

VANUATU

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BUSINESS

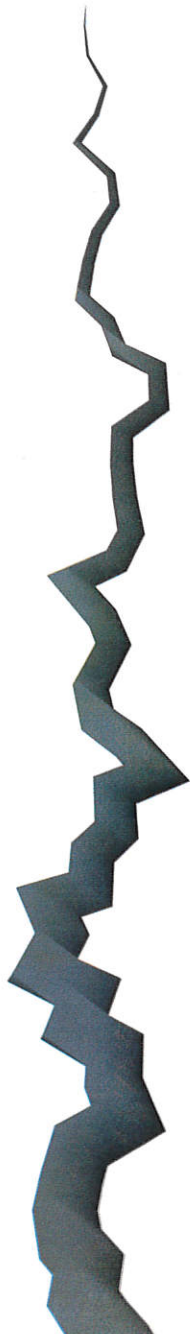
REVIEW

EXTENSIVE, THOROUGH AND PROFOUND

SOMETHING'S

**GOT
TO
GIVE**

Breaking down the
internet access wall





SOMETHING'S GOT TO GIVE

Mere access to internet isn't enough
for businesses—or anyone

This year's ICT Days celebrations were bigger than ever, sprawling over most of a week. Technical, policy and awareness discussions were presented in multiple streams, covering topics from disaster communications to privacy to Vanuatu's still-mostly-notional Internet of Things.

There's much to celebrate. Internet uptake is rising to new heights, and it's showing every sign of reaching critical mass. The phenomenon of network effects was first documented by telecommunications pioneer Theodore Vail at the beginning of the 20th Century. It was popularised by Bob Metcalf, the man who more or less invented the local area network. Later, in 2009, the model

was formalised and subjected to mathematical analysis.

In a nutshell, it states that once networks reach a certain size relative to the population, they create a virtuous circle of investment and uptake. The more people use a particular network, the more useful the network becomes, and the more people use it. Et cetera.

In July of 2009, entrepreneur and internet security Rod Beckstrom codified the fact that Network Effects have a downside, too. A 2009 article in Forbes Magazine describes it aptly: "The value for users is the total benefits from all transactions in a network minus the cost of those transactions."

Upside/Downside

The 'cost of the transaction' part is key here. This can manifest itself in psychological, physical and financial terms. Women, for example, tend to participate less in public discussions online because they tend to face far greater risks—emotional and physical—for venturing an opinion. This means that online life is often segregated in much the same way that 'real' life is: with women relegated to the periphery of power-related discussions, but still highly invested in fostering and building social ties.

Some of us have found that Facebook has too many negative costs. The time and attention frittered away on useless 'transactions'—memes, vanity posts, ads, calumnies and lies shared about as gospel truth—is vastly greater than any possible reward.

Viewed in social terms, Vanuatu has risen past the Network Effects sweet spot and emerged on the other side.

Financial Effects

In financial terms, Network Effects are barely beginning to make themselves felt. No matter how you turn it, the problem is a simple one: Internet costs too much, and there's too little of it.

Each of those problems is related, of course. And their effects ripple a long way out into the national economy. Lack of online business and information services mean that companies learn to live without. This creates two effects:

1. Companies learn to move slowly and avoid venturing too much, because it's not possible to know where the economy will be from one month to the next. Simply put, it doesn't always pay to plan.

2. Companies also learn to leverage ignorance and slow reaction times by engaging in business practices that are obsolete elsewhere in the world. In other words, it pays to drag your corporate heels. The early bird won't get the worm if the worm is late, too.

The benefits of automation and digitisation in financial and banking services are blindingly obvious. Asked why they don't move more quickly to embrace them, every bank manager we spoke to blamed the high cost of tech versus the tiny market.

But counterfactually, the company that made the largest investment in technology is the smallest and most vulnerable of all: the National Bank of Vanuatu. How BRED, ANZ and BSP—all of whom have corporate networks to draw on—can justify their continued foot-dragging on even basic electronic banking and security services almost certainly has more to do with the two reasons above than with cost considerations alone.

If the demand were visible, you can bet they would move to meet it.

Field of (Bad) Dreams?

Internet uptake and affordability has always been a supply-side scenario. Everywhere you look, prices and availability are defined

by the willingness to invest. But corporate conservatism has created strange distortions—both good and bad—in the global market. Even across the developed world, the amount of bandwidth you can buy—and its affordability—show huge fluctuations.

Countries with investment- and growth-oriented policies inevitably have higher bandwidth available at lower costs, whereas countries that rely on more traditional laissez-faire approaches tend to be characterised by higher costs and relatively lower bandwidth offerings.

Everyone knows that South Korea routinely offers gigabit internet packages to people's homes, and as much as that may evoke jealous sobs from local geeks, who struggle to get online at all, their achievement is easy to brush off as impossible to replicate. Population density, prosperity, clear policies and vast private investment in technology all make being a technological world leader a dawdle, people will say.

But what about Mongolia, where the price of a 10 Mbps connection is more than 20% cheaper than in Seoul? Do those factors still apply? Or how about Armenia or Azerbaijan, where the price difference is nearly 50%?

Even in Fiji, which shares many of Vanuatu's economic constraints, a 10Mbps connection is only about twice the South Korean price.

Vanuatu, by contrast, is about 32 times more expensive. That makes it about 16 times more expensive than in Fiji.

Price of a 10Mbps home connection

Rank	Country	Price	Rank	Country	Price
1	United Arab Emirates	87.72	46	Colombia	26.98
2	Iran	70.64	47	Hong Kong	26.79
3	Qatar	68.54	48	Germany	26.43
4	Iceland	61.87	49	Indonesia	26.13
5	South Africa	59.97	50	Malta	25.67
6	New Zealand	57.78	51	Montenegro	25.1
7	United States	52.59	52	Libya	23.65
8	Australia	51.28	53	Taiwan	23.58
9	Puerto Rico	50.18	54	Croatia	23.27
10	Switzerland	49.51	55	Morocco	22.94
11	Lebanon	49.48	56	Austria	22.43
12	Costa Rica	47.89	57	Greece	22.34
13	Ireland	46.05	58	Israel	22.24
14	Canada	44.15	59	South Korea	21.96
15	Iraq	43.01	60	Egypt	21.69
16	Philippines	42.36	61	Mexico	21.01
17	Peru	41.62	62	Finland	19.7
18	Belgium	41.36	63	India	18.34
19	Jordan	40.99	64	Tunisia	18.23
20	Algeria	40.95	65	Thailand	18.04
21	Saudi Arabia	39.74	66	Estonia	17.23
22	Norway	39.6	67	Sri Lanka	17.21
23	Dominican Republic	39.43	68	Albania	16.57
24	Argentina	39.12	69	Turkey	16.1
25	Panama	38.5	70	Czech Republic	15.6
26	Malaysia	36.9	71	Slovakia	15.01
27	Spain	36.31	72	Bosnia And Herzegovina	14.61
28	Japan	36.23	73	Hungary	14.29
29	Palestinian Territory	35.78	74	China	14.09
30	Cyprus	35.32	75	Serbia	13.95
31	Chile	34.39	76	Latvia	13.15
32	Ecuador	32.41	77	Kazakhstan	13
33	Uruguay	31.92	78	Armenia	12.89
34	Singapore	29.82	79	Azerbaijan	12.45
35	Pakistan	29.03	80	Macedonia	11.61
36	Italy	28.98	81	Poland	11.42
37	Slovenia	28.93	82	Georgia	10.82
38	France	28.79	83	Lithuania	10.69
39	Bangladesh	28.78	84	Kosovo (Disputed Territory)	10.44
40	Netherlands	28.63	85	Belarus	9.22
41	United Kingdom	28.29	86	Bulgaria	8.65
42	Brazil	27.98	87	Romania	7.52
43	Portugal	27.88	88	Russia	6.52
44	Sweden	27.77	89	Venezuela	3.69
45	Denmark	27.03	90	Ukraine	3.36
46	Colombia	26.98			

It'll end in tiers

In conversations with technical professionals and industry stakeholders since the Interchange submarine cable first landed on our shores, the common refrain has always been that we're not doing enough with our capacity.

The government was—initially at least—quite aggressive about leveraging our investment in internet infrastructure. Early on, officials were actively considering a World Bank funding offer similar to the one supplied to Tonga. Their cable was lit up shortly before Vanuatu's. Ultimately, the government deferred to Interchange Ltd to deliver the cable, granting them first-mover rights in the local market.

Capitalising the project was always going to be a challenge. And funding wasn't going to happen unless people here made a tangible commitment to actually use the bandwidth.

Enter the felicitously names FCC—or Fidelity Communications Corp. Local investor Tom Bayer saw the long-term value of bringing fibre internet onshore. He took a 1/8 share of Interchange Ltd, the cable owner. And when it became clear that the banks wanted to see firm promises, his company took the plunge. In exchange for a long-term commitment to a significant chunk of the available bandwidth, FCC managed to get Interchange to agree to sell wholesale only—effectively creating a two-tier market structure in Vanuatu.

Theoretically, there's nothing stopping other companies from stepping in at that level, too. All that's needed is a \$US 9-16 million dollar commitment over minimum 10 years.

Paying the Piper

Despite their own reluctance to commit early on, local companies are not happy having to pay the piper now. Grumbling over what they claim are predatory and discriminatory prices has been a constant refrain among the local ISP community. A year ago, one company rep claimed that bandwidth prices had hamstrung his efforts to sell high quality internet to the business community. Asked last week whether this is still the case, he said, 'Nobody's making money.'

Even when fibre prices dropped prices to about a quarter of what satellite providers were charging, the price was still nearly US \$400 per megabit of connectivity. Wholesale prices for what's known as transit on top-tier networks in the USA run as little as \$5 per megabit, with similar—if not better—rates in Europe and Asia.

Costs are kept low in part because much of the traffic that passes over top-tier networks is based on peering agreements. In layman's terms, these are simple handshake agreements between top-level networks saying, 'I'll let your bytes onto my networks if you let mine onto yours.'

Peerless performance

Vanuatu has allowed a virtually peer-free scenario to arise. It also has—for now at least—vanishingly small peering requirements. The amount of data passing between local ISPs is a tiny fraction of overall traffic.

CLOUDFLARE	Percentage Peered	Effective Price/Mbps/Month	Relative to Lowest Price
Europe	50%	\$5	1x
North America	20%	\$8	1.6x
Asia	55%	\$32	6.4x
Latin America	60%	\$32	6.4x
Australia	50%	\$100	20x

The chart above shows the relative cost of bandwidth assuming a benchmark transit cost of \$10/Megabits per second (Mbps) per month (which we know is higher than actual pricing, it's just a benchmark) in North America and Europe.

Youtube, on the other hand, is responsible for about 40% of all the bytes delivered in this country.

Once upon a time, there was a central interconnect facility that provided access to Google and related caches. The Vanuatu Internet Exchange was much-

Vanuatu customers—as much as 40% more, according to some. But he underlined his fiduciary duty to the company, and the fact that the government's contract with Interchange explicitly prohibited on-selling, precisely because of the potential to warp the market.

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ballyhooed at its inception, but it was later discovered that the arrangement, in which the Government shared its data caching facilities with local providers, was in contravention of its service agreement with Interchange.

Interviewed at the time Interchange CEO Simon Fletcher admitted that, conveniently for his company, cutting ISP access to the VIX cache would result in substantially more international bandwidth use for

A separate caching service was established by Interchange/FCC, and made available to local providers at 25% of the price of normal bandwidth. This was later nixed by the Regulator.

Peering and caching are little understood in the non-technical community, but they are instrumental in making it easier—and cheaper—to share and exchange data.

TRR-ism

Discontent concerning the way our cable bandwidth was being sold reached a peak recently. The Telecommunications and Radiocommunications Regulator, or TRR, felt obligated to step in. In a series of rulings beginning in mid-2016, Dalsie Baniala ordered Interchange and FCC to stop what her office considered to be discriminatory and anti-competitive behaviour concerning a market-sharing agreement with Speedcast International, a regional bandwidth supplier that provides the lion's share of satellite connectivity in the southwest Pacific.

At the same time, Interchange was designated a 'dominant service provider' in the wholesale internet market. This was the first in a series of decisions effectively pushing Interchange into the same regulatory straitjacket as UNELCO. The company was required to end a November 2014 sales agreement with Speedcast and FCC, to remove any non-compete restrictions on the customers, and most contentiously, to seek approval for all future sales on a cost-plus basis.

Interchange claims the right to be rewarded for taking the initial risk. Others counter that the Government of Vanuatu, the VNPF and Vanuatu Post are the ones taking the risk. Between them, they own 62.5% of the company.

Prices dropped precipitously after the cable arrived, and internet uptake ballooned. As we reported in the February State of the Nation column, active internet subscriptions exceeded 40,000 by the end of 2015.

Most local ISPs have lobbied the TRR in support of reduced prices and more consistent market behaviour.

Residential numbers grew dramatically once our bandwidth supply grew. Telsat, who had pioneered internet access to a number of Port Vila neighbourhoods with their wireless offering, saw their numbers leap by nearly 10% in a month. They are currently serving over 2,000 full-time customers and a large number of occasional users as well. Wantok, another wireless provider, is about half that size.

But even after the TRR's decision to force FCC's prices down, local ISPs insist that they're too high. One submission claims the TRR is allowing FCC a 30-35% profit margin on new bandwidth sales.

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Some, however, claim they got more than they wanted. In an order dated May 3 2017, the TRR unilaterally assessed prices for FCC's sale of bandwidth for four local ISPs based on costs.

Nearly all ISPs who were involved in the process felt that some of Interchange's dealing was discriminatory. The TRR concurred. She levied fines of VT 5.5 million for 'anti-competitive and discriminatory pricing in favour of FCC'.

The specific proposed sales of leased capacity on the ICL Cable that have been submitted to TRR pursuant to Order No. 1 of 2017, are as follows:

- (i) To Digicel: [redacted] Mbps of capacity for a total of [redacted] Mbps of capacity, under a [redacted] term of [redacted], for a price of US\$ [redacted]/Mbps/Month.
- (ii) To Speedcast: [redacted] Mbps of capacity for a [redacted] term (for the purpose of [redacted]), for a price of US\$ [redacted]/Mbps/Month;
- (iii) To TVL: [redacted] Mbps of capacity for a total of [redacted] Mbps of capacity, for a [redacted] term, [redacted], for a price of US\$ [redacted]/Mbps/Month.
- (iv) To TVL, an additional [redacted] Mbps of capacity, for a total of [redacted] Mbps, for a month-to-month term, for a price of US\$ [redacted]/Mbps/Month.
- (v) To TelSat:
 - a. [redacted] Mbps for a term of [redacted], for a price of US\$ [redacted]/Mbps/Month; or
 - b. [redacted] Mbps increasing up to [redacted] Mbps as needed, for a [redacted] term, for a price of US\$ [redacted]/Mbps/Month; or
 - c. [redacted] Mbps [redacted] to [redacted] Mbps for a term of [redacted] for a price of US\$ [redacted]/Mbps/Month.



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But the fact that people are consistently maxing out their connections is an indication that incipient demand is still huge. Both investors and policy makers should take note.

But others who benefited from the price reductions felt that the regulatory intervention was arbitrary and over the top. Placing a damper on market forces, they said, would only drive away investment.

In fairness to the TRR, the presence of a regulated cap on profits didn't stop VUI from bidding on the Santo electrical power concession. There are numerous voices across the globe who argue that the sooner we start treating bandwidth like a utility, the better.

Cable-Tied

In a written reply to our request for comment on the May 3 decision, FCC's Robert Bohn stated, "we are a little annoyed that the TRR has not adequately addressed the matter of our costs and how we spread those costs over the years of service. That is a technical issue that can be worked out pretty easily."

He went on to detail three areas that he felt the TRR hadn't properly considered: the impact on shareholders, a mechanism to ensure that cost-reductions are passed on to consumers, and current planning for a second cable.

Interchange and FCC have recently been touting the need for a second cable. Robert Bohn writes that if traffic is interrupted now, the downside could be significant. "[S]tatistically it will happen... and if prices crash, then who will pay for that second cable"?

Government formulated a plan for a second, donor-funded cable some years ago. According to numerous sources close to government, it was shelved in the face of lobbying from Interchange and others. Some of those sources find it a little rich that Interchange and FCC are now at the forefront of the crowd cheering the idea.

Something's Got to Give

No matter the outcome, one thing that everyone agrees on is that something's got to give. Through the Universal Access Policy, Vanuatu is formally committed to making broadband available across the country by the end of this year, and they're on track to deliver in substantial measure.

But access and affordability are two different things.

Local providers insist that they cannot bring prices down any further, but they're still north of the sweet spot for most Ni Vanuatu. Telsat reports that their most popular package is a VT 2,500 monthly product. "People love it. It's only 512 Kbps, but people find ways to use it. If they want to watch a movie, they download it overnight and watch it the next day."

But the fact that people are consistently maxing out their connections is an indication that

incipient demand is still huge. Both investors and policy makers should take note.

If we calculate benefits of better internet services solely on their ROI, then the current situation isn't likely to change. If, on the other hand, we look at both impact on GDP overall as well as the opportunity cost of allowing the rest of the world to pull away from us, there is a compelling case to be made for a firmer hand, not just on telecoms policy, but in implementation as well.

A 2013 OECD/UNESCO/ISOC study found a clear and unambiguous relationship between local content, lower internet costs, and increased economic activity. Business-to-business and business-to-consumer services in Vanuatu are languishing because the internet we've currently got isn't enough to carry the load.

We need to change attitudes toward internet, but that won't happen with abstract education and awareness. People learn by doing. Businesses, banks and public agencies and institutions need to get on board and start investing more in how they use their bandwidth.

That won't happen until mere connectivity stops chewing through their entire communications budget. ■