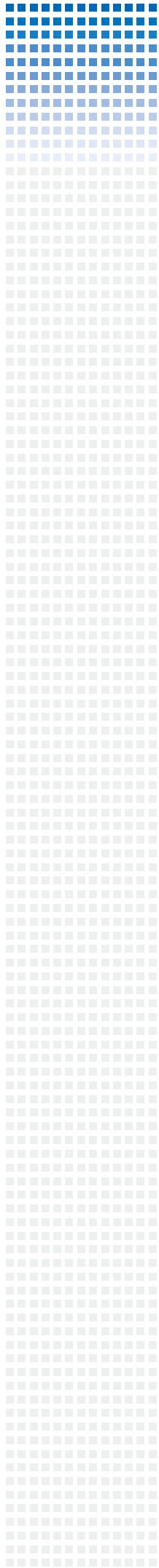


AscenVision[®]

Successful Story of **F1**



Background

Formula one racing is all about winning. Only the car first to cross the checker flag is the winner. In addition to good engine and chassis design, perfect setup of the car specific to the particular race circuit condition is also critical to the success of the team.

A European based F1 Racing team was looking for a solution to ensure their WAN connectivity to transmit important racing telemetric data between the pit garage and the Headquarter. The telemetric gathered from the track to the HQ lab is critical information for fine-tuning the setup of the racecar specific for the race track conditions. As the manufactures pouring in more money in advancing the racing technology, ensuring reliable delivery of the telemetric for analysis and optimal fine-tune has become a critical factor for the success of each race.

Challenge

Before the race or even the qualifying run, drivers have to perform many practice runs. In addition for the driver to get familiar with the track and conditions, gathering telemetric is another important part of the process, where many sensors were put on the race car to gather various data such as suspension damping, aerodynamic data, engine output, gear ratio, tire temperature, etc..

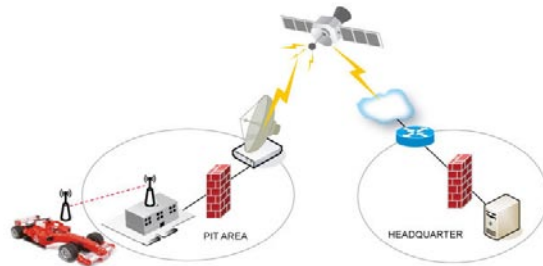
After the practice run, all the data is sent back to the headquarter where advanced lab setup and supercomputer are used, in conjunction with these telemetric data, to obtain the optimal settings for the race car, specific to the current track conditions. The setup configuration data is then transmitted (via WAN link) back to the race team on site to fine-tune the car.

Due to the diverse WAN connectivity conditions in various circuits F1 teams traditionally rely on its own satellite link for telemetric and configuration data transmission. With increased competition and complexity in advanced race car design, satellite link bandwidth is no longer adequate for such purpose. There are also diverse weather conditions affecting the effective throughput of the links, as well as the long latency problem commonly associated with satellite links. High quality leased lines offered by the race circuit operators, on the other hand, are often extremely expensive, and inflexible.

Cost-effective and highly reliable WAN connectivity specific for such purpose then becomes a hot ticket item for F1 racing team. With the proliferation and increased price/performance of

broadband lines, trunking multiple broadband lines become an attractive solution for such a specific purpose, enabling the team to enjoy higher bandwidth with leased line reliability.

The critical component going into this route of trunking cheaper broadband line is the WAN Load balancing device.



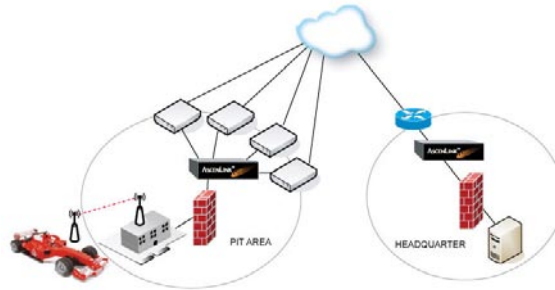
Why AscenLink

The team chose AscenLink as the solution after the careful selection and comparison for AscenLink's best integrated solution for total WAN traffic management. Four key advantages of Ascenlink are:

1. AscenLink supports Tunnel Routing in the network with dynamic IP address, which matches the requirements of the F1 racing team to provide VPN tunnels on multiple links. Further more, AscenLink can also do VPN load balancing in Tunnel Routing so that VPN packets can be transferred smoothly and with no downtime.
2. AscenLink supports HA (High Availability) so as to give the team more confidence. AscenLink can perform link backup not only WAN Links but DMZ and LAN as well. Further more, two Ascenlinks can be used to backup each other.
3. AscenLink's WAN link health detection technology can monitor and identify each WAN link's status. Such status information then is used for AscenLink to do intelligent load balancing.
4. AscenLink integrates the functions of Auto Routing, Multihoming, Firewall, Virtual Server, etc.. AscenLink can be deployed in various network environments without minimum modification to the existing network structures.

Solution

Two AscenLink are deployed in this case: one is inside the Team truck traveling all over the world, and the other is deployed in the headquarter. Each AscenLink integrates several WAN links together and dynamically balance the load of each link's and then VPN packet can be transferred in WAN via Tunnel Routing. In case traffic jam occurs in WAN, the bandwidth can be expended by plugging in more WAN links while needed. Furthermore, the unexpected failure of some WAN links will not affect the connectivity between the truck onsite racing circuit and the headquarter and the goal of non-stop reliability and higher speed is achieved.



Benefits

1. Bigger bandwidth at lower cost

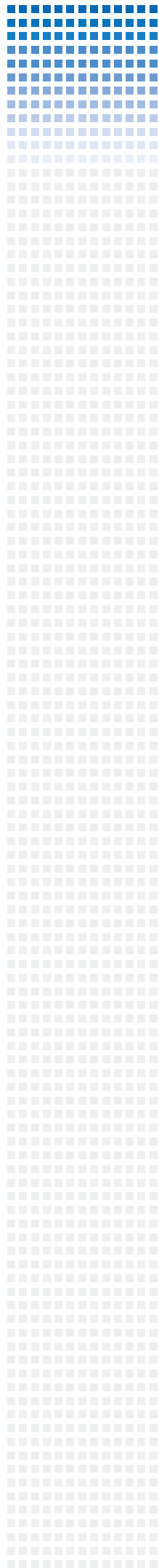
AscenLink aggregates multiple WAN links and provides load balancing to improve the total bandwidth usage. Besides, AscenLink resolves network congestion by taking advantage of various advanced load balancing algorithms such as Optimum Rout, Round-Robin, By connection, By traffic and so on. The combination of load balancing and fault tolerance algorithms enables customers to enjoy higher effective bandwidth with lower cost while maintaining the same level of service quality.

We use the following case to illustrate the point: Let's take the WAN connectivity costs in China for example:

| | Bandwidth | Monthly Rate |
|------|-----------------|--------------|
| DDN | 2Mbps | 800 USD |
| ADSL | 512Kbps×4=2Mbps | 15×4=60 USD |

In other words, with AscenLink to aggregate four ADSL lines, customers enjoy the equivalent effective throughput of 2M at less than one tenth of the original cost, while enjoying the same if not higher level of WAN service quality.

The same ROI applies to the case of F1 racing application. In some racing circuits, only with AscenLink can the team achieve higher bandwidth due to the limited availability of traditional



leased line bandwidth. Last but not least, the capability of supporting dynamic IP in tunnel routing renders AscenLink the only plausible solution for such unique application. It is no surprise that the CTO of the F1 racing team made the comment of “If AscenLink can not do it, then I would imagine no other solution in the world can do it”.

2. Improved reliability and stability

In addition to higher price/performance WAN connectivity, AscenLink also addresses the issue of single WAN link failure by its intelligent WAN link fail-over mechanism. The dual machine HA deployment further ensures 100% WAN link reliability.

AscenLink guarantees the reliable and stable network performance with its powerful technology backup. AscenLink is a kind of multiple functional network equipment, which can meet the various needs of different network environment.

To address the problems of slow access from LAN user to WAN server, the Auto Routing function in AscenLink enables the LAN users to connect to the WAN as if going through a Trunking of multiple WAN links to achieve the goal of higher speed and reliability.

To address the problems of slower web server responses, and the risk of service downtime due to single WAN link failure, AscenLink’s multihoming function enables high quality webservices to the WAN users without the expensive BGP agreements among multiple ISPs, as well as the complex BGP programming.

To address the issues of VPN load balancing in a dynamic IP network, the Tunnel Routing function frees the risk of VPN downtime and supports the VPN bi-directional load balancing and fault tolerance.

AscenLink’s Optimal Routing function is designed to address the slow access issues across different ISP due to ISP peering structure. In addition to the major function listed above, functions such as Backup Line, bandwidth management, Cache Redirection, Firewall, as well as Persistent Routing make AscenLink the best integrated solution for total WAN traffic management.

3. Ease to Deploy and to operate

AscenLink supports three operating models, ARP Proxy, SwiftNAT and No-NAT to ease the deployment without modification the existing network structure.

Ascenlink provides an intuitive Web-Based UI, through which administrator can easily make the configuration and management. All the management functions are classified into 5 categories, with which the network management and planning is simplified.

Last but not least, AscenLink provides LinkReport to assist monitoring of each WAN link status and statistics including bandwidth usage, traffic analysis and connection, etc. so as to facilitate network management and trouble shooting tasks.