
MAIP - Wholesale
Workgroup Broba on Ethernet
Meeting of 24/03/09

24 March 2009

together with



Objective of the meeting



- With the move to high speed broadband networks and further trend towards convergence, the demand for new and innovative services increases.
- Belgacom's Move to All IP roadmap is designed to match the evolving market needs and technological evolutions, thus providing a future proof business transformation, assure competitiveness and enable sustainable growth.
- As Belgacom cannot do this alone, it is of paramount importance to reach a common understanding and a joint plan with all operators using our infrastructure. Dialogue with our customers is key, therefore we want to keep you informed as roll-out plans are updated or technological decisions are taken.
- As a next step, we want to start up a customer consultation process in order to have a constructive and more in-depth debate on the evolution of our services.
- The first working group starting today will ***focused*** on the move to ***Ethernet for BROBA services***.

Agenda



1. High Level Status of the MAIP roadmap
2. IP Interconnection for voice
3. The GE-NT concept
4. Broba on Ethernet draft
5. Recap and next Steps

1

High Level Status of the MAIP roadmap

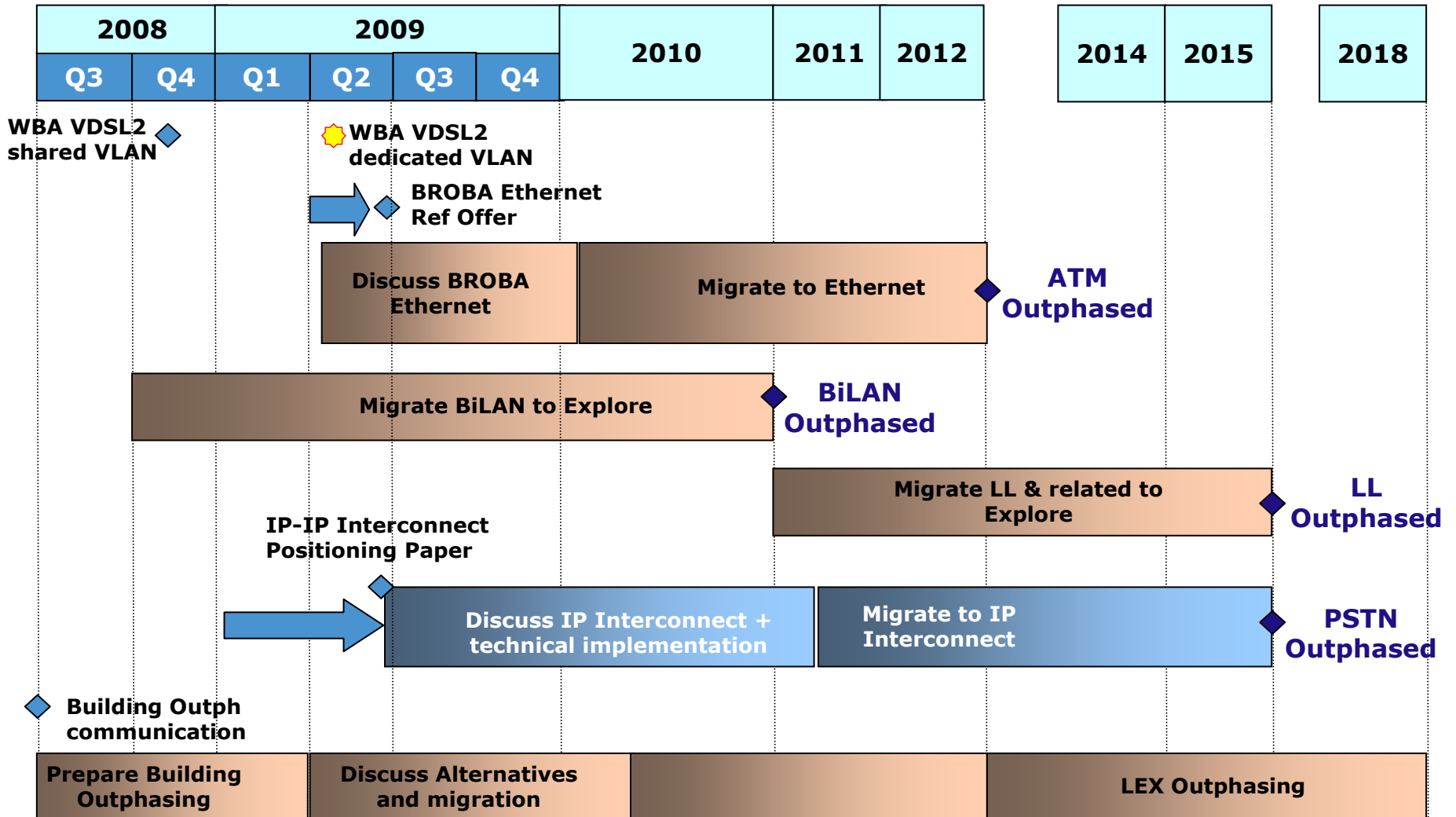
IP Interconnection for voice

The GE-NT concept

Broba on Ethernet draft

Recap and next Steps

Project Plan



High Level Status of the MAIP roadmap

2

IP Interconnection for voice

The GE-NT concept

Broba on Ethernet draft

Recap and next Steps

Indicative planning IP Interconnect (IP IC)



- No final planning:
 - Still under investigation at Belgacom
 - Changes still possible
 - Updated planning will be communicated when available
- Main drivers for planning:
 - PSTN/ISDN phased-out end of 2015
 - Technical specification of IP IC
 - Implementation period for Belgacom & other operators

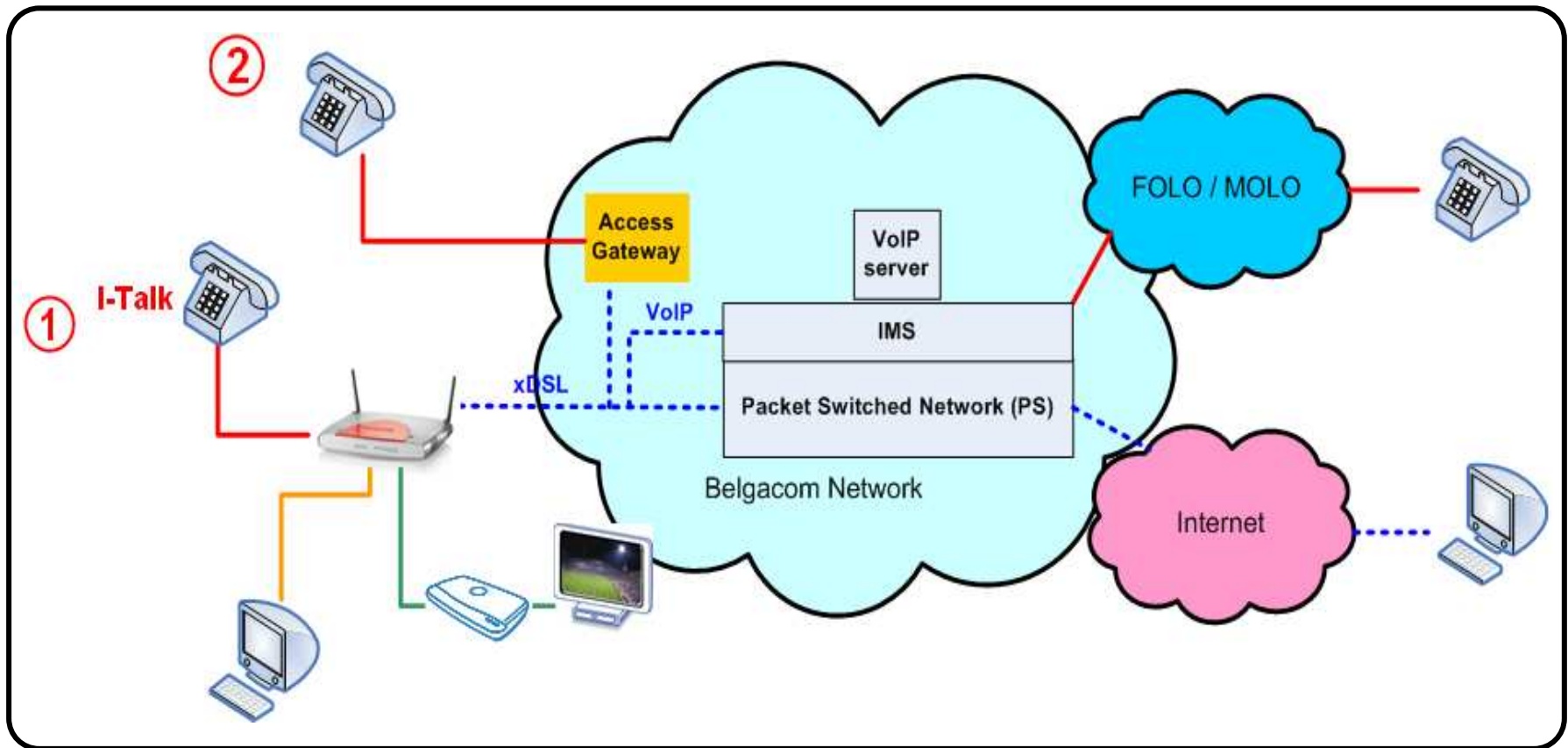
Interconnect Evolution



Move from PSTN to IP-Interconnect

- Complete voice network will migrate to IMS infrastructure
 1. VOIP for broadband customers, via Home Gateways
 2. PSTN emulation via Access Gateways
- PSTN interconnect towards IP interconnect
 - An IP-Interconnect offer will be discussed as from 2009
 - Technical implementation to be started in the course of 2010

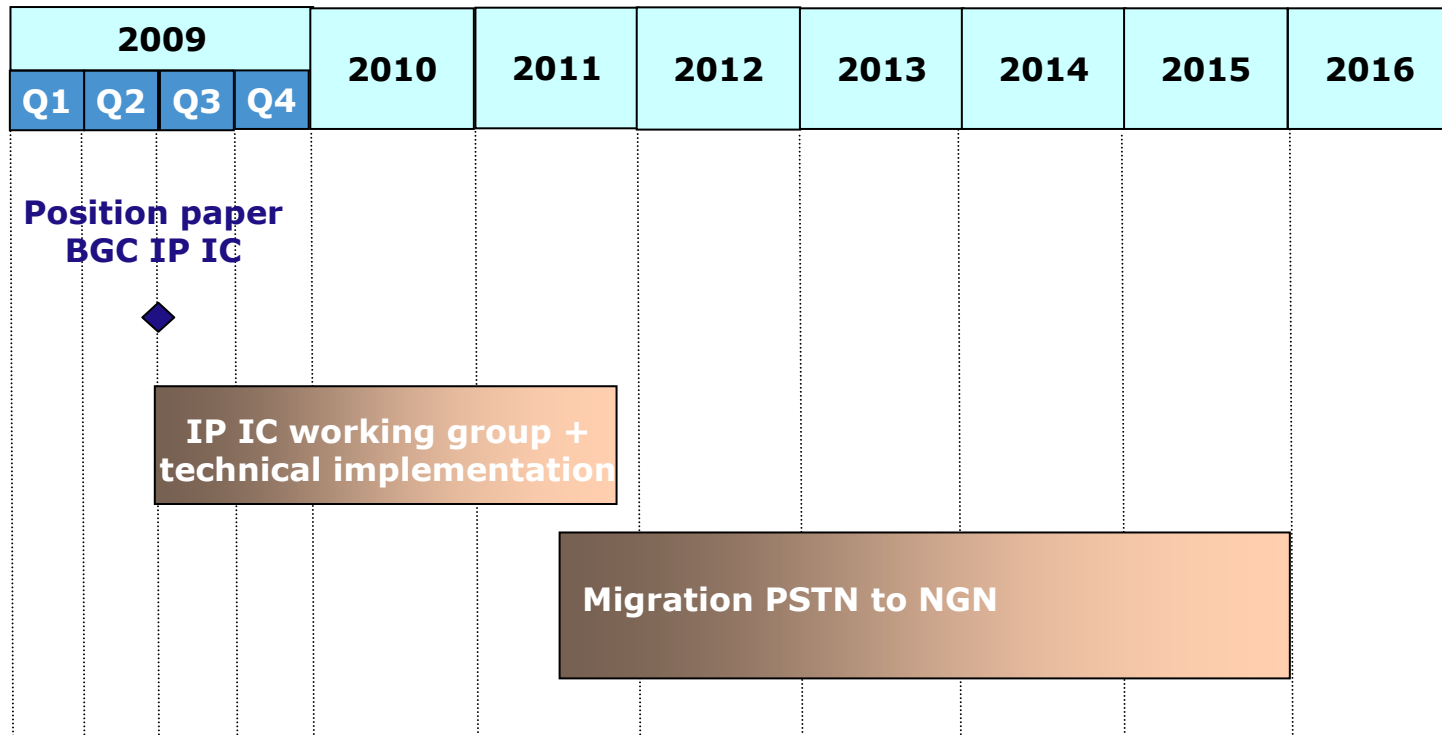
Interconnect Evolution - PSTN phase out



Move from PSTN to IP-Interconnect

- PSTN interconnect towards IP interconnect will also be influenced by the decisions in terms of:
 - General Planning
 - Building outphasing
 - Implementation of IP Interconnection
 - ...

Indicative planning IP IC



Some discussion topics



- Need to specify technical interface for IP IC
 - standardisation is not finished – not known if/when it will be finished
- Migration of TDM IC to IP IC
 - Belgacom to propose detailed migration scenario (currently under investigation)
 - first LEX phase out 02EUR (LAP) 31/12/2012
 - TDM alternatives available for LAP stop on 30/6/2011
 - second wave: LEX phase out 03WES (LAP), 02BRC, 83CIN 30/06/2014
 - ...
- The number of IC points for IP IC
 - stimulation optimal traffic spread + securisation
 - alignment with IC points data products
- Multi service IC links
 - integration IC links voice and data services: to be investigated
- CRDC evolution/extension for IP IC
 - network routing information required for optimised routing to IP or TDM IC
 - ENUM?

High Level Status of the MAIP roadmap

IP Interconnection for voice

3

The GE-NT concept

Broba on Ethernet draft

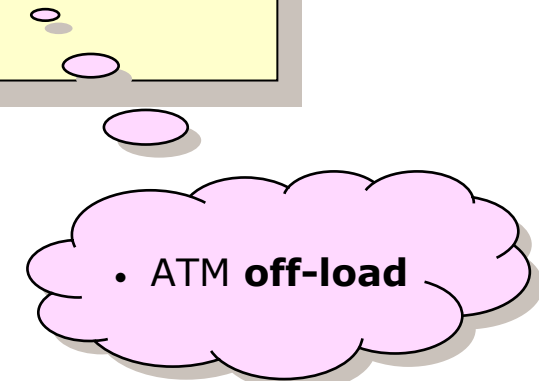
Recap and next Steps

- Why ?
- What ?
- Technical details
- How ?
- Planning

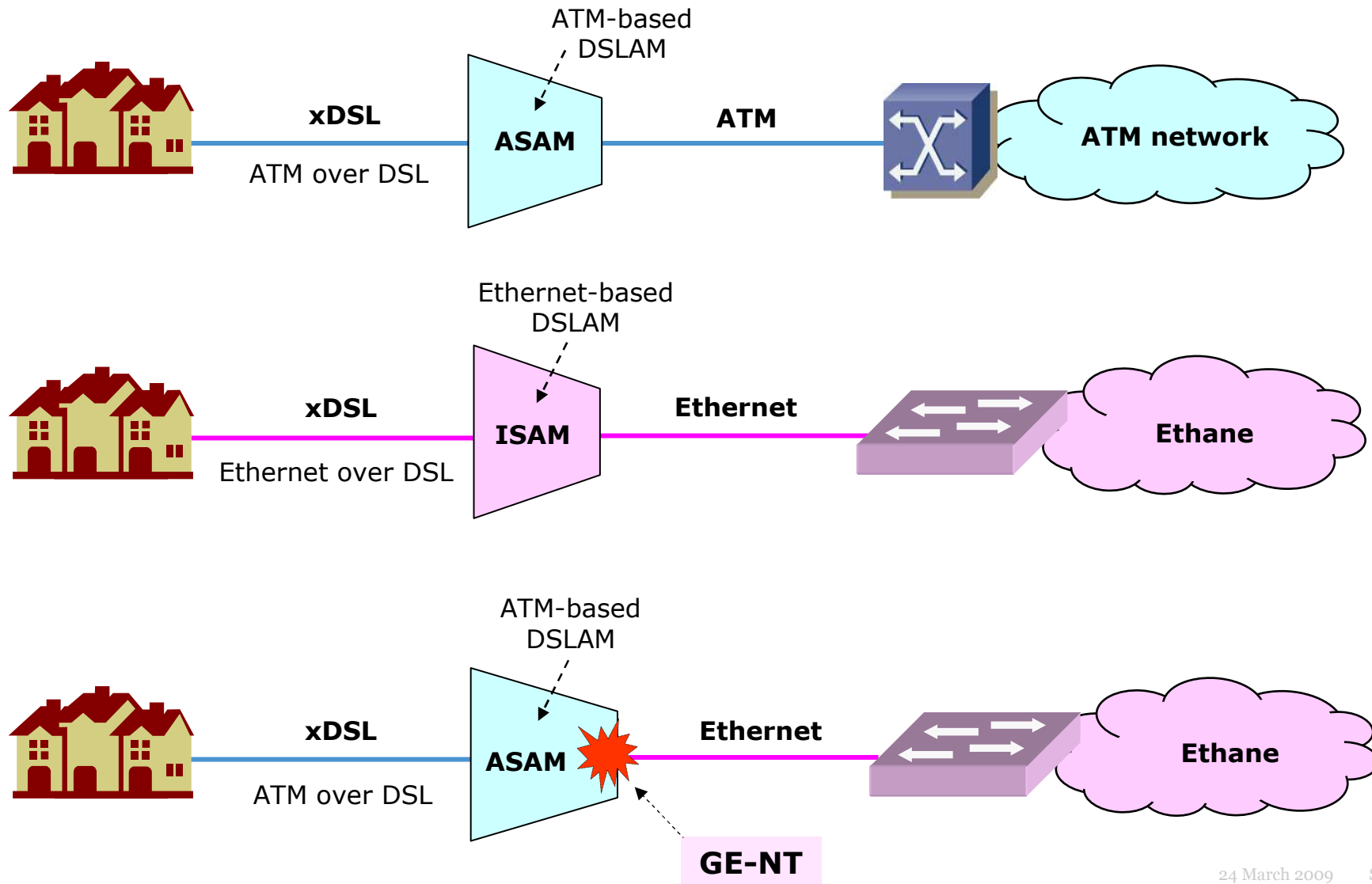
Why ?



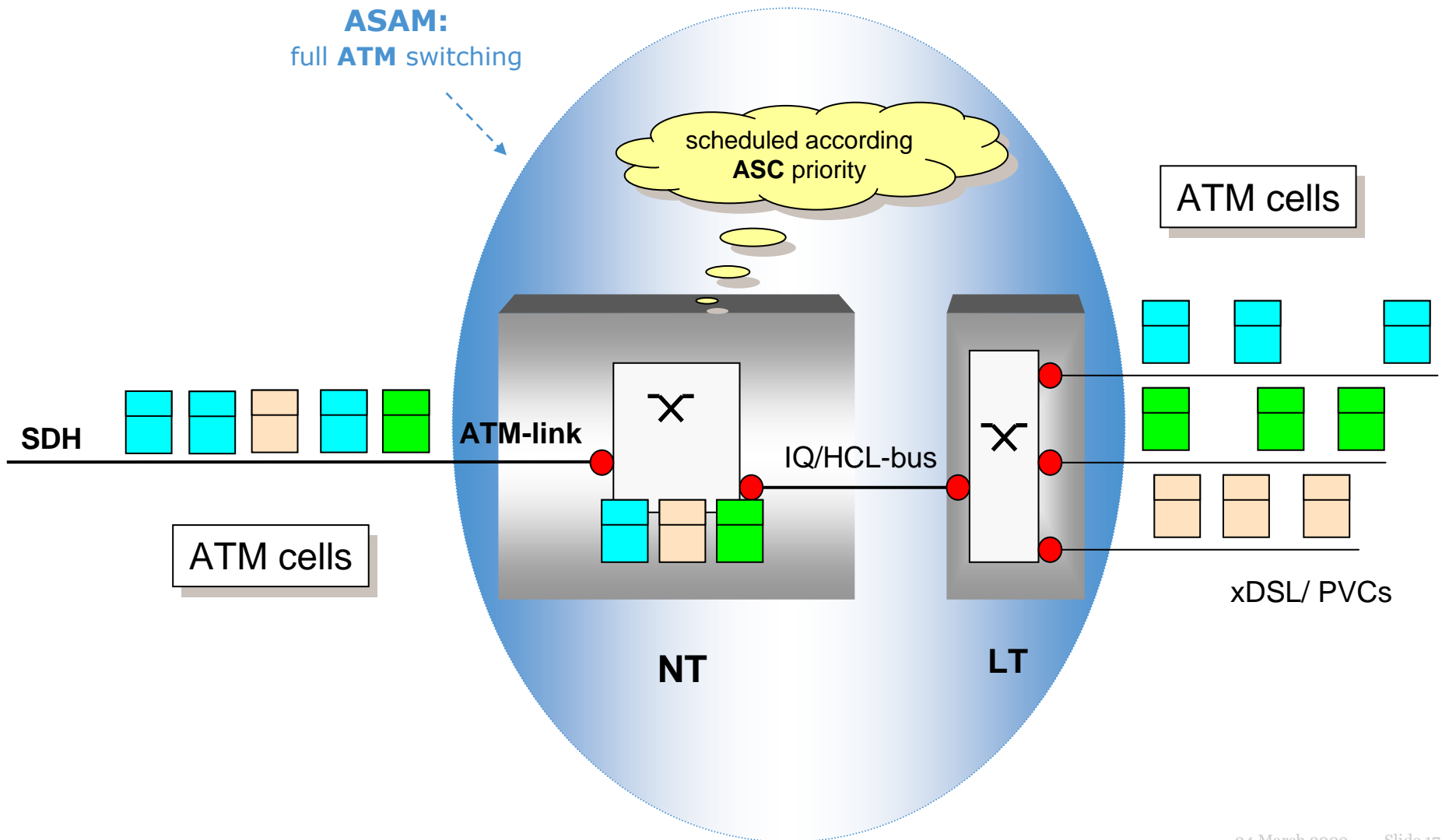
- Move all **IP**
 - ✓ flexibility (*new services, bandwidth,...*);
 - ✓ everything over IP;
 - ✓ ...
- Outphasing (old) **BAS** equipment.



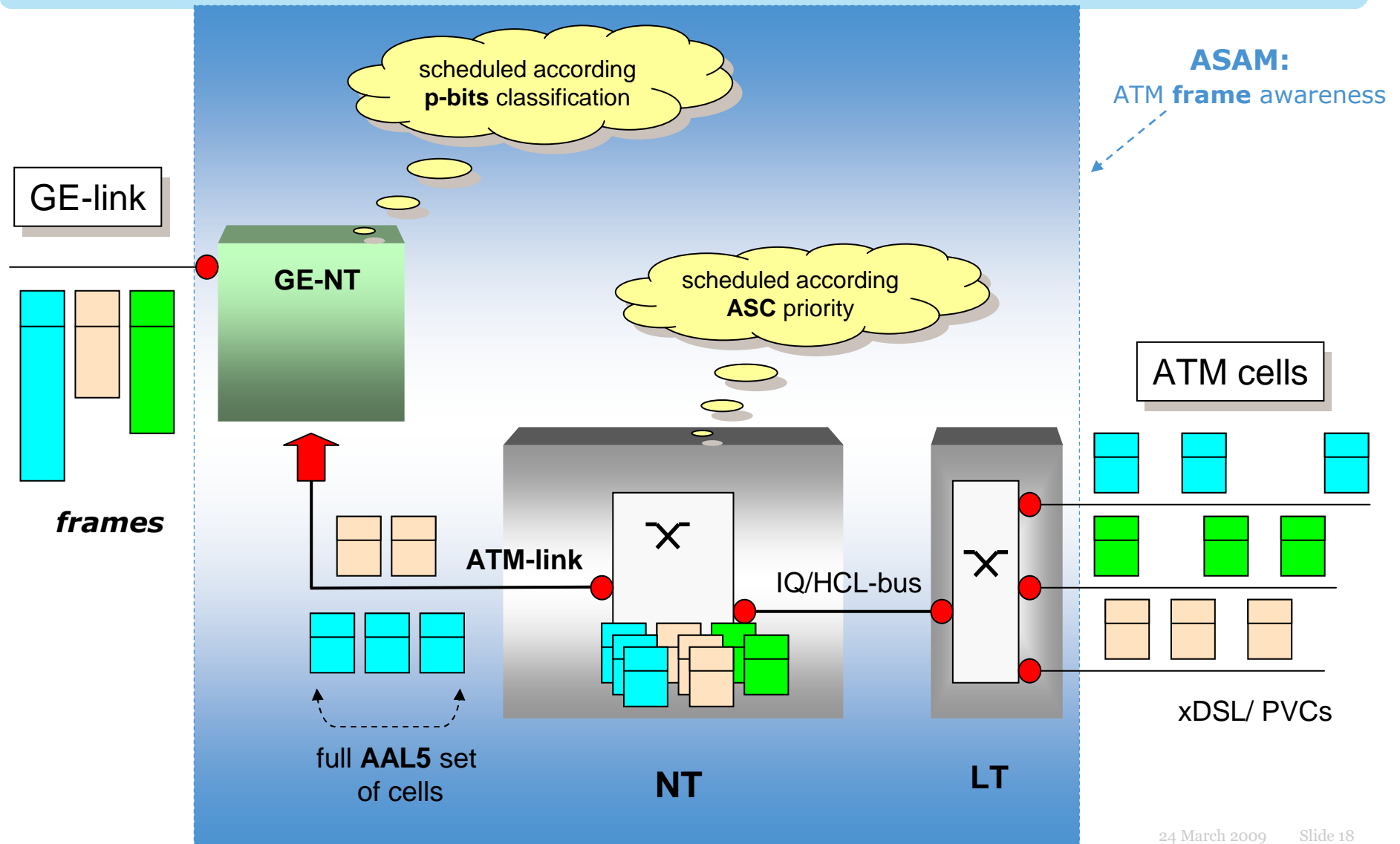
What ?



Technical details: ASAM

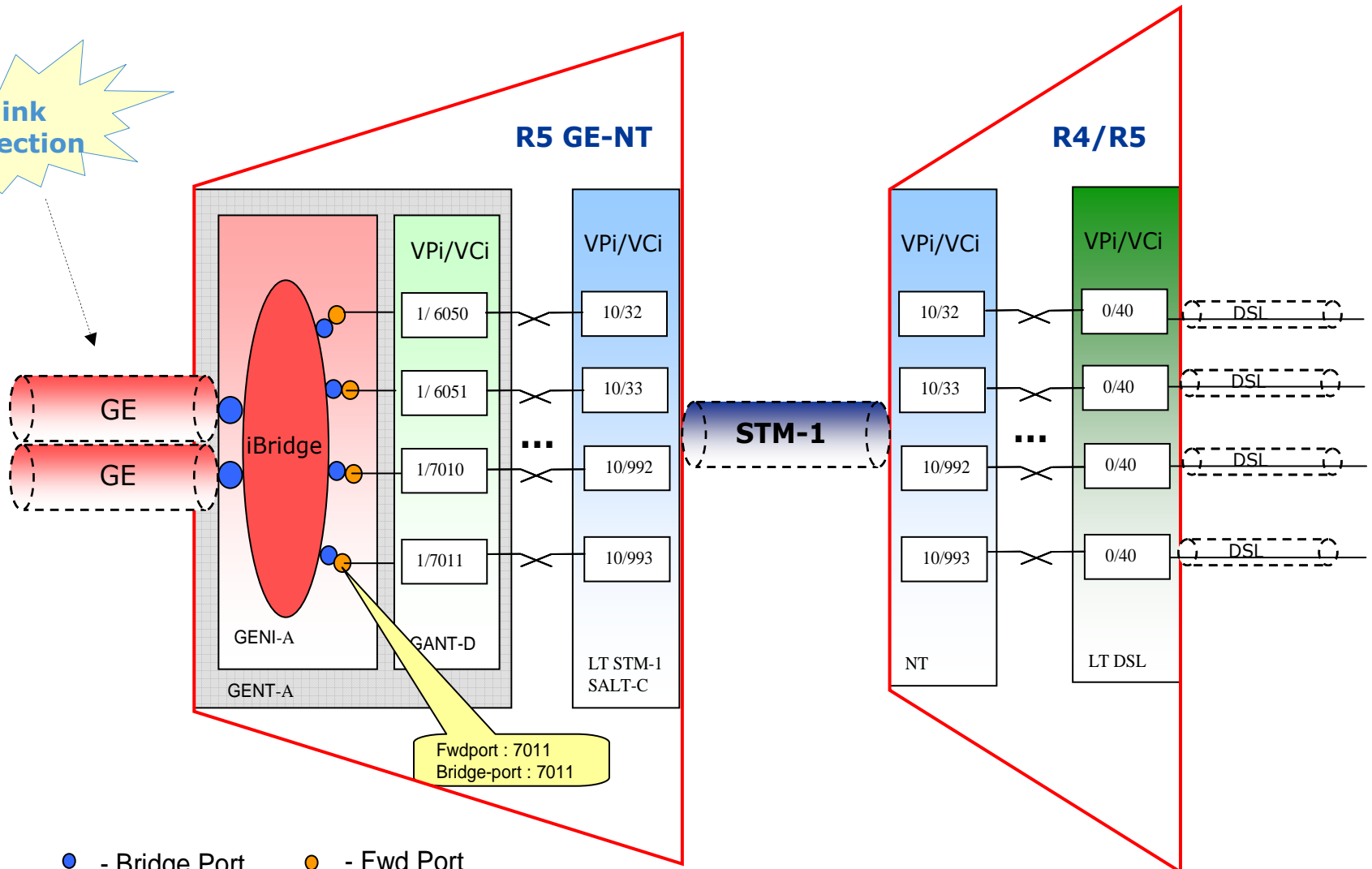


Technical details: *GE-NT*

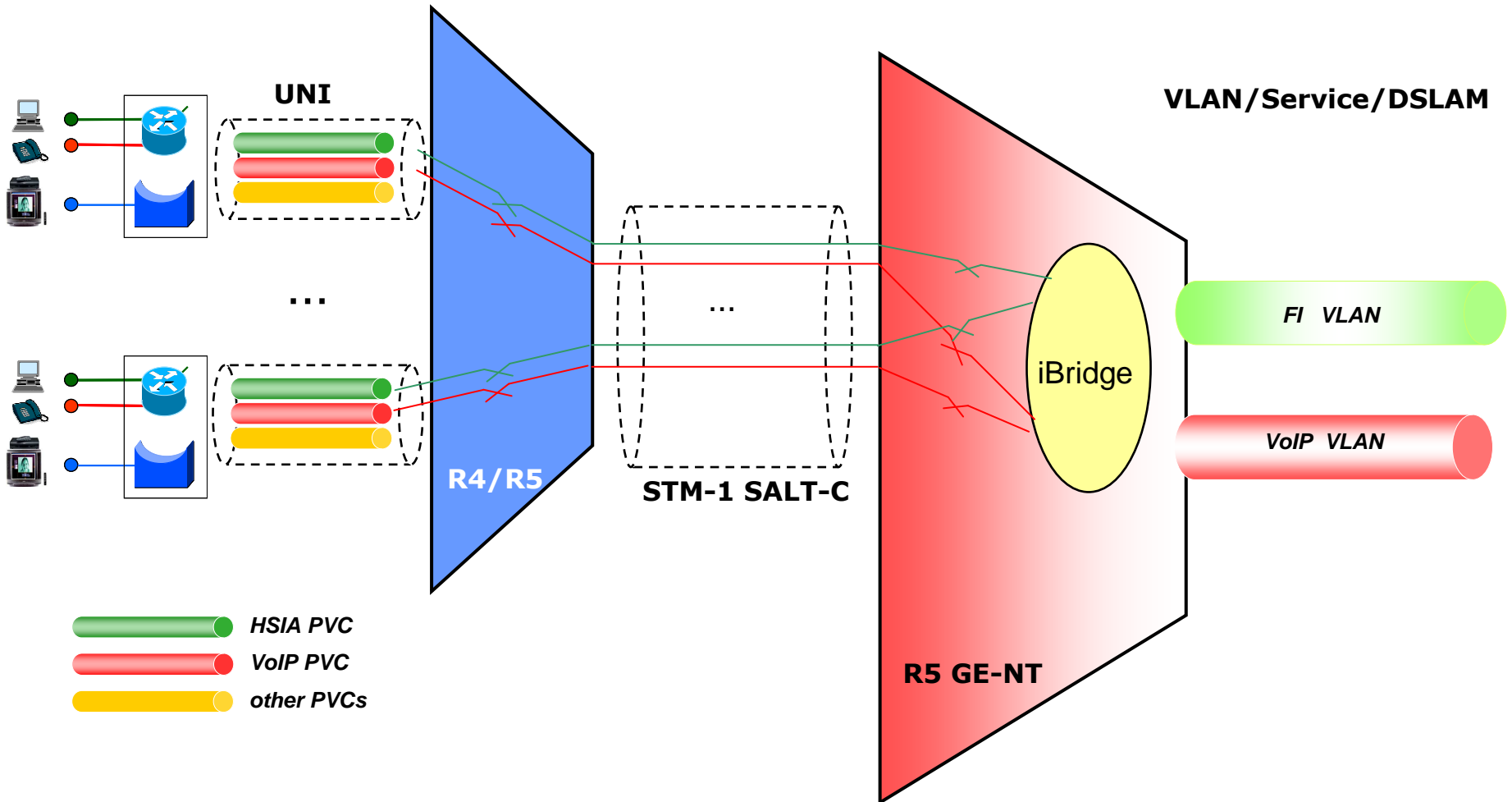


Technical details: GE-NT & ASAMs

link protection



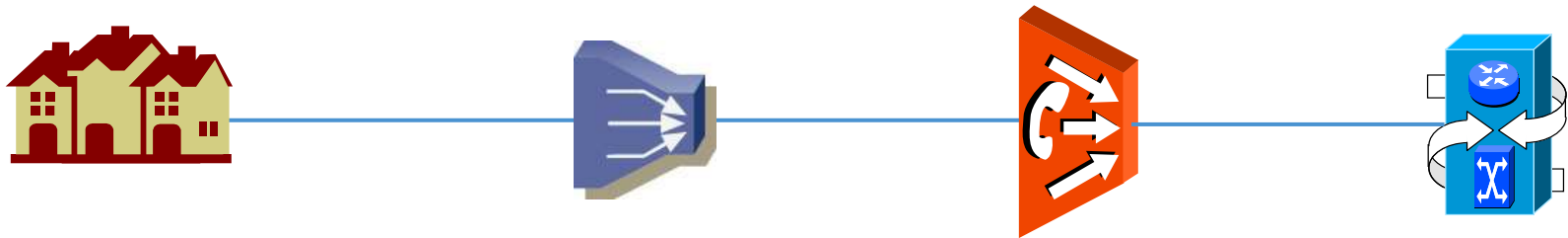
Technical details : *network view*



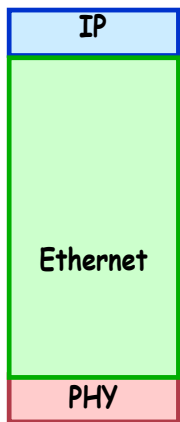
QoS mapping

ASC	P-bit
<i>CBR</i>	5
<i>rt-VBR</i>	3
<i>nrt-VBR</i>	1
<i>UBR</i>	0

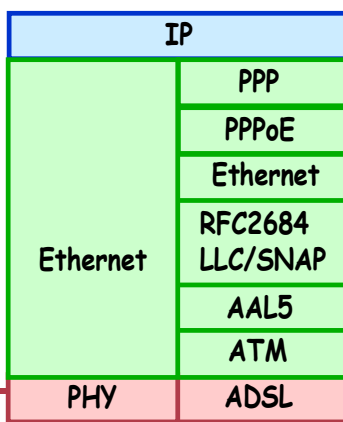
Technical details: *protocol stack (PPPoE)*



PC Ethernet



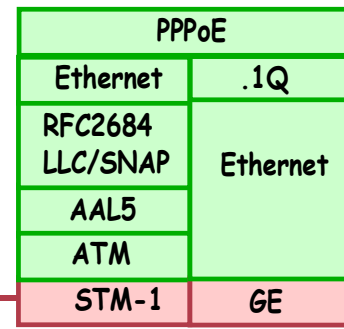
CPE



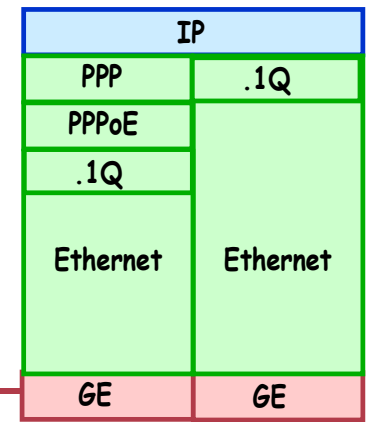
ASAM



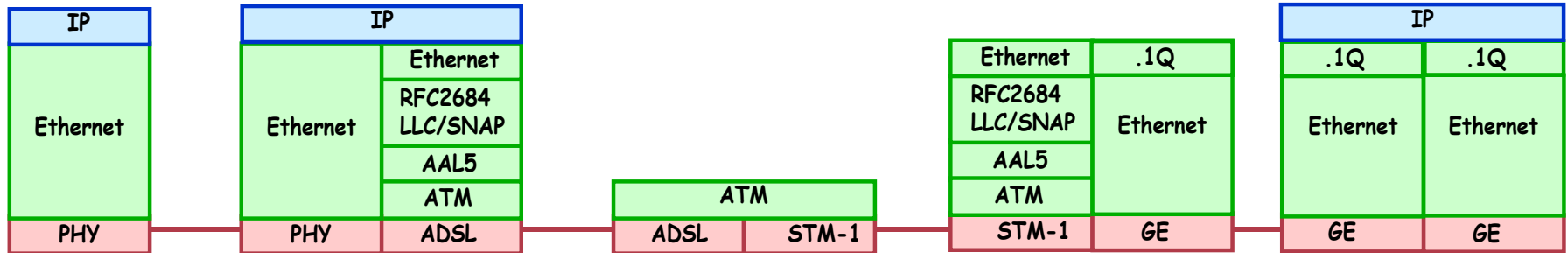
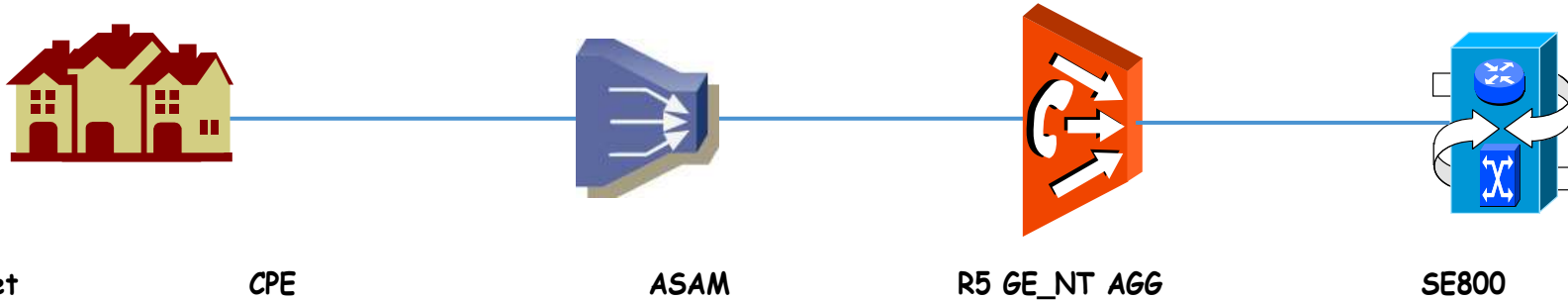
R5 GE_NT AGG



SE800

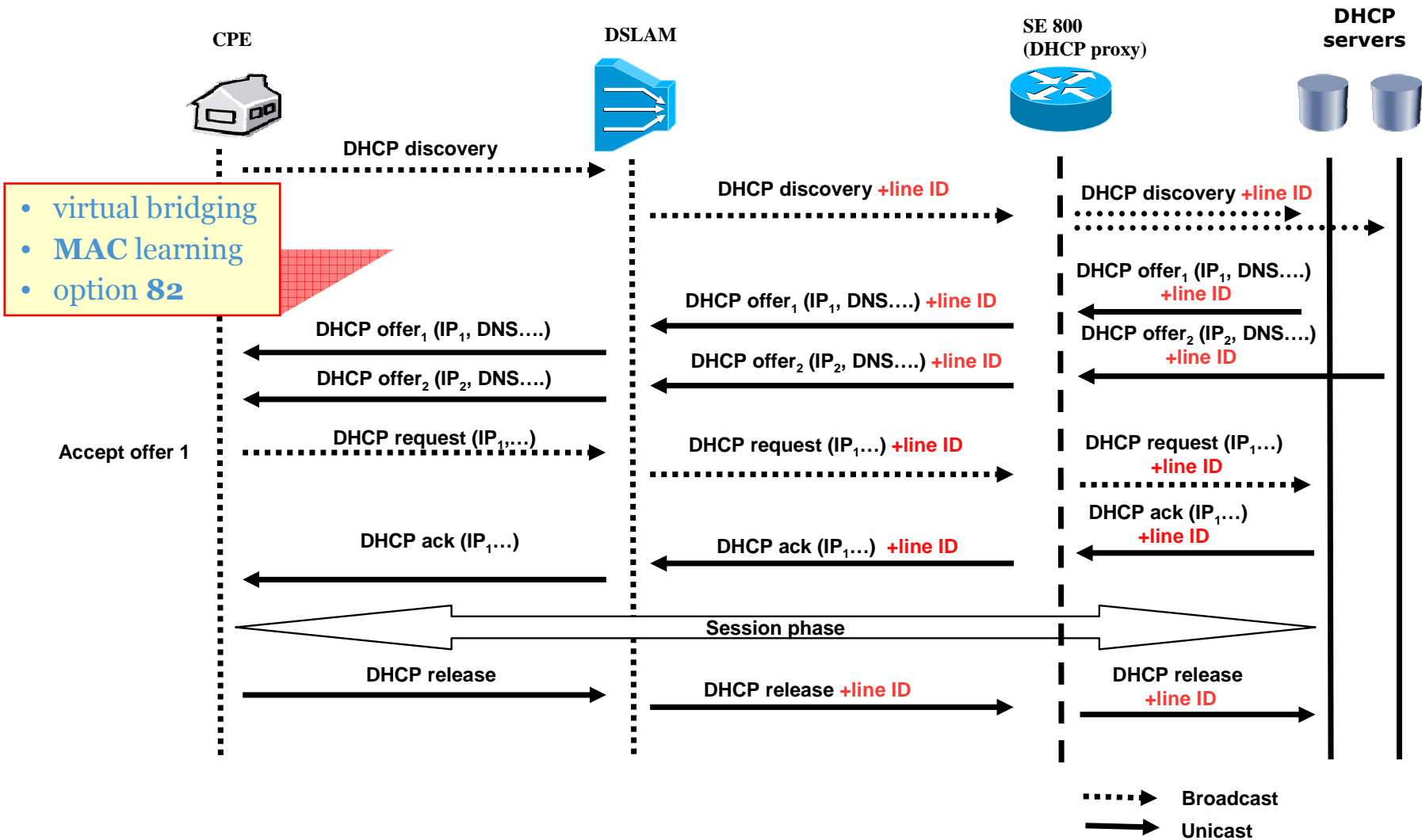


Technical details: *protocol stack (IPoE)*



- virtual bridging
- **MAC** learning
- option **82**

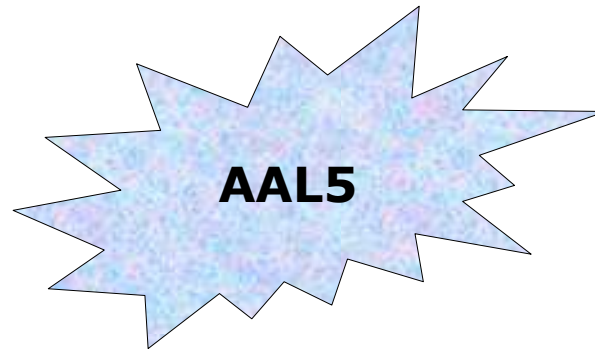
Technical details: *IPoE (DHCP)*



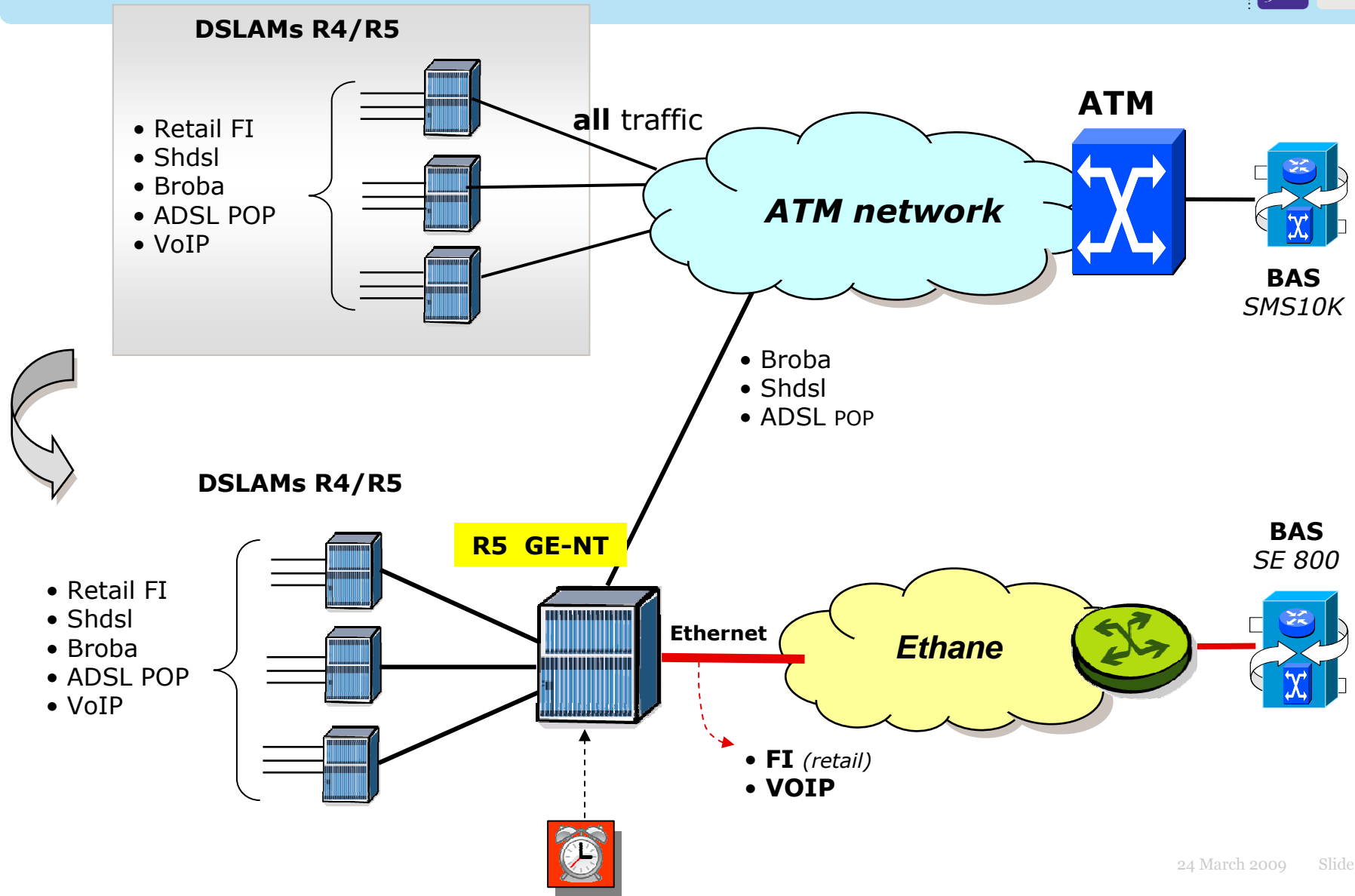
Technical details: *dimensioning*



Number of PVCs associated with bridge engine: **16k**



How ?



Planning



GE-NT introduction

Migration:

*FI(*retail)
&
VoIP

Study & Engineering:

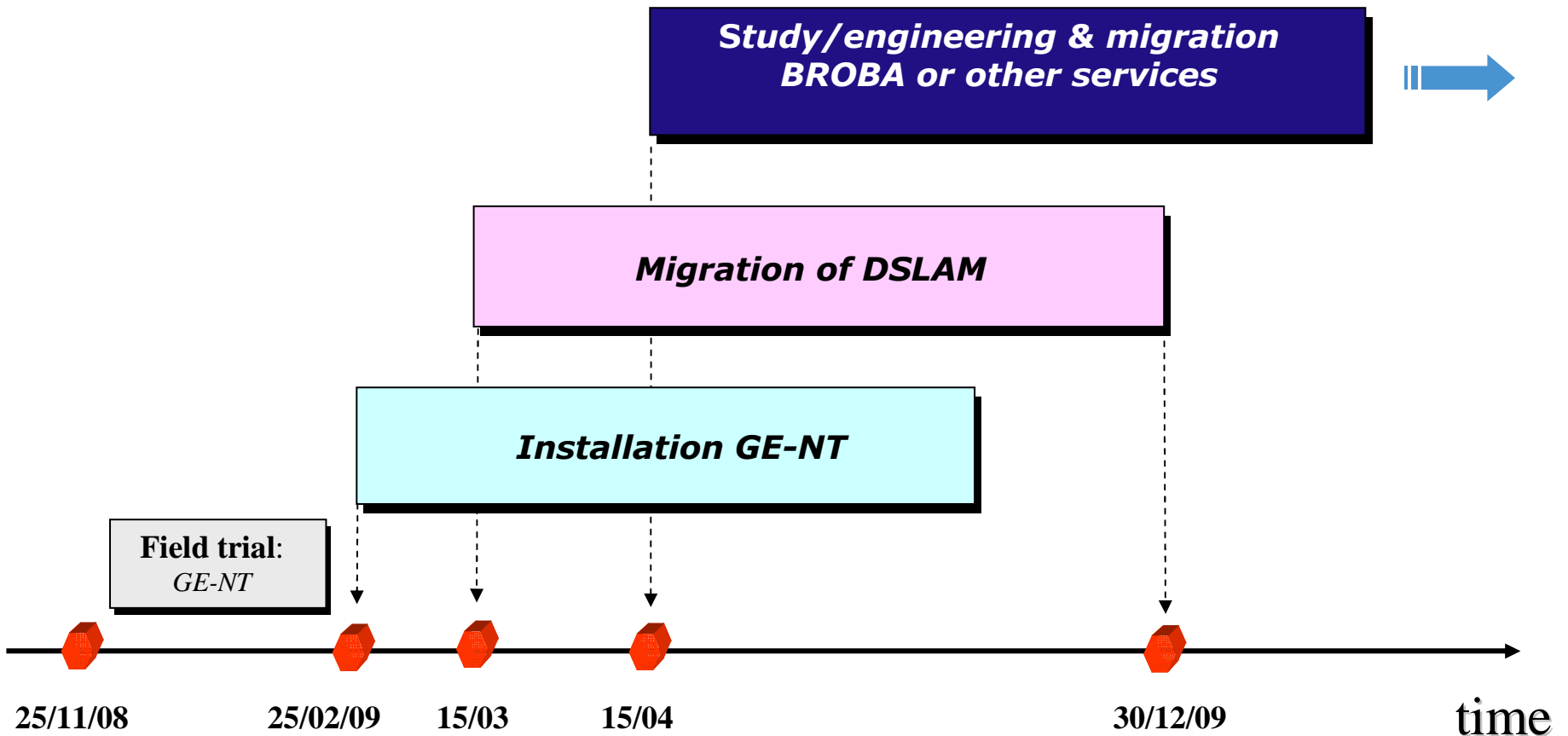
BROBA
or other
services

Migration:

BROBA
or other
services

Installation R5-Dslams with GE-NT

Planning



High Level Status of the MAIP roadmap

IP Interconnection for voice

The GE-NT concept

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Broba on Ethernet draft

Recap and next Steps

- **Purposes**
- **General architecture**
- **Product definition**
- **Migration of existing BROBA lines**
- **Limitations**
- **Pricing**
- **Timing**
- **Questions**

BROBA on Ethernet

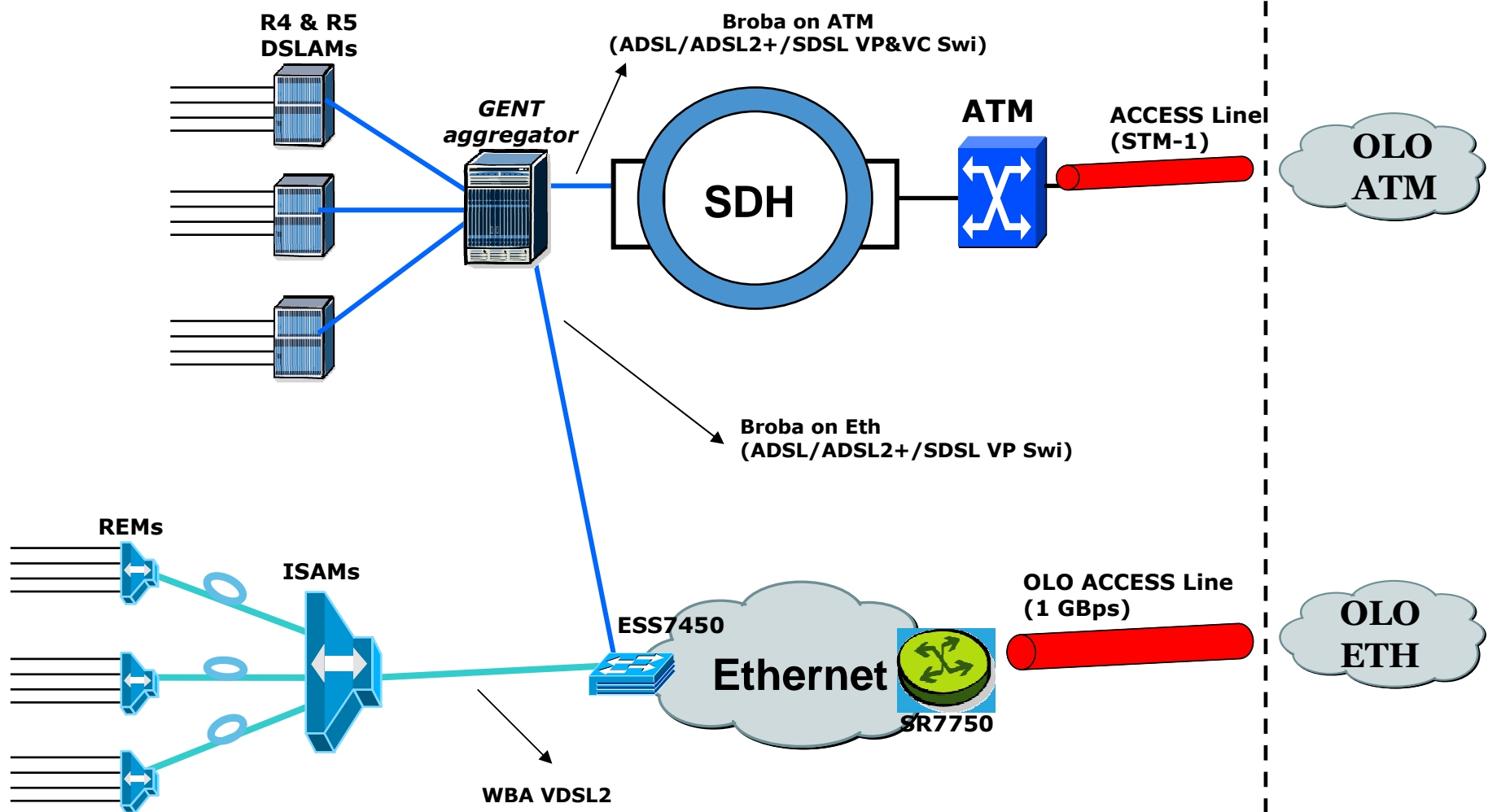
Purposes



- Common interest Belgacom and OLO to migrate from ATM to Ethernet Backbone
 - Keep only 1 future proof infrastructure (ETH), and avoid double backbone costs
- Alternative to WBA VDSL2
 - Avoid the costs and organizational issues due to the needed intervention at end-user premises (new VDSL modem + internal cabling + NTP) and at ROP level
- Prepare Belgacom ATM Backbone phase-out
- Use same solution as for Belgacom Retail

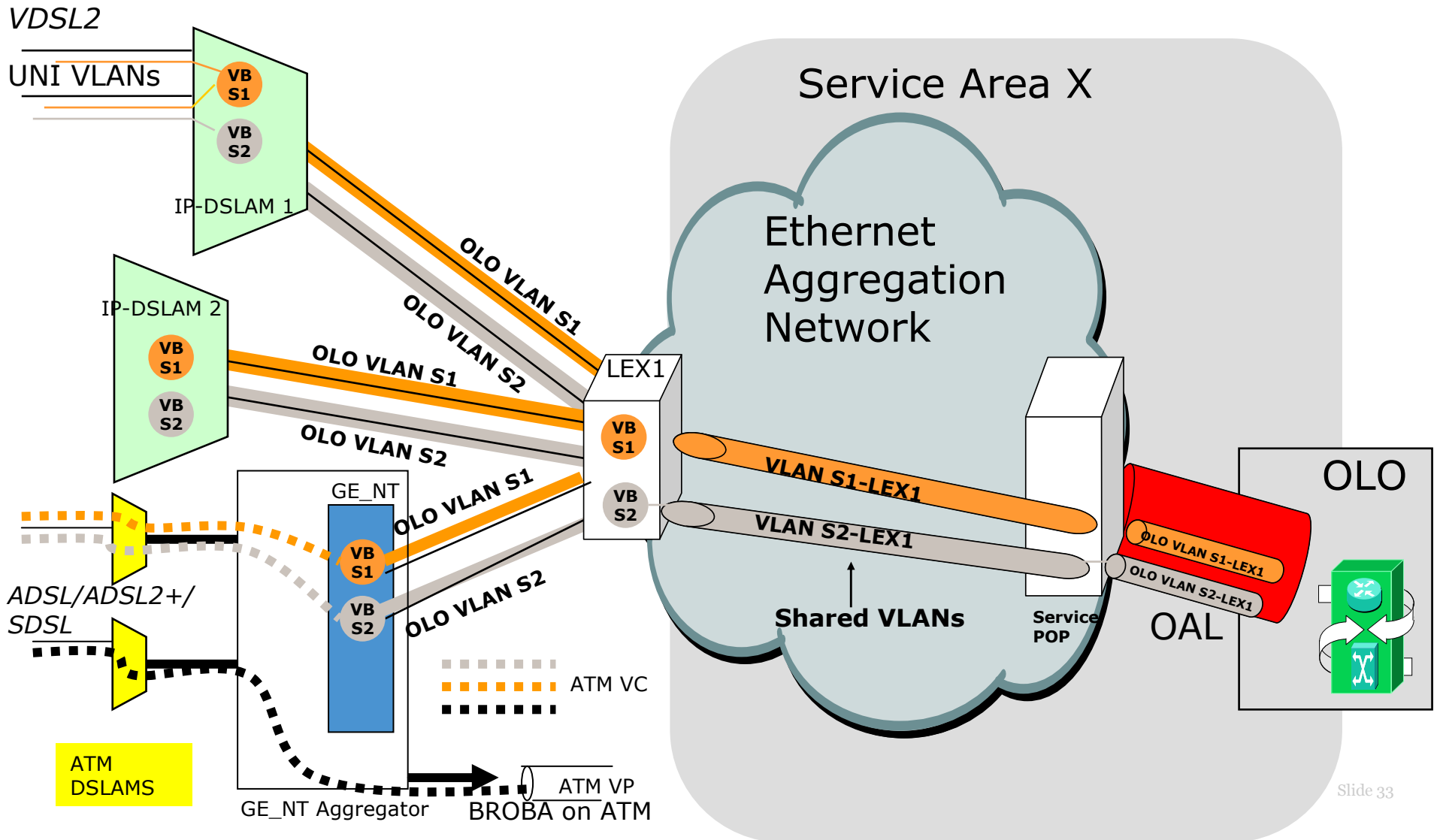
BROBA on Ethernet

General architecture (I)



BROBA on Ethernet

General architecture (II)

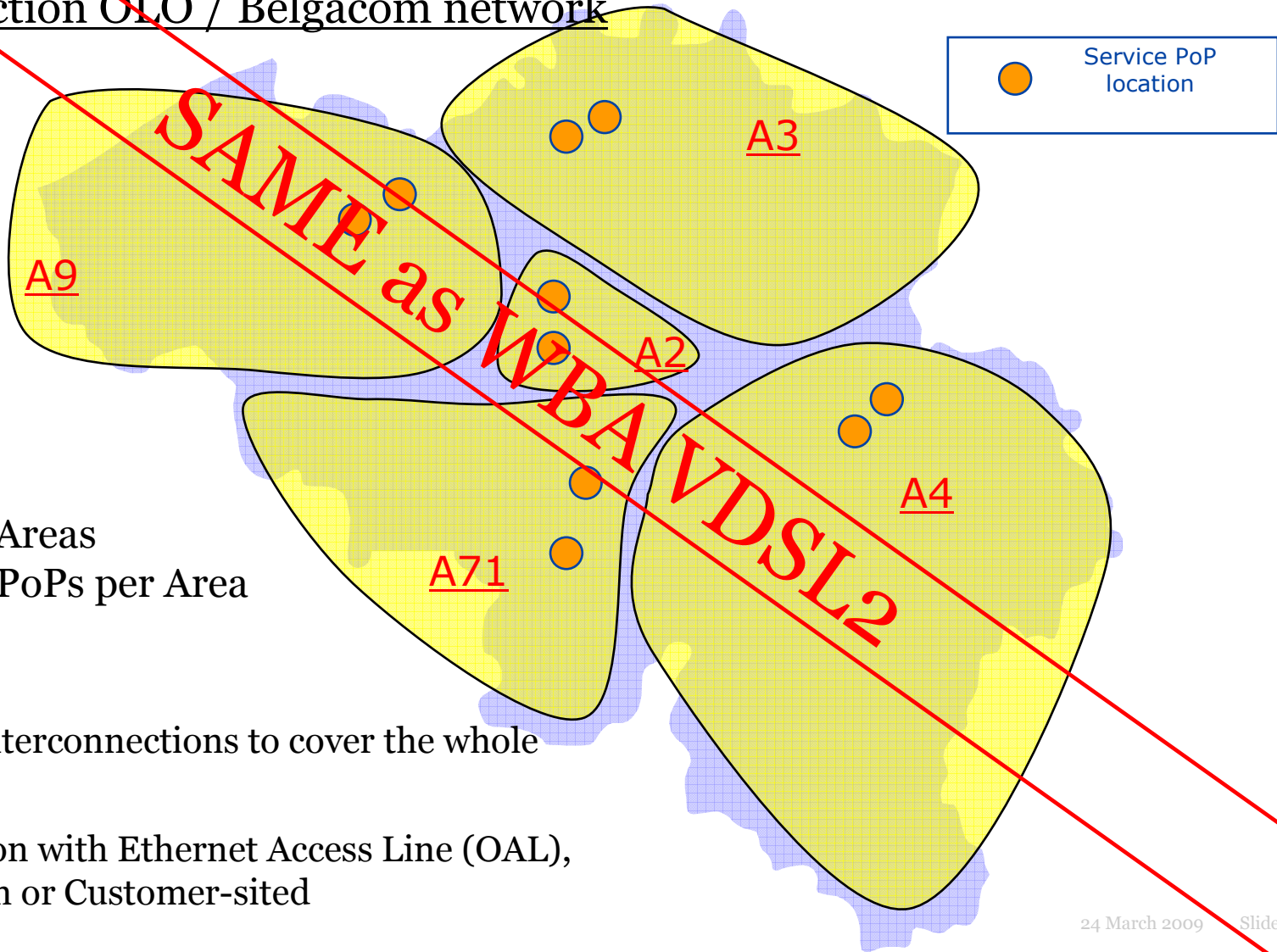


BROBA on Ethernet

Product definition



Interconnection OLO / Belgacom network



- 5 Service Areas
- 2 Service PoPs per Area

Minimum 5 interconnections to cover the whole country

Interconnection with Ethernet Access Line (OAL), 1GE, Belgacom or Customer-sited

BROBA on Ethernet

Product definition



VLAN

- Same (**shared**) VLAN as for existing WBA VDSL2
 - Bridging of VLAN at IP-DSLAM and at LEX level
- Four service qualities, differentiated by the Ethernet p-bit (P):
 - P=0 : best effort; P=1 : low priority; P=3 : medium priority; P=5 : highest priority
- Same VLAN can be used for BROBA on Eth and WBA VDSL2

BROBA on Ethernet

Product definition



End-User line

- With and without voice
- ADSL, ADSL2+, ADSL2 RE, SDSL (VP switching)
- Same Line Profile & deployment rules as BROBA on ATM
- ADSL/ADSL2+ modems
- No restriction on NTP
- No compulsory internal cabling rules
- No direct Cu pairs obligation
- Same installation modes as BROBA on ATM

SAME as BROBA (on ATM)

BROBA on Ethernet

Product definition



QoS mapping VC / VLAN

QoS mapping

ASC	P-bit
<i>CBR</i>	5
<i>rt-VBR</i>	3
<i>nrt-VBR</i>	1
<i>UBR</i>	0

BROBA on Ethernet

Migration of existing BROBA lines



- No automatic migration done by Belgacom
- Earlier date : March 2010
- Latest date : December 2012
- Not possible in outphased buildings

BROBA on Ethernet

Limitations (1)



- Number of VC per line limited by number of P-bit: 4
- Solution for SDSL VC switching still under study
- GE-NT card is not transparent for protocols transported on ATM:
 - Limited to Ethernet over AAL5
- Use of ATM OAM:
 - ATM OAM is limited to ATM part => not accessible by OLO
 - Ethernet OAM : not possible

BROBA on Ethernet

Limitations (2)



- Supported in BROBA/Eth:
 - Anything/Ethernet/AAL5/ATM
- Not supported : all other protocol stacks, eg
 - PPP/ATM (PPPOA)
 - IP/AAL5/ATM (Routed)
 - Circuit Emulation/AAL1/ATM
 - Voice on ATM/AAL2/ATM (used in UMTS)
 - Signalling/SSCOP/AAL5/ATM (used in UMTS)
 - Frame Relay/AAL5/ATM
 - OAM/ATM

BROBA on Ethernet

Pricing



(Rental prices)

- End-User line : close to BROBA
- VLAN : same as WBA VDSL2
- OAL : same as WBA VDSL2

The above information is subject to re-evaluation, evolution and changes, does not constitute any binding offer from Belgacom and does not contain any commitment from Belgacom.

BROBA on Ethernet

Timing



- 24/03: 1st workgroup BROBA on Ethernet
- 27/03: Presentation + MoM on Belgacom website
- End April: 2nd workgroup BROBA on Ethernet
- End May: 3rd workgroup BROBA on Ethernet
- End June: Offer submitted to BIPT
- March 2010: Ready to order



High Level Status of the MAIP roadmap

IP Interconnection for voice

The GE-NT concept

Broba on Ethernet draft

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Recap and next Steps

C. Mottiat
Product Manager

Next Steps



So far,

- Belgacom explained how the GE-NT cards are deployed in the Belgacom network
- How this could be used to develop an “Ethernet” version of BROBA
- What is a reasonable planning for development of a new offer

What's next:

- **MoM of today's questions + answers for next workshops**
- **Belgacom keeps on developing in order to reach March 2010 target**



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