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Network Transformation: Optimizing Data Center Locations and Carrier Relations for Enhanced Performance

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As the season of annual resolutions kicks off, it's time to evaluate and set new goals for many things — among them, perhaps your network configuration. With 2025 in full swing, we predict the digital landscape will continue to ramp up in terms of innovation, new technologies, and demand. Though your network may be performing well at the moment, what works now, or even exceeds expectations, may not work as the landscape shifts and the industry evolves. If the goals you have set for your enterprise are centered around growth, network transformation should be top of mind to be able to achieve that growth as technology rapidly evolves.



More than simply upgrading hardware, transforming your network involves a fundamental overhaul of network architecture, protocols and technologies, with the goal of creating a more agile, scalable and secure network that easily adapts to support modern applications and services. Examples may include the incorporation of enhanced security protocols, the integration of cloud or 5G technologies and/or the incorporation of software-defined networking. Rather than maintaining the status quo and catching up to changes in the landscape, continuous evaluation of your network performance and transformation initiatives can make you a pioneer in the industry, staying ahead of your competitors and prepared to handle challenges that may not even exist right now.

Network transformation is not only critical for enhancing your overall performance on a day-to-day basis, but also essential to ensure that you can prevent disruptions. Two key aspects will determine the success of your network transformation initiative: strategic data center placement

and the cultivation of strong carrier relationships. Concentrating on these areas enables you to significantly improve your network efficiency, reduce costs, and deliver superior services.

Strategic Placement of Data Centers

Strategically placing data centers plays a crucial role in network transformation. Carefully selecting locations can significantly enhance network efficiency, reduce latency, and improve overall performance. Key considerations for optimal data center placement include their proximity to end users, network coverage/reach and geographical redundancy.

To achieve optimal proximity, consider analyzing user demographics and geographical distribution, identifying areas with high user concentration and evaluating network traffic patterns and data flow. By keeping the location of user clusters in mind when deciding on data center placement, you can minimize the physical distance data needs to travel, resulting in faster response times. Beyond that, business continuity and disaster recovery (BC/DR) must be considered when it comes to physical placement to ensure that users affected by weather events or other regional phenomena do not experience a disruption in service.

In addition, locating a data center in less populated areas should be taken into account, but only if it makes sense with the factors listed above. Distributing data centers across different geographical regions enhances your BC/DR capabilities by helping mitigate the risk of service disruptions due to natural disasters, power outages or man-made issues (like backhoe-induced fiber failure, or BIFF). Other benefits of geographical redundancy include improved fault tolerance and system reliability, enhanced data backup and recovery options, compliance with data sovereignty regulations, and load balancing capabilities for optimized performance.

Strategically placing data centers in diverse locations is a key component in creating a robust and resilient network infrastructure. By mirroring critical data across multiple sites, this may ensure that you can keep your centers up and running in case of a disaster, helping you maintain your SLAs with your customers.

Factors to consider include:

- Existing network infrastructure in the area.
- Availability of high-speed internet connections.
- Presence of multiple internet service providers (ISPs) for redundancy.
- Potential for future network expansion.

With extensive network coverage, you can ensure that your data center provides better connectivity options and ensure consistent service to users across various locations.

Enhancing Carrier Relationships

Fostering strong relationships with carriers, or network providers, is another vital component in transforming your network. Carriers provide the network infrastructure and connectivity in a data center, thus allowing the IT equipment within the data center, such as servers and storage devices, to communicate with each other as well as with clients' devices at their base locations.

Solid carrier relationships can lead to substantial benefits for clients and contribute to overall network optimization. Key aspects of enhancing carrier relations include performance analytics and reporting, cost management and optimization, service quality, and customer support. By taking a proactive approach to carrier relations, you can go a long way toward ensuring the relationships between you and your customers remain rewarding.

Multiple carriers are often utilized at data centers, ensuring diversity and redundancy. To analyze carrier performance in such a facility, implementing comprehensive multi-carrier management systems can assist by helping to generate in-depth reports and analytics on various aspects of carrier performance such as latency, throughput, bandwidth utilization, and uptime. This leads to actionable insights that drive data-driven decision-making and helps identify carriers that consistently meet or exceed vendor promises.

Balancing cost efficiency while using multiple carriers can be complex, but it is possible. By leveraging data-driven insights, you can negotiate favorable rates with each carrier and manage their overall transportation budget more effectively. For example, one company saved 28 percent on every load beyond initial capacity awards by identifying a new carrier with lower rates, resulting in a total savings of \$341,000 year-over-year, demonstrating the significant impact that data-driven cost management can have on your bottom line.

Transforming your Network

Utilizing strategies such as data-driven decision making, continuous carrier evaluation, machine learning for optimization, re-engaging dormant carriers, developing a portfolio of multiple carriers, and network assessment may prove significant when successfully transforming and optimizing your network.

Machine learning solutions can also be a tool for gathering data and making key decisions by helping you identify new lane opportunities and optimize your carrier utilization. Enterprises can leverage these algorithms to detect anomalies and potential issues in real time, as well as using them to identify historical data to predict future demand. Harnessing the power of machine learning in your facility can lead to higher levels of efficiency and cost-effectiveness when it comes to your network operations.

To enhance the quality of data being used for decision making, conduct thorough network assessments so that relevant key performance indicators (KPIs) can be created. This process involves analyzing current network performance and bottlenecks to identify areas for improvement. The KPIs you develop for the network must align with business goals, with clear, measurable objectives defined. Establishing relevant KPIs is essential in helping track the progress of your network transformation initiatives and measure your success.

Regularly evaluating and comparing carrier performance helps identify opportunities for improvements and further cost savings. There are several ways to go about this process, including analyzing the aforementioned KPIs, benchmarking against industry standards and soliciting feedback from both internal teams and your customers. Committing to the continuous evaluation of carrier performance ensures that your relationships with those carriers remain aligned with your evolving needs and goals.

In addition to evaluating current carriers, a focus on re-engaging dormant carriers may lead you to expand your network capacity and increase booking opportunities. You can identify carriers with whom you have had limited recent activity and assess their current capabilities and performance. If it makes sense, you can pursue a renewed relationship with those carriers by exploring new collaboration opportunities and negotiating updated terms and rates. This benefits you as well as them, as it results in a diversified carrier portfolio and potential cost saving.

Developing a diverse carrier portfolio ensures that you are utilizing the solutions that work best for your operations and customers. It can offer greater flexibility and scalability, freedom of choice to customers, optimal uptime and lower latency. Making the effort to cultivate a diverse carrier portfolio can also give you peace of mind, as it provides increased security options as well as enhanced BC/DR options.

As the digital landscape expands and new technologies emerge, it is essential to ensure that your network providers suit your changing needs as you grow, which is more likely to be the case with a diverse portfolio.

Looking Ahead

Several emerging technologies are shaping the future as network transformation continues to evolve. These technologies, some of which are listed below, can aid in network transformation efforts by providing opportunities for a more responsive and efficient network infrastructure:

Software-Defined Networking (SDN): SDN lays a foundation for agile and responsive networks by enhancing flexibility, scalability, and automation. This technology represents a shift in network architecture, decoupling control and data planes to enable centralized management and programmability.

Network Function Virtualization (NFV): NFV complements the above, SDN, by virtualizing network functions traditionally performed by dedicated hardware appliances. This approach reduces hardware dependencies while improving resource utilization, enabling faster deployment of network services.

5G Technology: the adoption of 5G networks is set to revolutionize connectivity, offering unprecedented speeds, lower latency, and increased device density. This technology enables new use cases such as autonomous vehicles, smart cities and advanced IoT applications.

Edge Computing: edge computing brings data processing closer to the source, reducing latency and improving real-time decision-making capabilities. This technology is particularly beneficial for IoT devices and applications requiring rapid response times.

Artificial Intelligence and Machine Learning: AI and ML are increasingly being integrated into network management systems, enabling predictive maintenance, automated troubleshooting and intelligent resource allocation. These technologies help optimize network performance and reduce operational costs.

Network transformation is a complex but necessary process to ensure that you stay on the cutting edge as the digital infrastructure industry evolves. As we enter a new year, embracing emerging technologies and focusing on strategic partnerships will be key in helping you create a resilient, scalable and future-proof network infrastructure that drives innovation and maintains a competitive advantage.

With the demand for faster, more reliable and more efficient networks continuing to grow, the organizations that invest in comprehensive network transformation will be best equipped to meet the challenges and opportunities brought on by tomorrow's digital world. The key to achieving success in your network transformation efforts lies in adopting a data-driven approach and ensuring that you continuously evaluate performance. By following these principles and remaining adaptable to the ever-changing technological landscape, you will better position your enterprise for long-term success.