

EMBARGOED TILL 1 JUNE 2016, 0930 Hrs

Annex B

MEDIA FACTSHEET

HetNet Trials

About HetNet

An initial assessment by IDA forecasts the mobile data traffic in Singapore to grow exponentially from approximately 3.1 petabytes per month in 2010 to approximately 37 petabytes per month in 2015, representing a compound annual growth rate of 64%. IDA is exploring HetNet as a strategy to mitigate the potential crunch in wireless spectrum usage, available traffic capacity, and the provision of seamless connectivity everytime and everywhere, indoors and outdoors. The key benefits of HetNet are:

Efficient & Pervasive Coverage

The use of small cells¹ and Wi-Fi is particularly crucial to providing additional capacity to indoor environments where a majority of broadband data traffic occurs. They can also be used to boost coverage and capacity at key locations where macro coverage is weak. One of the key characteristics of HetNet is to improve cell density in Singapore.

High Quality Connectivity

As real-time Internet services and applications become increasingly popular among users, it is important that users enjoy sufficiently high data speed and low latency across different networks to support these services and applications. For example, services such as Internet telephony should be provisioned with minimal latency as users switch from one network to another, while other services such as HD video streaming should be provided with sufficiently high bandwidth so that users can enjoy an uninterrupted viewing experience.

Enhance Resiliency & Security

¹ “Small cells” are low-powered radio access nodes that have a range of ten metres to several hundred metres and are “small” compared to the macro base stations which may have a range of up to tens of kilometres.

Consumer devices will be able to roam across different environments covered by networks of different wireless technologies and maintain seamless access to internet services. Therefore, users are more likely to remain connected even when a particular network is down. Virtualisation of networks will also support a more secure and agile environment.

Improve User Experience

By harnessing all available networks across different parts of the wireless spectrum, HetNet can increase Singapore's overall wireless capacity and hence data speeds. This will not only improve user experience but also meet the growing demand for mobile connectivity and usage of bandwidth intensive applications.

About HetNet Trials

To help visualise the potential benefits of HetNet to consumers and enterprises, IDA is conducting a series of trials with the participation of M1, MyRepublic, Singtel and StarHub. The trials have commenced since April 2016 and will be completed by June 2016. It is rolled out in the Jurong Lake District, and some of the locations include lifts, pedestrian walkways, bus interchange and MRT station.

Through these trials, industry players will evaluate efficient and optimal solutions to easing network congestion in areas with heavy human traffic and delivering high speed and consistent mobile connectivity. They will also test new methodologies, using small cells to improve mobile coverage in traditionally low or weak coverage areas such as HDB lifts or void decks.

Each participant is rolling out its own HetNet Test Circuits to evaluate the technical feasibility of providing uninterrupted high-speed Internet access to users, when the typical user moves from his home to public areas such as the MRT station.

Existing deployments of LTE leverage on a duplexing technique called Frequency Division Duplex (FDD). For these trials, besides LTE-FDD, some participants will be deploying LTE using a new duplexing technique called Time Division Duplex (TDD) which enables more flexibility in spectrum utilization. One of the objectives of the

trials is to enable the interworking of LTE-FDD and LTE-TDD so that mobile devices may access both networks seamlessly. Participants would also be assessing the viability of deploying small cells in areas of high human traffic to ease network congestion there.

Findings From HetNet Public Trials

Roadshows Survey

An on-site survey was conducted during roadshows that were conducted over two weekends in April 2016. Out of 1,100 participants who were surveyed, **86%** were more satisfied with the improvements in network performance due to HetNet. Speed tests conducted at the Jurong East MRT station showed a significant **65.67%** improvements in average download speeds and **21.21%** improvements in upload speeds.

Focus Group Study

A focus group session was also conducted with 60 participants to gather feedback on the Trials. The top 3 benefits that participants cited included stronger or more stable signal; faster internet download/upload speed and having seamless connectivity even while on the move or at different locations where connectivity tends to be weaker.

Future Implementation

Feedback from stakeholders will be solicited on the HetNet solutions that are demonstrated at the HetNet Trials. Learning points from the HetNet Trials will also be documented and shared with stakeholders, so as to facilitate implementation (led by mobile network operators) on a larger scale.

For media clarification, please contact:

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Appendix I

Locations of HetNet Trials

