INTRACOM TELECOM's Approach on Policy Management & Control

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"All applications (and, up to a point, all subscribers) should be treated equally, with no discrimination in the bandwidth supplied, and no applications (apart from security threats) blocked. "

▶ Net neutrality helped the Internet to bloom with thousands of applications

▶ As there is sufficient bandwidth, there is no need to apply application-specific controls.

A key problem for the operator is how to reconcile the conflict between people's virtually limitless desire for OTT applications and the scarcity of network bandwidth that these applications require.


Top 1% => 30+% of Traffic
Top 10% => 80+% of Traffic

http://www.iijlab.net/~kjc/tmp/rbb-20060211.pdf
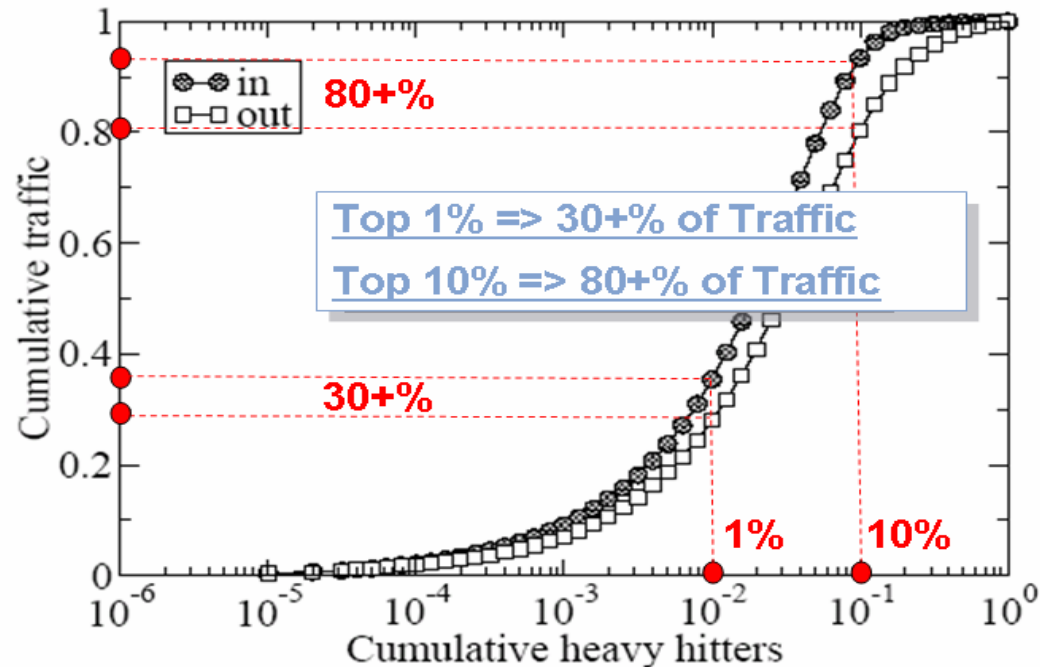
▶ **A resource is scarce if the demand at zero price would exceed the available supply.**

Policy Management & Control = Network Neutrality

The application of Fair Usage policies ensures a more equitable customer experience by:

▶ Identifying users that create high volumes of usage to minimize potential
▶ network congestion issues
▶ Measuring and tracking subscriber data usage against limits and sending
▶ notifications based on current usage
▶ Dynamically enforcing service contract terms, such as warnings, throttling,
▶ suspension, removal of service, or charging for additional usage

Hourly Total Bandwidth (Kbits/Sec) per Service
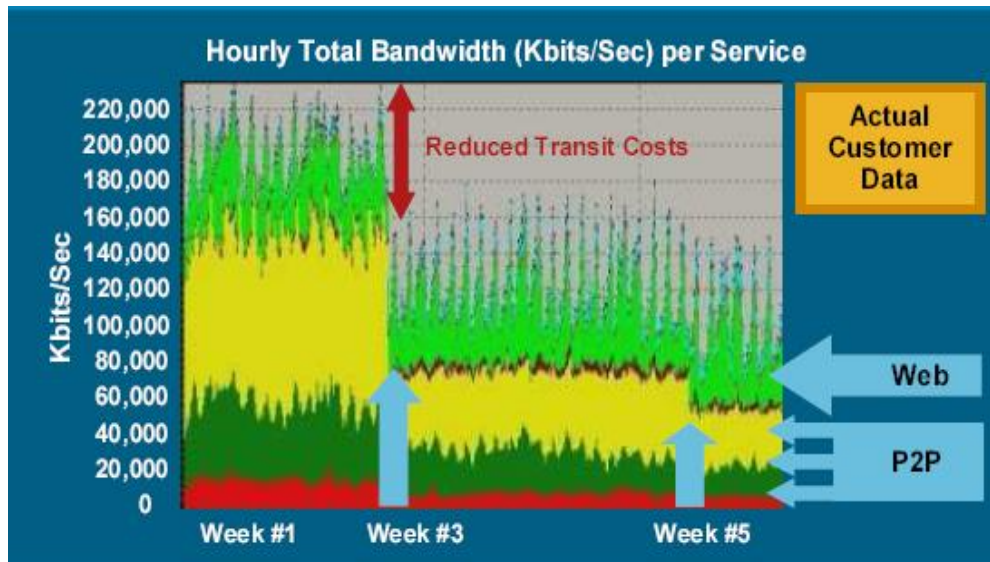
Usage	Less Than 2.8GB	Less Than 4.2GB	Less Than 5.6GB	Over 5.6GB
E-mail + WWW	No Limit	No Limit	256 kbps	256 kbps
Audio/Video Streaming	No Limit	128 kbps	65 kbps	48 kbps
P2P	48kbps	28 kbps	28 kbps	16 kbps

User Quota Based on 7-Day Timeframe

▶ **Provide an effective mechanism to help mitigate network congestion during peak periods ensuring that customers receive the level of service they expect.**

Traffic Access & Backhaul Costs

Revenue & Traffic Decoupled

€

Revenues

Time
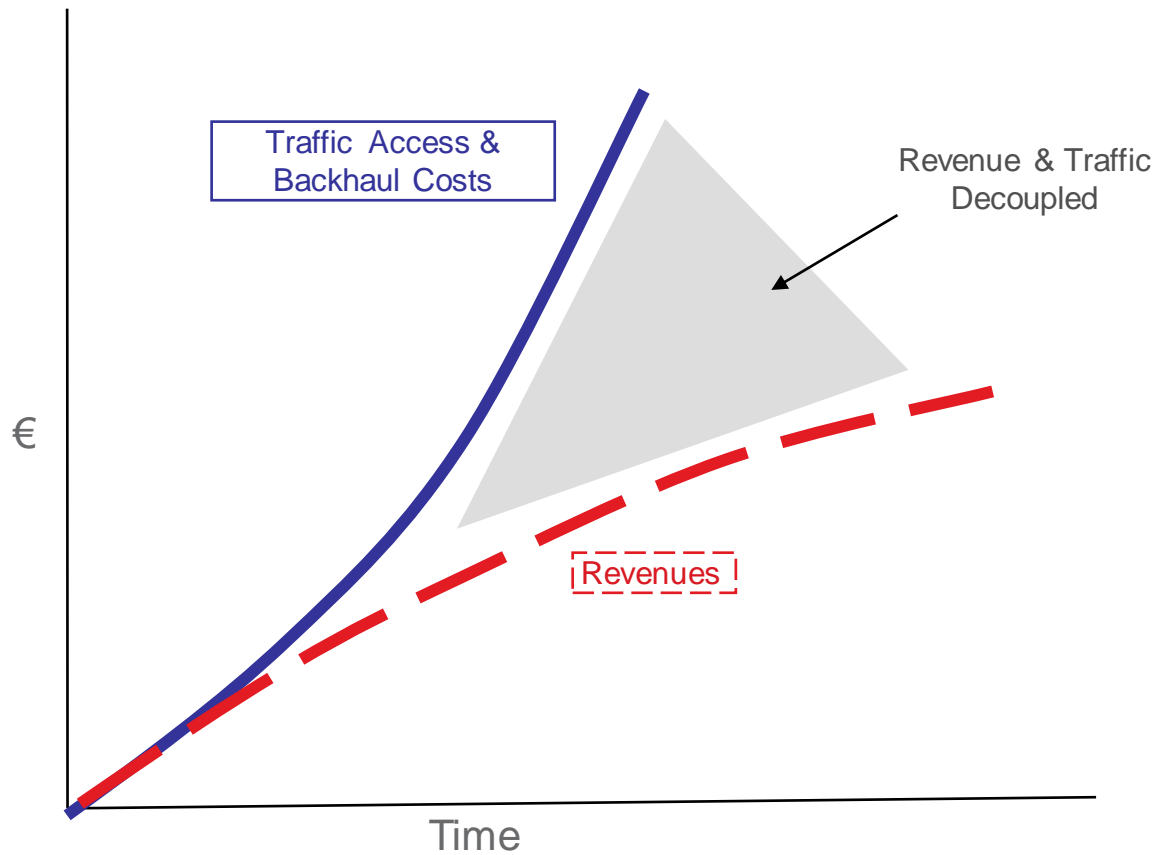
▸ **The Costs vs. Revenues wedge is not anymore maintainable by operators**

How we deal with the problem of scarcity

"Management via network over-provisioning cannot continue indefinitely. We need to be a lot smarter about how we manage resources, and how we handle applications that are harming the network."

▶ What is the best way to do that?

▶ How should we price the Network resources?

▶ What would be the degree of service differentiation and personalization?

▶ Which parameters will influence the equilibrium?

▶ **Policy control provides the tools to manage the scarcity problem**
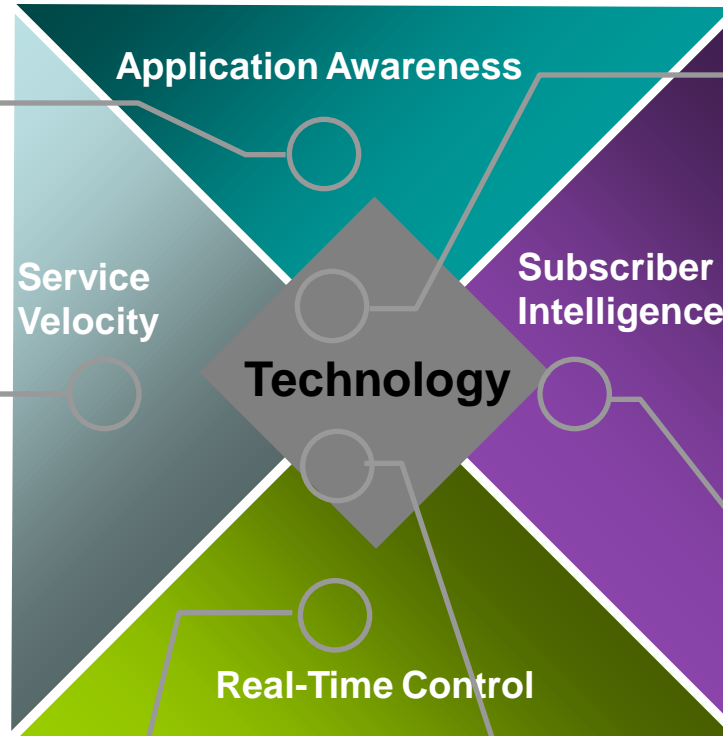
Key Standards Organizations in Policy

ORGANIZATION	MAIN OUTPUTS
3GPP	Release 7 (current) PCRF/PCEF architecture; Release 8 now in preparation
ETSI Tispan	Although Tispan in now integrated into 3GPP, ETSI initially developed a distinctive policy architecture for Tier 1 telcos deploying wireless NGNs
CableLabs	Within PCMM architecture, Policy Server is defined, and CMTS acts as PEP
OMA	PEEM has developed and defined reusable policy mechanisms for OMA enablers such as presence
Broadband Forum	WT-134 Policy Control Framework now under preparation. Well-established TR-069 auto-configuration spec also relevant here.
IETF	Key AAA standards, in particular Diameter; also developed the Common Open Policy Service (COPS) protocol to support policy control on QoS signaling protocols.

Generic Service Control Framework

- Policy Information Model
  - Defines the encoding of policy information and rules
  - Static and Dynamic
- Policy Decision Point (PDP)
  - Decisions based on rules and available information
  - Event + Action => Condition
  - Stateful or Stateless entity
- Policy Enforcement Point (PEP)
  - Policy aware node
  - Can be of multiple nature
  - Enforces the decisions made by the PDP
- Transport protocols
  - Provide the communication between PDPs & PEPs
  - Different protocols per domains
  - Push and Pull Models

```
Application
Function
   ↕
Policy Decision
Point (PDP)
   ↕
Policy
Enforcement
Point (PEP)
```

Cisco Service Control Engine PEP

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Application Awareness

Stateful Deep Packet Inspection: Instead of processing packets as individual events, the SCE fully reconstructs flows up through Layer 7.

Service Velocity

Technology

Subscriber Intelligence

Carrier Class: Designed for carrier-grade deployments requiring:

● **High Performance for Multi-Gigabit and 10 Gigabit Speeds.**

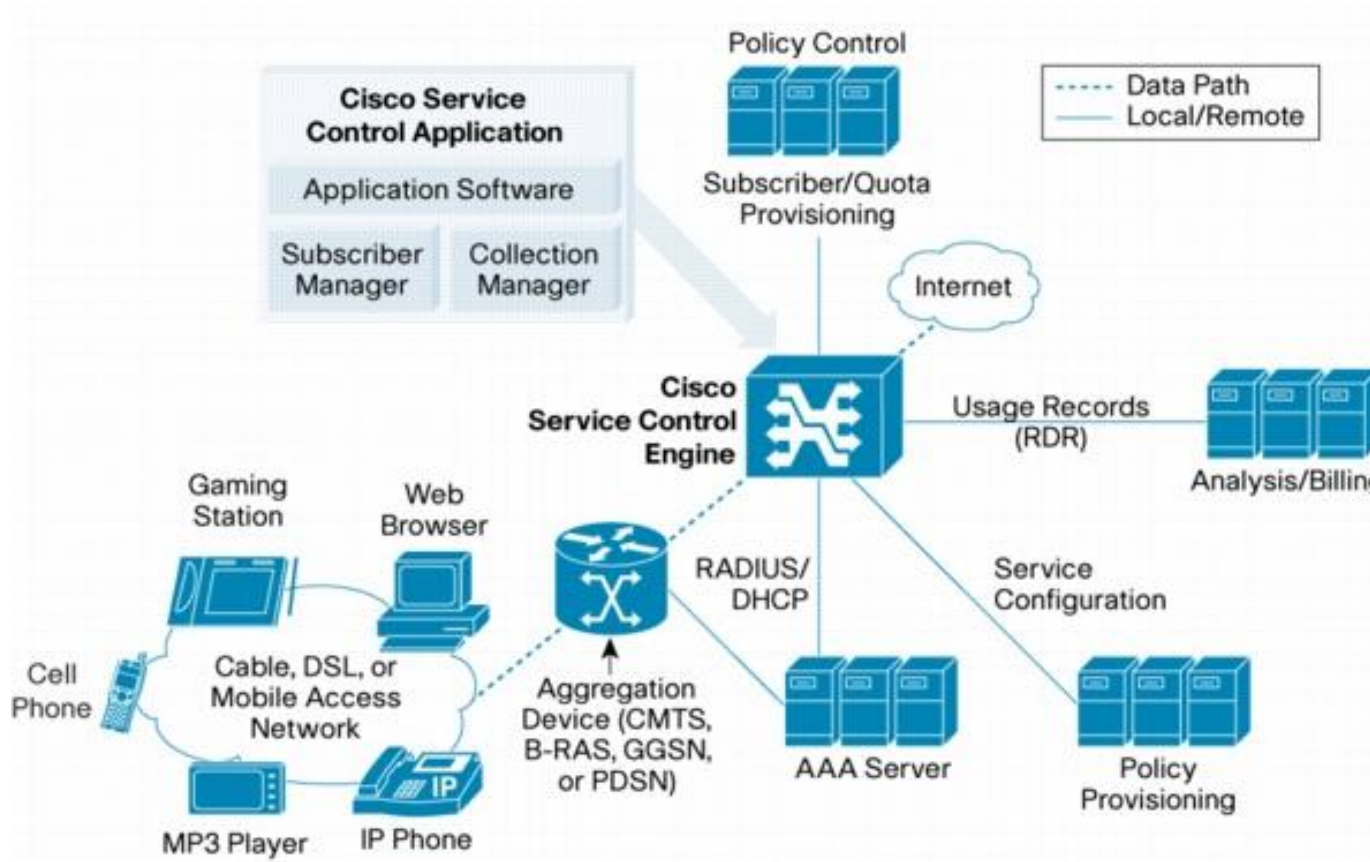● **High Availability & Reliability with stateful failover.**

Subscriber State Management with Per-Subscriber BW Management, and Quotas

Rapidly Programmable: Rapidly re-tasked to support new protocols or applications.

Real-Time Control

Application Session-Level Bandwidth Shaping, Blocking, Redirecting (HTTP, RSTP, SIP)

Extensible Platform & Open Architecture: Based upon a flexible purpose-built platform:

Modular and scalable

HW acceleration

Easy-to-use, with open APIs for seamless OSS Integration

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INTRACOM TELECOM's Policy Control and Management solution – ActionRuler™

▶ ActionRuler™ is a real time integration platform tying together subscribers, AAA, OSS/BSS and the network

▶ ActionRuler™ consists of two basic components:

- Policy Charging and Rules
- Deep Packet Inspection Equipment (Cisco SCE)

▶ ActionRuler™ can be integrated with other 3rd party components:

- Web Content Optimization & Compression Equipment
- Multimedia Content Compression Equipment
- VAS Application Servers
- Content Cache

▶ **DPI works on network traffic & sessions as a whole**

▶ **Policy Charging & Control personalizes QoS to each individual subscriber**

Why ActionRuler™

▶ Growing demand for bandwidth-intensive services

    ▪ Spending on network capacity upgrades.

▶ Usage of IP-based applications exploded

   ▪ Information

    ▪ Communication

    ▪ Entertainment

▶ Internet users and content providers are becoming very sophisticated and demanding

    ▪ Two sided revenue opportunities

▶ Need for Personalized QoS and Services

    ▪ Differentiating factor for new customers acquisition and churn reduction

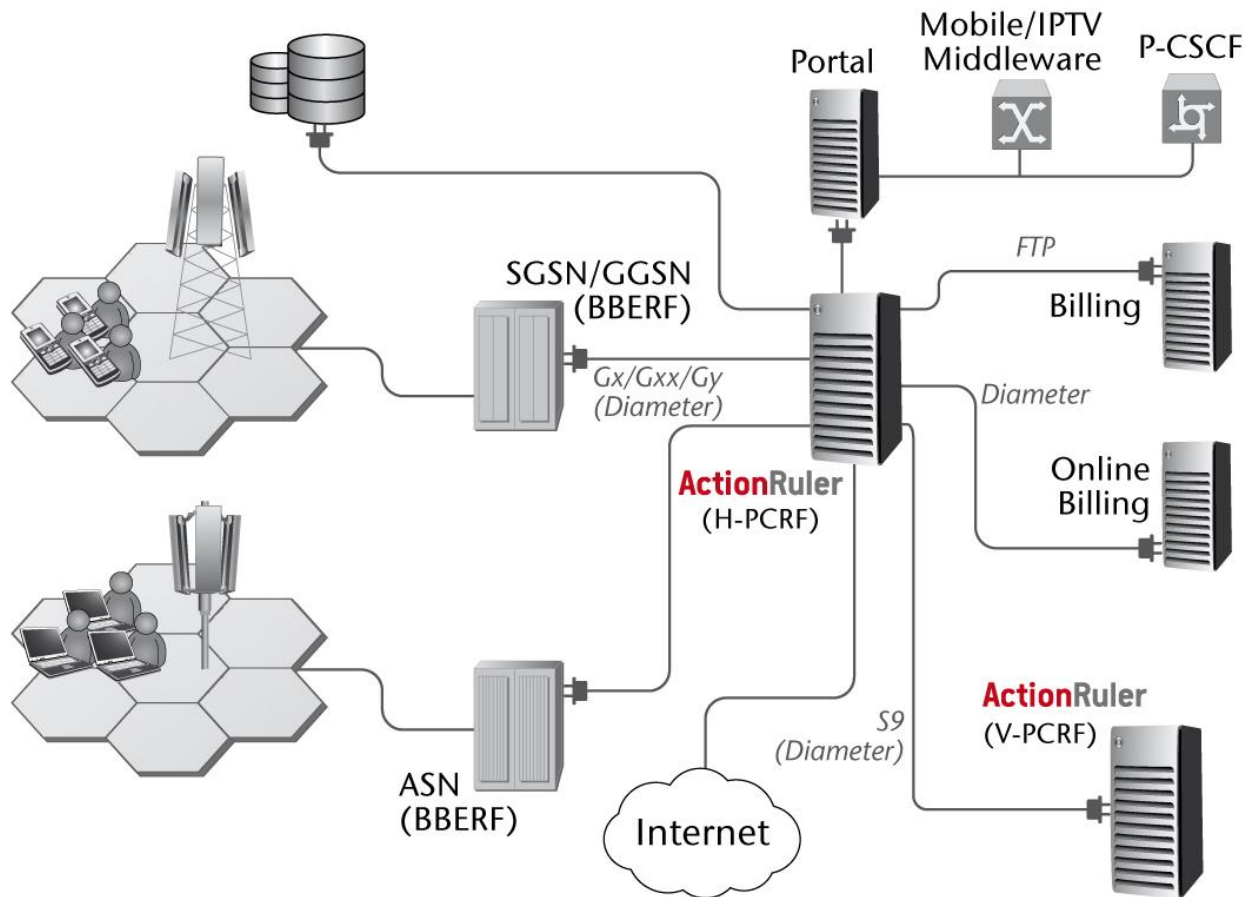▶ **Policy Management is emerging as a core network component**

ActionRuler™ – Network Diagram / ISP Deployment
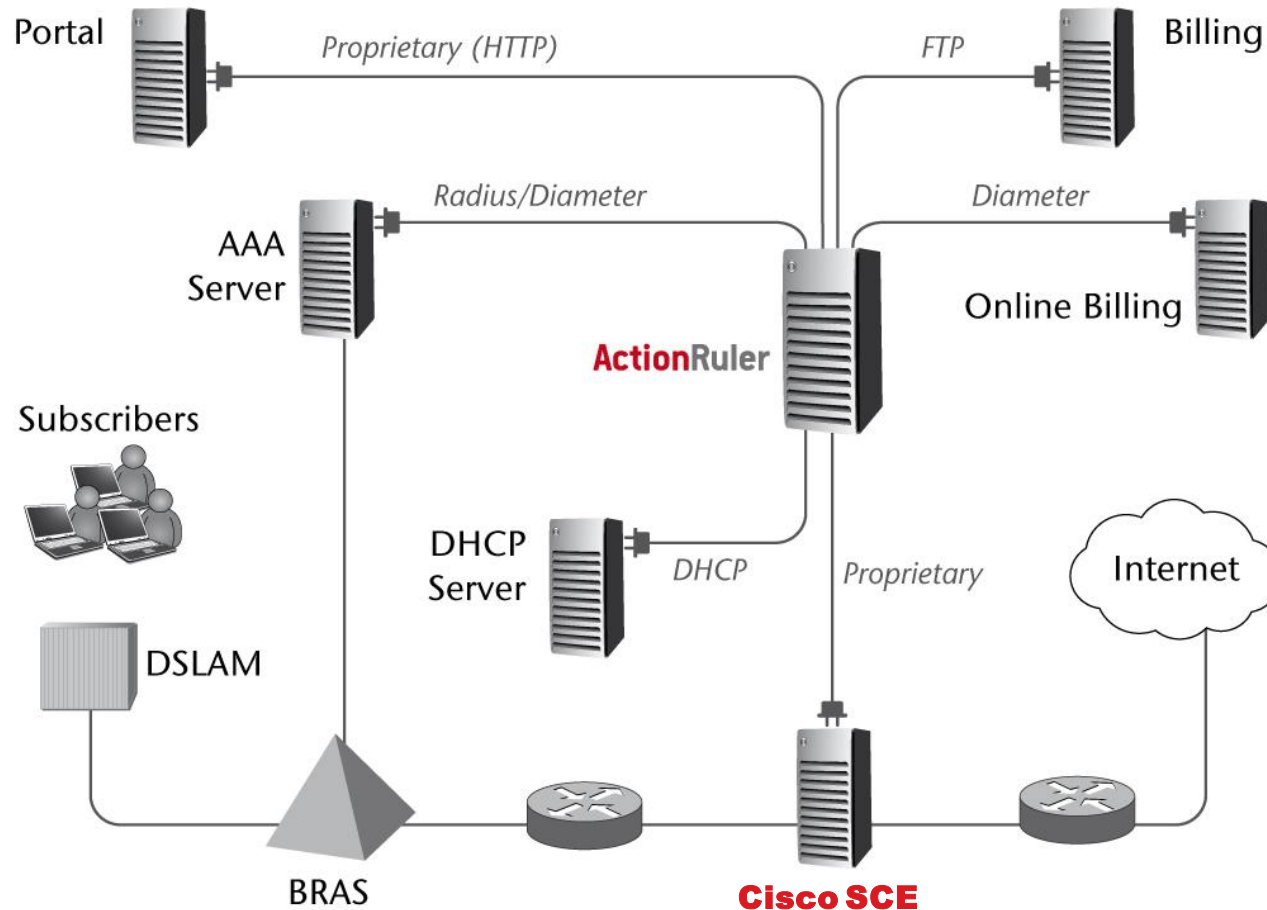
▶ **The network diagram depicts where ActionRuler™ is positioned in an ISP network. ActionRuler™ enforces policies utilizing DPI appliances indicated in the diagram as PCEF (Policy Control Enforcement Function).**

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▸ **The network diagram depicts where ActionRuler** [TM] **is positioned in a 3GPP compliant core network. ActionRuler** [TM] **enforces policies utilizing the available access gateways (SGSN/GGSN, ASN) which act as the policy enforcement points.**

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ActionRuler™ – Applications Examples

▶ **Bandwidth on Demand – Turbo Button**

Subscriber that has been enrolled to a low-bandwidth package can exploit turbo button in order to get access to higher bandwidth for a limited period of time, or for as much as the service is enabled by the subscriber in the self service portal. The service is charged based on duration of usage. The service is expected to be used by:

- Subscribers that would like to upload/download a sizable file
- Users that would like to access live streaming or video content
- Gamers that would like to get access to increased internet speed during on gaming session

▶ **Content Filtering - Parental Control**

Parental Control can be used be parents/guardians that would like to protect children by controlling their Internet usage. Using the self service portal they can:

- Limit access to specific services based on time constrains (eg. limit LastFM usage to 2 hours per day)
- Maintain filters that prohibit access to specific URLs, video sharing websites or application categories from the home computer

ActionRuler™ – Applications Examples

▶ **Roaming Cost Control**

- Price limits for data

- Maximum limit for data traffic

- Notifications of costs at threshold prices (e.g. 80% & 100%)

- Subscribers capability to continue the session when the limit has been reached.

- Subscriber's capability to change the limits with instant activation.

▶ **Weekend Fair Usage**

Operators can use the Weekend fair usage throttling in order to provide :

- Limited bandwidth for specific applications during the weekend when the access requests are immense

- Unrestricted bandwidth during the rest of the week when the requests for access are much less.

- Bandwidth can also be enforced based on the subscriber's current location

ActionRuler™ – Applications Examples

▶ **Mobile Device Broadband Throttling**

Operators can change the available applications and QoS depending on the device used to access the network (e.g. if Netbook with 3G USB is used, then P2P traffic is blocked).

▶ **Home Zone 3G Throttling**

Users are allowed a higher bandwidth when connected from their home and a lower bandwidth when connected on the road.

▶ **On Demand QoS to Service Providers**

Operators can guarantee QoS for a fee to content providers (e.g. YouTube HD video)

▶ **Marketing Campaign Redirects**

Targeted Subscribers will be redirected to promotional pages every X events

▶ **Prepaid/On Demand ADSL Access**

Subscribers have access to limited set of sites by default. Upon fee payment they have unlimited access for a specified period of time or traffic volume.

ActionRuler™ Building a Strong Ecosystem

- **Cisco** Gold Partner
  - Complete Cisco lab at INTRACOM TELECOM HQ
  - IOT Testing at INTRACOM TELECOM Labs
  - Deep knowledge
- **Acision** (Already a partner for prepaid – under negotiations for Broadband Suite)
  - ActionRuler™ Policy Rules component of Acision Broadband Suite
  - Mutually Executed IOTs
- **Hewlett Packard** (OpenCall Technology Partner)
  - Core ActionRuler™ technology (ServiceWeaver™) embedded in same container with OpenCall Platform
  - Live at Cosmote Greece
  - Discussions to OEM core technology to HP
- **Sicap** Partner
  - Device Management Suite Integration
  - Live at Cosmote Group

Why INTRACOM TELECOM

▶ Vast experience in the development, implementation, support and operation of applications and services in complex network environments worldwide

▶ Seamless and timely integration to any network, leveraging INTRACOM TELECOM's 30-year experience in deploying carrier-grade network solutions and maintaining it's own portfolio of word-class network products.

▶ **INTRACOM TELECOM's experience and its state of the art platforms make it the right choice for customers and partners**

thank you

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