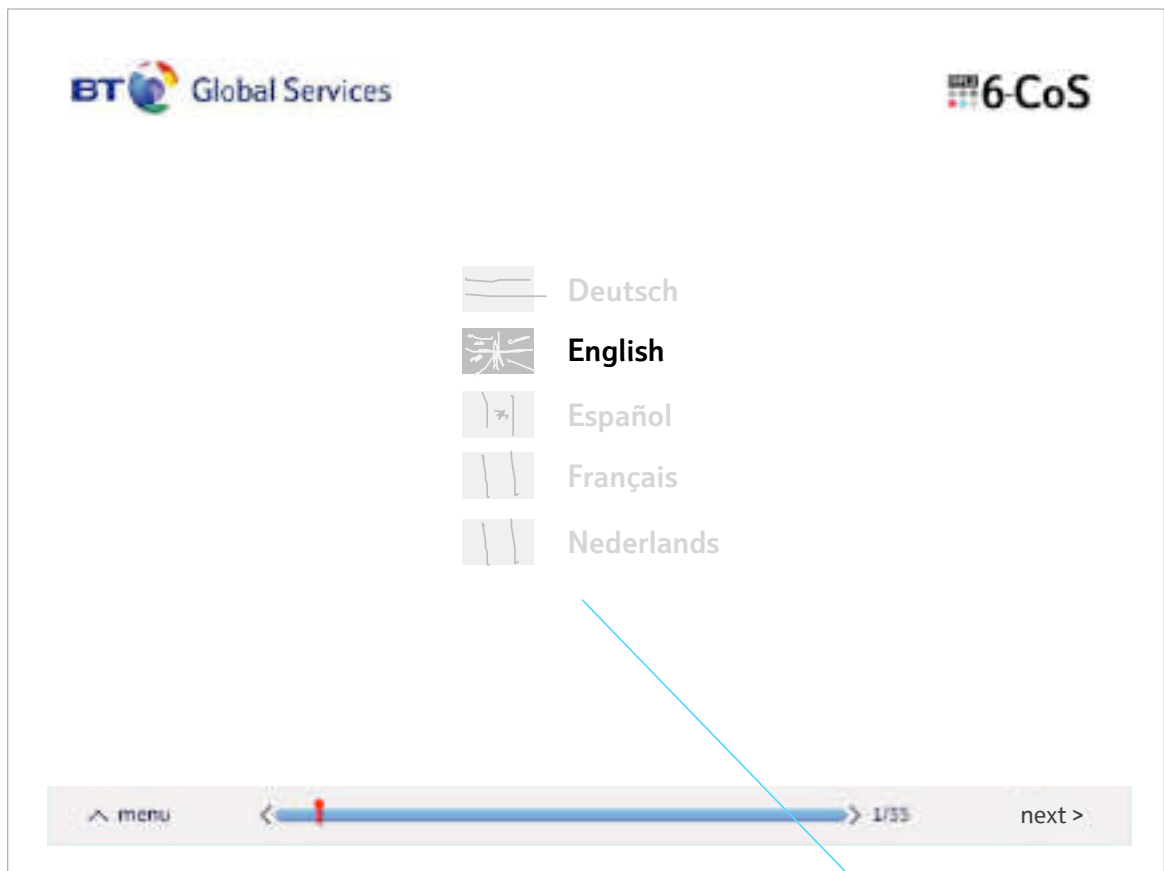


The Ten Minute Guide to MPLS 6-CoS Language Chooser



content only.
Look&Feel to follow.



sequence cue code

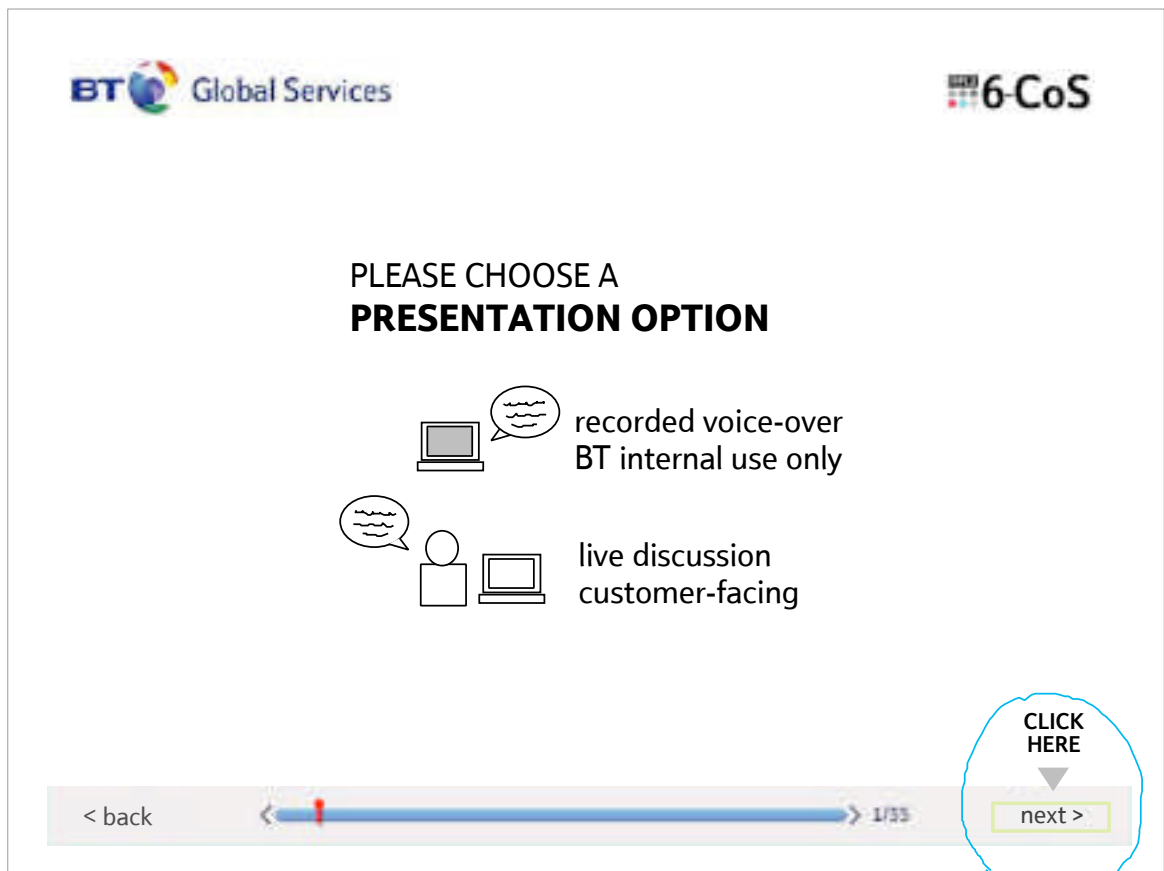
Note / Action

Voiceover

include language
chooser though we'll
only have English in the
first version

The Ten Minute Guide to MPLS 6-CoS Sound Chooser

content only.
Look&Feel to follow.



sequence cue code

Voiceover



Note / Action

"CLICK HERE"
appears after 5? secs


The Ten Minute Guide to MPLS 6-CoS Sound Checker

content only.
Look&Feel to follow.






CHECK THE SOUND LEVEL



<< click here

If necessary adjust your
headphone or speaker setup.

< back



begin >

sequence cue code

Note / Action

Voiceover

sound checker only
appears if user has
chosen 'recorded
voice-over' version

The Ten Minute Guide to MPLS 6-CoS

Flash-based 5second logo animation with sound sting

content only.
Look&Feel to follow.



The Ten Minute Guide to MPLS 6-CoS

MENU

00 Menu

content only.
Look&Feel to follow.
 The Ten Minute Guide to . . . **MPLS 6-CoS**

<i>Overview . . .</i>	01	What is Class of Service (CoS) ?
<i>Inside the pipe . . .</i>	02	What is 3-CoS ?
	03	What is 6-CoS ?
	04	How does Scheduling allocate bandwidth ?
	05	What is Bursting ?
	06	What does Out-of-Contract mean ?
<i>Inside the IP header . . .</i>	07	What is DiffServ ?
	08	What are Class Selectors ?
	09	What is Transparency ?
<i>Learning Zone . . .</i>	10	SIM CoS Interactive Illustration
<i>Next Steps . . .</i>	11	Where can I find more information ?

users can jump to
these pages directly
clicking "menu"
(bottom left) will
bring them back here

[GLOSSARY](#)

< back



next >

sequence cue code

Note / Action

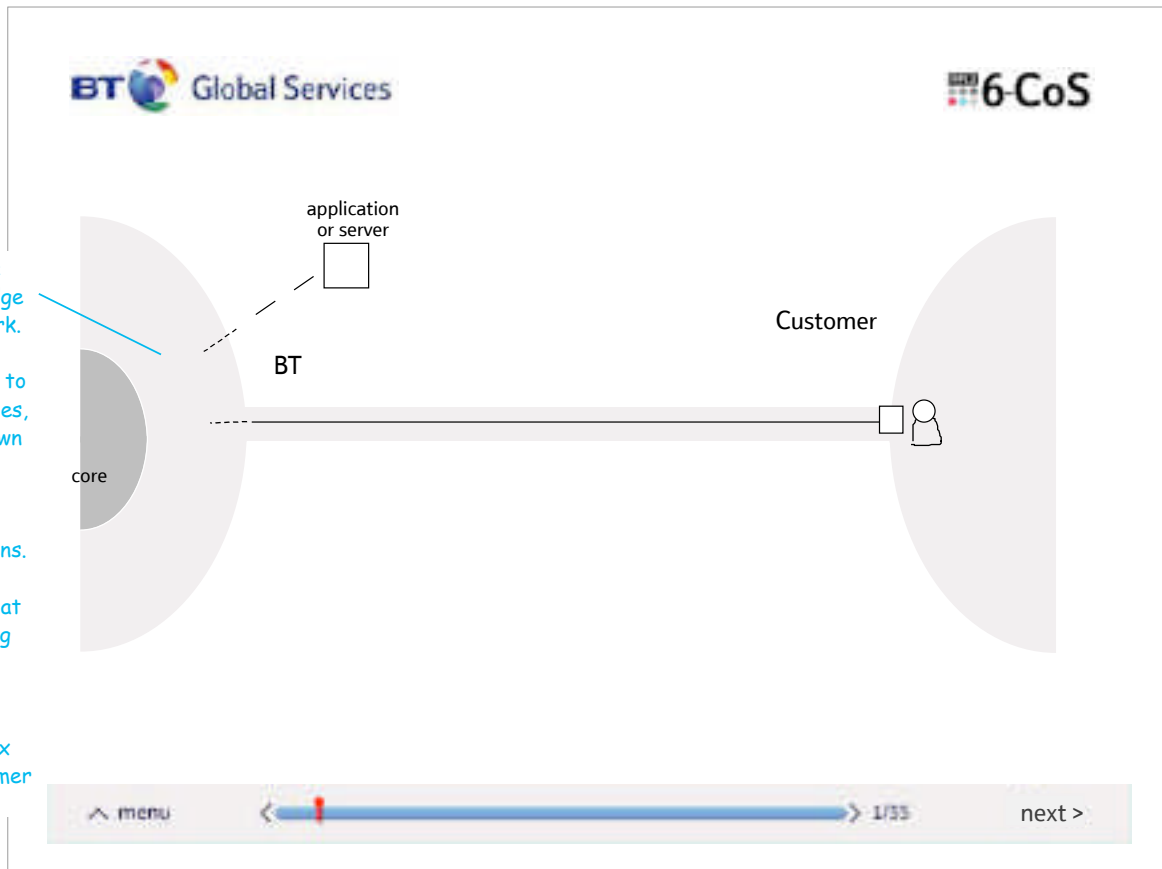
00_01

Voiceover

Welcome to the Ten Minute Guide
to BT's MPLS Class of Service solution, 6-CoS

You can jump in by clicking one of the Frequently Asked Questions shown,
. . . or click "Next" to work through them in a logical sequence.

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.01 What is [Class of Service](#) (CoS) ?customer traffic
arrives at the edge
of the BT network.Then it connects to
other third parties,
who have their own
access points.so the lines just
signify connections.
and the dashed
style signifies that
we aren't showing
the exact route
through BT.maybe show a box
where the customer
access joins BT.

sequence cue code

Note / Action

01_01

Voiceover

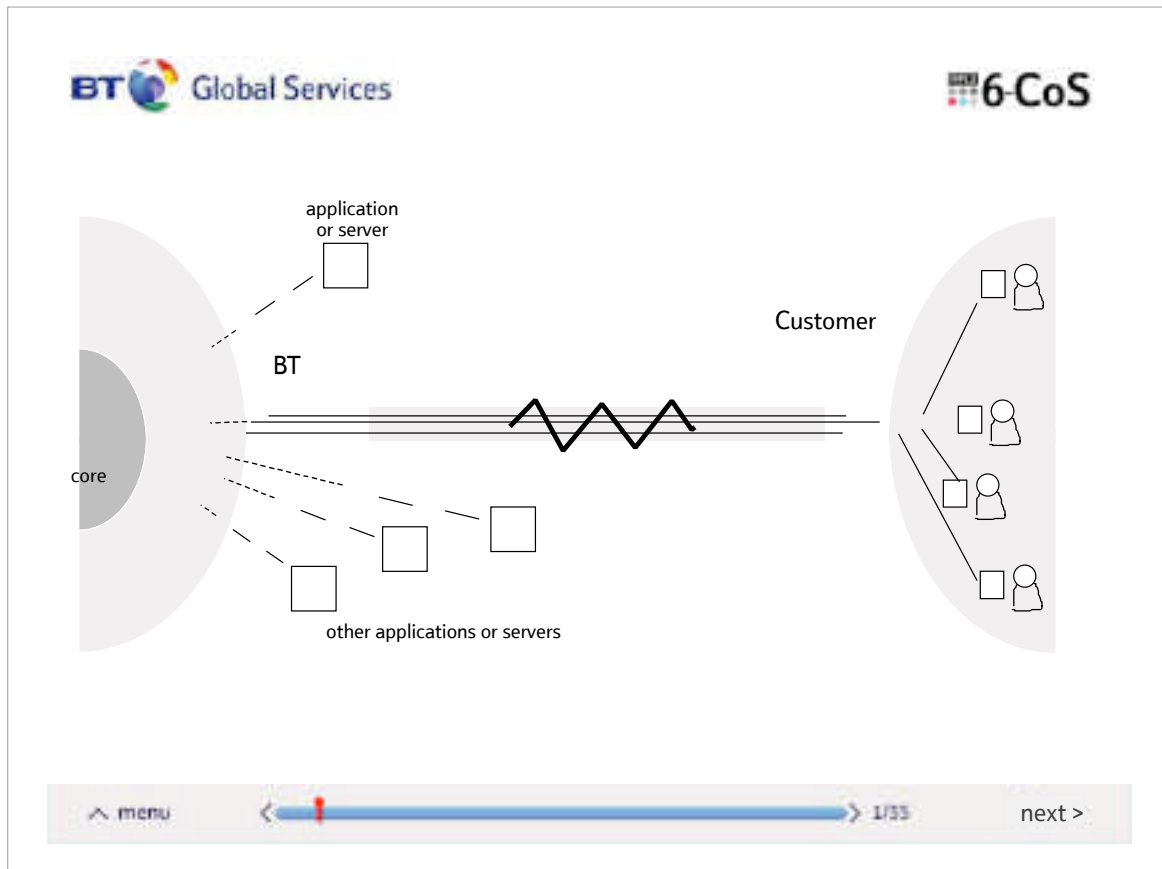
Class of Service is a way of organising shared bandwidth more efficiently, according to the needs of each application.

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

01 What is [Class of Service](#) (CoS) ?

transition



sequence cue code

01_02

Voiceover

As more applications come online,
and user demand increases,
congestion and delays can arise.

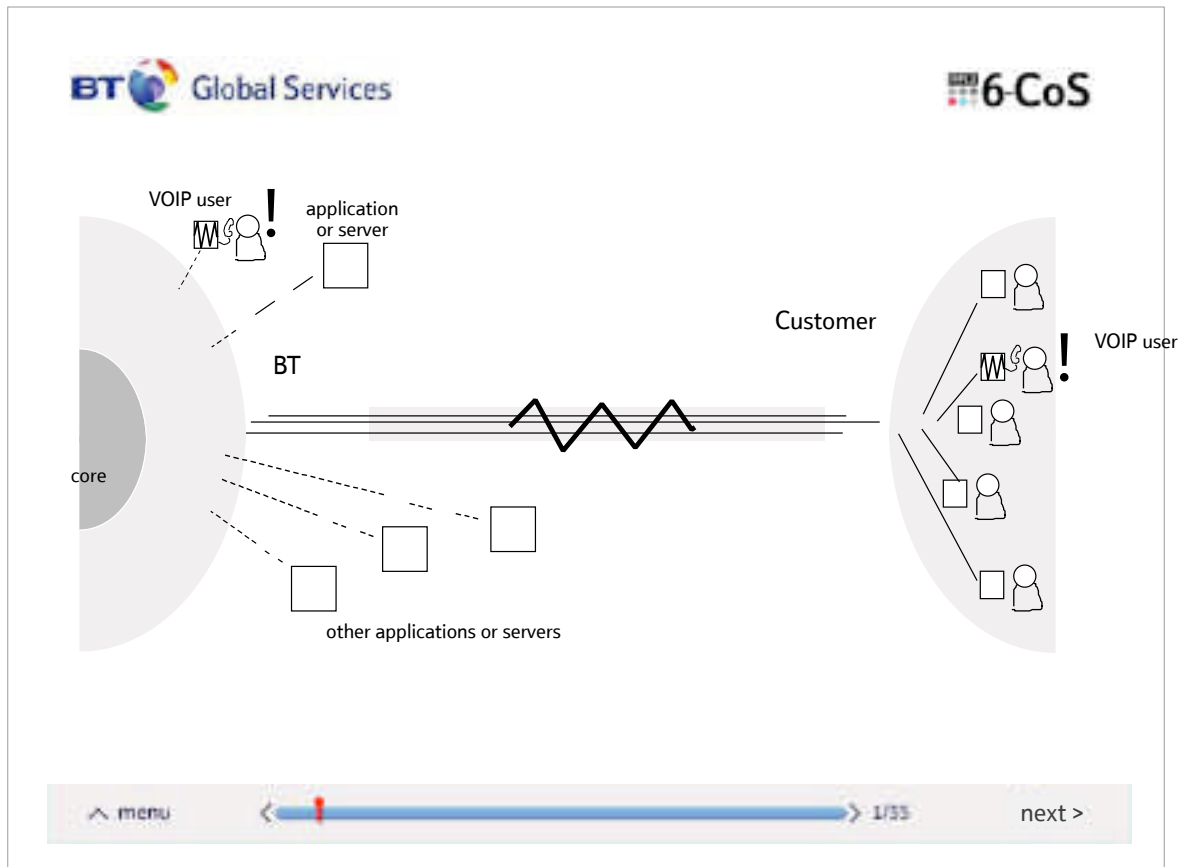
Note / Action

<SFX: medium
amount of data
conflict>

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

01 What is Class of Service (CoS) ?



sequence cue code

Note / Action

01_03

Voiceover

Email or web-browsing is not significantly affected

but users on business-critical applications
like Citrix or SAP
soon notice performance drops.

And real-time applications,
like voice-over-IP, security, or video-conferencing,
can become completely unusable.

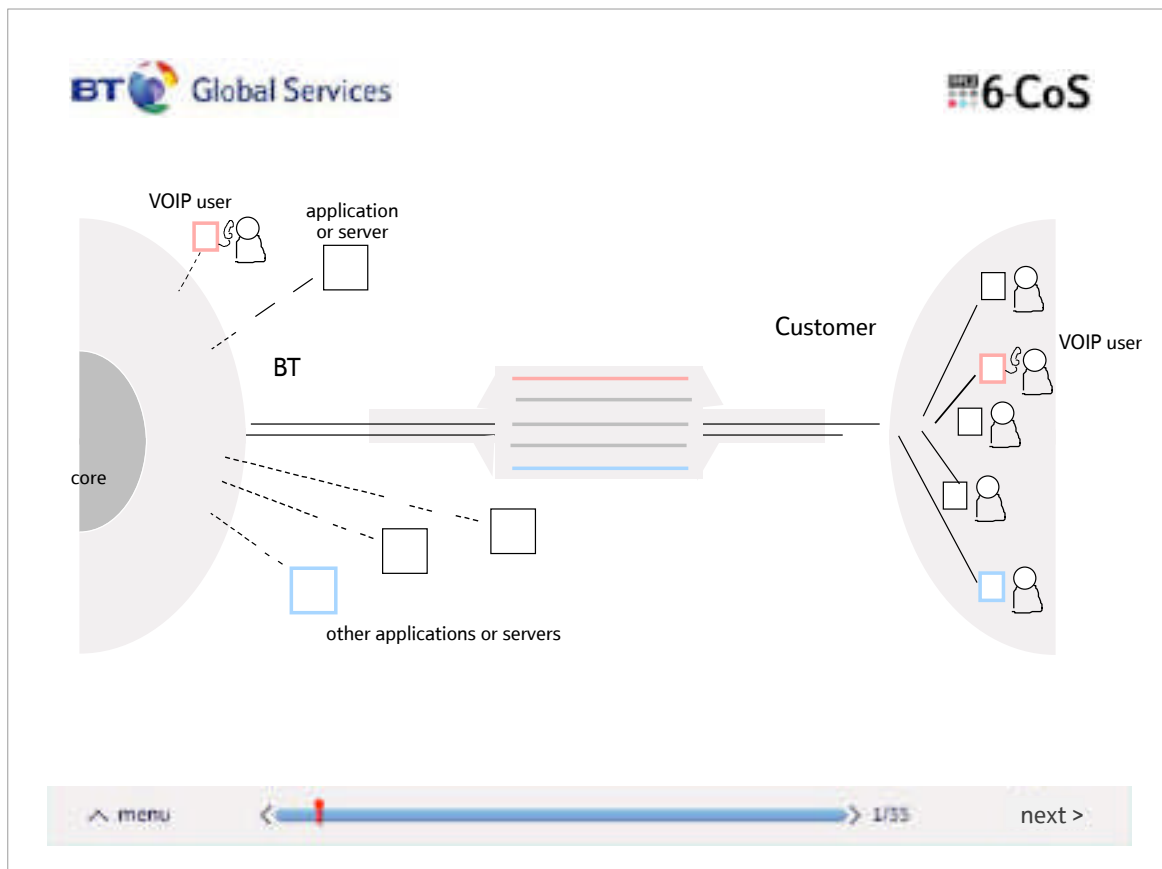
<SFX: large amount
of data conflict>

<SFX: disrupted
user conversation.
"Hello? Is ... that
the ... I ... T
depart ... ment?
Hello? What?>

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

01 What is [Class of Service](#) (CoS) ?



sequence cue code

Note / Action

01_04

Voiceover

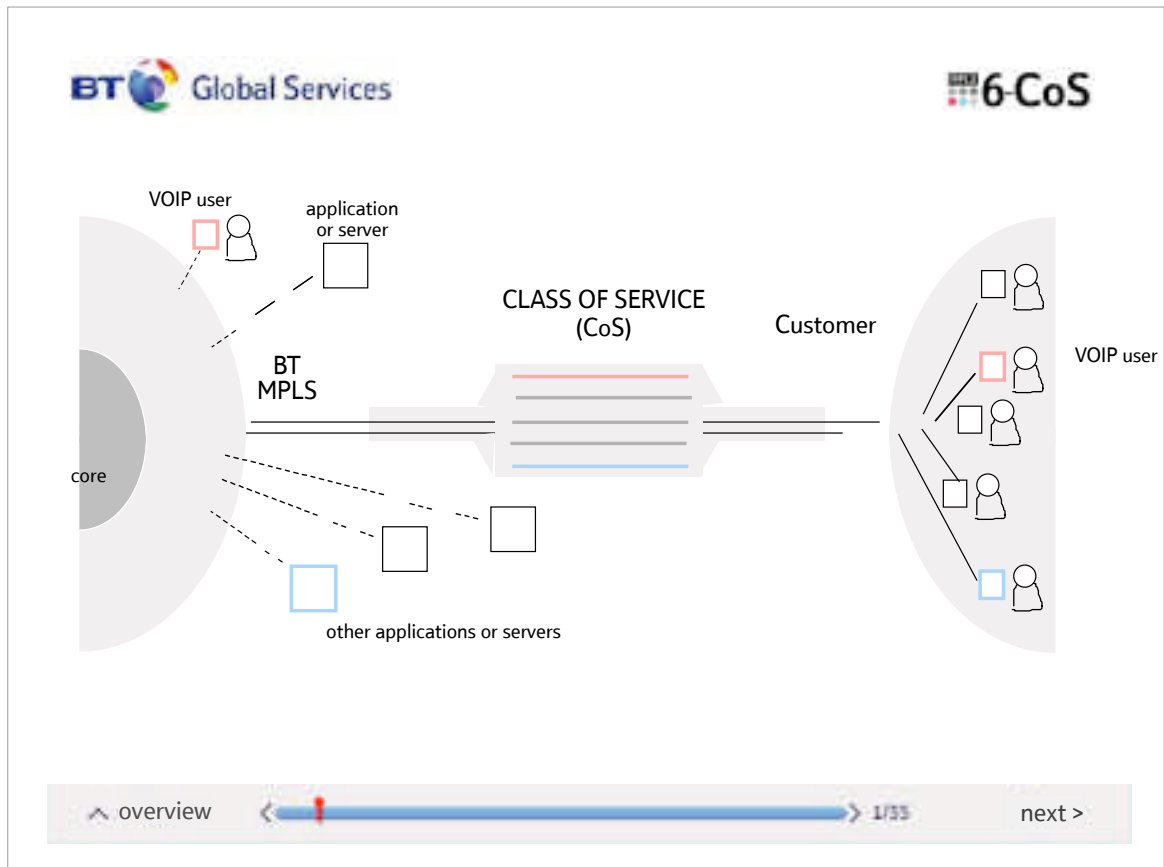
The solution is to offer applications a higher or lower '[Class of Service](#)', depending on their sensitivity to time delays.

So that voice traffic can have priority over data traffic such as Oracle or email, for example.

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

01 What is [Class of Service](#) (CoS) ?



sequence cue code

Note / Action

01_05

Voiceover

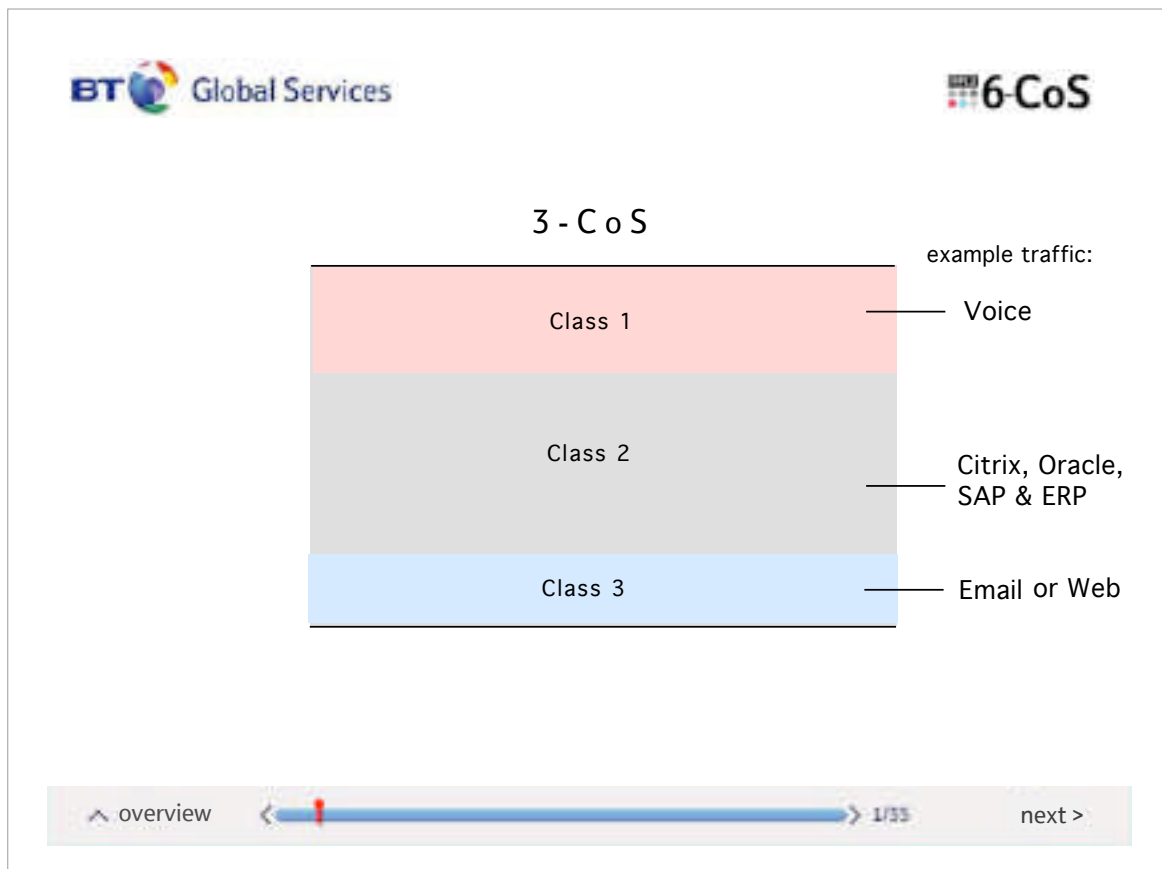
BT's MPLS platform offers a range of options for doing this - at the network edge, and in the core.

The latest version offers six separate classes and a range of powerful configuration options.

It's called '6-CoS', and this Ten Minute Guide explains how it works.

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

02 What is 3-CoS?

sequence cue code

Note / Action

02_01

Voiceover

x

3-CoS was the original class-of-service model used in BT.

It offered three classes of services and was based on a proprietary implementation.

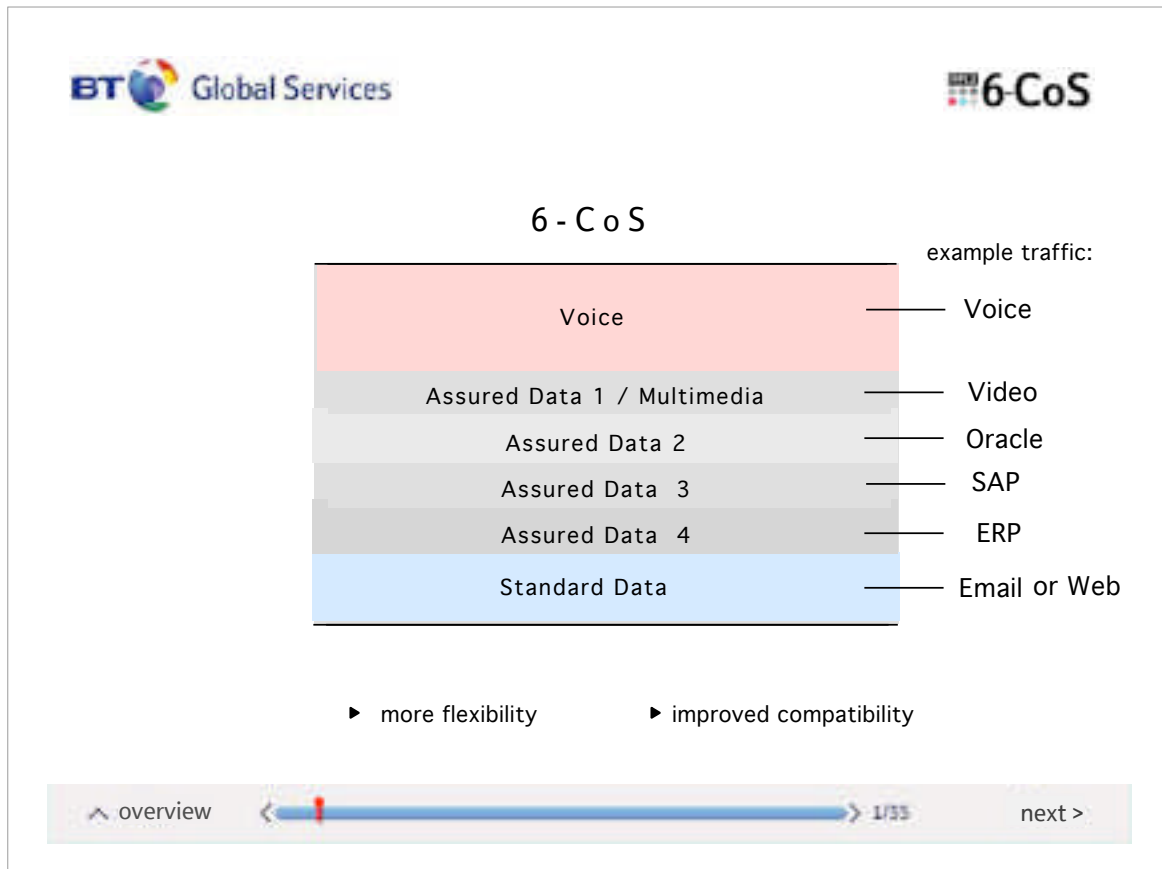
Now, in response to the growing range of applications and emerging industry standards,

3-CoS is being superseded by 6-CoS.

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

03 What is [6-CoS](#)?



sequence cue code

Note / Action

03_01

Voiceover

xx

6-CoS on BT's MPLS platform effectively adds new sub-divisions so that each key application can have its own Assured Data Class.

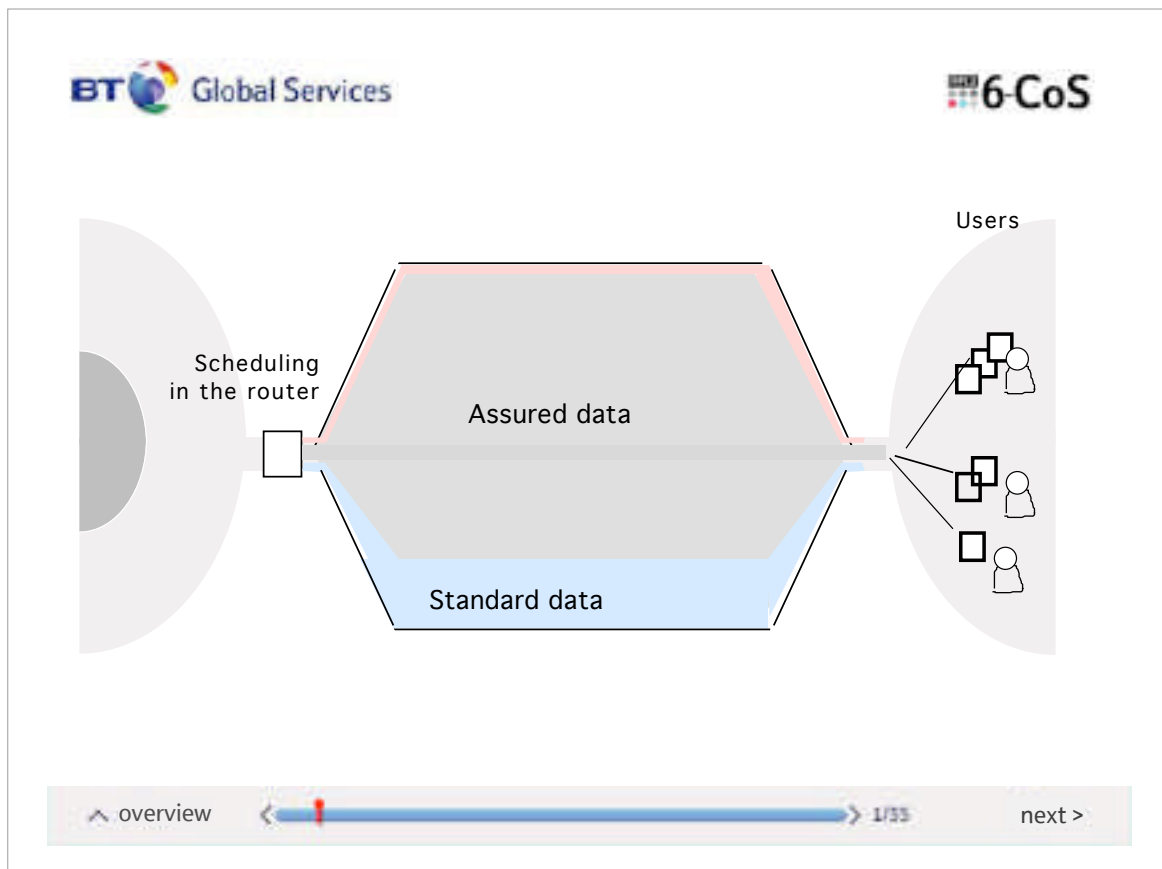
to create a Six Class-of-Service model, with more configuration flexibility than 3-CoS, and improved compatibility with established industry standards.

For example, any one of the Assured Classes can support a multimedia enhancement

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

04 How does [Scheduling](#) allocate bandwidth ?



sequence cue code

Note / Action

04_01

Voiceover

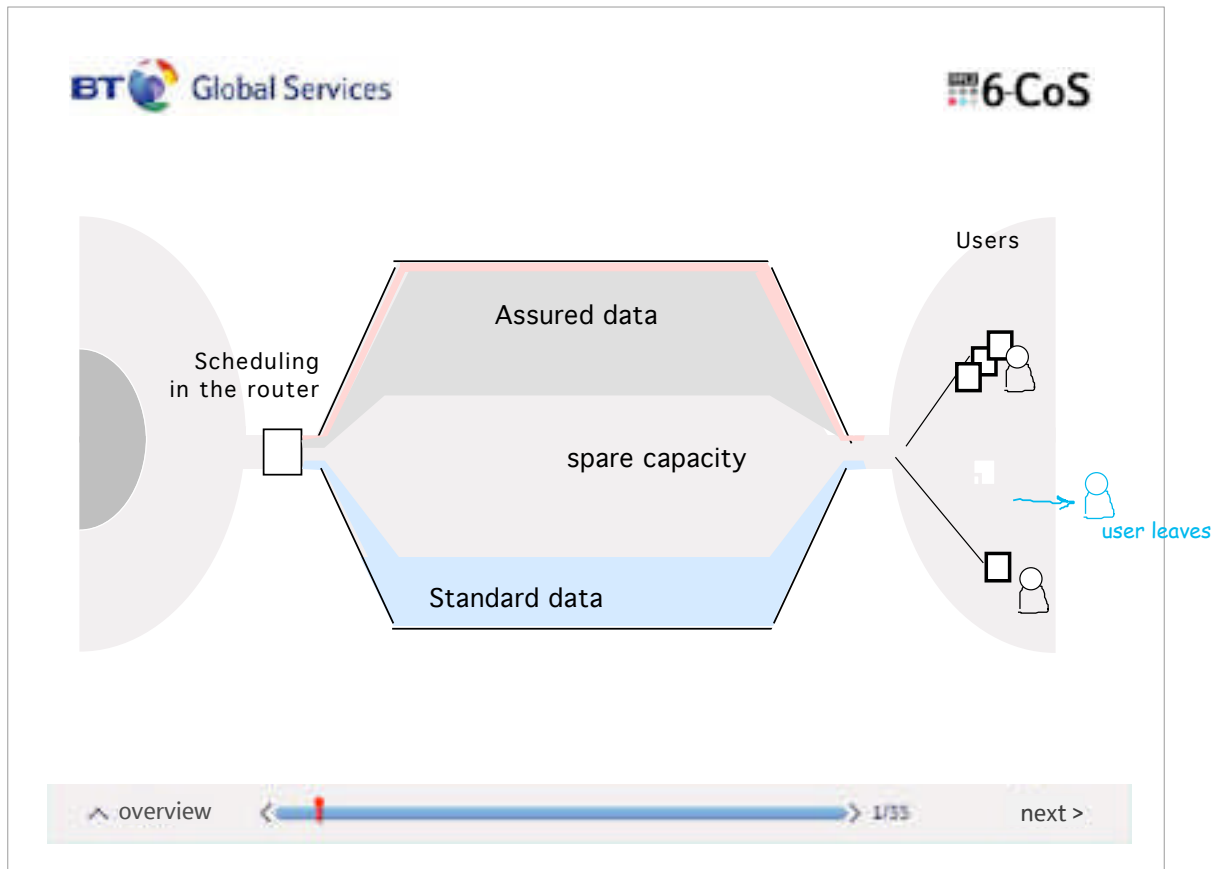
In any Class of Service model,
the dynamic allocation of bandwidth
is controlled by configurable scheduling and policing
in the routers.

X

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

04 How does [Scheduling](#) allocate bandwidth ?



sequence cue code

04_02

Voiceover

They identify which class each data packet belongs to and mark it, allow it through, or queue it, depending on the bandwidth available and the interaction of priorities at that moment.

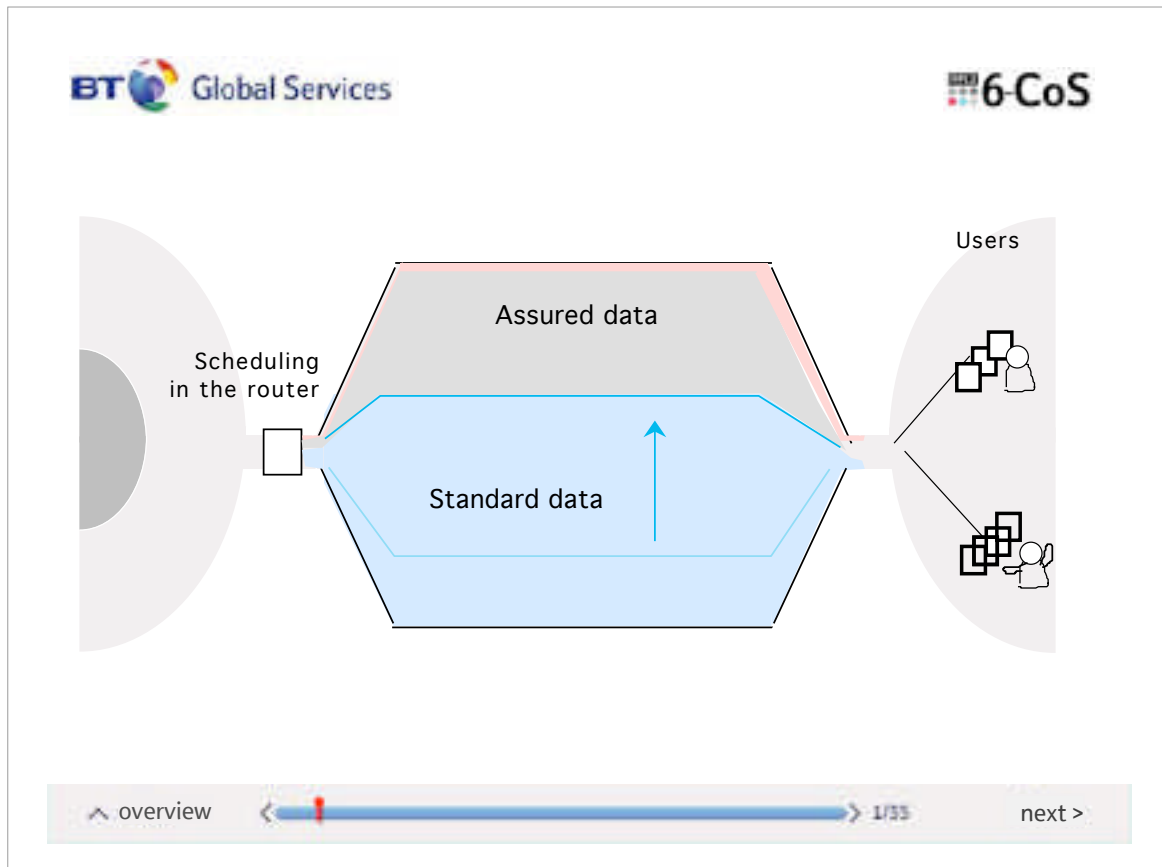
Note / Action

users come and go, and the layers adjust accordingly

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

04 How does [Scheduling](#) allocate bandwidth?



sequence cue code

04_03

Voiceover

For example, when the network is not busy, lower-priority traffic can expand.

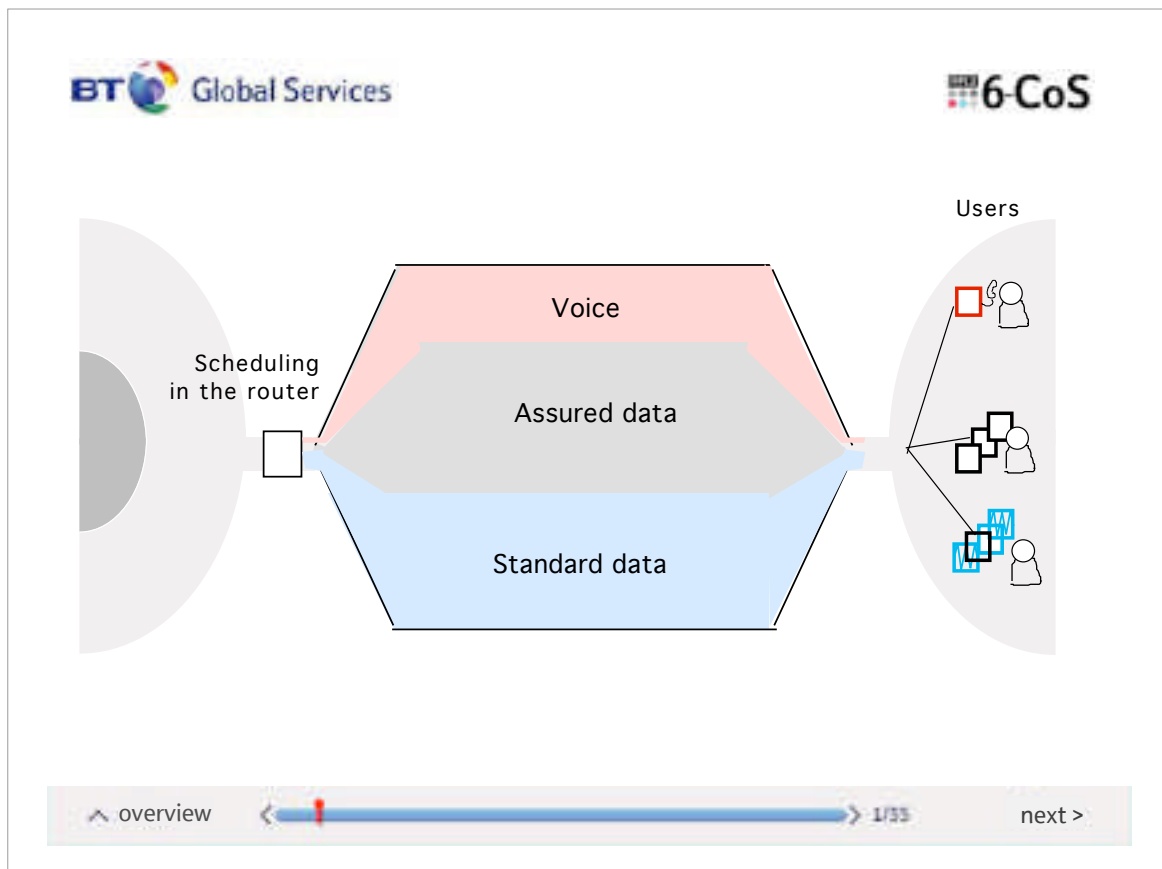
Note / Action

sfx: woo hoo!

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

04 How does [Scheduling](#) allocate bandwidth ?



sequence cue code

Note / Action

04_04

Voiceover

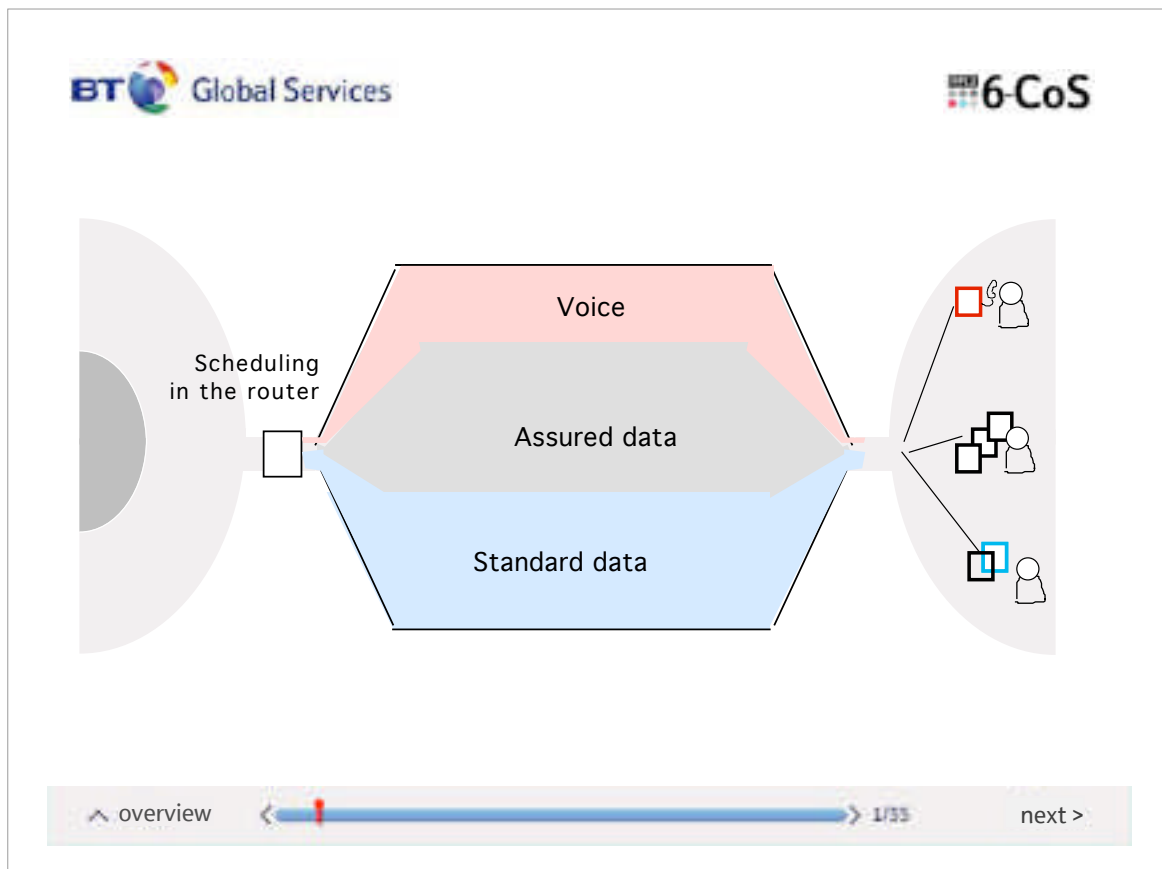
But as soon as higher-priority traffic comes along, some of the low-priority packets must be queued, or ultimately dropped, to make room.

x

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

04 How does [Scheduling](#) allocate bandwidth ?



sequence cue code

04_05

Voiceover

The originating application for any dropped data will usually re-send, or adjust transmissions in response to the reduced throughput.

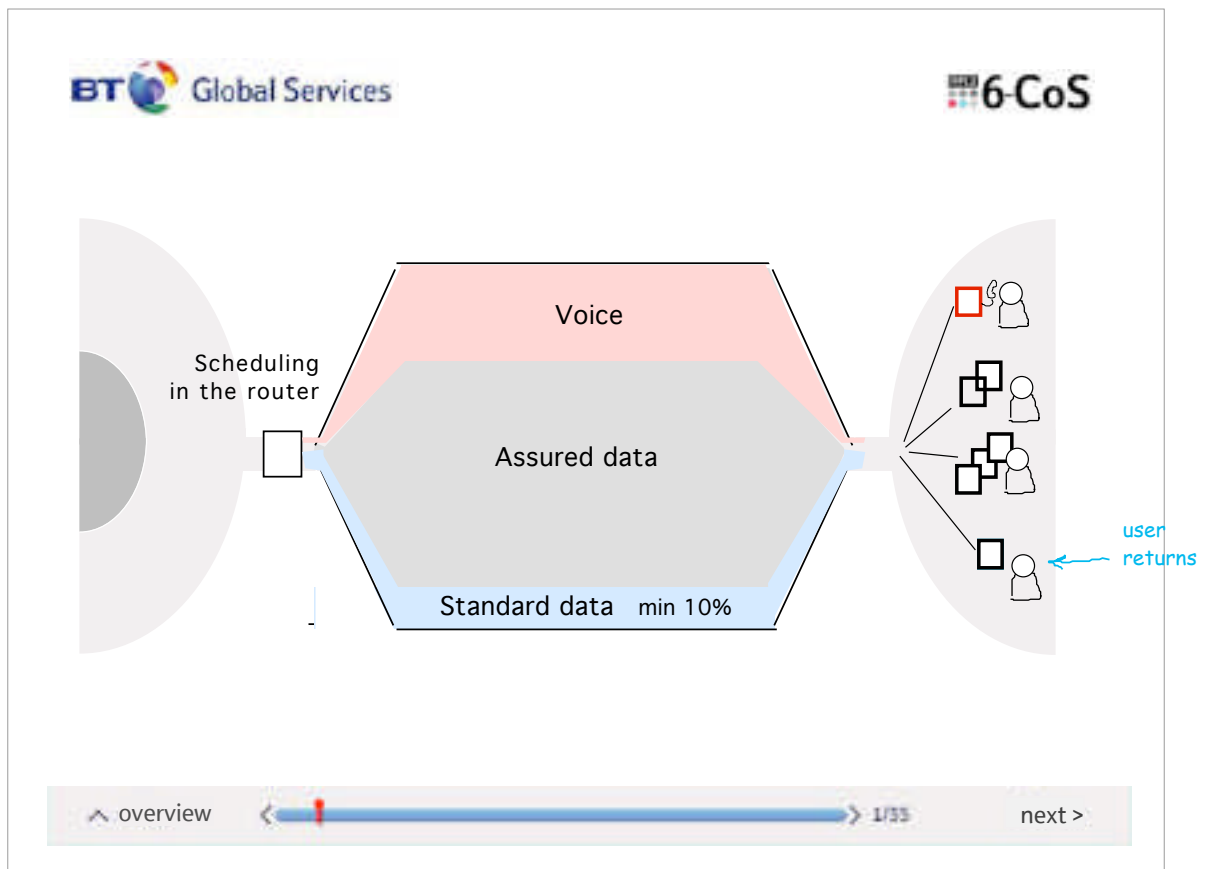
Note / Action

add "solving
problems"
bullets

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

04 How does [Scheduling](#) allocate bandwidth ?



sequence cue code

04_06

Voiceover

Scheduling policies include a minimum percentage of access bandwidth, below which a Class cannot be squeezed.

10% in the case of Standard Data.

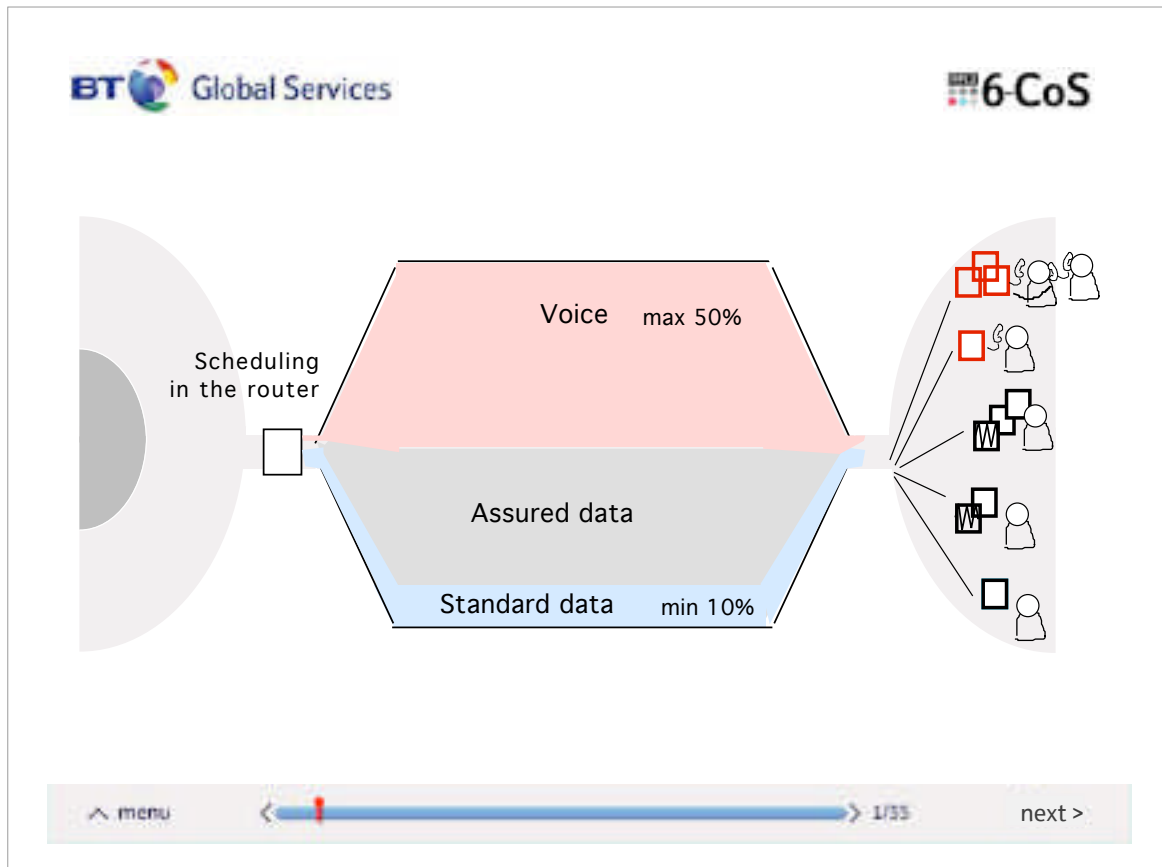
Note / Action

x

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

04 How does [Scheduling](#) allocate bandwidth ?



sequence cue code

Note / Action

04_07

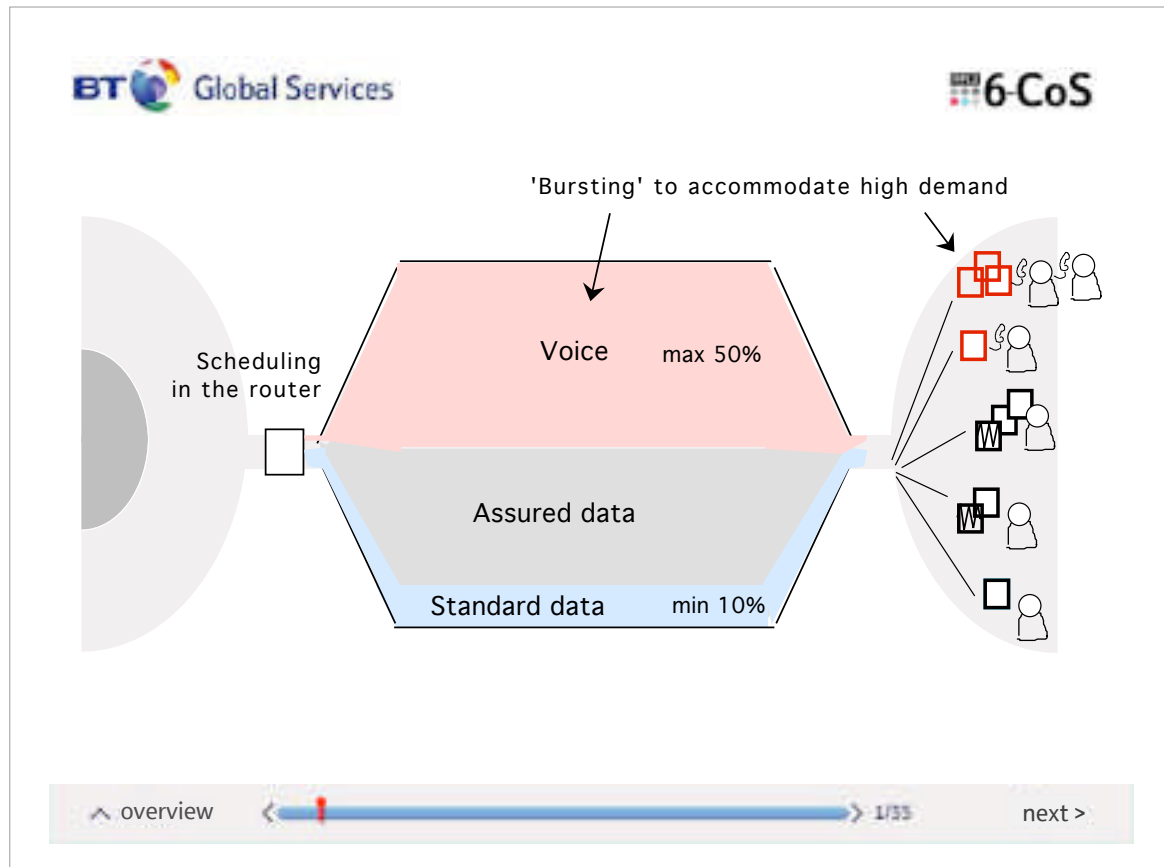
Voiceover

. . . and often an upper limit as well.
Usually 50% for Voice.

add more VOIP
users

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

05 What is [Bursting](#) ?

sequence cue code

Note / Action

05_01

Voiceover

"Bursting" is when an Assured Data application's demand for bandwidth increases rapidly, exceeding the usual limits for that class.

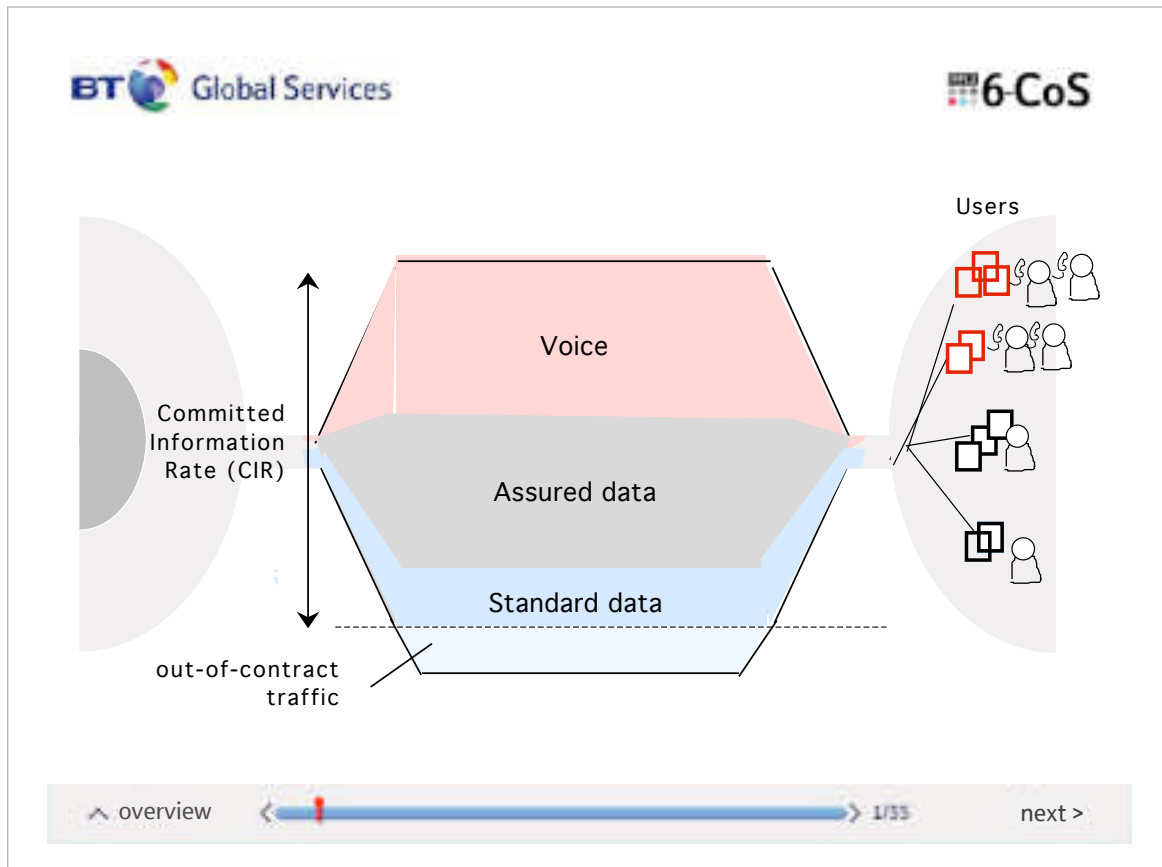
BT will usually carry the extra traffic on an "out-of-contract" basis, if network resources are available.

add more VOIP
users

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

06 What does [Out-of-Contract](#) mean ?



sequence cue code

Note / Action

06_01

Voiceover

"Out-of-contract" means traffic entering the BT network that exceeds purchased class bandwidth.

It will be carried and delivered to the far end, if sufficient capacity exists.

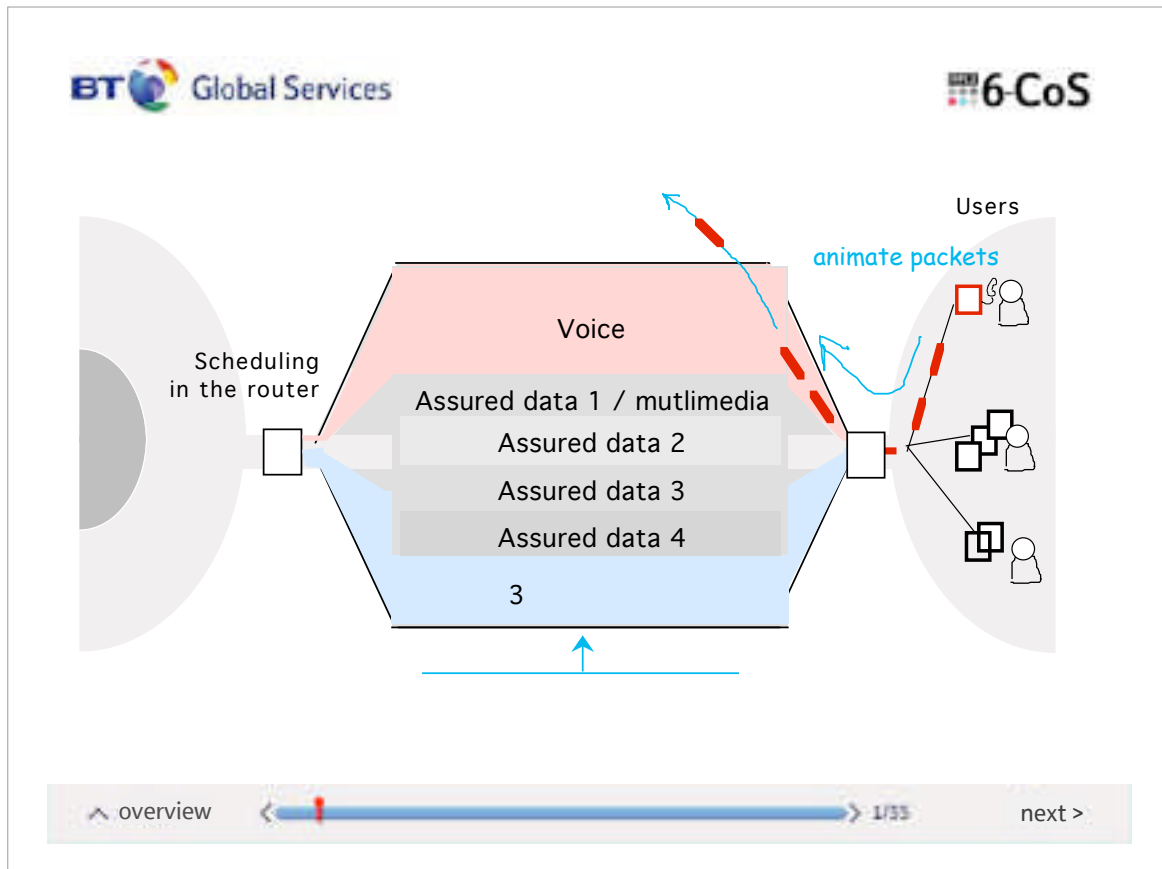
"Out-of-contract" traffic is marked differently to in contract traffic by BT as it enters the network. This makes it easily identifiable across the core and allows BT to act upon both types of traffic accordingly.

add yet
another
VOIPuser

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

07 What is [DiffServ](#) ?



sequence cue code

Note / Action

07_01

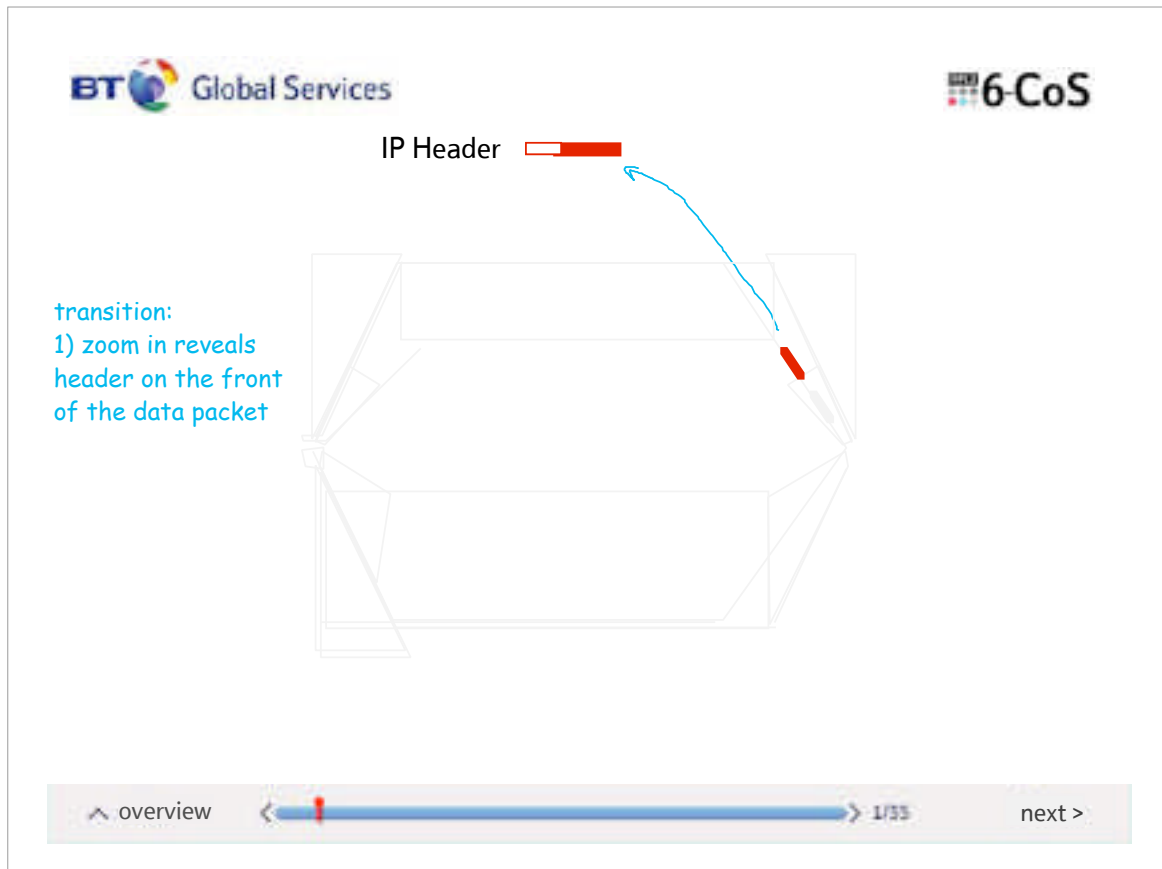
Voiceover

"Diff Serv" is short for "Differential Services" . . .

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

07 What is [DiffServ](#) ?



sequence cue code

Note / Action

07_02

Voiceover

. . . an industry-standard identification system for data packets on their journey across the network.

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

07 What is [DiffServ](#) ?




IP Header

Version	Header Length	Type of Service	Total Length	... etc
---------	---------------	-----------------	--------------	---------

transition:

2) highlight "Type of Service" section

^ overview
< 1/35
next >

sequence cue code

Note / Action

07_03


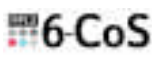
Voiceover

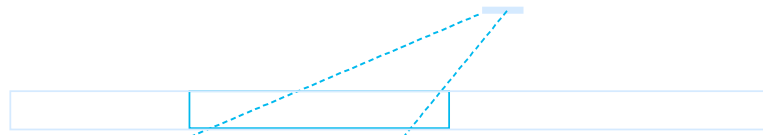
It uses the first six binary digits of the "Type of Service" field in each data packet's IP header to record what class it belongs to, and various other information . . .

The Ten Minute Guide to MPLS 6-CoS

content only.
 Look&Feel to follow.

07 What is [DiffServ](#) ?



Type of Service (TOS) Header
 DiffServ Code Point (DSCP)

^ overview
<
1/35
>
next >

sequence cue code

Note / Action

07_04


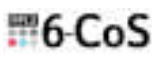
Voiceover

. . . using a scheme called Differential Services Code Point
 - or DSCP for short.

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

07 What is [DiffServ](#) ?

Type of Service (TOS) Header DiffServ Code Point (DSCP) <div> <div>0</div> <div>0</div> <div>0</div> <div>0</div> <div>0</div> <div>0</div> <div>x</div> <div>x</div> </div>	DiffServ Name Default Class (DE)	BT MPLS 6-CoS Name Standard Data
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------	------------------------------------------------

^ packages < 1/35 next >

sequence cue code

Note / Action

07_05

Voiceover

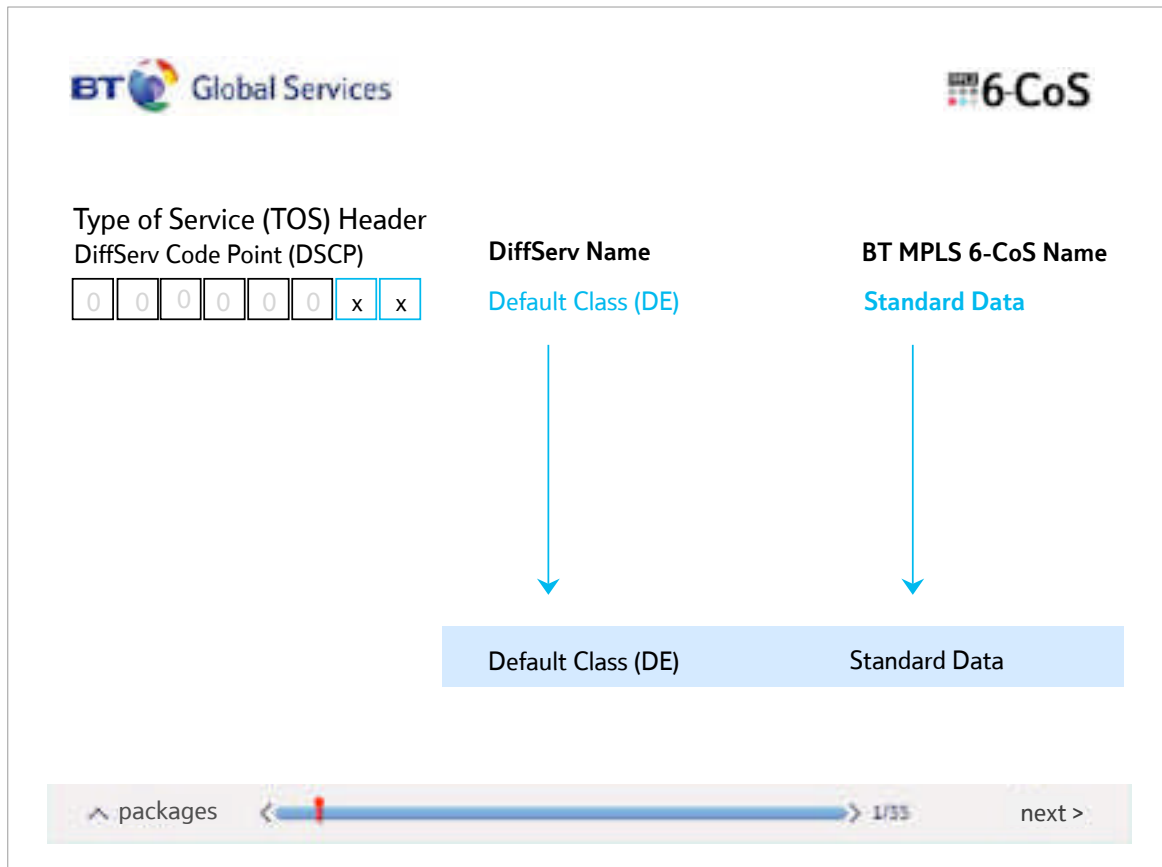
Six zero's in the TOS field indicates the Default class . . .

x

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

07 What is [DiffServ](#) ?



sequence cue code

07_06

Voiceover

. . . for Standard applications like email or web-browsing.


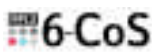
Note / Action

words drop
down to layer

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

07 What is [DiffServ](#) ?

Type of Service (TOS) Header
DiffServ Code Point (DSCP)

DiffServ Name
Management

BT MPLS 6-CoS Name

1

1

1

1

1

1

x

x

Management

Default Class (DE)

Standard Data

^ packages < 1/33 next >

sequence cue code

Note / Action

07_07

Voiceover



"Six ones" identifies 6-CoS Management data, a narrow channel supporting the main classes.

x

The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

07 What is [DiffServ](#) ?

Type of Service (TOS) Header
DiffServ Code Point (DSCP)

1	0	1	0	1	0	x	x
---	---	---	---	---	---	---	---

numbers change
during the Assured
layers build up, as
shown ---->

	DiffServ Name	EF	BT MPLS 6-CoS Name
101010	Expedited Forwarding	EF	Voice
001000		AF1	
010000		AF2	
011000	Assured Forwarding	AF3	Assured Data
100000		AF4	
101110	Default Class	DE	Standard Data

^ packages

1/35
next >

sequence cue code

Note / Action

07_08

Voiceover


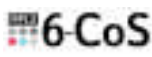
After that, it gets more complicated, as the six bits encode not only Class of Service, but also other useful information as well.

sequence:
quick
build of
layers

The Ten Minute Guide to MPLS 6-CoS

08 What are [Class Selectors](#) ?

content only.
Look&Feel to follow.

Type of Service (TOS) Header
DiffServ Code Point (DSCP)

1	0	1	0	1	0	x	x
---	---	---	---	---	---	---	---

{ **Class Selector**
eg. AF1

DiffServ Name

Expedited Forwarding

BT MPLS 6-CoS Name

EF	Voice
AF1	
AF2	
Assured Forwarding	Assured Data
AF3	
AF4	
Management	
Default Class	DE
	Standard Data

^ packages

<
>
1/33
next >

sequence cue code

08_01

Voiceover

Class Selectors are the first digits of the DiffServ Code Point showing which Class of Service each data packet belongs to, for Assured Data, Multimedia or Voice applications.

Note / Action

sequence:
build up
layers

The Ten Minute Guide to MPLS 6-CoS

08 What are [Class Selectors](#) ?content only.
Look&Feel to follow.

BT Global Services

6-CoS

Type of Service (TOS) Header
DiffServ Code Point (DSCP)

1	0	1	0	1	0	x	x
---	---	---	---	---	---	---	---

Class Selector
eg. AF1

Other Differential
eg. High drop priority

AF1

Assured Forwarding

packages 1/35 next >

sequence cue code

Note / Action

08_02

Voiceover

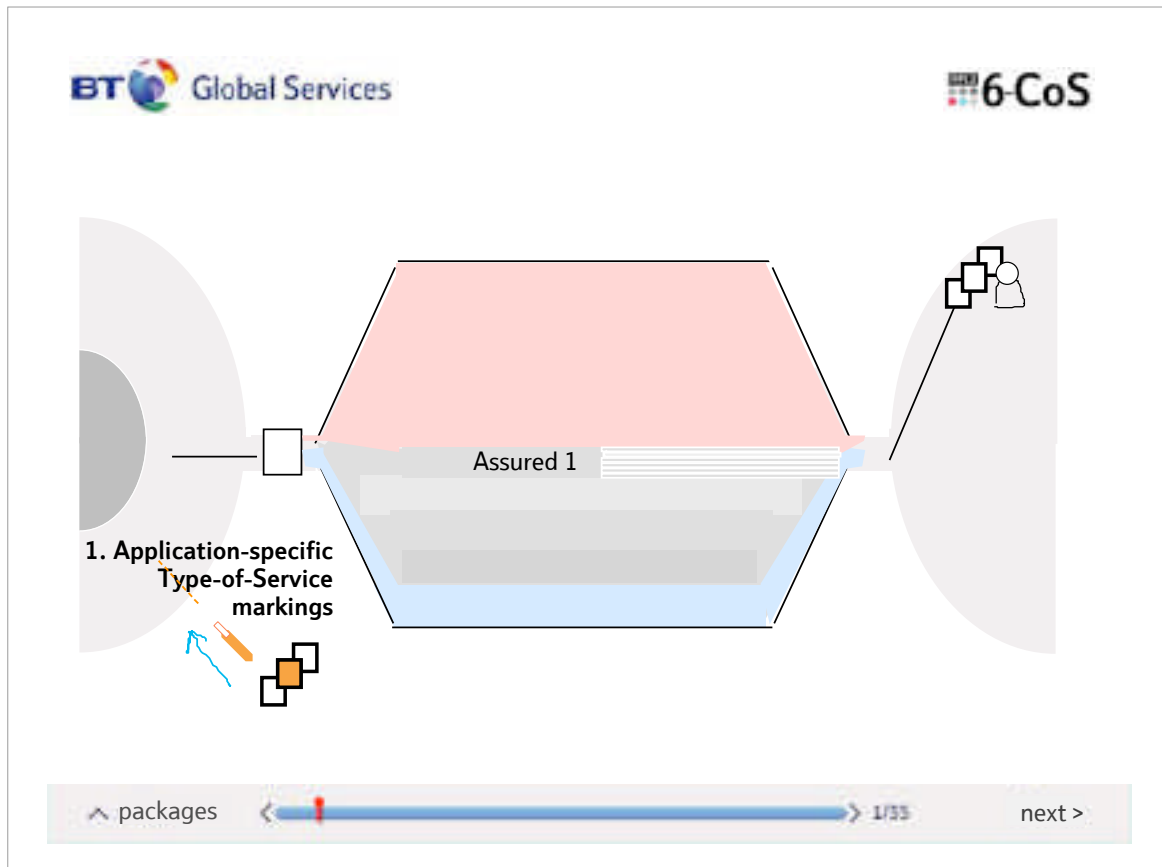
x

This leaves the later digits free to differentiate types of data within the same class:

for example,
to assign different levels of drop priority

or preserve special markings from proprietary or legacy software applications.

The Ten Minute Guide to MPLS 6-CoS

09 What is [Transparency](#) ?content only.
Look&Feel to follow.

sequence cue code

09_01

Voiceover

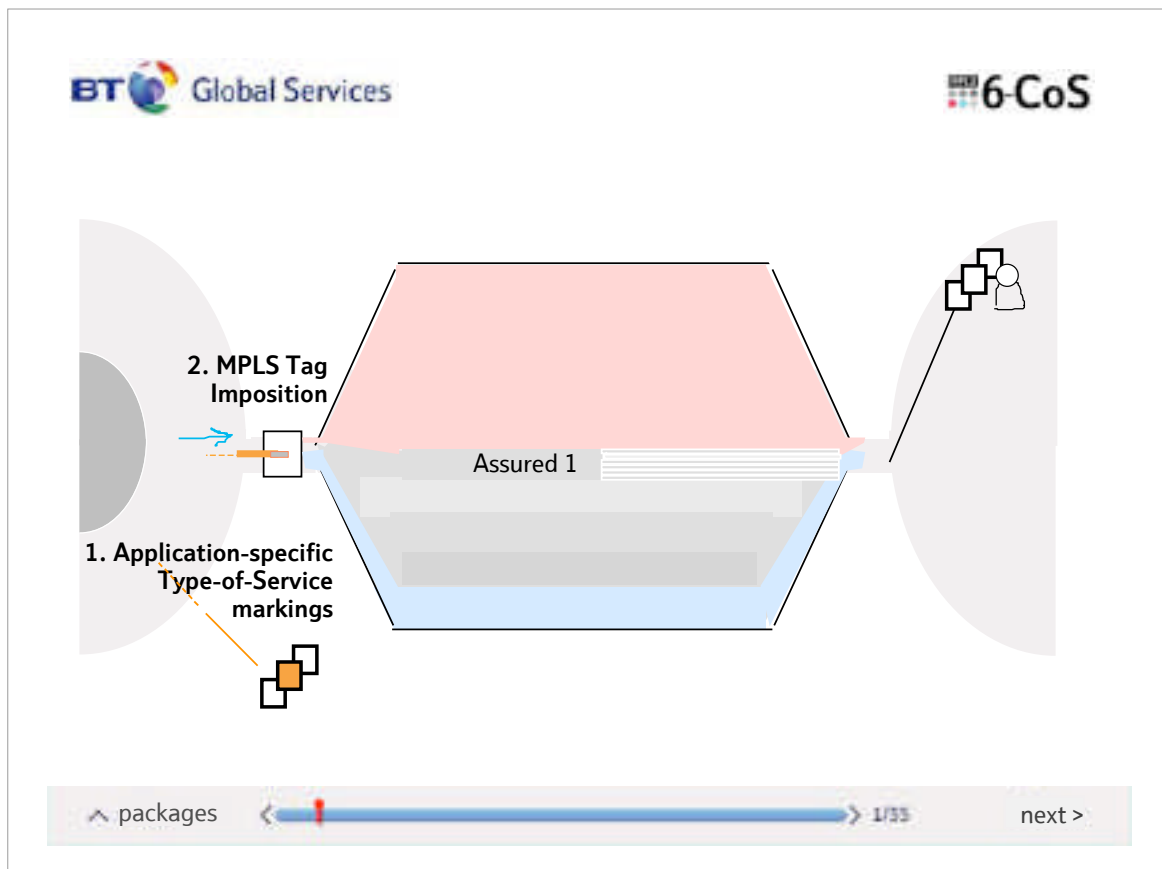
"Transparency" allows customer configured Type of Service values to be maintained as data passes throughout the BT network.

Note / Action

transition:
pull-back from
previous screen.

packet with
white header
starts journey

The Ten Minute Guide to MPLS 6-CoS

09 What is [Transparency](#) ?content only.
Look&Feel to follow.

sequence cue code

Note / Action

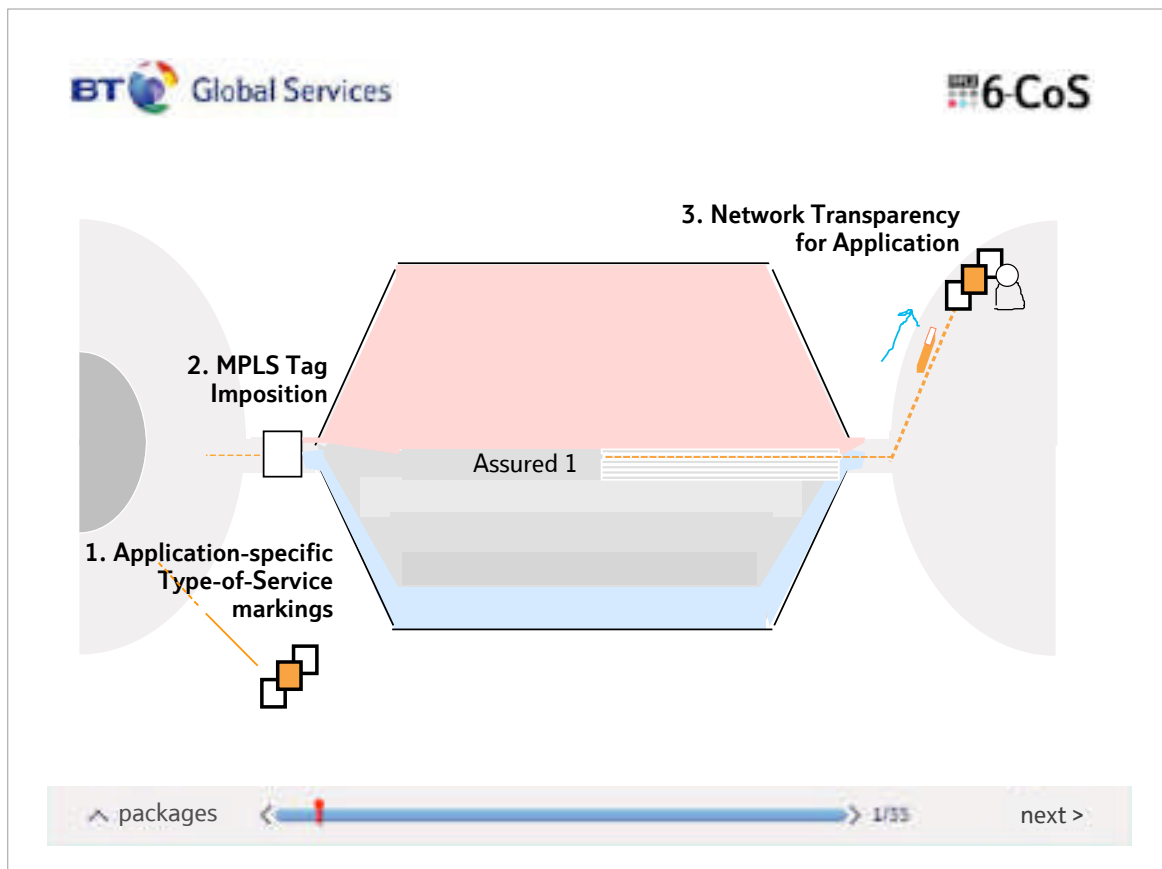
09_02

Voiceover

This reduces implementation issues and allows more 6-CoS solutions to be configurations of a standard package rather than a special bid.

packet header changes to grey as it passes through router

The Ten Minute Guide to MPLS 6-CoS

09 What is [Transparency](#) ?content only.
Look&Feel to follow.

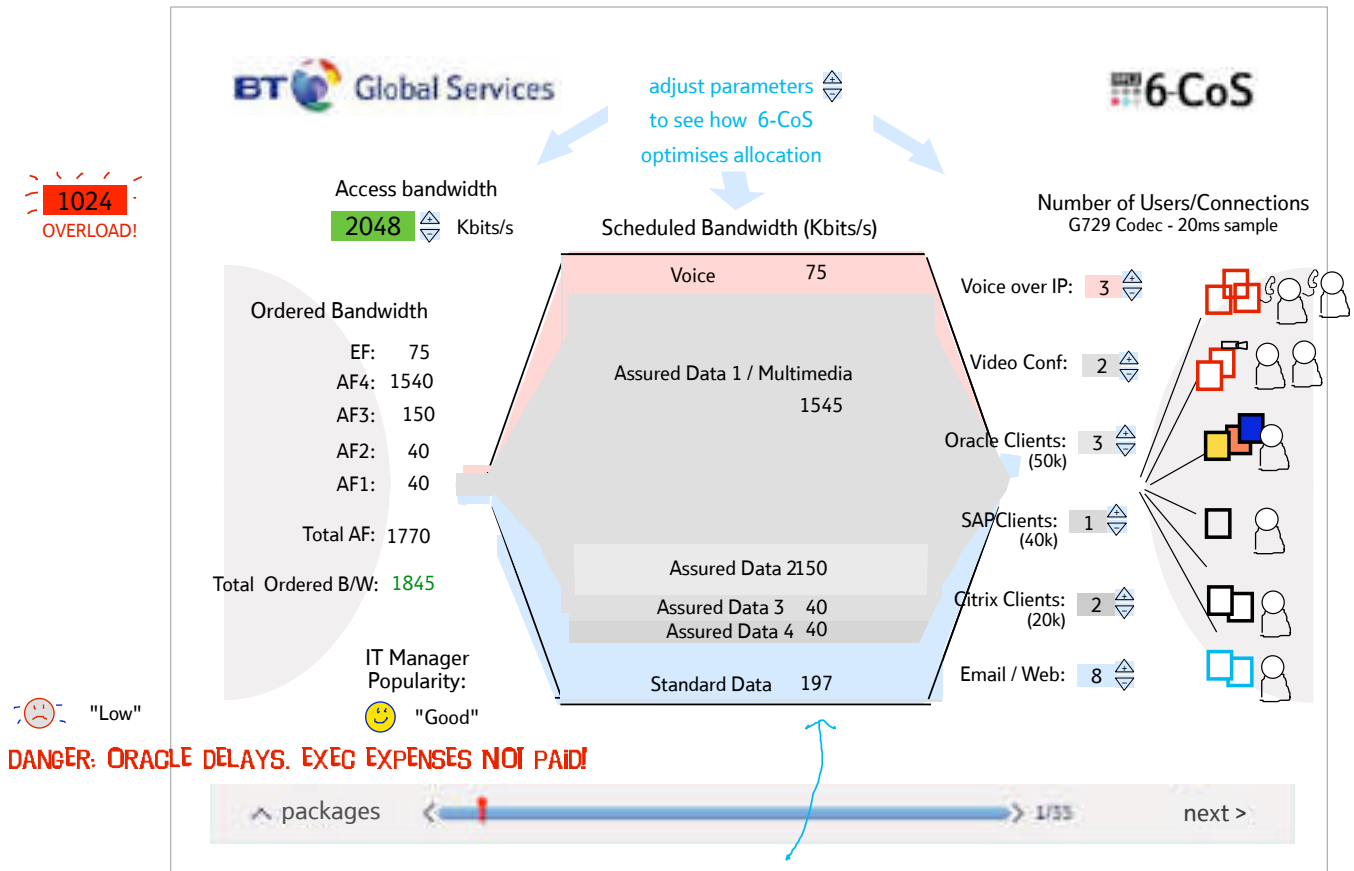
sequence cue code

Note / Action

Voiceover

packet header
changes to white
again as it
emerges at the
other end

The Ten Minute Guide to MPLS 6-CoS

10 SIM CoS [Interactive Illustration](#)content only.
Look&Feel to follow.

The visual height of each class changes "proportional" to its number over the "Access Bandwidth" total. However we'll have to CHEAT so low numbers don't disappear completely.

sequence cue code

10_01

Voiceover

You can adjust parameters on this interactive illustration to see how Class of Service scheduling responds, to optimise bandwidth efficiency.

newflashes

- SAP sessions rejected!
- VOIP quality of service becoming unusable!
- Increased pre-holiday demand cannot be met!
- Product launch marketing activity delayed!
- Network not available to new users!
- High latency!
- High packet loss!
- Network not responding!
- Web pages not appearing!
- Remote-workers unable to access critical applications!
- Unpredictable Citrix performance!
- Printing causes Citrix to slow or stop!
- VOIP echo and talk overlap!
- Customer billing delayed!

Note / Action

1) colour of input-field corresponds to colour of Class of Service in the pipe.

2) need a "proportional" visual representation of number of "clients". Could be windows, people or both. needn't be one-for-one.



3) when "Total Ordered B/W" is less than "Access Bandwidth", both numbers are green, and "IT Manager Popularity" is good.

When "Total Ordered B/W" EXCEEDS "Access Bandwidth", both numbers go red. <sfx>- network glitches and irate users "What the . . .?!"
"IT Manager popularity" changes to "Low"


The Ten Minute Guide to MPLS 6-CoS

content only.
Look&Feel to follow.

- 11 Where can I find [more information](#)?

Next steps & further information



- ▶ customers please contact your Account Manager
- ▶ customer-facing web-links:
 - <http://www.btglobalservices.com/en/products/mpsl/>
 - <http://www.btglobalservices.com/en/products/atm/>
 - http://www.btglobalservices.com/en/products/frame_relay/
- ▶ BT internal intranet links:
 - http://globalservices.intra.bt.com/products/professional_services.html

Applications Assured Infrastructure (AAI)

http://globalservices.intra.bt.com/products/applications_assured_infrastructure/

[XXXXXXXXXXXXXXXXXXXXX](#)

[XXXXXXXXXXXXXXXXXXXXX](#)

^ overview

<
>
1
1/33 next >

sequence cue code

Note / Action

11_01

Voiceover

That concludes this simplified overview of MPLS 6-CoS.

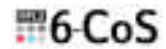
Please follow the links shown for more information on technical aspects of 6-CoS and its many customer benefits.

Thank you for listening.

The Ten Minute Guide to MPLS 6-CoS

Glossary

content only.
Look&Feel to follow.



Glossary

ATM	Asynchronous Transfer Mode
CoS	Class of Service, Traffic over a VPN
CDR	Committed Data Rate
CIPR	Committed Internet Protocol Rate
CBR	Constant Bit Rate
CE	Customer Equipment (same as CPE)
CPE	Customer Premises Equipment
DSCP	Differential Services Code Point
FR	Frame Relay
LAN	Local Area Network
MPLS	Multi Packet Label Switching
NTE	Network Terminating Equipment
PVC	Private Virtual Circuit, Traffic over a VPN
PFM	Proactive Fault Management
PE	Provider Edge - The PoP Node equipment
QOS	Quality of Service
SLA	Service Level Agreement
TOS	Type of Service
VOIP	Voice Over Internet Protocol
VPN	Virtual Private Network - MPLS, Frame, ATM

[^ overview](#)


1/33

[next >](#)

sequence cue code

Note / Action

Voiceover