Subscriber and Service Management

SwiNOG #14

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Agenda

- Trends in the Internet
- The Cisco approach to service differentiation
- Use cases

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Traffic patterns are changing

TODAY:

… a large portion is P2P traffic

… bandwidth utilization is primarily driven by unicast Video

… browsing/email traffic down to 6 to 19% depending on geography

… Voice is almost neglectable

Some graphs ->

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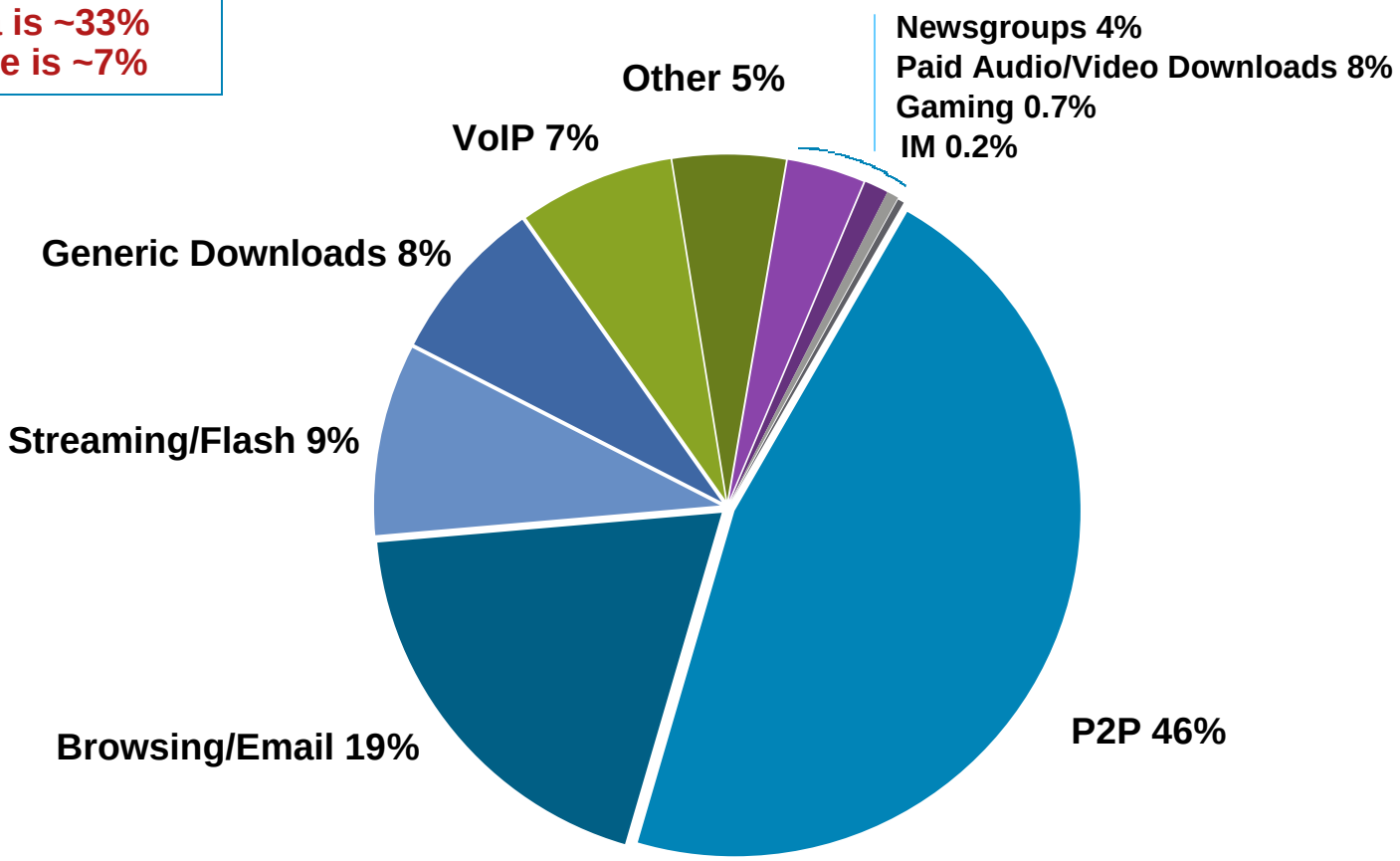
Consumer Broadband Traffic: NA ISP

P2P is 46% of North American Traffic

Video is ~60%
Data is ~33%
Voice is ~7%



Source: Data from Cisco Service Control Engine, April 2007

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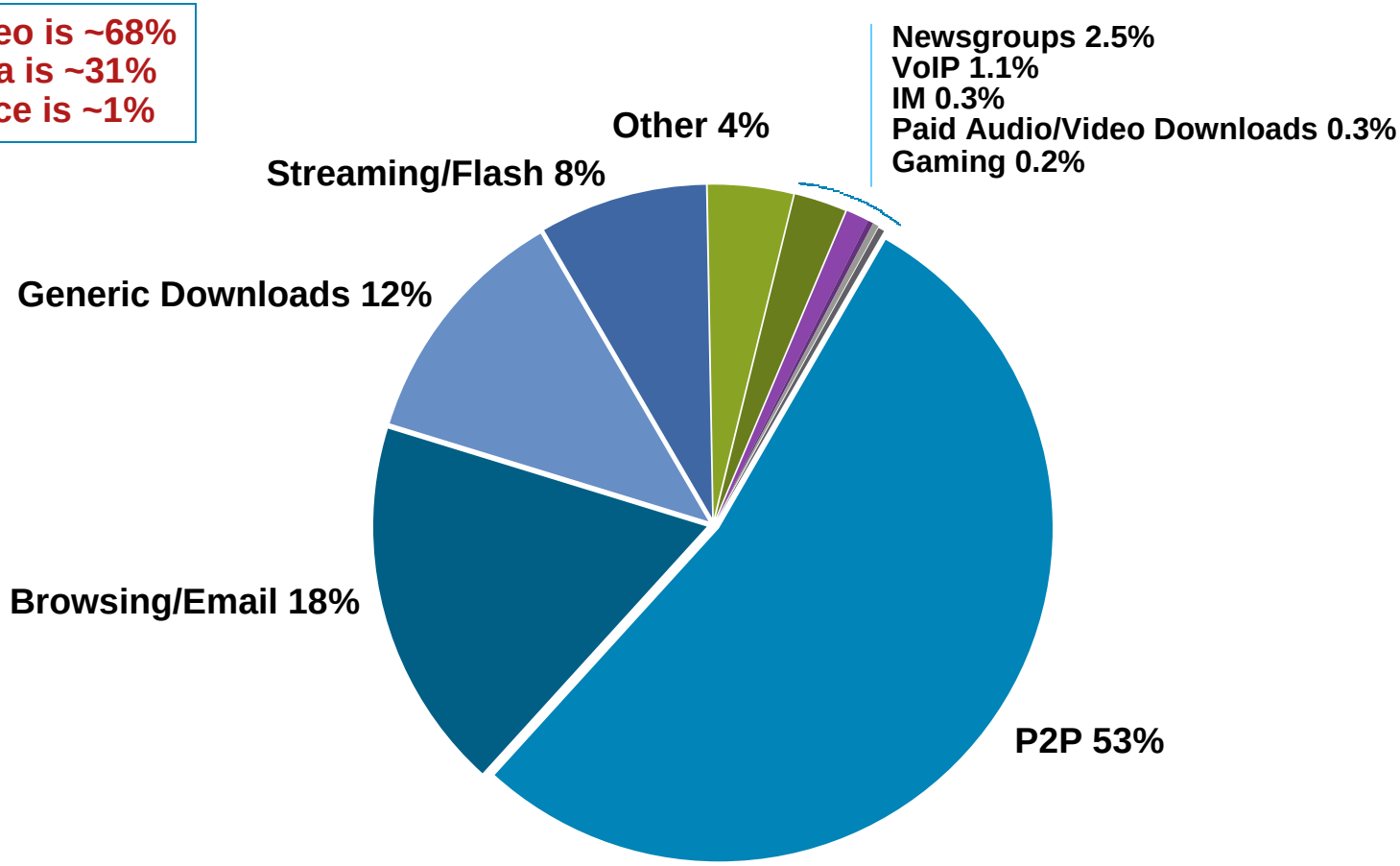
Consumer Broadband Traffic: EMEA ISP

P2P is 53% of EMEA Traffic

Video is ~68%
Data is ~31%
Voice is ~1%



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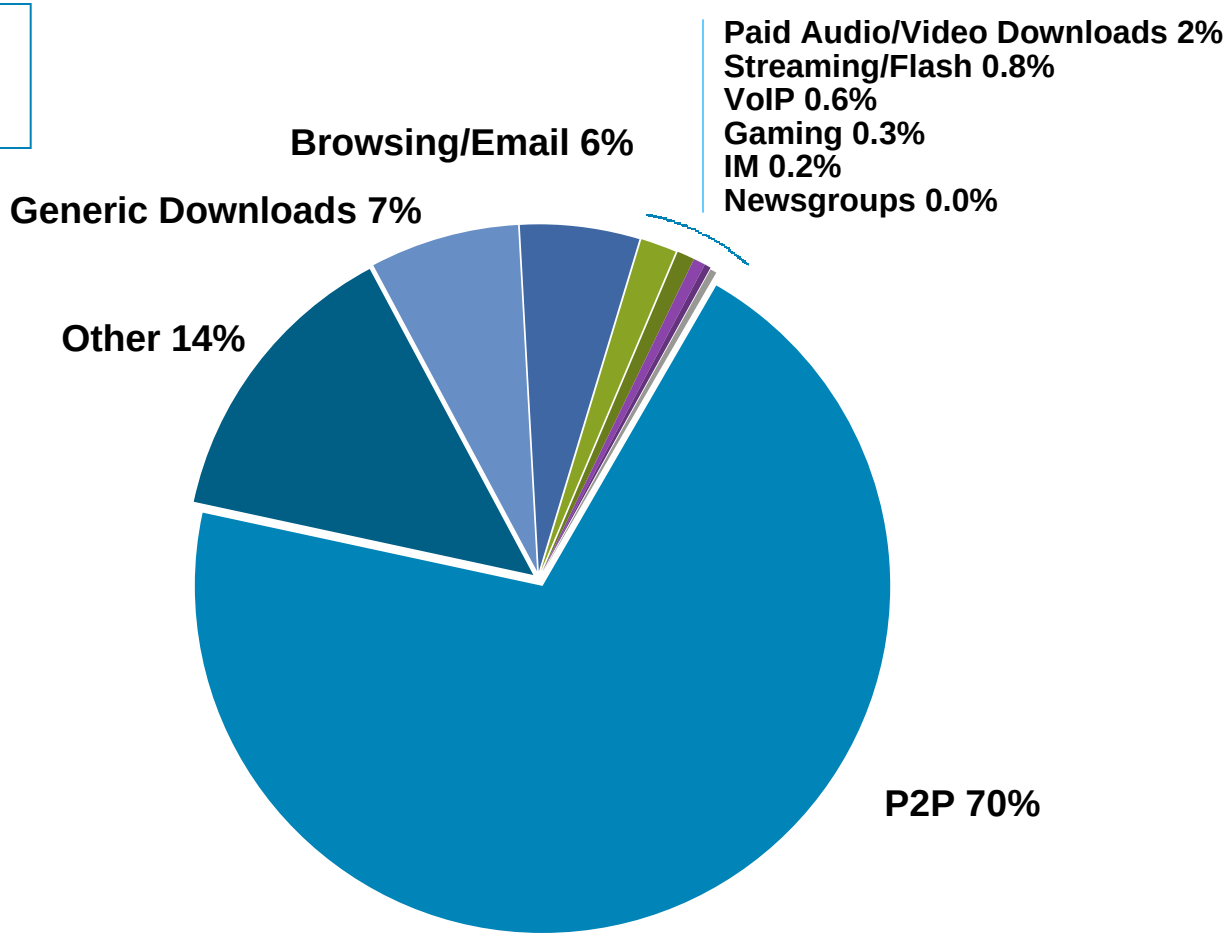
Consumer Broadband Traffic: APAC ISP

P2P is 70% of APAC Traffic

Video is ~73%
Data is ~26%
Voice is ~0.6%



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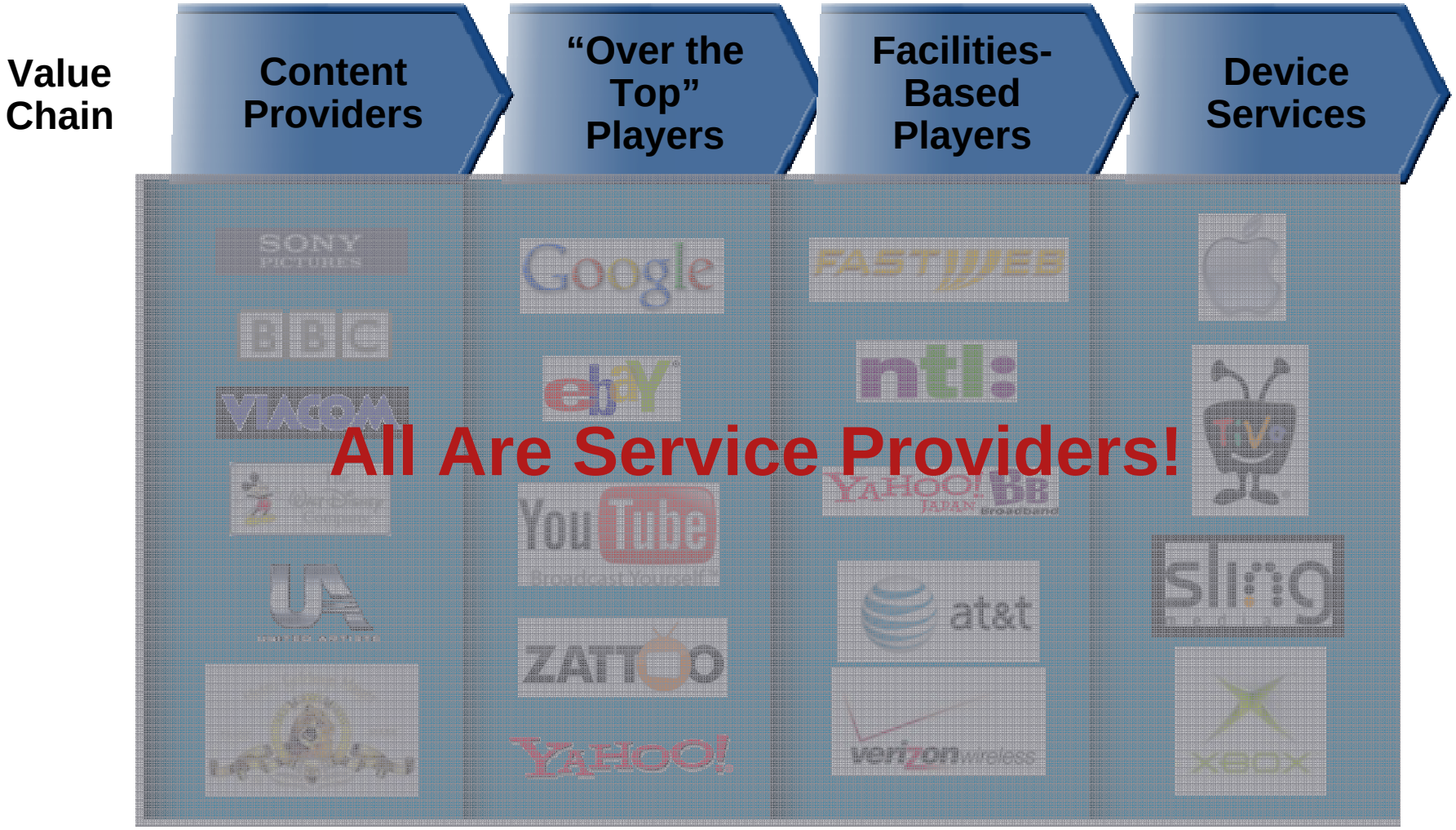
Main bandwidth driving factors: Non-Traditional Competitors aiming for Market Share



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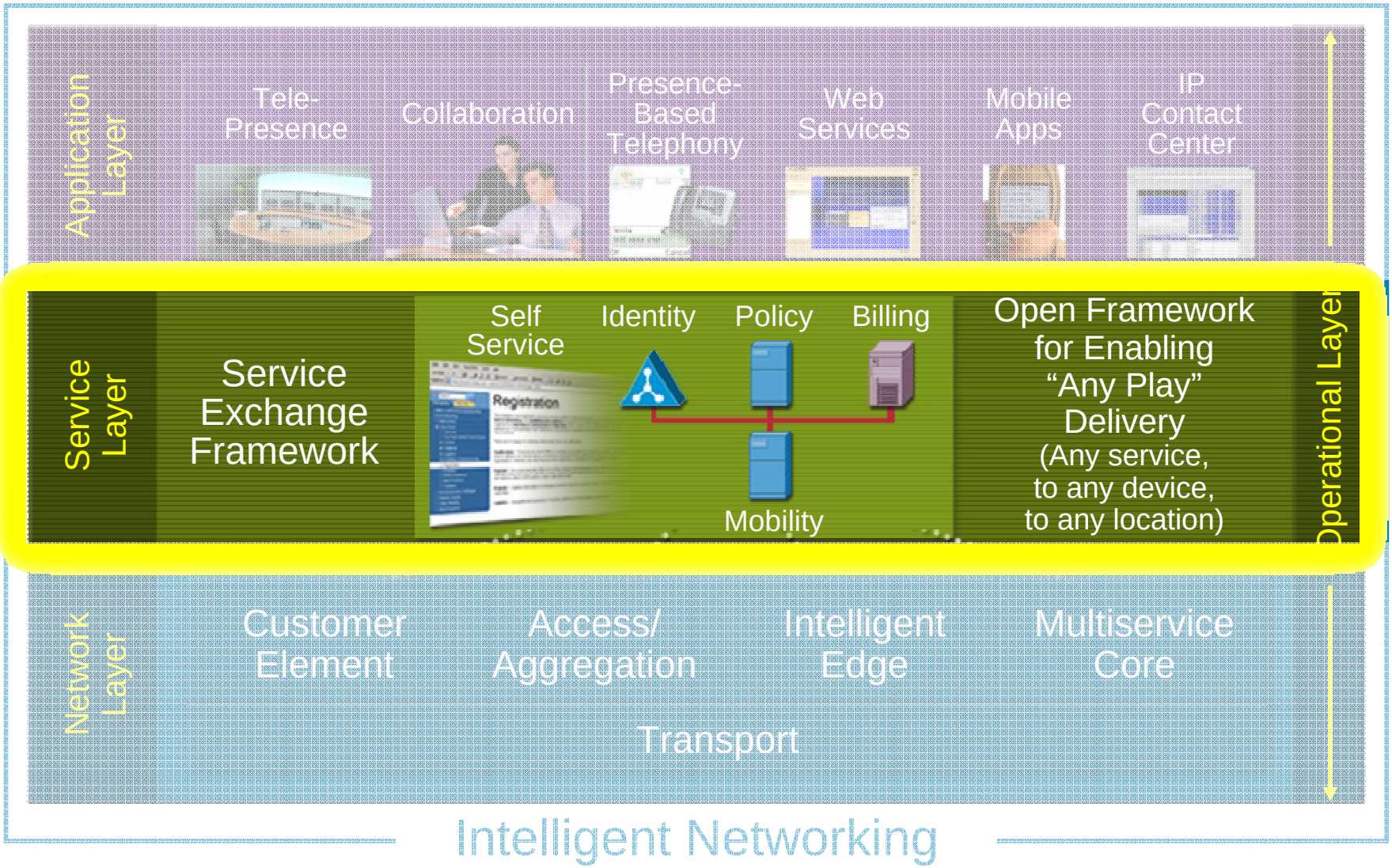
Cisco IP NGN - Service Convergence



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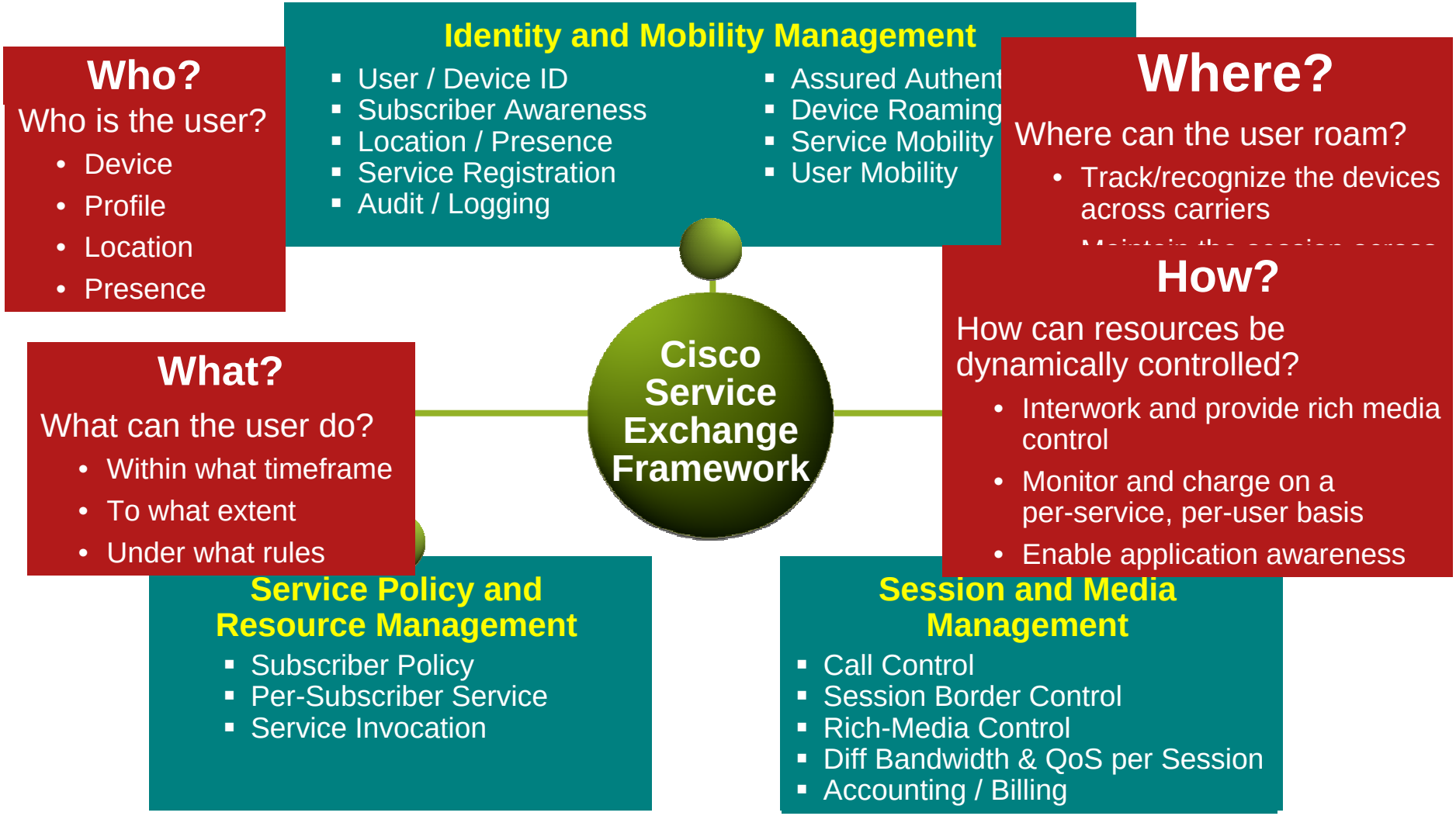
Service Exchange Framework

Making "Any Play" Real



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Intelligent IP Networks

Create New Service Opportunities and Increase ARPU

Revenue-Generating Services

- Walled Garden Portal – localized advertisement
- Bandwidth on demand (Turbo Button)
- Virus detection (TCP Session Limits)
- Virus Filtering of certain protocol flows
- Per-User Firewalling
- Differential treatment of traffic
- Pre-Paid Services (Volume, Time…)
- …

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Cisco Network components of relevance

- **SCE: Service Control Engine (Appliance)**

Stateful Deep Packet Inspection – In depth monitoring

Superior Performance

High Availability

Integration and Management

- **ISG: Intelligent Services Gateway (Part of special Cisco IOS)**

Access technology agnostic

Subscriber identification

Service and policy determination

Session policy enforcement

Session life-cycle management

Accounting for access and service usage

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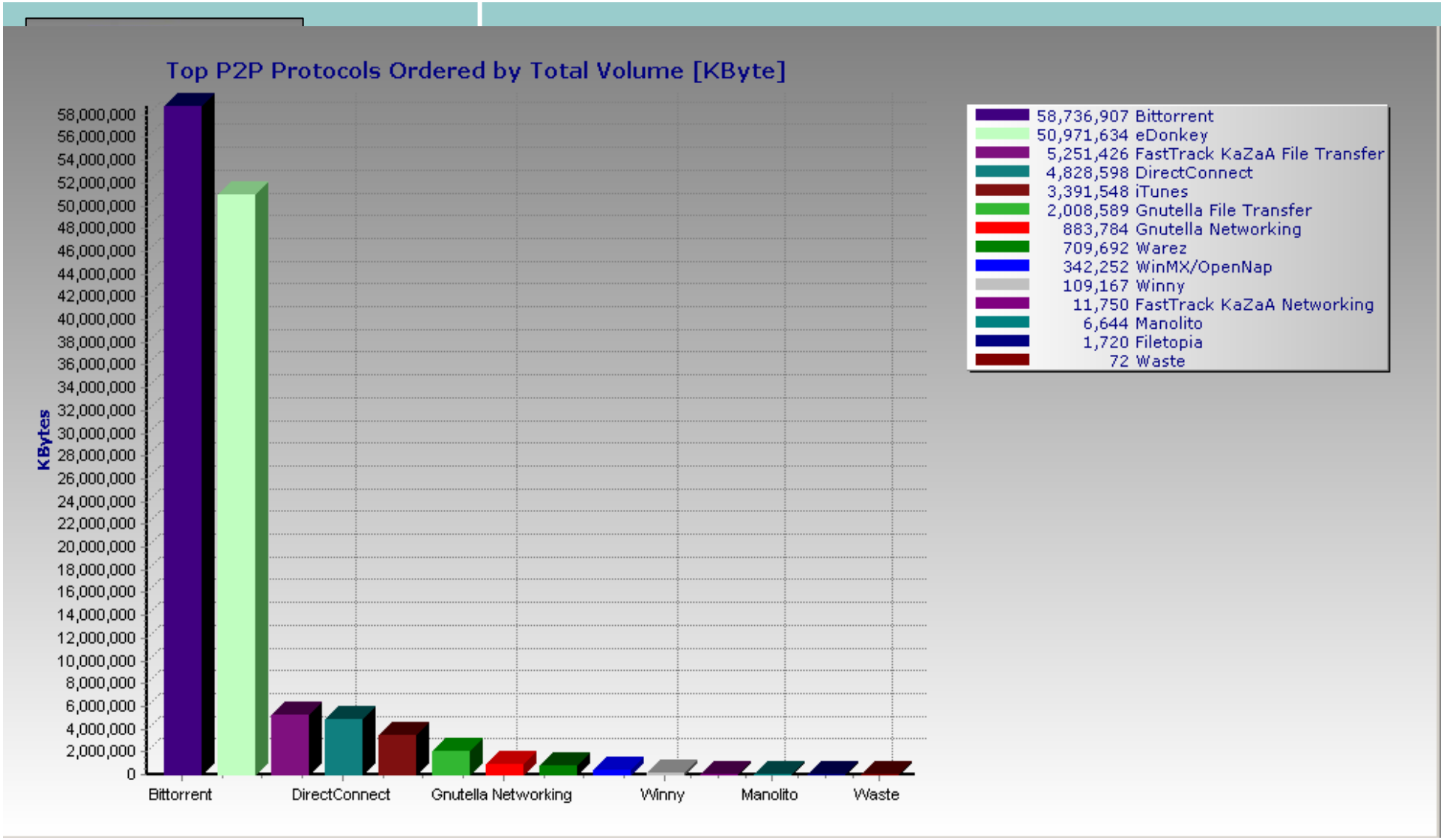
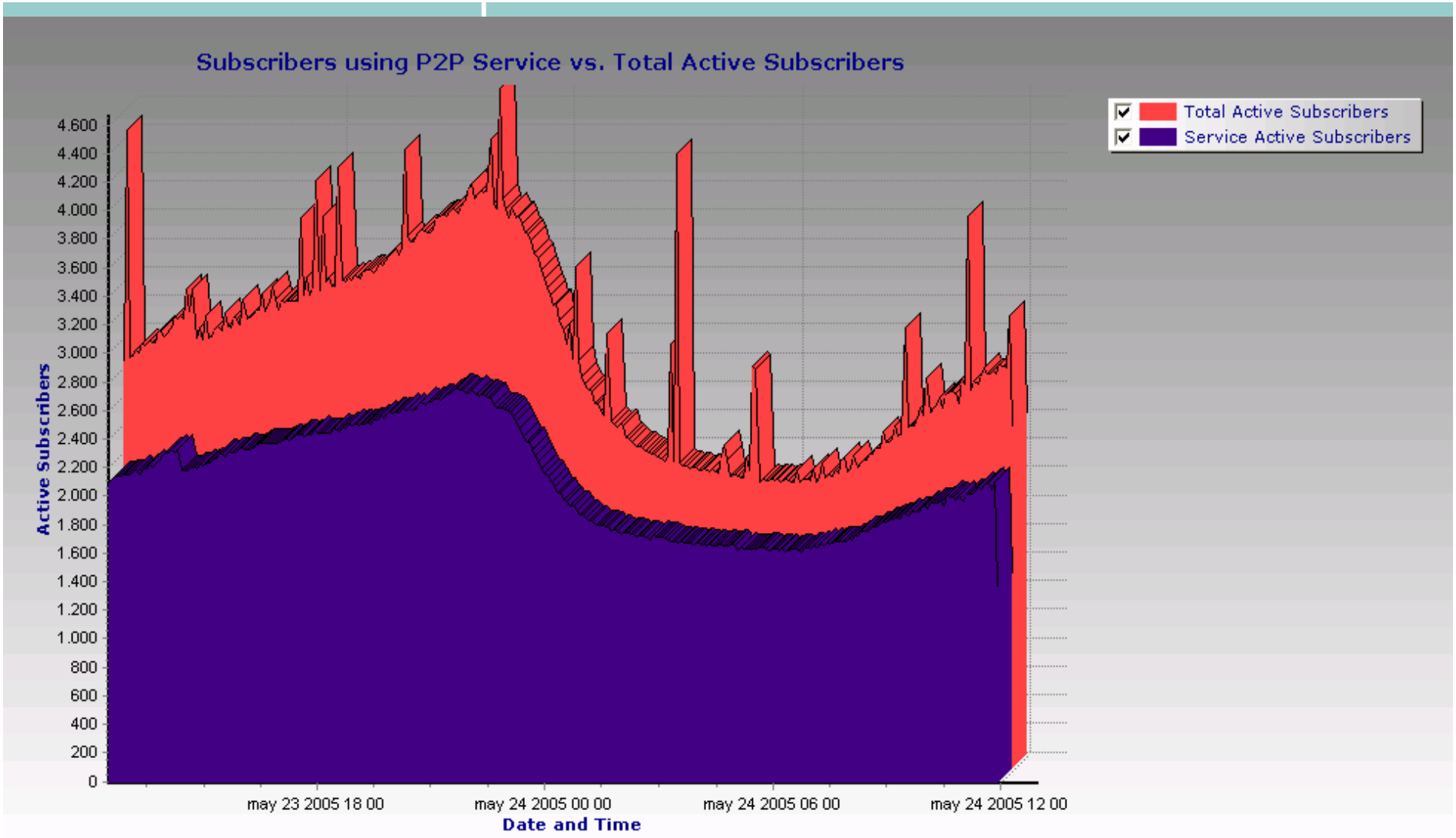
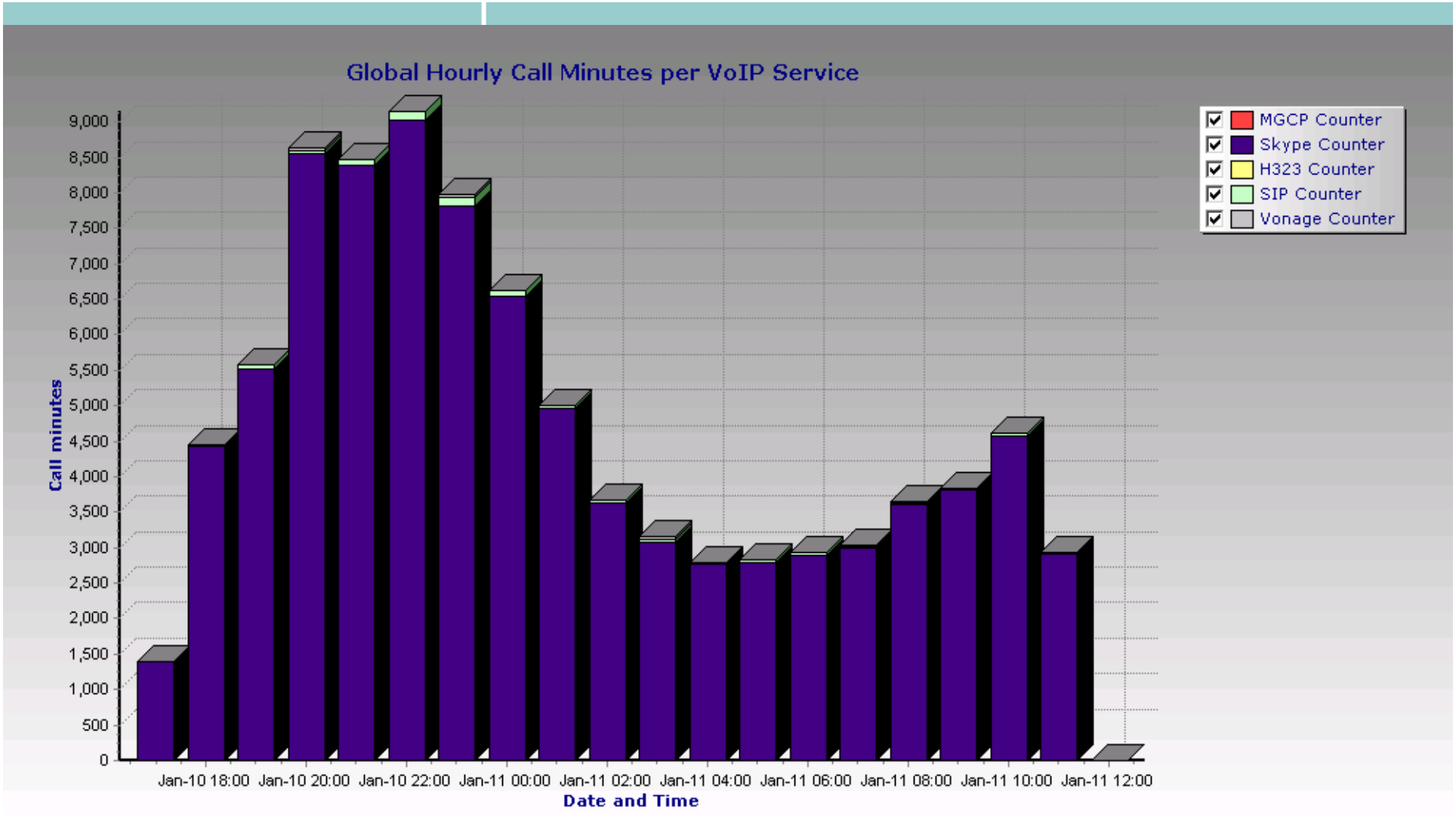
SCE: Network Analysis and Subscriber Intelligence



SCE: Network Analysis and Subscriber Intelligence



Network Analysis and Subscriber Intelligence



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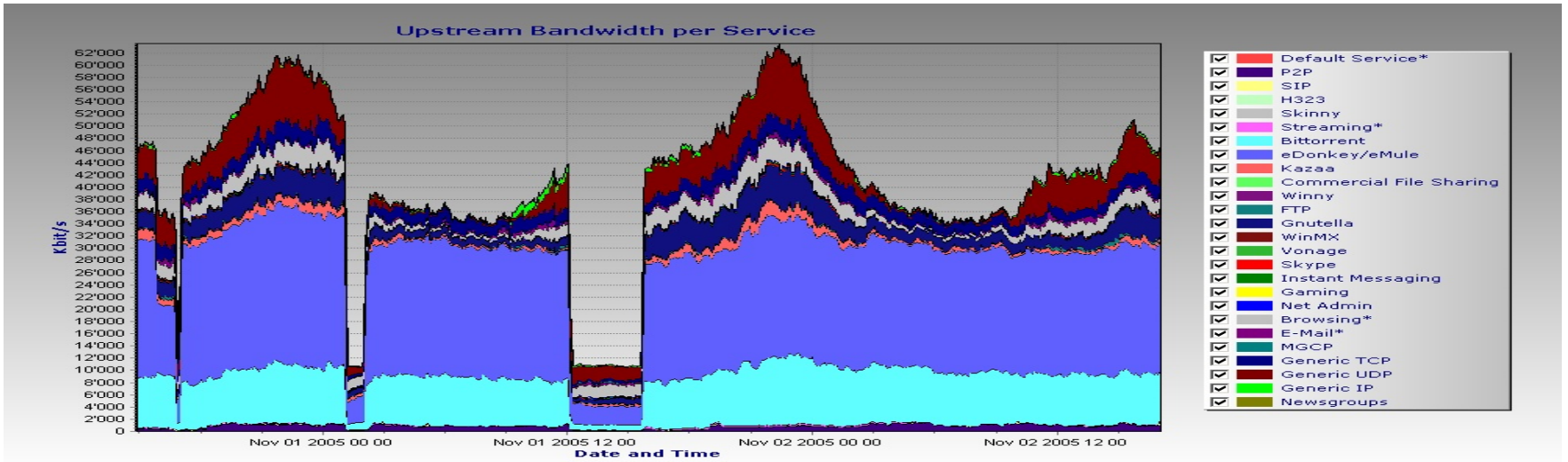
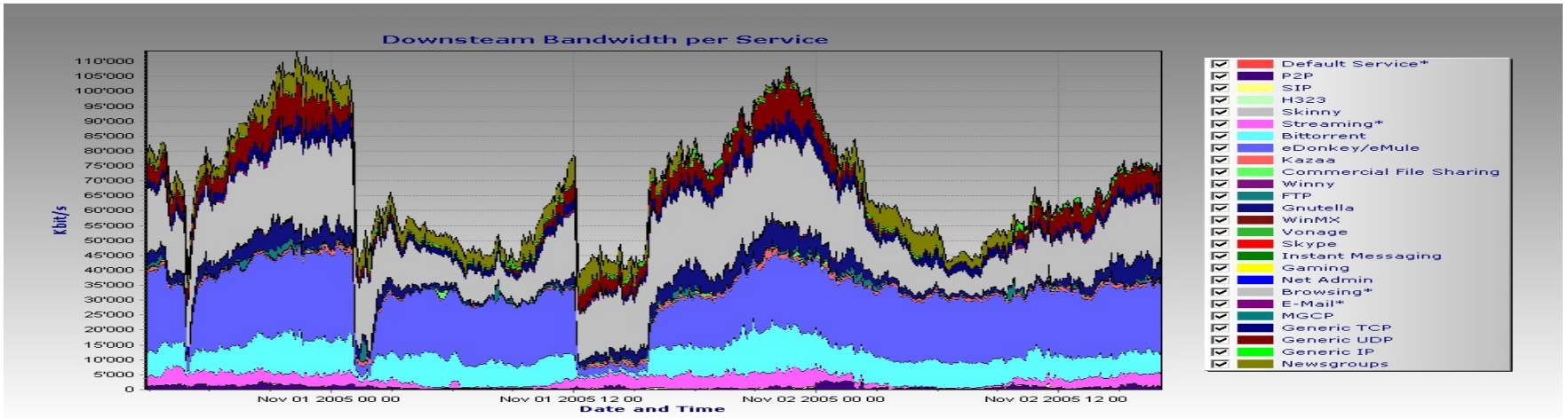
SCE policy control in action





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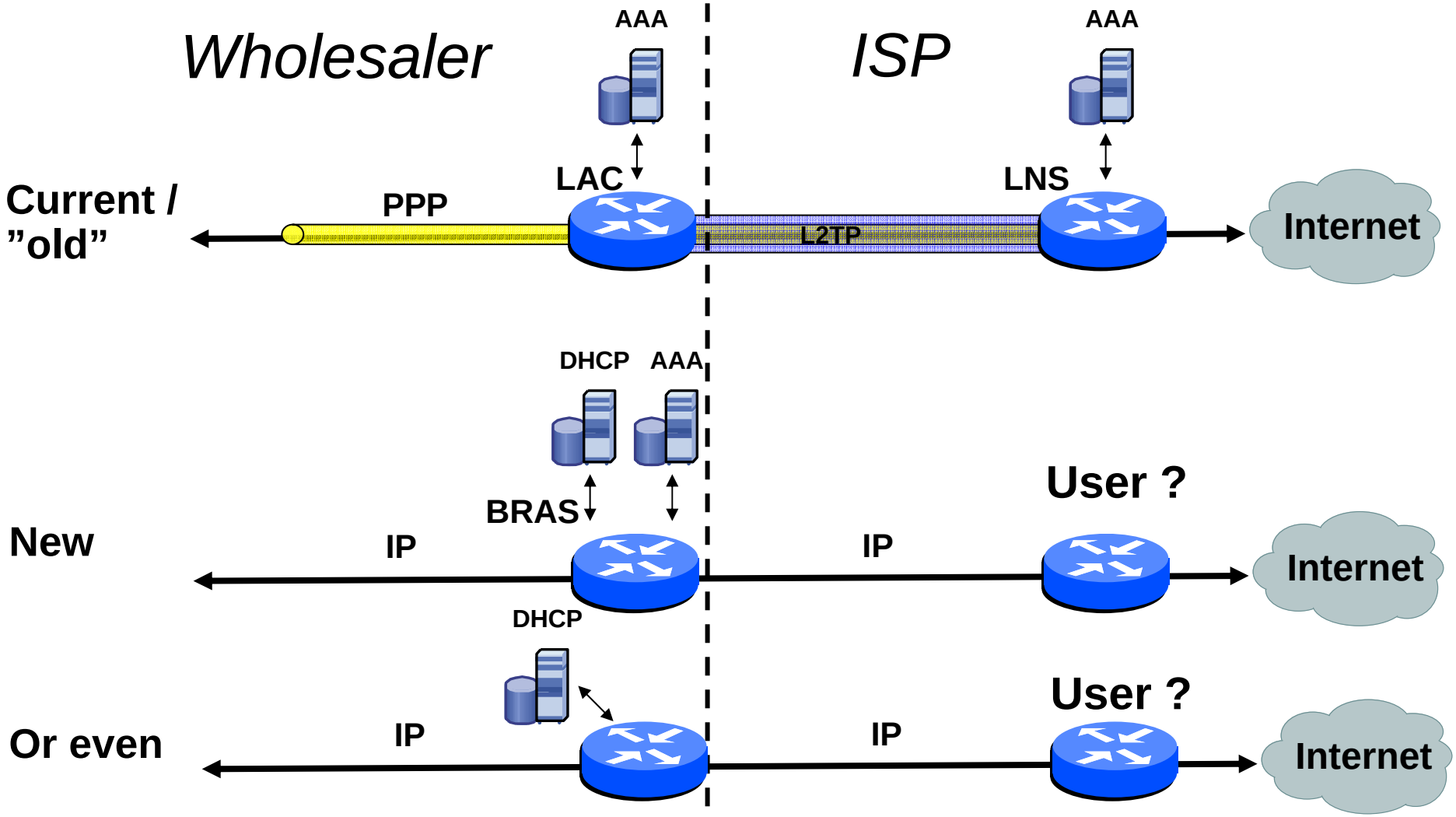
ISG use case 1
From PPP to IP sessions



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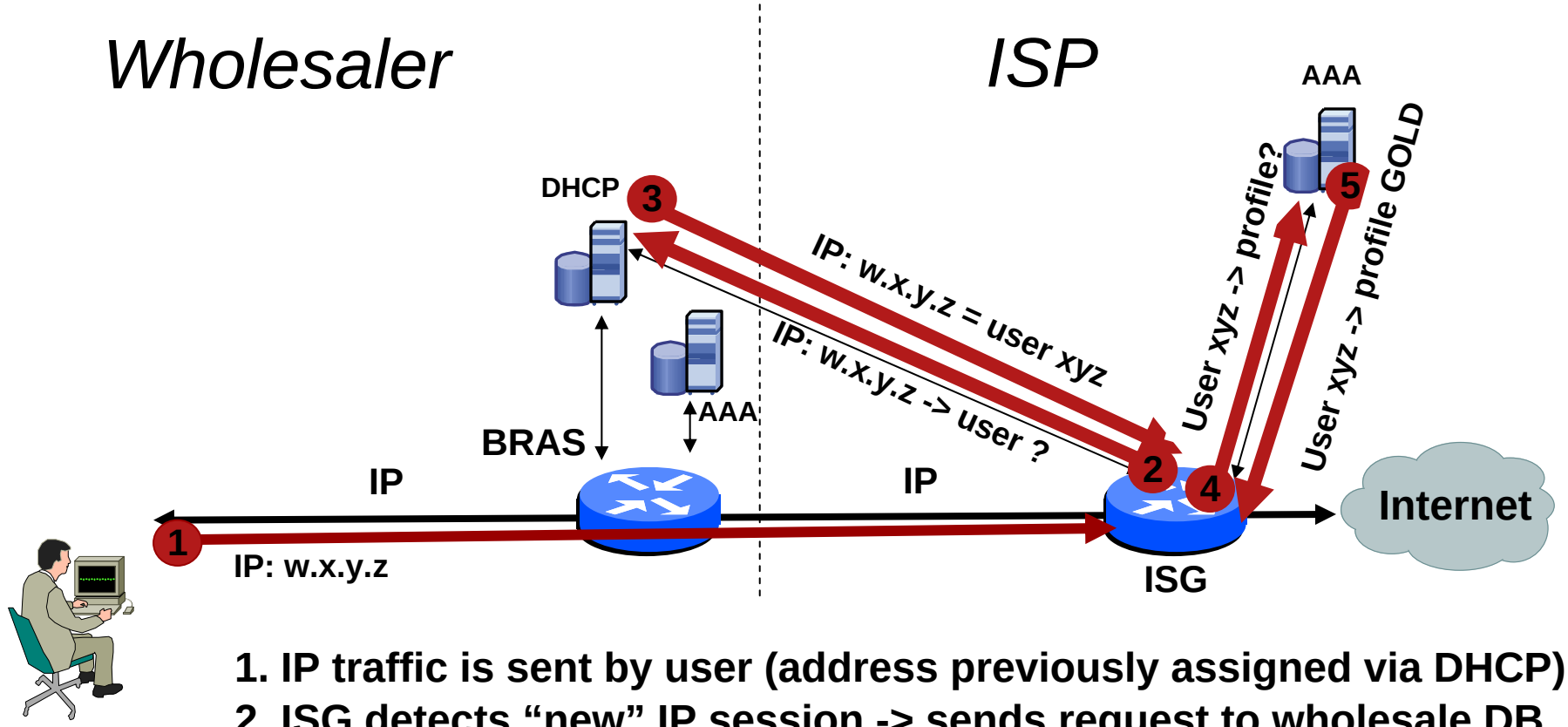
Use ISG to handle IP sessions



1. IP traffic is sent by user (address previously assigned via DHCP)
2. ISG detects “new” IP session -> sends request to wholesale DB
3. Wholesale DB responds with user information
4. ISPs ISG queries ISPs DB
5. ISPs DB returns user profile and applies settings on ISG

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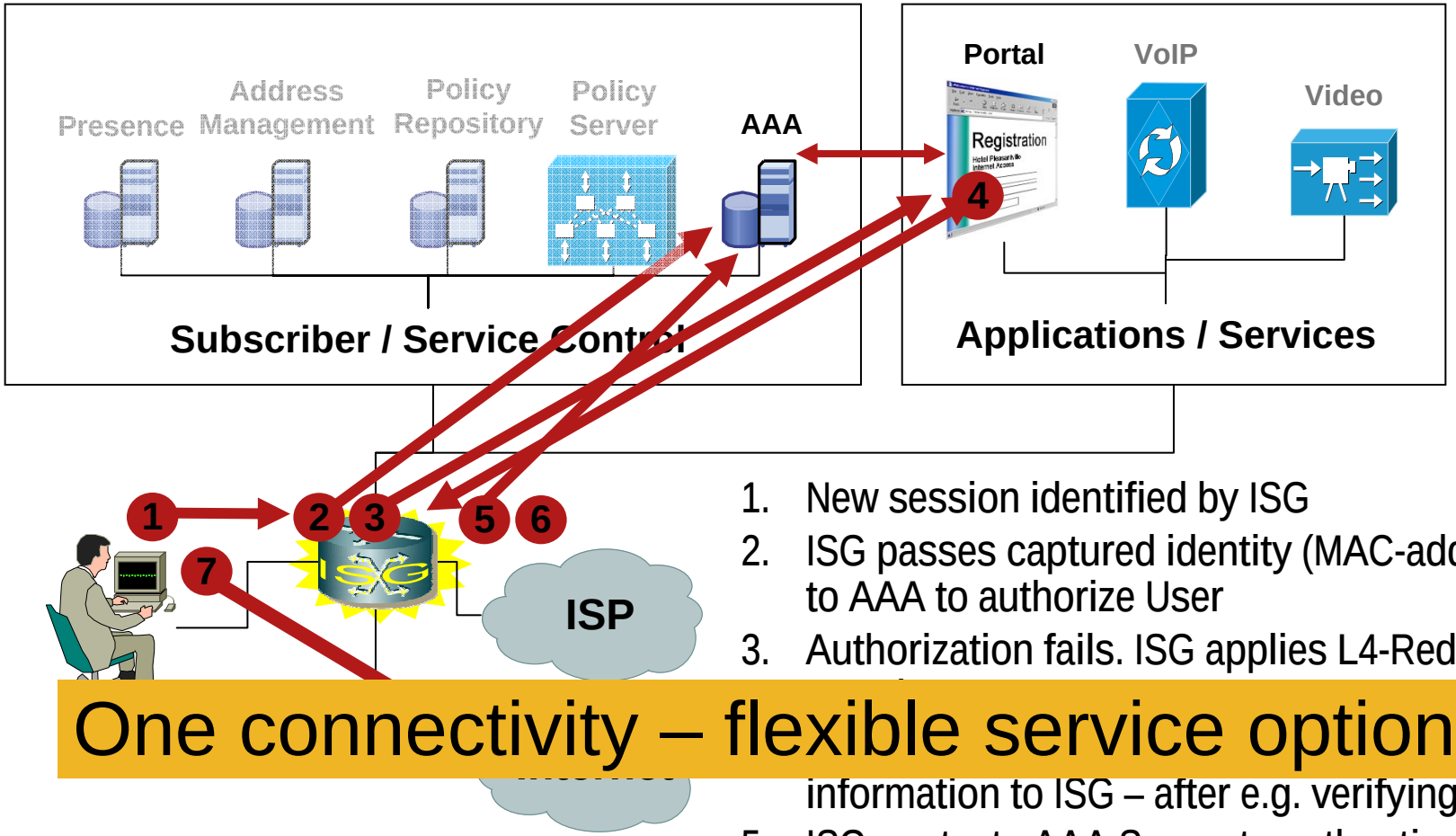
ISG use case 2
User self subscription with redirection



1. New session identified by ISG
2. ISG passes captured identity (MAC-address/Port) to AAA to authorize User
3. Authorization fails. ISG applies L4-Redirect to
4. information to ISG – after e.g. verifying payment
5. ISG contacts AAA Server to authenticate User
6. Authentication Success. L4-redirect removed
7. User now has Internet access

One connectivity – flexible service options

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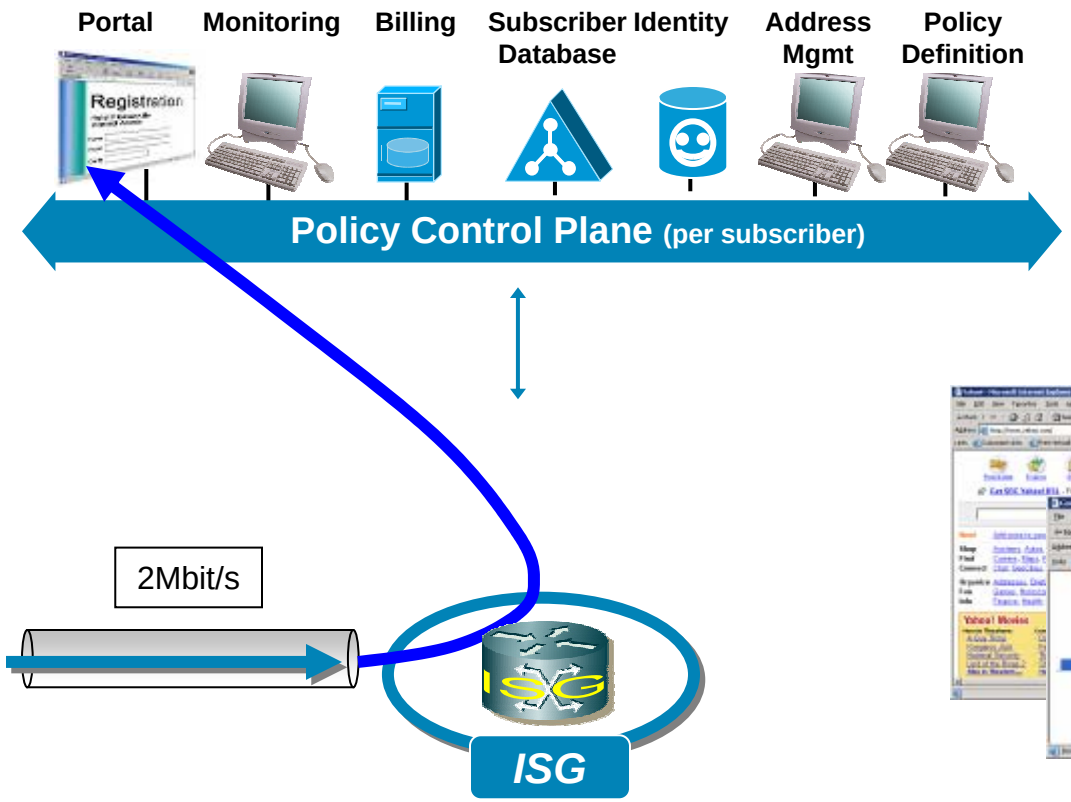
ISG use case 3
Cruise Control (1)

- Client has purchased a 2Mbit/s connection, but needs more temporarily or permanently. Speeding up the Internet connection does not need operator intervention. User can select their bandwidth on a portal



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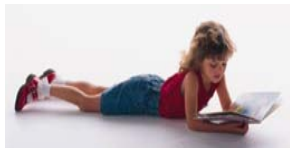
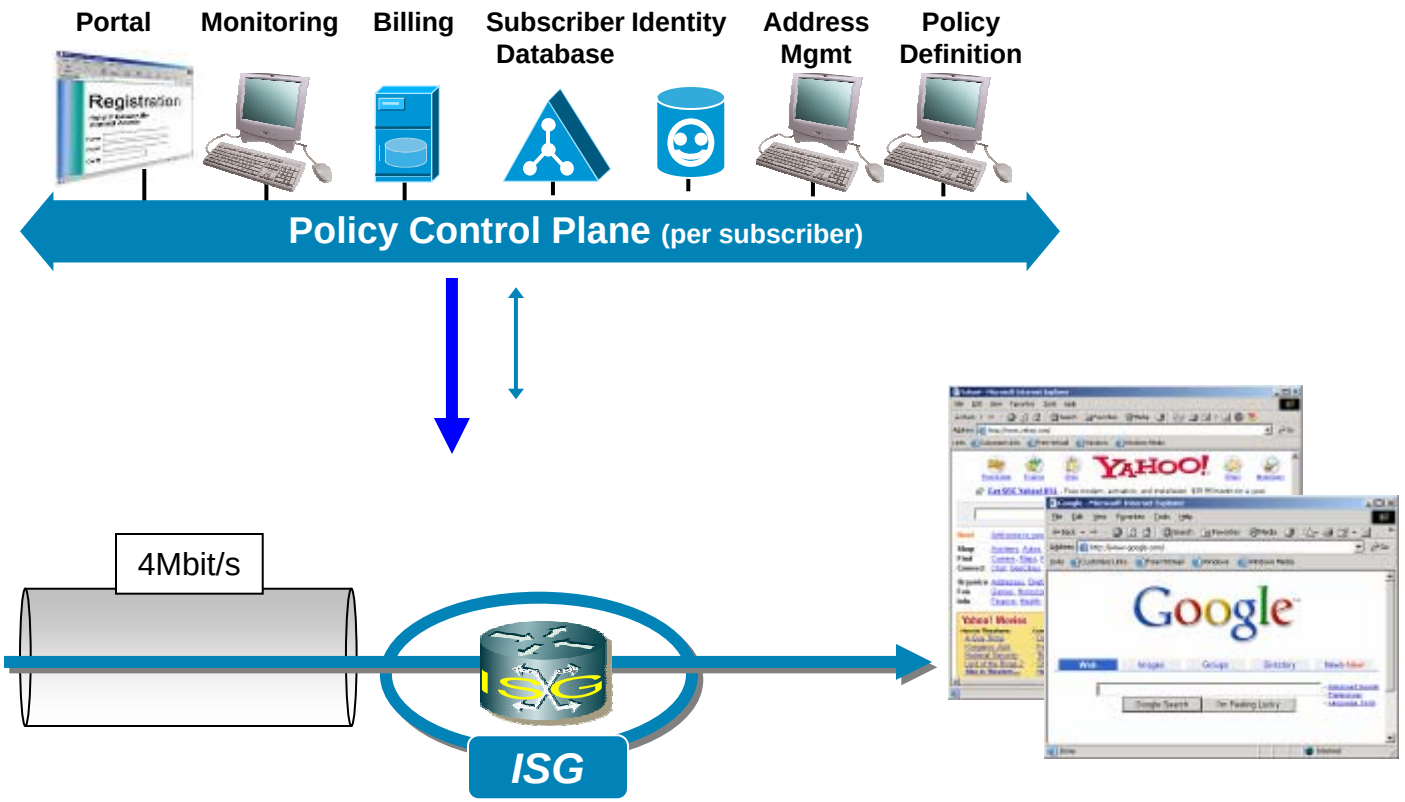
ISG use case 3
Cruise Control (2)

- Through the Policy Plane the new connection speed is signaled to the ISG gateway and instantiated for that user. This change can be permanent or temporary.





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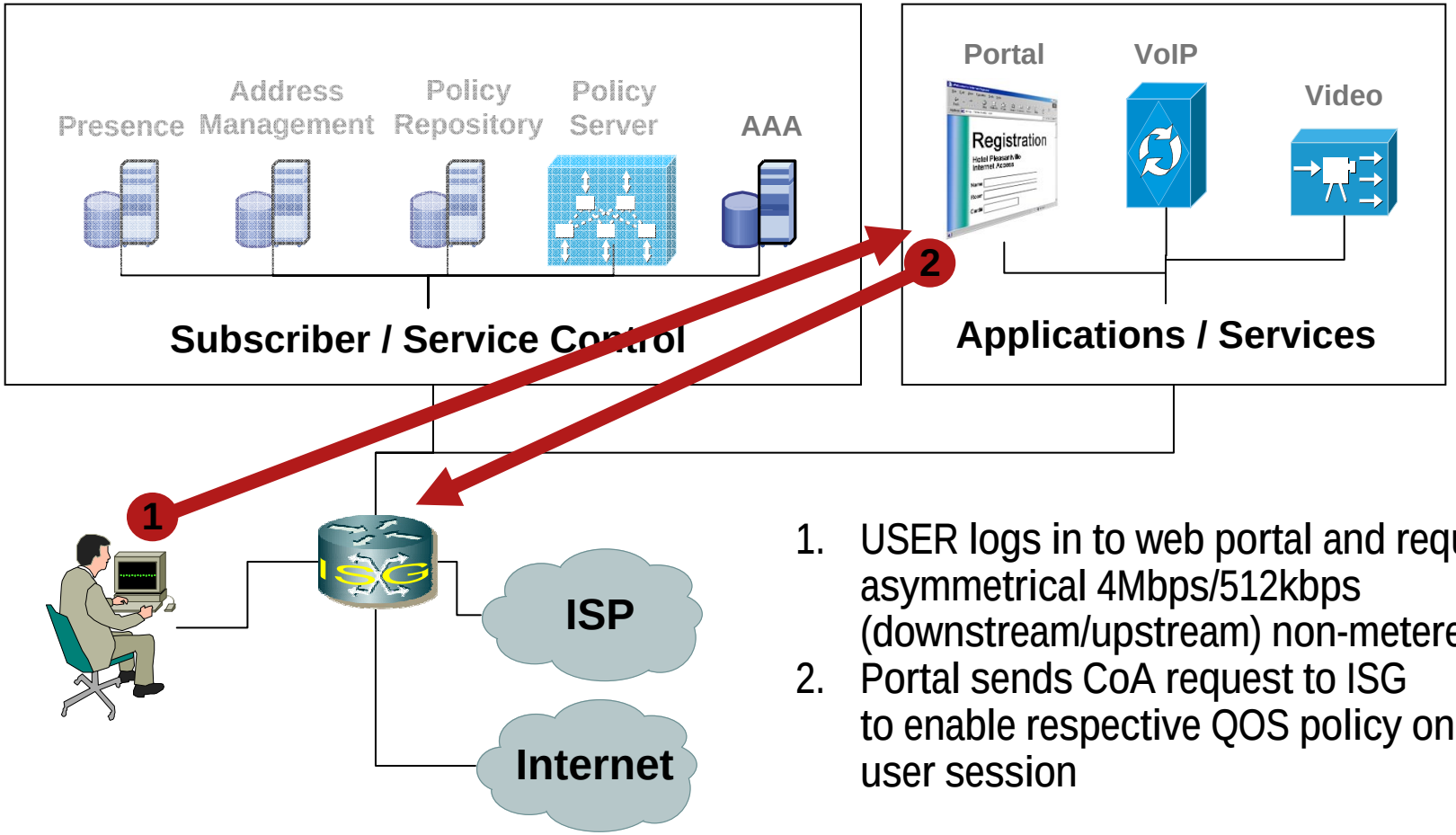
ISG use case 3: User bandwidth selection
ISG Based Deployment (Overview)



1. USER logs in to web portal and requests an asymmetrical 4Mbps/512kbps (downstream/upstream) non-metered service
2. Portal sends CoA request to ISG to enable respective QOS policy on user session

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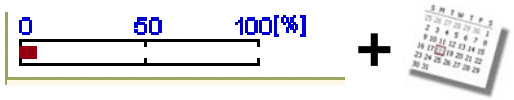
SCE use cases
Policy Based Service Combinations

- Quota based service: Premium Subscriber can download up to 100 gigabytes per month vs “plain subscriber” which only gets 40 GB/month

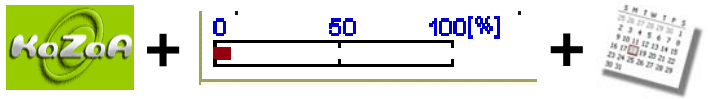


- Time based service: Premium Subscriber gets the full day 3Mbit/s downstream data rate, vs. “plain subscriber” that gets from 8am to 12pm just 1Mb/s and the rest of the day 3Mb/s

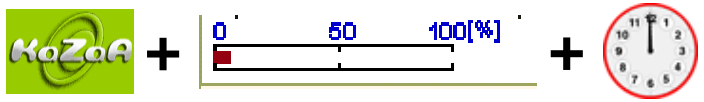
- Duration based service: In addition to a lower cost email only access you grant 60 minutes of “free Internet” access per month

- Application based service combinations:

  Premium Subscriber can download 30 gigabytes more of *P2P traffic* per month then plain subscriber



  Premium Subscriber can download P2P the whole day, compared to a plain user that can only do it after 12am.



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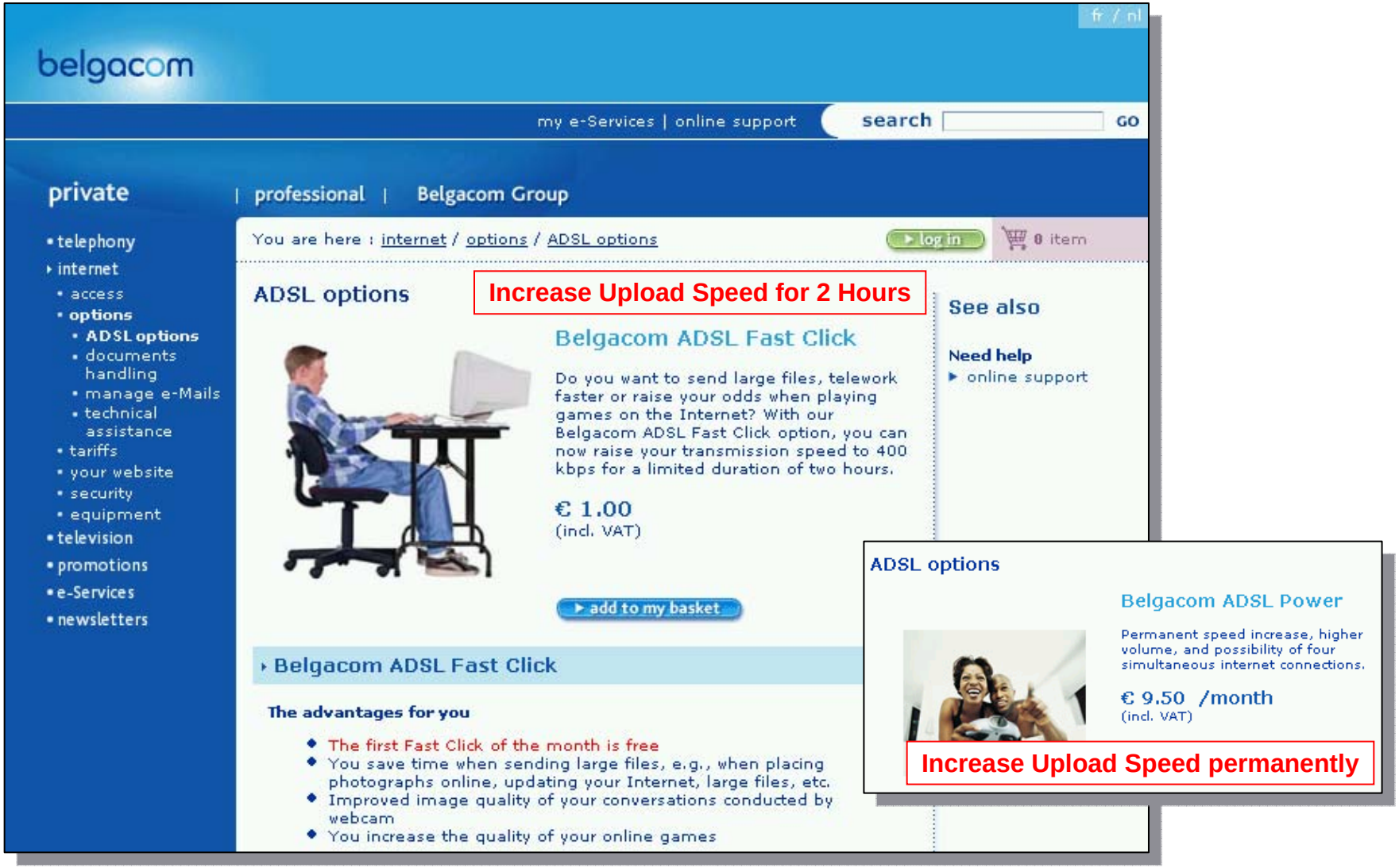
Turbo Button
Belgacom



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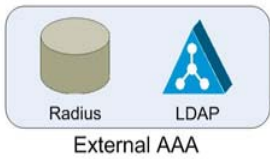
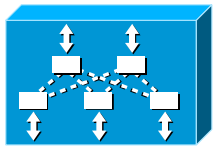
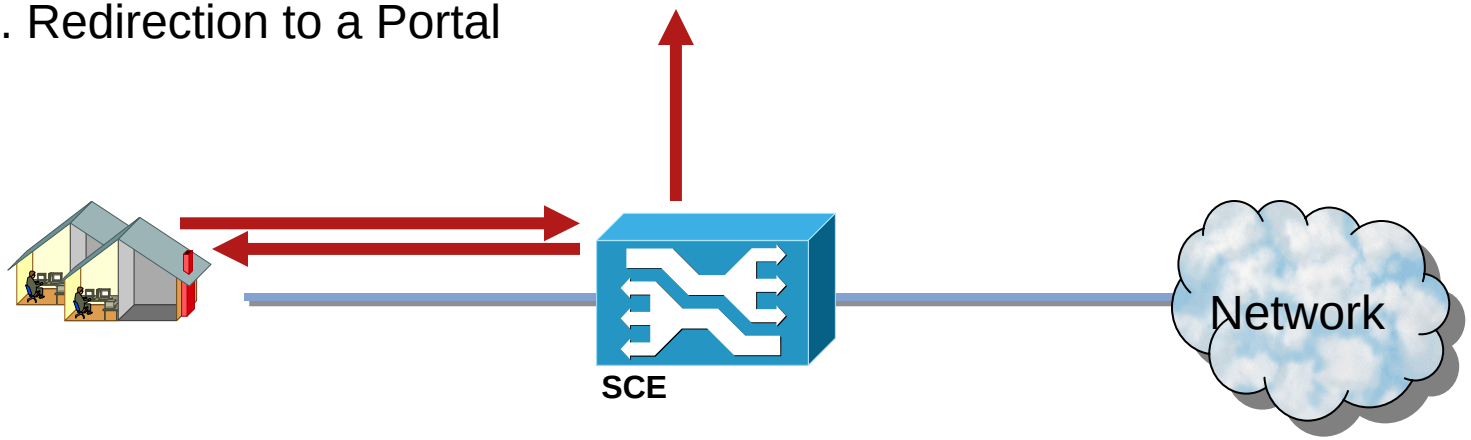
Dynamic Provisioning via a Portal





1. Redirection to a Portal



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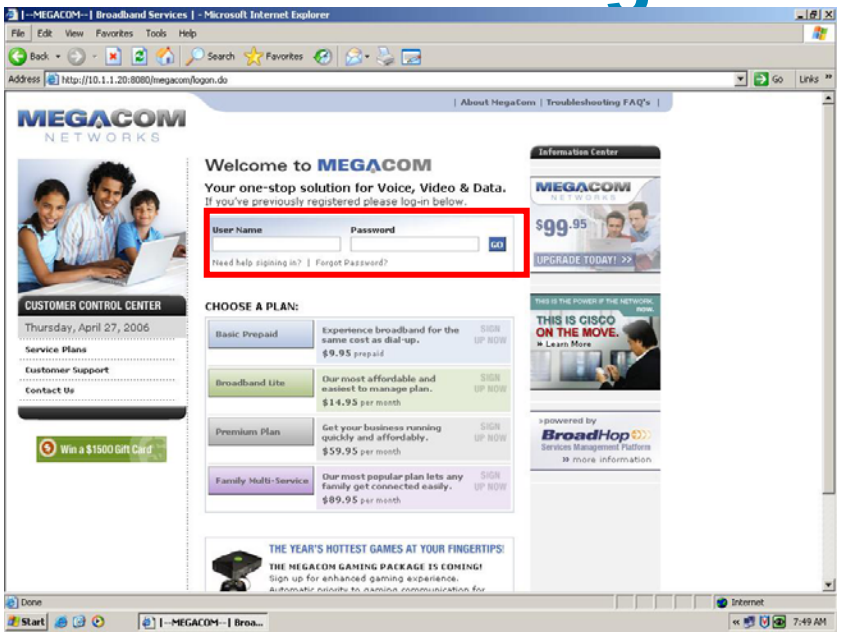
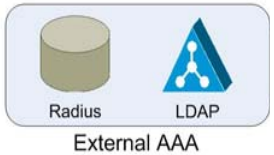
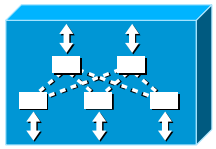
Dynamic Provisioning via a Portal

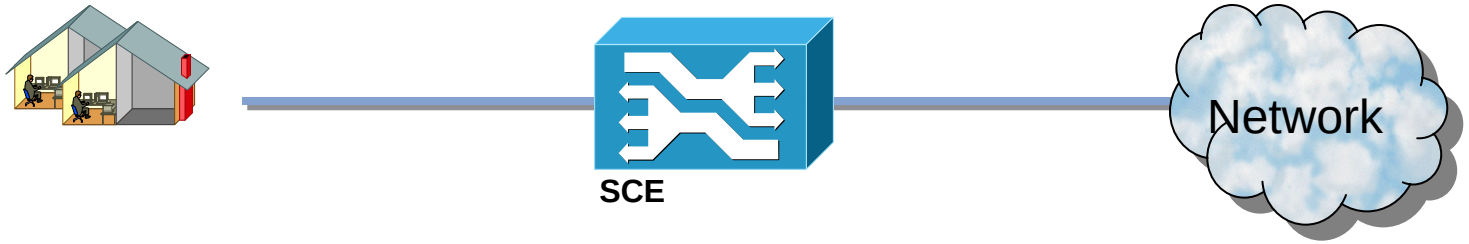




External AAA


Policy Server

2. Request for Login



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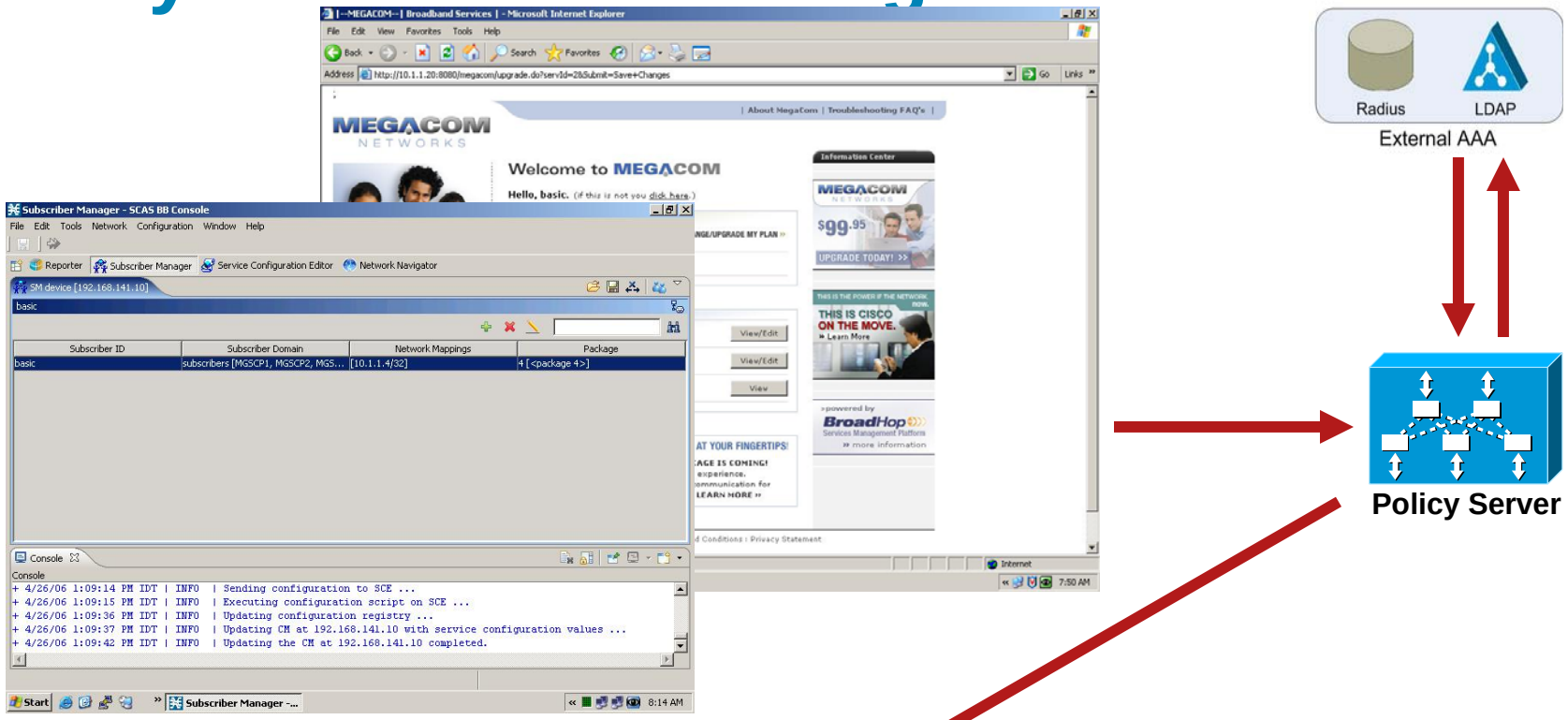
Dynamic Provisioning via a Portal



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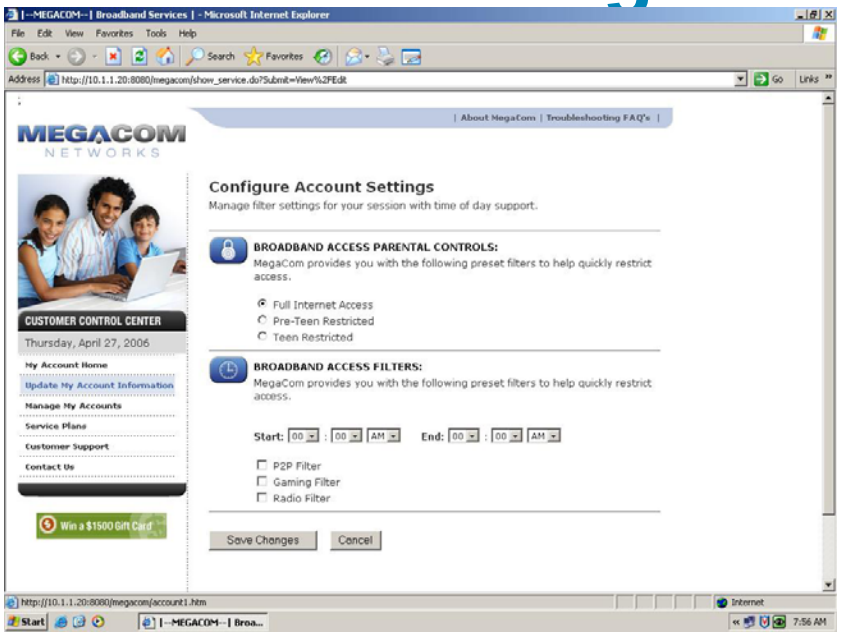
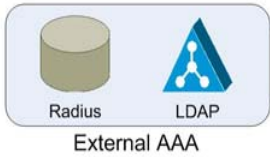
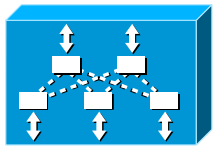
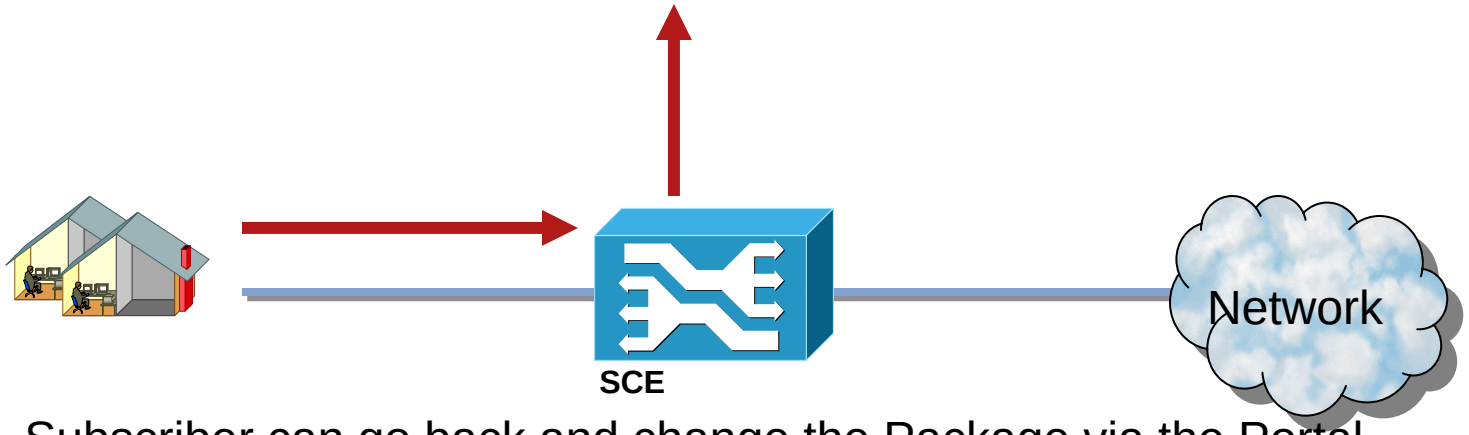
Dynamic Provisioning via a Portal









4. Subscriber can go back and change the Package via the Portal

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Another example: Multiple Quota Levels per Speed Level - *BT UK*

Provider What is this?	Download Speed What is this?	Download Limit What is this?	Set-up Cost	Monthly Cost	Year 1 Total Cost
BT Broadband Option 1	2Mb	2GB per month	free	£17.99	£206.88
BT Broadband Option 2	2Mb	6GB per month	free	£22.99	£269.88
BT Broadband Option 3	2Mb	20GB per month	free	£26.99	£317.88
BT Broadband Option 4	2Mb	40GB per month	free	£29.99	£356.88

Users are requested to Upgrade when systematically exceeding Quota

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Summary

- Bandwidth growth continues at fast pace (internet BW double every 4 months in recent past)
- Knowing what traffic is on the network allows easier service creation and differentiation
- ISPs need to differentiate through service flexibility
- Costs need to be in balance with revenue
- IP Sessions must be detectable and correlated with user profile to ensure “an ISPs future without PPP”
- Cisco Service Control Engine and Intelligent Services Gateway are key components of an intelligent network infrastructure

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