



VIPRINET LARGE-SCALE VPN DEPLOYMENT

EXECUTIVE SUMMARY

Viprinet may be integrated into already existing networks quite reasonably, and extends these quickly, flexibly and reliably at the same time. It enables to replace existing infrastructures step by step by a cheaper solution that offers higher availability. In addition, Viprinet offers emancipation and a huger independence from business ISPs used to date, thus increasing the bargaining position of the enterprise in relation to single Internet and solution providers.

INTRODUCTION

Many enterprises operate corporate networks that have grown over the years some of which span across countries and sometimes even across whole continents. In many cases, these networks are either operated entirely by a single huge Internet provider such as T-Systems, AT&T et al., so, as a consequence, these corporate networks are administered externally. The contracts offered by these providers mostly have a long term and are inflexible. In addition, the providers create dependencies in terms of availability, service quality, and QoS with the enterprises whose networks they operate.

This is usually reflected in the time needed for the implementation of new or temporary locations into a corporate network, as this is solely owed to the performance, the ability to supply, and the flexibility of the chosen providers. It may at times happen that a huge Internet provider cannot offer adequate connections (MPLS, T1, T3, SDSL) at a new location or may only provide them at exorbitantly high costs or with a long waiting period. As far as international connections are concerned, the respective provider who has been chosen by the enterprise must have their own infrastructure in all respective countries or must be ready to cooperate with local providers. Wherever such cooperation must be negotiated in the first place, the local site-to-site connection may delay dramatically. In such cases, the enterprise in question might only help itself by choosing a conventional VPN solution without bonding like from Cisco or Juniper.

In all such cases, Viprinet offers the remedy needed, because:

- The Viprinet VPN technology is not based on a single connection, but rather on the bonding of several Internet connections of different Internet providers and technologies.
- It takes only a single access technology (e.g. 3G) to realize a connection via Viprinet. At a later stage, additional WAN media may be integrated into the bonding setup during operation. This way, Viprinet infrastructures in general are operational extremely quickly, as no cables need to be laid in order to solve the connectivity problem.
- In addition, the Viprinet VPN technology offers a comprehensive QoS with fine-grained configuration.

Owing to its huge flexibility, Viprinet technology can, as a rule, be integrated into already existing corporate networks without any problems. Different integrated failover systems such as the bonding of several different Internet connections, Node Stacking for Multichannel VPN Routers and the Hub Redundancy System for Multichannel VPN Hubs guarantee the required quality and reliability of the connection. Viprinet partners provide the necessary worldwide service in case of a breakdown.

This whitepaper explains how Viprinet can be used in connection with a large and externally administered corporate solution and by that create a significant added value for your enterprise.

SEVERAL APPROACHES

Viprinet may harmonize and complement already existing network infrastructures in different ways. In the following, three potential operational scenarios will be described – this list of examples is, however, not final, as Viprinet infrastructures are very flexible due to their modular structure and may thus be used in plenty of other fields. Please contact us so we can jointly find a solution for your specific connectivity requirements.

Today, MPLS is considered to be a gold standard whenever large enterprises wish to connect their locations with one another in compliance with defined service guarantees. Therefore, all examples demonstrated here shall refer to MPLS; the demonstrated solutions, however, may also be applied by other business connections of large telecommunication providers such as T1 or T3.

1. International Site-to-Site VPN

In many countries, MPLS enables the use of relatively broadband Internet connections. Unfortunately, this technology is subject to limits too: MPLS is not available everywhere and, at the same time, it is extremely expensive.

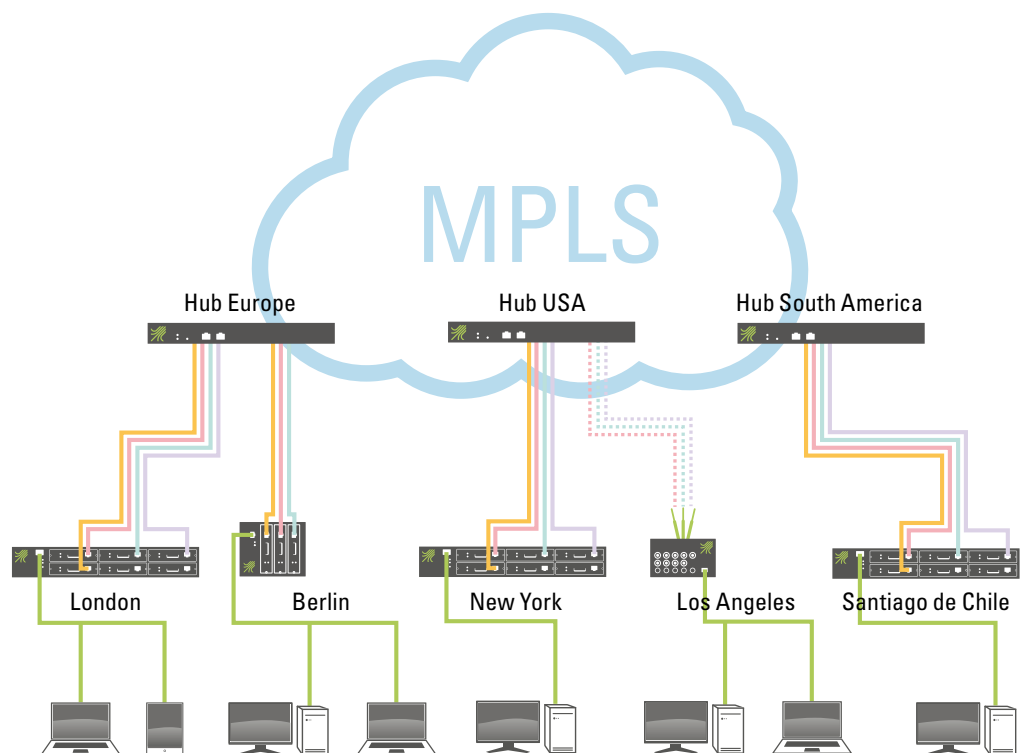
A large international enterprise with legal seat in Germany aimed at connecting several larger and smaller locations in different countries all over the world via MPLS. When encountering the problem that several of his locations were situated in very remote places, it showed that realizing full connectivity via MPLS would be pointless due to cost and logistic reasons.

In order to decrease costs for the connection while upholding a constant quality, the enterprise decided to continue to utilize MPLS for its transcontinental connections among the regional head offices. However, the connection of the local sites to the MPLS handover points should be summarized by countries and continents and realized via Viprinet.

Therefore, one Viprinet Multichannel VPN Hub for each continent (Europe, North America, South America) was installed in a sufficiently connected data center while the different locations were fitted with a Multichannel VPN Router adapted to local needs. This way, data traffic from Berlin and London terminates at hub Europe, traffic from New York and Los Angeles terminates at hub USA, and traffic from Santiago de Chile terminates at hub South America; the hubs are then connected with each other via MPLS.

By that, the international enterprise now benefits from a continuous high-quality site-to-site VPN that, as a consequence of country-specific bonding of consumer-grade offers, is much cheaper and more efficient than a pure MPLS connection could ever be.

In brief: Here, MPLS and Viprinet work hand in hand.



2. Redundant Site-to-Site VPN

Quite often, large telecommunication providers charge expensive fees for their corporate MPLS solutions. This is especially the case when the required MPLS infrastructure is not available at the place of operation, and has to be set-up in the first place.

This is what a German company had to learn that had assigned a large provider with the connection of its locations. While the company no longer had to take care of its location connectivity, it was also no longer able to change the existing network infrastructure or to intervene in case of a failure, thus being entirely dependent on its provider. The result was that connecting a new location generated considerable administrative costs since the provider had to check whether MPLS was available for this location. In some cases, realization of a new site-to-site VPN was delayed by several weeks and months, or the costs for it increased dramatically leaving the company with nothing it could do about it.

With the help of Viprinet, the company could not only regain a part of its independence, but also significantly increase the availability of its locations. Here, Viprinet technology was installed in parallel to the existing MPLS infrastructure. For that, a Viprinet Multichannel VPN Router was installed at each site next to every MPLS router and fitted with Viprinet Hot Plug Modules according to the conditions on the spot. This way, favorable consumer products like DSL and LTE can now be bonded to a highly available broadband connection that transmits the fragmented data stream to a Viprinet multichannel VPN hub that is installed separately from the MPLS infrastructure in a data center. Thereafter, the hub reassembles the data stream correctly, decodes it, and forwards it to its ultimate target on the public Internet (or intranet).

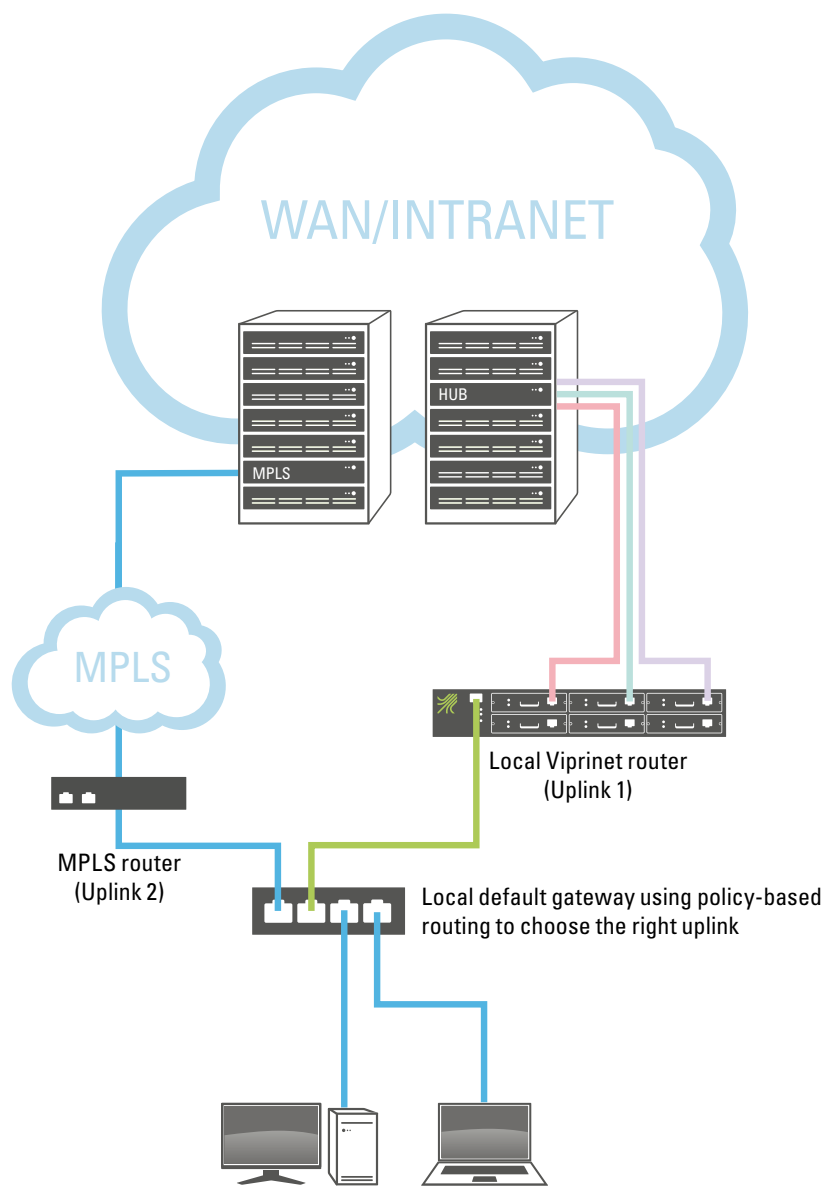
The decision which data traffic to route via which separate system – MPLS or Viprinet infrastructure – is at the company's discretion; all it takes is a gateway with an upstream connection to both systems that distributes the data traffic accordingly.

As far as the company is concerned, such a redundant site-to-site connection offers many advantages:

- The company may decide dynamically in accordance with availability and requirements which data traffic shall be routed via which connection;
- In case that the externally managed MPLS solution should fail or be disrupted, the location would nevertheless be connected to the Internet and to the company's intranet. Thus, troubleshooting times are no longer a threat – neither is their financial burden. This means that the company is completely independent from the availability of the Managed Service;

- As a result of the using two separate connections, there is much more bandwidth available in total;
- Viprinet may be installed without depending on the Internet provider of the managed service. This means that one's bargaining position in relation to such providers is considerably increased, as, due to the parallel infrastructure, the transition from MPLS to Viprinet can technically be realized at any time and smoothly executed, if necessary.

In brief: Here, the existing MPLS infrastructure continues to exist at a site whereas Viprinet is installed separately, and both connectivity solutions are operated in parallel.



3. Integration of MPLS into a Viprinet Infrastructure

Sometimes, the docking or adding of such a flexible connectivity solution like Viprinet to a relatively rigid MPLS infrastructure is not enough. This often happens whenever the total of the available reliability and bandwidth have to be increased for the benefit of the enterprise connectivity. In order to accomplish this, the capacity of an MPLS infrastructure would have to be increased, a service for which Internet providers ask good money. It is exactly that cost explosion that can be prevented by integrating the MPLS system into a Viprinet infrastructure, as Viprinet may achieve an increase in capacity by bonding cost-effective consumer products such as DSL or LTE.

A media agency that concentrated on solutions such as Citrix and Cloud Storage applied this measure. As a result of the special dependence on a permanent connection for any applications hosted in a data center, this client had an early interest in the MPLS concept across which his regional sales offices could be connected with the data center at guaranteed service levels. While at the beginning this solution seemed a feasible way, the limits of this set-up showed quite soon when disproportionate growing the demand for bandwidth grew disproportionately – especially in combination with the hosted storage solutions. Although the client's Internet provider would have been in a position to provide higher bandwidth for client's MPLS connection, this would have resulted in an unreasonable increase in running costs for the still very young agency. At the same time, classic and thus quite cost-effective consumer Internet connections such as cable, DSL, or mobile communications were available at the respective locations.

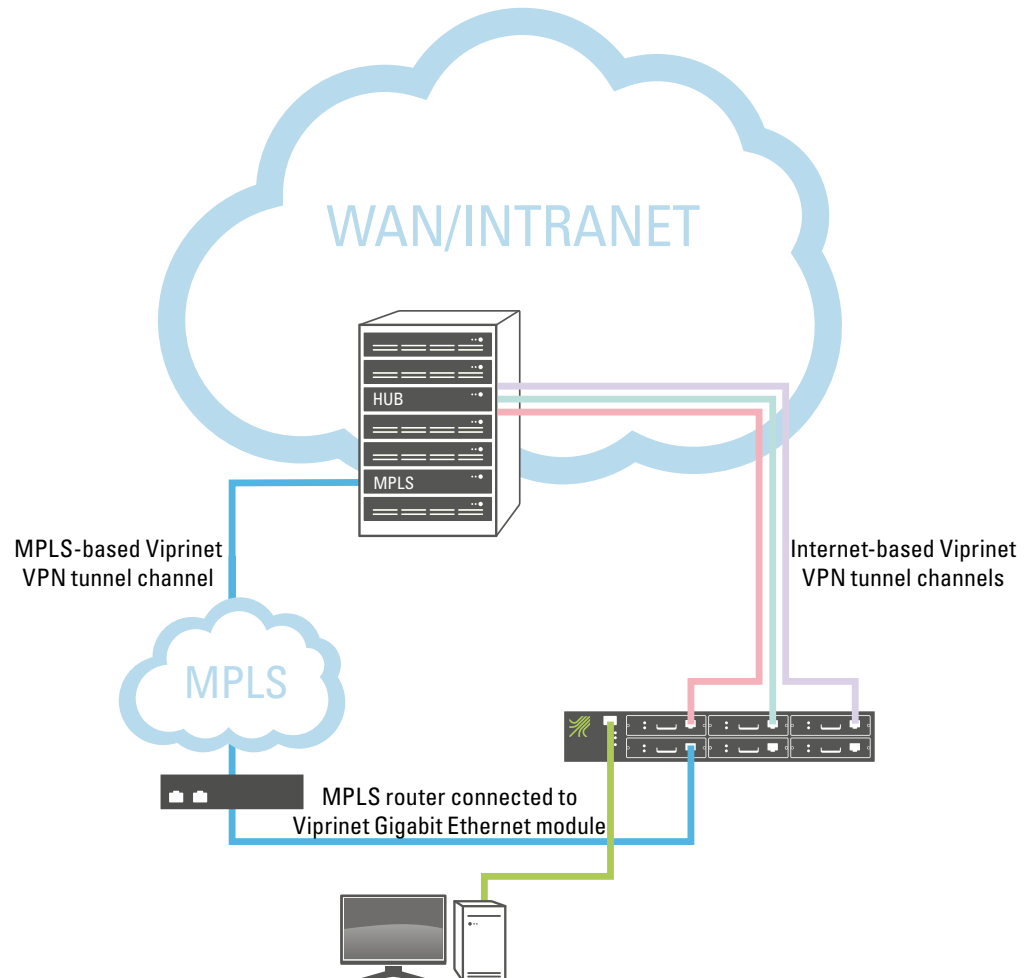
Viprinet then developed an individual solution in cooperation with the client that allowed including the existing MPLS connection into the Viprinet infrastructure that was based on cable and LTE connections. Now, Viprinets' own QoS system distributes a large portion of the interactive data traffic onto the optimized MPLS connections that are outspokenly well suited for short durations. At the same time, the synchronization of local folders as well as ordinary Internet traffic and offsite backups to the NAS infrastructure in the data center predominantly use cable and LTE connections. In case one type of connections fails, the data transmission is continued smoothly across all other available connections.

The advantages especially compared to redundant site-to-site VPN are obvious:

- As MPLS becomes part of a Viprinet infrastructure, less maintenance is required.
- The local gateway that (to date) has to take intelligent decisions which traffic to route via which connection is no longer needed; instead, QoS rules and classes may be determined and configured optimally in the web interface of Viprinet routers and hubs accordingly.

- If the MPLS solution that has been set-up in parallel to Viprinet as described in the second example fails, the data stream is cut off and the respective user session has to be re-established. Should the MPLS connection described in this example fail, only the total bandwidth would be reduced – already established user sessions remain uninterrupted.

In brief: Here, the previous MPLS infrastructure is being integrated into a Viprinet solution.



However, at this point we'd like to emphasize that such a setup is much more complicated than the other two drafted solutions, since a number of prerequisites have to be met that must be checked in advance. In this special case, the Viprinet hub in the data center had to be accessible via the MPLS network and via the Internet across a single WAN port IP address. Here, this was accomplished via a separately addressed transfer network between the VPN port of the hub and the gateway that was connected to the MPLS and the Internet. The required VPN tunneling connections could be transmitted into this transfer network via destination NAT. In other setups, it may, for instance, be necessary that the MPLS provider make configuration changes to the MPLS infrastructure.

Upon implementation of such a scenario it is mandatory that an experienced network engineer drafts and structures the connectivity solution diligently as this setup must be adapted absolutely individually to both topology and type of connectivity (layer-2 or layer-3 connection, T1, T3, etc.).

GENERAL REQUIREMENTS

In order to use Viprinet profitably, enterprises require at least two different kinds of Internet access technologies and Internet providers at their locations, according to the motto "The more technologies and providers, the better". This is the only way that line failures caused by cut-off lines, overbooked radio cells, or poor mobile radio reception can be satisfactorily compensated.

The location for the remote station – the Viprinet Multichannel VPN Hub – must be equipped with a suitable connection to the Internet and to an existing corporate network. In general, this will be a spot in the company-owned data center or in a data center of the Managed Service provider.

Regardless of the attempted scope: Competence in the area of IT or networking, respectively, is indispensable for a successful switch to the Viprinet solution. As a result of the complex settings for Viprinet Multichannel VPN Routers and Hubs, enterprises usually need experts with specialist knowledge in the field of network technology, either by their own employees or by a Viprinet Bonding Service Provider. The latter provide their clients with a wide range of services in all Viprinet matters, and they also cover, amongst others, the implementation and maintenance of Viprinet solutions.

If you with your enterprise have outsourced your IT department to a large telecommunications provider like Telefonica, T-Systems, or to any other Internet provider as many of the larger enterprises have done it, we advise you to do a cost-benefit analysis. Understandably, these providers have little interest in loosening their clients' dependency or in advertising to switch providers, respectively.

GET STARTED TODAY!

Start out with a cost-benefit analysis and balance out whether you would prefer to react quickly and flexibly to new requirements from your corporate network by using Viprinet, and for that acquire IT competence; or if you are prepared to accept slow-downs from the large providers in striving towards a higher reliability, bandwidth, and along with that work efficiency.

After that, please answer the following questions to ensure the success of your Viprinet solution right from the start:

1. Are there any alternative Internet providers at the respective location?
2. What are your enterprise's requirements in relation to bandwidth and latency?
3. Which applications do you use?
4. Which services do you use from where to where, and which bandwidths do these services need?
5. Which locations have to communicate with one another?
6. Would it be beneficial for you to rather operate a hub for yourself or to lease one?

The more detailed your own requirements profile is, the easier and quicker are we in a position to build a Viprinet infrastructure in your enterprise together with you.

Please do not hesitate to call us at: [+49 6721 / 490 30-0](tel:+496721490300)

We and our partners are looking forward to consult and support you with the concept, planning, and implementation of your connectivity project and beyond.