# Service Exchange Framework

## Personalised subscriber management

Lazar Obradovic, CSE

World Wide Software Story Teller

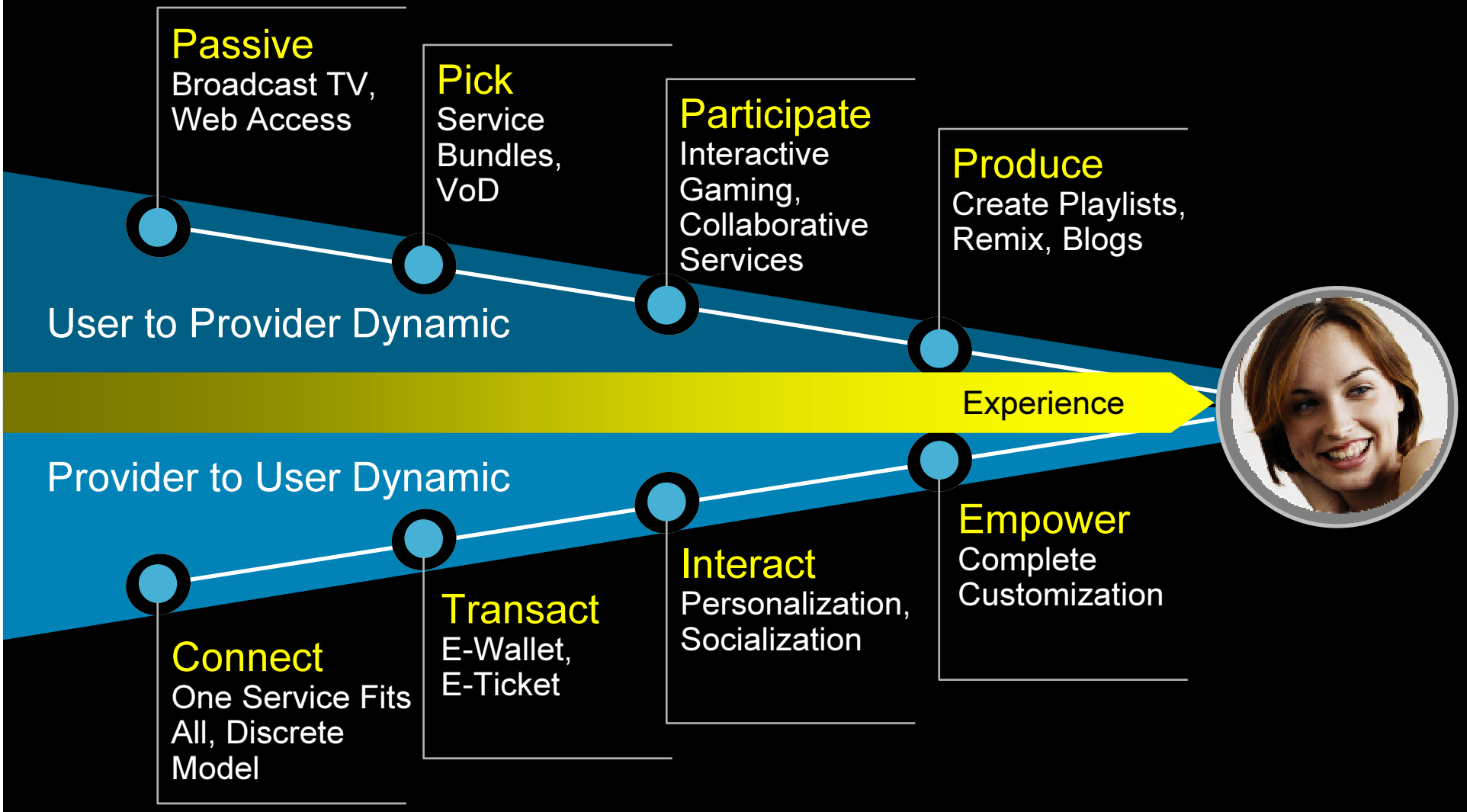
  

# Agenda

- Challenges and Opportunities
- Cisco IP NGN: Service Exchange Framework
- Personalized Subscriber Management
- Subscription Services and Operational Services
- Summary

# Market Transition, Consumers, "Web/Video 2.0"
## Content/Device Boundaries Blurring

# The Rise of the Empowered Consumer
## Evolutionary Phases of Experience



# New Experience Provider Offer
## Enabling the Next Wave of Broadband

Add Services | Add Value | Add Subscribers

Branded VoD
($4.99/movie)

Branded TV
($29.99)

Branded Phone
($15.99 + LD)

| Parental-Control | Anti-Spam | Anti-DoS |
|---|---|---|
| ($5.99) | ($5.99) | ($5.99) |

| Broadband Light | Broadband 4 Kids | Broadband Basic | Broadband Advanced | Broadband Business |
|---|---|---|---|---|
| $19.99 | $24.99 | $29.99 | $39.99 | $49.99 |

# Transition of Expectations
## New Digital Culture, New SP Opportunities

| **What**<br>They Want | **When**<br>They Want It | **Where**<br>They Want It | **How**<br>They Want It |
|---|---|---|---|
|  |  |  |  |
| **Broad Choice; Personalized, Simple** | **On Demand; Available Always** | **Everywhere; "Follow Me"** | **Flexible; No Platform, Access or Bundle Restrictions** |

# A World of Agile Attackers and Potential Partners

## Value Chain

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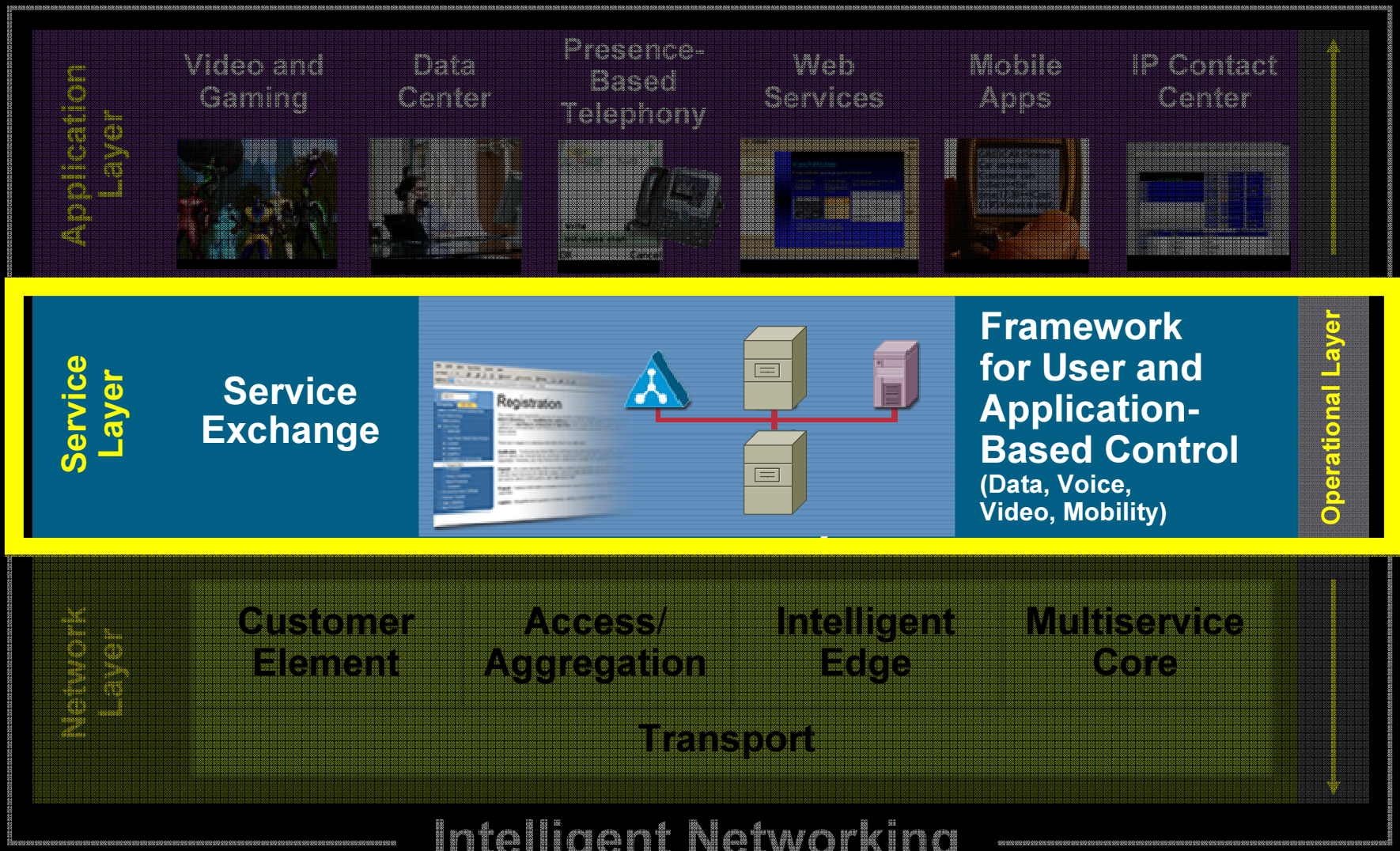
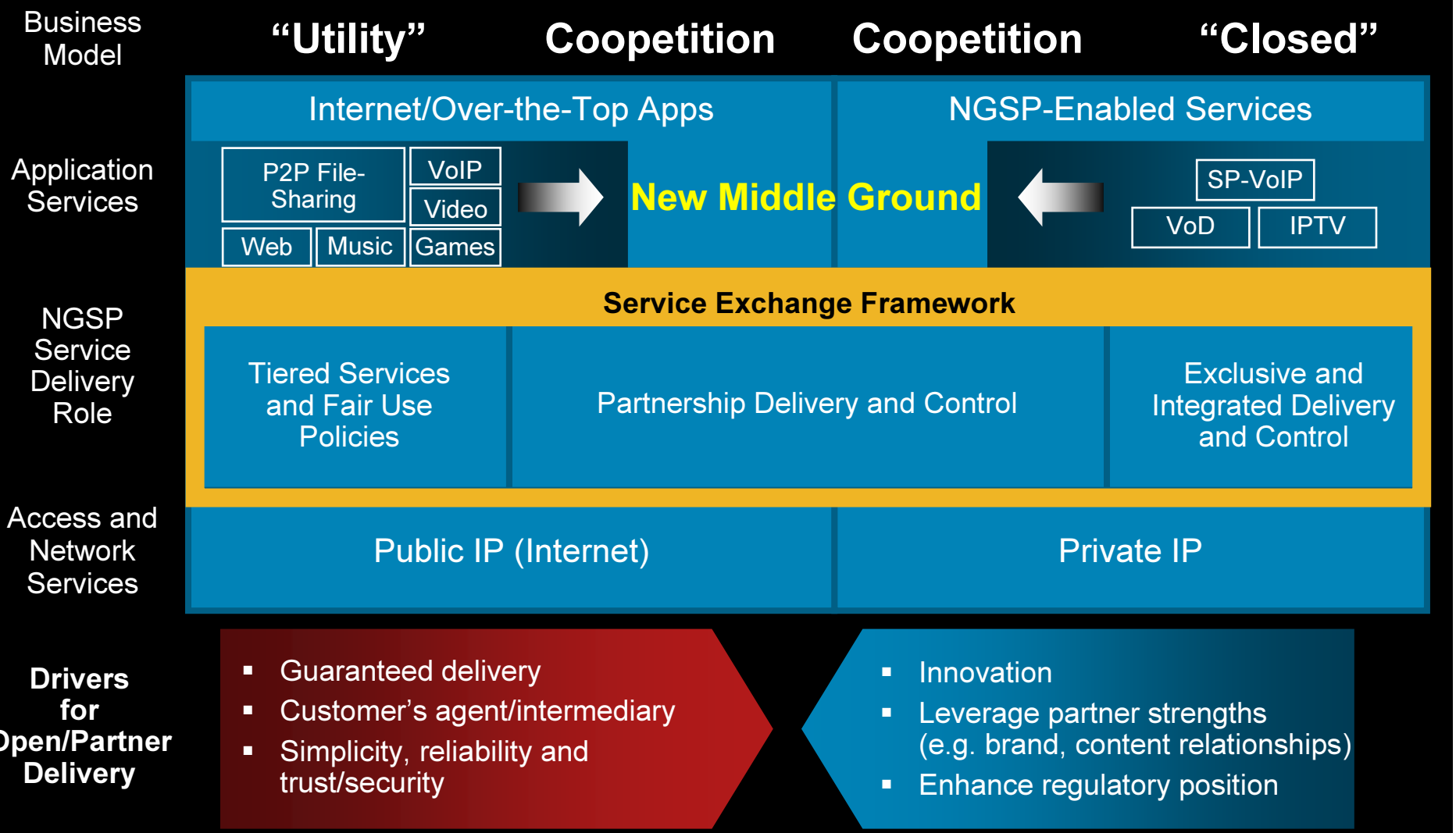
# Cisco IP NGN Service Exchange Framework
## Enabling Better Service Control and Awareness

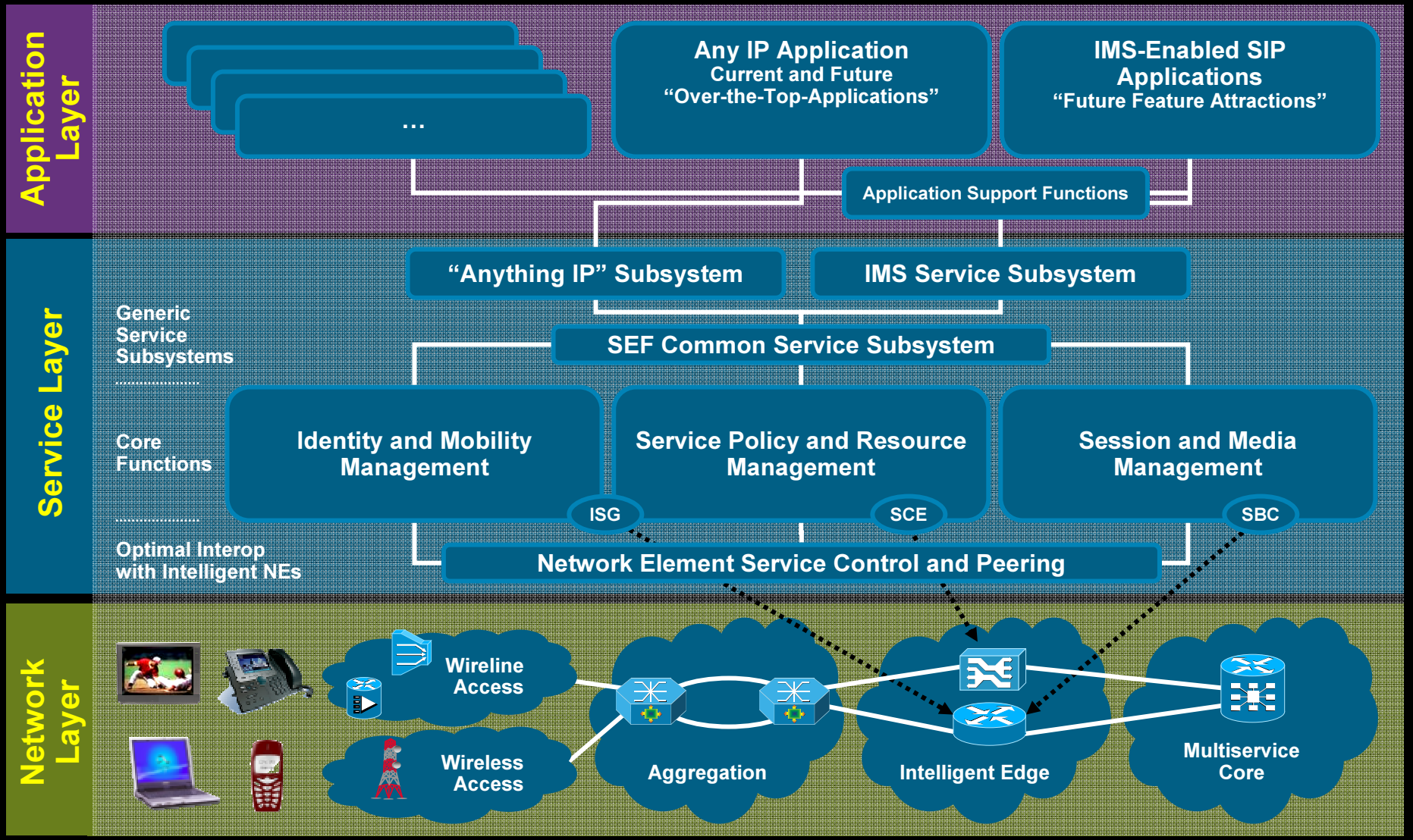


# A New Business Model for SPs:
## Monetize the Growth of OTTPs




Source: Cisco IBSG, December 2006

# Cisco IP NGN: Universal NGN Architecture
## Enabling All Emerging Network Architecture Standards



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# Cisco Service Exchange Framework:
## Intelligently Managing Service Coordination

Challenge:
Service Coordination

IP/TV or VoD

vs.

Web Browsing

vs.

VoIP

Policy Trigger

Who? What?

Service Exchange Framework

Where? How?

Monitoring Enforcement

Solution:
All IP Bundle

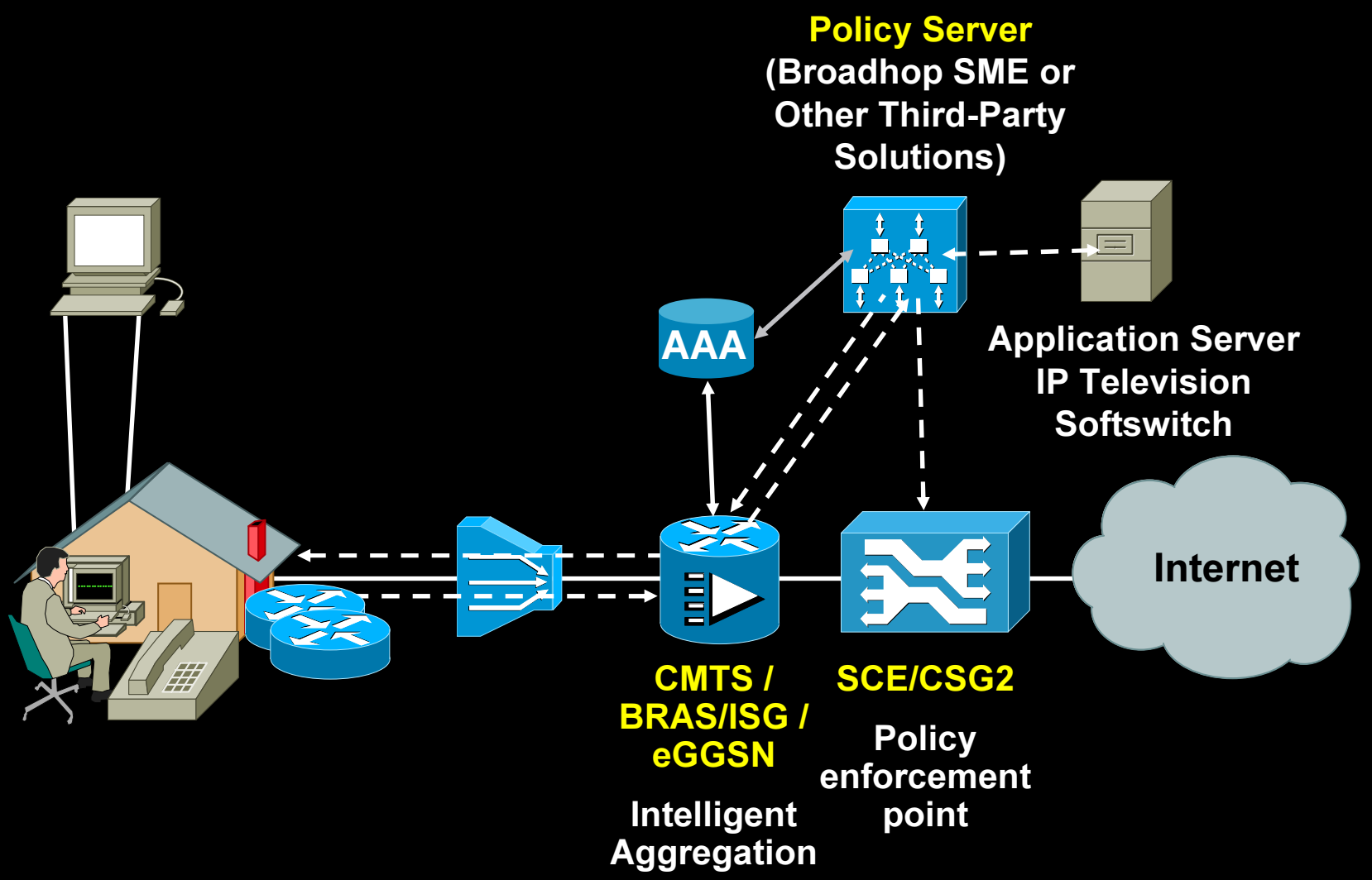
# Subscriber and Application Intelligence
## Heightened Awareness

- The experience providers differentiate themselves competitively by how well they provide and brand a

**Personalized Subscriber Management**

- The Cisco Service Exchange Framework includes the architecture, technologies, and products necessary for heightened subscriber, application, and network awareness
- Cisco calls the subscriber-related intelligence solutions

# Personalized Subscriber Management
## Integrated SEF Solution Example

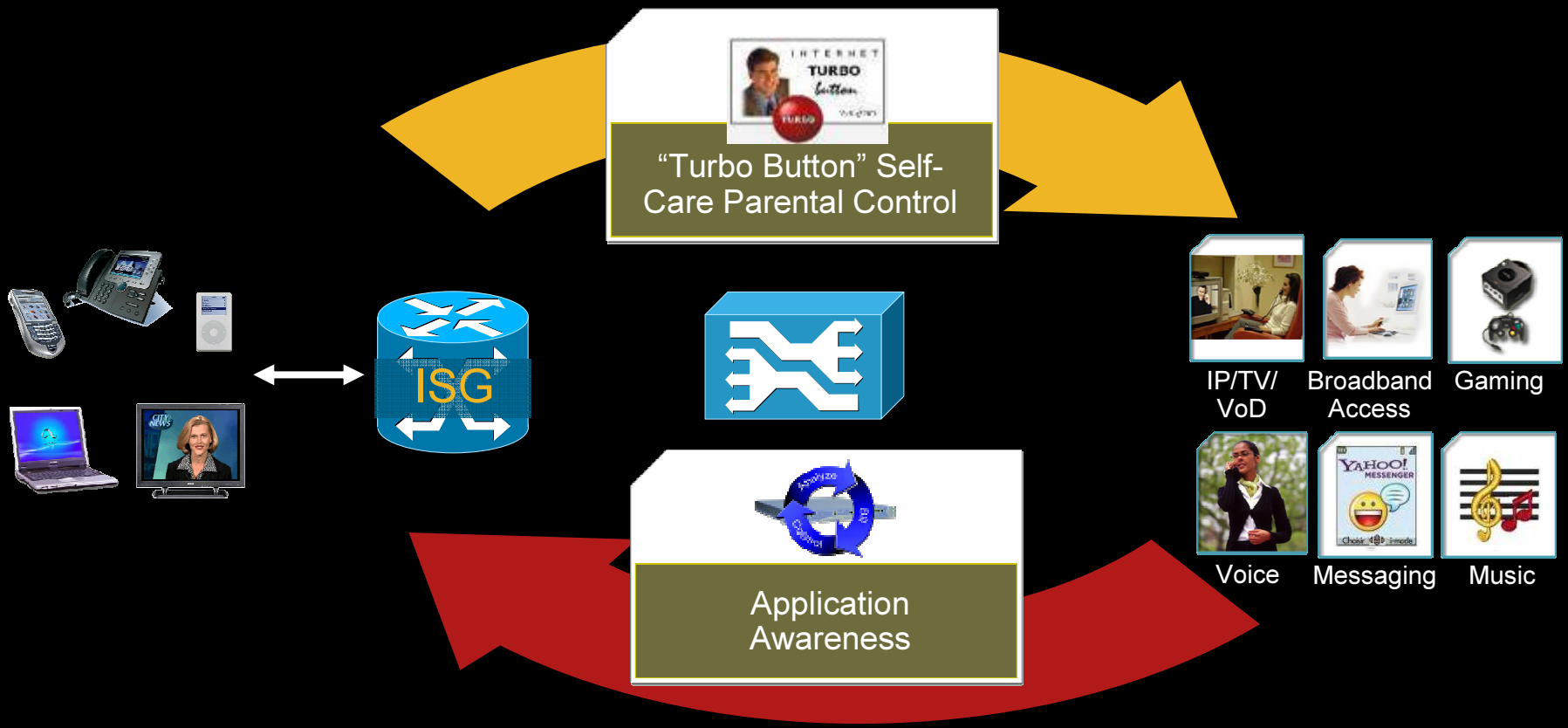


# Dynamic Personalized Services

## Enhanced Quality of Experience

Industry's First Subscriber and/or Application-Driven Solution

"Pull": Enhanced Experience Is Subscriber-Driven



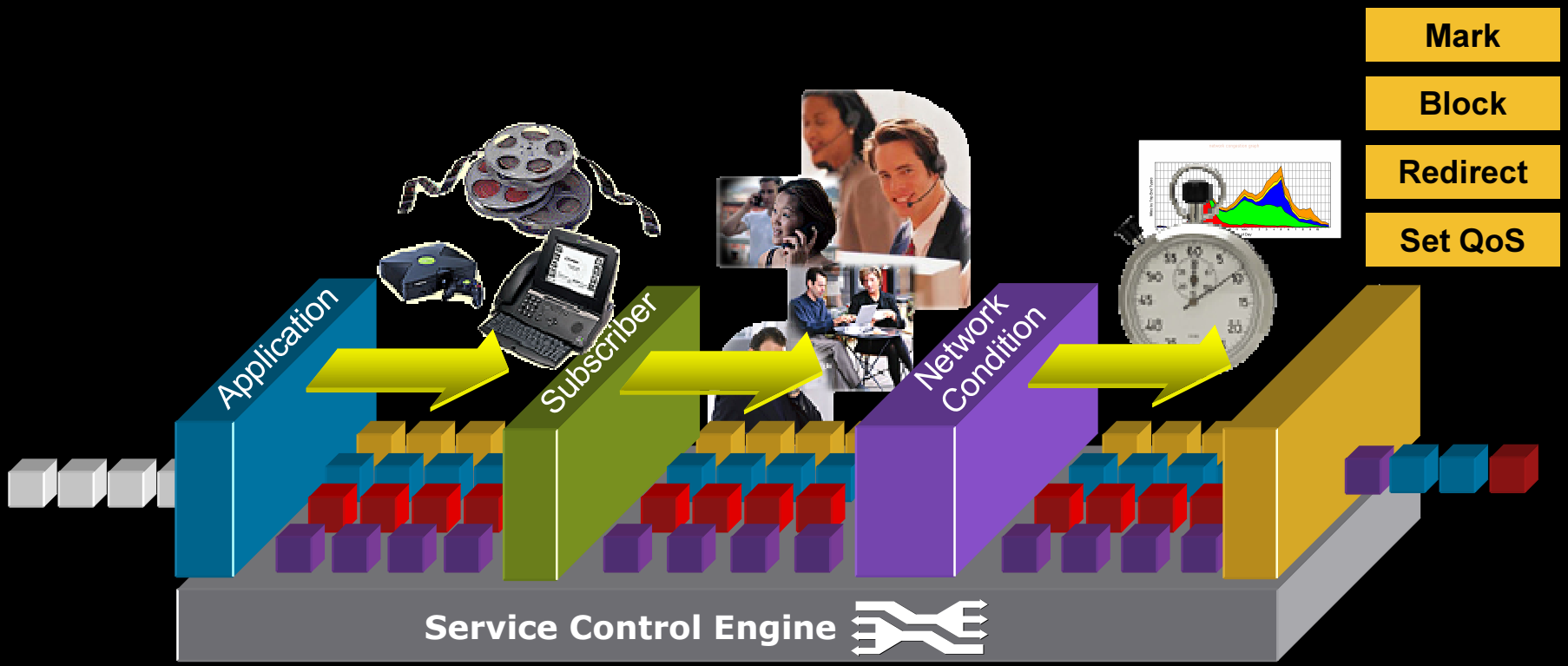

"Push": Enhanced Experience Is Application-Driven

# Cisco's Service Control Solution
## How Does SCE Work?

**Reporting and Traffic Analysis**
Know What's Going on in Your Network

**Packet Flow Optimization**
Prioritize Critical and Latency-sensitive Applications and Control Malicious Traffic

**Enhanced Service Offerings**
Enables Individualized Application and Content-Based Services



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# Personalized Subscriber Management
## Service Examples

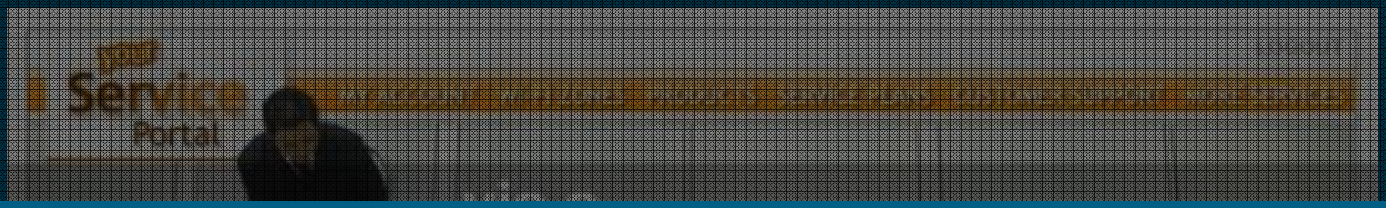
### Self-Service Subscription Services

- Parental controls and content filtering: Set Internet controls for children, including blocking access and imposing time limits on online use
- Bandwidth on-demand: A turbo button to boost bandwidth for a set or undetermined period of time
- Allowance-based subscription: Choose quota-based or time-based bandwidth for a set period of time as referred to as prepaid service
- Pay-As-You-Go subscription service: Buy time or bandwidth as needed

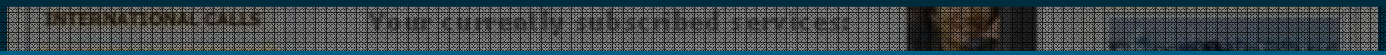
### Optimized Operational Services Examples

- P2P management and network optimization: Apply a broad set of policies to effectively manage all traffic

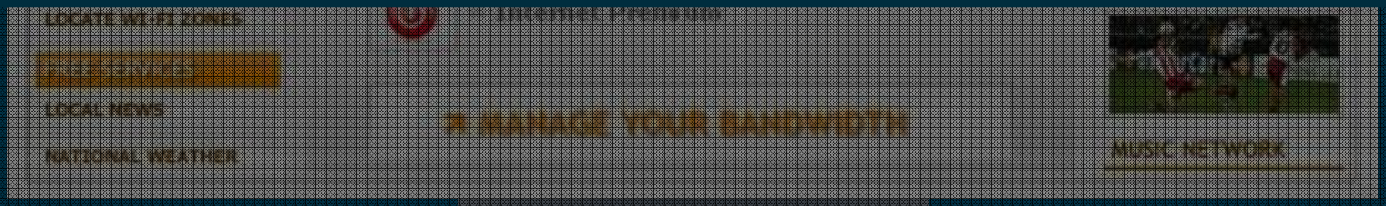
# Self-Subscription Service
## Via Personalized Web Portal



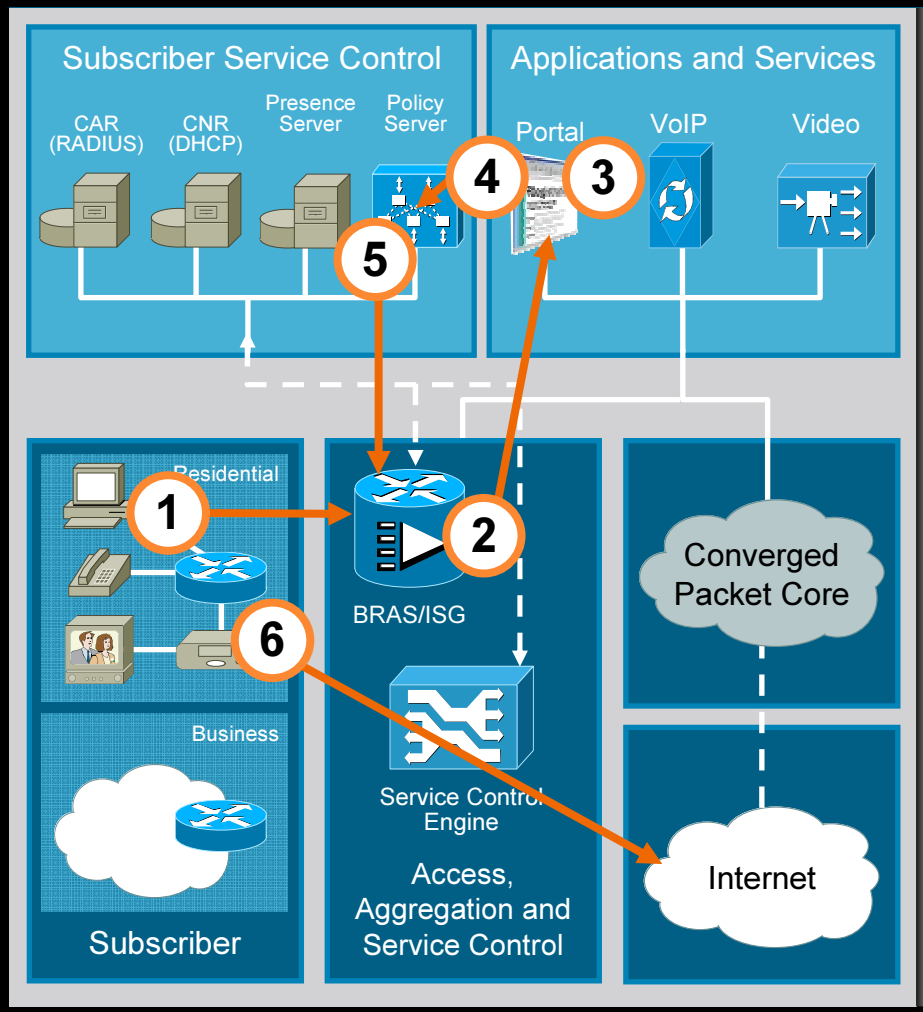

Enable Zero-Touch Provisioning,
for Full Self-Service Account Setup



Enable Customers to Self-Select
and Modify Services and Features



# Portal-Based Self Service Selection
## Use Case




1. User starts web browser
2. ISG or SCE redirects user's browser to subscriber self management portal
3. User logs into the web portal and requests an unmetered Internet access service at a defined upstream or downstream rate
4. Web portal passes service change request to the policy server
5. The policy server confirms change to service and applies the respective service policy to ISG or the SCE, which is then applied to the user session. The policy server can also generate any required billing events
6. User has rate limited unmetered Internet access

# Parental Controls
## Getting involved in your child's experience

Parental Controls and Content Filtering

Adults Can Access a Web Portal and Set Internet Controls for Children, Including Blocking Access to Certain Types of Websites, and Imposing Time Limits on Online Access

# Personalized Subscriber Management:
## Subscription Services Example

### Content Filtering

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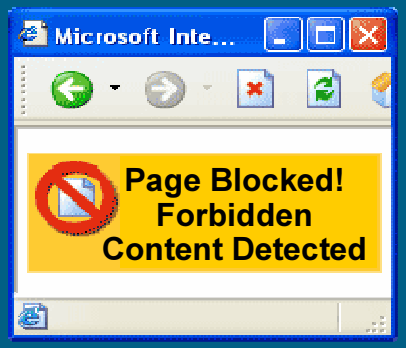
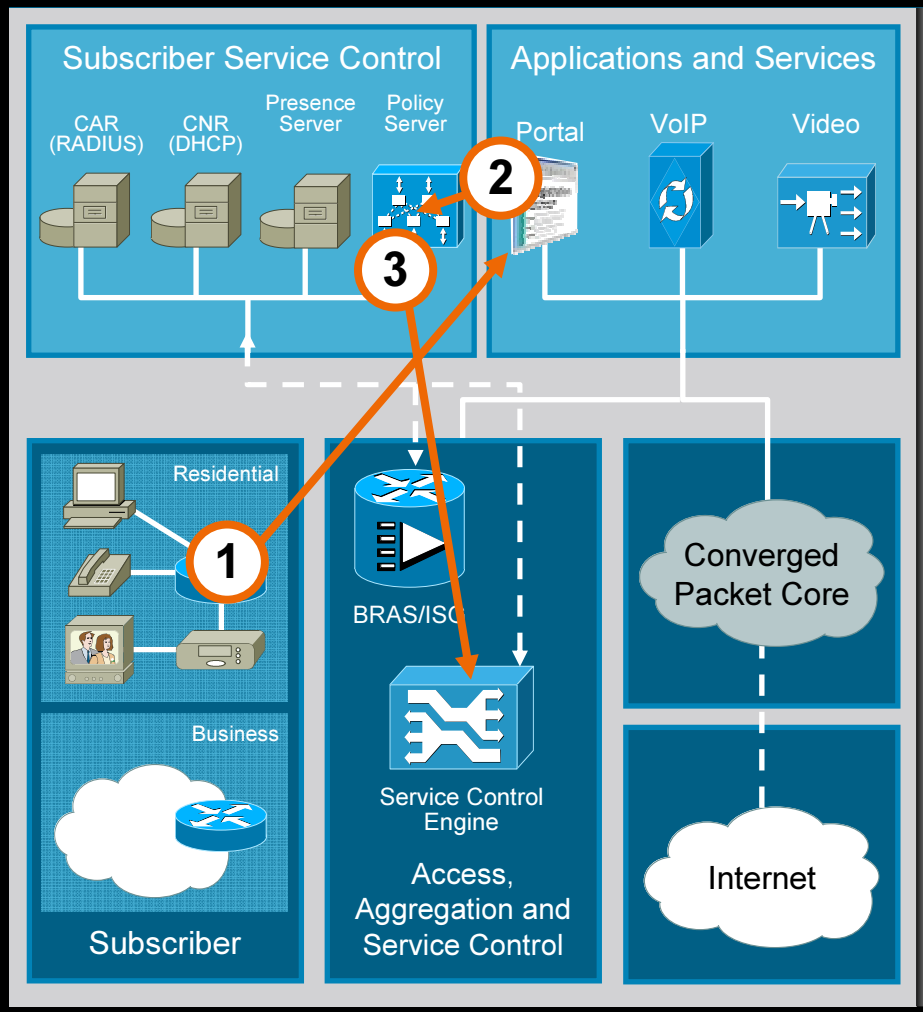



- Subscriber-managed parental control
- Basic website blacklisting provided free of charge
- Comprehensive filtering and security for a small monthly subscription

# Parental Control
## Use Case




1. User logs in to web portal and subscribes to parental control service
2. Web portal passes service change request to the policy server
3. The policy server pushes the respective URL filtering package to the SCE, which filters the traffic for that users session

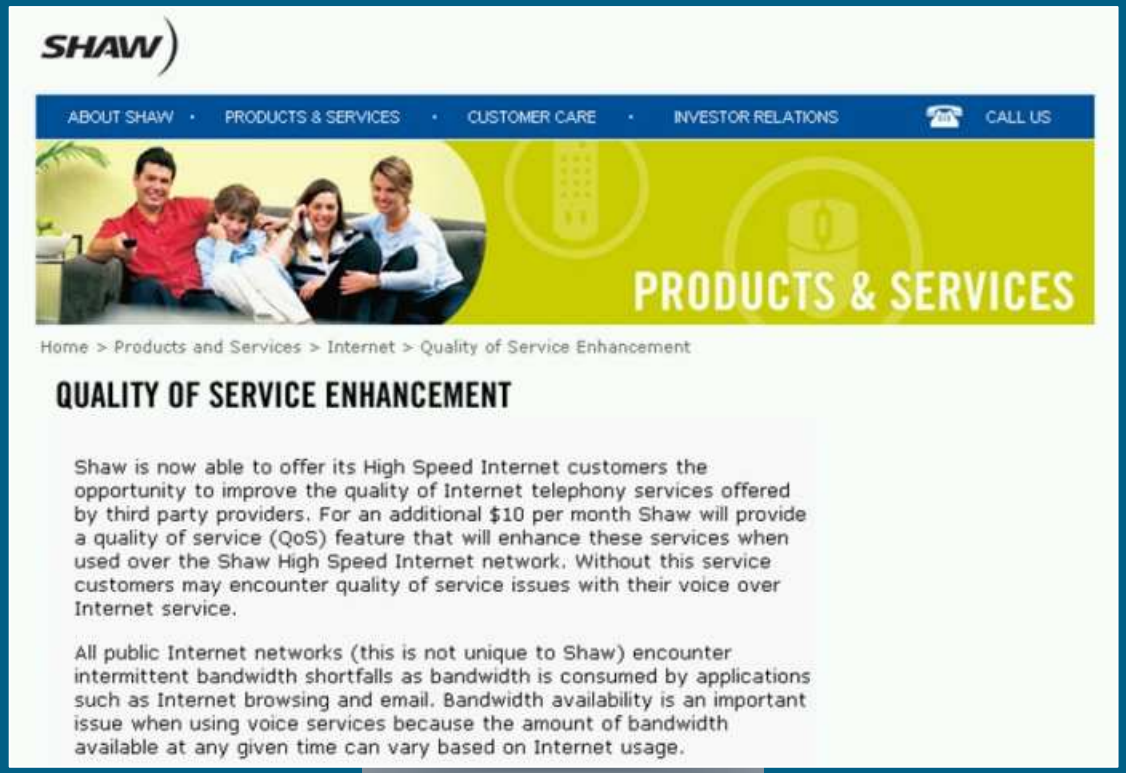
This could make use of the Surf Control URL filtering database

# Bandwidth-On-Demand
## Meeting Subscriber Needs on Demand

### Turbo Button

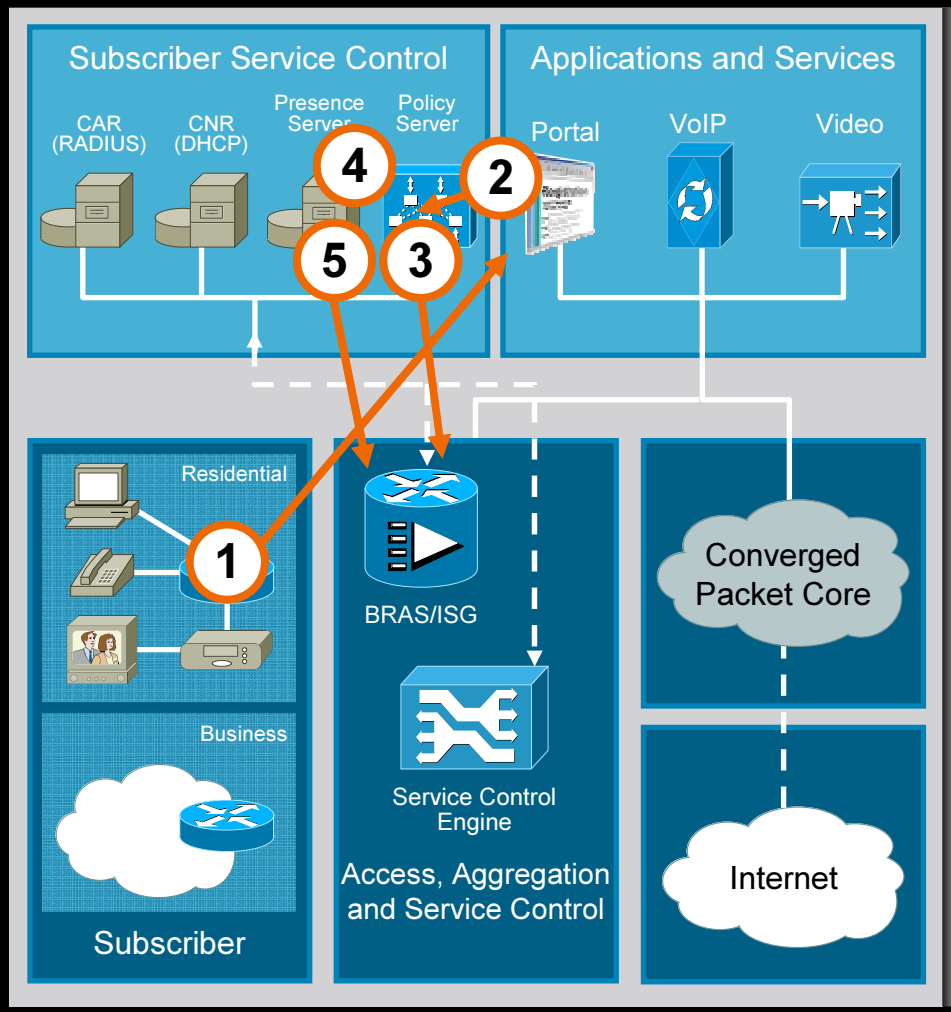
Subscribers Who May Have a Standard Lower-Speed Internet Service May Visit a Web Page on the Provider's Site and Click on a Turbo Button to Boost Their Bandwidth for a Set Period of Time or to Leave the Button Engaged Until They Return and Deselect It

# Over-The-Top Service Enhancements:
## Shaw Communications (Canada) VoIP




Shaw Communications Also Uses the DPI Technology to Increase Revenue. For Example, Customers Who Use Vonage or Another Internet Phone Service Can Pay an Additional CAD $9.95 a Month to Make Sure That Their Calls Get Higher Priority on the Network Than Some Other Uses.

# Turbo Button Service
## Use Case



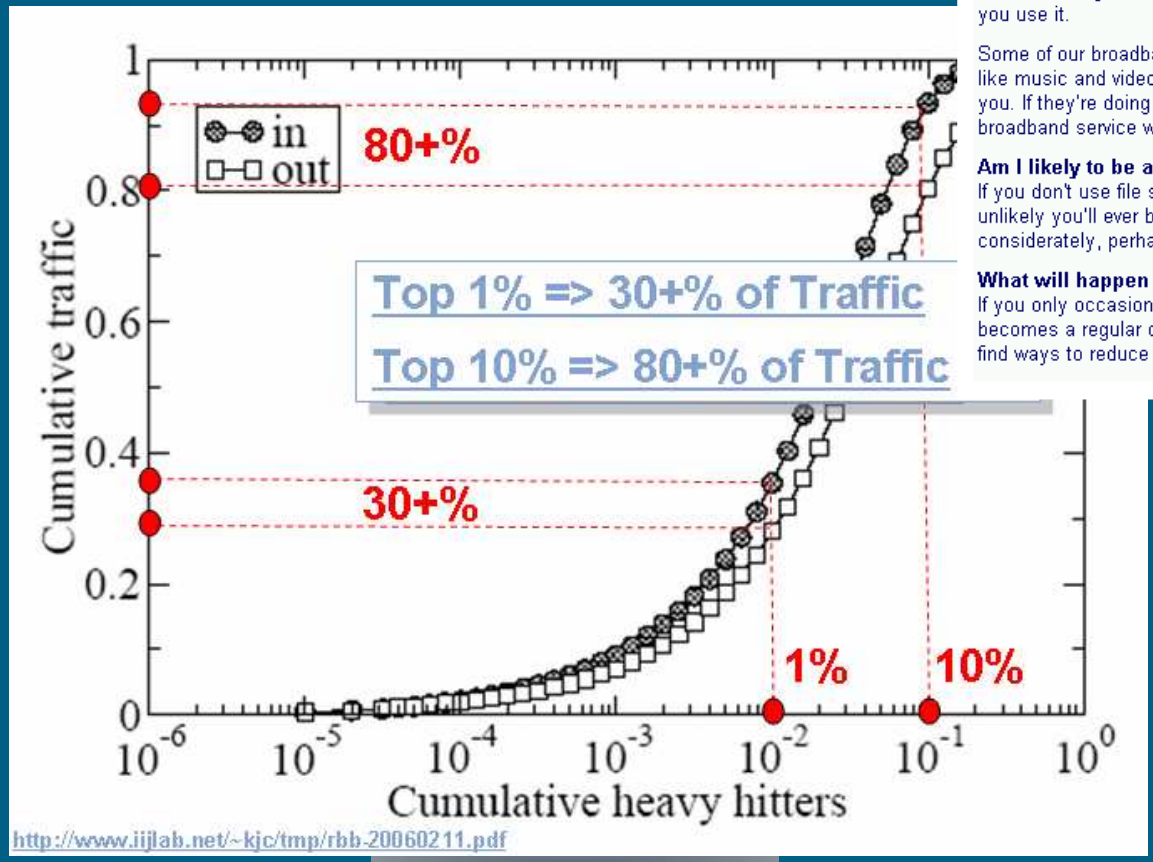

1. User logs in to the web portal and requests a time quota based Internet access service at a defined upstream/downstream rate
2. Web portal passes service change request to the policy server
3. The policy server confirms change to service and applies the respective service policy to ISG or the SCE, which is then applied to the user session. The policy server can also generate any required billing events. User has increased rate of Internet access
4. The policy server tracks time scheduler for subscriber session (user can view remaining time quota at portal)
5. Time quota expires and the policy server pushes policy to ISG or SCE, which re-applies the subscriber's previous service

# P2P Management and Network Optimization
## Analyze, Manage, and Optimize Traffic

Peer-to-Peer Management and Network Optimization

Peer-to-Peer Traffic Can Cause Massive Traffic Peaks and Require Providers to Upgrade Expensive Backbone Links or Pay More at Peering Points; the Cisco Service Exchange Framework Enables Providers to Apply a Broad Set of Fair Use Policies to Effectively Manage All Network Traffic

# Fair Use Policies
## Addressing Heavy Users




### Fair Use Policy for Broadband

If you're on either our unlimited or uncapped broadband service then our Fair Use Policy applies to you.

**Why have one?**
Well it's designed to make sure your broadband service is fast and reliable whenever you use it.

Some of our broadband customers use file sharing software and download large files like music and videos. This uses up lots of network capacity leaving less available for you. If they're doing this at peak times, it could mean that the speed of your broadband service will be affected.

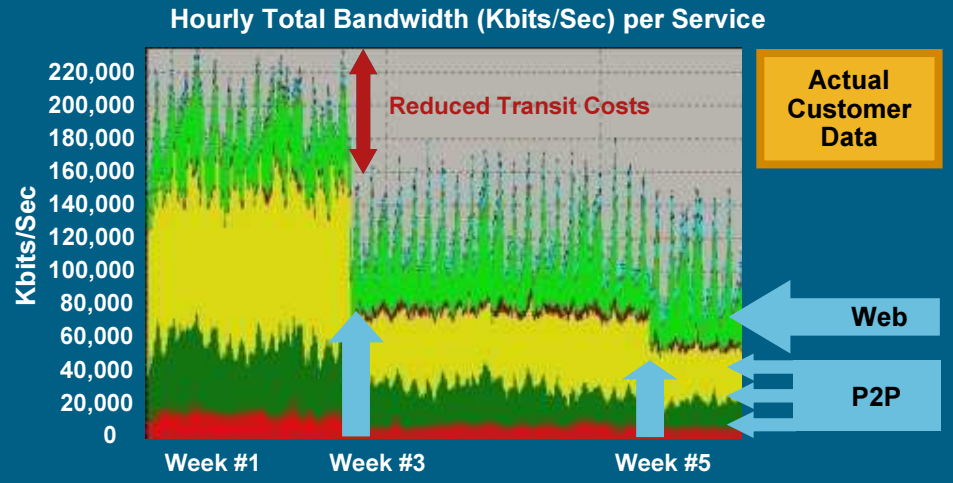
**Am I likely to be affected by the Fair Use Policy?**
If you don't use file sharing software or download large files from the Internet it's unlikely you'll ever be affected by this policy. If you do, all we ask is that you do so considerately, perhaps by downloading outside the peak hours of 6pm to 11pm.

**What will happen if my use is very high?**
If you only occasionally have very high usage, we're unlikely to be concerned unless it becomes a regular occurrence. If this does happen then we'll get in touch to help you find ways to reduce your usage.

**By Managing Congestion, Fair Use Policies (FUP) Can Significantly Increase the Performance pf Interactive Applications (VoIP, Gaming, etc.), Thereby Benefitting the Majority of Users, While Keeping Network Upgrades in Sync with Revenue Growth**

# Managing P2P Traffic:
## Packet Flow Optimization Example

### Service Prioritization via Packet Flow Optimization




### Managing P2P Applications

- Enable new business models between content and service providers
- Detect and manage affiliated applications and align QoS
- Co-branding and fee sharing

# Personalized Subscriber Management:
# Operational Services Examples

## Implement Fair Use Policy


- Eliminates bandwidth bottlenecks
- Enhanced user experience

| 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

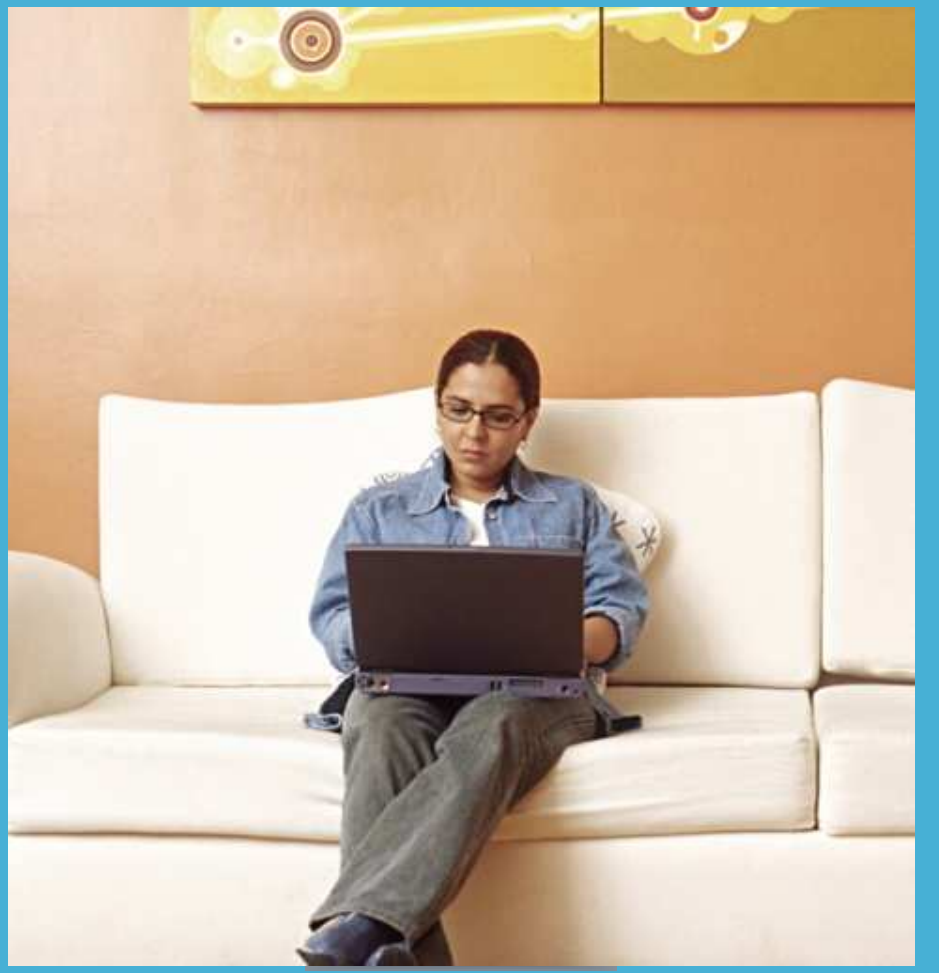
# Allowance or Quota Based Services
## Buy Time or Bandwidth as Needed

### Allowance Based Subscription

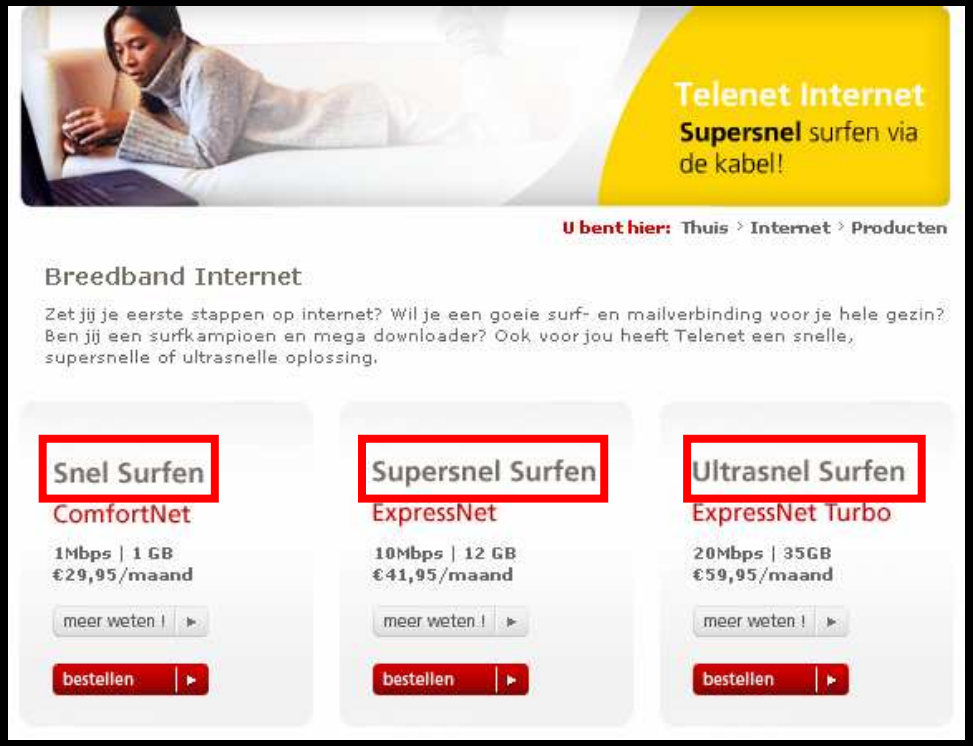
This Feature Allows Subscribers to Choose Volume Quota-Based or Time-Based Bandwidth for a Set Period of Time, for Example on a Monthly Basis

### Pay-as-You-Go Subscription Service

This Option Is Ideal for Subscribers Who Use the Internet Intermittently and Only Want to Buy Time or Bandwidth as Needed; When Users Launch Their Browsers, They Are Redirected to a Web Portal Where They Select the Two-hour "Pay As You Go" Option; After Two Hours, the Session Could Either Be Terminated or the User Could Purchase More Usage



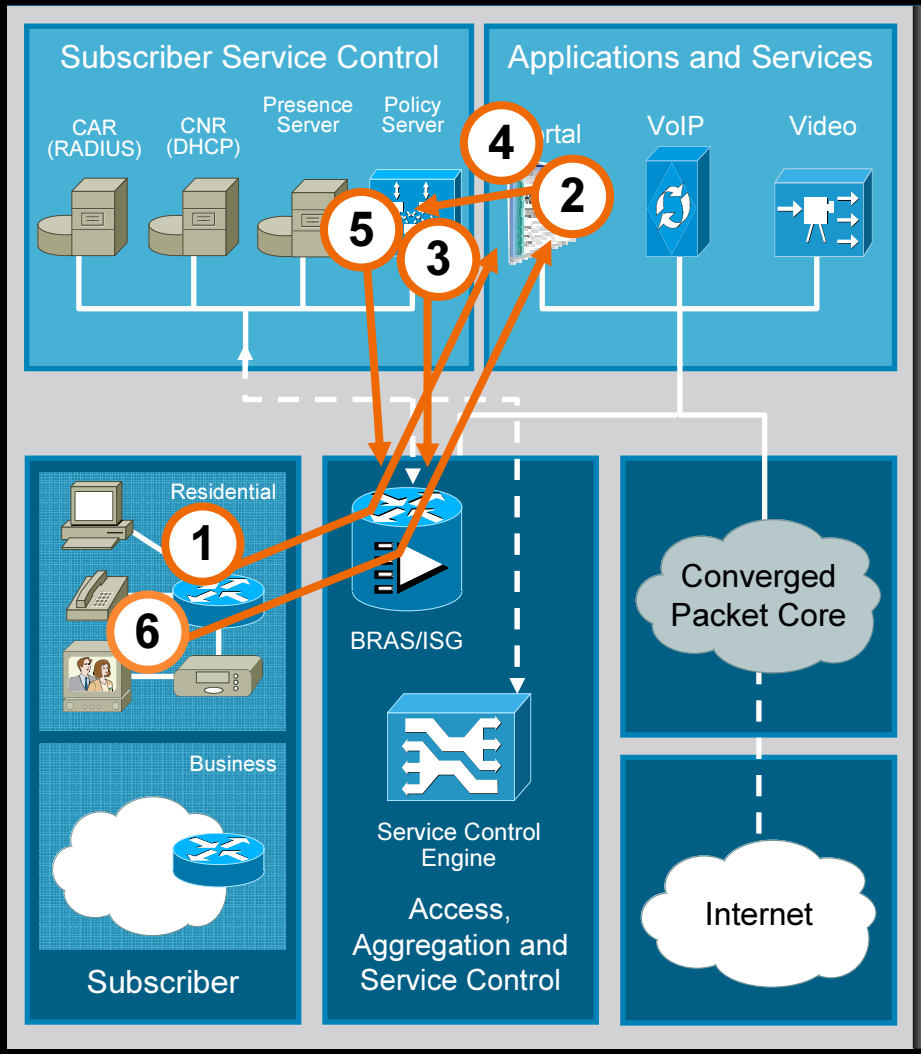
# Quota Based Tiering
## Telenet: Cable Company in Belgium




- Quota complements Speed as a Tiering parameter.
- When a User reaches Quota, his Internet service is reduced to dial-up speed.
- The User then has the option to upgrade his Quota Level or continue at reduced speed till the end of the month.
- 15% of the Customers upgrade their Quota every month*.
- Belgacom, the Belgian Incumbent deployed similar Quota system on xDSL.

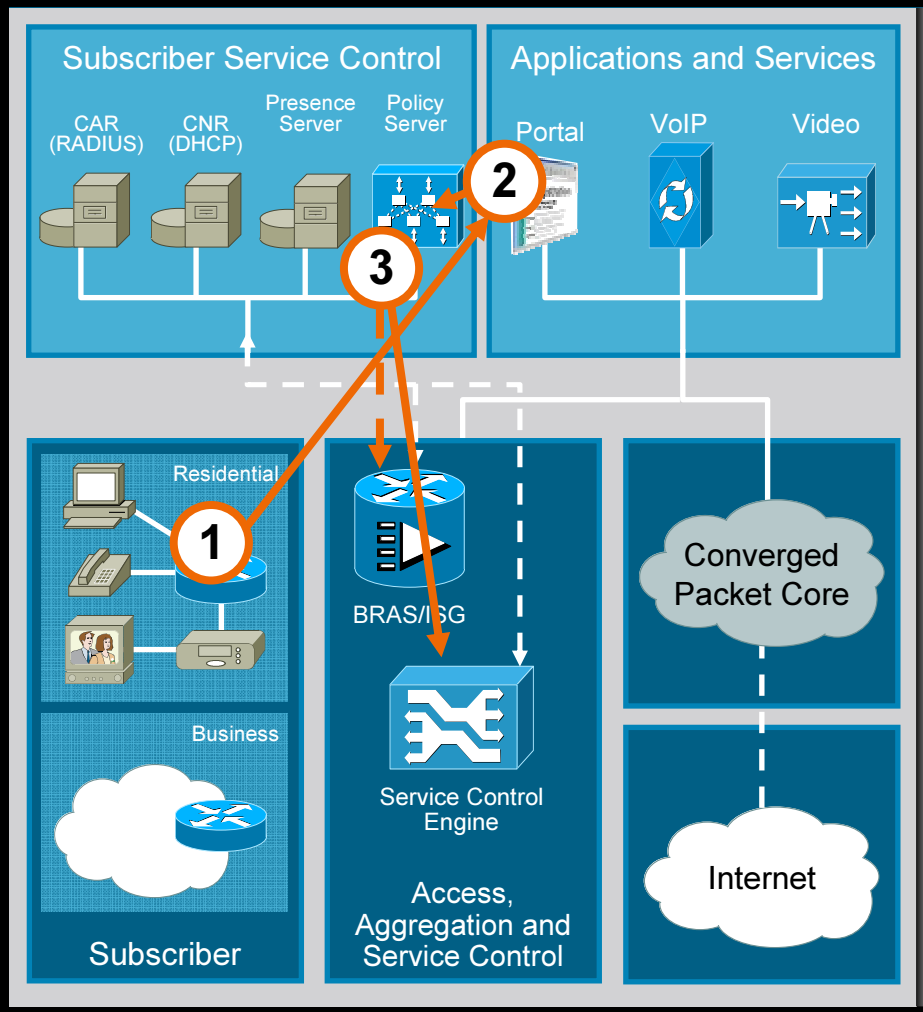
***http://www.billingworld.com/rev2/main/featureArticle.cfm?featureID=7799**

# Prepaid Service
## Use Case



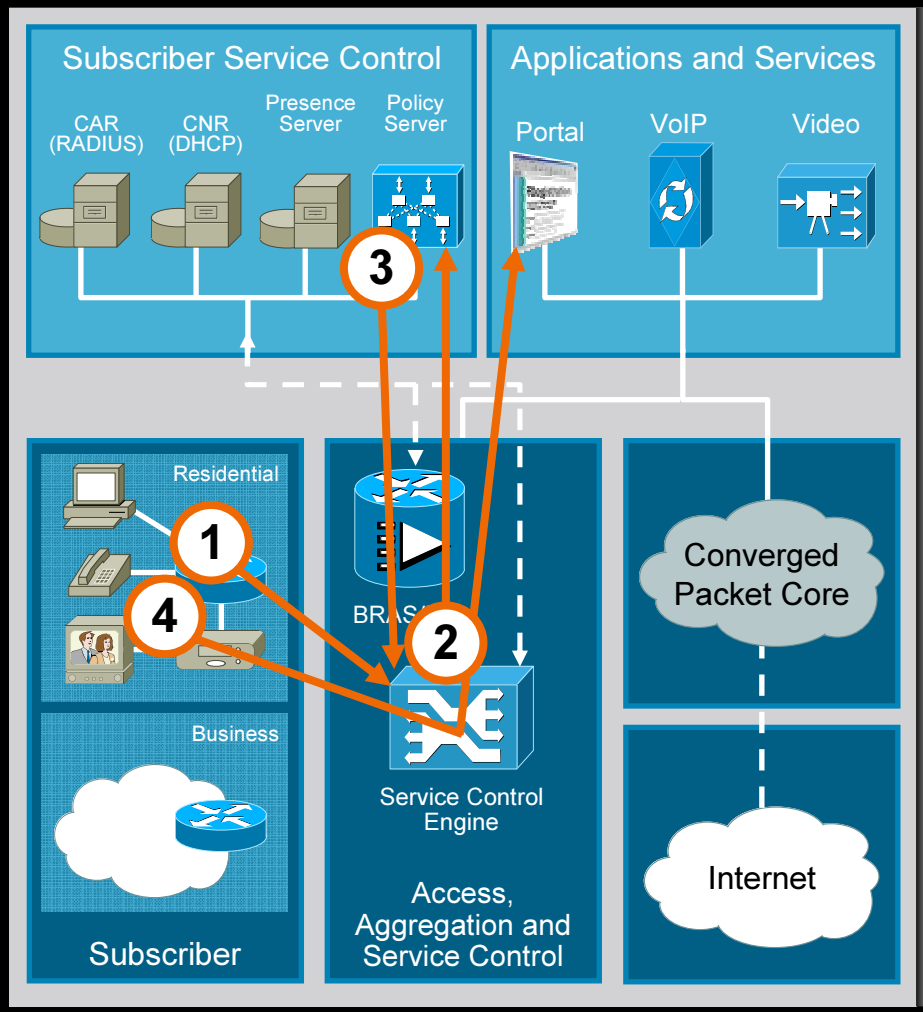

1. User logs in to the web portal and request a usage-based Internet access service
2. Web portal passes service change request to the policy server
3. The policy server confirms change to service and applies the respective service policy to ISG or the SCE, which is then applied to the user session. The policy server can also generate any required billing events. User has usage limited Internet access
4. The policy server tracks usage quota based upon accounting from the ISG or SCE for the subscriber session (user can view remaining quota at portal)
5. Usage quota expires and the policy server pushes a penalization policy to ISG or the SCE, which limits or blocks the subscriber's service and applies HTTP redirection to redirect the user's browser to the subscriber self management portal
6. User's browser is redirected to the sub-scriber self management portal, where they can buy additional usage quota

# Prioritized Over-the-Top Appl. Service
## Use Case



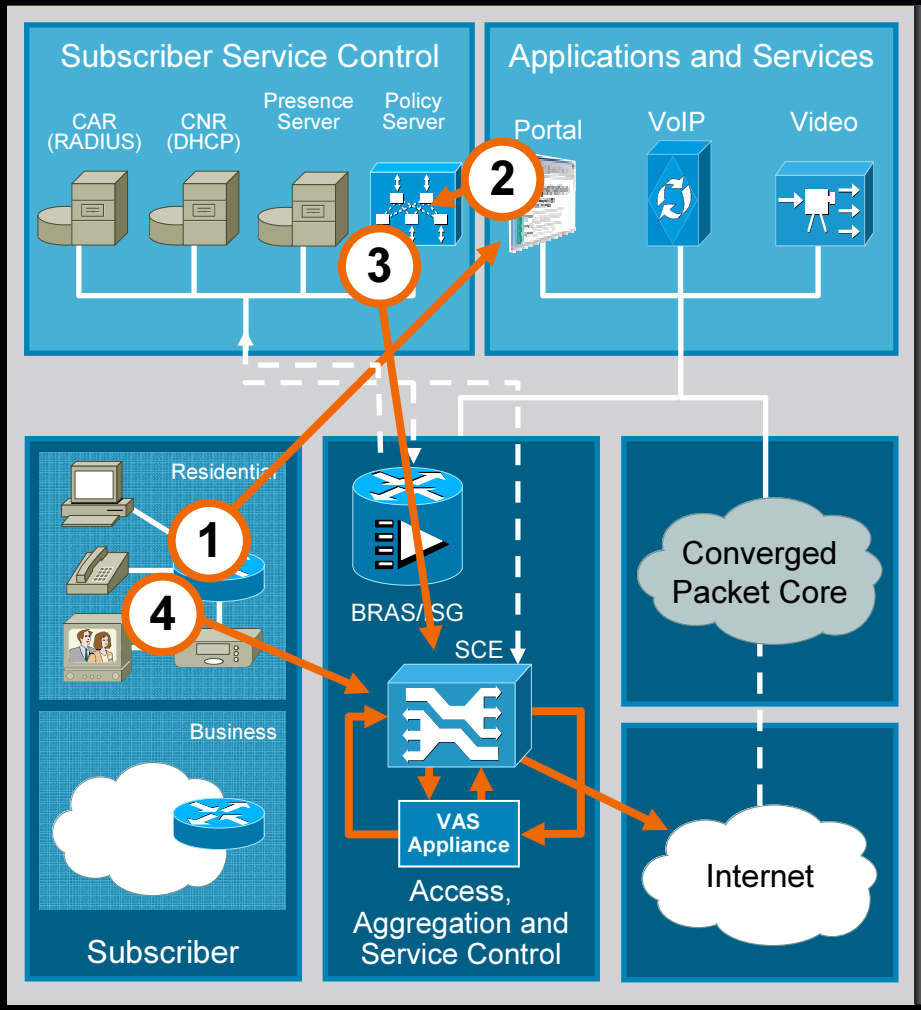

1. User logs in to the web portal and requests a service which prioritizes the subscribers Over-The-Top (OTT) VoIP and/or video applications
2. Web portal passes service change request to the policy server
3. The policy server confirms change to service and applies the respective service policy the SCE, which is then applied to the user session. The policy server can also generate any required billing events. The user has prioritized OTT VoIP and/or video applications

# Anomaly Detection
## Use Case




1. Infected PC is used for TCP SYN attack
2. SCE detects SYN attack and sends notification to policy server
3. The policy server pushes policy to SCE, which applies HTTP redirection to redirect user to web portal (all other traffic is blocked or limited)
4. User browser is redirected to web portal, where they are informed of infection and appropriate actions to take to clear infection (they may also be informed via other means such as e-mail)

# Content And Context Filtering Service
## Anti-X Use Case




1. User logs in to web portal and subscribes to Anti-X control service
2. Web portal passes service change request to Broadhop SME
3. Broadhop SME server pushes a package to the SCE which applies a VAS package to the subscriber subjects the subscribers traffic
4. The respective URL filtering package to the SCE, such that the user traffic is subjected to an external appliance providing the appropriate service (e.g. Streamshield, Ironport)

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# Possible Approach

## Initially Deploy SEF Components

- SCE: For application/user awareness and policy enforcement
- Policy Server: For dynamic provisioning and policy mgmt.
- ISG/SSG: For application awareness and policy enforcement

## Enable New Services

Bandwidth-on-demand, application plus user traffic differentiation, usage-based service, and fine granularity reporting

## Improve Network Visibility and Performance

Service mix monitoring per application and user, improved network yield through improved visibility, behavior anomaly monitoring (for troubleshooting and security)

## Create a Platform for Future Service Evolution

End-to-end integrated service visibility and control