

OAK Telecom Rural Council Case Study

Background

The “Council” is principally a rural shire with a small number of sites in remote townships supporting customer service and tourist offices, as well as depots and community centres.

The issue is to provide a low-cost, secure network which connects these sites together in a simple solution which requires no complex operations by the users. The network must also have a fixed cost monthly cost (for budgeting purposes), with low support costs and good, reliable performance.

It was also decided that the network should support a Voice-over-IP (VoIP) telephone system hosted at the civic centre, but including phones in all the remote sites.

Regional Shire Council

Council decided on a Private Network solution from OAK Telecom with eight remote sites using ADSL2+ connections and a 4M/4M SHDSL connection at head office (the civic centre). The main office in a seaside town would have ideally had a larger connection, but as this is classed by Telstra as “regional zone 4” and had no competing carriers, the prices for even modest SHDSL connections would be thousands of dollars per month. Our simple solution was to use two ADSL2+ connections at less than 5% the price.

When the network was stable and performance issues had been balanced, council decided to implement VoIP and OAK Telecom assisted them, in advance of this implementation, to prepare the network.

Type of Network Chosen

Due to the remote nature of the sites and the carriers’ pricing policies, the network was implemented using completely ADSL2+ throughout in a network permitting (at that time) no Quality-of-Service (QoS).

Ideally a network set up for VoIP telephony should have a fibre infrastructure using QoS throughout to ensure that voice packets receive priority over data packets, which ensures low jitter (buffering) and therefore good voice quality.

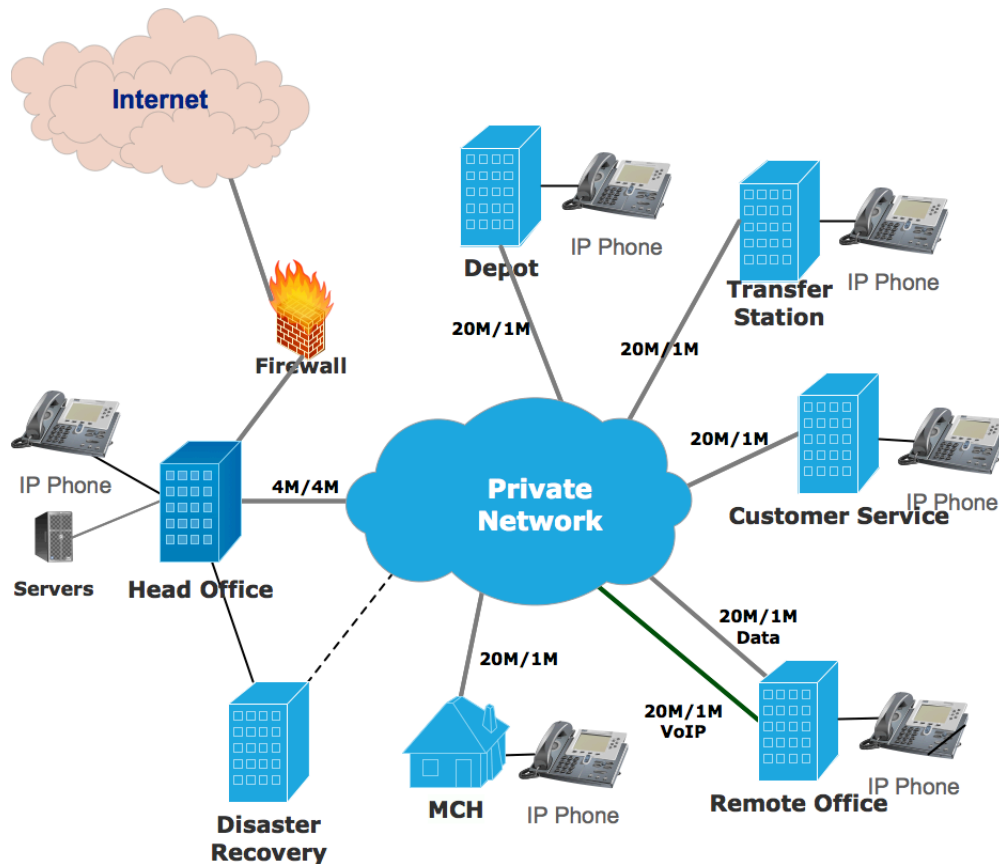
As explained, this was not even a remote possibility at a reasonable price. OAK Telecom worked closely with the integrating carrier to set up the network in a way which would permit reasonable quality voice. Using low contention connections (nominally <50:1, but in reality much lower in rural environments), it was found that packets presented first would be delivered first at the other end with a good probability level. This proved to be sufficient for quality VoIP. In one case using a second ADSL2+ connection for VoIP-only proved to be the easy solution.

Benefits of the OAK Telecom Private Network

The advantages of a private network are that it is like extending the blue cable on your office LAN to other locations simply, reliably and in complete security. The private network doesn’t use the Internet, so is completely secure. The upload and download charges are included in the fixed monthly price, so there are no surprises.

A cheaper alternative can be constructed by creating a virtual private network (VPN) across the Internet, but the results are poorer and less certain. In a private network the lower latency and jitter also provide a much improved end-user experience.

Access to the Internet is enabled through a separate large connection in the civic centre, which then has a single firewall protecting the entire private network. The head office LAN forms part of the private network.



Future Directions

The use of multiple VLANs on the private network, enabling end-to-end separation and prioritisation, is of great interest to councils generally. One VLAN can be used for staff data communications, another for public WiFi, another for VoIP, etc. This will bring immediate benefits, especially as QoS becomes available end-to-end, even on third party carrier remote links.

The low latency and jitter already make the network suitable for IP telephony (with or without quality-of-service) and also for video conferencing, but the introduction of QoS and separate VLANs enhance this greatly.

NBN connections can be added to the private network just like any other connections, plus ADSL links can be bonded together to increase capacity economically where NBN doesn't yet exist and other types of connection can be too expensive (as in this case study with links in remote areas!).

This case study has been prepared anonymously for website publication, but OAK Telecom can provide actual information privately or contact details for referees. Please contact us for further details or a free consultation.