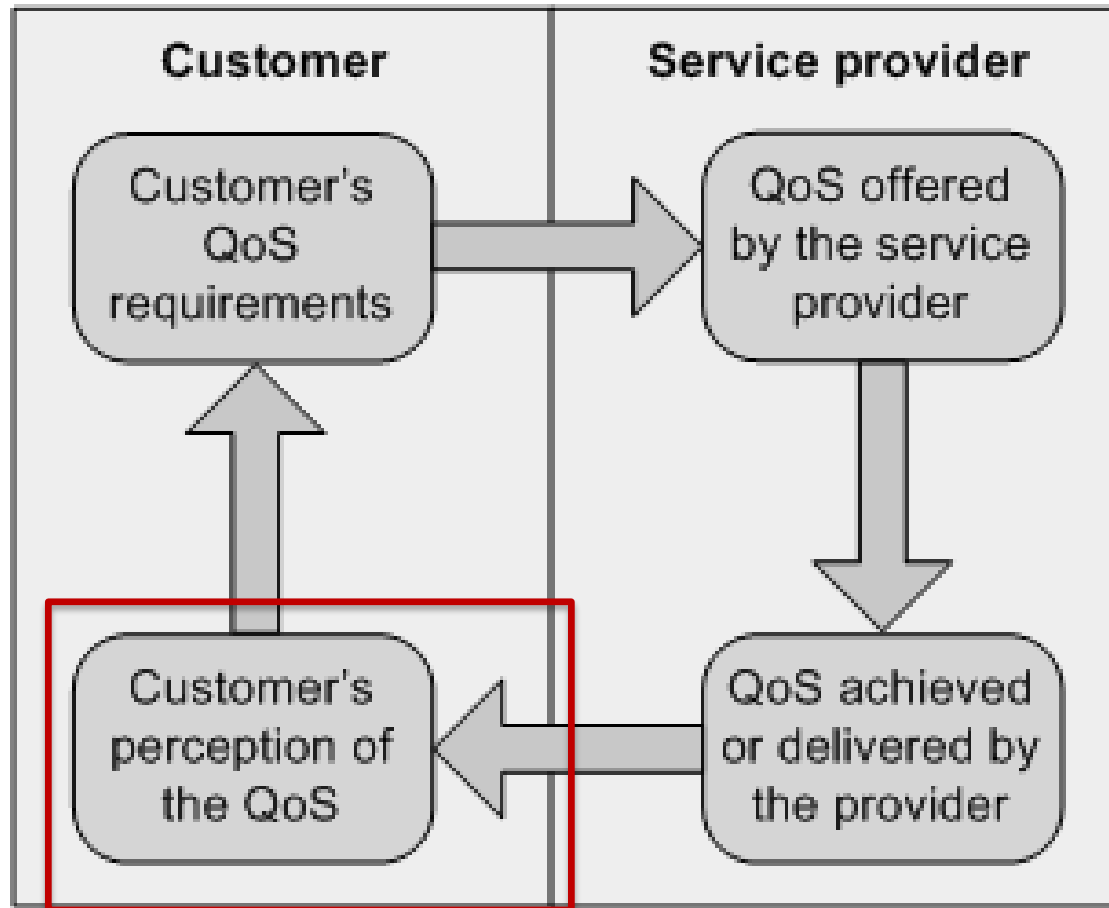
# Ibys Technologies

Leading Quality of Service

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- 1. Introduction**
2. CSFB/LTE/VoLTE
3. Multimedia Services:  
YouTube/VoIP/IPTV
4. Uses Cases

# Four Views of QoS



**Ibys (Xplorer)**

## Objective

- **Active** Stationary
- Active Drive/Walk
- Passive Counters and Signaling

## Quad-Play monitoring tool

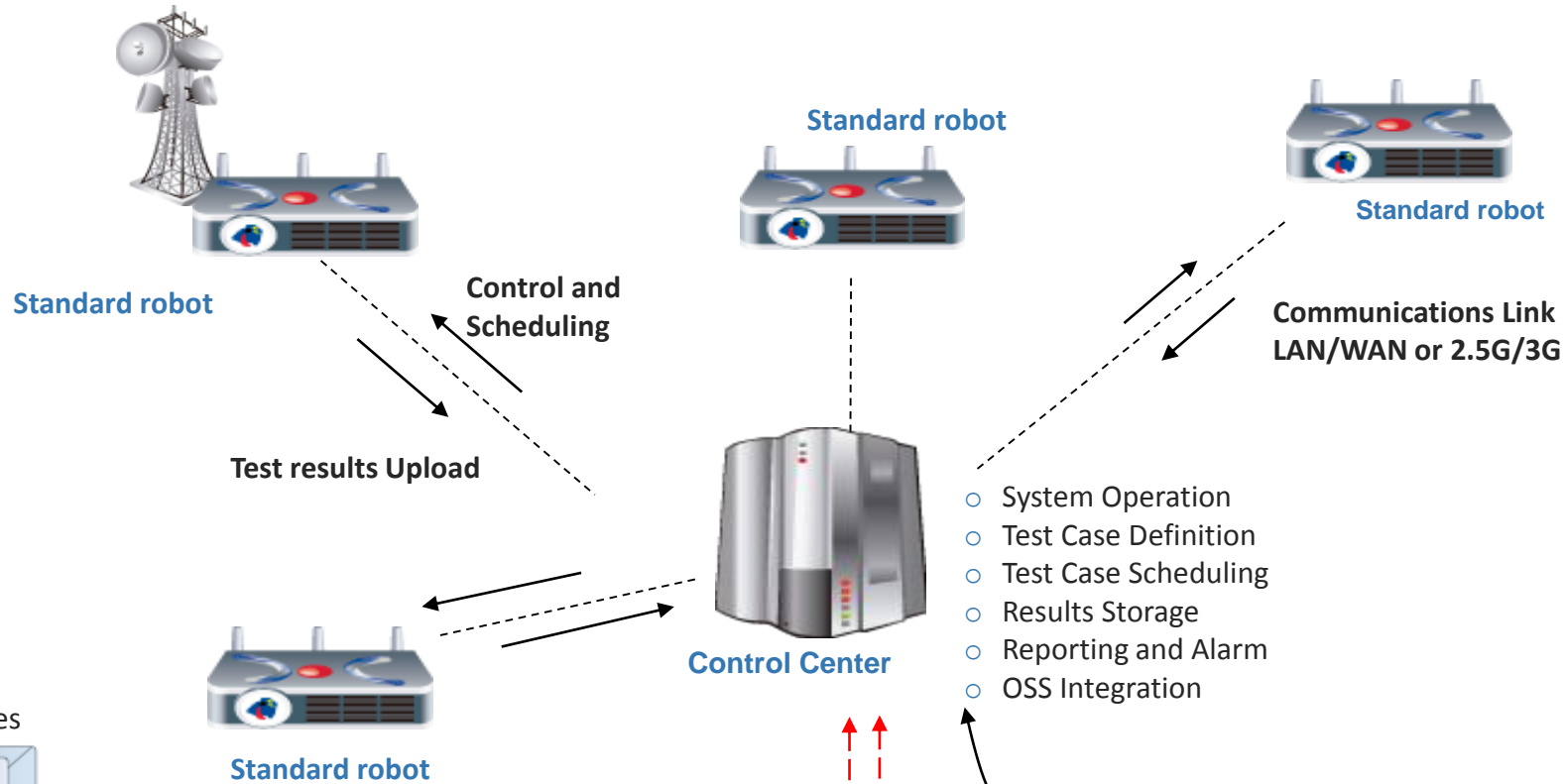
Fixed, Mobile, Internet and TV

## Automated, end2end, active

- Robots for stationary testing
- Robots for drive testing
- Quality issues identification caused along the end2end network path

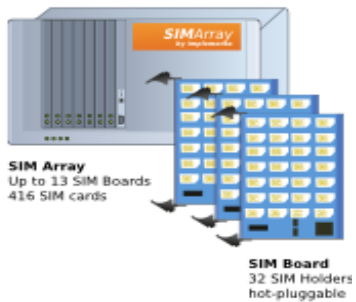
# Architecture

RF Tower  
2G/3G Antennas



**SIM\_Server**

Allocates SIM-card resources



Optional equipment

**Users**  
Web -Based Access

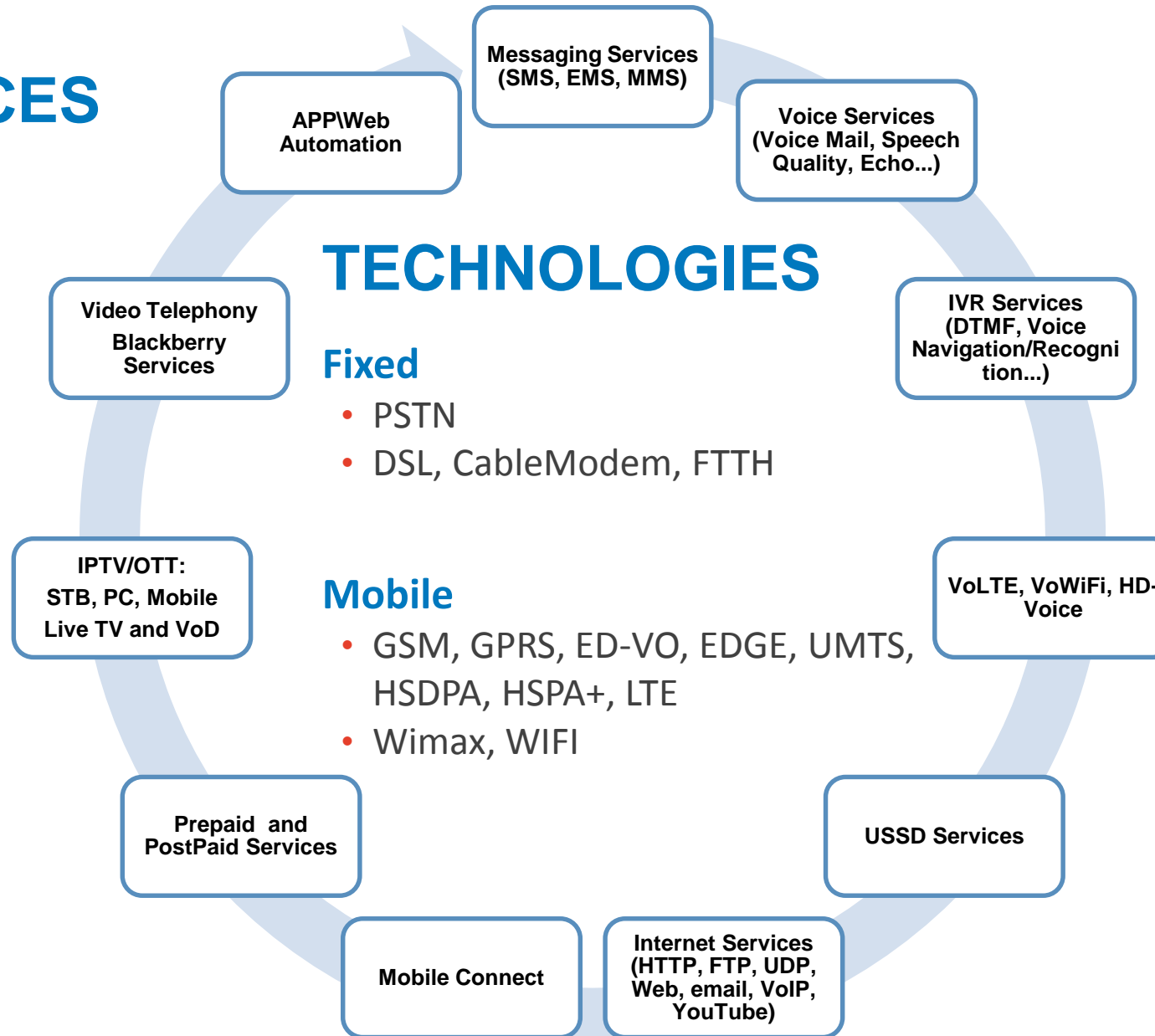


**Mobile robots on vehicle**



## Remote, Automation, Integration, Scalability

## SERVICES



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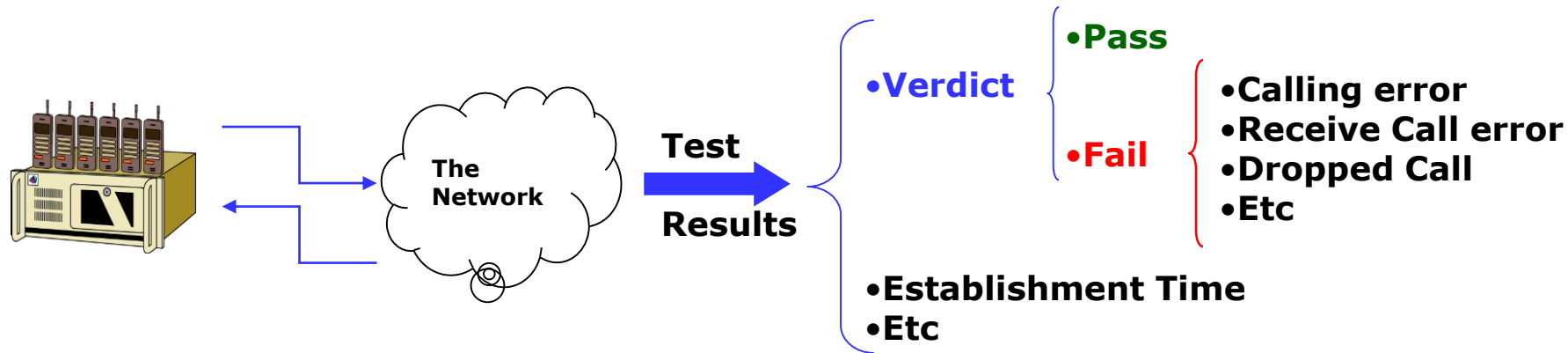
1. Introduction

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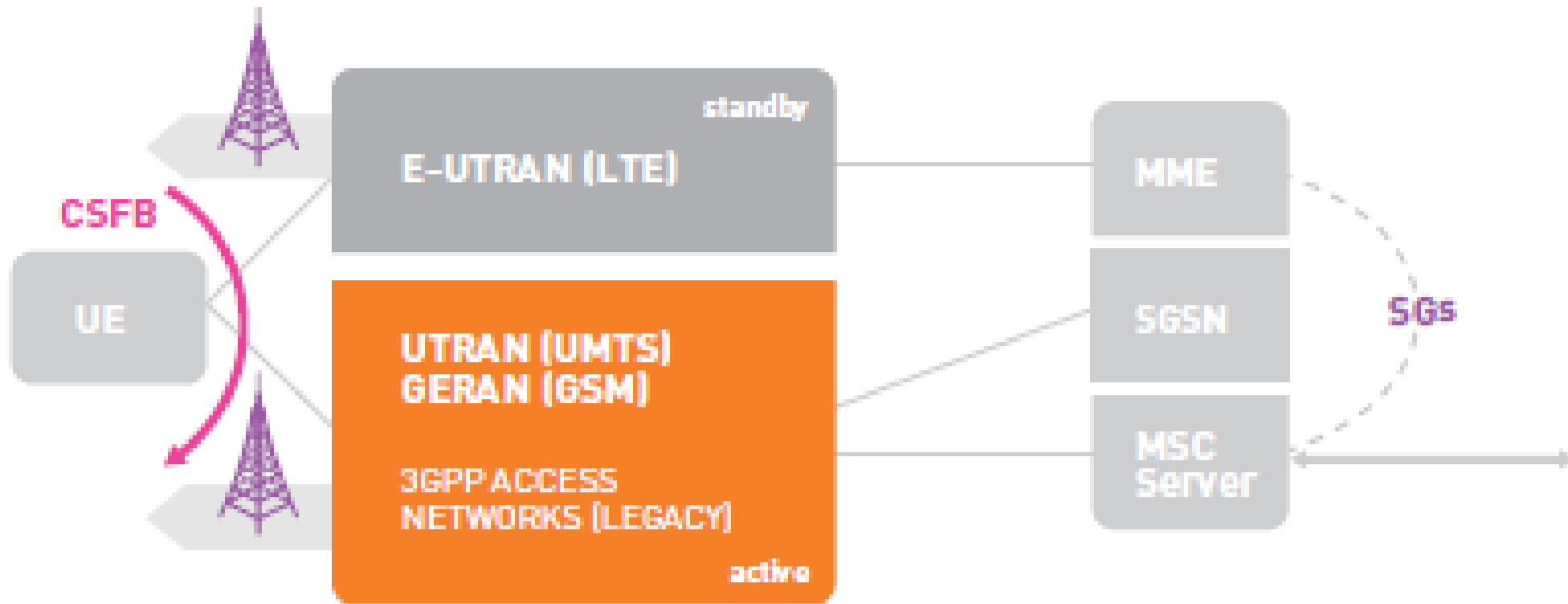


## Voice Call **KPIs** Generated:

- Voice Service Accessibility [%]
- Voice Call Establishment Ratio [%]
- Voice Call Establishment Time [seconds]
- Voice Drop Call Ratio [%]
- MOS Perceptual Quality (PESQ/POLQA)



# CSFB I



## Indicator details

From: 16/04/2017 17:44:45 To: 19/04/2017 17:44:45

### FallBack Time

FallBack Time in 4G Calls

**1.364,57** ms.

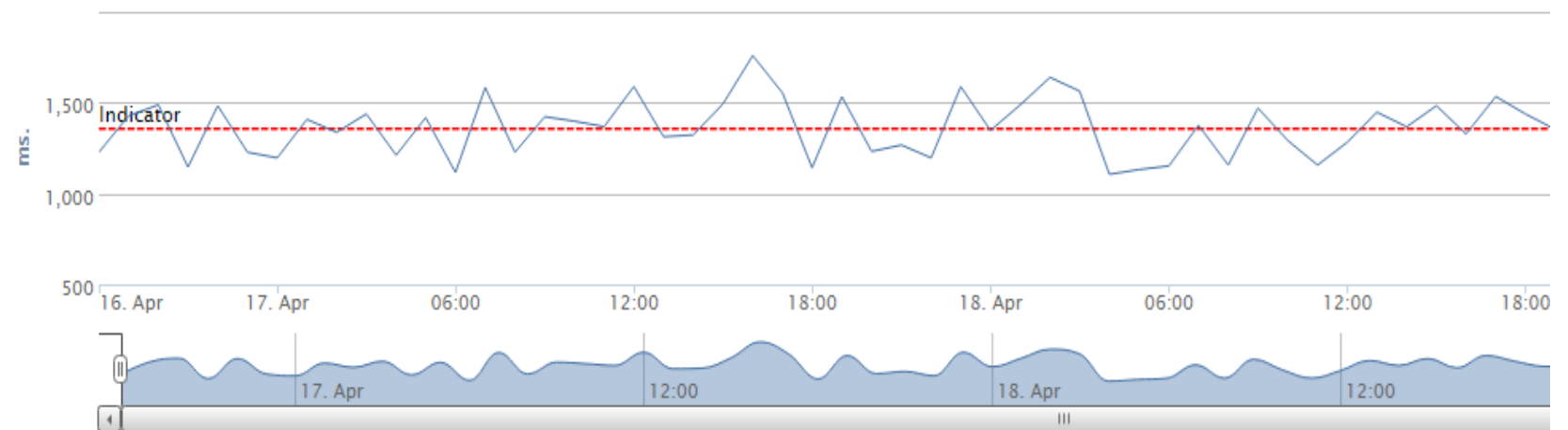
Show SLI by Location.

Export to pdf.

Auto refresh

### Graphical Evolution

FallBack Time



## KPIs

- **Fall Back Time & Fall Back Success Rate**
- **Return to 4G Time & Return to 4G Success Rate**

# POLQA – Voice Quality - QoE

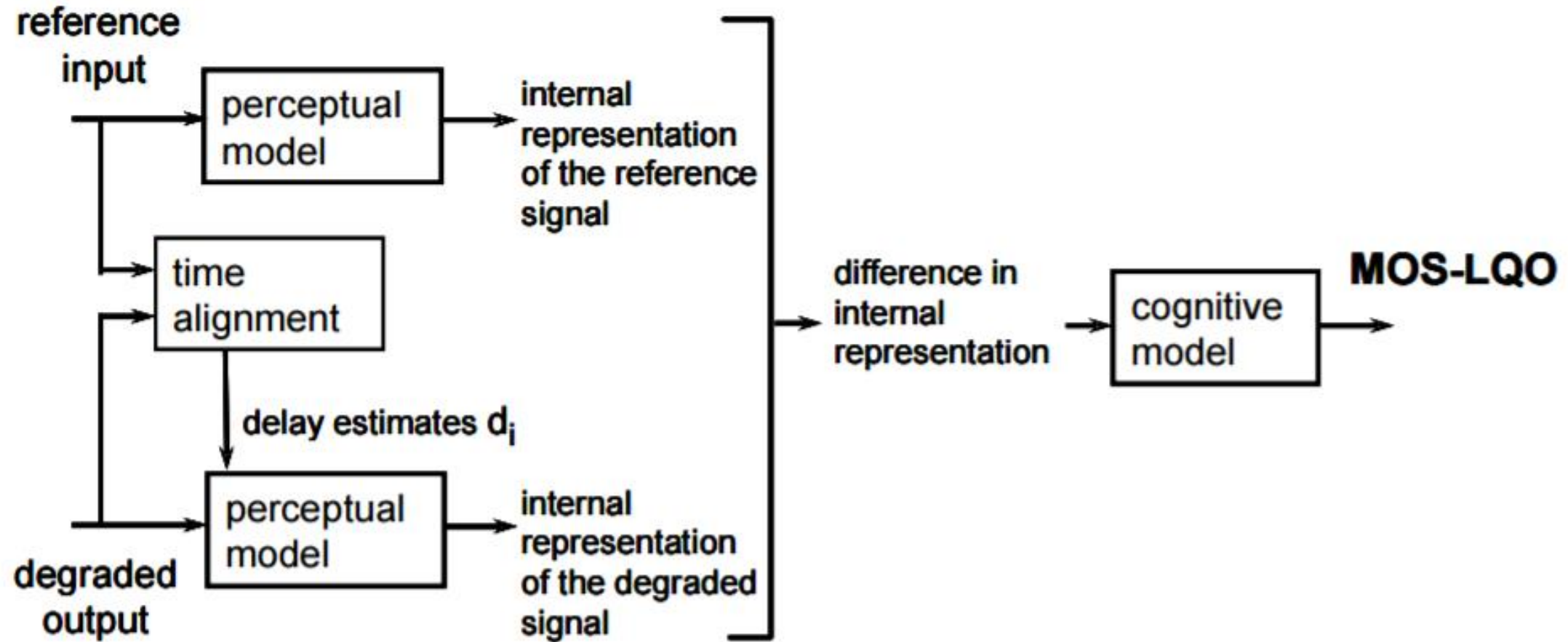
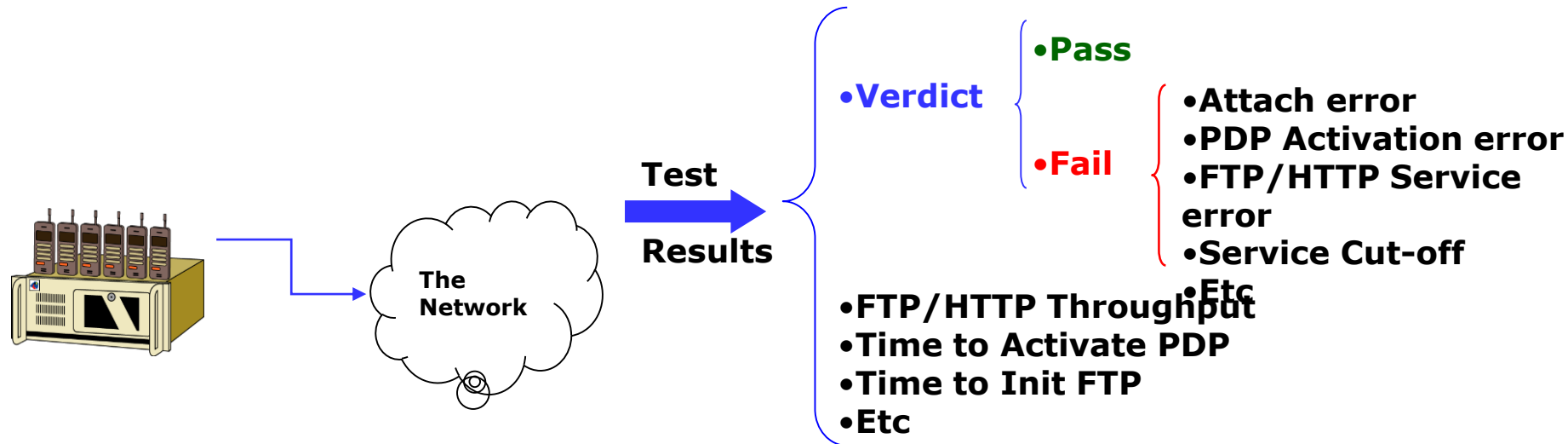


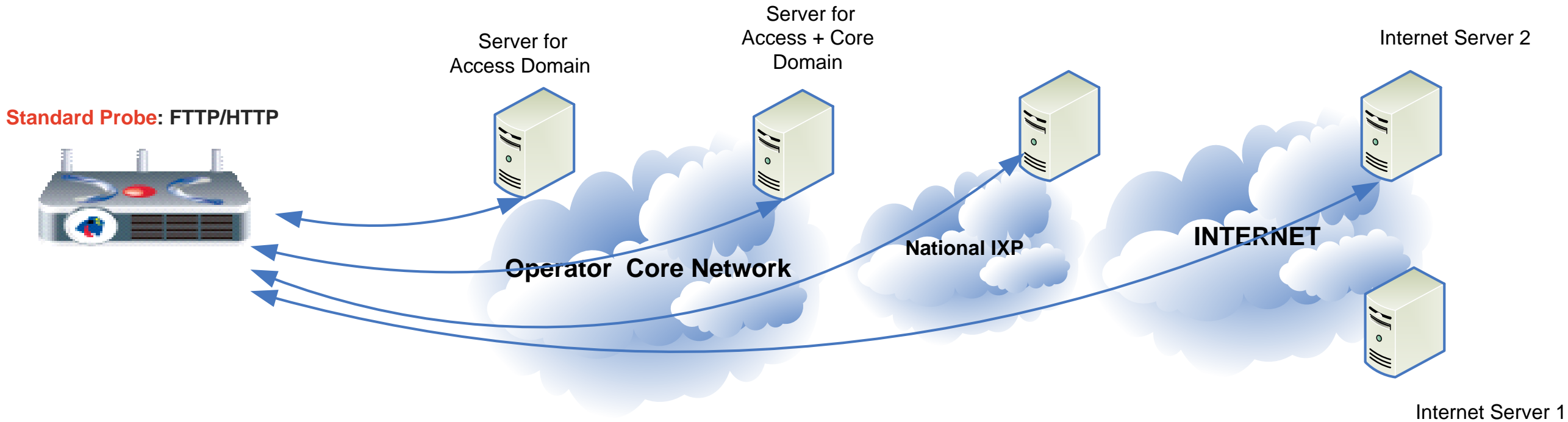
Figure 1: Basic POLQA Philosophy

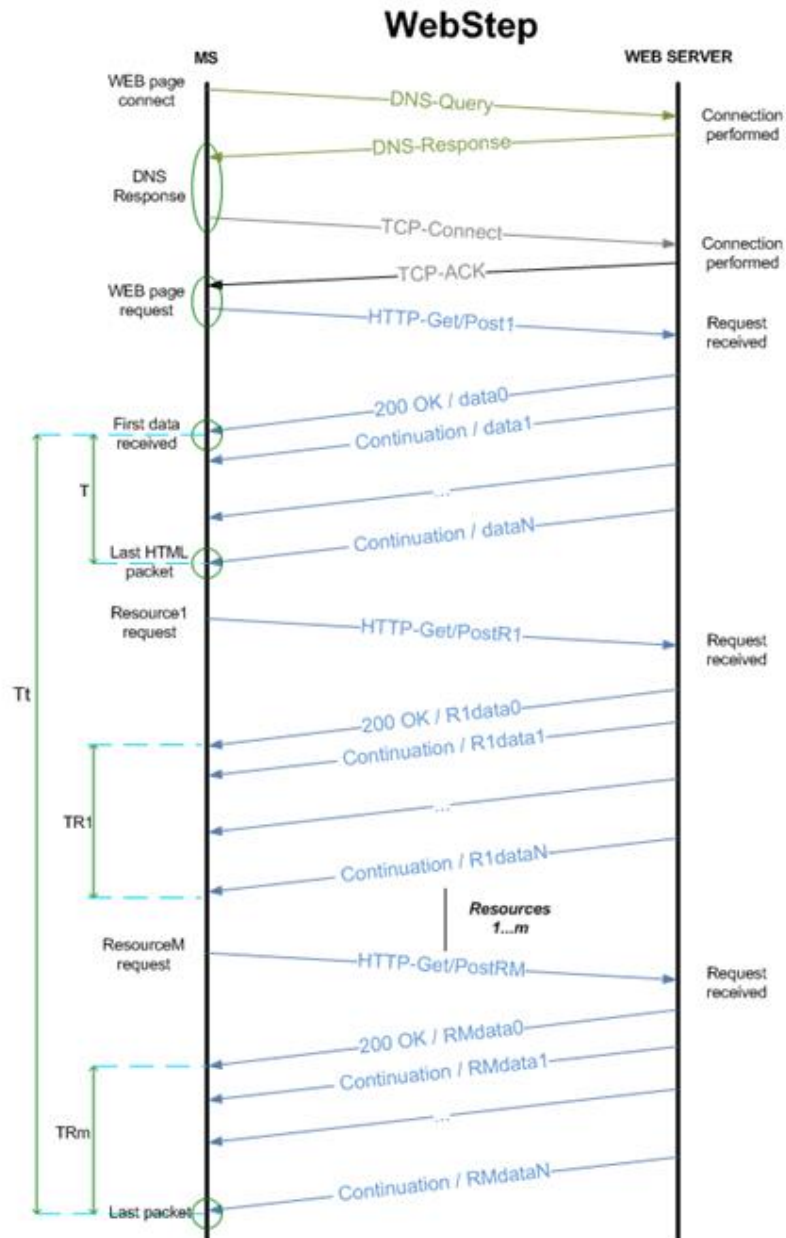


## Data Service **KPIs** Generated:

- PDP Establishment RATIO
- Service Accessibility [%]
- DNS time [seconds]
- DNS Success RATIO
- Upload/Download throughput [bps]

# Data Services – Reference Server





Output parameters:

$FirstDataReceivedTS = First\ data\ received$	$DNSResponseTS = DNS\ response$
$DownloadTime = T + TR1 + \dots + TRm$	$ValidBytesDownloaded = \sum_{i=1}^n data_i + \sum_{i=1}^{m,n} R_i data_j$
$DownloadFullTime = Tt$	
$HTTPConnectTS = Web\ page\ connect$	$MainLastDataReceivedTS = Last\ HTML\ packet$
$DNSResponseTS = DNS\ Response\ received$	$FullLastDataReceivedTS = Last\ packet$
$HTTPRequestTS = Web\ page\ request$	
$BytesDownloaded = \sum_{i=0}^n data_i + \sum_{i=1}^{m,n} R_i data_j$	$DownloadRate = \frac{ValidBytesDownloaded}{DownloadTime}$

- **Param IN:** URLs
- **KPIs:** DNS time, PDP Connection Time, **Download Full Time**, Browsing Success Rate



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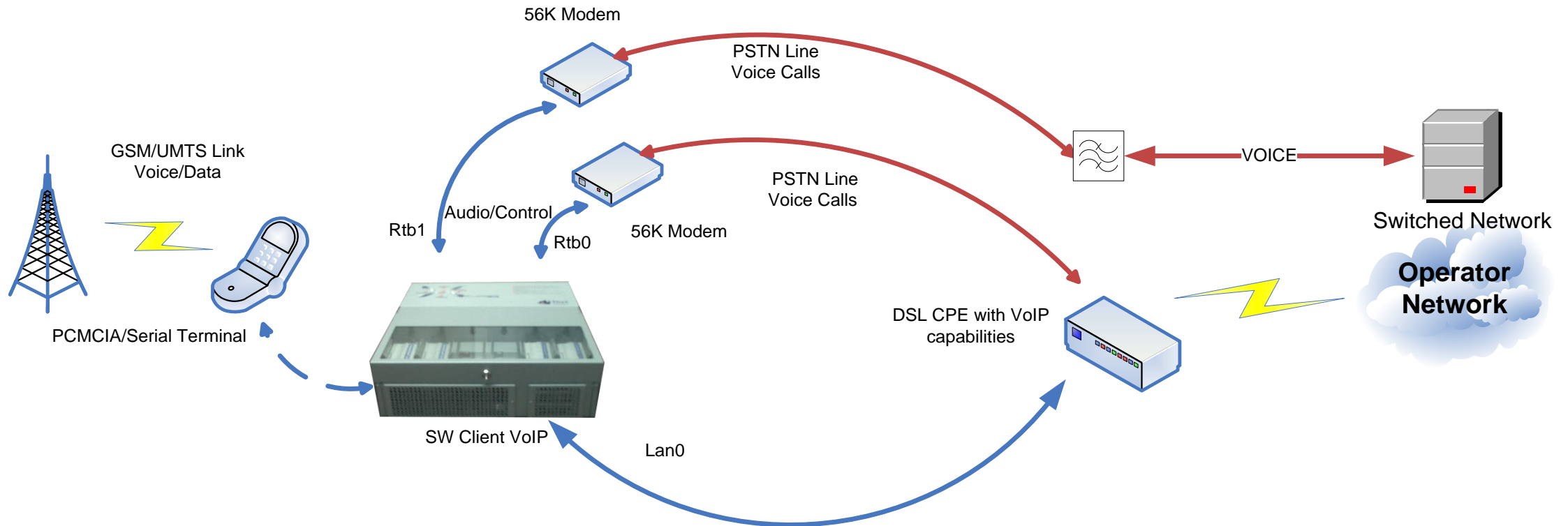
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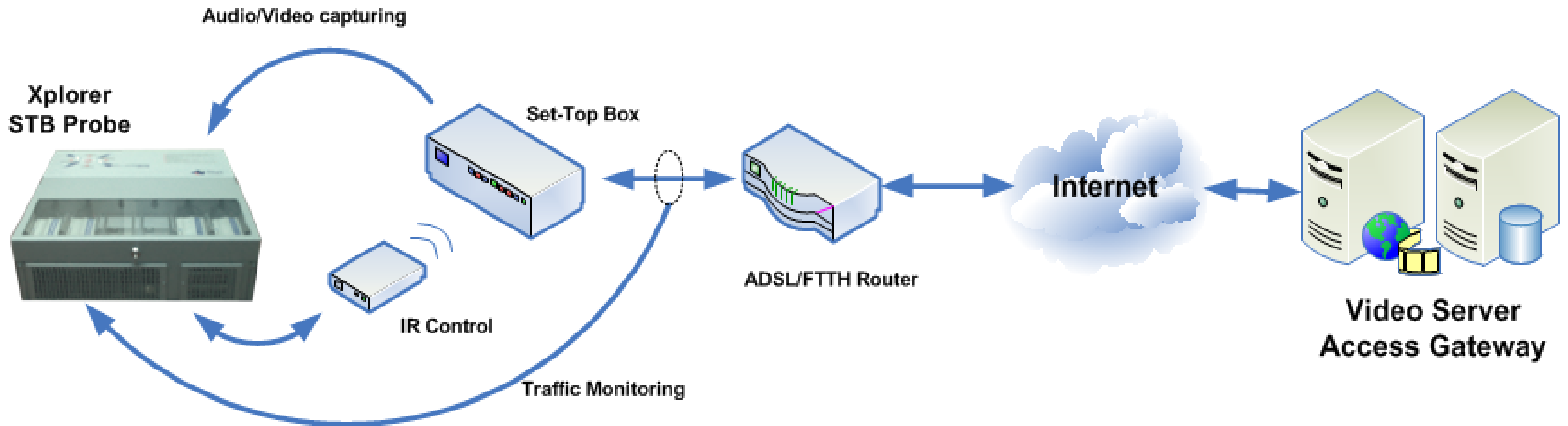


10 Best Places to Visit in South Africa

# VoIP - Scenario



# IPTV – Scenario STB



# Scenario TV App

Xplorer  
TvApp

Audio/Video

Lightning

OSx Device

Iphone

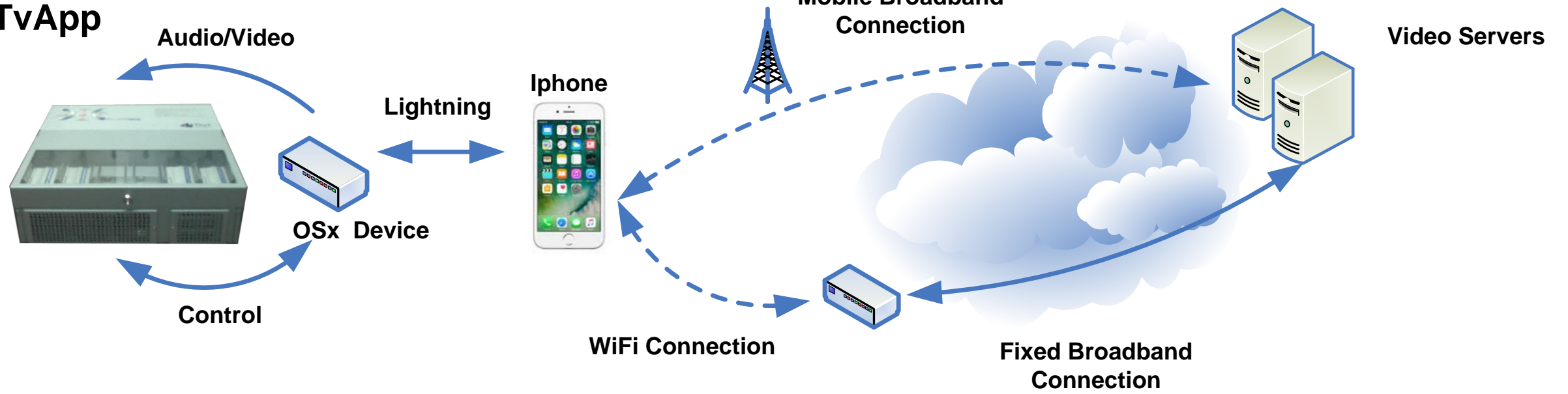
Mobile Broadband  
Connection

Video Servers

Control

WiFi Connection

Fixed Broadband  
Connection



From: 14/07/2017 13:18:14 To: 17/07/2017 13:18:14

**Zapping time STB**

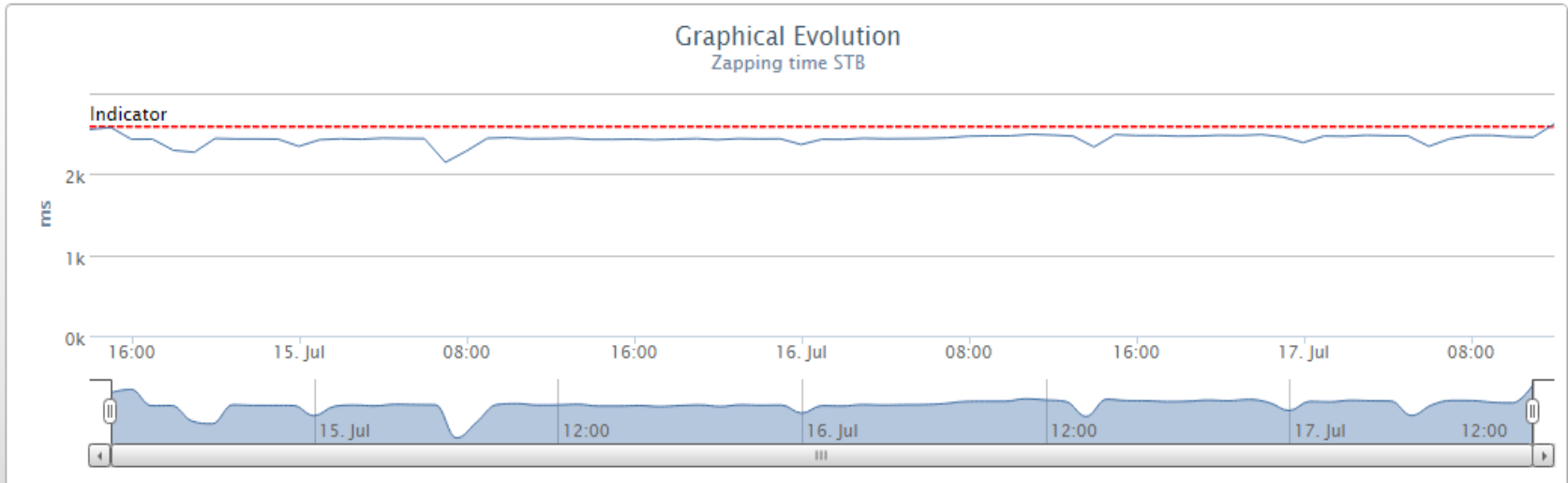
Zapping time STB

**2.595,62 ms**

Show evolution by location.

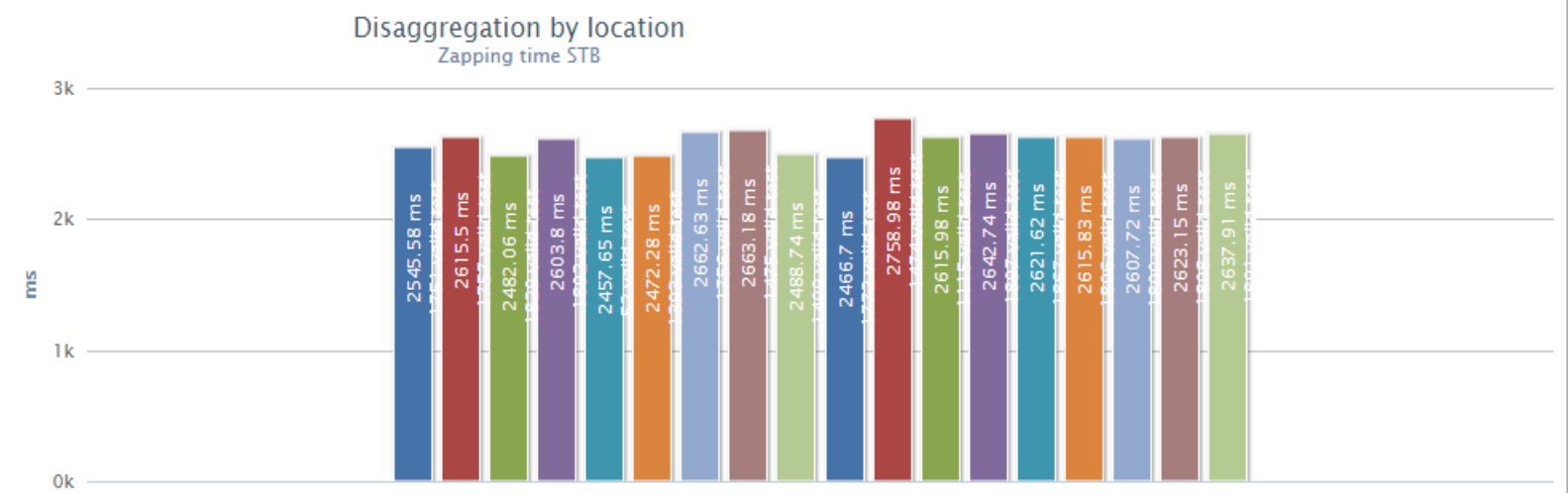
Export to pdf.


Auto refresh



Hide all series

Barcelona	OTT-FO-AREQUIPA4
Camarillo	Palos
Camarillo2	Palos2
Canillas	Sevilla
FO-ALCORCON	Ulises
FO-PILAR	Ulises2
JAZZTEL-CANILLAS2	Ulises3
JAZZTEL-CATALANES	
Kansas	
Meneses	
OTT-FO-AREQUIPA3	





Dashboard
Results
Service Status
System Status
System Settings
Administration
Test Settings
KPIs

User: Admin

Refresh

Service Status
System Alarms
Test Alarms

### Service Status by month

Service/Week	Week 01	Week 02	Week 03	Week 04	Week 05
SMS	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %
HTTP	0,00 %	0,61 %	0,30 %	0,32 %	35,00 %
FTP Get	0,30 %	0,60 %	0,00 %	0,99 %	6,06 %

Recent

- 2014
- 2013
- Jan
- Feb
- Mar
- Apr
- May
- Jun
- Jul
- Aug
- Sep
- Oct
- Nov
- dec
- 2012
- 2011
- 2010

### System Alarms

**Severity:** High

**Unit:** UPPRUE1

**Manager:** Gsm Supervisor

**Activate:** 19/09/2014 05:25:23

Up Terminal Lost(Operator register error)

**Severity:** High

**Unit:** UPPRUE1

**Manager:** Gsm Supervisor

**Activate:** 19/09/2014 05:27:22

Up Terminal Lost(Operator register error)

**Severity:** Critical

**Unit:** UPPRUE1

**Manager:** UpMonitor

**Activate:** 24/07/2013 08:58:03

HeartBeat of UP to CC

**Severity:** Critical

**Unit:** Telecable 1

**Manager:** UpMonitor

Monitors hardware and software failures reported by Probe Units and Control Center.

### Test Alarms

**Severity:** Critical

**Unit:** PU\_Demo

**Manager:** EIS Results

**Activate:** 20/03/2014 11:17:20

YouTube-Ono

**Severity:** High

**Unit:** PU\_Demo

**Manager:** EIS Results

**Activate:** 23/09/2014 04:00:41

ADSL-BROADBAND-HTTP

Displays a list with the test alarms currently activated.

<< Previous
Mode weeks of month: Year 2013 month January weeks from 1 to 5
Next >>

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# Use Cases

- **ZICTA:** 10 robots for stationary testing + 12 robots for drive testing + CC + SimServer
- **BOCRA:** 11 robots for stationary testing + 2 robots for drive testing + CC
- **LCA:** 5 robots for stationary testing + 2 robots for drive testing + CC



# Last Reflection More Value to Operators

## 1. Current Situation

- NRA monitors QoS
- NRA generates Reports and shares with Operators

**Benchmarking reports → valuable**

## 2. Suggestion for More Value

Help Operators to have a **proactive 24 x 7 supervision**

- Operators provide free airtime for more tests
- Operators can be notified when there are service degradations or unavailability



# Thank You

Carlos Pérez Sainz

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