A PERFECT

What happens when a technically informed enterprise customer shops around for a mobile high-speed data solution? Richard Kennedy looks into field service demands in New Zealand

While in Europe much of the attention around mobile data services has focused on consumer applications, elsewhere operators have chosen to address the enterprise market as a launch strategy. 'The consumer sector is diverse, fragmented and often unpredictable,' says Garry Mitchell, service development manager (Mobile Data Group) Telecom New Zealand. 'Our feeling was if you're launching services, why pitch for the tough market? The enterprise sector already knows it needs high-speed mobile data services.'

One major advantage of such an approach is that it is not reliant on the availability or otherwise of appropriate, affordable handsets. Laptops or PDAs with PCMCIA cards are the terminal of choice for road warriors like field workers and sales persons. And both devices and data cards are already readily available.

Downer Connect

New Zealand's Downer Connect is a subsidiary of Downer EDI Limited, an Australian ASX200 listed company. Although Downer is a relatively new player in the communications industry, having acquired Downer Connect it has become one of the country's largest technology contracting organisations with an extremely experienced, technically sophisticated workforce. Downer Connect provides engineering design, construction and maintenance for telecommunication plant and equipment nationwide. Its support services cover personal communication equipment such as telephones and faxes, through to major long distance carrier installations.

Because of its close links with Telecom New Zealand, Downer Connect provides a valuable insight into the criteria informing a high-speed mobile data strategy of a company that understands the technology's potential.

The company was formed in 1997 and comprises personnel from former Telecom NZ business groups including Telecom Mobile and Telecom Cellular. Because of this background, Downer Connect is extremely exacting with regard to its communications requirements. Tying the two companies even closer, Downer Connect makes extensive use of Telecom NZ's Mobile JetStream fast data service and Telecom NZ is a major customer of Downer's maintenance service.

Field force demands

Downer Connect has teams of field workers on call 24/7; all of their work is time-critical, with the company incurring stiff penalties for non-delivery of tightly monitored service criteria. Downer Connect has 386 field technicians who handle over 1300 jobs a day across both North and South islands. 'Of the half million jobs our field personnel tackle every year, there are two critical moments that have to be flagged within 60 minutes of the event occurring,' explains Downer Connect IT manager Laurie Boniface. These are arriving at the customer premises and the service actually being restored. 'If we miss these slots, it costs the company in penalties.'

Boniface believes that providing a comprehensive overview of the status of every job at any given moment gives individual field workers a sense of control of their working days. Each technician has access to all of the information for all of the jobs in their team via remote access to their company's LAN based WorkNET system. At anytime there can be up to 260 field technicians throughout New Zealand needing access to the LAN. 'There are significant productivity gains in using this kind of technology to enable frontline field workers to organise their own workloads based on what they can

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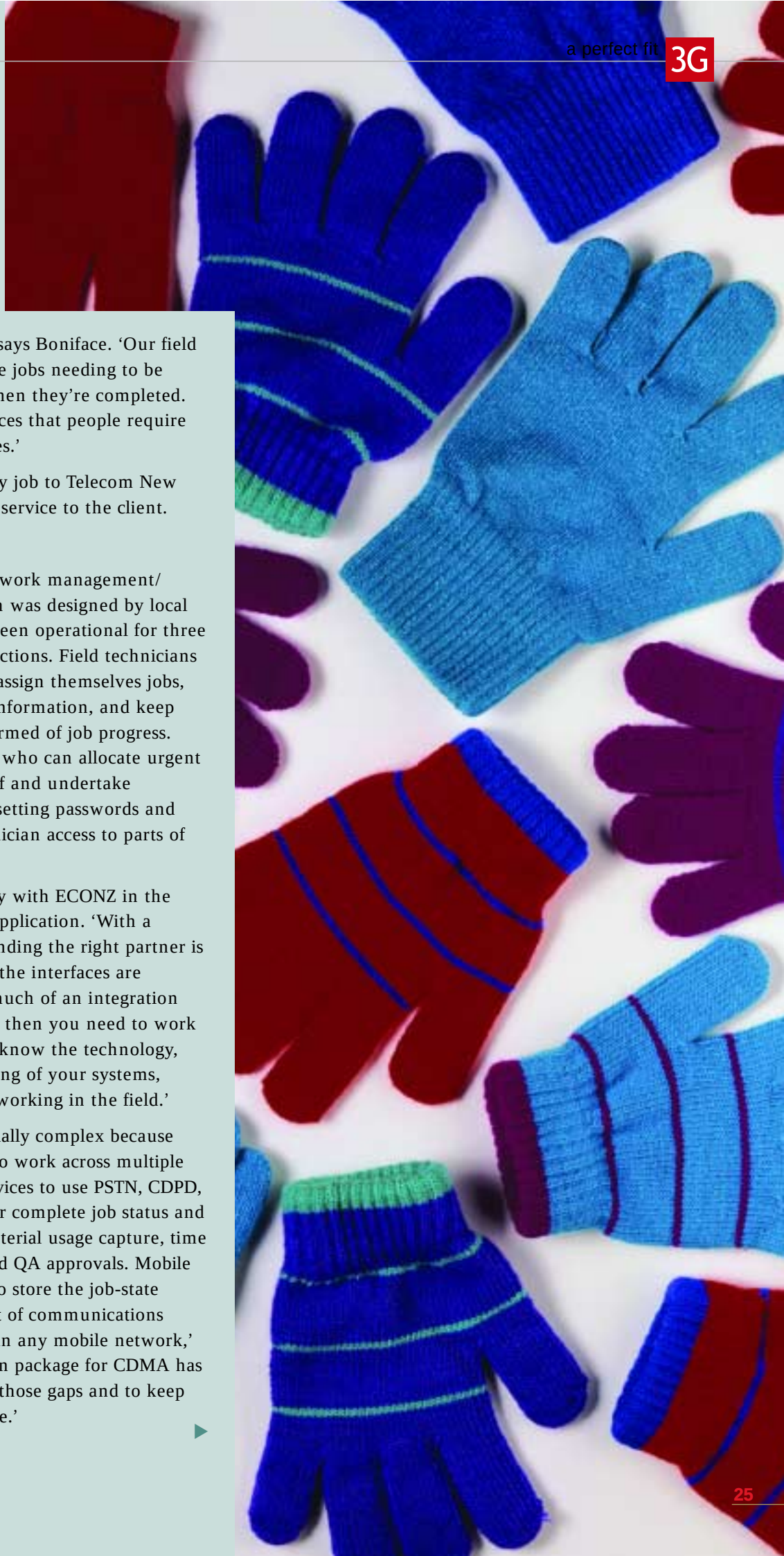

most efficiently fit in that day,' says Boniface. 'Our field technicians have to know all the jobs needing to be done, who's doing them and when they're completed. We're dealing with critical services that people require to be up and running at all times.'

Visibility of the progress of every job to Telecom New Zealand in real time is a critical service to the client.

WorkNET

WorkNET is Downer Connect's work management/ dispatch system. The application was designed by local IT integrators ECONZ and has been operational for three years. It serves a number of functions. Field technicians use it to plan their day's work, assign themselves jobs, collect messages, track costing information, and keep their client – Telecom NZ – informed of job progress. Each team has a team manager who can allocate urgent jobs to technicians, manage staff and undertake administrative tasks such as re-setting passwords and enabling or disabling field technician access to parts of the system.

Downer Connect worked closely with ECONZ in the development of the WorkNET application. 'With a complex application like this, finding the right partner is critical,' Boniface maintains. 'If the interfaces are standardised, then there's not much of an integration issue. But if they're proprietary, then you need to work with someone that doesn't just know the technology, but also has a good understanding of your systems, objectives and the problems of working in the field.'

The integration work was especially complex because sophisticated functionality had to work across multiple platforms. WorkNET enables devices to use PSTN, CDPD, cellular, and CDMA transport for complete job status and event management, product/material usage capture, time management, service actions and QA approvals. Mobile clients also have the capability to store the job-state change process offline when out of communications coverage areas. 'There are gaps in any mobile network,' says Boniface. 'So the integration package for CDMA has been designed to accommodate those gaps and to keep trying until a connection is made.'

The key point here is that connectivity shouldn't be an issue for users. The field force should be solely concerned with resolving the problem they've been sent out to fix.



Connectivity should not be an issue for users

Searching for transport

Since it became operational in 2000, WorkNET has been tested over a number of different types of communication networks. While all these permitted remote access, none enabled optimum performance levels. 'Our field technicians often need to connect to WorkNET five times during one job,' says Boniface. 'And when they complete eight jobs in one day, making sure that the client and the company are kept informed can get expensive. It's critical that they stay online when they need to connect 35 to 40 times a day.'

Downer Connect started out using a combination of PSTN and cellular access. Cellular connections were found to be unpredictable, slow and costly. 'The earlier networks we tried provided some of our requirements, but not enough,' explains Boniface. 'For example, success with PSTN dial-ups turned out to be unacceptably low, with at times up to a 50 per cent failure rate.' It seems likely that much of this had to do with PSTN's variable connection protocols.

The company found that where there was coverage, CDPD technology worked extremely well. 'It did the job and kept us connected and the WorkNET system was well suited to it,' says Boniface. 'I think at that time we were on the best network we could get in the market. However, it was very limited in coverage area. It's only now that we compare it to the speed, coverage, connectivity and ease of use of Mobile JetStream that CDPD seems to pale by comparison.'

The final option was using WorkNET over GPRS. At the time the decision had to be made, Downer Connect decided that while there was a network in place, the billing structure for GPRS data services was unattractive and there were doubts about the availability of peripheral devices.

HSD in action

In July 2002, Telecom NZ launched its CDMA2000 1XRTT network and Mobile JetStream high-speed data service. Mobile JetStream is up to three times faster than a conventional dial-up modem. It can clock up data speeds of 153kbps, but averages between 40-80kbps. There's also the always-on advantage of packet technology, plus users only pay for the amount of data they download and not the length of time spent online. This can make Mobile JetStream an even cheaper option than text messaging.

'The most important criteria for Downer is coverage and connectivity,' says Boniface. 'Telecom NZ's high-speed data solution delivers both. It's ironed out many of the problems around remaining connected to the server from out in the field.' He goes on to explain that this is a solution that also makes a significant impact on productivity. 'With PSTN and cellular, the system required field staff to dial manually and waste time waiting around to connect. With CDMA that doesn't happen – they don't even need to dial.'

Deploying mobile high-speed data services in the field is perceived internally more as a performance tool than additional IT expenditure. Downer Connect believes that using the service will provide a more cost efficient solution in respect of communication costs. In addition, it will further cut costs in the long run through reducing the time it takes to process a job and increased efficiencies in job allocation. The company is already

finding its workers can get through more jobs in a day, but considers it more important that the field force is able to access WorkNET in real time and users able to input status changes immediately.

The Mobile JetStream service has already been rolled out to 210 Downer Connect field staff and there are plans to cover the remaining WorkNET equipped workforce in the very near future.

Neither training nor provisioning caused any problems. For a start, all Downer Connect's field force workers are computer literate and familiar with always-on technology from their experience of CDPD. 'From a provisioning perspective, it's all quite straightforward,' says Boniface.

'We have standard laptops with a standard image covering all of the connection media that we use including CDMA. In the background we enable the users profile in the security access system. So for the user, as long as they get their password correct it is just a question of plug and play.'

PCMCIA cards

Telecom NZ's high-speed data solution uses a type II PCMCIA modem card that fits into any laptop or PDA with the appropriate slot. 'The cards were one of the reasons we chose the CDMA solution over GPRS, says Boniface. 'In the first place we weren't sure about the availability of the GSM peripherals, but also the CDMA card was the tidiest, most elegant solution.'

He maintains that it was important to Downer Connect that the modem card was robust in terms of power feed arrangements. The power feed from the vehicle to the device is very straightforward as it utilises the feed to the laptop and the inherent PC power management system. Flat vehicle batteries are now uncommon compared to CDPD's separate inverter supply.

Security

On the security front, there are individual gateway authentication issues that need to be addressed, because Downer Connect operates a secure VPN environment. However, Boniface considers this to be a straightforward administrative issue that can be handled by team managers.

Telecom NZ's Mobile FieldForce business line connects Downer Connect's mobile devices with its LAN containing the WorkNET computer system via Telecom's Private IP Network – not via the internet. This adds an extra layer of security and is compatible with the applications and hardware Downer Connect is already using. Telecom NZ manages the administration and maintenance of the inter-office network.

'As an application, WorkNET is intrinsically secure,' says Boniface. 'In addition to the Private IP Network, WorkNET uses a proprietary messaging system that only accepts valid messages.'



Workers get through more jobs in a day using high-speed data services

3G future

Although Downer Connect has taken up high-speed data via CDMA 1XRTT technology, the criteria that informed service selection ticks all the boxes required for an attractive 3G enterprise solution.

End-to-end security was an important consideration and was addressed through close cooperation between customer, integrator and carrier. Comprehensive coverage, ubiquitous connectivity and competitive pricing were the non-negotiable parts of the package, along with ease-of-use and the ready availability of hardware. It's also worth noting, though hardly surprising, that as a customer Downer Connect has no loyalty to any particular delivery mechanism. The company would simply use the technology that offered the most reliable solution at the best price.

In the final analysis, the enterprise market is uninterested in the air interface – they simply want a fast and robust end-to-end solution. 'To be honest, it's not mobile technology that's given us a competitive advantage,' says Boniface. 'WorkNet has given us the edge on our competitors. CDMA 1X high-speed data has simply been a very welcome enabler that has allowed our application to perform the way it was designed.' ■

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