BELGIAN INSTITUTE FOR POSTAL SERVICES AND TELECOMMUNICATIONS

CONSULTATION OF THE BIPT COUNCIL

OF 21 OCTOBER 2009

FOR TELECOM OPERATORS

AND MODEM VENDORS

ON

VDSL2 MODEMS

To respond to this document

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Reactions are to be sent by electronic way only.
Confidential parts in this document should be clearly indicated.
This consultation takes place according to Article 140 of the Act of 13 June 2005

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INTRODUCTION

This consultation aims at on the one hand clarifying BIPT position on interoperability modem and on the other hand approaching a certain number of problems related to the interoperability of VDSL2-modems & TR069-access.

Through this consultation the Institute would like to obtain the opinion of telecom operators and modem vendors so that BIPT can have a well-founded opinion on this subject.
Respondents are especially requested to give their view on these subjects, to check various arguments and possibly to provide new arguments which could strengthen our current view or could change the view of the Institute.

INTEROPERABILITY MODEM

LACK OF INTEROPERABILITY OF VDSL2 MODEMS

Interoperability between DSLAM and CPE is not guaranteed by an ITU standard and it may be more difficult to achieve due to the differentiation possibilities of the VDSL2 technology (different flavours, deployment scenarios, configuration settings) and due to the more sensitive services like VoIP & IPTV that use the VDSL2 platform.

The efforts of the Broadband Forum to improve interoperability include

- Demonstrate interoperability with basic testing described by Broadband Forum Plugfest description
- Broadband Forum elaborates working texts on performances and functionality test plans
- Broadband Forum issues Technical Recommendation when working texts are stable.
- Broadband Forum creates a Logo and a lab accreditation program related to the technical recommendation to promote the interoperability testing.

There is still no standard at the Broadband Forum guaranteeing interoperability between DSLAM and the various types of modem.
This standard is provided for in 'broadband suite 3.1', after which it can, depending on the modem vendor and the adaptations necessary, still last up to 6 months before modems can be sold according to the standard.
For the moment we still don't know when the Broadband Forum will be ready with this standard, but there's little chance that this will be the case before the end of the year.

Given that VDSL2 is far more complex than ADSL and ADSL2 and that the industry effort is spread over more variants with much more contradictory interests, it may be feared that VDSL2 evolution to maturity will be much slower than for ADSL and ADSL2. It seems thus impossible to predict when interoperability will become a reality and a strict control of the firmware versions may be needed for a long time to go.

Belgacom points out that VDSL2 technology is not ripe enough for the moment and therefore it is better to have the same chipset both for modem and DSLAM to prevent operational problems, reductions in efficiency and line instability.

While services offered on VDSL2 such as VoIP and IPTV are much more sensitive to noise.

This opinion seems to come from KPN given that the Dutch WBA offer states on page 25 of Annex II:

> *"VDSL2 technology is still new and interoperability between DSLAM equipment and modems still has to be examined.*
>
> *KPN will recommend choosing a given modem type where the chipset of the end-user modems and DSLAM modem are similar."*

MODEM MONOPOLY

Without interoperability guarantees, an NRA is forced to oblige the modem from one vendor in the wholesale bitstream offer to prevent future interoperability problems.

BIPT decided in its decision of 30 September 2009 on WBA VDSL2:

> *"The Institute agrees with the restriction on the type of modem and the automatic update of these modems, otherwise there is too much risk that problems arise because interoperability is not guaranteed. (…)*
>
> *As soon as the interoperability standard of the Broadband Forum is available, Belgacom should on the one hand make the necessary effort to adapt their DSLAMs as soon as possible (without creating problems for the existing retail and wholesale services) so that interoperability is supported as laid down by the Broadband Forum and to remove the modem obligation from the WBA offer."*

This excludes other modem vendors from a national market and creates modem vendor monopoly. Alternative operators don't have the same scale as the incumbent to obtain an interesting price for those modems and they can't use the economies of scale of their international shareholders (e.g. alternative operators that are affiliates of FT, BT, KPN, Telefonica, DT) if only one modem vendor is allowed. This wil increase their costs & make them less competitive towards the incumbent

To ensure that alternative operators receive less interesting conditions for modems, an additional procedure was foreseen by the Institute in its decision of 30 September 2009:

> *"The Institute requests therefore Belgacom to act as intermediary and to resell the SAGEM-modem to OLO's at the same conditions as the conditions which are currently applied to carrier wholesale (and therefore Scarlet as well). Belgacom is ready to do so but requires however the OLO to install itself the firmware on the device to get it ready to start."*

FIRMWARE UPDATES

According to Belgacom a well controlled behaviour of the CPE is needed to

- remotely check if the installation respects the deployment rules,
- enable generic guideline for repair process,
- achieve expected performances, stability and line quality,
- provide reliable field statistics to further fine-tune the provisioning and repair rules.

Before every firmware update a DSLAM and CPE firmware validation is needed to guarantee interoperability and to detect issues that might create operational problems, lower bitrates or unstable links.

Usually the validation verifies that a new firmware version still work correctly against a counter-part with a previous modem firmware. Validation against older version than the previous one are not performed as it would result in excessively high number of test and identify issues that can not be solved since the vendor does not support anymore the older versions.

There are no guarantees that future DSLAM or CPE firmware will not present problems when running against older version counter-parts. Therefore firmware upgrades of the CPEs are needed to keep CPE's aligned with the DSLAM firmware versions. During the validation, the detected issues will be evaluated to see if they are impacting the services, if they can be corrected or if the should be adjusted through changing the processes. There is a risk that some CPE's may become incompatible with new firmware, which might create a difficult question regarding responsibility and the process and contractual conditions to be elaborated.

TR069-ACCESS

Through TR069-access to the modem a telecom operator can remotely change wireless settings, security settings, firmware updates, … This makes the control of the modem much easier.

FIRMWARE-UPDATES VIA TR-069

Alternative operators request TR069-access to the modem to manage remotely the modem parameters (password, WIFI, VoIP, …) just like the retail services of Belgacom. However Belgacom refuses to give up TR069-access because it is necessary to update firmware. Yet alternative operators put forward the fact that they can execute the firmware-upgrade themselves provided that Belgacom provides them with it sufficiently in advance (for example 2 weeks). Finally alternative operators are concerned by the fact that Belgacom can access parameters of end-users via TR-069.

For sake of non-discrimination and in the interest of the end-user the Institute considers that Belgacom should authorise alternative operators to adapt the modems of their end-users through TR069 access.

Firmware update can be perfectly carried out by alternative operators themselves. When receiving modems by Belgacom, alternative operators have to install firmware themselves (this is also the case for WBA VDSL2 Dedicated VLANs). Therefore the Institute does not see why the update of modems in the case of WBA VDSL2 shared VLANs could not be carried out by alternative operators themselves.

HOW COULD IT BE POSSIBLE TO OFFER TR069-ACCESS?

Some alternative operators insist on using their own modem, while others emphasize the need for a workable solution at a competitive price: either the Sagem modem for 80€[(*)] and with full TR-069 access for the alternative operators, either a cheap bridge (max 25€)[(*)] with TR-069 capable Ethernet router controlled by the alternative operator behind the bridge.

Off course, both solutions remain costly, but the main objective is to give alternative operators control over their own equipment. It is a bridge too far for the alternative operators to purchase the modems but not be able to control them.

Option 1: TR069-access on SAGEM modem

Belgacom points out that TR069-access on SAGEM modems is no feasible solution as parameters are set according to what has been developed by the Belgacom Platform and alternative operators should therefore graft their services on the Belgacom Platform, which prevents any differentiation possibilities.

Some alternative operators are in favour of API-access to the Belgacom Platform to change some settings through TR-069 (wireless settings, VoIP, …)

Option 2 : Brug + Ethernet Router

One workable solution is to move the demarcation point of Belgacom's responsibility to the VDSL2 modem itself. In this set-up, Belgacom controls layer 1 & 2 while the alternative operators control layer 3.

In this solution the VDSL2 modem controlled by Belgacom works as bridge and an Ethernet router is placed behind this bridge. The alternative operators can use TR-069 on this router to perform automatic provisioning. In casu the alternative operator receives an Ethernet over VDSL2 signal from Belgacom.

(*) Indicative price

As a transparent L2 bridging with Layer 2 QoS the modem allows alternative operators to easily map via a Graphical User interface services with different classes. Therefore alternative operators must propose their own CPE's behind the SAGEM modem to offer their services (e.g. Service Router, IP Phones...). With this solution alternative operators can build their own Fast Internet and VoIP services with their own roadmap making a service differentiation with Belgacom retail services.

A light modem version with bridge, based on the current SAGEM modem, would create large development costs for Belgacom and wouldn't create a large price difference against current SAGEM modem. Belgacom doesn't have the resources to support two modem platforms

Belgacom is willing to do bridge set-up with 80€ modem with Ethernet router behind the end-user connection. In combination with the Ethernet router, this solution becomes too expensive for the alternative operators.

However the Institute considers that the use of 2 units gives a competitive disadvantage to the alternative operators. This would render their service less user friendly, more complex and certainly more costly.

CONSULTATION

Through this consultation the Institute would like to obtain the opinion of telecom operators and modem vendors so that BIPT can have a well-founded opinion on the issue dealt with in this document.

Respondents are especially requested to give their view on these subjects, to check various arguments and possibly to provide new arguments which could strengthen our current view or could change the view of the Institute.

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BELGACOM WBA VDSL2
Position Paper on modem

Date: 25.08.2009

MODEM IN THE WBA OFFER

The picture and text here below describes the modem proposed in the WBA offer of Belgacom.

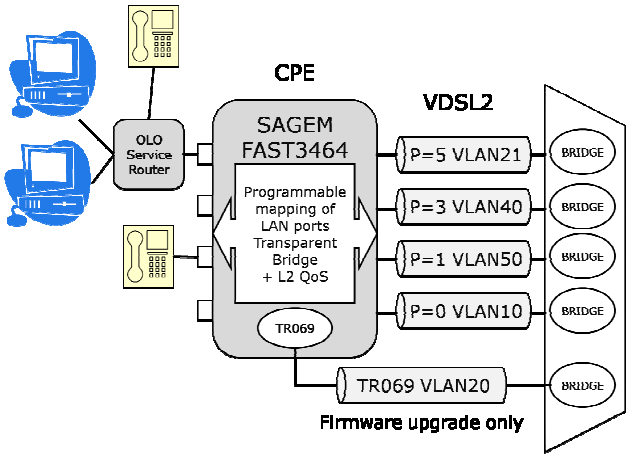

Figure 1 CPE architecture of the BGC WBA

Basically the WBA offer provides OLO's the benefit to offer their services through the high bandwidth of the VDSL2 access technology of Belgacom.

Belgacom guarantees a stable and robust VDSL2 access though the SAGEM modem via his quality assurance and qualification process.

A mechanism of firmware upgrade makes sure that the modem will follow the VDSL2 evolution/improvements of the Belgacom network.

As a transparent L2 bridging with Layer 2 QOS the modem allows OLO's to easily map via a Graphical User interface services with different classes. Therefore OLO's must propose their own CPE's behind the SAGEM modem to offer their services (e.g. Service Router, IP Phones…). With this solution OLO's can build their own Fast Internet and VoIP services with their own roadmap making a service differentiation with Belgacom retail services.

With this configuration there is no interest or need to manage any service parameters on the SAGEM modem because it functions as a full L2 bridge. The service configuration is then totally under control of OLO's managing their CPE's.

If OLO's customers do want to access their service in wireless mode (Wifi) or other service parameters (e.g. password management), the needed settings must be configured where they are, i.e in the OLO service router and not in the SAGEM modem.[1] The full L2 bridge functions brought by the SAGEM modem allow OLO's to manage their service on their service router or IP devices in a full transparent way with the protocol they want to use, including TR069. This TR069 protocol will then probably be different from the one Belgacom uses, as the latter protocol has been adapted to the Belgacom Auto Configuration Server.

[1] Indeed, as the SAGEM modem is a pure bridge L2 mode (no IP nor application running on top of it) there is no application in the SAGEM modem to access internet nor VoIP services, so the configuration of the login/password Fast Internet or VoIP must be made on the OLO service router. There is simply no other choice.

ONE MODEM FOR OLO AS ALTERNATIVE

The alternative to the 2 box solution (SAGEM modem + service router/IP devices) proposal using only the SAGEM FAST3464 as unique customer CPE does not make a lot of sense in the context of the WBA offer.

As showed in the picture below this option would force OLO's to use exactly the same application modules and service platform developed by Belgacom to make the CPE working correctly with the service platform.

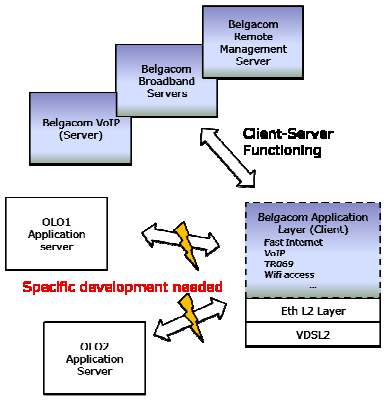

Figure 2 Client-Server Applications

Services are offered through dedicated Client-Server implementation. And So the Belgacom client is not able to support any application server developed by OLO's. This would be in conflict with the principle allowing OLO's to differentiate their services from the Belgacom retail services. In addition this would force OLO's to follow the BGC retail roadmap removing all flexibility on service evolution at OLO's.

Moreover this solution would require long and intensive development efforts from OLO side. The timelines might intersect with the timeline within which the VDSL2 technology reaches a reliable level of interoperability, that allows the testing and connection of alternatives modems to the Belgacom network.

CONCLUSION

The above leads in a logical way to the solution Belgacom is proposing now:

➔ Till VDSL2 technology has reached a reliable level of interoperability the SAGEM modem of Belgacom is used as a L2 bridge in order to guarantee interoperability with the Belgacom network.

The OLO is managing its services from its own service router that is connected behind the SAGEM modem. All functionalities can be managed from that router (including Wireless settings, password management) etc. As the Sagem modem functions as a L2 bridge, the OLO can manage these transparently from distance.

➔ Once a reliable level of VDSL2 interoperability has been exists, OLOs can opt for a one-box solution. To that means they will need ensure that their modem is validated for initial connection to the BGC network, by means of guaranteeing a number of tests. These will be described in due course in a specific addendum.

Of course the OLO could also opt to continue working with a 2-box solution.

°°° end of this document °°°