

iN2015< IMAGINE YOUR WORLD



SINGAPORE'S NEXT GENERATION NATIONWIDE BROADBAND NETWORK



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The Next Generation Nationwide Broadband Network is an ultra high-speed, nationwide, all-fibre network that will underpin Singapore's transformation into an intelligent nation and a global city powered by infocomm, under the Intelligent Nation 2015 masterplan.

Singapore's Next Generation Nationwide Broadband Network



The Vision of iN2015

Intelligent Nation 2015 (iN2015) is an initiative by the Infocomm Development Authority of Singapore (IDA), to establish Singapore as an intelligent nation and a global city, powered by infocomm.

As part of the iN2015 masterplan, Singapore is looking into the deployment of a seamless, trusted and intelligent Next Generation National Infocomm Infrastructure (Next Gen NII) that will be realised by 2015. The Next Gen NII comprises of a nationwide ultra high-speed fibre access infrastructure and a complementary pervasive wireless network that will be a critical enabler of the various vertical sector economies of Singapore. Such an infrastructure will also contribute to the overall competitiveness of the infocomm sector as it creates wider and more intelligent highways and ports for the flow of digital goods. It will also empower every individual and business in Singapore with the opportunity to engage in networked, infocomm-enabled services.

Singapore's Next Generation Nationwide Broadband Network

The Next Gen NBN, when fully deployed nationwide by 2012, will ready Singapore for an infocomm-enabled future and place it at the forefront of broadband development internationally. It will offer pervasive, competitively priced, ultra-high broadband speeds of up to 1Gbps and beyond to all physical addresses in Singapore, which includes homes, schools, government buildings, businesses and hospitals. Singaporeans will be able to enjoy a richer broadband experience with more choices and at affordable prices. Businesses, large and small, will find it cheaper and easier to access ultra high-speed broadband, and be able to use infocomm more extensively to boost productivity and competitiveness. The Next Gen NBN will be a strategic enabler that will transform the way we work, live, learn and interact.



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Key Features of Next Gen NBN



High downlink and uplink access speeds

The Next Gen NBN will be able to deliver downlink access speeds of 100 Mbps, scalable to 1 Gbps or more. Similarly, it will provide for uplink access speeds from 50 Mbps per end-user connection initially, and be future proof and scalable subsequently.

Pervasive nationwide coverage

When fully deployed by 2012, the Next Gen NBN will provide connectivity to every physical address in Singapore including homes, schools, government buildings, offices and hospitals.

Competitive pricing

Competitive pricing will be made available to downstream players on a non-discriminatory basis.

High level of adoption

Cost-effectiveness and open access to the Next Gen NBN will attract Retail Service Providers to offer a wide range of innovative services over the network. This, in turn, is expected to catalyse adoption by end users and enterprises in various industry segments.

Singapore's Next Generation Nationwide Broadband Network To Be Islandwide by 2012

From January 2013:

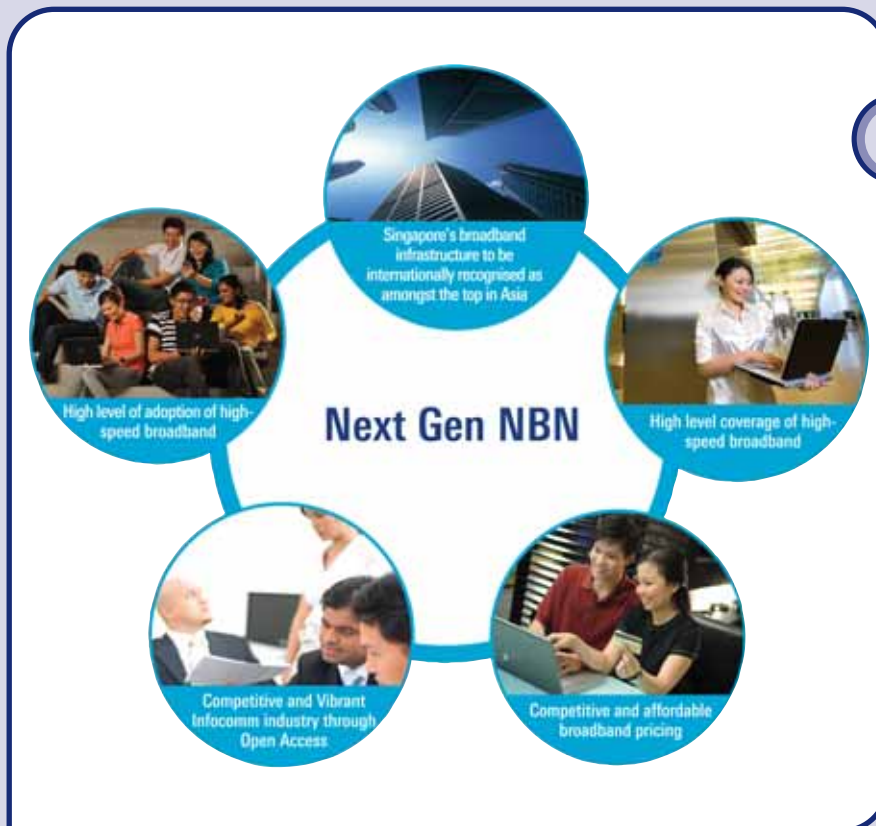
The Universal Service Obligation takes effect. This requires the NetCo to meet all requests to install fibre termination points and the OpCo to activate wholesale bandwidth services over the NetCo's fibre.

30 June 2012:

Coverage of the Next Gen NBN is targeted to reach 95 per cent nationwide.

31 December 2010:

60 per cent of homes and offices nationwide are expected to have access to the Next Gen NBN.



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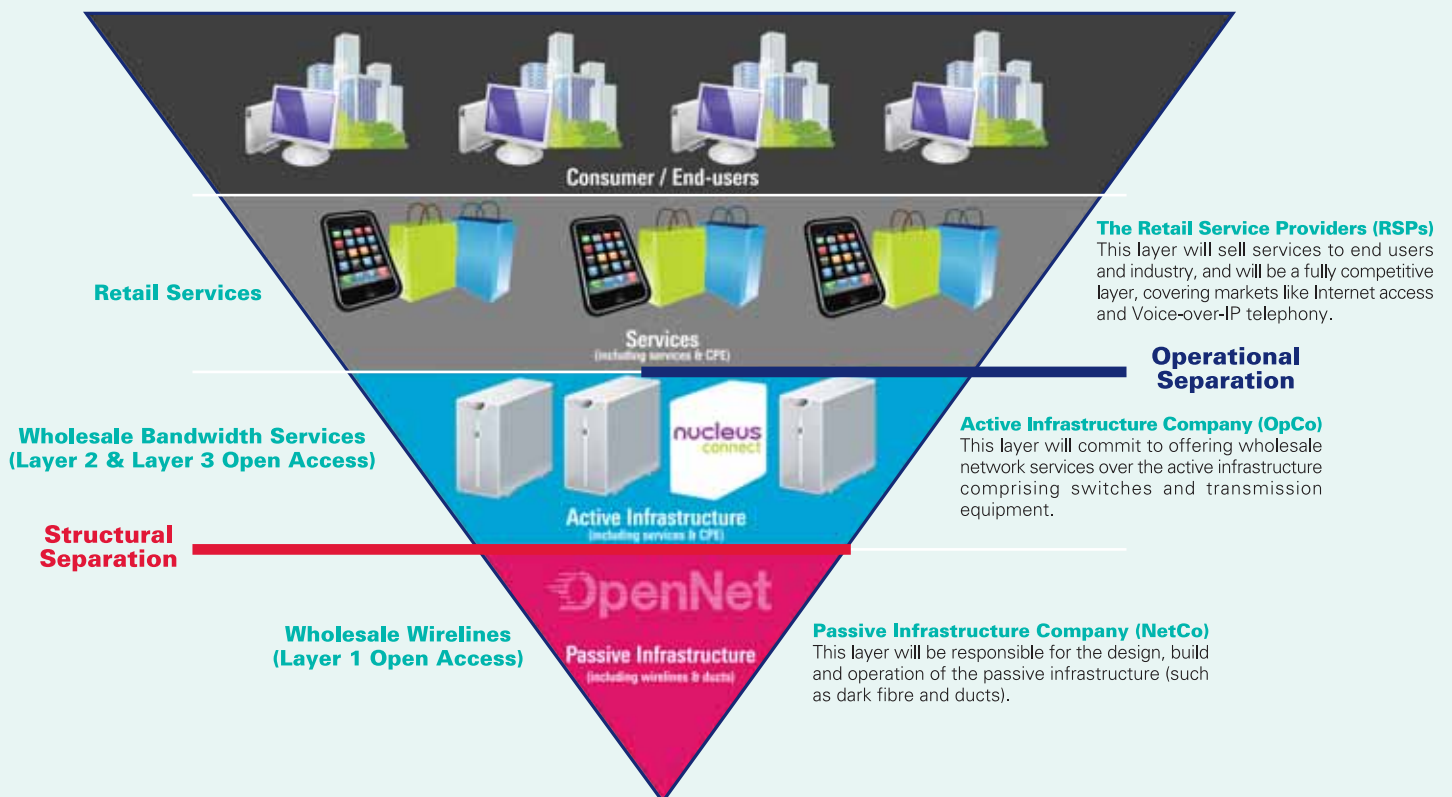
Next Gen NBN Industry Structure for Effective Open Access



Effective Open Access

For Singapore to fully benefit from the economic opportunities of Next Gen NBN, it is critical that Next Gen NBN provides effective open access to downstream operators that will ensure attractive wholesale prices to Retail Service Providers and offer a non-discriminatory platform to deliver innovative next generation services. To achieve this, structural and operational separation will be implemented at the NetCo and OpCo layers respectively. This will spur greater vibrancy and competition at the services layer to benefit end-users.

The desired Next Gen NBN industry structure will hence comprise a neutral open access Network Company (NetCo) and a competitive open access Operating Company (OpCo) layer that will together lower market barriers for Retail Service Providers (RSPs).



Structural Separation

Structural Separation is defined as “No Effective Control” and is a stricter form of separation. For all intents and purposes, OpenNet and its downstream operators are separate entities with fully autonomous decision-making considerations. One assessment factor is level of cross-shareholding, amongst others.

Operational Separation

Nucleus Connect will be operationally separated from downstream RSPs. It will be required to set up a separate entity for its operations, complete with branding, physical premises and staff. Nucleus Connect can, however, retain full shareholding ownership of its downstream RSPs or vice versa. The compliance of the operational separation requirements will be monitored by IDA or a monitoring board appointed by the IDA.

With a framework for effective open access aimed at ensuring affordable wholesale and retail service pricing, the Next Gen NBN will bring about a more competitive broadband market.

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Next Gen NBN Industry Structure for Effective Open Access



The Next Gen NBN Network Company: OpenNet

The Next Gen NBN NetCo Request-for-Proposal (RFP) was issued in December 2007 and closed in May 2008. In September 2008, OpenNet consortium was selected as the Next Gen NBN NetCo.

About OpenNet

OpenNet, established in 2008, is a joint venture between four partners - Axia NetMedia (Axia), Singapore Telecommunications (SingTel), Singapore Press Holdings (SPH) and SP Telecommunications (SPT). IDA has awarded OpenNet the contract to build, manage and operate a nationwide all-fibre platform for Singapore's Next Generation Nationwide Broadband Network (Next Gen NBN). Being the foundation of the Next Gen NBN, OpenNet will provide a competitive, yet neutral level playing field environment for all downstream operators, enabling the delivery of rich content and ultra-high speeds of up to 1Gbps and above per end user.

The Next Gen NBN Operating Company: Nucleus Connect

The Next Gen NBN OpCo Request-for-Proposal (RFP) was issued in April 2008 and closed in December 2008. In April 2009, StarHub's Nucleus Connect was selected as the Next Gen NBN OpCo .

About Nucleus Connect

Nucleus Connect, a wholly-owned subsidiary of StarHub incorporated on 14 April 2009, is responsible for designing, building and operating the active infrastructure of Singapore's Next Gen Nationwide Broadband Network. It will offer comprehensive and flexible services that will help Retail Service Providers select and deliver broadband connectivity services to their target markets quickly and seamlessly, bringing a more enriching experience to the end users. Nucleus Connect plans to commence commercial operations in the second half of 2010.

Together with the grant of up to S\$750 million for the NetCo and S\$250 million for the OpCo, the Government will invest up to a total of S\$1 billion to put in place the Next Gen NBN.



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Next Gen Services with Next Gen NBN



To be deployed nationwide by 2012, the Next Gen NBN will catalyse the creation of a greater range of innovative next generation services for end-users in homes, offices, schools and other outdoor locations. Some of the next generation services that could ride on Next Gen NBN include Interactive Internet Protocol TV, telemedicine, immersive learning, multi-user real-time simulation games and real-time grid computing. The Next Gen NBN will enable Singapore to exploit new economic opportunities in the digital age and enhance the vibrancy of its infocomm sector. Here are some of the possible services that Singaporeans can enjoy in the near future:

A Preview of Next Gen Services

Fast Upload and Download Speeds

With Next Gen NBN's scalable speeds of up to 1Gbps and beyond, uploading and downloading of files will now be significantly faster. The consumer will now be able to download content in minutes rather than hours while utilising several high-bandwidth applications simultaneously. Among the many applications that could arise are Software-as-a-Service (SaaS), remote data backup and file restoration, and a richer online gaming experience.

High-Definition Video Conferencing

From telecommuting to keeping in touch with loved ones, the way people communicate from home and office will be transformed with the emergence of high-definition (HD) video conferencing enabled by the Next Gen NBN. With HD video, voice and data communication running on the same broadband bandwidth, users will be able to conduct video conferences that are as real as can be, without the need for heavy investments and bulky set ups.

Interactive Internet Protocol Television (Interactive IPTV)

Next Gen NBN will transform television with Interactive IPTV, increasing the flexibility of TV viewing with exciting and enhanced features, such as interactivity and on-demand viewing. Consumers will now be able to watch their favourite high-definition TV programmes enriched with interactive features such as polling, time-shifting and electronic programming guides, while on-demand TV will suit the busy individual's schedule.

Telemedicine

Next Gen NBN will enable the seamless and secure exchange of information among major hospitals, clinics and patients at home, improving home medical care through services such as remote medical consultation. This will ensure healthcare continuity by eliminating the need for patients to be physically present at consultations, reducing frequency of visits to clinics. It is foreseen that these innovations will give much sought after relief to patients with chronic diseases and the elderly.

Grid Services

Grid computing services, delivered seamlessly via Next Gen NBN, offer enterprises and consumers access to huge computing power, software and data storage on a pay-as-you-use, on-demand basis. Businesses, especially SMEs, can save by tapping on these services without having to incur heavy upfront capital costs in equipment and software licences, and yet enjoy the flexibility of scaling the applications to support the business growth.

Interactive Digital Signage

Imagine being able to deploy high-resolution, high quality content over a network without having to worry about bandwidth limitations. Combine this with a digital authoring software and touch-screen technology to enhance interactivity, and the result is a platform for rolling out highly engaging, interactive, high quality digital signages that can be updated in real-time via Next Gen NBN and with customised content to suit different purposes or target audiences.

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Deploying Services with Next Gen NBN



To boost the ease of delivery and adoption of new services, IDA is looking into programmes that will facilitate the deployment of impactful and meaningful next generation services and lower the entry barriers for new Retail Service Providers.

RSP Connect

RSP Connect is a platform for all Retail Service Providers (RSPs) to build connections, exchange ideas and explore potential opportunities with other RSPs and the larger business community. As part of RSP Connect, participants will have access to Next Gen NBN industry networking events and user education initiatives by industry and domain experts, find potential business opportunities on Next Gen NBN, and receive insights from IDA on the latest developments of the network.

For registration or details on RSP Connect, visit <http://www.ida.gov.sg/ngnbnrspconnect>

Next Gen Innovation Centres (NGICs)

IDA will work with technology leaders to set up NGICs. These centres will help to ease RSPs' market entry into the Next Gen NBN by helping to conceptualise new business models, prototype new solutions, and expedite the roll-out of services. Companies can leverage the NGICs' resources and expertise to develop their solutions, and work alongside world class technology and business experts.



Want to be a part of Next Gen NBN?

If you are interested to deploy services on Singapore's Next Gen NBN, please email services@ida.gov.sg

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Dark Fibre

Refers to fibre optic cables that have been deployed but are yet to be in use (in technical terms, "unlit", hence "dark").

Network Company (NetCo)

The NetCo will design, build and operate the passive infrastructure of the Next Generation Nationwide Broadband Network.

Non-building Address Point

Means a location in Singapore or connected island other than a physical address.

Open Access

Means the offer of open access at all segments of the network (both passive under NetCo and active under the OpCo) providing connectivity on a wholesale basis at non-discriminatory and non-exclusive terms.

Operating Company (OpCo)

The OpCo is responsible for implementing the active infrastructure of Next Generation Nationwide Broadband Network and managing the flow of ultra high-speed broadband traffic on the NetCo's passive infrastructure.

OpCo's Wholesale Prices

These are the prices at which the OpCo will sell its services (eg. bandwidth connectivity services) to downstream players, specifically, the Retail Service Providers; these are as oppose to retail prices, which are prices to be charged by retail service providers to end-users.

Retail Service Providers (RSPs)

Means any person providing retail services to end-users using the Next Generation Nationwide Broadband Network or any other networks in Singapore.

Universal Service Obligation

A requirement under the Next Gen NBN NetCo and OpCo Requests-for-Proposals. NetCo's USO requires NetCo to meet all requests, from 2013, to install fibre termination points in homes, offices and buildings. OpCo's USO requires OpCo to meet all requests, from 2013, to activate wholesale bandwidth services over NetCo's fibre in homes, offices and buildings.

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The Infocomm Development Authority of Singapore (IDA) is committed to growing Singapore into a dynamic global infocomm hub. IDA uses an integrated approach to developing info-communications in Singapore. This involves nurturing a competitive telecoms market as well as a conducive business environment with programmes and schemes for both local and international companies.

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