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NBN Pricing Explained

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NBN Co released wholesale pricing guidelines in December 2010, updated in December 2011. The pricing has multiple components, including the wholesale price to connect an individual subscriber. This connection price starts at $24 per month, however there are additional pricing components. This report outlines the NBNCo pricing model, showing how these additional components affect the total wholesale price for NBN services.

Background

NBNCo sells wholesale services only. These are purchased by "Access Seekers", who then offer retail services to individual subscribers. A key NBN feature is uniform wholesale pricing for all Access Seekers, to foster a competitive retail broadband market. In particular, NBNCo provides no discounts for volume, all Access Seekers (and hence retailers) pay the same rate for wholesale NBN services.

Pricing Components

This report outlines pricing for "standard" broadband service components, prices for Committed Information Rate services (i.e. bandwidth guarantees) and multicast (e.g. for Pay TV) are not considered.

Each subscriber needs an "Access Virtual Circuit" (AVC), which identifies their traffic within the NBN. Access Seekers generally purchase one AVC per subscriber, the AVC is the first component of the wholesale cost.

The NBN comprises multiple "Connectivity Serving Areas", each with a "Point of Interconnect" or POI to which Access Seekers connect their respective backhaul infrastructure. Access Seekers purchase a "Connectivity Virtual Circuit" (CVC) for each Connectivity Serving Area they wish to cover. The CVC is essentially a bandwidth pipe, the size determined by the cost. The larger the CVC, the better the service to subscribers within the Connectivity Serving Area.

The Connectivity Virtual Circuit is the second component of the NBN Co wholesale cost. The NBN is essentially an Access Network, terminating in subscriber premises. Access Seekers connect to the NBN at a specified Point of Interconnect (POI) as outlined above. There is a per month charge for every POI connection, the third NBNCo wholesale cost component.

Finally, there is a one off charge for each POI connection, the fourth NBNCo cost component.

NBN Co Prices

These currently are:

1) Access VC

Downstream speed (Mbps)	Upstream speed (Mbps)	Per month
12	1	$24
25	5	$27
25	10	$30
50	20	$34
100	40	$38
250	100	$70
500	200	$100
1000	400	$150

Downstream speed refers to incoming traffic, i.e. from the network to the subscriber. Upstream speed is the outgoing traffic.

2) Connectivity VC

$20 per Mbps per month. For a given Connectivity Serving Area, the first 150 Mbps per month is free, until 30000 premises have been passed. Also, each Access Virtual Circuit comes with 50 kbps of "free" CVC capacity.

3) POI connection per month cost

This cost is based on the speed (either 1 Gbps or 10 Gbps) and the distance of the connected link. (10km or 40 km). The costs are:

Speed/distance	Per month
1 Gbps/10 km	$200
10 Gbps/10 km	$500
1 Gbps/40 km	$400
10 Gbps/40 km	$1000

As well as the POI costs, the Access Seeker also pays for backhaul capacity from the POI to their own "point of presence" or network. This backhaul is not sourced from NBN Co.

4) POI connection one off setup fee

Speed/distance	One off fee
1 Gbps/10 km	$1000
10 Gbps/10 km	$7000
1 Gbps/40 km	$5000
10 Gbps/40 km	$35000

NBNCo Pricing Rationale

The key idea behind the NBNCo pricing is to separate the subscriber connection cost (the Access VC) from the bandwidth cost (the Connectivity VC). This allows Access Seekers to differentiate their respective retail broadband products, based on the size of (and amount paid for) the Connectivity VC.

In particular, the Connectivity VC size determines the "Contention Ratio", a standard measure for broadband service quality. The idea behind contention ratio is simple. Suppose 100 subscribers each have a 1Mbps broadband service, with the combined traffic from all subscribers feeding into a 1 Mbps transmission link. A 100:1 contention ratio then results. If the transmission link was 2 Mbps, the contention ratio would be 50:1 and so on. A common feature of low cost broadband services is high contention ratios, leading to poor performance (e.g. slow downloads) during peak periods.

Hence pricing the Connectivity VC separately from the Access VC allows Access Seekers to determine their respective contention ratios and hence the quality (budget, premium) of their retail broadband offerings.

Actual NBN wholesale prices

Here we consider how Connectivity VC costs affect NBN Co wholesale prices.

An example on p24 in the December 2011 NBNCo Product and Pricing Overview shows the NBNCo wholesale cost for 2100 subscribers on a 12/1 broadband service with voice, assuming a 100:1 contention ratio. Here the per subscriber Contention VC cost is $1.90, relatively small compared to the $24 per month Access VC wholesale price.

Another example (p 31) considers a business grade service, where around half the traffic has a contention ratio of 20:1 the other half a contention ration of 4:1, for a 50/20 Mbps service. Here the monthly CVC cost is around $109 per subscriber, about three times the month $34/month wholesale NBN Co price for the 50/20 Mbps Access VC.

The NBN Co GPON infrastructure provides a nominal 2.5 Gbps for every 32 subscribers, or around 80 Mbps per subscriber at full load (all 32 subscribers active at once).

However, as the NBN Co examples show, the Connectivity VC pricing will result in retail broadband services using only a fraction of this capacity.

Additional Wholesale Costs

Access Seekers will have significant additional costs to the NBN Co ones, in particular, backhaul from NBN Co POI to the Access Seeker Point of Presence. The 2014 Telstra Wholesale Rate Card for Domestic Transmission Capacity Service indicates prices of around $48 /month for 5 km, $171/month for 1000~2000 km (assuming a 100 Mbps purchase). Hence, for Access Seekers without their own backhaul infrastructure, backhaul costs will exceed Connectivity VC costs, given the latter price of $20 Mbps/month.

In addition to backhaul costs, Access Seekers fund their own infrastructure (servers, routers), bulk Internet connectivity, marketing, staff, premises etc.

In short, the NBNCo wholesale price reflects neither the total per subscriber cost for Access Seekers, nor the eventual retail prices for NBN based broadband products.

Summary

The NBN Co pricing model separates capacity costs from access costs. This allows Retail Service Providers to differentiate their products, based on the amount of NBN Co capacity purchased. The capacity cost is a relatively small component of entry level wholesale broadband prices, however becomes significant for higher speed services, particularly for enterprise clients. As well as the NBNCo wholesale cost, Access Seekers face significant additional costs, in particular for backhaul.