



Real-time Charging of Mobile Data Services

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Київ,
18–19 квітня 2006



Life is a lot
easier when you have
the right
solution



IP-Services Charging Node (ICN)

Real-time Charging of Mobile Data Services

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Adding value to your network

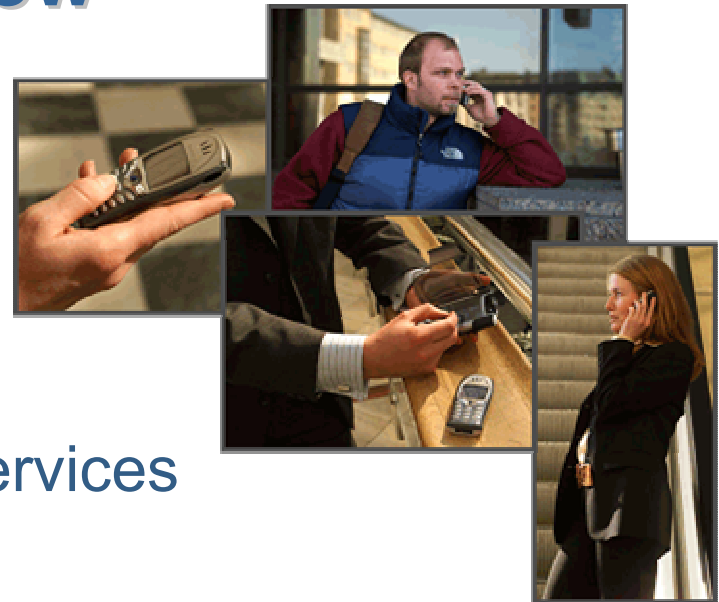
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Technology
Developer
Partner

Teligent - company overview

- Founded in 1990 in Sweden
- Sales appr. €50M 2005
- 350 employees worldwide
- Mobile, IP & Wire line network services
- Global Presence with PoS and Regional Technology Centres
- Publicly listed at the Stockholm Stock Exchange



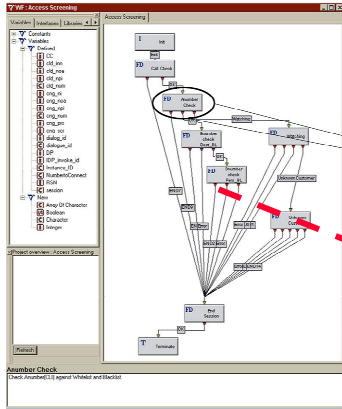
Recent Achievements

- 30% yearly growth rate since 2003
- Transformed from W. European, fixed line vendor to Global Fixed, Mobile & IP vendor over the last 3 years
- Established 15 PoS Globally
- Successful M&A track record
- Successfully attracted major Operators with significant system sales orders
- Doubled number of parallel development & delivery projects over the last 12 months

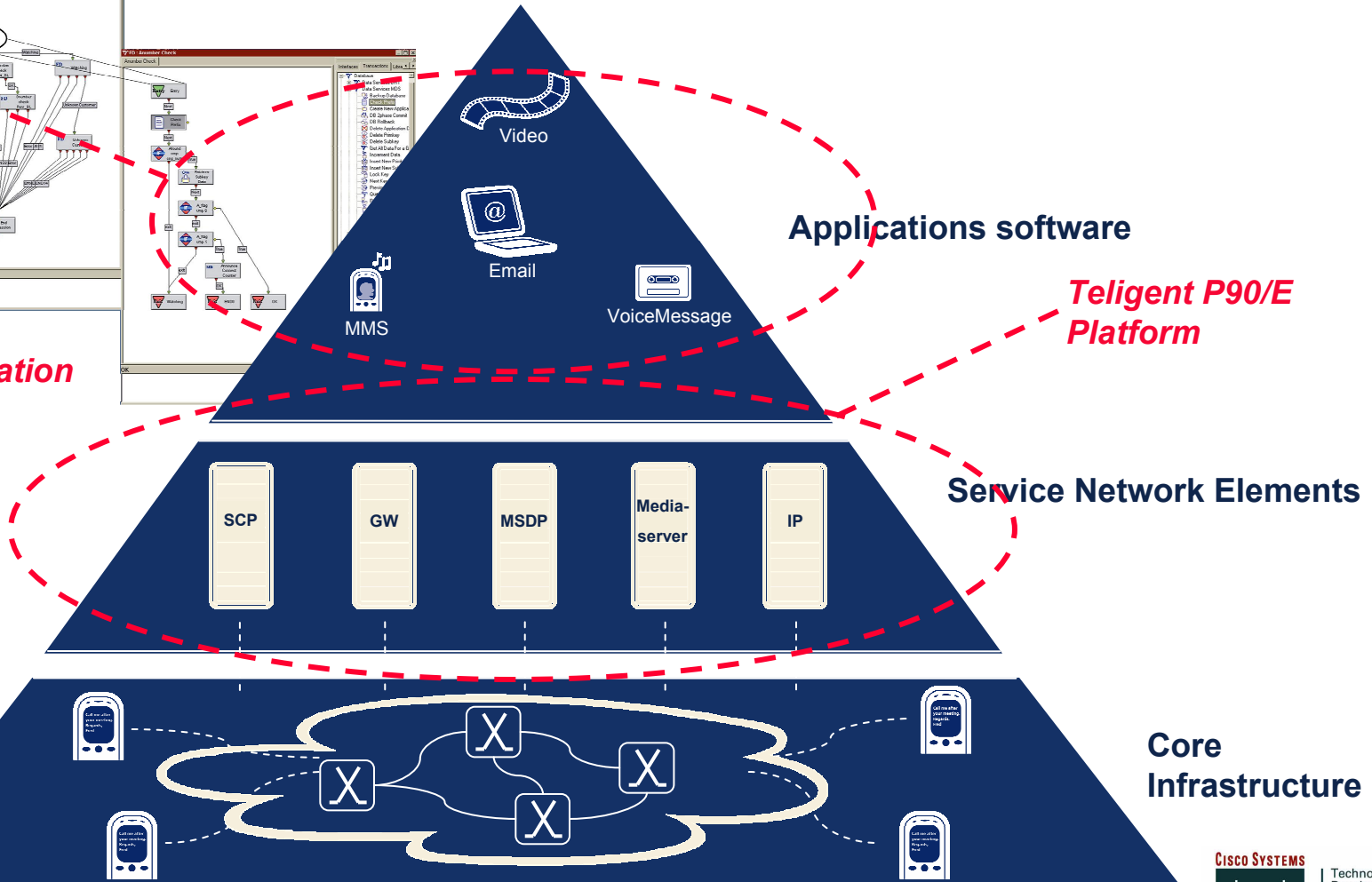


Value Added Services

Positioning / offering



Teligent Application Builder



Applications software

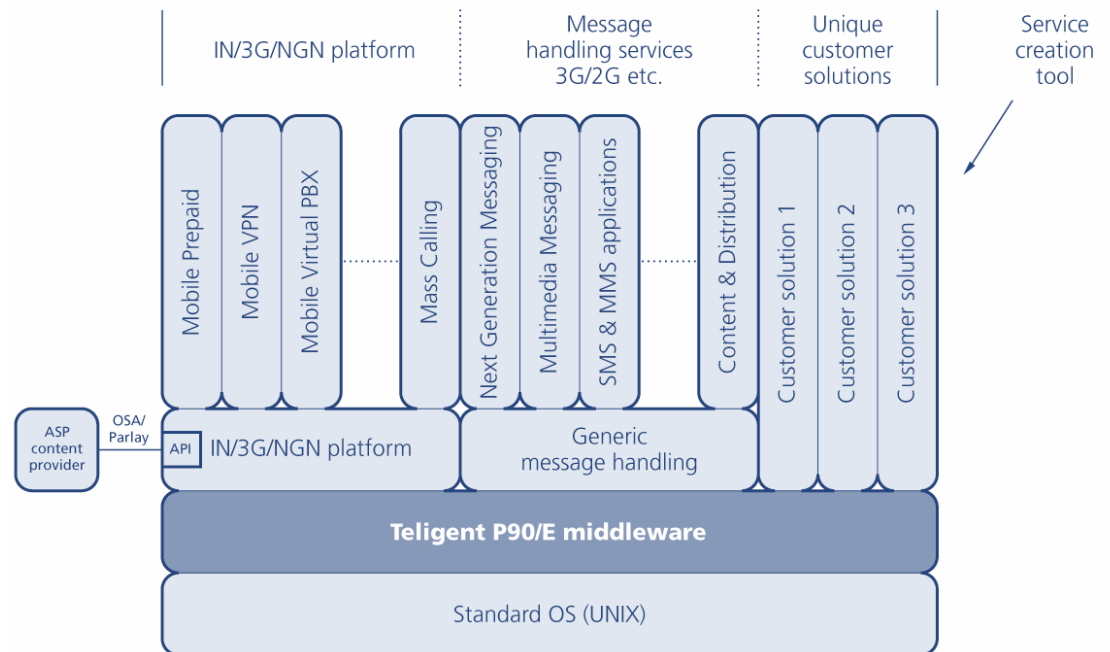
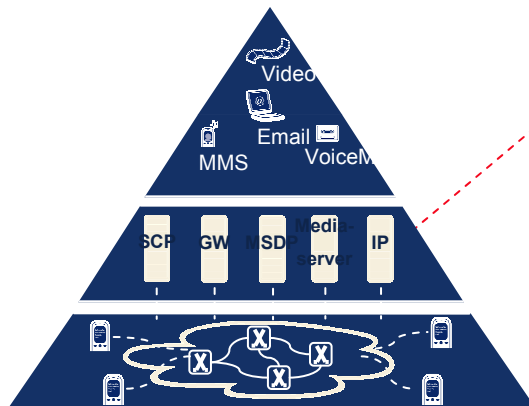
Teligent P90/E Platform

Service Network Elements

Core Infrastructure

Teligent P90/E platform

- All applications based on Teligent P90/E
- USP in converged networks environment
- Next Generation & patented 3G tech
- Open architecture



Service Application Areas

Messaging

- Voice mail, Multimedia/Video, SMS, MMS

Intelligent Network Services (IN Services)

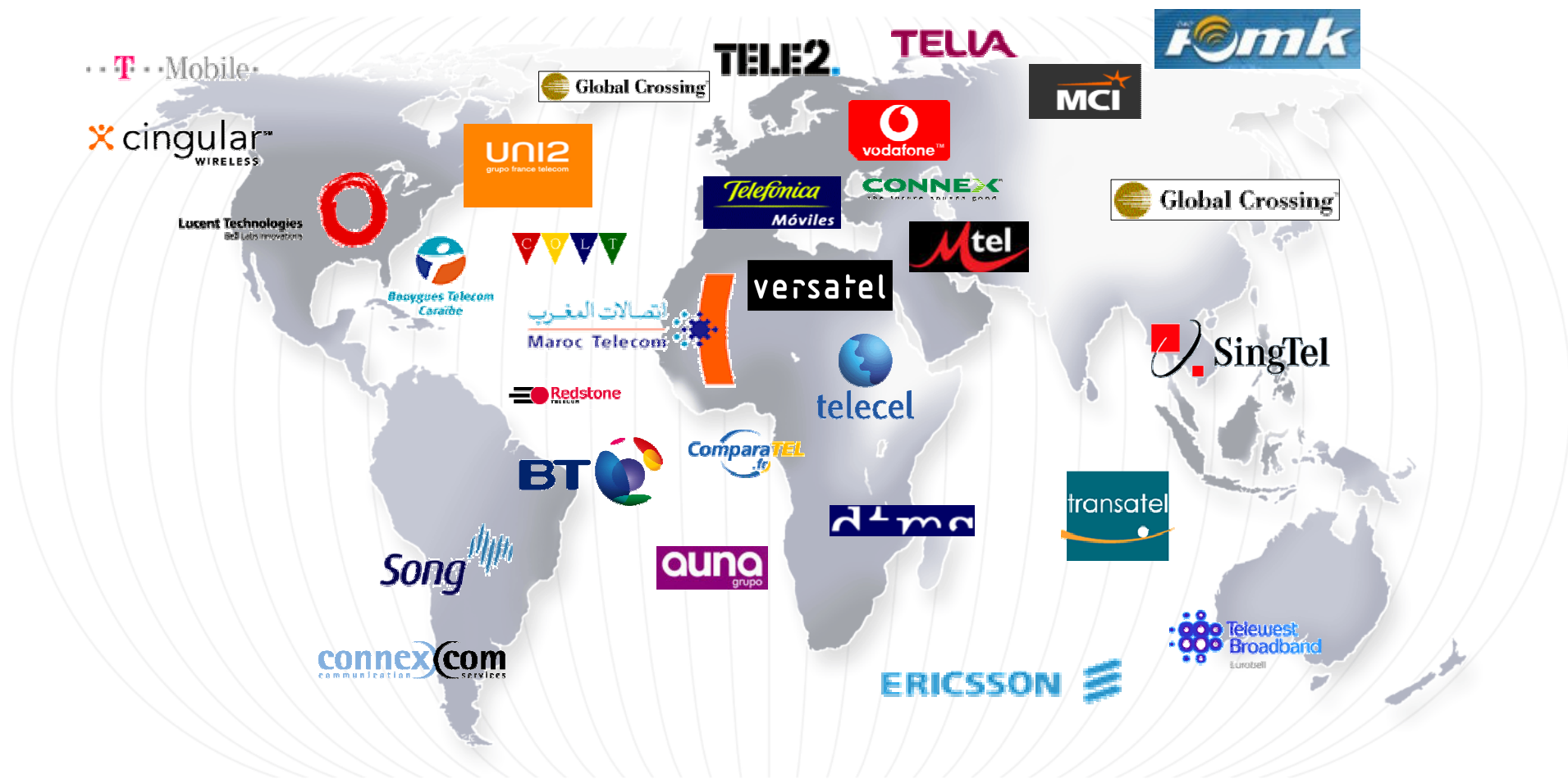
- Mobile Prepaid, Mobile VPN/Virtual PBX, Mass Calling/Televoting, Missed Call Alert

Mobile Data

- Mobile Data/MSDP & IP-Services Charging Node (ICN)

Platform references

> 200 installations globally – and more in delivery





Teligent Geographical Locations

North-East

North & Central Europe/Stockholm,
Germanic Markets/Düsseldorf,
Russia & CIS/Moscow

North-West

UK/London,
North America/Raleigh

South-East

Malaysia/Kuala Lumpur,
Singapore/Singapore,
Philippines/Manila

South-West

Latin America/Rio de Janeiro

South

Africa/Rabat, France/Paris,
Iberia/Madrid, Middle East/Dubai

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IP-Services Charging Node (ICN)

Mobile Operator Challenges & Market Place



Adding value to your network



The Mobile Operator Challenges

- *Need additional sources of **revenues and profitability**.*
- *Combination of **wireless and internet** technologies is becoming key to continuous growth in revenues and margins.*
- ***Real-time rating and charging** of GPRS based data traffic - an important differentiator to operators.*
- ***Flexible and differentiated** rating of different content types and content locations make attractive rating plans possible.*
- *Increasing **segmentation** in end user demands*
- *Decreasing service **lifetime***
- *Support different **payment models** for all services*

The Mobile Data Service Domain

100+ Service Providers
1000+ Services

SMS Services

- News
- Stock watch
- Sports
- Horoscopes
- Quizzes
- Logos
- Banking

MMS Services

- Pictures
- Sounds
- Animations
- Ringtones
- Adult content
- Etc.

WAP Services

- News
- Sports
- Betting
- Content downloads
- Games
- Banking

GPRS Services

- Web browsing
- Web mail
- Banking
- Location based services

Streaming Services

- Live Video
- Live Audio
- Video on demand
- Audio on demand
- Etc.

The collage illustrates various mobile services and content types:

- SMS Soccer Service:** Includes options like Result Demand, Result Register, Predict Demand, and Predict Register.
- SMS Download:** Includes options like Logo, Picture Message, Screen Saver, Ringtone, and Color Wallpaper.
- SMS banking:** A logo for SMS banking.
- Bozen:** A logo for Bozen.
- Premium Rate SMS:** A logo for Premium Rate SMS.
- oddschecker.com:** A Nokia phone screen displaying betting odds for Horse Racing, Football, Golf, Cricket, Tennis, and Options.
- Map:** A map showing Brooklyn, NY.
- Spiral:** A colorful, hypnotic spiral graphic.
- Snowboarder:** A photo of a snowboarder in mid-air.
- Soccer Game:** A photo of a soccer game in progress.
- Envelope:** An icon of an envelope.
- Train Schedule:** A screenshot of a train schedule for Transbents.

Market Requirements

Management of financial relationships with service partners

- *Revenue sharing*

Loyalty programs for content services

- *Bonus based on usage*
- *Operator and content provider related loyalties*

Real-time rating and charging of service usage

- *Pre-paid and Post-paid users*
- *Enabling convergent charging*

Integration with existing Business and Support Systems

- *CRM, Billing, etc*

Telco grade performance

- *High availability, scalable*
- *System Management, Service Provisioning, Performance Measurements*

Independent of existing Prepaid System vendor

- *Easy to integrate into existing payment flow*

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IP-Services Charging Node (ICN) *Solution & Packaging*



Adding value to your network



Technology
Developer
Partner

ICN – Product Value Benefits

- *A packaged CSG turnkey solution*
- *Ideal turnkey solution for Wireless Operators seeking to apply advanced & flexible charging methods for mobile data traffic*
- *Allows Operators to be able to charge their customers not only based on data volume & time, but on events and the actual value a service brings to the subscriber*

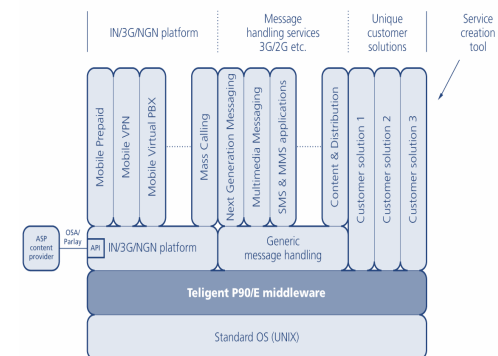
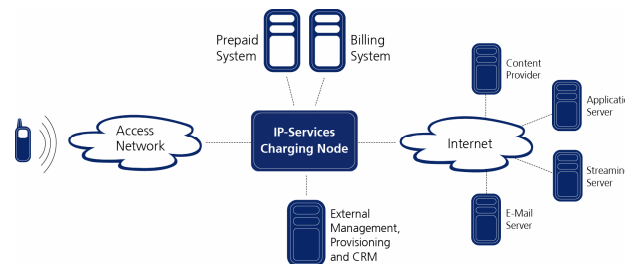
The ICN consists of

- *Cisco Content Services Gateway (CSG) - Cisco's specialized card designed for the Cisco 7600 high capacity router*
- *Teligent Real-Time Charging Gateway (RTC-GW) – application handling real-time rating and charging on any chargeable event as well as the integration to any legacy Prepaid billing and CRM system*



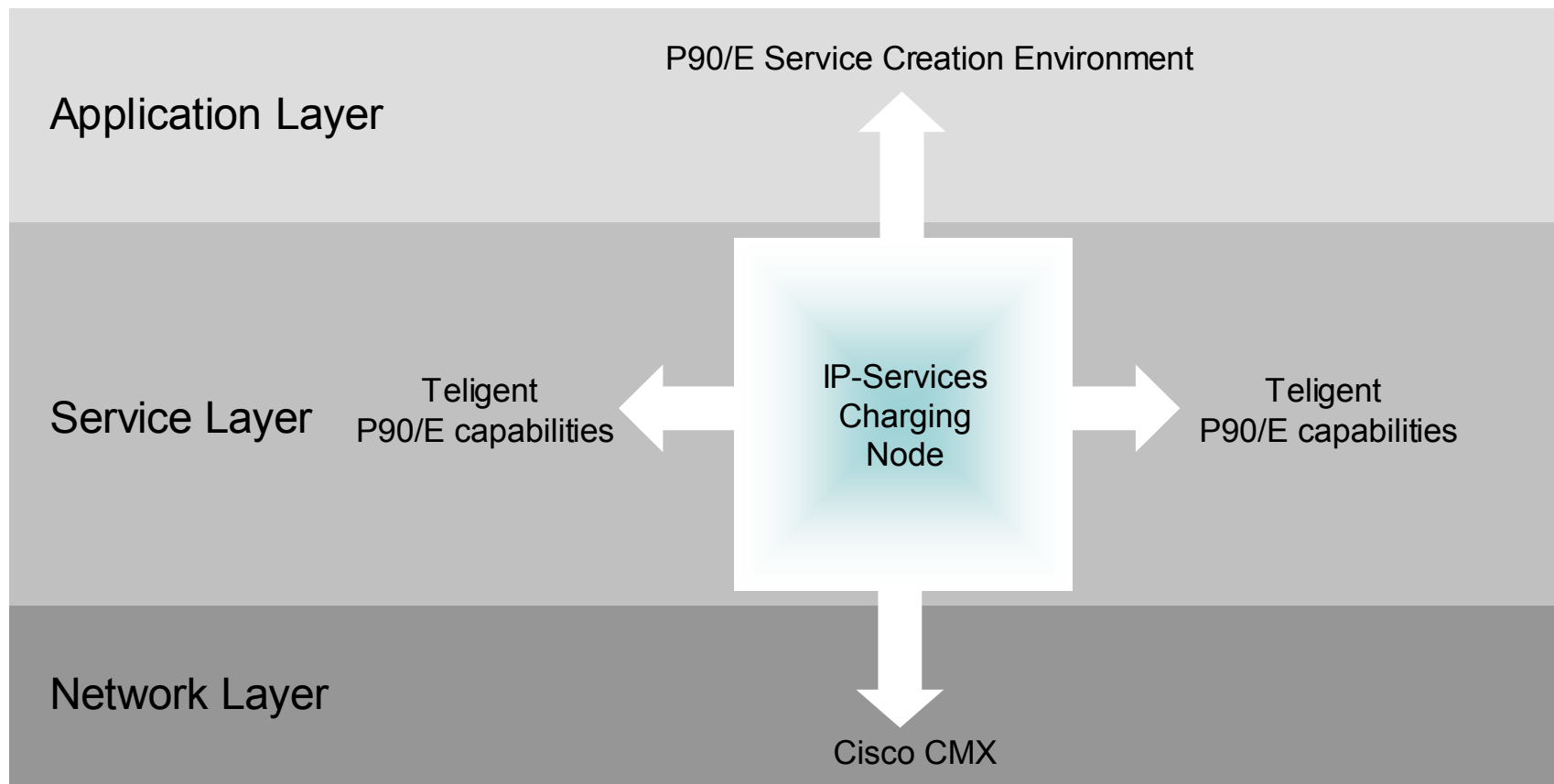
CSG

Cisco® 7600



Teligent P90/E

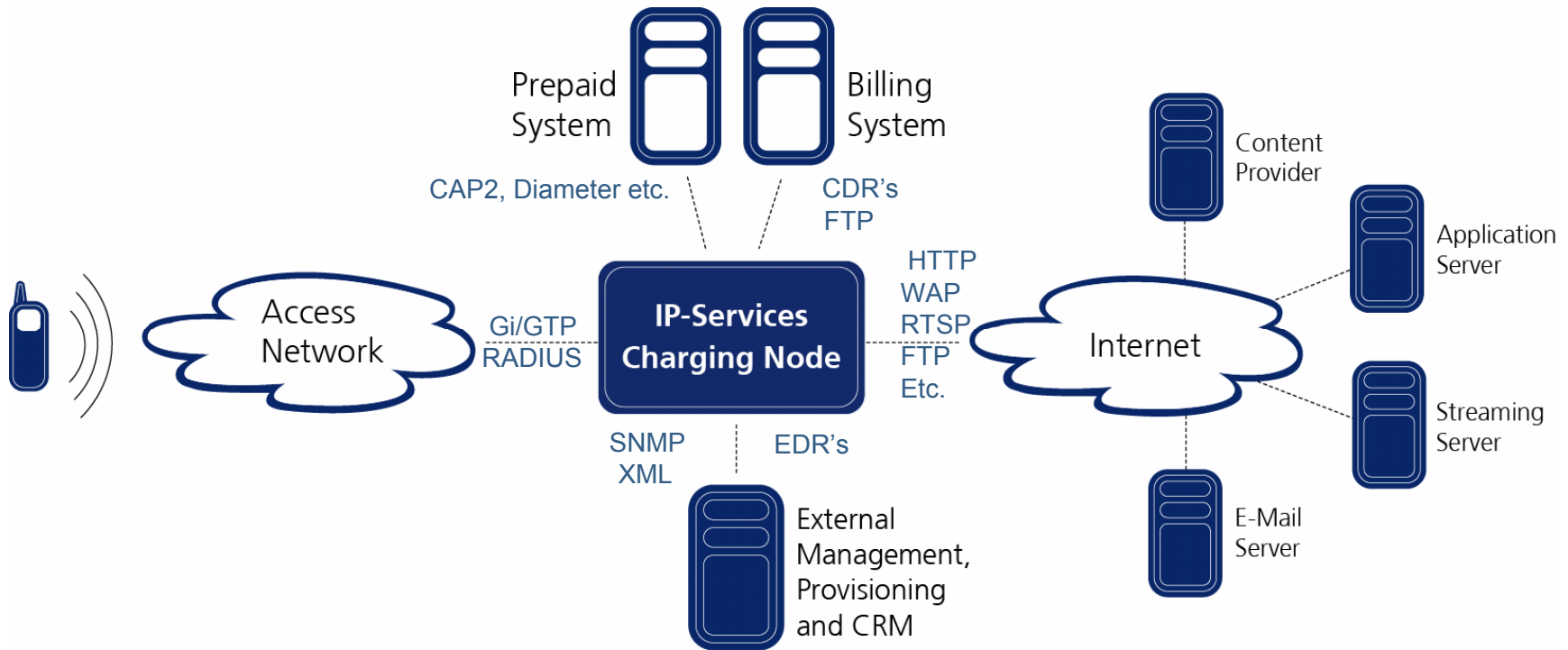
ICN – The Bigger Picture



IP-Services Charging Node

Technical & Features

ICN – Network Placement



ICN – Main benefits

- **Pre-pay enable mobile data services**
 - ✓ Real time charging of mobile data in any legacy prepaid system
- **Eliminate revenue leakage**
 - ✓ Subscriber authorization for service-access
 - ✓ Real-time direct debit or reserve/commit charging
 - ✓ User-notification dialogs such as Advice of Charge (AoC)
- **Differentiation in service rating**
 - ✓ Flexibility in creating differentiated tariff models
 - ✓ Charging on individual basis, billed to A- or B-party
- **Multiple concurrent services**
 - ✓ Multiple concurrent services per user-logon session
 - ✓ Differentiation in user service access, application-aware inspection of content
- **Charging only for delivered value**
 - ✓ Capabilities to (optionally) exclude retransmitted packets from volume measurements
 - ✓ Complete status of a transaction or event

ICN – Main Components

- **CSG**

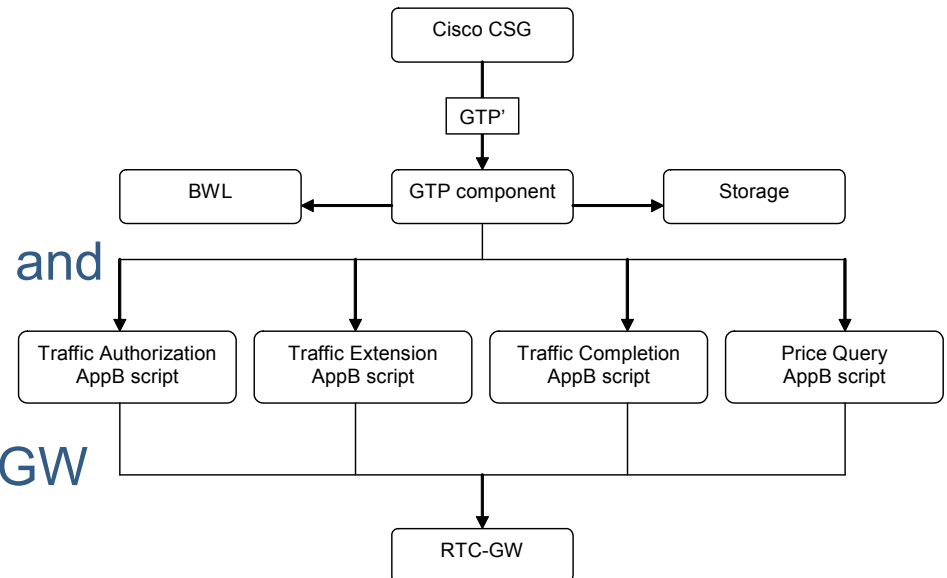
- Intercepts users GPRS/IP traffic
- Premium traffic authorized
- Redirection to alternative website
- Provides billing statistics.

- **GTP Component**

- Gateway between Teligent P90/E and Cisco CSG
- Cisco GTP' based interface.
- B/W List-checks
- Monetary reservation in the RTC-GW
- CDR's and EDR's created.

- **RTC-GW**

- Teligent object based Real-Time Rating Engine
- Tariff Builder tool
- Real-Time Charging (integration with legacy prepaid system and postpaid billing systems).



ICN – Traffic types supported, examples

HTTP

- Direct Debit, or when the HTTP POST/GET is completed.
- If failed transaction, cancel reservation in IN-PP.
- Volume or time-based rating continuous in configurable chunks of time or data with a reserve/debit scheme.

WAP

- Same basic mechanism as for HTTP.

FTP (File Transfer Protocol)

- Same basic mechanism as for HTTP.
- Only RETR (retrieve file) commands will be debited. All other ftp commands are free of charge.

RTSP (Real Time Streaming Protocol)

- Same basic mechanism as for HTTP.
- Only one RTSP stream will be charged per RTSP control connection.
- If multiple streams (audio, video etc) are detected, the URL of the first stream will be used for rating and charging.

ICN – Subscriber Access Features

RADIUS Proxy

- The RADIUS proxy is used to retrieve user correlation information (IP address and MSISDN).

B/W-list

- The content authorization request from the Cisco CSG will initiate a B/W-list check on user towards a ICN user DB (or by lookup in external user DB).

Rating

- When user authorized and in case pre-paid the ICN will initiate rating of event/content/session.

User account balance check and debit

- In case user is pre-paid the debit or reserve operation towards prepaid IN is performed.

ICN – Billing and Statistics Features

Billing records

- The ICN uses the billing records from the Cisco CSG to produce statistics information.

CDR/EDR

- At the end of each transaction, a record (CDR/EDR) indicating the content accessed and the amount deducted is created in the ICN.

Storage

- The transactions information are stored in EDR's and CDR's for post-processing by any billing system or data warehouse and report generator.

ICN – Rating Engine

Rating of services based on...

- *Differentiated based on volume, duration, time of day, quality of service*
- *Per-click charging*
- *Charging according to minutes of usage for a service*
- *Bill-back to content providers for advertisements*
- *Account crediting, or not charging customers, for errors or retransmitted packets.*

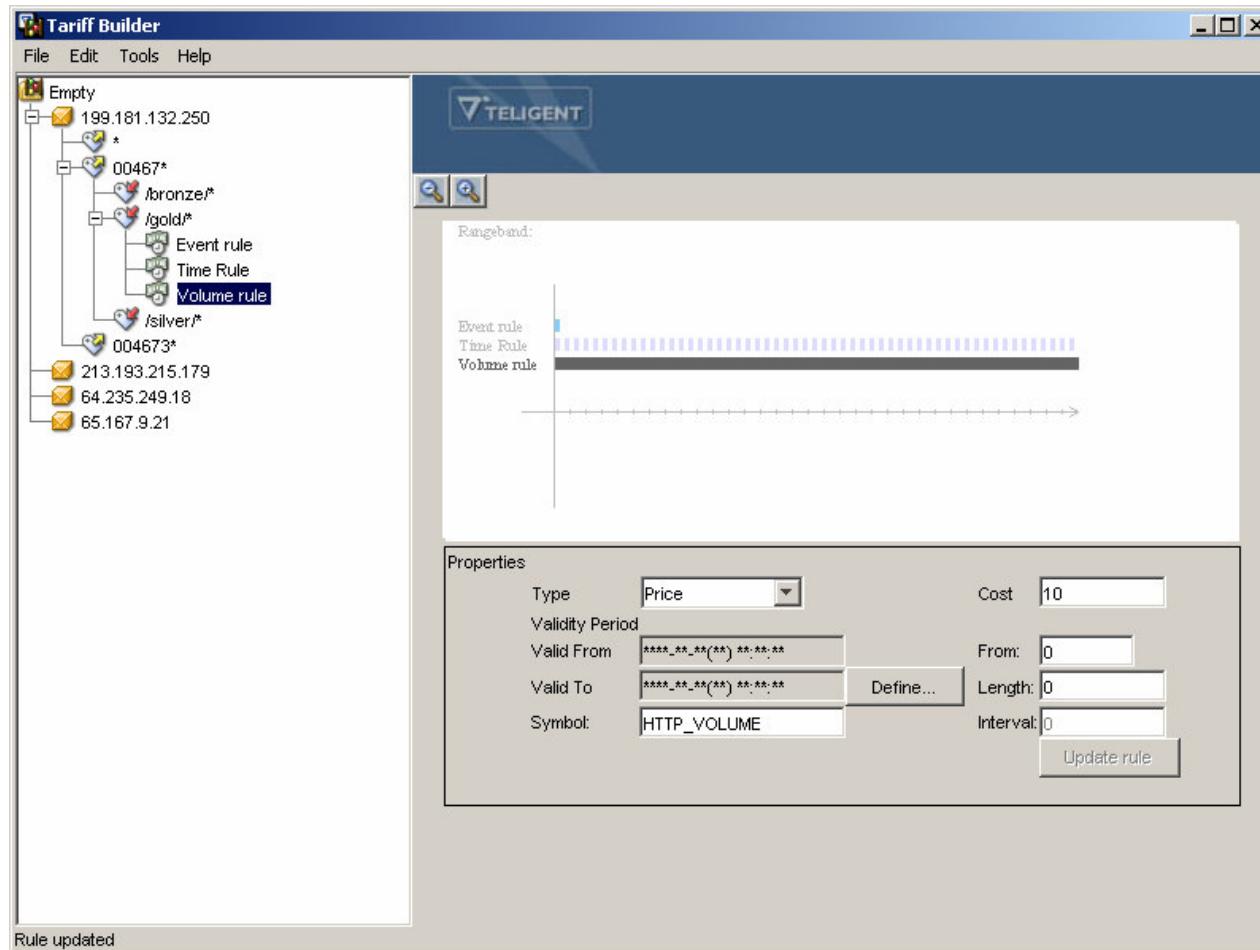
ICN – Rating Examples

<i>Content/Service type</i>	<i>Rating Method</i>
<i>User Self-services</i> <ul style="list-style-type: none"> ▪ <i>Balance inquiry</i> ▪ <i>Account top-up</i> ▪ <i>Service activation</i> ▪ <i>etc.</i> 	<i>Free</i>
<i>News</i> <ul style="list-style-type: none"> ▪ <i>Stock quotes</i> ▪ <i>Sport results</i> ▪ <i>Weather</i> ▪ <i>etc.</i> 	<i>Per Click</i>
<i>Phone Personalisation content</i> <ul style="list-style-type: none"> ▪ <i>Ringtones</i> ▪ <i>Screensavers</i> ▪ <i>Wallpapers</i> ▪ <i>etc.</i> 	<i>Per Download</i>
<i>General Browsing</i>	<i>Per Volume unit</i>
<i>Mobile Games</i>	<i>Per Game</i>
<i>Streaming Media</i> <ul style="list-style-type: none"> ▪ <i>Music</i> ▪ <i>Video clips</i> ▪ <i>etc.</i> 	<i>Per Second</i>

ICN – Rating types supported

- **Event based rating**
 - *Direct debit or when successful completion (refund/cancel reservation possible).*
- **Volume based rating**
 - *Performed on a kilobyte basis.*
 - *Initial reservation made when the traffic is first authorized.*
 - *At regular intervals, debit and extension of the reservation is performed.*
- **Time based rating**
 - *Performed on a second basis.*
 - *Initial reservation made when the traffic is first authorized.*
 - *At regular intervals, debit and extension of the reservation is performed.*
- **Multiple rating**
 - *Event, volume and time based rating can be combined in any way so that the final amount debited to a subscriber is based on one, two or three different rating bases.*

ICN – Tariff Builder tool



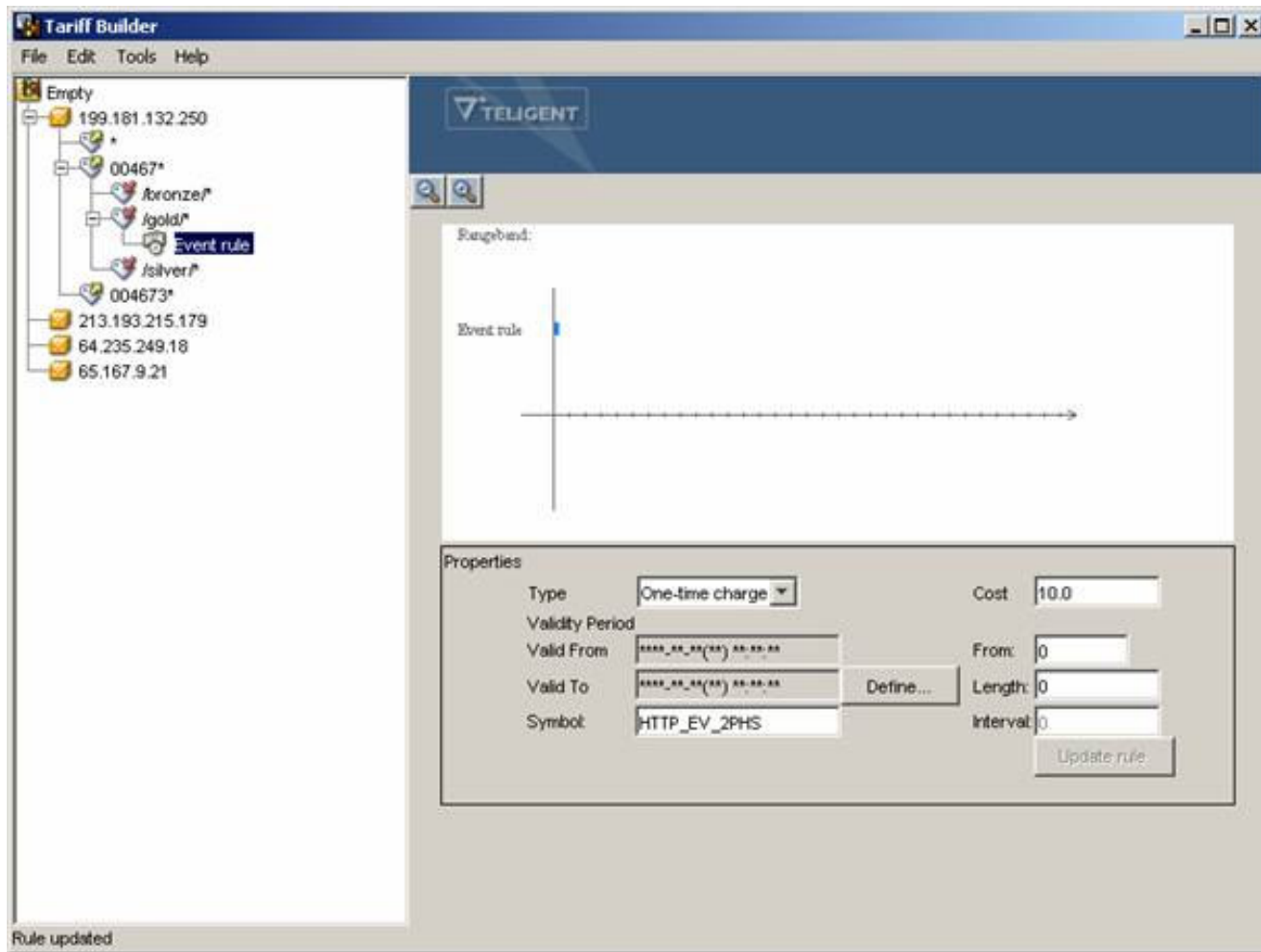
The screenshot shows the 'Tariff Builder' application window. On the left is a tree view of the tariff structure:

- Empty
 - 199.181.132.250
 - 00467*
 - /bronze/*
 - Event rule
 - Time Rule
 - Volume rule
 - /silver/*
 - 004673*
 - 213.193.215.179
 - 64.235.249.18
 - 65.167.9.21

The main area displays a 'Rangeband' graph with three horizontal bars representing 'Event rule', 'Time Rule', and 'Volume rule'. Below the graph is the 'Properties' panel:

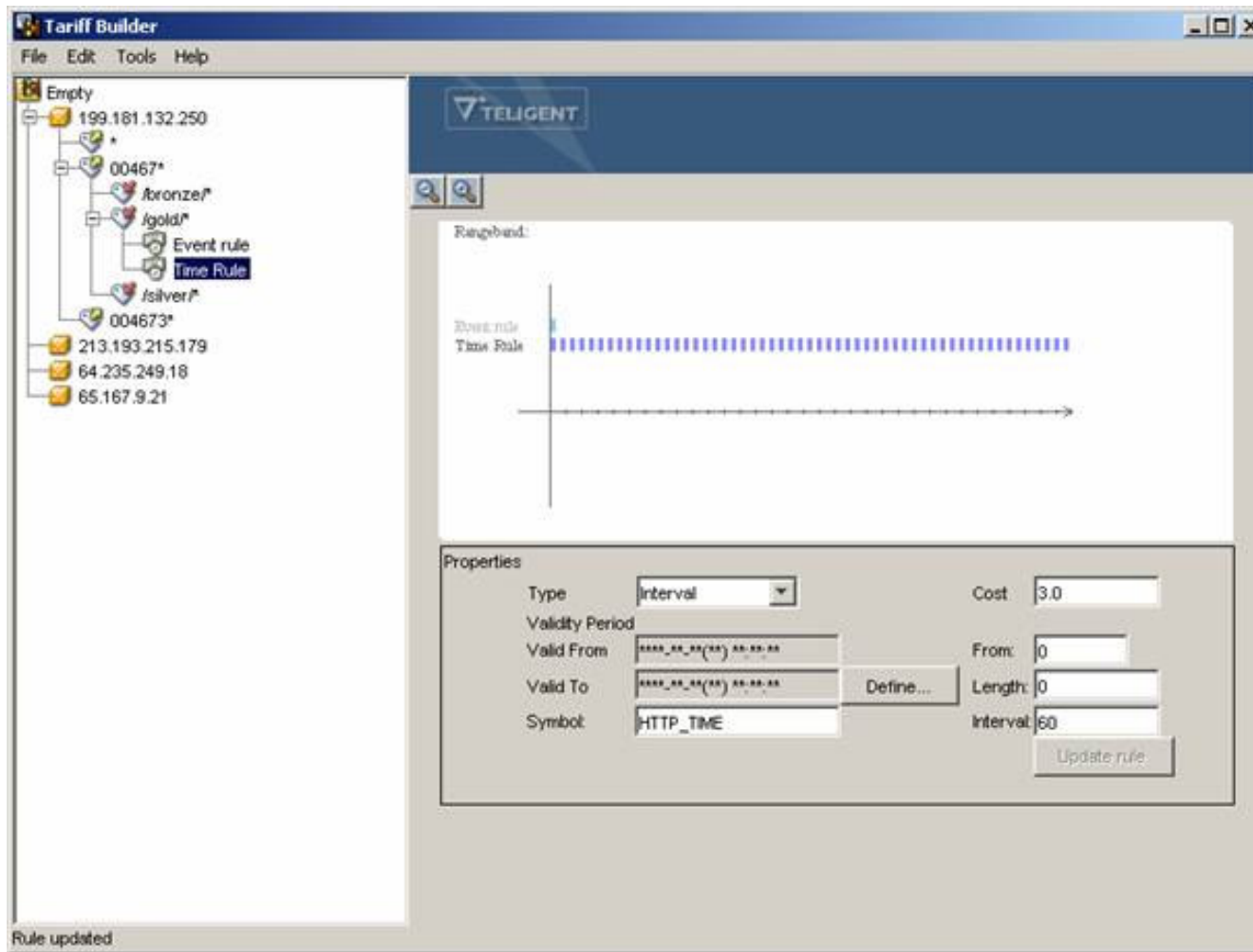
Type	Price	Cost	10
Validity Period		From:	0
Valid From	****_**_**(**) **:**	Length:	0
Valid To	****_**_**(**) **:**	Interval:	0
Symbol:	HTTP_VOLUME	Update rule	

At the bottom left of the window, a status bar indicates 'Rule updated'.



Event Based Rule example;

- charge 10 units for all HTTP downloads
- user with MSISDN 00467*
- content from 199.181.132.250, URL starts with /gold/*



The screenshot shows the 'Tariff Builder' application window. On the left is a tree view with the following structure:

- Empty
 - 199.181.132.250
 - 00467*
 - foronze*
 - lgold*
 - Event rule
 - Time Rule
 - lsilver*
 - 004673*
 - 213.193.215.179
 - 64.235.249.18
 - 65.167.9.21

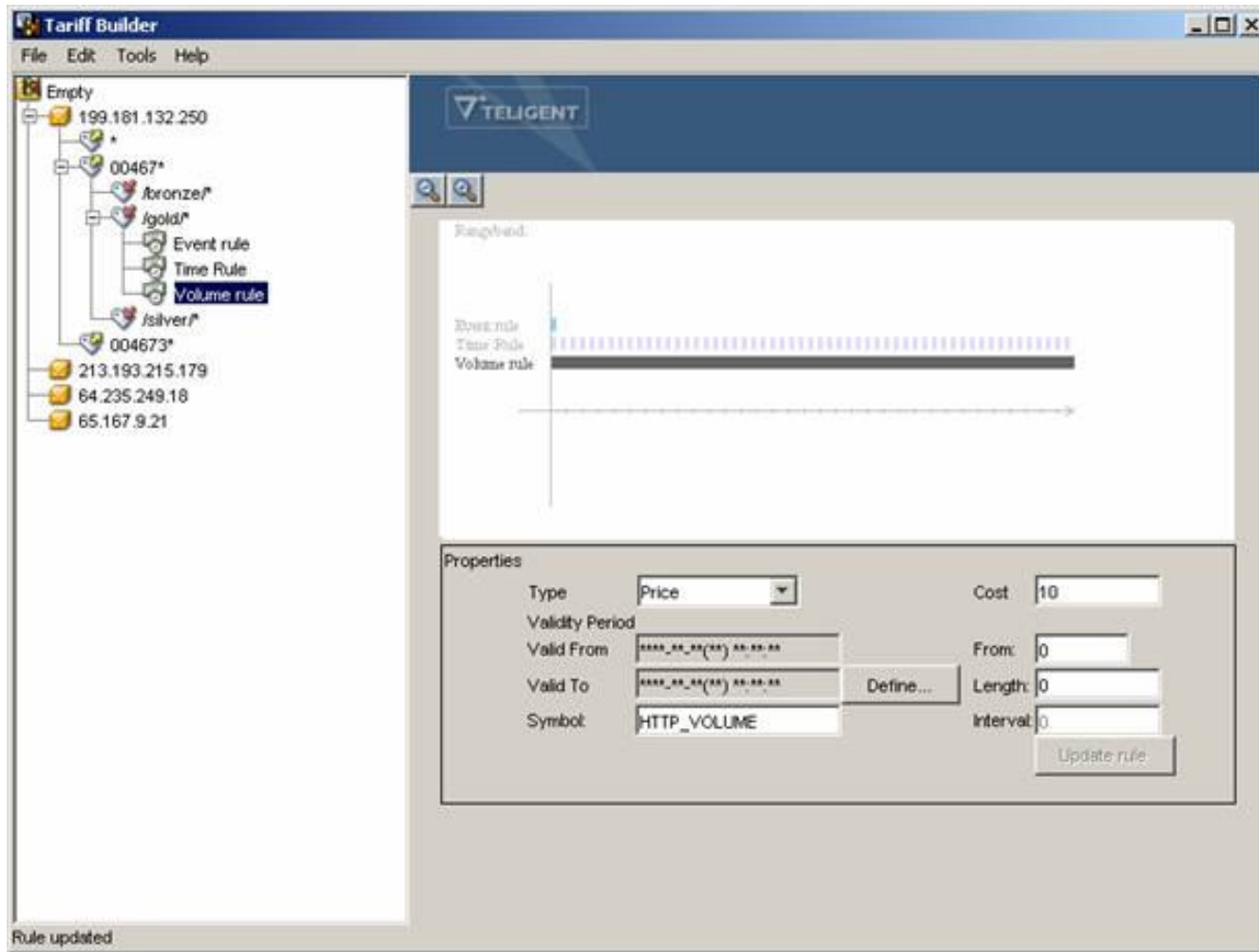
The main area on the right contains a graph titled 'Rangebind:' with a vertical axis labeled 'Event rule' and 'Time Rule'. Below the graph is a 'Properties' panel with the following fields:

- Type: Interval
- Cost: 3.0
- Validity Period:
 - Valid From: [Date field]
 - Valid To: [Date field]
 - Define... button
- Symbol: HTTP_TIME
- From: 0
- Length: 0
- Interval: 60
- Update rule button

A status bar at the bottom left of the window displays the text 'Rule updated'.

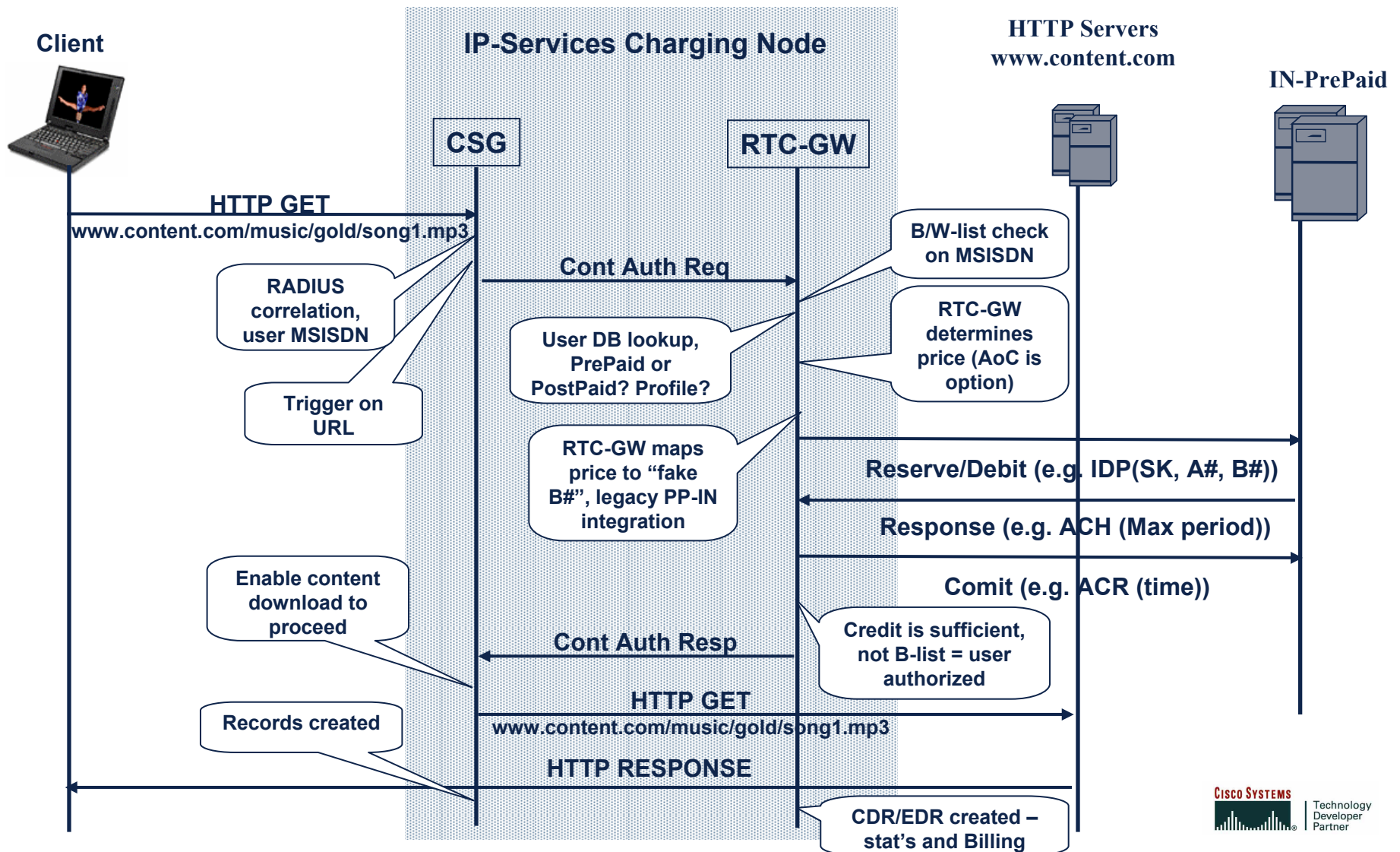
Both event and time based rule example:

- dual rating
- another 3 units charged every 60 seconds



Volume based HTTP rule added;
- charged 10 units every kilobyte.
- triple rating.

ICN – Content download, example (prepaid)



ICN – Provisioning, Sample Screenshots

The screenshot displays the ICN provisioning interface with the following components:

- Properties for Content provider:**
 - Left sidebar: Revenue Sharing Report, SMPP report, MM7 report, JKSERVICE, Service Access Numbers, Charged Party Rules, Blocked Numbers, Allowed Numbers, Loyalty Scheme.
 - Content Provider form:
 - Name: JKCP
 - Use alias:
 - Revenue sharing report:
 - Contact name: Johan Krafft
 - Contact phone: 0733117036
 - Contact email: johan.krafft@teligent.se
 - Contact address 1, 2, 3: (empty)
- GPRS Service Properties -**
 - General tab:
 - Name: GPRSService
 - Tariff plan: GPRSService
 - Type of service: GPRS
 - Rating type: GPRS volume
 - Rate quality of service:
 - Max postpaid interval: 86400 seconds
 - Max postpaid volume: 100000 KIB
 - Prepaid interval: 300 seconds
 - Prepaid volume: 100 MB
- ADMINUSER**
 - Operations | Properties tab
 - Table of properties and permissions:

Property	Read and write	Read only	No access
firstName	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
surName	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
loginName	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
password	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
blocked	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
accessProfile	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
city	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
country	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
email	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
phone	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
street1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
street2	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
zip	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

ICN – Advantages with our solution

- **Covers both Prepaid & Postpaid billing within mobile networks from 2.5G through 3G**
- **Vendor Independent - easily interfaced with all incumbent voice prepaid and billing systems**
(to date CAP2, CAP3, INAP CS1, CS1+, SINAP5m & Diameter / Ericsson, Alcatel, Siemens & Huawei)
- **Packaged Solution – requires significantly less integration meaning implementation time is faster**
- **Cost efficient turnkey solution**

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Thank You !



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Id-005163 rev A9





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THANK YOU!



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