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Availability and edge computing:

Empower ROBOs and drive business innovation

IT leaders are embracing edge computing as a powerful way to maximize the business value of initiatives such as the Internet of Things (IoT), mobile computing and digital transformation. In a distributed edge computing architecture, data is processed at the periphery of the network, as close to the originating source as possible.

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Edge computing improves time to action, enables analytics in near real-time and conserves vital network resources.[1] Businesses achieve immediate cost efficiencies and performance improvements, with added flexibility to drive innovation. Edge computing also delivers huge gains for users in remote office and branch office (ROBO) locations, while giving IT teams greater flexibility in managing growing numbers of endpoints and users.

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Given the myriad business benefits of edge computing and the relative simplicity in deploying and managing the technology, it should be no surprise that edge computing is one of IT's fastest growing segments. The market is expected to grow at an annual compound rate of 35.4% through 2022, expanding from $1.47 billion in 2017 to $6.72 billion.[2]

The overall success of this massive investment is contingent on one key factor: Availability. The edge computing environment can no more afford downtime than any other area of your business. In the world of ongoing digital transformation, organizations have zero tolerance for downtime across all critical applications and workloads.

When it comes to Availability, it shouldn't matter whether your underlying technology platform comprises of a centralized data center, multiple clouds, an edge computing environment or some combination of all the above. And it shouldn't matter if you are supporting centralized workers, remote workers, mobile workers or connected devices. They must all have uninterrupted access to and from the applications and resources they need at any time from any location.

Fortunately, IT teams can maximize Availability, increase reliability and minimize downtime at the edge by using industry leading solutions that are well proven across all IT environments. This white paper discusses how to leverage edge computing to drive your business forward while ensuring that Availability of applications, data and workloads is never compromised.

Why edge computing and why now?

Digital technologies are transforming organizations of all sizes. IDC forecasts that by 2025 the global datasphere will grow to a trillion gigabytes, 10 times the amount of data generated in 2016.

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"Increasingly, data will need to be instantly available wherever and whenever anyone needs it," IDC says. "By 2025, an average connected person anywhere in the world will interact with connected devices nearly 4,800 times per day — basically one interaction every 18 seconds."[3]

1 "Definition: Edge Computing," SearchDataCenter, TechTarget
2 "Edge Computing Market Worth 6.72 Billion USD by 2022," Marketsandmarkets, Nov. 1, 2017
3 "Data Age 2025: The Evolution of Data to Life Critical," an IDC White Paper Sponsored by Seagate, April 2017

We are already witnessing explosive growth of IoT devices in industries such as manufacturing, energy, transportation, healthcare, retail and others. Gartner says there will be 8.4 billion connected devices by the end of 2017, more devices than there are people on the planet.[4]

In addition to supporting IoT workloads, edge computing satisfies the requirements of a changing workforce that is becoming much more distributed and mobile than ever before, a trend that will continue to expand unabated with the influx of millennials in the workforce.

Edge computing provides IT decision-makers with an answer to the challenges raised by these powerful changes both within the workplace and across the changing landscape of customer expectations. Edge computing allows for efficient data processing with large amounts of data being processed near the source, reducing Internet bandwidth usage and providing actionable information faster and more efficiently than if data were transported to and processed in a central data center.

The growth of IoT devices and the changing workplace are among the key underlying factors driving demand for edge computing, manifested in the following ways:

- **Increased mobility:** The increase of mobile endpoints and adoption of bring-your-own device initiatives by remote and local employees is creating a resultant increase in the volume of data at the remote and device level. This trend will not only continue, it will accelerate.
- **Latency sensitivity:** User expectations for performance and Availability are high and continue to rise, driven by IT consumerization and other factors. Latency sensitivity drives the goal to reduce latency, which can be complicated by the increased volume, variety and velocity of data. Edge computing is a proven method of reducing latency for ROBOs and mobile workers.
- **Analytics and new business models:** Companies are creating new business models focused on data analysis and processing. By moving processing and content delivery/collection closer to the data sources — including cloud on-ramps and off-ramps — IT teams can support business innovation and efficiencies.
- **Supporting modern workloads:** The use of smaller, distributed, connected data centers that are closer to concentrations of users and generators of content/data is becoming necessary to support modern workloads. These not only augment traditional data centers; they improve performance across the entire organization by reducing pressure on enterprise networking resources.

To leverage these benefits, IT decision-makers must address whatever concerns they may have about edge computing, including the common fear that it can be difficult to manage and that they may lack the right skill sets at their remote branch offices.

4 "IoT Market Research: Which Industries are Leading the Curve," Internet of Things Institute, Aug. 23, 2017

But, in reality, today's technologies allow edge environments to be managed from a centralized location with complete visibility into and control of the micro data centers at the remote sites. And, with the growth of virtualization and solutions such as software-defined architectures and hyper-converged infrastructures, micro data centers are becoming much easier to deploy and manage than ever before.

Availability at the Edge

Whichever technology you use to build your edge computing micro data centers, you must make sure that you focus on Availability and deploy modern Availability solutions that ensure the reliability, recoverability and effectiveness of your data, wherever it is located.

Data created and processed at the edge is all part of your enterprise computing environment, just as valuable, relevant and necessary as the data created and processed anywhere else in your IT infrastructure. If it is unavailable or compromised in any way, it can create a significant financial impact, while compromising customer relationships, unplanned downtime and the inability to meet service level agreements. According to the 2017 Veeam Availability Report, the average hourly costs of downtime are $108,000 for business-critical applications and $48,000 for non-business critical applications.[5]

Enterprises already have zero tolerance for downtime; they should possess the same expectations at the ROBO and mobile computing levels and must consider critical Availability solution requirements at the edge for ROBOS, as follows:

- **Data management ease of use:** As noted, you may not have onsite IT resources at the ROBO. With the right management platform that should not be an issue.
- **High-speed recoverability:** Your solution should be able to deliver recovery time and recovery point objectives (RTPO™) of < 15 minutes for ALL applications and data.
- **WAN backup and acceleration:** Built-in WAN acceleration dramatically reduces the bandwidth required for transferring backups and replicas over the WAN.
- **Increased adoption of virtualization:** Virtualization is vital to successfully deploying and managing micro data centers, so you should leverage Availability software that is designed to optimize virtualized environments.
- **A cloud-agnostic platform:** You can avoid vendor lock-in by using a solution that supports workloads across any cloud environment.
- **Complete IT infrastructure visibility and analytics:** You should be able to leverage proactive monitoring, reporting, testing and documentation to enhance security and compliance capabilities.

5 "Why Organizations Still Struggle to Transform & Innovate," Veeam 2017 Availability Report, April, 2017

Veeam Availability at the edge

Veeam® Availability Suite™ includes ROBO features that address all the pain points of legacy backup and recovery solutions, even at the edge. Key features include:

- Analytics and visibility using monitoring and alerting tools designed to help IT managers solve for inefficiencies and make their backup data work for them
- Built-in WAN Acceleration technology to optimize data transfers over the WAN
- Single pane of glass management and visibility
- Faster local backup and recovery times, lowering RTPOs
- Improved scalability and reduced bandwidth consumption
- Proven capabilities in:
  - High-speed recovery
  - Data loss avoidance
  - Verified recoverability
  - Leveraged data
  - Complete visibility

Conclusion

Edge computing is becoming more important as organizations embrace digital transformation, the IoT, mobile computing, big data analytics and other hallmarks of the modern era. For IT decision-makers, edge computing is yet another area where they can use advanced technology to drive operational efficiencies and business innovation.

To reap the full benefits of edge computing architectures, IT leaders must ensure that Availability at the edge is uncompromised in any way. The same attention to Availability, reliability and recoverability that is mandated in centralized computing environments must also be achieved in edge computing environments.

When it comes to Availability solutions for edge computing, Veeam is a proven market leader. Veeam solutions deliver high-speed recovery, deep analytics, simplified management, data loss avoidance, verified recoverability and other critical capabilities required for today's Always-On Enterprise™.

For more information on how you can leverage market leading Availability solutions to empower ROBOs and drive innovation in your edge computing environments, please visit Veeam at https://www.veeam.com/remote-office-backup-recovery-solutions.html

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