

How router clustering can improve customers' WAN uptime

by Ragula Bhaskar, 15 July 2003

I would estimate that 75% of all support calls were due to ISP related issues. With the implementation of router clustering technology, these calls have been virtually eliminated and this most definitely impacts SanDisk's bottom line. The router-clustering solution truly saved SanDisk millions of dollars simply by being able to keep our production facilities constantly connected to US offices.

Seung Ha, Network Operations
SanDisk Corporation

Ask yourself a question: What happens when a customer's WAN connection fails? Do you lose credibility with your customers? Do they lose revenue? Does it affect your client's productivity levels? If your answer is yes to any of these questions, you understand that many of your customers need redundancy for their Wide Area Networks (WANs). A relatively new kind of technology, called router-clustering (RC), is now available to companies that require keeping their WAN infrastructures up and running despite failures to WAN connection downtime due to ISP, routers or backbone failure.

Telcos, ASPs and resellers of data and voice lines can use RC technology to address the main concerns customers have about WAN infrastructures: Speed (bandwidth), redundancy and high availability, and security, by implementing RC devices into their customers' networks. RC technology can also help Telcos sell lines to current clients and penetrate their competitors' markets by bonding a line or multiple lines with a competitor's line(s), without the need of the

other parties' cooperation (unlike BGP programming).

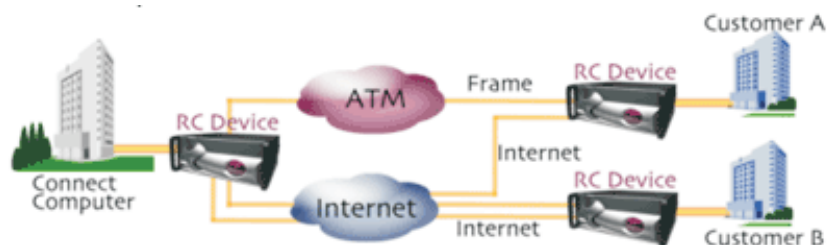
This article will explain the need for RC devices in today's business world, recommend ways to use RC devices as a value add to Telcos and ASPs who also sell VPN or other WAN solution packages, and conclude with a case study example of an ASP who backs up its own WAN systems, as well as those of their customers, with RC devices.

Making the Case for WAN Reliability

Regardless of industry type, many companies view their WAN infrastructures as cornerstones of their businesses simply because they depend on the Internet as an indispensable communications tool. The use of Internet-based applications is on the rise as a result. This is supported by analyst reports, including Jim Metzler of Open Reach's Tackle Your Top 5 Wide Area Network Challenges. According to the report, Internet-based applications are growing at a rate of 40%- 45% a year.

infrastructures to deploy mission critical applications to enhance and fortify their WAN infrastructures. According to a report from Infonetics Research, two thirds of the respondents to their latest study, The Cost of Downtime, 2003, indicated the two primary factors driving them to upgrade their WAN infrastructures are the twin desires to lower the cost and to improve the reliability of their WAN services.

The implementation of RC technology is steadily on the rise due to the demand for improved availability of WAN services to support the ever-growing popularity of Web-based applications. WAN failure is not simply an inconvenience for many companies; it's a potential detriment to their businesses. A lost Internet connection due to router, ISP, backbone or line failure has become an issue of cost resulting in lost productivity, lost revenue, and in some cases an issue of liability for the customer and sellers alike.



The increase in TCP-based applications such as email, Web browsing and file transfers, has also increased the probability of performance degradation and WAN instability for end users. This has lead companies that use their WAN

For ISPs, ASPs, and master agents, downtime can lead to customer dissatisfaction and termination of contracts if the ISP or service they are providing is the root of the problem, (e.g. service provider problems leading to an

Continuation next page...

How router clustering can improve customers' WAN uptime

...Continuation from previous page

interruption in client WAN services). RC technology provides a relatively easy-to-implement, cost effective and efficient solution to the common interruptions of Internet services resulting in WAN downtime. RC devices also provide several other features that benefit the customer, such as load balancing methods for inbound and outbound traffic, additional security for data transmissions, and greater bandwidth capability by aggregating two or more lines through the RC device.

The Scoop on RCs

How do RCs devices do the trick? First, RC technology bonds any combination of T3, T1, DSL, Cable, ISDN and/or Wireless connections to achieve aggregate speed and redundancy. Typical RC devices can intelligently sense the status of services (ISP, backbone, line, router, etc.), and reroute IP packets automatically when failures occur. RC devices accomplish redundancy by bonding multiple connections from the same or separate ISPs and backbones, without the need for ISP cooperation or setting up proprietary hardware or software at the ISP site(s). Dynamic load balancing and route control features help give control of a network back to the network administrator, without the BGP programming.

RC devices are application, technology, and router independent, sitting transparently in a network at the edge of the LAN -- there is no need to purchase special routers or additional hardware. There are several RC types that support different kinds of

WAN infrastructures, e.g.: RC devices designed to support thin client models and a different RC device to support VPNs. Be sure to choose the one that suits your customers' needs on a case-by-case basis.

ASP Case Study Highlighting the Advantages of RC Integration

Small to medium sized ISPs and ASPs who do not have multiple POPs available to provide redundancy to their own WAN can also integrate RC technology into their network, as the following case study illustrates. The case study highlights the advantages of integrating RC devices into, in this instance, an ASP's network at the customer and ASP data center sites.

Situation

CONNECT Computer Corporation (Fairfield, CT) provides outsourced and integrated, managed IT services. CONNECT wanted to enhance its services by ensuring redundancy and high availability for its VPNs with clients who desired WAN redundancy.

Solution

CONNECT Integrated 11 RC devices into its ASP environment -- two redundant units at its data center and an additional 9 at client sites across the US. CONNECT now provides high availability for its ASP clients by bonding two Internet connections and two private frame relay connections through its RC device unit, while its clients bond various public and/or private data connections at each of their sites.

Benefits

Achieved high levels of redundancy and efficient delivery of information as well as a significant increase of the security of data transmission using RC technology.

Complete Story

CONNECT Computer, a full service provider of IT solutions that specializes in enterprise network integration, ASP hosting and disaster recovery solutions, has built a reputation for developing and maintaining dependable, fully-managed services for the past 18+ years.

CONNECT requires fault tolerant and redundant systems, with 100 percent uptime, for its ASP and disaster recovery services. The company has taken steps to ensure high availability for its customers by integrating nearly a dozen router-clustering devices at separate sites to further support its ASP infrastructure. Bonding one or more private or public lines at each site, RC devices have provided fault tolerant application delivery business continuity solutions and efficient, dynamic load balancing to support CONNECT's fully-managed services for its ASP/VPN customers.

According to Alan D. Wittstein, President of CONNECT Computer Corporation, delivery of applications over a WAN has traditionally been a main focus of concern because of its vulnerabilities to failures on the network. To that end, CONNECT has set up a network that guarantees availability to its customers.

Continuation next page...

How router clustering can improve customers' WAN uptime

...Continuation from previous page

CONNECT uses RC technology to bond two Internet lines with two private frame connections, and balancing the load over all four connections at its data center, resulting in robust redundancy and superb performance to protect WAN services. CONNECT set up primary and fail-over RC devices for total redundancy. "Our RCs deliver high levels of up-time and performance for the deployment of online applications," said Wittstein.

CONNECT has currently deployed eleven RC devices to multiple clients, including financial and security firms, to manage their VPN solutions. According to Wittstein, several of CONNECT's clients have suffered Internet access outages (due to ISP failures) while the RC devices were in place. Without exception, the RC devices successfully shifted Internet traffic to available lines when those failures occurred.

"It passed the real test with our first client that implemented a RC device to protect and ensure the deployment of mission critical WAN applications. The client is a financial firm hosted in our ASP environment," said Wittstein. "Our financial clients, as a perfect example, would endure significant financial losses if they could not access data because of a failure of the WAN. RC technology has played a crucial role in keeping our V

PN with clients up and running, and ensuring delivery of IP traffic despite failures to the WAN. The RC technology has become a critical and central component in our network," concluded Wittstein.

CONNECT Computer continues to sell and utilize Router Clustering

devices. CONNECT is pursuing several opportunities including a 45 site WAN to a new customer requiring redundancy for all of its frame relay sites. Using RC technology, the client can use inexpensive DSL to provide failover for every leg of its WAN. The customer will achieve a very short ROI.

This simplified diagram illustrates how router clustering devices helps CONNECT Computer and its clients achieve a redundant, highly available, and fast VPN by bonding two or more lines from each site. The router clustering technology also provides additional security of data transmission utilizing its MPsec technology, which sends IP packets randomly over the multiple lines.

Summary

Benefits and Features for End Users

- Dynamically senses router status, and automatically reroutes traffic to available lines when services fail
- Intelligent load balancing of IP traffic without BGP
- Bonds any combination of T3, T1, E1, E3, DSL, ISDN, cable or wireless connections
- Sits transparently in a network
- Plug and play solution to prevent WAN downtime

Does not require any hardware or software at the ISP site

Benefits for ISPs, Telcos, and ASPs

- Sell more lines to existing customers for speed, last mile

redundancy and reliability of their WANs or to provide managed services

- Sell additional lines to your existing customers from different POPs to provide reliability, redundancy and speed
- Sell multiple data lines at multiple locations
- For cost conscious customers, sell multiple DSL or T1s, and RC will bond the speeds to provide a high-speed connection

For Frame customers, sell a VPN solution (managed or CPE based) as a back-up to their frame networks

How ISPs, Telcos, and ASPs Can Sell to Their Competitor's Customers

- Sell additional lines to the competition's customers without displacing their current provider. No BGP programming or cooperation of ISP is needed
- Sell a managed VPN solution to the customer who already has a VPN service from a competitor. Your VPN service provides backup as well as increased speed

Ragula Bhaskar, Ph.D., is the president and chief executive officer of FatPipe Networks, a developer of router clustering technology. For more information, please write info@fatpipeinc.com