



EDGE COMPUTING – UPDATE 2020 AND BEYOND

BRUNS-PAK WEB SERIES #4

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Wednesday, January 22, 2020 11:00AM – 11:45AM EDT via Web-Ex





AGENDA

I. Review of the "Data Center Elements" To Be **Considered When Developing a Comprehensive Data** 11:00-11:05 Center Strategy – Focus Element #19 – Edge Computing II. What Is Edge Computing? 11:05-11:15 III. 11:15-11:20 **Edge Data Center Reliability Considerations** IV. **Edge** Data Center Infrastructure Challenges and 11:20-11:25 **Deployment** Considerations V. Edge Data Center Use Areas 11:25-11:35 VI. **Questions and Answers** Survey Form 11:35-11:45 **Recurring Series/Topics**





Part I

Review of the "Data Center Elements" To Be Considered When Developing a Comprehensive Data Center Strategy – Focus Element #19 – Edge Computing





The Hybrid "2020 Transformation" Enterprise Data Center Elements







- ✓ The critical elements are to be addressed at board/trustee levels:
 - Best Practices
 - Vendor Neutrality
 - Total Cost of Ownership
 - > Opex
 - > Capex
 - Funding Short/Long Term
 - Modularity/Scalability
 - Risk
 - Schedule of Delivery
 - Cybersecurity Focus
 - Trends
 - o Uptime







✓ 2020 Continued Evolved Focus

- Cybersecurity
- Network
- Compliance/Regulatory
- Damages
- Edge Computing
- Legal Impacts
- Various Levels of Reliability







- 1) Depending on the Data Center Enterprise, a Hybrid Solution
 - A. Cloud: Private Public
 - **B.** Colocation
 - C. Enterprise
 - D. Edge
- 2) Best Practice "Drivers" in Developing the Data Center Enterprise Solution
 - A. Total Cost of Ownership
 - B. Risk
 - C. Data Liability
 - D. Compliance
 - E. Best Practice
 - F. Cybersecurity







- G. Disaster Recovery
- H. Maximize Opex Minimize Capex
- 3) Data Center Enterprise "Hybrid" Solutions Across Four (4) Components:
 - A. Modular
 - **B.** Scalable
 - C. Flexible
 - D. Reliable



- 4) What Goes Where? For How Long?
- 5) Some Applications NOT Conducive to the Cloud.
- 6) Edge 2020 and Beyond





Part II

What Is Edge Computing?





What Is Edge Computing?

- 1) **Definition**
 - A. Wikipedia
 - Edge Computing is a <u>distributed computing</u> paradigm which brings <u>computation</u> and <u>data storage</u> closer to the location where it is needed, to improve response times and save bandwidth.

2) Why Edge vs. Cloud

- A. Latency Improvement
- **B.** Bandwidth Reduction
- C. Less Cost
- **D.** Improve Performance
- E. Privacy Benefits



F. Edge of the Network Deployment Reducing Cloud Impact/Use. In Summary, *Edge computing when you generate, collect, and analyze data on the edge of the networks where the data is generated rather than centralized severs and systems, commonly called the cloud. *Wikipedia





What Is Edge Computing?

3) Edge

- A. Edge computing is about pushing the processing of data intensive, remotely isolated applications away from the core of the central data center to the outer edges of the network where the interactions are happening and the actual processing needs to take place real time or near real time.
- **B.** Minimizes data latency that is inherent to long haul centralized enterprise data center solutions and cloud centers.
- C. Utilizes real-time apps processing and analyzing data at point of origin.
- **D.** Improves application performance and experience by collecting, processing, and analyzing data locally faster.
- E. Enhances data transport speeds across telco infrastructure.
- F. Supports process / data intense IOT, AI, industrial, network, and retail type applications.
- G. Size does not correlate to its name "edge" or use type. **Partner associate credit**





Part III

Edge Data Center Reliability Considerations





Edge Data Center Reliability Considerations

- 1) Edge Considerations
 - A. Our industry has mature data center engineering designs for enterprise and on-premises data centers with a range of reliability levels **
 - **B.** Bring this knowledge and reliability to the "Edge"
 - The scale and form factor of the facility infrastructure will change but the need for reliability still exists, maybe even more so
 - Need for standardization of repeatable and scalable deployments
 - Edge Data Centers many times will require the same redundancy and reliability capabilities as their larger enterprise data center counter-parts
 - There will be engineering challenges at the location of the Edge Data Center(s), where site and facility infrastructure may not have been purpose built to support mission critical reliability
 - C. Challenges can be overcome but when your business requires Edge Data Center solutions across many locations and possibly across the globe, you may quickly identify that there may not be a one size or solution that fits all





Part IV

Edge Data Center Infrastructure Challenges and Deployment Considerations





Edge Data Center Infrastructure Challenges and Deployment Considerations

- 1) Infrastructure challenges at the Edge location site:
 - ✓ Acceptable site identification area
 - Existing site physical risks identification
 - Power/cooling/space reliability "retrofits" to accommodate Edge
 - ✓ Design/engineering challenges and on going support
 - ✓ Speed to delivery
 - ✓ Modularity/scalability

2) **Deployments**

- ✓ There may be no one size / design fits all solution
- Solutions may vary in design based on existing site conditions, available infrastructure, and IT deployment strategy
- ✓ Data Centers will vary in size based on "Edge" application requirements and IT hardware utilized
- **Achieve standardization and repeatable solutions when possible**
- Incorporate scalability into solution offerings
- Develop quick deployment methodologies this is not to be a journey but a quick deployment of commoditized solutions







Part V

Edge Data Center Use Areas





Edge Data Center Use Areas

- 1) Manufacturing and Distribution Centers
 - Support real-time manufacturing applications and operations
 - Support high volume data inventory and shipping applications

2) Business and Research Locations

- Support data intense applications where data transport to central enterprise data centers is not feasible
- *High volume computational applications*

3) Telco Network Hubs / Nodes

- Data transport optimization
- Support virtualized Software Defined Network (SDN) architecture

4) Network Security

- Advanced security apps are pushing first line of defense and authentication to the edge
- Provides network / security isolation at the fringe
- Isolation and layering of security

Partner associate credit





Edge Data Center Use Areas

5) Retail Industry

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- Enhancing the customer experience
- Automated inventory and production shelf applications

6) Automotive Industry

- Enhanced safety features
- Self driving automobiles
- 7) Physical Security
 - Video and facial recognition systems

8) Smart Home Automation Systems

• Use of systems like Alexa and homes security automation

9) IOT Applications

• Wearables (fitness, healthcare), Smart Cities, Agriculture / Farming, Energy

10) Streaming Services

- YouTube, On Demand Video, Music Apps
- Utilizing metro or regional Edge data centers to reach concentrated customer base and minimize latency

11) Social Media

• Facebook, LinkedIn, Twitter, Instagram **Partner associate credit**







Part VI

Questions and Answers







Further contact/inquires:

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