

Section 9A Backhaul Study

Kordia's response to the Commission's Preliminary questions in understanding domestic backhaul services

23 September 2016



SUBMISSION

Summary

- 1 Kordia Limited (Kordia) welcomes the opportunity to submit on the Commission's Section 9A Backhaul Study "Preliminary questions in understanding domestic backhaul services" (**Backhaul Study Paper**).
- 2 Kordia is both a provider and user of backhaul services. Kordia recently launched its 9.6Tbps capable DWDM network with interconnection nodes between Auckland, Hamilton, Palmerston North, Wellington, Napier and Tauranga.
- 3 Kordia considers that the domestic backhaul market in New Zealand is generally a competitive market. However Kordia believes that some issues are worthy of consideration in relation to competition and the Backhaul Study. These are set out below in our responses.
- 4 Kordia would welcome the opportunity to discuss this submission further with the Commission.

Response to Questions

The following are Kordia's responses to the specific preliminary questions in the Paper:

1. ***In your view, have we adequately defined the scope of our domestic backhaul services study? Please explain your view.***

Yes. We agree with the way the Commission has defined backhaul services by reference to their geographic classifications and the technology used to deliver the backhaul services. Figure 1 in the Backhaul Study Paper is an adequate representation of backhaul services in New Zealand.

2. ***Do you agree with the geographic classification for domestic backhaul services? Please explain any proposed changes.***

We agree with the geographical classifications set out in Paragraph 20 however please note our comments regarding Inter-Island constraints as set out in our response to question 5 below.

3. ***Please comment on backhaul technologies. In particular, in your view:***

- (i) ***Have we overlooked any current or emerging backhaul transmission technologies at any layer?***

The transmission technologies described in Paragraph 22 adequately describe the current and emerging backhaul technologies.

- (ii) ***Are there any material technological or geographical constraints on where the technologies could not be used to provide backhaul services?***

While all of the technologies are capable of being used, it is Kordia's view that the only cost effective and long-term scalable technological solution to meet the bandwidth demand is DWDM.



(iii) Is Ethernet becoming the default technology of choice for backhaul services from main trunk to metropolitan? If so, why?

Ethernet is the most common **interface** technology used in the provision of backhaul services.

Backhaul services that are presented using a technology other than Ethernet are still converted to an Ethernet interface because such an interface is the most prevalent interface standard globally.

While the interface is commonly Ethernet, the technology (ie how the service is carried on the backhaul infrastructure) can be any number of the technologies listed in the Paragraph 22 of the Backhaul Study Paper.

As our customers' bandwidth requirements grow and where the capacity at a major location has already been aggregated by a Retail Service Provider (RSP), we are seeing an increase in the number of customers looking to use DWDM technology.

4. We invite comments on the regulated backhaul services. We are particularly interested in your view on whether the choice of backhaul transmission service depends in any way on the type of traffic that is to be conveyed ie,

(i) whether transmission requirements for UCLL differ from those for UBA, whether transmission requirements for UCLL differ from those required for mobile backhaul; and any other relevant potential application for domestic backhaul services;

In the past, the fact that UCLL and UBA traffic could not be carried over the same backhaul service added cost and complexity to the market. However, as services move to UFB based accesses or those that are presented as Ethernet, this is becoming less of an issue.

(ii) what bandwidth options are required to meet future demand?

Kordia is commonly seeing demand for 10G services and we foresee 100G in the near future and accordingly more bandwidth will be required.

5. We are also interested in your view on whether there are backhaul services which are not subject to competition that should be regulated? Please explain how your view is consistent with the section 18 purpose statement.

We believe that regulation of backhaul services and also Dark Fibre inputs to backhaul services should be considered where there is a natural barrier to competition. We have set out some examples of this below.

Cook Strait

Kordia believes that real competition issues exist in relation to access to backhaul capacity across the Cook Strait.

Over the years, the Commission has concentrated on the regulation of the so-called 'bottle neck' backhaul access services such as Chorus' UBA and UCLL backhaul services.

However, in Kordia's view, a "bottle neck" area that requires the Commission's consideration for competition issues and regulation is the access to Dark Fibre, Layer 1 and Layer 2 capacity across the Cook Strait. The Cook Strait Cable is the only viable option for interconnection of a service provider's Inter-Island backhaul networks. The other two cable options are owned and controlled by Vodafone and Spark and there would be little incentive for them to provide Dark Fibre to third party service providers to enable interlinking of competitive DWDM networks.



Chorus' tail extension services

Chorus has recently offered tail extension services (and other LFCs could do this - particularly in provincial cities). In such cases the LFC is using its natural monopoly position as the access provider to aggregate its own access services and provide the backhaul services itself. While the pricing may initially be attractive for the consumer, the provision of these tail extension services creates barriers to entry for other backhaul service providers who will have no incentive to invest in backhaul infrastructure.

The restriction to entry into the market for more backhaul service providers will impact the quality of backhaul services generally. For example, redundancy options will be reduced (or non-existent) and this will impact on the resilience of domestic backhaul services in New Zealand.

6. *Have we adequately captured and described the local access nodes which are of interest to access seekers and network operators? If not, what additions, or alterations would you recommend?*

Yes.

7. *We invite any comments on the existing suppliers of domestic backhaul services. We are particularly interested in the following:*

(i) the extent to which existing suppliers self-supply backhaul services; and

Kordia supplies backhaul services to itself. Return on investment in the commissioning of a backhaul network may be achieved through the provision of wholesale backhaul services to other RSPs or Kordia may receive a commercial return by its ability to lower costs and have greater control where Kordia elects to self-supply backhaul services.

Where the commercial return from having its own backhaul network is not viable, Kordia would purchase backhaul services from a third party provider.

(ii) any major changes that recently occurred, or are expected to occur in the foreseeable future, in the provision of domestic backhaul services?

Chorus' tail extension services

As discussed above, Kordia is of the view that Chorus' recently announced offer of tail extension services threatens competition in the domestic backhaul services market. The tail extension service is essentially a vertically integrated backhaul option that will allow RSPs to have individual customer circuits delivered from the local handover location to the closest of one of (currently) five regional points of interconnect for a small incremental cost to the UFB access circuit.

The vertical integration of Chorus to provide both access and backhaul may discourage investment in backhaul networks in the future and this could impact market price, coverage, market choice and competition and also the resilience of our national backhaul infrastructure due to lack of alternative networks.

8. *We also invite comments on expansion conditions in the provision of domestic backhaul services. We are particularly interested in:*

(i) any factors that could impede expansion in the provision of domestic backhaul services;

As discussed above, we see the vertical integration of services by LFCs such as Chorus as a factor which could impede expansion in the provision of domestic backhaul services.



(ii) whether excess capacity is available, and where;

We don't believe that there is ever really any "excess" capacity available at any time.

The most significant investment in a backhaul network is obviously the upfront investment to build the infrastructure. However, in order to "light" the Dark Fibre and provide the capacity to deliver the services over that network, a separate investment case is required each time.

For example, each time Kordia adds 10Gbps of capacity to its DWDM network, it needs to invest in transponders and other equipment in order to make such capacity available. It isn't a case of "excess" capacity just sitting there waiting to be used. Once the network is built, there is always cost involved in lighting the Dark Fibre. The provision of capacity is therefore considered each time in light of commercial return. .

(iii) whether there is a lack in capacity for backhaul services such as mobile backhaul services; and

Kordia is not in a position to comment on this question.

(iv) how long expansion to add capacity incrementally takes.

Expansion to add capacity to an existing link can take between one and three months depending on available inventory. This is assuming that the Layer 1 backhaul service links exist already. The commissioning of a new backhaul service would obviously take significantly longer.

9. Please explain

(i) to what extent are transmission services currently supplied on a link-by-link basis, and to what extent are transmission services supplied as a national service?

The requirement for an aggregated national or link-by-link backhaul service is really determined by the geographic spread and number of 'active' network nodes a service provider has.

A small service provider with only a small regional interest or a small service provider with a small number of customers spread over a nationwide basis will not want to invest in hardware at various POI/exchanges for aggregating traffic as they will not have sufficient traffic volume to justify the cost. Such providers will typically want to work with a single network hub site and utilize a backhaul service construct that might offer aggregated national backhaul to a single hub site (or a very small number of sites say less than three).

(iii) what are the drivers to supply backhaul services as a national service rather than the traditional link-by-link basis?;

See above.

(iv) whether there is a developing trend towards supplying domestic backhaul on the basis of a national service rather than on a link-by-link basis.

A larger service provider with a much larger number of customers spread across the whole country, and a network that may already comprise of multiple network nodes across many regional areas will want to purchase backhaul capacity on a link by link basis. Larger service providers with a large number of network nodes and associated higher level of technical resource and skill will want to better optimize their network capacity for optimal service performance and cost, something that may be better done (and easier to do) using discrete point-to-point backhaul links.

The question is really one of 'horses for courses'. Larger more sophisticated service providers may want to 'do it themselves' using point-to-point backhaul links for better control of their service quality and input costs while smaller service providers want a 'pre-built' simple aggregated national backhaul service.



10. ***In the instance when a RSP requires a national deal from a non-Chorus provider, would that non-Chorus provider have to deal with Chorus to provide transmission capacity on a national level?***

Potentially. The RSP may require a DFAS from Chorus to connect the customer location into the RSP POP. In many cases RSPs like Kordia will have their own intercity connectivity.

11. ***In your view, what is the likely impact of RBI and UFB on backhaul services eg, demand, supply, capacity, coverage and price?***

Currently the increase in speed of the UFB access (for example 1Gbps) is not translating to an equivalent increase in the backhaul network as customers (although liking the idea of a higher speed access) are not actually utilizing the additional capacity available to them. It is unknown when future applications will be available that might change the utilization of the access and hence have an impact on backhaul services (such applications could be 3D virtual reality gaming or 3D video conferencing applications). It will be these types of applications that will have a significant impact on the increased demand for backhaul.

12. ***In your view, what non-price service attributes are important to demand for domestic backhaul services? Please explain your reasons.***

If increased customer use due to new applications drives an increase of the utilization of access and therefore the backhaul network then many RSPs will have to adjust their business model offerings and pricing accordingly. The current prices we are seeing for a 1Gbps service at around \$200-\$250 per month would be unsustainable when this occurs unless backhaul networks significantly drop in price and also the cost to deliver.

As links are currently under-utilized many RSPs are relying on excess capacity rather than network engineering to support customer applications that would normally have been reliant on QoS to maintain service quality and performance. If this network dynamic changes due to increased utilization of the links this would cause traffic engineering to again be required end to end.

13. ***In your view, what are the major recent changes and expected changes in the foreseeable future in the demand for domestic backhaul services?***

Kordia is seeing demand for 10Gbps and we soon expect to see demand for 100Gbps handovers and backhaul. Centralized and Cloud based computing is driving backhaul networks and traffic to Auckland and offshore when previously this was offloaded at regional locations. Perhaps the most obvious driver is the rapid uptake of on-demand video services such as Netflix, Lightbox and Neon.

14. ***For each of the options described, we invite comments, and evidence to support your comments, on: (i) whether you agree with our description of the options available to purchase domestic backhaul; (ii) in your view, what drives the choice of each option; (iii) the differences (if any) in the customers buying each of the options; (iv) In your view what relative share of the backhaul market is purchased under each of the above options?***

We believe that we have addressed some of these queries in our comments above however we would welcome the opportunity to discuss these further with the Commission.

15. ***Explain whether pricing structures are moving away from the traditional pricing model. If so, please explain the new alternative pricing structure(s) and the rationale for adopting new pricing structures.***

Yes pricing structures are moving away from traditional models. We are seeing moves to a pay as you grow model where customers are billed for the national backhaul based on the aggregate capacity at the head-end of multiple links into an aggregation node.

This puts more risk on the backhaul provider as capacity for each RSP may need to be 'reserved' or at least under-utilized until their demand increases. This move is being driven mainly by Gig access services. The large capacity step increase from a 100 or 200 to a 1000Mbps access is making

capacity planning increasingly difficult for both backhaul suppliers and backhaul consumers.

16. In your view, what are the drivers of the significant drop in commercial backhaul prices in New Zealand?

Chorus' recent aggressive price decreases for their DFAS services caused a step change in the market to which other providers had to respond.

Even small RSPs are now big consumers of bandwidth and so the price per Mbps is now much less variable. Smaller customers are getting access to much better prices compared to their much larger competitors than they were a few years ago.

Backhaul providers are more willing to price based on forecast demand than they have previously in an attempt to capture growing customers quickly and to offset large network investments with immediate cash flow.

In order to achieve the advertised line rate of a UFB connection, RSPs are having to invest in much larger 'start-up' capacity compared to when they offered FS/FS access speeds. Consistent demand for increased capacity has made buyers more confident in buying networks based on future demand which makes providers more confident to invest and also offer a lower price to these types of customers.

17. Are you concerned about any pricing behaviour in the provision of backhaul that may raise potential competition concerns?

Yes - as already discussed above in relation to LFCs' tail extension services. The Chorus CRT pricing between some New Zealand centres is so low that it doesn't financially stack up for other service providers to try to compete for these backhaul services. When it was released, the Chorus CRT rate card dropped the market price expectations by between 50% and 75% of existing rates offered by other service providers.

18. Please provide evidence on any price differentials between routes that you would deem to be competitive and uncompetitive.

To date pricing seems to be consistent across routes. We can currently meet existing market prices however future investment decisions are made more difficult. There is potential for some smaller regional routes to be priced higher if there are few competitive providers.

19. We invite views on the criteria for assessment of competition for domestic backhaul services. We are particularly interested in your view on (i) the most appropriate criteria that should be used in future competition test assessments, and also what criteria should remain intact; (ii) how far is close enough to a Chorus exchange to be a competitive constraint on Chorus and why?

In general, Kordia believes that the domestic backhaul services market in New Zealand is a competitive market and does not require further regulation. However, as discussed above, Kordia believes that one of the most appropriate criteria for assessing competition is whether there are any potential barriers to entry for a provider and whether such barriers could affect the quality of the service. We have set out above the areas where we believe such barriers exist.

Kordia Limited
23 September 2016

