

Application-Centric Performance SLAs for MPLS VPNs



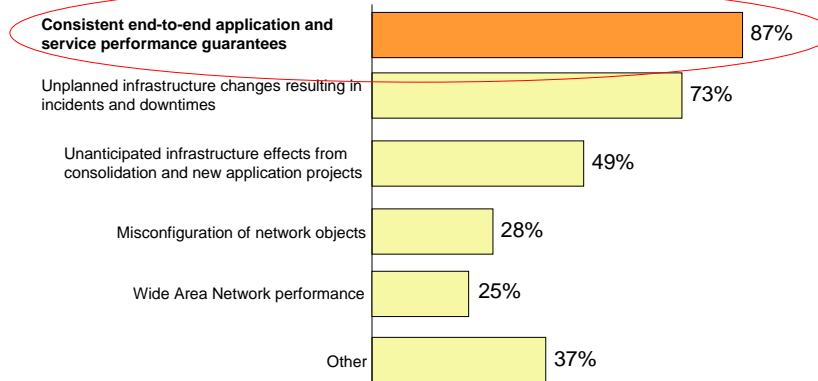
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Enterprises are looking at consistent end-to-end application and service performance guarantees

“What are your top three issues in managing corporate IT infrastructure?”



Source: Forrester Research Study among IT infrastructure managers at \$1billion-plus companies, March 2005

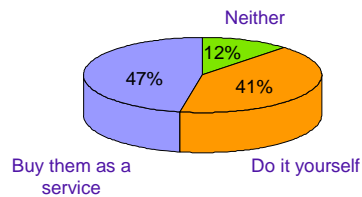
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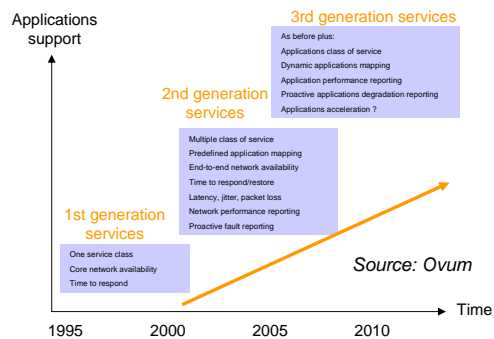
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A new opportunity for service providers to increase market share, revenues and profit



Source: IDC survey of network managers of large European companies

A large portion of Enterprises are looking at Managed Services for Application Traffic Management



A 3rd generation of IP-VPN services is emerging to answer this need

"A few service providers are making the first steps towards applications-centric SLAs, sometimes referred to as the Holy Grail of networking." *Peter Hall, Ovum*

SLA basics

Type of SLAs

- ▣ Reactivity
- ▣ Availability
- ▣ Efficiency

Ingredients for an SLA

- ▣ One indicator (what we measure)
- ▣ Thresholds on those indicators (the objectives)
- ▣ Rules for validity of the indicators
- ▣ Penalties or bonuses

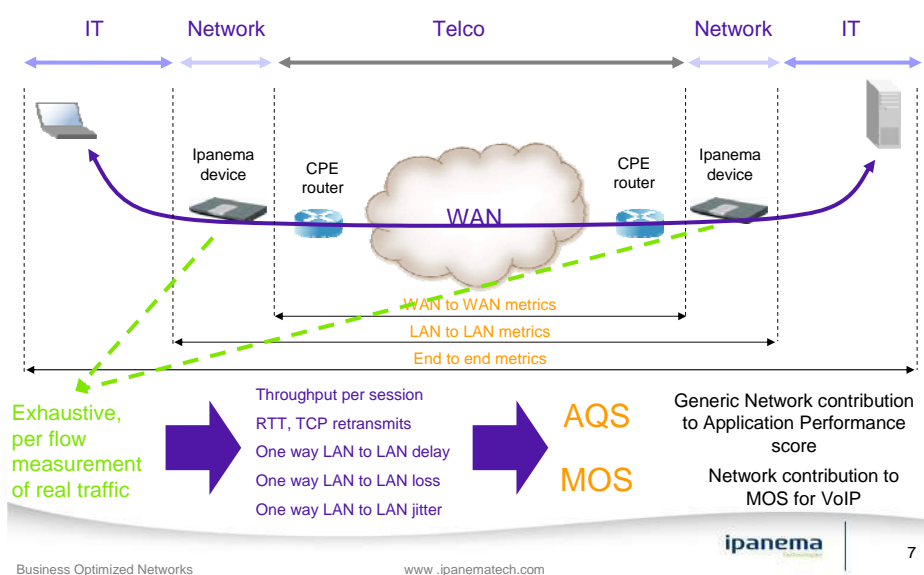
3 key requirements for Application SLAs

- ❏ Application SLAs can have a tremendous value from the Enterprise standpoint as long as they:
 - ❏ Are based on indicators that describe the delivered performance in relation with applications
 - ❏ E.g. SAP, Citrix ... performance
 - ❏ Cover a well defined and key portion of the application delivery chain
 - ❏ E.g. the performance from LAN A to LAN B, the performance from the Server A to Client B ...
 - ❏ Are representative of the actual quality levels delivered to end-users
 - ❏ The ability to prove the SLA is a number one component of its value

How does existing network SLAs fit with the requirements ?

Application SLA requirement	Traditional network SLAs based on router to router delay and loss (PING/SAA)	
	Compliance with requirement	Comment
Are based on indicators that describe the delivered performance in relation with applications	No	Not representative of the performance of applications but rather of the link itself
Cover a well defined and key portion of the application delivery chain	No	Only representative of the performance of the WAN (does not take into account congestion issues in CPE routers ...)
Are representative of the actual quality levels delivered to end-users	No	Only a estimate of performance (PING/SAA once an hour, day ...)

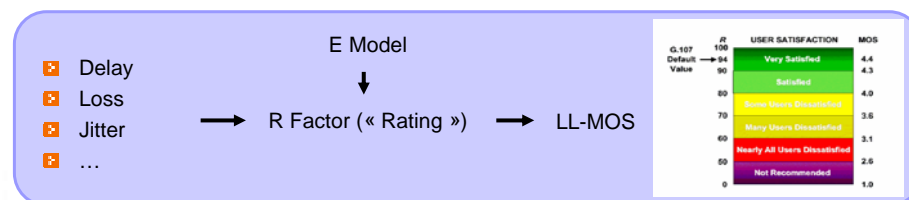
Ipanema's proposal for Application SLA indicators



The LAN-to-LAN « MOS » (LL-MOS)

Mean Opinion Score

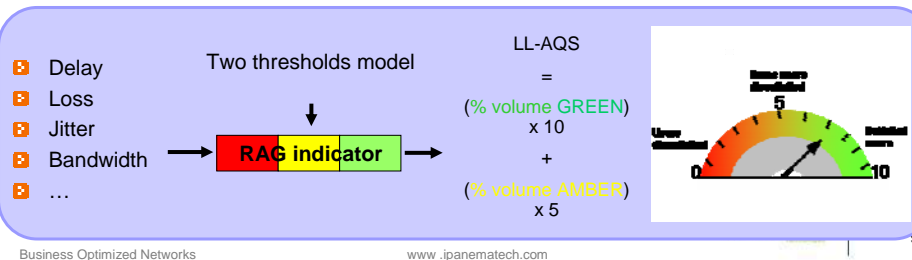
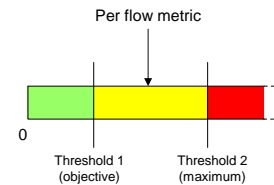
- Computes network contribution to voice quality
- Based on ITU E-model and LAN to LAN per flow metrics
- Topology consolidation weighted by activity volume



The LAN-to-LAN « Application Quality Score » (LL-AQS)

Ipanema proprietary LAN-to-LAN Application Performance Score

- Computes network contribution to application performance
- Based on a proprietary model and LAN to LAN per flow metrics
- Topology consolidation weighted by activity volume



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How does Ipanema SLA indicators fit with the requirements ?

Application SLA requirement	Application centric SLAs based on Ipanema	
	Compliance with requirement	Comment
Are based on indicators that describe the delivered performance in relation with applications	Yes	Look at individual application flows
Cover a well defined and key portion of the application delivery chain	Yes	Cover what happens from LAN to LAN
Are representative of the actual quality levels delivered to end-users	Yes	Exhaustive measurement of real traffic

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Ipanema's proposal for Application SLA thresholds on the indicators

- ❏ There is an analogy between “application performance availability” and “network availability”
 - ❏ Percentage of time during which the application performance is “available”
 - ❏ Available application means:
 - ❏ MOS > threshold
 - ❏ AQS > threshold
- ❏ The commitment can be by “network” and by “site”, e.g.:
 - ❏ Application performance availability over the network > 99,9%
 - ❏ Application performance availability on each site > 99%

Ipanema's proposal for Application SLA rules for validity of the indicators

- ❏ Application performance degradation can be caused by the customer itself or by the chronic under-provisioning of the network
 - ❏ Too much critical traffic on a given site prevents allocation of the minimal bandwidth for each active user
- ❏ Thus we must be able to split the responsibility between:
 - ❏ The Service Provider
 - ❏ The Enterprise customer
- ❏ Ipanema computes an overactivity indicator that detects when the Enterprise goes beyond possible usage of the link vs. negotiated SLAs
- ❏ The computed SLAs take into account overactivity periods
 - ❏ The Service Provider can never be endangered by an Enterprise misuse
 - ❏ Dedicated reports inform the Enterprise of the overactivity periods and give recommendation for optimal link sizing based on their usage of the link (through a Rightsizing technology)

Application SLA example

Application profile: « Data »

Profile Data “TOP criticality”

- Network: AQS > 9,5 during 99,9% of the period
- Site: AQS > 9,5 during 99% of the period

Profile Data “HIGH criticality”

- Network: AQS > 9,0 during 99,9% of the period
- Site: AQS > 9,0 during 99% of the period

Profile Data “Best effort”

- No SLA

Application profile: « VoIP »

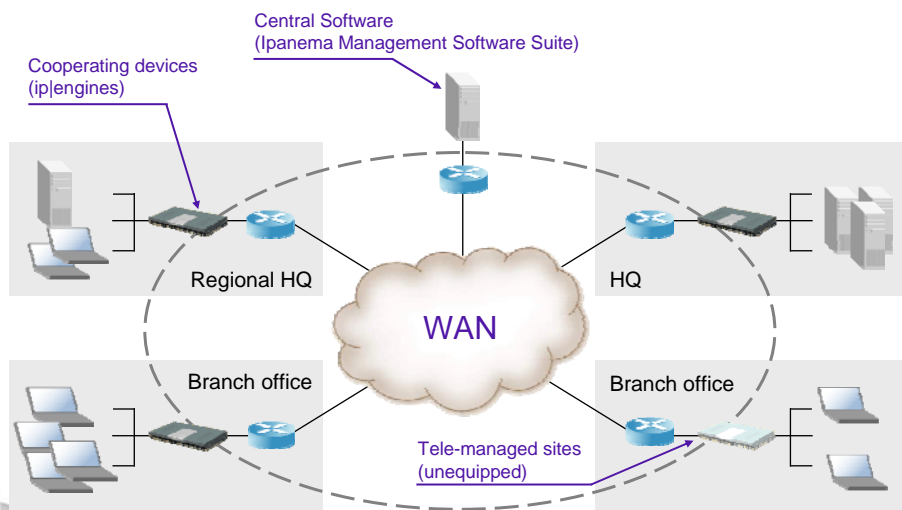
Profile VoIP G711

- Network: MOS > 4 during 99,9% of the period
- Site: MOS > 4 during 99% of the period

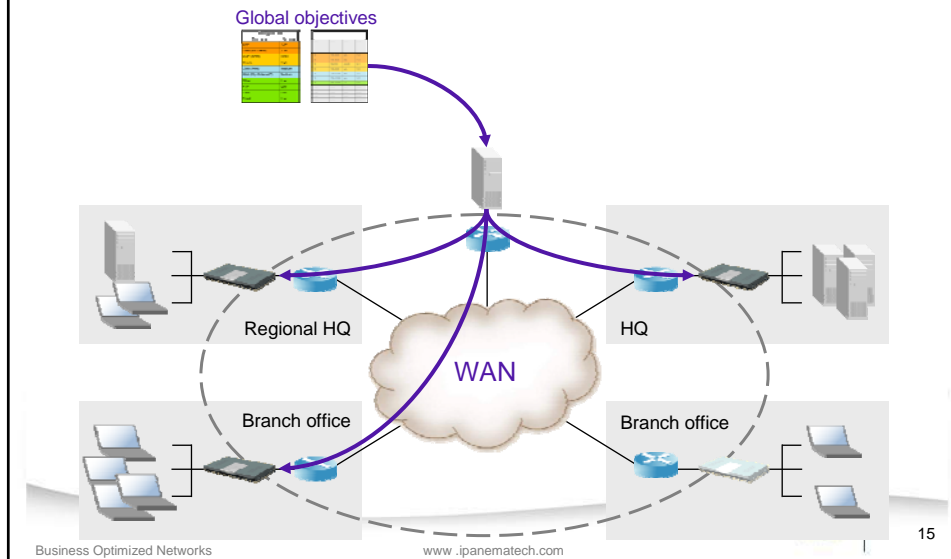
Profile VoIP G723 – G729

- Network: MOS > 3,5 during 99,9% of the period
- Site: MOS > 3,5 during 99% of the period

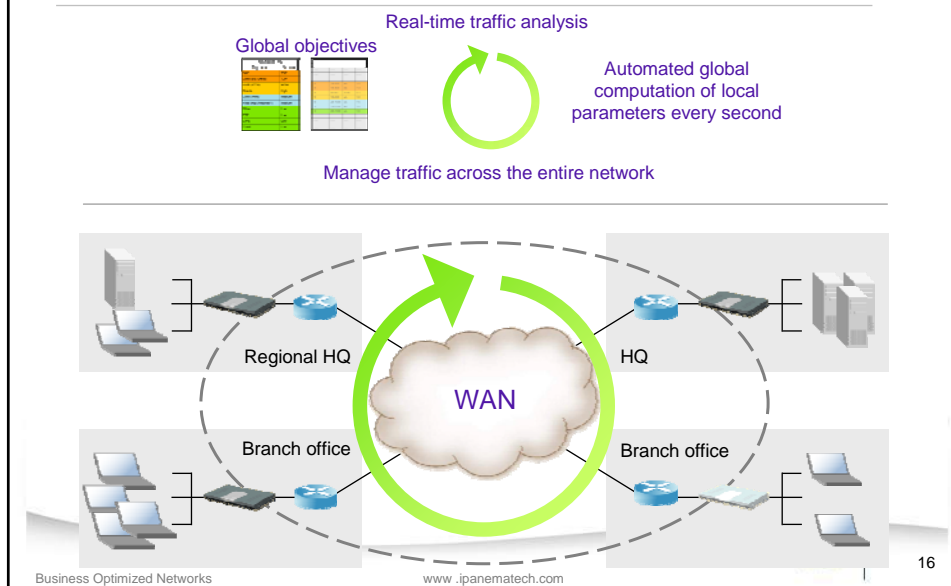
The Ipanema System measures and automatically enforces Application SLAs using a central software & cooperating devices



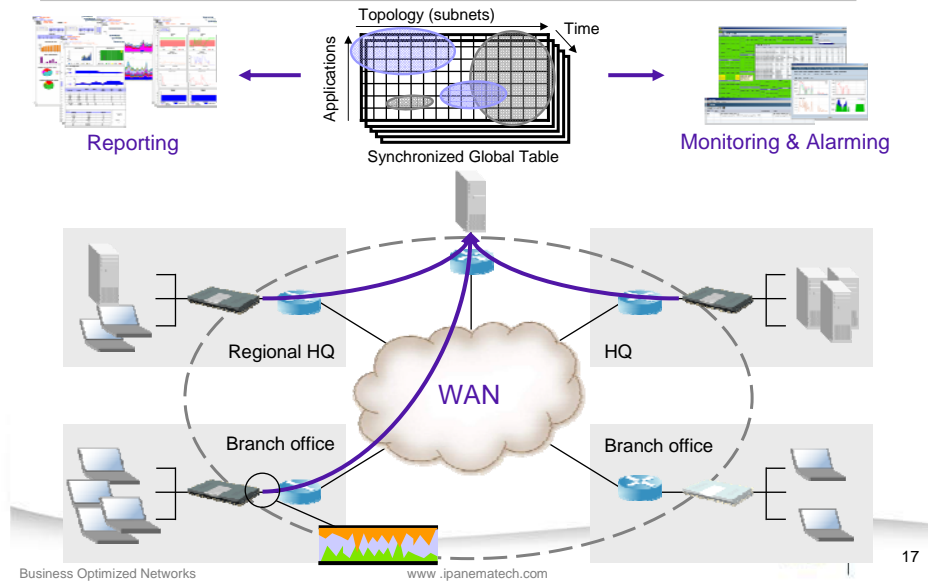
The Ipanema System uses global Application Performance Objectives ...



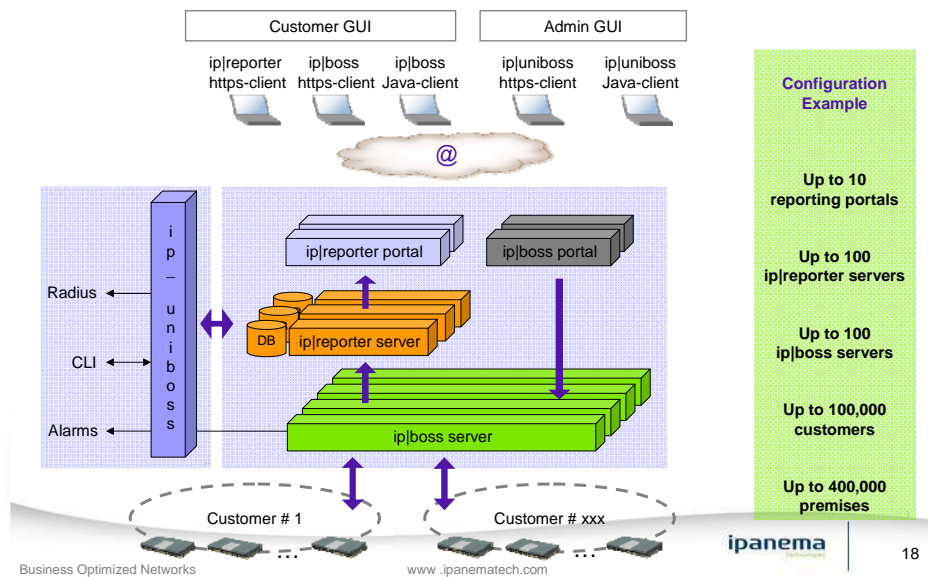
... to manage the traffic dynamically across the entire network



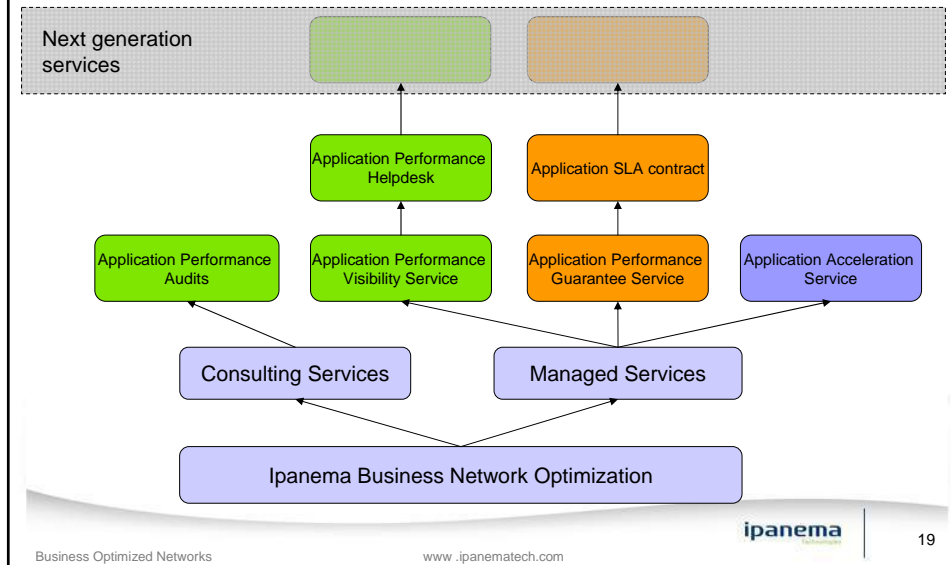
The Ipanema System consolidates a picture of the whole network traffic in real-time into a Synchronized Global Table



SALSA is a dedicated platform for generalized rollouts by MSPs

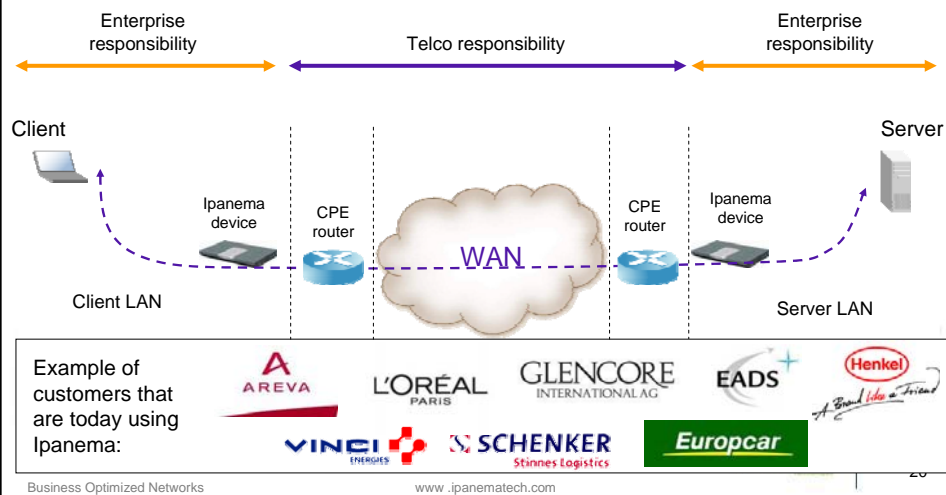


Ipanema can be delivered to the Enterprise through a variety of services



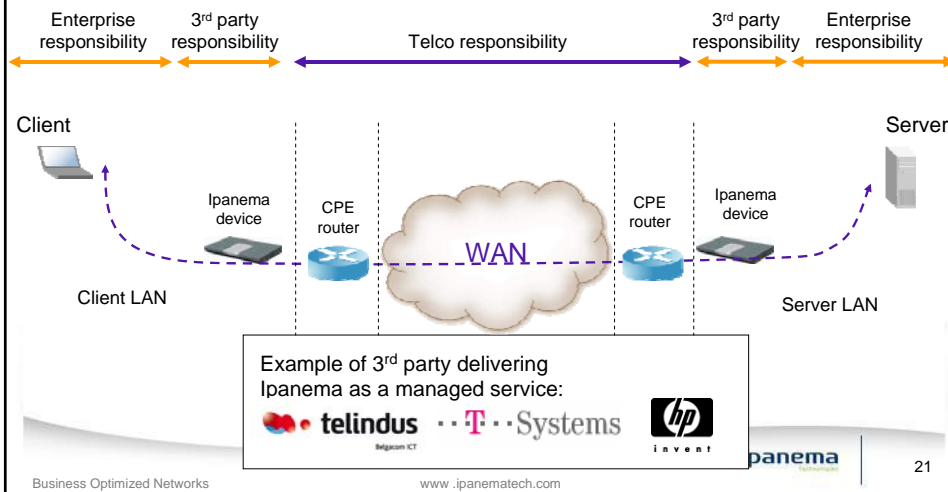
Network Application SLAs can be put in place in the Enterprise through different models

Model #1: The Enterprise deploys and manages Ipanema itself



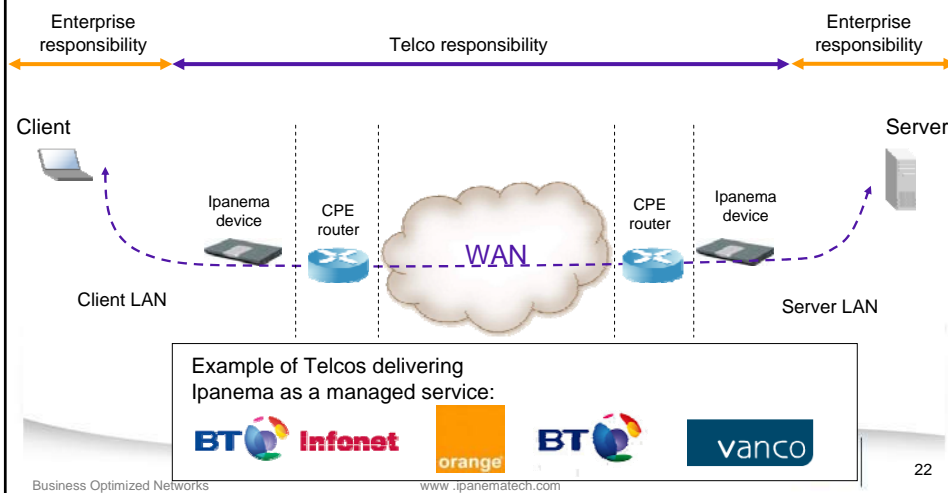
Network Application SLAs can be put in place in the Enterprise through different models

Model #2: The Enterprise buys Ipanema from a third party in the form of a managed service



Network Application SLAs can be put in place in the Enterprise through different models

Model #3: The Enterprise buys Ipanema from its Telco in the form of a managed service



Summary

- ✦ Enterprises want to get to relevant SLAs on the key section of the application delivery chain that the network represents
- ✦ Ipanema is providing a technology that allows to define and measure SLAs on the network that:
 - ✦ Are based on indicators that describe the delivered performance in relation with applications
 - ✦ Cover a well defined and key portion of the application delivery chain
 - ✦ Are representative of the actual quality levels delivered to end-users
- ✦ Ipanema provides a “turn key” network Application SLA definition, measurement and enforcement framework that includes:
 - ✦ A range of high level indicators suitable for network Application SLAs
 - ✦ The ability to automatically check for Application SLA validity based in multiple deployment scenarios
 - ✦ A set of dedicated SLA tools and reports
 - ✦ The ability to enforce the Application SLAs over the network thanks to a global approach based on Application Performance Objectives
- ✦ Many Enterprises today get the benefits of Ipanema innovative Application SLA solution either directly, through their Telco or through a third party

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