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# Internet aggregators evolve to meet enterprise internet VPN momentum

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# Summary

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## Catalyst

Automation is familiar ground to network operators. The history of telecommunications is one of increasing efficiency to lower costs and improve service experiences. Survivors have continuously improved efficiency to keep margins that return capital, to re-invest in the business. Private WAN services are relatively complicated, which increases cost. Shifting some business traffic from private WAN services to public internet VPNs could be a simpler, cheaper alternative. The quality of the public internet has improved: The provider service experience has become more consistent, there are fewer disruption events, and traffic performance is better on average. Cloud services adoption flattens out enterprise networks to simpler hub-and-spoke or partial mesh architectures. But if an enterprise wants to stitch together a WAN from internet service providers, coordinating many different parties is a recipe for headaches and service problems. For this reason, many network providers handle internet aggregation. Internet aggregation is a managed service that smooths over the wide differences of individual internet providers and present the enterprise with a coherent service experience.

## Omdia view

Omdia predicts that MPLS VPN revenue stagnated in many markets and has started a very gradual decline. MPLS ports and growth in bandwidth demand is offset by price pressures. Larger enterprises' new bandwidth hunger has shifted toward internet VPNs. In some situations -- where applications tolerate some variability, and providers and markets that offer reasonably consistent internet performance -- internet VPN works as a private WAN substitution. In those circumstances, internet VPNs are acceptable secondary or failover connections for large branch offices. Internet VPNs also found a role as primary connections for smaller branches. Internet VPNs (with or without SD-WAN) let enterprises change their VPN configuration in software, rather than waiting for a partner to make a network change on their behalf. Security over the public internet is also achievable. The growing collection of these practices has been summarized as "secure access service edge."

Enterprises have of course used best-effort internet access for decades. But promoting internet VPN as a full-time MPLS VPN alternative puts greater responsibility on the public segment, and here working with the wide world of internet service providers (ISPs) can prove challenging. Individual ISPs have great variations in price, service levels, and access technologies in use: hence, internet aggregation. One network provider is appointed lead managed services partner, pulling together third-party networks and access. From selection and quoting through to operations, troubleshooting and remediation, the internet aggregator can bring order and manageability across national, regional, and global access options. This is a far more elegant solution than for an enterprise to try and handle purchasing, operations, and management of up to dozens or more individual "best of breed" local and regional internet service partners.

## Key messages

- The rapid cloud-ification of enterprise networks is a major factor enabling enterprises to favor internet VPN for their new purchases instead of private WAN. In some circumstances simple, high-speed, and inexpensive internet access is a better option than complex, slower to deploy, relatively costlier private WAN services.

- There is operational complexity in working with many internet services partners. Internet aggregators pull together agreements with many hundreds of partners and services. Therefore, they can offer fast and accurate provisioning and services delivery; ensure quality of service that is consistently acceptable; and present a unified services and support experience.
- While internet aggregators help enterprises add internet VPNs into their enterprise network, large enterprises still retain private WANs. There are interdependencies between private WAN service logic – guaranteed QoS levels and routing tables – and their business applications. A jarring shift to internet puts applications at risk.
- ISPs have levels of sophistication from Space Age to the Stone Age. Aggregators work with partners at their level of automation. More automated is not always better: Seemingly advanced partners may have faulty systems and/or unreliable data. Part of the aggregator’s job is to be intelligent about how to engage with each partner most effectively.
- Accurate network mapping for price quotes and provisioning is a major issue. Some partner operations maintain rigorous accuracy; others resemble the card game “Go Fish”. Aggregators need to hedge when a site that seemingly had a sub-\$250 per month service available, has a surprise \$25,000 construction charge.
- Managed internet aggregation is a low-margin business. Competitors selling these services generally bundle other services to make the business more profitable. Managed SD-WAN services are an obvious value-add, as are professional and managed services around security, cloud connectivity, and site installation/support.

## Recommendations

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### Recommendations for enterprises and service providers

A primary reason for *enterprises* to consider internet aggregators is to have the freedom to choose among many ISPs, to build enterprise network segments with internet VPNs. To use public internet for corporate traffic, the enterprise needs a level of information insight, management control, and basic accountability over its subscribed internet services. Few enterprises like the idea of buying from a long list of ISPs directly. The enterprise would need to manage different contracts and schedules, service terms, operations processes, and support options. Choosing an internet aggregator puts one partner in charge of supplying services from other internet providers and manages relationships on its behalf.

Businesses that want to shift corporate network segments over to internet VPNs need to vet the risk. Applications workloads facing variable and unpredictable performance can break down. Moving to internet is less of a gamble if sites are in metros near major traffic hubs and cloud centers, ported applications are reasonably fault tolerant, and selected ISPs have a decent business services track record.

There are cases where enterprises want internet VPNs but need solid applications performance and results are less sure. Here, enterprises have a choice of different places to turn for aggregators. General categories of internet aggregators, and what each can bring to improve performance beyond general-purpose internet traffic, include:

- **Large network providers** can source and manage internet services end to end, pulling traffic into their own internet backbones and applying class of service (CoS). This tactic may limit access options and cost more, but it yields a more consistent internet experience.

- **Some alternative providers** operate a global private backbone that the enterprise reaches through any internet access point; some other providers analyze and optimize internet traffic to various degrees across public core infrastructure. There are yet more players that tie optimization intrinsically to their own SD-WAN platforms and services.
- **Internet aggregators** without their own internet backbone are still effective. They have experience with service quality of many internet providers and the dynamics between providers. The aggregator can recommend preferred options balancing consistent performance vs. cost.

In any event, enterprises considering internet VPNs must assess and be comfortable shifting workloads onto the public internet. The level of performance and control they need over applications traffic may dictate the types of internet aggregators and types of internet access partners they can consider, or whether they use an aggregator at all. An aggregator can help the enterprise test the viability of a shift to internet VPN, helping to make the go/no go decision. Any enterprise needs to step carefully of course and needs a contingency plan. Dismantling the MPLS core, especially trying to rush a conversion, is an unnecessary risk.

For *service providers*, the internet aggregator role is demanding. Enterprises want their sourced internet service providers rolled together into a single service that is informative; easy to order, consistent to control, and simple to reconfigure; and still inexpensive. Beneath any internet aggregator's slick, customer-facing systems is a large ecosystem of suppliers that is wildly uneven in performance and sophistication. The aggregator needs the internal intelligence to know which partners to recommend in what situations; and how to interact with different partners across processes for fastest and/or most accurate success.

Any service provider can be an internet aggregator through sourcing and reselling these services. Even large internet aggregators have relationships and will buy from each other to plug potential gaps. A provider that wants to enter the business generally would have some direct sourcing deals with major ISP partners, augmented by third-party aggregators and network information brokers to fill in the blanks. For example, a provider in central Europe might find 80% of its footprint is covered by just four direct wholesale agreements; the provider might serve rest-of-world locations by sourcing and reselling from one or more global internet aggregators.

## Market status

### Defining aggregation

This report uses two terms: Network aggregation and internet aggregation. Both are types of services integration and management (SIAM) specifically for managing network services.

- **Internet aggregation** refers to a managed service that pulls together services from multiple third-party ISPs, potentially including its own internet services. The aggregator is a single point of contact that rolls up third-party service quoting and contracts; handles service orders and activation; provides monitoring, management, control; and deals with any troubleshooting and remediation. The aggregator may also layer its own premium services (e.g., security or SD-WAN) on top.
- **Network aggregation** is a super-set of internet aggregation, referring not just to internet services but any network services that are assembled for consumption. This includes MPLS VPNs and Ethernet and expands to other Layer 3 IP/Layer 2 switched services.

Any provider that works with third-party providers to extend network connectivity can describe itself as an aggregator, though some are more comprehensive in their direct coverage than others. In the old world of global MNC services, aggregation was less challenging because there were fewer major B2B choices. A large incumbent telco would buy national circuits and services from Orange in France, from Deutsche Telekom in Germany, and so forth. Today's network aggregation ecosystem is characterized by:

- **High volumes of partners.** A proper aggregator offers an option of major network providers in each market. This includes national incumbent and competing telcos, as well as fiber providers, broadband specialists and/or wireless broadband. The most expansive global internet aggregators have many hundreds – even a thousand or more – partners.
- **Webs of relationships.** Aggregators do not limit themselves to direct relationships. Where they do not have direct reach, they will source through other partners. For example, if an aggregator needs to reach enterprise sites in southeast Asia but has no direct partner agreements there, it may look to buy through partners that do have local agreements in place. There are also network information brokers that compile lists such as what fiber owners pass or connect to what buildings, so prospective buyers know what parties to approach for direct price quotes.
- **Quoting and provisioning intelligence.** When quoting contracts, network aggregators need to deal with data accuracy across many partners. Service order track records over time show what level of trust to place in partner data. The issue can be especially jarring if an enterprise expects low-cost broadband, then finds out getting service would mean months of delay and huge construction charges. Network aggregators must set expectations with clients and have contingency plans. Some sites where a preferred broadband option seemed to be readily available will turn out to be a mirage.
- **High touch, low margins.** Network aggregators must manage up to hundreds of provider relationships efficiently. Partners have different levels of process sophistication, order accuracy, and responsiveness, and will also vary on network quality and performance. An aggregator needs to smooth over the differences and present a single view. This involves a flexible mix of automated processes and manual work. Buyers expect a quality unified managed services experience. But they are not willing to pay a big premium over the cost of internet service itself. That means efficiency is key, and aggregator service margins are always being squeezed.

## MPLS VPN slows, internet VPN gains momentum for corporate networks

Verizon executives summarize the driver behind the enterprise shift to internet VPNs effectively: Enterprises are very satisfied with MPLS VPN, but now they just want to get to clouds. They want new services turned on quickly; they like more bandwidth at lower costs. COVID also accelerated the shift to digital and shift to cloud, by pushing workforces out of the office to internet-connected remote/home sites.

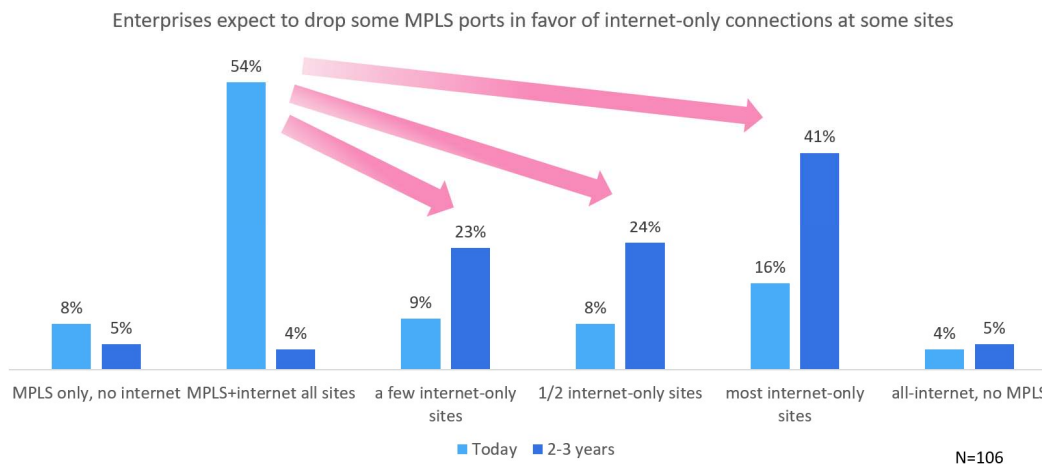
Omdia's measures of network satisfaction confirm MPLS is well-liked. An Omdia 2020 global survey of 106 large MNCs found that the average MPLS satisfaction was 7.90 out of 10. By contrast, the average satisfaction with internet services – granted, the expectations of the two types of network services are quite different – was 7.77 out of 10.

But high MPLS satisfaction will not stop a shift toward internet VPNs. As Figure 1 shows, only a few large MNCs worldwide (8%) use all MPLS and no internet at all. Even fewer (just 4%) use only internet and no

MPLS. Over the next two to three years, the poles at either extreme do not shift much. The MPLS-only segment will decrease slightly to 5%. The internet-only segment barely budges, at 5%.

But Figure 1 also shows a huge shift outside the extremes. More than half of large MNCs connect all their sites with both MPLS and internet today. Almost all these businesses expect to connect some, many, or most of their sites with internet-only access in the next two to three years. This represents a massive shift in towards all-internet, which means corporate traffic is carried by internet VPNs. From both quantitative surveys and qualitative discussions with IT executives, large enterprises already source internet services from a mix of dedicated, wireline broadband and wireless broadband internet; they are already used to choosing the best-suited access tool for the job.

**1. Figure 1: The role of internet VPN will grow in enterprise networks over the next 2-3 years**



Source: Omdia

**Summary takeaway:** The slow hollowing out of MPLS by large MNCs has begun, and enterprises widely expect to turn their attention toward internet alternatives. MPLS VPNs’ advantages are also its drawbacks: Careful top-down assembly and traffic controls guarantee quality but add to lead times and cost. Internet VPNs are more frequently a “good-enough” alternative for enterprise connectivity.

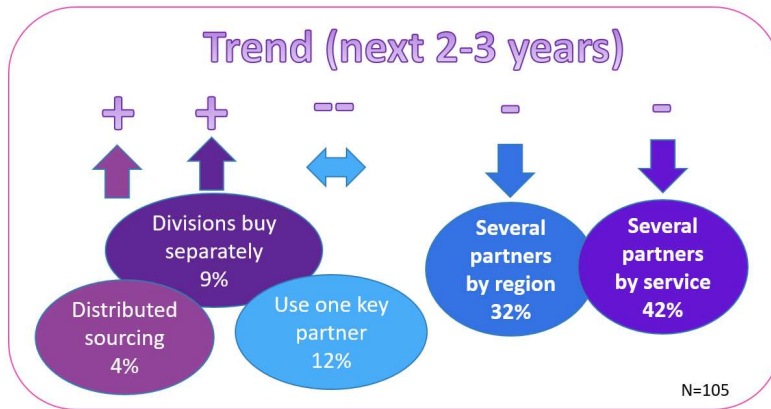
## Many large MNCs procure network services by region/by type of service

Large enterprise IT departments concentrate control over network contracting control. They fully centralize purchasing, or else roll up network procurement by region or some other way. As Figure 2 shows, about three-quarters of large MNCs divide their network services by geographic region (e.g., Americas, Asia, EMEA) or by type of service (e.g., MPLS, Ethernet, internet, managed network services, managed network security). Over the next two to three years, there is a weak trend toward more distributed sourcing, which gives business divisions and local offices more control over purchasing. But even in two to three years, a solid majority of enterprises still expects to source networks the way they do today: several providers, divided by region or by type of service.

Figure 2 below shows procurement for all network services. Specific to internet services, Omdia found that about 58% of large MNCs sourced internet access through their regional offices. But Omdia also believes buying is more fluid: The decision may be made one way, but global/regional headquarters and local offices

influence the buying decision. Specific to internet services, Omdia finds that 17% of surveyed MNCs consolidated purchasing through a single global authority. 25% of MNCs let local offices make the purchase decision, but in most cases the local office had to select from a list of pre-approved partners.

**2. Figure 2: Large enterprises mostly divide network purchasing by region and/or by service**



Source: Omdia

**Summary takeaway:** Most large MNCs prefer a middle ground between fully centralized and fully distributed network buying decisions. Few enterprises allow their local offices free rein to buy whatever internet access they want: There is value in managed and curated experiences. This preference to roll up purchasing means enterprises will expect partners to roll together the wide array of internet options for them: suppliers of access including dedicated and broadband, over FTTx/PON, xDSL, cable/DOCSIS, fixed wireless, or 3G/4G/5G LTE wireless. Dedicated internet can vary in performance quality. Broadband internet is a patchwork of technologies with wide variations in performance levels and support levels. Suppliers and available business internet plans also vary widely from one country to the next, and frequently within national markets. There is value in providers that can curate ISPs and match strengths against enterprise needs.

## Market dynamics

### Orange Business Services: global incumbent helping enterprises move to internet VPN with managed services

As with other major incumbents, Orange Business Services is a leading global supplier of large enterprise private WAN services. The company took note as enterprises took stronger interest in trends such as hybrid networks and SD-WAN.

Orange Business Services responded with Multi-sourcing Service Integration (MSI), a managed aggregation service launched in 2018 to give large enterprises a way to broaden their network options. The provider designed MSI to appeal to all possible entry points: enterprises that want to swap networks in one go; enterprises that want to shift networks at a pace of their own choosing; and enterprises that want a partner to take over contracts and manage migration to a new end state, rationalizing networks over time.



MSI aims to ingest whatever services and suppliers the enterprise feeds it, to manage under a consistent approach, fixing problems along the way. MSI management tasks include service desk; dealing with change management and problem resolution; and dealing with inherited third-party services, infrastructure, and contracts. MSI plugs into ServiceNow, to serve as a services broker for Orange Business Services' own as well as third-party services.

Orange Business Services has about 500 network provider partner relationships for MSI. The provider also can take over and manage endpoints by providers that are not (or not yet) part of its stable of partners.

Internet aggregation is not a high-margin service; the importance of MSI is to put Orange Business Services in the role of trusted advisor and managed network partner. MSI is an entry point for Orange Business Services to add other professional services and managed services, helping enterprise clients on their network transformation journey.

Orange Business Services continues to evolve MSI as a managed platform. It offers a MSI Essentials variant at entry level pricing, intended to bundle the provider's managed SD-WAN services with its wide choice of underlying global network options.

The provider is adding support for end-to-end monitoring services such as ThousandEyes (part of Cisco Systems). The monitoring platform middleware can incorporate APIs other data sources, pull them together, normalize, correlate, and build responses to collected data. Orange Business Services expects to add other probe platforms and monitoring solutions as a MSI feature over time, assembling a catalogue of options.

The provider also is expanding MSI to manage mobile services. Orange Business Services already takes over mobile contracts and manages them on behalf of the enterprise. The new MSI MobilityNow expansion brings APIs and automation to let enterprises issue instructions directly to operators and mobile service providers that Orange Business Services manages on behalf of its customers.

Finally, Orange Business Services continues to deepen the range of API calls that can be made to MSI through ServiceNow. Orange Business Services first announced availability of ServiceNow integration through its managed network services back in 2015, predating MSI. Today, the provider continues to expand the API functions that can interface with its own systems through ServiceNow. The most recent features will include expansions to support provisioning, controlling functions such as inventory and equipment orders, and technician dispatch.

## Market outlook

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### Leading practices of Internet aggregators

Based on reviews and discussions, some of the important areas of focus for internet aggregators include:

- **Support global-local enterprise purchase decisions.** In surveys and qualitative discussions, enterprise executives favor the concept of a hybrid network purchasing model. The master contract is centrally managed, but regional and local offices can choose preferred providers from an approved list. A global enterprise headquarters, for example, may have pre-approved Argentina sites to select among Telefonica, Telecom Argentina, Lumen, or Fibertel. Local partner choices roll up to an aggregator responsible for management, reporting, billing, and support.

- **Support a platform of platforms.** Internet aggregators work with each other; with partners who are both suppliers and buyers; with network information brokers such as GeoTel, Connected2Fiber, FiberLocator, and Ookla; with channels and resellers; and with managed services specialists. Their back office and partner-facing platforms need to be flexible. Aggregators collect a great deal of intelligence that is valuable to understanding what partner best practices look like, and how to put together internet VPNs with consistent network performance and health.
- **Streamline and accelerate partner orders.** The primary MSP value of network aggregation is ease of use. Rolling together quoting, delivery, management and billing for a customer eliminates headaches. A secondary benefit is to set up systems so they can process service orders in parallel with each other, speeding up the quote-to-cash interval. The aggregator can learn the windows to complete various processes and time them to coincide with one another, instead of waiting linearly for step A to complete before starting step B, then waiting for step B to complete before starting step C, and so forth.
- **Automation (RPA) for efficiency and cost savings.** Network providers have huge variation in automation and sophistication. Regardless, aggregators can use analytics, artificial intelligence/machine learning (AI/ML) and robotics process automation (RPA) to examine track records and make informed decisions about partner selection, provisioning and management processes. Automation can identify best partners and services and recommend how to work with partners for troubleshooting and problem resolution most effectively. It can build assistive workflows for those aggregators best reached by email or phone.

## Conclusion

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When it comes to serving enterprises, the telecoms industry is adept at large, complex, high-quality, secure networks. There are situations where these networks are overbuilt for enterprises' requirements. The migration to more distributed clouds lets enterprises connect sites mainly to nearby cloud destinations. More performance-tolerant, cloud-hosted applications also helps unravel complex networks. Compared to private WAN, internet VPNs, with or without SD-WAN, can be faster to deploy, flexible to change, can be adequately secured, and may offer good-enough performance (dependent on selected ISPs' design decisions, purchased port speed and access options). Organizing and supervising many individual ISPs can be time-consuming and difficult for enterprises. ISPs have wide differences in levels of automation, processes, interaction, and support. They also differ in service consistency, reliability, and in traffic performance. Internet aggregation can pull together markets, providers, and access options in each market. They become a simple front end to deal with a very complex underlying quilt of ISPs. In addition to normalizing a complex ecosystem, Internet aggregators can recommend or validate underlying ISP choices, speed up orders and changes, resolve trouble more quickly, and provide useful performance metrics. While MPLS VPN and Private WAN services will remain vital for many years to come, for these reasons internet VPNs also will continue to gain ground with enterprise services.

# Appendix

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## Methodology

Material from this report draws from interviews with network providers that offer aggregation services, plus secondary research.

## Further reading

*Broadband aggregation supports everything except carrier margins* (January 2020)

*Full MPLS Exit: The Cautious SD-WAN Path to All-internet WAN* (April 2019)

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