

Broadband for Southland

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PRESS RELEASE

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PROVISION OF BROADBAND HIGH-SPEED INTERNET SERVICES FOR SOUTHLAND

After considering the developments in the ISP market and recent attempts by various organizations around New Zealand to determine the economic viability of forming buying groups to “aggregate demand” in order to make broadband solutions available to organizations that cannot afford such services as they are currently priced, we have decided to make SouthNET the “aggregation leverage point” for provision of high-speed “always-on” wireless Internet services for Southland.

Important Elements in the Broadband Equation for Southland

- **Wireless Technology**
 - 1) Wireless Internet is cost effective and a proven technology. SIT has pioneered its application in Southland, in conjunction with Computerland Southland, with two operational pilots on-line via wireless right now: James Hargest and South School. SouthNET is the wholesale Internet bandwidth supplier to SIT.
 - 2) SouthNET’s Systems Administrator Justin Wright, Netsolutions, Dunedin, has three + year working experience with wireless Internet solutions.
- **BCL and rural infrastructure**

On August 20, 2001, IT Minister Paul Swain announced the government’s intentions to use the Crown Operating Company BCL as the infrastructural foundation to provide a platform for distribution of data by telecommunications and Internet services providers.
- **“AIR Gateways”**

The Governments August 20, 2001 announcement of its intention to make the BCL network available to third parties in the near future means there will be “air gateways” around Southland in strategic geographic locations, which will act as infrastructural bridges encompassing as much as 25 km or greater broadcast zones.
- **Southland As a Unique Case**

We believe that Southland’s size, population and closely-knit relationships between individual Southlanders and Southland community, schools, businesses, local government bodies, councils and community trusts places

Southland in a unique position to aggregate demand and solve the broadband challenge. We believe that this solution will generate significant benefits for the province as a whole and the individual participating entities. Such a solution might not be possible if attempted by a larger province with a lesser degree of cohesiveness than is evidenced in Southland.

□ **Status**

SouthNET is currently a Telecom Corporate Client and is one of the largest consumers of Internet services in the South Island. SouthNET is a Southland-based, Southland-owned Internet service provider. SouthNET concentrates on providing Internet services to the local population in Southland and Otago.

□ **History**

SouthNET was founded in 1995, has an established client-base, an excellent reputation and demonstrated track-record of providing superior Internet services to commercial, governmental and residential clients. SouthNET hosts the official NZ Police National Headquarters Internet site (www.police.govt.nz), supplies S.I.T. wholesale Internet bandwidth and are Internet consultants to the NZ Police. SouthNET's System Administration and Security Advisor, and SouthNET's management have been formally vetted by the NZ Police. SouthNET's Internet services are complemented by several other businesses owned by colleagues and friends.

□ **The Competition**

- A. Walkerwireless is the largest "national" provider of wireless services. Walkerwireless' services are not available in Invercargill, Fiordland or Southland.
- B. Telecom launched its high-speed ADSL Jetstream service in Invercargill's CBD in August. This variable charged service (the client is billed for megabyte traffic used) is constrained to operate within 4km of the primary ADSL-enabled Telecom exchange. There is no indication that Telecom has scheduled launch of high-speed ADSL services in rural Southland communities, e.g., Te Anau, Winton, Gore, Tuatapere.

Telecom's ADSL Jetstream service is only available in metro exchanges and only in Jetstream-enabled exchanges. Having evaluated the problems experienced in the USA and Australia, where companies tried to provide ADSL service in areas with marginal telecommunications line infrastructure, it is improbable Telecom will make the considerable capital investment to ADSL-enable these rural locations, even if it were infrastructurally possible.

- C. We believe that by aggregating demand in Southland (demand by schools, businesses, regional and district councils, organizations and individuals) and distributing the service via the wireless technology, we should be able to provide a high-speed Internet service which competes with Telecom's Jetstream in Invercargill and which is 15-20% less expensive than Telecom's Jetstream high-speed service in Invercargill and 20 – 50% less expensive than Telecom's high-speed Frame Relay Service in rural Southland.

□ **Timing**

With the recent local introduction of Telecom's ADSL Jetstream service, local schools, businesses and councils have learned that they need high-speed Internet services to remain competitive and to service their clients and constituencies. They have also learned that Telecom's Jetstream service is not inexpensive. These two facts have provided the basis for attempts to aggregate demand and implement a cost-effective solution.

The timing of this recognition provides an excellent opportunity for Southland to pool its interests, demand and requirements for broadband Internet services and to use SouthNET as the "aggregation leverage point" for provision of high-speed "always-on" wireless Internet services for Southland.

□ **SouthNET Infrastructure**

SouthNET has an established local infrastructure, with local Points of Presence in Invercargill, Te Anau, Dunedin and Queenstown. These services include expensive international and domestic bandwidth, a dedicated stacked 2 meg DDS circuit running from Netgate to Invercargill Public Library, Telecom data lines, SouthNET-owned 3COM Total Control units, etc. This established infrastructure (already made cost-efficient by SouthNET 's established client-base) provides an inexpensive foundation for the provision of economically viable wireless Internet services for Southland, Fiordland and Invercargill.

SouthNET would continue to use this Telecom-based infrastructure until BCL's infrastructure is available to third parties. At that stage, distribution would be via wireless and no longer dependent on use of Telecom's DDS circuits.

□ **Regional Identity**

1) Geographic and Generic Internet Domains Names

SouthNET has access, via its affiliated company New Zealand Country Matters Ltd (www.newzealandcountry.com), to a treasure chest of 200+ strategic geographic and generic New Zealand-related Internet domain names, which may further leverage the profile of the project and differentiate Southland on the New Zealand and world stages. This may be perceived as a marketing advantage that no other ISP can reproduce, as the domain names for the geographic regions of New Zealand are no longer available. (please see the attached Southland Times and Christchurch Press articles).

2) Free e-mail accounts

At some stage, we may make available free e-mail and pop e-mail accounts, similar to the Yahoo or Hotmail services based in the U.S.A.. The email addresses themselves would be based on the domains: www.southland.net.nz, www.invercargill.net.nz, www.fiordland.net.nz, so people may have addresses such as your-name@fiordland.co.nz, etc. This would in effect act as a subtle, pervasive branding exercise for Southland, as every time someone corresponded anywhere in the world using one of these distinctive addresses, the recipients would see southland, invercargill, fiordland, etc.

3) Established Relationships

SouthNET has a myriad of long-term, established relationships with key Southland businesses, organizations, councils, schools and individuals. These relationships may present additional opportunities for Internet and telecommunications development projects in Southland.

□ A Rural Scenario – www.broadband.teanau.co.nz

- A. We are assuming that the broadcast location in each rural point will be a school, business or regional government entity with which SouthNET has a relationship.
- B. SouthNET would have a Telecom 256k Streamline DDS 2 meg Private Virtual Circuit activated to connect Invercargill HQ to the remote location. The wireless equipment in the remote location is then connected to this circuit and broadcasts to receiving clients.
- C. SouthNET would then install the broadcast station in the host location best suited for direct line-of-sight (required for wireless transmission) distribution.
- D. As the clients' use of the service increases over time, capacity on the 2 meg circuit from SouthNET Invercargill HQ to Te Anau would be increased as demand and resources allowed.
- E. The broadcast locations may be relocated when the BCL rural network becomes available.

□ Bandwidth Pricing Plans

1) Wireless technology (which has fallen significantly in price and risen in performance in the past 3 years) appears to be an economically viable solution for provision of high-speed Internet services in rural communities such as Southland.

2) Telecom offers to retail consumers two main types of "always-on" high-speed Internet services in rural New Zealand: Frame relay and DDS. Both start at \$900 per month. There are a variety of options, including flat-rate and variable (traffic) pricing plans.

3) Pricing for broadband.southland.net.nz will be considerably less expensive than the Telecom high-speed alternatives currently available in rural Southland.

4) Average Pricing Targets. The goal of the www.broadband.southland.net.nz wireless service is to be price competitive with Telecom's ADSL Jetstream service in Invercargill, where Jetstream is available, **and** to make affordable high-speed Internet services available to rural Southland towns where the alternative Telecom frame relay and DDS high-speed services are extremely expensive. The final discounted retail price would depend on the level of participation in the "Southland demand aggregation" component of the

project. The more entities that subscribe to the service, the greater the demand would be and, consequently, the more leverage exercisable in negotiating bandwidth and other infrastructural pricing concessions from the wholesale suppliers.

5) Rural Pricing. We are using Telecom frame relay and DDS services and Walkerwireless pricing as reference points. For sake of discussion, 12 wireless accounts may make provision of the service and bandwidth economically viable in a given rural location, covering the cost of the DDS circuits and bandwidth required to keep the service well-resourced.

6) Spreading the broadband coverage between regions. Some densely populated rural communities with thriving local farm services or tourism economies (e.g., Winton and Te Anau) will be more economically viable than others, which are less populated (e.g. Tuatapere). However, approaching and structuring the project from a Southland-wide standpoint, "economically marginal" sites such as Tuatapere might be folded into the project and receive the broadband services, even though such a site might not qualify as a feasible candidate if considered alone. In effect, some locations would subsidize others to make the service available to as many Southland regions as economically viable.

SOUTHLAND-WIDE BUY-IN

- As mentioned above, wireless is now operational in Invercargill. SIT has pioneered its application in Southland, in conjunction with Computerland Southland, with two operational pilots on-line via wireless right now: James Hargest and South School.
- SouthNET is the wholesale supplier to SIT.
- Wireless could be made available almost immediately throughout Southland. Lead times for installation of stacked DDS circuits usually varies from 4-8 weeks, depending on the Telecom workload.
- Roll-out of wireless services where SouthNET already has points of presence (Invercargill, Te Anau, Queenstown and Dunedin) would be much faster, as the lines are already active. One would just have to order hardware, install and configure.
- We believe that approaching the project as a Southland-wide solution will afford greater economies of scale and higher dollar savings, resulting in a higher level of participation, therefore providing high quality Internet services at the most affordable price.
- Southland-wide buy-in by local businesses, local government, city, regional and district councils and schools should allow us to provide wireless Internet services for less expense than will be available from the national suppliers (Walkerwireless, Telcom, etc.).

TIMELINE

broadband.southland.net.nz is being launched in September.

THE BROADBAND EQUATION – Definition and Pricing Plans

The primary constraints governing provision of high-speed broadband Internet services anywhere in the world are now bandwidth and traffic. These new constraints might be simplified into terminology we are now coining as, "The Broadband Equation," where Bandwidth + Traffic = Broadband Costs in \$.

A typical medium traffic level high-speed broadband Internet non-residential user might be defined as 5 gigabytes of Internet traffic per month.

What is Internet megabyte (MB) traffic and how is it generated and how much is used?

It is difficult to quantify or define a profile for an average user anywhere.

A small New Zealand rural graphic design operation could be sending 10-25 gigs a months (a 300dpi scanned photograph or a cymk file for print output) can be 10-50 megs in size. At that rate it does not take long to break the multi-gigabyte barrier in a month.

One medium-size New Zealand law firm may make extensive use of e-mail file attachments (say a Word document sending back and forth between two businesses for revisions, at say 250k) - you would have to send 4000 of those to comprise one gig of traffic...while another might not be quite as au fait with the new technology and may not use it to transfer document files at all.

The "splash" page for any given Internet site...general rule is that it should not exceed 100k...so say the average page might have what, 75k of content on it? If there were 100k on every page and the users cache was turned off (every page refreshed every file every time) one would have to view 10,000 pages to comprise one gig of traffic.

Applications that consume large amounts of broadband include music files (which can be blocked by mail administrators), heavy-duty graphics on www pages, e.g. Flash multimedia movies, which cannot be blocked, video files, on-line audio-visual and interactive programs and educational applications, which are increasingly popular with schools worldwide. Real-time, on-line interaction between schools is also a burgeoning application and is broadband intensive.

How one uses the Internet for routine applications such as sending files also impact on costs.

We heard recently that there is a small school that sent out its 4 megabyte Word newsletter to its mailing list.

Very important note: If a client were to send one 4 megabyte email to 1000 clients on its mail list through the ISPs standard mail service and servers, and if the client were on a plan that charged by traffic via isdn centrix, Jetstream, wireless, etc. then the client would be charged the going rate for the single 4 meg file transferred.

If the client is connected to a high-speed traffic-charging Internet connection and the client sends that one meg email to 1000 recipients on their mail list and the mail is

not distributed directly through the ISPs servers but is sent through the client's in-house smtp mail server (which most businesses, schools, government entities now have to manage their mail systems) and then routed externally from the in-house mail system to the ISP, the client would generate 1000 individual e-mail message and would be charged 1000 times for the 4 megabyte file. That is 4 gigabytes of mail transferred in one e-mail, simply by sending one e-mail to a mailing list, with one file attached to it.

For additional examples of definitions of MB (megabyte traffic), one may visit www.jetstream.co.nz, Frequently Asked Questions. They have a variety of MB (megabyte examples). Visit the "what uses MB text link." They equated the 1 gigabyte a month plan to the equivalent of 1800 online hours, which if one divides by 30 days means there are 60 hours in a day. This does not mean much because looking at time-on-line connected vs high-speed services is comparing apples and oranges.

Internet connection-time and traffic usage are two entirely different services, with different price structures. A high-speed Internet connection can actually change the way people use the Internet. In the chart on the Jetstream site, typical single action usage examples range from .001 MB for one email with only text to FTP (e.g. transferring a program or file via the Internet) for one minute uses 7- 20 megs. When transferring files via the Internet, one can send up to 20 megabytes in a single minute. That equates to 1200 megabytes (1.2 gigabytes) in one hour, with is over ¼ of the 5 gigabyte example of average MB traffic used to an entire month!

It is exceedingly easy to generate significant (budget-breaking) traffic when using high-speed broadband services, which can transmit data at rates 50 to 100 times + that of a standard 56k dial-up modem.

The previous speed and time constraints we have grown to dread since 1995 when the Internet became a commercial entity no longer exist in the world of broadband Internet.

THE NEW INTERNET "BROADBAND EQUATION"

As previously mentioned, the primary constraints governing provision of high-speed broadband Internet services anywhere in the world are now bandwidth and traffic: our "The Broadband Equation," where $\text{Bandwidth} + \text{Traffic} = \text{Broadband Costs in \$}$.

SouthNET's proposed pricing is more than competitive with Telecom's Jetstream in Invercargill.

The more significant SouthNET wireless competitive advantage occurs, and massive savings accrue to the clients, in the rural regions.

As mentioned above, the primary constraints governing provision of high-speed broadband Internet services anywhere in the world are bandwidth and traffic, "The Broadband Equation," where $\text{Bandwidth} + \text{Traffic} = \text{Broadband Costs in \$}$.

Increase either the speed or the traffic components in the broadband equation and the dollar costs increase.

In addition to the Broadband Equation, provision of high-speed Internet services to

rural locations is further constrained by the dual considerations of older traditional telecommunications lines and older telecommunications exchange infrastructure and the lack of economies of scale afforded by the lower population density.

Demand for Broadband

There is an insatiable global demand for high-speed Internet.

Despite the excesses of the 1998-2000 DotCom Mania period, the irrational exuberance and greed that finally culminated in the meltdown of the technology shares on stock markets worldwide and flat economic growth in the USA, Europe and Asia, global demand for broadband continues to increase.

The real Internet revolution has little to do with the NASDAQ. The real Internet revolution, the convergence of telecommunications and computers, is rapidly redefining the way people communicate, interact, learn and conduct business.

Recent articles about broadband and the networking industry included some relevant points:

- Broadband access has only penetrated 10% of the market.
- Companies cannot afford not to upgrade networks in an economic downturn because the better their networks are, the better their productivity and customer support will be.
- One study predicted that demand for bandwidth would increase by a factor of 300 in this decade. We would note that such long-term predictions are of questionable value for planning purposes.
- Closer to home, in New Zealand the Southern Cross Cable was launched earlier this year. To date it appears that The Southern Cross Cable network company has just been able to keep up with demand.
- Projections of supply and demand for broadband in Zealand range between 100% and 200% compound growth per year.

Despite the variations in projections, there appears to be a general consensus that availability of bandwidth will remain “revenue neutral”, a term used to describe the practice of providing clients with a greater quantity of a given product or service (with decreasing per unit costs) for the same absolute dollar amount.

The price and quantity of Telecom’s wholesale MB traffic and telecommunications circuits services provided to SouthNET over the past five years have followed the revenue-neutrality structure. SouthNET has received ever greater quantities of services and the dollar amount of the monthly Telecom invoices have either remained the same or increased.

We expect the same revenue-neutrality pricing structure to apply to the global broadband market, whereby wholesale and retail clients will use significantly increased quantities of high-speed Internet services, which will become less expensive per unit over time, but that the absolute dollar volume of services

consumed will continue to increase. We also believe that it is probable that the percentage of disposable funds spent on broadband by any given entity will increase relative to traditional expenditure categories (buildings, advertising, staff, management, etc).

As broadband-intensive Internet applications become increasingly important and central to the efficient conduct of commerce and education, Southland's need to have access to these strategic Internet services to remain competitive will increase in both relative and absolute dollar terms.

The Broadband.Southland.net.nz Solution:

We have formed a view that:

- By making use of SouthNET as the "aggregation leverage point", maximizing the economies of scale of SouthNET's existing Internet bandwidth, services, expertise and infrastructure
- coupled with a Southland-wide demand aggregation plan
- working closely with broadband.southland.net.nz strategic alliance participants and participating big businesses, schools and regional governmental organizations
- deploying a combination of wireless Internet distribution technologies, Local Area networking where applicable, for the provision of affordable, cost-effective high-speed "always-on" Internet broadband services for rural and metropolitan Southland-Fiordland-Invercargill is economically viable in the short-term and medium-term
- and that making this strategic infrastructural Internet investment in Southland will benefit and increase the competitive position of Southland.

Sincerely,

Jacqueline
Communications Centre
South Net Ltd.

SouthNET is a 100% owned and operated Southland, NZ business
Southland, New Zealand

Phone: 03-214-6136

Fax: 03-236-0909

E-mail: contact@southnet.co.nz

www.southnet.co.nz

fiordland.net.nz | invercargill.net.nz | queenstown.co.nz | otago.net.nz | southland.net.nz

**Specializing in providing high performance Internet services
to rural New Zealand for over 5 years.**