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SINGNET PTE LTD
RESPONSE TO INFO-COMMUNICATIONS DEVELOPMENT AUTHORITY OF SINGAPORE PUBLIC CONSULTATION ON GUIDELINES FOR THE PROVISIONING OF COAXIAL CABLE HOME NETWORKING SOLUTIONS

1. INTRODUCTION

1.1. SingNet Pte Ltd (**SingNet**) refers to the Info-communications Development Authority of Singapore (**IDA**) public consultation on the Guidelines for the Provisioning of Coaxial Cable Home Network Solutions (**Guidelines**) issued on 2 September 2011.

1.2. SingNet is a leading Internet Access Service Provider (**IASP**) in Singapore and has been at the forefront of Internet innovation since 1994, being the first IASP to launch broadband services in Singapore. SingNet offers a comprehensive suite of broadband Internet services delivered both over the Digital Symmetrical Line (**DSL**) and fibre technologies. SingNet is also licensed to offer IPTV services under a nationwide subscription television licence granted by the MDA.

1.3. SingNet provides services to both corporate and residential end-users and is committed to bringing the best of global communications to its end-users in the Asia Pacific and beyond.

1.4. SingNet is committed to the provision of state-of-the-art telecommunications technologies and services in Singapore and welcomes the opportunity to make a submission in response to the Guidelines issued by the IDA.

1.5. This submission is structured as follows:

Section 1 – Introduction
Section 2 – General Observations and Comments
Section 3 – Specific Comments

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2. GENERAL OBSERVATIONS AND COMMENTS

2.1. With the availability of high-speed residential broadband plans of 100Mbps and beyond over the Next Generation Nationwide Broadband Network (**Next Gen NBN**) to 95% of homes by June 2012, the need for suitable home networking solutions in order to realise and distribute the high bandwidth connection to multiple users and devices within the home is likely to increase.

2.2. Existing home networking solutions such as wireless local area networking (**Wi-Fi**) and powerline networking have their respective limitations in supporting bandwidth-intensive applications or applications that require reliable high throughput connections within the home. Wi-Fi networking is susceptible to interference from other nearby Wi-Fi networks and the signal weakens as it passes through walls. Powerline networking is also susceptible to interference caused by the operation of electrical appliances within the home.

2.3. The most suitable home networking solution to complement the Next Gen NBN is the use of structured network cabling utilising Cat5e or Cat6 cables. While this is a viable solution for new homes or homes undergoing renovations, it remains a potential challenge to install structured network cabling in existing homes due to the one-time installation costs and the unsightly trunking used to house the structured network cabling.

2.4. Due to the challenges of installing structured network cabling in existing homes, SingNet submits that a more viable alternative solution that is able to support reliable high-throughput connections within the home is coaxial cable home networking (**CCHN**). Given that most homes in Singapore already have coaxial cables installed, CCHN offers home owners a quick, easy and reliable means of realising and distributing a high-throughput connection within the home by leveraging on their existing coaxial cables in the home.

2.5. In light of the fact that CCHN is a viable home networking solution that complements the Next Gen NBN; it is critical that the IDA removes all barriers and impediments to the adoption of CCHN by home owners.

2.6. While we welcome and support the IDA's efforts to facilitate the adoption of CCHN Solution with the proposed Guidelines, we submit that more could be done by the IDA in this regard.

2.7. As the IDA is aware, the CCHN Solution may be the only viable home networking solution that complements the Next Gen NBN and will facilitate the take-up of services utilising the Next Gen NBN. In terms of certain issues raised by an industry participant, we note that the IDA has already dealt with the issue by ensuring that the frequency on which the CCHN Solution operates does not interfere with existing Cable Services. Further, in relation to the transmission of RTM1 broadcast signal, SingNet notes that RTM1 can be migrated to an alternate frequency outside the range approved for CCHN Solution.

2.8. The IDA should also be aware of upcoming technologies such as G.hn with throughput of 1 Gbps envisaged for CCHN; therefore the IDA should be forward-looking and assign additional frequency spectrum of at least 100MHz for CCHN in order to realise the benefits of new technologies such as G.hn.

2.9. In relation to the assignment of additional frequency spectrum for CCHN, we would note that Japan has already assigned 200MHz spectrum at 2 GHz for G.hn[1].

2.10. Notwithstanding the above, SingNet is pleased to provide its specific comments to the Guidelines as follows:

3. SPECIFIC COMMENTS

Suitability of Home Configurations and Minimum Conditions for Deployment of CCHN Solutions

In-home coaxial cable systems layout

3.1. In 2.2.1 of the Guidelines, the IDA indicated that a setup with the isolation filter (**Filter**) installed at the riser will be the "*typical setup for most housing types*".

[1] ITU-T G.9960 Annex C, June 2010

3.2. SingNet submits that where the splitter is located within the home, it should be recommended that the Filter be installed within the home i.e. as per the setup in **Illustration 2**.

3.3. A Filter used for a CCHN solution is a passive component with characteristics similar to a coaxial splitter which a home owner may install within the home. There is no necessity to require that the Filter be installed in the distribution tap if it can be installed within the home.

3.4. Furthermore, installing the Filter at the distribution tap is also technically inferior due to additional losses from the length of the cable between the tap and splitter.

3.5. There are further merits for installing the Filter within the home. If the Filter is in the riser (i.e. a publicly accessible area) it is potentially susceptible to access by third parties and may be subject to tampering. Whereas a Filter within the home allows for a greater degree of security and protection whereby the CCHN solution provider providing home networking solutions using in-home coaxial cables (**Solution Providers**) is able to take some comfort from the fact that the home owner can ensure that the Filter is not tampered with or removed.

3.6. In **Illustration 1**, it is proposed that the Filter be installed in the riser which would require access to the distribution tap. **Illustration 1** should be deleted. SingNet reiterates that where the splitter is located within the home, it should be recommended that the Filter be installed within the home i.e. as per the setup in **Illustration 2**.

3.7. SingNet also submits that the statement in **Illustration 2** "*Where access to the distribution tap is not possible…*" is flawed [as access to the distribution tap is controlled by the BCS provider] and should also be removed. SingNet proposes that the description for **Illustration 2** be as follows:

> *"Preferred setup for CCHN solutions. Where the splitter box is within the home, the isolation filter should be installed at the in-home splitter box."*

3.8. In view of the above, SingNet submits that **Illustration 1** should be removed from the Guidelines and **Illustration 2** be re-labelled as **Illustration 1** with the description amended as proposed in para 3.6 above.

3.9. The Guidelines state that only homes served via a single coaxial splitter are suitable for a CCHN solution. Specifically, IDA indicated in 2.2.4 of the Guidelines that **Illustration X1** is not suitable for the installation of CCHN Solution.

3.10. SingNet does not agree or support this statement. Where a home is served via multiple coaxial splitters, the home may still be suitable for deployment of CCHN solutions so long as the CCHN solution is deployed to points on the same coaxial splitter i.e. Y. As a precaution, additional Filters could be installed at Point X to prevent any potential interference in the event that the customer decides to change the existing CCHN solution setup to a different coaxial splitter.

3.11. If required, the cables terminating at Point X can also be easily switched with ones at Point Y to enable home networking to the desired rooms. The Solution Provider should ensure that the signal levels remain within the recommended thresholds if such switching is performed.

3.12. SingNet submits that **Illustration X1** is a viable option and should not be dismissed outright as there may be a substantial number of homes with this setup. SingNet proposes that **Illustration X1** should be listed as **Illustration 2** in the table in paragraph 2.2.1.

Other coaxial cable system layouts

3.13. The Guidelines have identified only in-home coaxial cable layouts as being suitable for the CCHN Solution.

3.14. SingNet does not agree or support this limitation. SingNet would highlight that there are a substantial number of homes (particularly HDB) where the splitter is located in the riser. Homes with such layouts should still be able to derive the benefits from the deployment of the CCHN Solution for home networking purposes. If not, there is likely to be an adverse impact on the take-up of services utilising the Next Gen NBN.

3.15. SingNet submits that such a layout should be included in the Guidelines to ensure that all layout permutations are properly addressed and as many customers as possible can benefit from a CCHN Solution. SingNet therefore proposes that the IDA include a layout in which the splitter is installed in the riser and label this layout **Illustration 3**. In such a layout, the Filter will need to be installed at the riser. This will require the full cooperation of the BCS provider to give the Solution Provider access to the riser. SingNet provides additional comments in relation to the grant of access to BCS Facilities in paragraphs 3.22 to 3.25.

3.16. The inclusion of Illustration 3 as a coaxial cable layout suitable for the CCHN Solution will substantially widen the number of homes (particularly HDB) that may benefit from the deployment of CCHN Solution. In light of the fact that the CCHN Solution may be the only viable home networking solution that complements the Next Gen NBN; especially in existing homes; it is critical that the IDA removes all barriers and impediments to the adoption of CCHN by home owners.

BCS system inspection

3.17. The Guidelines require that the Solution Provider should "*conduct a thorough inspection of the BCS within the customer's home and verify its condition*". SingNet submits that a check which includes all the aspects in (a) to (e) of paragraph 2.2.5 is excessive and unnecessary.

3.18. Solution Providers should only be required to inspect and verify the condition of the points of attachment e.g. if the filter is installed within the home then the Solution Provider would not require access to the riser therefore there is no basis for requiring the Solution Provider to check the riser or the tap box within the riser.

3.19. SingNet proposes that paragraph 2.2.5 be amended as follows:

> *"Solution Providers should also conduct a thorough inspection of the* ***points of attachment to the*** *BCS system within the customer's home and verify its condition. The inspection* ***may*** *include the following aspects:*

a) *Coaxial distribution riser;*
b) *Coaxial distribution tap box in the riser;*
c) *Coaxial splitter box housing the 1st coaxial splitter (if applicable);*
d) *Layout of BCS in home; and*
e) *TV outlets in home"*

[emphasis on proposed amendments]

Installation of CCHN solutions by competent persons

3.20. CCHN solutions such as the HomePNA device deployed by SingNet include customised software to conduct tests on the coaxial cable therefore SingNet proposes that paragraph 2.3.3 (c) should be amended as follows for clarity:

"....are equipped with the necessary testing equipment or ***equivalent*** *tools to conduct testing..."*

[emphasis on proposed amendments]

Single point of contact for performance interference issues or disputes

3.21. The Guidelines require that Solution Providers serve as the single point of contact for any performance interference issues or disputes arising from the CCHN solution.

3.22. SingNet submits that in order for the Solution Providers to ensure that it is able to carry out investigations properly and promptly, the Guidelines should require:

(a) the BCS Operator to provide the Solution Providers with a single point of contact for the purpose of escalating interference or dispute cases involving multiple parties;
(b) the BCS Operator to work with the Solution Providers on an escalation Service Level Agreement in good faith; and
(c) that the BCS Operator not impose any charges for the above.

Grant of Access to Facilities Managed or Controlled by BCS Operators in Common Areas

Agreement between Solution Provider and BCS Operator for the grant of access to the BCS Facilities

3.23. The Guidelines require that the Solution Provider and BCS Operator negotiate an agreement for the grant of access to the BCS Facilities.

3.24. SingNet submits that where access to the BCS facilities is required to install the Filter for the purposes of implementing a CCHN solution and in view that access to the BCS Facilities is controlled by the BCS Operator, access to the BCS Facilities is a bottleneck facility.

3.25. As highlighted earlier, a substantial number of homes have coaxial cable layout with the splitter located in the riser and the only means for such homes to benefit from the deployment of CCHN Solution is to install the Filter at the riser. Given that access to the BCS Facilities is essential and critical for the deployment of the CCHN Solution, the IDA should either declare the BCS Facilities Critical Support Infrastructure (**CSI**) and/or issue a direction to the BCS Operator to provide access to the BCS Facilities to ensure that the implementation of the CCHN solution is not frustrated or delayed by the BCS Operator.

3.26. SingNet further proposes that as part of the direction, the IDA should review, audit and approve the charges (if any) to be imposed by the BCS Operator for access to BCS Facilities.

Workmanship Disputes between the End User and the Solution Provider

Service degradation issues

3.27. The Guidelines require that the Solution Provider uninstall the CCHN solution in the event of any service degradation issue that cannot be resolved.

3.28. SingNet submits that the Solution Provider should only be required to uninstall the CCHN solution if there is any degradation issue arising from the implementation of the CCHN solution [i.e. at the point of installation]. The

Solution Provider should not be required to uninstall the CCHN solution should there be a degradation of Cable Services due to general wear and tear of the BCS.

3.29. SingNet proposes that paragraph 4.1.1.2 be amended as follows:

> *"Where the Solution Provider is unable to resolve any service degradation issue* ***arising from the installation of the CCHN solution****, the Solution Provider should uninstall the CCHN Solution"*
>
> *[emphasis on proposed amendments]*

Appendix B: Post-Installation Verification Process

3.30. The Guidelines require the Solution Provider to verify the quality of service for Cable Services. SingNet submits that this requirement is excessive and unnecessary.

3.31. Paragraph 2.2.5 of the Guidelines already requires that the Solution Provider inspect and verify the BCS within the customer's home. This is sufficient to ensure that the BCS remains in the same condition as it was prior to the implementation of the CCHN solution.

3.32. It is unfair to hold the Solution Provider accountable for the Cable Services provisioned over the BCS. The Solution Provider cannot be responsible for determining when a service difficulty is due to service degradation caused by factors other than the CCHN solution.

3.33. SingNet proposes that paragraphs 2 and 3 be removed. Any Cable Service difficulties encountered by the customer will be referred to the service provider.

4. CONCLUSION

4.1. While we welcome and support the IDA's efforts to facilitate the adoption of CCHN Solution with the proposed Guidelines, we believe that more should be done by the IDA.

4.2. SingNet submits that where the splitter is located within the home, it should be recommended that the Filter be installed within the home i.e. as per the setup in **Illustration 2**. A Filter used for a CCHN solution is a passive component with characteristics similar to a coaxial splitter which a home owner may install within the home. There is no necessity to require that the Filter be installed in the distribution tap if it can be installed within the home.

4.3. The Guidelines have identified only in-home coaxial cable layouts as being suitable for the CCHN Solution. SingNet does not agree with or support this limitation. SingNet would highlight that there are a substantial number of homes (particularly HDB) where the splitter is located in the riser. Homes with such layouts should still be able to derive the benefits from the deployment of the CCHN Solution for home networking purposes. SingNet therefore proposes that the IDA include a layout in which the splitter is installed in the riser. In such a layout, the Filter will need to be installed at the riser. This will require the full cooperation of the BCS provider to give the Solution Provider access to the riser.

4.4. The IDA should also be aware of upcoming technologies such as G.hn with throughput of 1 Gbps envisaged for CCHN; therefore the IDA should be forward-looking and assign additional frequency spectrum of at least 100MHz for CCHN in order to realise the benefits of new technologies such as G.hn.

4.5. We would note that Japan has already assigned 200MHz spectrum at 2 GHz for G.hn.

4.6. Finally, given that access to the BCS Facilities is essential and critical for the deployment of the CCHN Solution, the IDA should either declare the BCS Facilities Critical Support Infrastructure (**CSI**) and/or issue a direction to the BCS Operator to provide access to the BCS Facilities to ensure that the implementation of the CCHN solution is not frustrated or delayed by the BCS Operator.

4.7. SingNet further proposes that as part of the direction, the IDA should review, audit and approve the charges (if any) to be imposed by the BCS Operator for access to BCS Facilities.