Case Study: METTLE SE

Vertical:Campus/EducationGeography:Trivandrum, Kerala, India

Client Profile

This institution is the oldest engineering college in the state, established in 1939 in the then Travancore State. The institution owes its foundation to the vision of the then Maharajah of Travancore. The institution has eight full fledged departments offering undergraduate, postgraduate and Doctoral Programmes under University of Kerala. The college has around 3500 students, 240 teaching staff and 500 non-teaching staff. According to a study sponsored by the Department of Science and Technology, Government of India, this client was in the list of top ten Engineering Colleges in India.

Problems to solve

Campus is connected to the Internet by multiple ISPs to satiate the demand for high bandwidth necessitated by around one thousand Internet connected computers. WAN links provided by the ISPs are not of equal bandwidth. While load balancing the links of unequal bandwidth has to be handled so as not to saturate the link with low bandwidth and to avoid under utilisation of higher capacity links. One ISP charge extra once a set data transfer limit has exceeded,load balancing has to be implemented in such a way that the link with data transfer limit should be kept under the limit to avoid excess billing. College LAN subnets are not secured from Virus attacks from the Internet as they don't have Gateway Antivirus installed in their network. Content Filtering is to be implemented to filter out offensive content as a part of their Internet usage policy. College has subscribed to e-journals for its staff and students and it must be accessible securely from remote locations also. Some servers hosted in the campus have to be made accessible from the Internet.

The device should be able to take power from two independent high availability power sources the college maintains. To comply with this the hardware devices must be powered from two independent power sources. This was of prime importance.

Solution

Mettle SE3700 was deployed at the College to resolve their networking issues. Mettle SE3700 is the ideal platform considering the large number of computers (more than one thousand) in their local network. With its multi-core architecture Mettle SE3700 can easily support that many number of users and the services demanded by them. The robust hardware architecture works without stressing itself even in a high bandwidth and large user base local area network.

Mettle SE3700 has a redundant power supply system, with two hot swappable SMPS units, which takes power from two different sources. This ensures that Mettle SE3700 is never down due to power supply related issues, unless both power supply sources are down simultaneously, which is very rare. The

redundant power supply unit in Mettle SE3700 will again save it from a downtime if one of the two SMPS units breaks down. Solutions can be further classified into:

- 1. Mettle SE for Link Load Balancing
- 2. Mettle SE as a Firewall, Gateway Antivirus and Content Filtering Engine
- 3. Mettle SE as a VPN Server
- 4. Mettle SE for Port Forwarding

Mettle SE for Link Load Balancing

College is serviced by three ISPs and their WAN links, of unequal bandwidth, are terminated at Mettle SE. Mettle SE handles the bandwidth aggregation and load balancing of the WAN links. Point to note is WAN links of the ISPs are of unequal bandwidth and comes with data transfer limits. In this scenario Internet usage has to be distributed across various links in such a way that the link with the highest bandwidth should handle most amount of the data transfer. Mettle SE handles the data flow effectively by sending out data through the link with highest bandwidth and maximum data transfer limit. The two benefits of doing this are:

- 1. The link with limited data transfer limits would be sent with lesser amount of data through them which will enable them to stay within the transfer limit set by the ISP.
- 2. The link with low bandwidth is prevented from getting saturated, providing a better overall performance to users.

Mettle SE also provides automatic link fail over feature. In the event that a WAN link goes down due to ISP problem, Mettle SE automatically removes it from the load balancing pool. The Internet usage is then split between other active WAN links in the load balancing pool. Once the failed WAN link is back up it is automatically added back into the load balancing pool.

Mettle SE as Firewall, Gateway Antivirus and Content Filtering Engine

Mettle SE secures computers and servers in LAN in three ways, firewall, gateway antivirus and content filter. Firewall in Mettle SE secures the LAN from unauthorised access from other networks. Firewall rules combined with Aliases feature in Mettle SE is used to restrict unauthorised access to resources to users from different LAN subnets. Publically accessible servers are hosted behind Mettle SE's Firewall to secure them from attacks and unauthorised access. Servers are still made available to users on the Internet, which is mentioned later in this article.

Mettle SE boasts of having an inbuilt Gateway Anti Virus engine which filters all viruses and worms coming from the Internet before reaching the local area network. The Gateway Antivirus engine inside Mettle SE automatically keeps itself the virus definitions updated. This helps to identify and quarantine even the latest virus that has been released on the Internet. A huge risk of virus infections of the computers in LAN is thus solved by Mettle SE.

Every organisation/institution that provides Internet connection to its people have to make sure that it is used in accordance with the Acceptable Usage Policy (AUP). Such Internet usage policies are hard

to enforce on a one-on-one basis. The Internet usage policy is best enforced at the point of presence of the WAN links, which ensures that unwanted content is not fed to the LAN subnet. Mettle SE made it possible to implement the Internet usage policy at the college. Mettle SE scans the request sent by the computers on the LAN subnet, and if the content requested by user is found to be against the policy, Mettle SE blocks the content from being served. This helps in keeping the local network of the college free from offensive content from the Internet.

Mettle SE as VPN Server

This college has been ranked highest among engineering colleges in India in e-journal usage. E-journals providers restrict access to their servers only to registered IP address blocks. This means it is impossible for a staff or student to access e-journals remotely. Mettle SE solves this problem effectively using PPTP VPN service.

Members of staff and students are given with a PPTP user name and password pair. They then connect to Mettle SE via PPTP using their credentials. Once they are connected Mettle SE provides them restricted access to the campus network. This enables them to access the e-journal websites remotely.

In addition to this, VPN service also allows them to access Intranet websites and centralised file storage systems. The VPN service in Mettle SE helped them to access the IT resources in the campus irrespective of their location, without compromising security.

Mettle SE for Port Forwarding

Many organisations, large and small, have servers hosted in their internal network that needs to be accessed from the Internet. Assigning public IP address to these servers is generally avoided due to potential security risks. So servers are hosted behind Mettle SE and is well protected from attacks, viruses and threats by Mettle SE's robust Firewall and Gateway Antivirus engine. To make it available on the Internet Mettle SE uses port forwarding which transfers IP packets between the local IP addresses of the servers and an allotted public IP address for a specific port. The result is, the server can be accessed from the Internet but at the same time it is kept secure, behind Mettle SE.

Conclusion

The college is satisfied with the performance of Mettle SE3700. Mettle SE is the secure gateway for their connections to public networks and secures the servers and computers in the local networks. Mettle SE does bandwidth aggregation of three WAN links of unequal bandwidth providing the campus with high bandwidth and at the same time provides weighted link load balancing. Remote connections are managed by Mettle SE providing staff and students with access to their college resources from the Internet.

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