
Automated Network Recovery when Disaster Strikes

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Abstract

We can't prevent disasters, but we can help ensure that organizations and businesses are better prepared when disaster strikes!

Satellites at 36,000km above our heads are beyond the reach of disasters on the ground. Satellite earth stations can be fixed or portable, and used to automatically and rapidly recover critical communications links.

While we have all seen a gradual displacement of satellite with fibre optics for primary communications circuits, many organizations are finding that satellite remains a viable and cost-effective solution to backup critical communications – a link to the sky right from their business premises.

However the challenge in using satellite is the high cost of bandwidth – or is it? This paper describes how organizations can benefit with cost-effective assurance of protection over satellite for their mission-critical circuits, and introduces a new service launched by SingTel, based on technology from NetworkAdvantage.

Disaster is Relative

Disasters can strike at any time. Caused by deliberate sabotage, natural events, accidents, infrastructure failures and even biological attacks, communications networks are at risk.

With increasing trade globalisation and development of e-commerce, our reliance upon communications networks continues to increase. Loss of mission-critical circuits disrupts business services, upsetting customers, and can mean loss of income and even loss of customers!

Regardless of the primary telecoms service provider, it is the business and organization itself that will suffer credibility and potentially business survival, for not having an adequate disaster recovery plan in place.

Headlines focus on major cable failures, such as the recent failure of the SEA-ME-WE-3 cable near Karachi, and subsequent fiber breaks off the coast of India and Pakistan, impacting Internet traffic in those countries as well as the UAE and Sri Lanka. For example, *"Call centres lose US clients due to service disruption, causing millions of dollars in losses and intangible damage, Pakistan Call Centres Association", IndiaTimes 3 July 2005.*

However regular, shorter period "brown-outs" that do not make the news, are plaguing business in many parts of Asia.

Even when redundant path cable is in place problems can occur, as seen recently in New Zealand when a rat was blamed for damage to one cable, while the other was hit by a post-hole digger. The resulting 5 hour outage on a busy Monday disrupted the stock exchange and other business.

For businesses wholly reliant upon communications, such failures seriously affect not only their business, but can damage emerging industries bringing disastrous results.

Satellite for Disaster Recovery – The Past

Communications circuits over satellite for recovery were typically either set up manually or continuously provisioned. Manual provision usually involves a phone-call to a satellite service provider to allocate bandwidth, satellite equipment at each end of the link to be configured, and circuit transmission re-routed. The time to get service back on line is variable, being difficult to achieve in less than 30 minutes and more often takes several hours. This is just too long to maintain the high-availability service demanded by customers for transmission of their mission-critical data.

Continuous provision of satellite bandwidth for recovery purposes is an option, but typically cost-prohibitive for all but the largest telcos.

As a method for network recovery, satellite has the unique and natural advantage of very wide geographical coverage. Bandwidth on satellite can be shared. And when managed appropriately, one

piece of bandwidth can serve to back up many terrestrial circuits, as the chances of them all failing at once is very low.

Automated Disaster Recovery – Today’s Recovery Service

An automated disaster recovery service makes available a ‘pool’ of satellite bandwidth for recovery. Because of satellite’s wide coverage area, the bandwidth pool can serve many geographically separate circuits. Bandwidth is then made available when needed to serve a recovery event. A service based on this principle need cost only a fraction of full-time bandwidth cost. Bandwidth is paid for as used.

Such a service provides a seamless and cost-effective method for failsafe recovery of critical circuits over satellite when key communication links such as those using landlines, submarine cables and satellite systems are lost. An effective protection against the threat of network failure, it actively monitors customer’s primary circuits for service interruption, and automatically establishes a satellite link when required.

Acting as insurance against disasters, an automated disaster recovery service assists customers recover rapidly and automatically when disaster strikes. Tailored to customers specific network needs and bandwidth requirements, the service typically provides a backup to primary circuits direct from the customer’s premises, for example a satellite dish located on the rooftop.

Example: SingTel’s Automatic Network Disaster Recovery Service

SingTel have recently launched such as service based from their Bukit Timah earth station in Singapore.

SingTel’s service provides cost-effective backup over satellite, supporting bandwidth from 64 kbps onwards. Actively monitoring customer’s primary circuits for interruption, the service automatically establishes a satellite link when required.

The service is charged according to bandwidth actually used during a disaster recovery event, plus a monthly fee according to the number of circuits and bandwidth reserved.

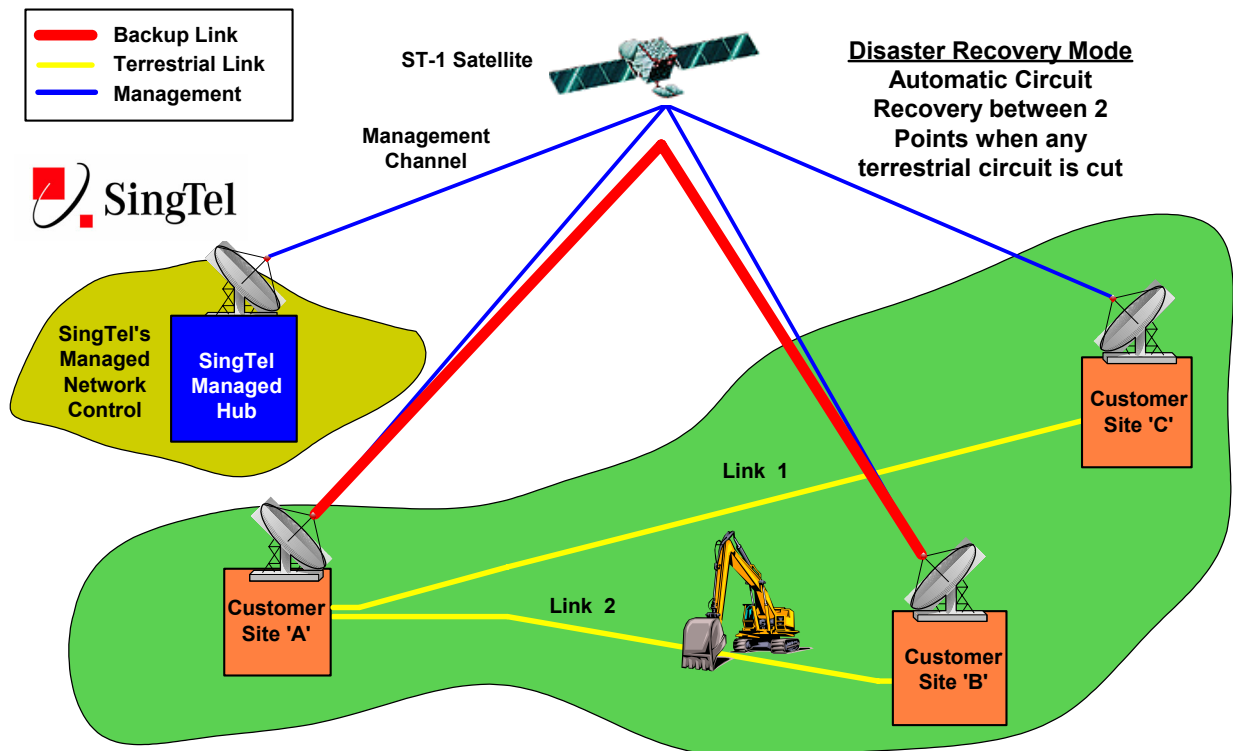


Figure 1: SingTel’s Automated Network Disaster Recovery Service

From SingTel's 24x7 network management centre, a network control hub provided by NetworkAdvantage is able to manage backup of customer's mission-critical circuits between any customer location within a country or between countries, and within the footprint over Asia of SingTel's ST-1 satellite at 88°E. Service is provided on either Ku or C Band.

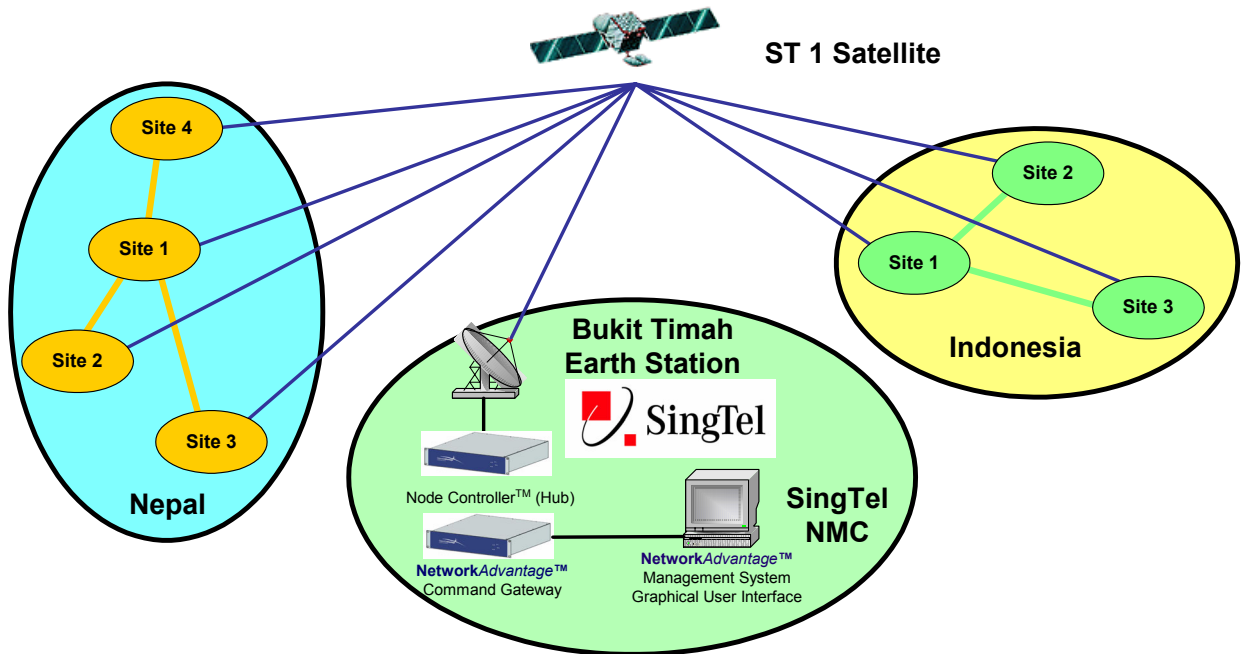


Figure 2: Management from Singapore

Configuration at Customer Premises

Satellite equipment (including satellite antenna, electronics, satellite modem and Node Controller) is installed at the customer's premises and connected to the customer's existing router, multiplexer or switch. The equipment is non-intrusive to the primary transmission circuit and only comes into service when there is a failure of the primary circuit.

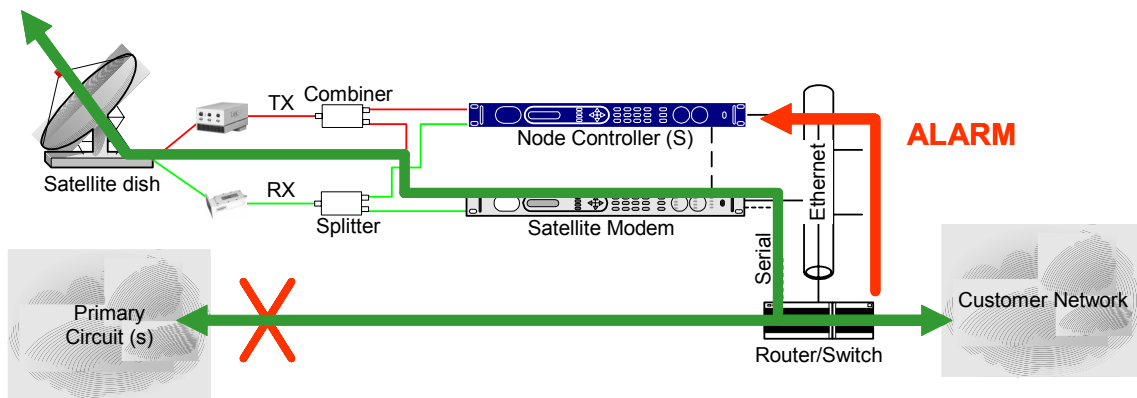


Figure 3: Configuration at Customer Premises

Upon detecting a primary circuit failure, the customer's router, or multiplexer is configured to switch to the backup route and to send an alarm to the Node Controller. The Node Controller detects the alarm (typically in the form of an SNMP trap) and requests a satellite link from SingTel's network management

centre. The bandwidth manager at the control hub automatically assigns frequencies and corresponding power to satellite modems at either end of the circuit to bring up a satellite link of appropriate bandwidth.

When the primary circuit is restored, the satellite link is taken down. A record of the event, circuit, bandwidth and time is logged for billing to the customer.

Who Needs Automated Network Disaster Recovery?

Service providers such as call centres, Business Process Outsourcing (BPO), telcos, cellular and Internet Service Providers (ISPs) can all benefit to meet their obligations towards Service Level Agreements and the Quality of Service required in today's competitive environment. Many service providers require backup communication routes to avoid punitive penalties for non-performance, notwithstanding the need to maintain revenue streams.

Financial services companies including banks, insurance, brokers and traders, suffer severe disruption to their services during loss of communications, costing real money and additional resource and lost time for potentially several days of reconciliation.

Modern multi-site, multi-national corporations, manufacturing plants and service industries cannot afford disruption to normal business operation. A cost-effective backup solution using satellite can provide the necessary competitive edge to keep your business running when your competitors are suffering.

During disaster scenarios, government organizations, civil defence services, military and aid agencies are stretched, putting pressure on communications services that may have been damaged.

Be Prepared!

As disaster can strike at any time, and anywhere, it is prudent to be prepared, and extremely risky not to have an adequate disaster recovery plan in place. With services such as SingTel's Automated Network Disaster Recovery Service, satellite is well placed to play a significant part in disaster recovery planning for service providers, businesses and relief organizations.

Free from terrestrial interference, an Automated and rapid Network Disaster Recovery Service over satellite provides cost effective insurance in preparation for when disaster strikes.

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