Pipeline
Technology for Service Providers.
www.pipelinepub.com Volume 15, Issue 5

Datacenter Trends

By: Michael C. Morey

This year was another tumultuous one for data centers. The type of growth we saw in 2018 followed three different trends: hybrid data centers, edge data centers and underground data centers. The sheer volume of data seems to be the singular most powerful catalyst to transform data centers in 2019—with no signs of slowing down. This catalyst will further increase the growth and adoption—no matter where a business is in the adoption cycle—of these trends, bringing significant opportunities to end users, customers and data center companies.

TREND #1: Hybrid Data Centers

The hybrid data center has arrived, and today's hybrid data center bears little resemblance to the data center of yesterday. Now with the ability to integrate capabilities from a variety of sources—including software-as-a-service (SaaS) applications as well as infrastructure-as-a-service (IaaS)—the hybrid data centers securely deliver an improved end-user experience. By combining a centralized cloud with a localized data center that has large compute and storage located closer to the end user, you can provide an optimized end-user experience.

When compared to yesterday's legacy data center, data center evolution today is clearly marked by integrating different strategies. These include moving applications out of a centralized data center to SaaS vendors, renting data center space, and even moving disaster recovery (DR) to an IaaS provider. The hybrid approach enables companies to virtualize their own data center infrastructure by developing new internal cloud capabilities. With the ability to spin up resources in the cloud (with minimal clicks), companies can drastically reduce the time to market for new apps and services and decrease costs—while increasing business agility. Some key benefits the hybrid data center approach brought to companies in 2018 include:

- **Increased Reliability:** Still reliant on infrastructure, the hybrid model builds in additional redundancies by leveraging multiple cloud services to increase reliability.
- **Applications Equal a Catalyst for Evolution:** Applications and the systems responsible for tomorrow's business applications continue to accelerate the change a hybrid data center must accommodate—resulting in increased performance, new capabilities and improved operating efficiencies.
- **Improved Workload Management:** Workloads in a hybrid data center can be whatever the

enterprise needs at any given moment. By evaluating on a case-by-case basis, data centers can modernize existing workloads wherever possible, adapting to the end users' needs.

Most importantly, the hybrid data center enables end users to get the data they need, when they need it—while enabling the data center and its customers to enjoy the improved economics to easily shift between private and public clouds.

According to 451 Research's report Six Real-World Approaches to Managing Hybrid IT Environments, by 2019 the hybrid data center approach will take hold as, "organizations anticipate that just under half (46 percent) of enterprise workloads will run on-premises IT environments, with the remainder off-premises...." Clearly, hybrid IT environments have become the norm.

TREND #2: Edge Data Centers

Exponentially growing data and higher distribution of data is making the legacy, metro-based, monolithic data centers passé. Instead, companies are turning to smaller, more localized data centers with larger compute capabilities as a better and more powerful option to handle increasing amounts of data. This choice makes data more available more quickly in more places for customers and end users.

Moving the processing of data closer to customers and end users decreases response times, enables faster processing speeds and efficiently utilizes network resources. In 2019, we will see more adoption of the edge data center—perhaps even with it becoming the norm—to further meet the needs of the ever-increasing amounts of data necessary for more complex computing tasks. Some examples include companies seeking to sustain their advancements in Artificial Intelligence and machine learning, developments which made edge data centers critical pieces of their infrastructure in 2018. Defined by the distributed IT architecture in which customer data is processed at the outskirts of a network, edge data centers also house edge computing devices, which make them a perfect solution for the current and coming wave of IoT devices. According to the IDC FutureScape: Worldwide IoT 2018 Predictions report, "By 2020, edge computing spend will reach 18 percent of the total spent on IoT infrastructure." This is also indicative that the future will be more distributed.

TREND #3: Underground Data Centers

Underground data center benefits start with the surrounding rock, which acts as a natural shield from extreme weather conditions such as hurricanes and tornadoes that may otherwise make a facility vulnerable to outages. However, not all underground facilities are created equal. While it's a great idea to locate compute and storage hardware below ground, the true advantage lies within the underground placement of critical operations infrastructure such as utility transformers, gensets and chillers.

Because an underground data center infrastructure does not have to work as hard to maintain ideal temperature levels, it consumes less energy. As a result, these underground facilities can provide an optimal environment for reduced power consumption and reduced energy costs. It is also easier to maintain an operationally stable temperature underground. When closed off to the outside environment, a facility can function as a biosphere permitting all critical infrastructure to operate within known, tighter parameters that produce high levels of efficiency and performance. From the customer perspective, the naturally cool environment is optimal for the operation of server racks and other hardware, minimizing the need for additional cooling methods that demand (and waste) power and other resources.

While the advantages associated with an underground facility deployment are numerous, not all locations are conducive to this type of facility. Given the vast and differing topology across North America, some geological areas cannot support the physical requirements of an underground mine. In addition, even in some of the most advantageous regions highly conducive to this type of deployment, the time and resources associated with construction are too great to justify the benefits. Instead, some of the more successful underground data center providers choose to secure

rights to expand within dormant portions of the mines and utilize that existing space for facility deployment.

For enterprise customers seeking additional locations or are deciding where to house their critical data and infrastructure, the choice couldn't be clearer. The benefits associated with going underground for optimized colocation space are significant and can easily benefit organizations across all industries that require secure, resilient and cost-effective data storage.

A great example can be found within the healthcare industry:

The volume of critical healthcare information generated by telehealth is creating a data security and availability challenge for healthcare providers, one that is bound to increase as the telehealth adoption continues to grow. While traditional data centers often offer HIPAA/HITECH certification, they do not necessarily provide the maximum in protection—and this protection can be affected by natural disasters and security incidents, just as with any other facility. Underground data centers are the IT infrastructure innovation that can resolve the data protection challenge for healthcare organizations while also providing unprecedented assurance that sensitive patient information will be physically protected from any kind of natural or man-made threats.

Looking Ahead to 2019

Next year presents a wealth of opportunity in the construction and expansion of data centers, particularly throughout local markets. Enterprises that were reticent in 2018 to moving to the cloud will make the transition to the hybrid cloud; data center companies recognizing the need for edge data centers will expand their own portfolios to include more localized options for their customers; and data center companies that understand the benefits of the underground data center will either start to build or partner with companies that will provide customers added assurance in going underground. No matter what I am excited to see what 2019 holds for data centers, as necessity always has—and always will—drive innovation.