Real-time Charging of Mobile Data Services

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IP-Services Charging Node (ICN)

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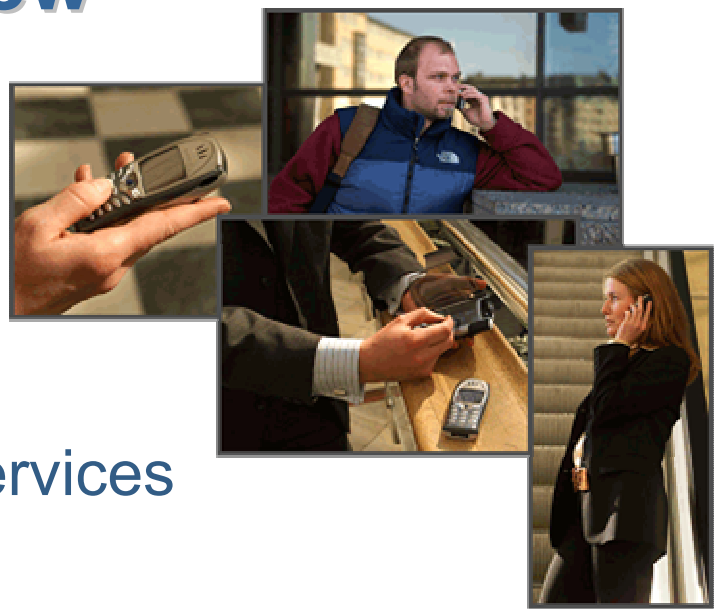
Teligent - company overview



- 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

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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

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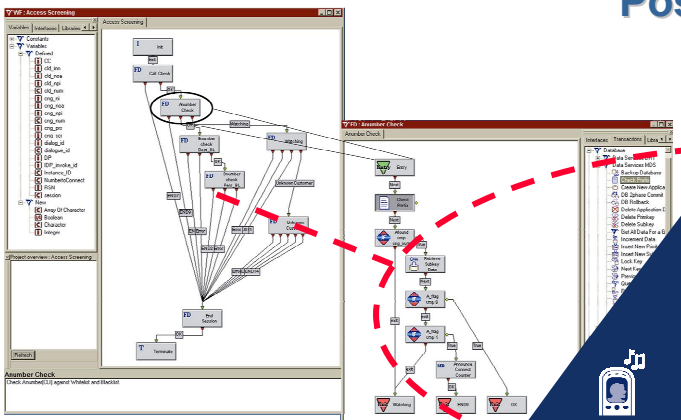
Value Added Services

Positioning / offering



Video

Email

MMS

VoiceMessage

Applications software

Teligent P90/E Platform

Teligent Application Builder

SCP

GW

MSDP

Media-server

IP

Service Network Elements

Core Infrastructure

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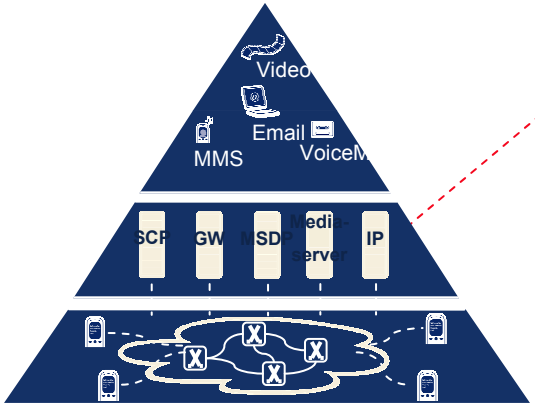
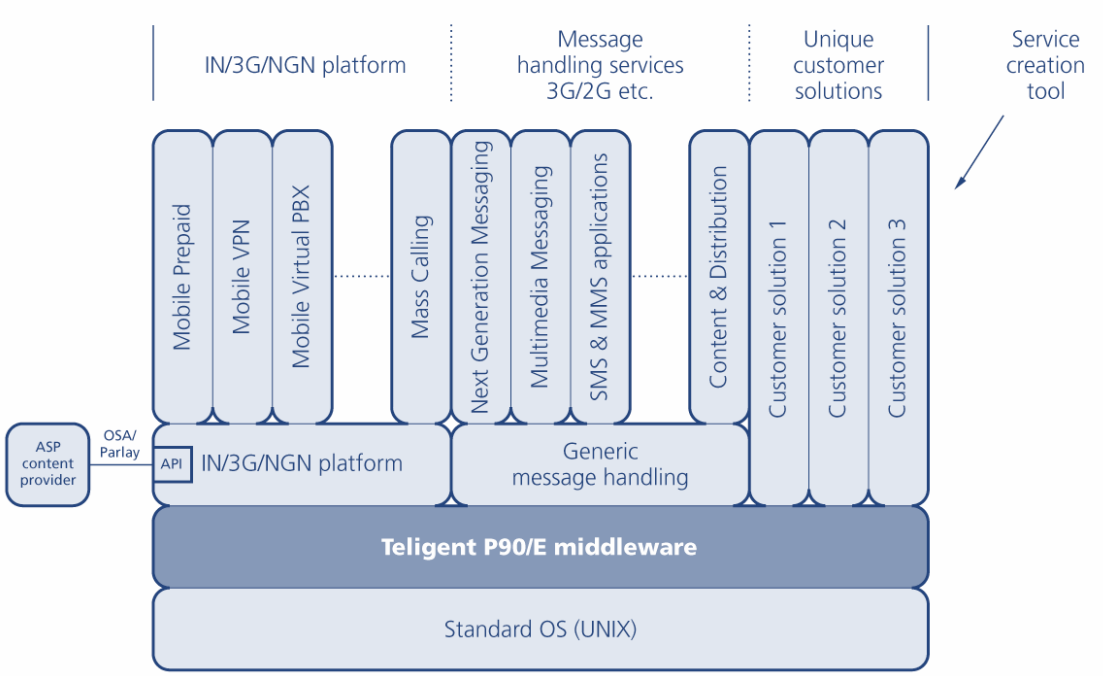
Teligent P90/E platform

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





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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)

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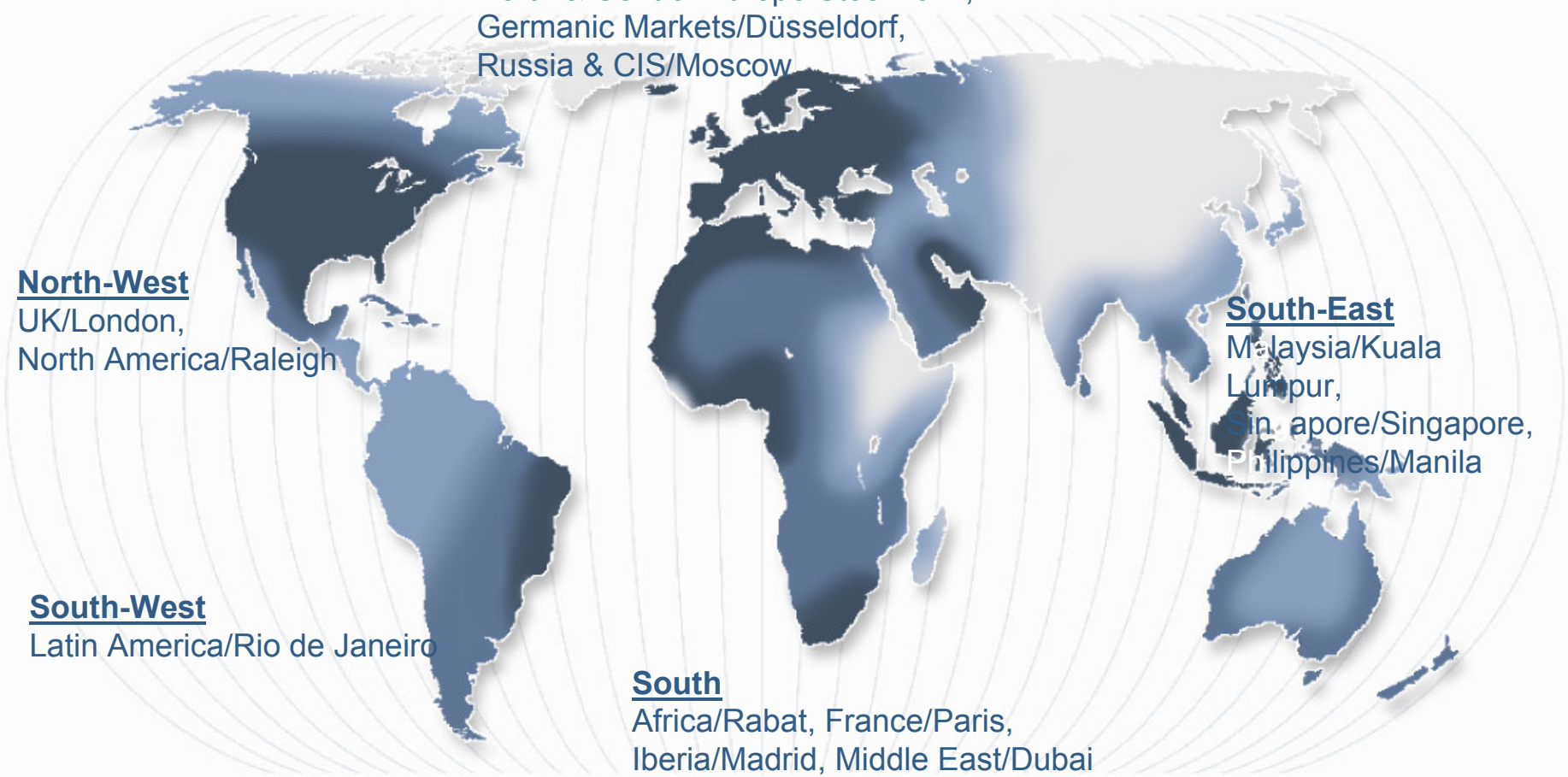
Platform references

> 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

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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*

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The Mobile Data Service Domain

100+ Service Providers
1000+ Services

SMS Services	MMS Services	WAP Services	GPRS Services	Streaming Services
▪ News ▪ Stock watch ▪ Sports ▪ Horoscopes ▪ Quizzes ▪ Logos ▪ Banking	▪ Pictures ▪ Sounds ▪ Animations ▪ Ringtones ▪ Adult content ▪ Etc.	▪ News ▪ Sports ▪ Betting ▪ Content downloads ▪ Games ▪ Banking	▪ Web browsing ▪ Web mail ▪ Banking ▪ Location based services	▪ Live Video ▪ Live Audio ▪ Video on demand ▪ Audio on demand ▪ Etc.

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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

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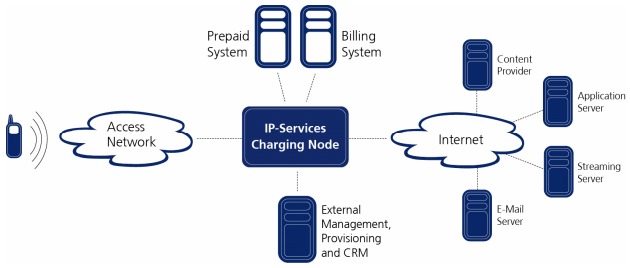
ICN – Product Value Benefits

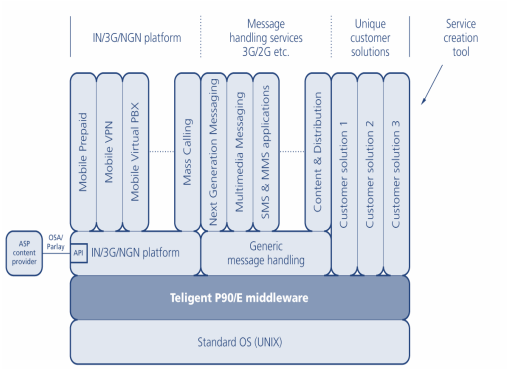
- *A **packaged** CSG **turnkey** solution*
- *Ideal turnkey solution for Wireless Operators seeking to apply advanced & flexible charging methods for mobile data traffic*
- *Allows Operators to be able to charge their customers not only based on data volume & time, but on events and the actual value 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 chargable event as well as the integration to any legacy Prepaid billing and CRM system*

Cisco® 7600





Teligent P90/E

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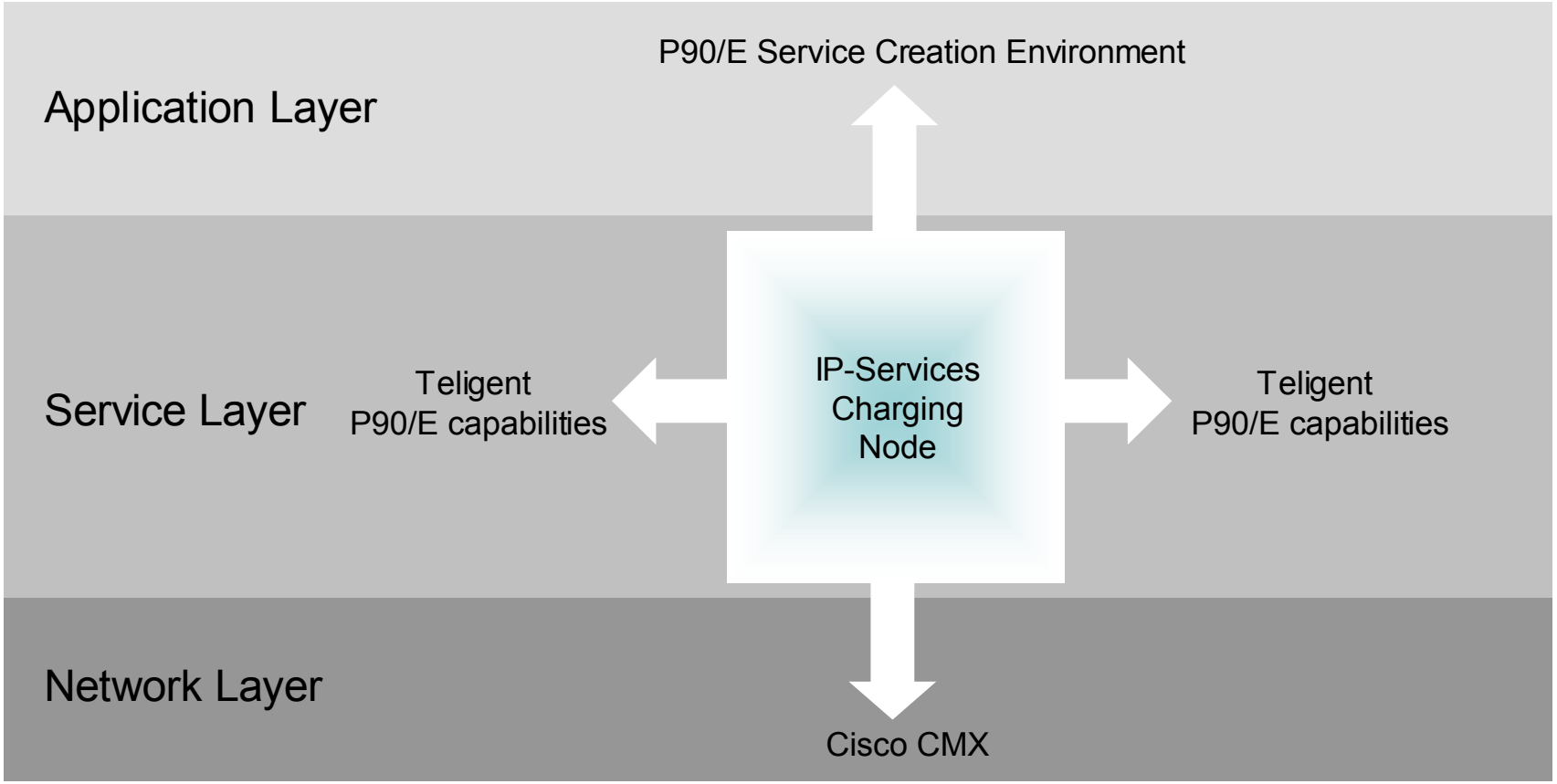
ICN – The Bigger Picture



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IP-Services Charging Node

Technical & Features

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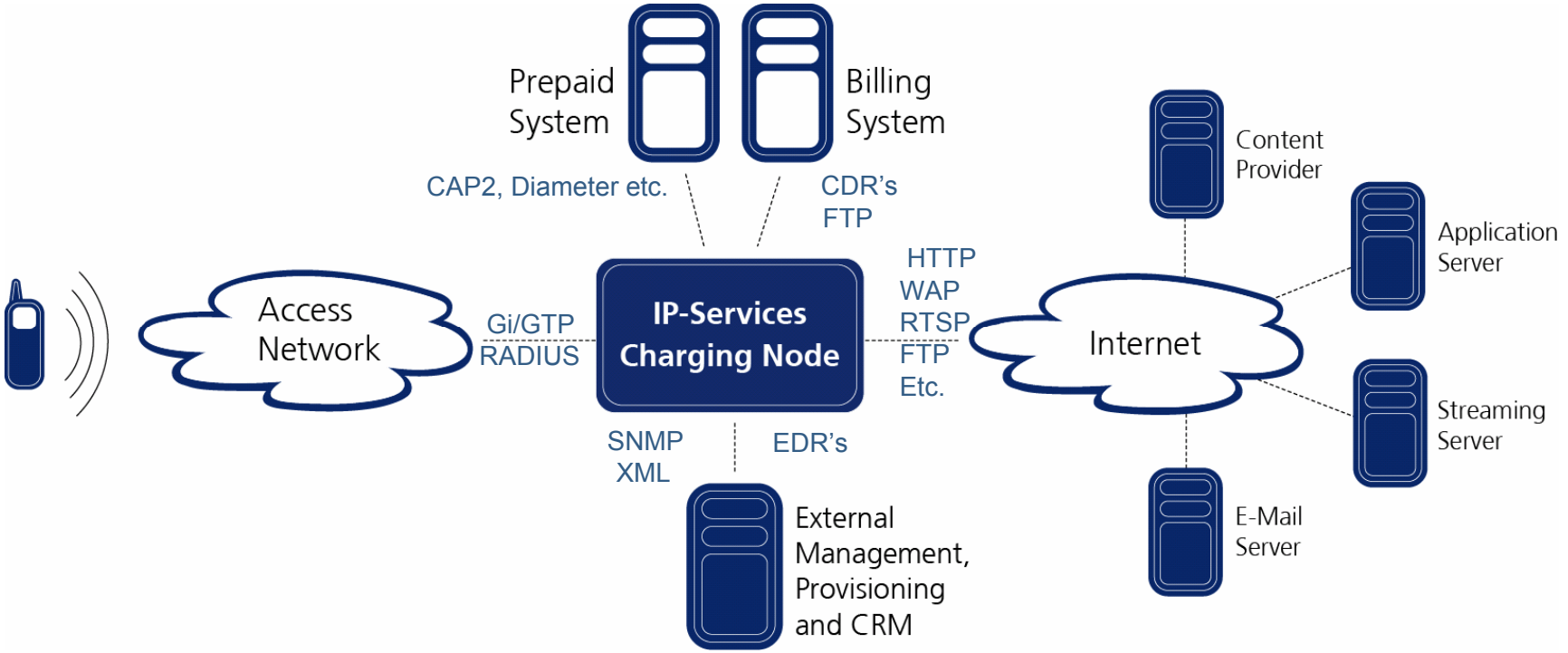
ICN – Network Placement

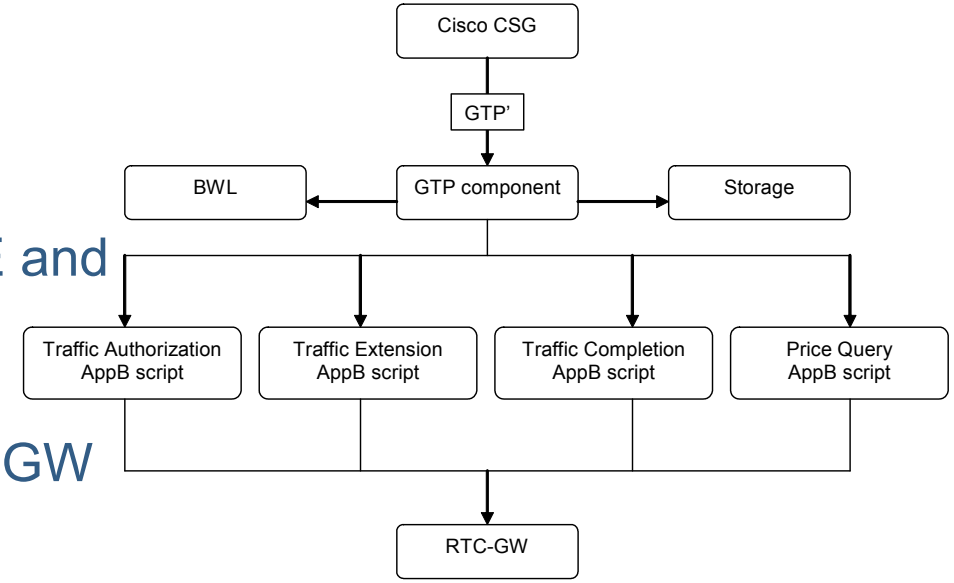


ICN – Main benefits

- **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 continous 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.

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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

Content/Service type	*Rating Method*
User Self-services ▪*Balance inquiry* ▪*Account top-up* ▪*Service activation* ▪*etc.*	*Free*
News ▪*Stock quotes* ▪*Sport results* ▪*Weather* ▪*etc.*	*Per Click*
Phone Personalisation content ▪*Ringtones* ▪*Screensavers* ▪*Wallpapers* ▪*etc.*	*Per Download*
General Browsing	*Per Volume unit*
Mobile Games	*Per Game*
Streaming Media ▪*Music* ▪*Video clips* ▪*etc.*	*Per Second*

ICN – Rating types supported

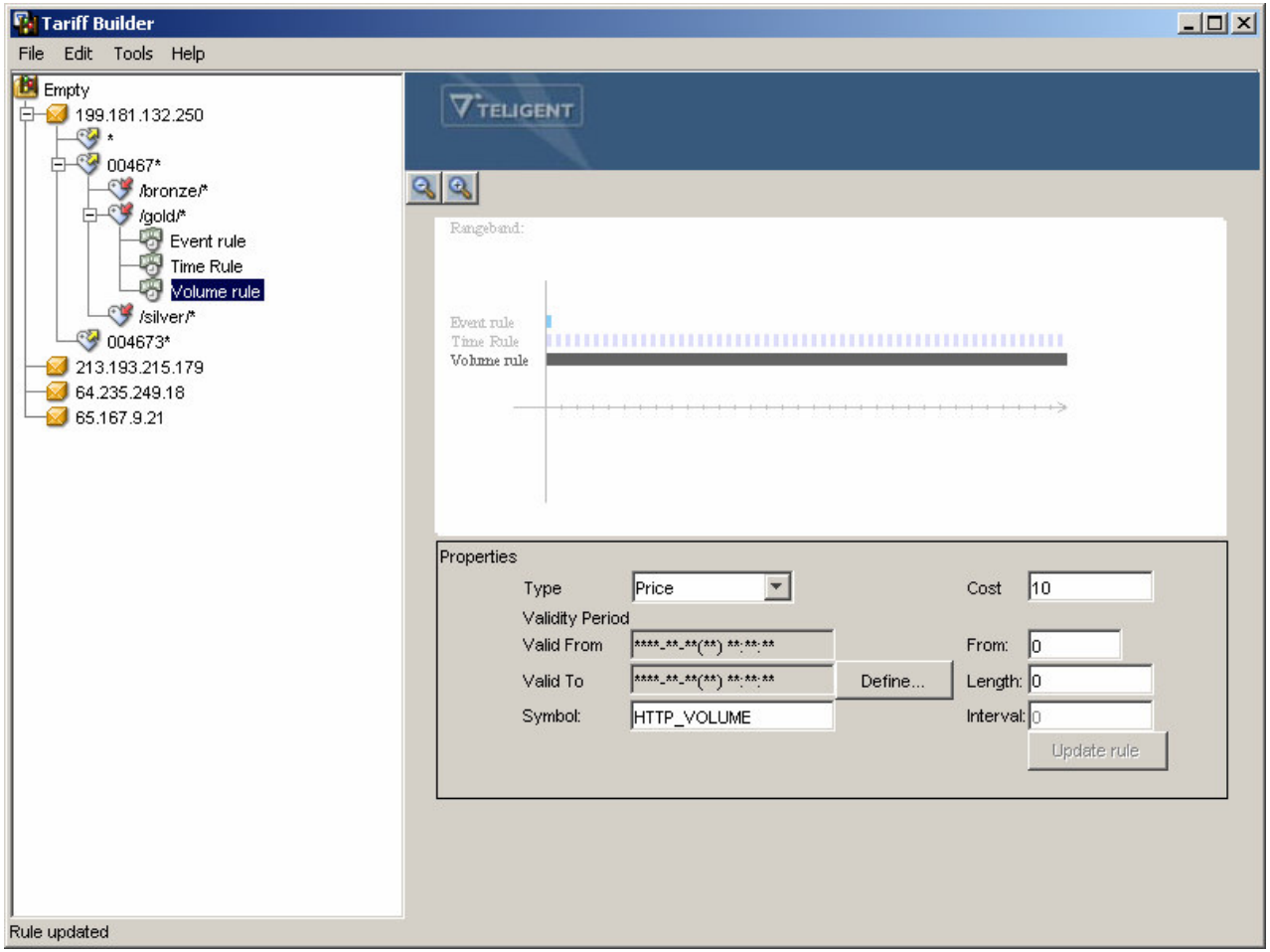
- **Event based rating**
  - *Direct debit or when succesful completion (refund/cancel reservation possible).*

- **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



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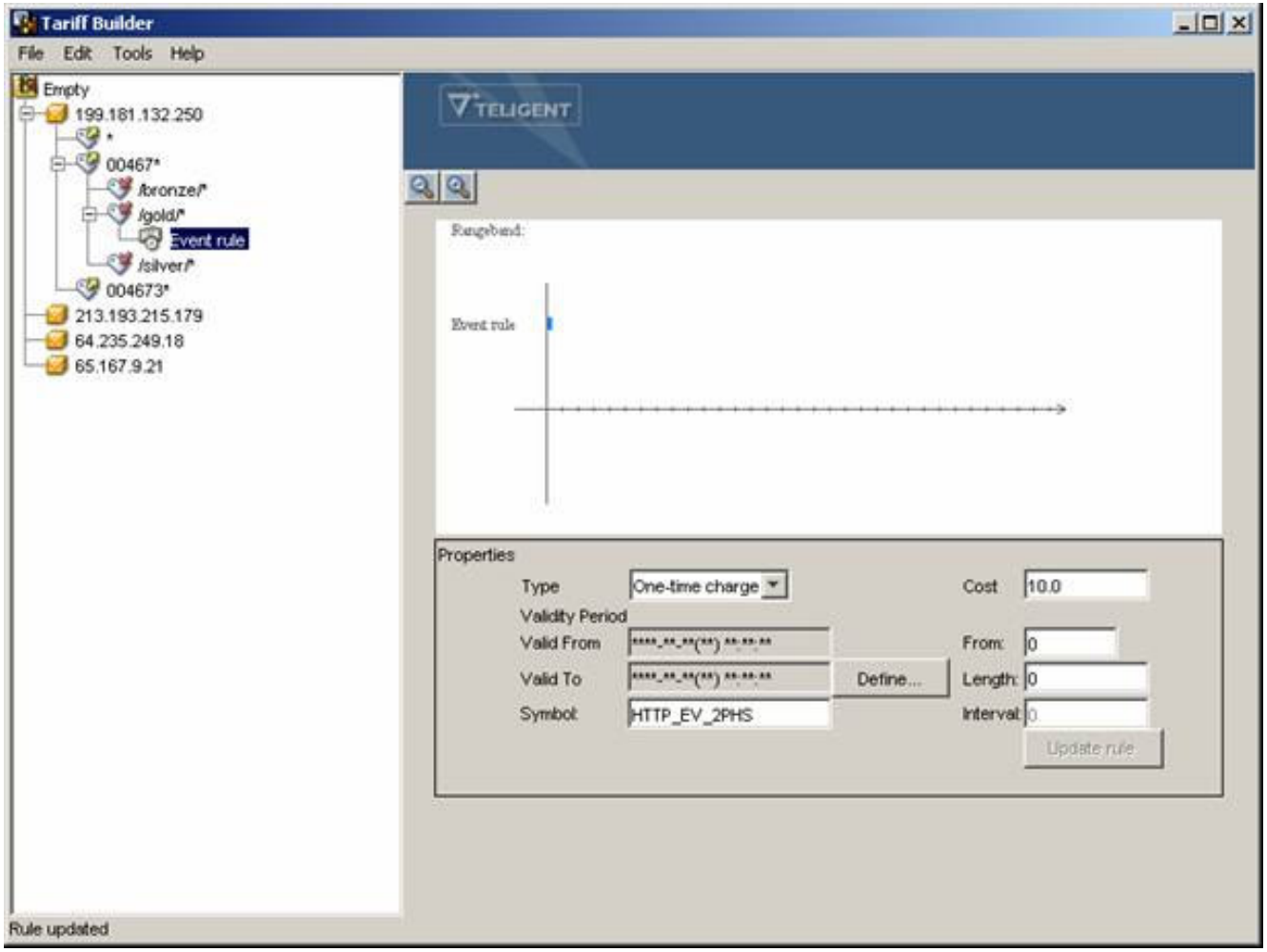

Event Based Rule example;

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

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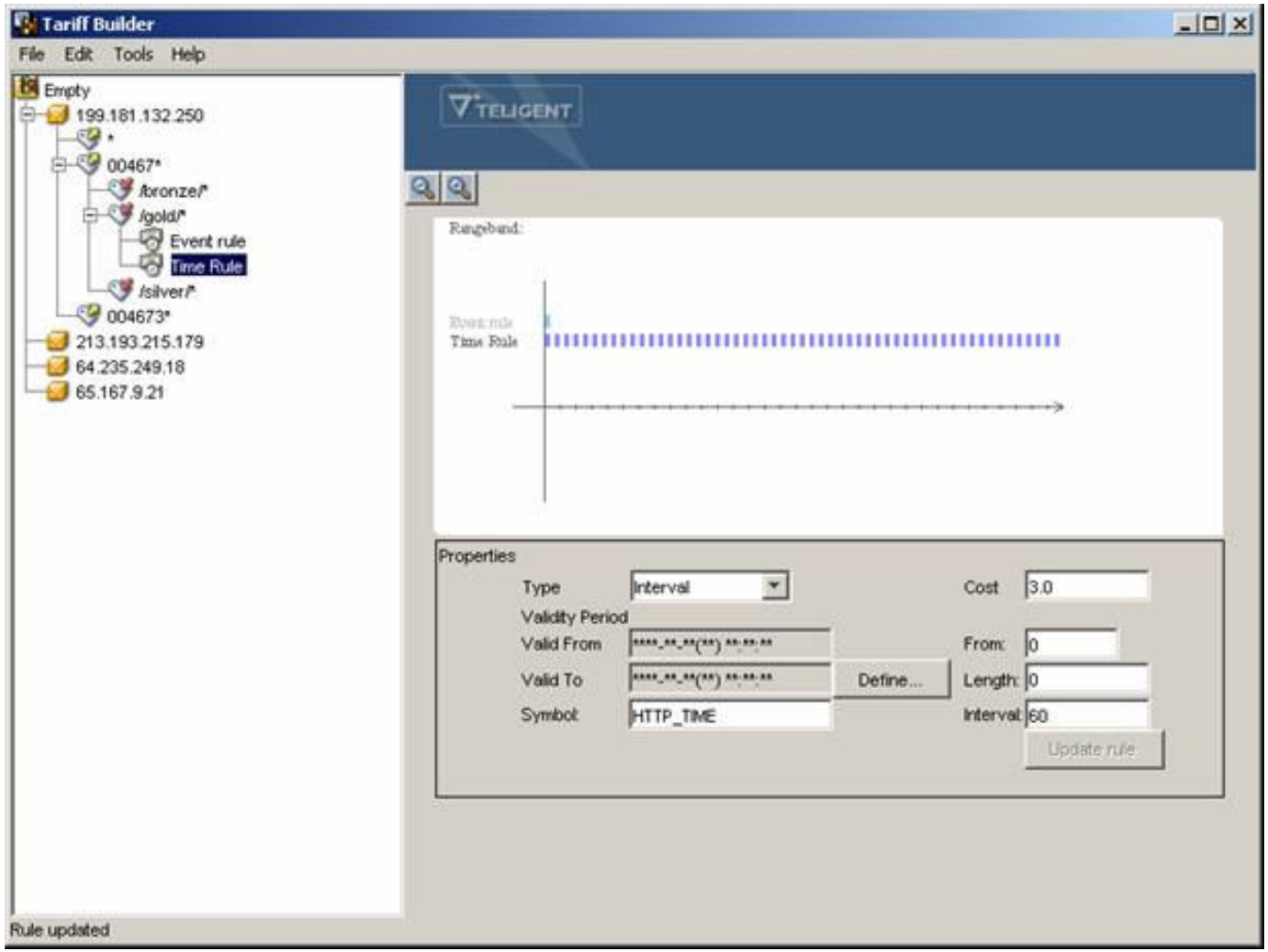
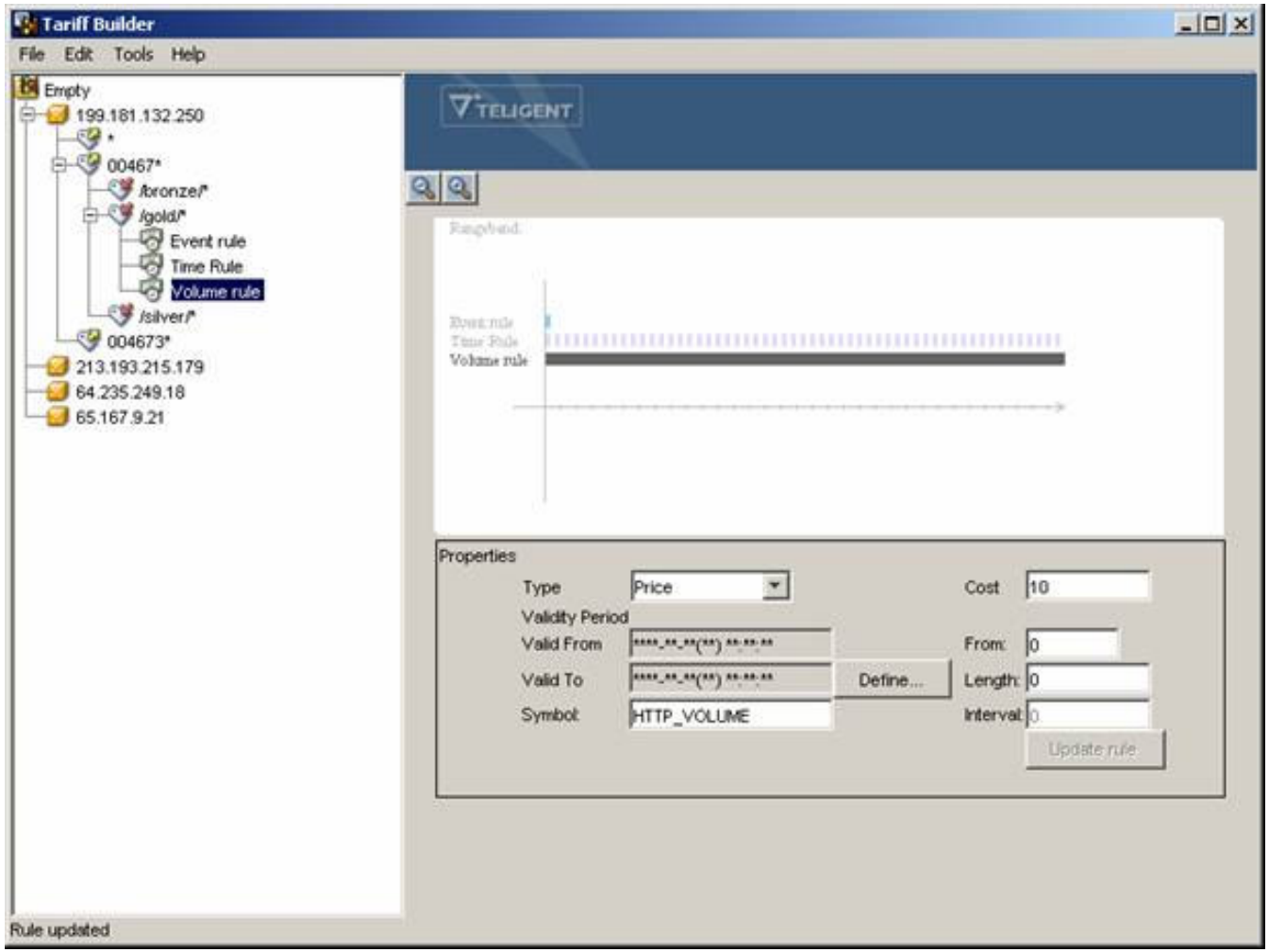


Both event and time based rule example:
- dual rating
- another 3 units charged every 60 seconds



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

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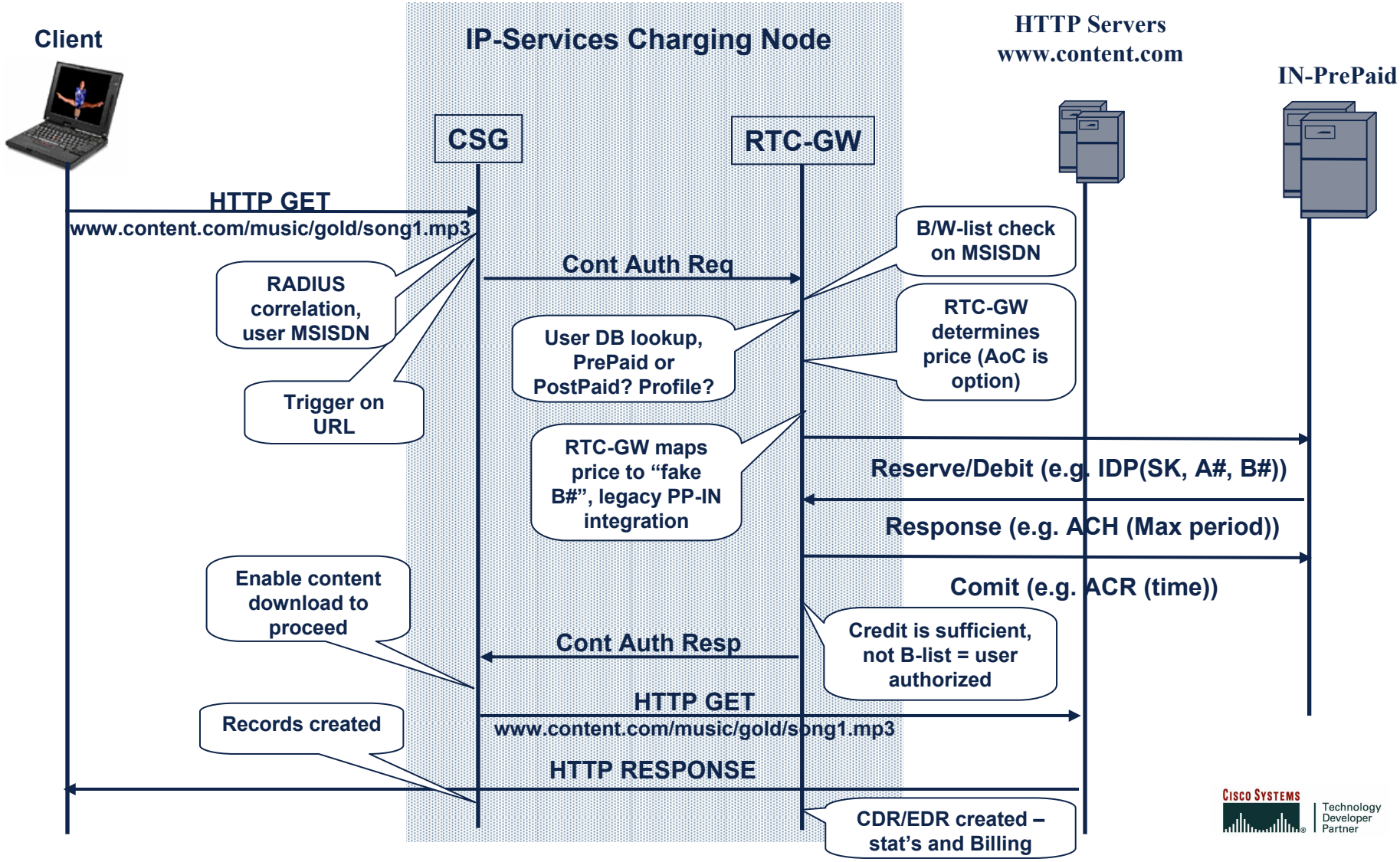
ICN – Content download, example (prepaid)



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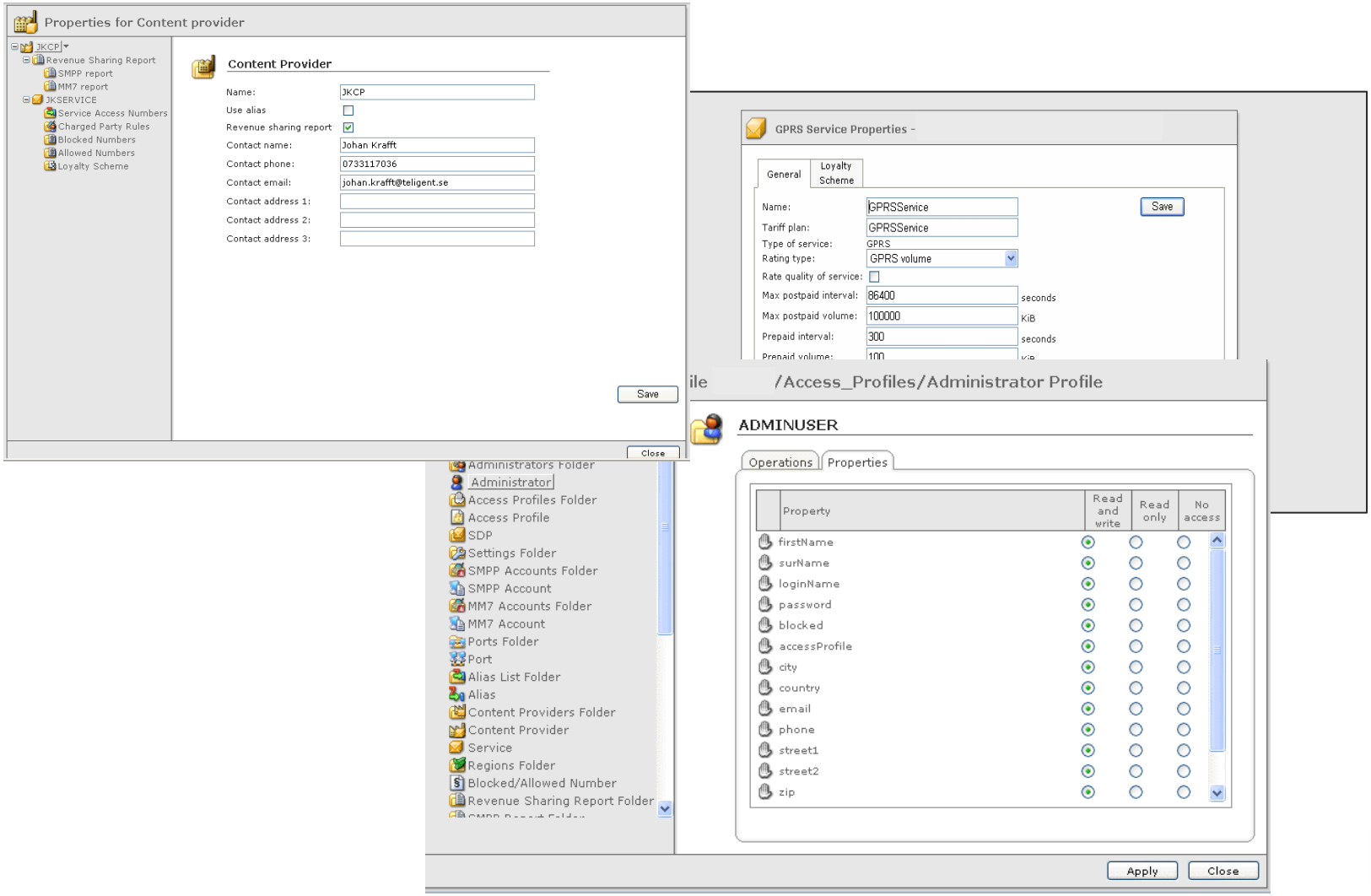
ICN – Provisioning, Sample Screenshots



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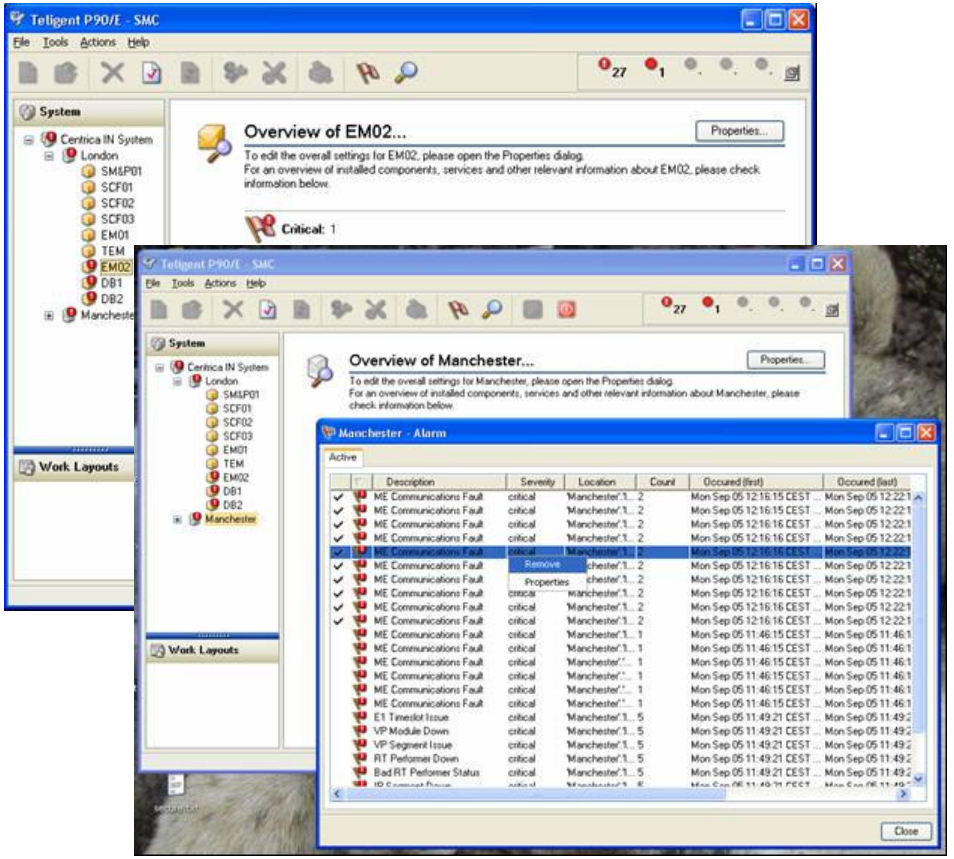
ICN – NMC integration

- Teligent-EM/System Management Console
- SNMP v2c for integration with NMC
- Teligent MIB provided



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 & Huaweii)

- ***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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THANK YOU!