Ethernet in the WAN – cause and effect

Quotes from the Ovum white paper. April 2003

On Ethernet in the MAN and WAN:

"New network technologies are allowing the more adventurous service providers to challenge <<traditional highly priced WAN services>> to offer a new breed of data service. Ethernet is at the heart of this transformation."

*"For higher bandwidth WAN and MAN services, Ethernet can be up to **80%** less expensive than traditional technologies like ATM."*

"Pioneering users have recognised the unique combination of technical benefits and pricing simplicity within Ethernet data services and have enthusiastically embraced them"

"Ovum believes Ethernet services are now at an inflexion point. The technology required to deliver services over metro (and greater) distances has passed the stage of being a novelty and is now "carrier grade". "

"The benefits <<of Ethernet MAN and WAN services>> to enterprise network managers in terms of improved performance and simplification of network management are clear."

"It is only lack of awareness among users and the scarcity of service providers that holds back the market."

"Innovation in the market will be driven by value added service providers. Incumbents face significant portfolio issues with Ethernet services."

"<< Ethernet LAN and MAN services>> are potentially powerful competition for the established Frame Relay and ATM services that are currently the most profitable data services. "

"….all types of Ethernet interface and particularly optical interfaces have seen dramatic price reductions. Considerable cost savings are possible by moving to an optical Ethernet network"

"….we expect a rapid swing in purchasing decisions in favour of Ethernet services. Their simplicity and low cost make a compelling case for change. "

“Ethernet services are an attractive option for expanding the bandwidth available in metro areas and regionally. They can provide simplicity and security with lower costs and higher throughput.”

“It is clear that Ethernet will progressively become a significant part of WAN solutions, mainly at the expense of services such as Frame and ATM”

“The key point is that a business migrates to a Gigabit Ethernet connectivity for simplicity and cost reasons.”

” One of the most stark contrasts in price between the Ethernet and <<traditional leased line>> options occurs in the local access”

“Lower cost base allows customers to buy more capacity for the same price”

Getting technical:

“Ethernet is the dominant technology in local area networks – no translation is needed from an Ethernet LAN to an Ethernet carrier service.”

“If users adopt a Layer 2 bridged Ethernet solution they can manage their LAN and WAN infrastructure with a common set of management tools. “

“Even where an IP VPN solution is preferred, an Ethernet infrastructure is more efficient than the alternatives”

“An Ethernet service is simply a better fit to corporate networks than the last generation of services – Frame Relay and ATM.”

“WAN and MAN Ethernet services are potentially more attractive to VoIP users because they avoid the overhead of protocol translation inherent in Frame Relay and ATM services and hence introduce less delay”

“Fibre Channel operation is distance limited and FCIP provides a way to extend SANs over Ethernet MANs and WANs.”

“….the reliance of NAS storage on IP networks raises concerns about data security when it is deployed across public networks, and so business critical NAS deployments should be based on dedicated Ethernet connections.”

“Even with a dedicated Ethernet link, iSCSI is likely to cost around $400 per connection – considerably less than a Fibre Channel connection”

“The latest draft of the IEEE 802.17 RPR standard delivers 50 ms restoration time <<for RPR>> – the same as Sonet/SDH – although proprietary implementations are known to offer even faster recovery times.”

“By introducing Ethernet line cards (blades) into existing SDH equipment service providers can start to offer point-to-point Ethernet solutions cost-effectively over any distance that can be covered by SDH”

“Encapsulation of layer 2 services such as Ethernet allows “pseudo-wire emulation services” (which are point-to-point “virtual leased line” (VLL) replacements) and transparent LAN services (i.e. operating on a multipoint to multipoint basis) to be established over an MPLS-enabled network”

“MPLS-based traffic engineering and re-routing capability can be used to provide QoS/CoS support and restoration respectively”

On consolidation:

“The availability of high capacity at low cost breaks the need to co-locate people, storage and computers. Network managers can architect their systems by business need rather than network cost.”

“Users, in Europe at least, have become accustomed to high prices for network services. …. It has been much cheaper to co-locate people, with computers and storage in each location rather than to consolidate them and deliver their services using a wide area network”

“Ethernet now offers a highly available and cost-effective means of accessing consolidated IT resources from multiple business locations.”

On storage:

“Storage networking is moving away from dedicated fibre solutions and an increasing range of everyday storage network needs will be met by a Gigabit or Fast Ethernet solution”

“With a wide area Ethernet network, the <<NAS>> storage and computer devices can be separated by many tens or even hundreds of kilometres.”

“It is likely that Ethernet will provide the most cost-effective solution for the majority of wide area storage networks as the unifying technology for applications.”

“Many companies are finding that Ethernet MAN & WAN services can help them achieve these <<rapid data restoration>> ends for networked attached storage (NAS).”

On the demand for greater bandwidth:

“Banks are reviewing their branch network architectures to determine how they can support web applications now.”

“Browser based applications challenge the conventional <<low WAN bandwidth>> branch network model”

“.Ethernet provides greater bandwidth flexibility than traditional fixed networks enabling users to increase their bandwidth subscription only for those periods when video is in use”

“The viability of Ethernet as a video distribution network is well proven in the residential market already”

“Once any enterprise concerns about the web services model are resolved, Ethernet services will make a good platform for delivering them”

“Enterprise WAN networking is using increasingly data-hungry applications: CRM support, HTML-based apps, extranets, IP telephony, remote offices and tele-workers”