

# **The Data Center Hybrid 19 Elements - Cloud/Colocation/Enterprise Impact - COVID 19 and Update - 2020 and Beyond**

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# Agenda

- ▶ *I: The Data Center 2020 Hybrid 19 Elements – Update and Overview*
- ▶ *II: COVID 19 Impacts*
  - ▶ *Cloud*
  - ▶ *Colocation*
  - ▶ *Enterprise*
- ▶ *III: The “New” 2020 Work Place and Data Processing Environment*
- ▶ *IV: Projected Impacts of the Data Center Community Moving Forward*
- ▶ *V: Questions and Answers*



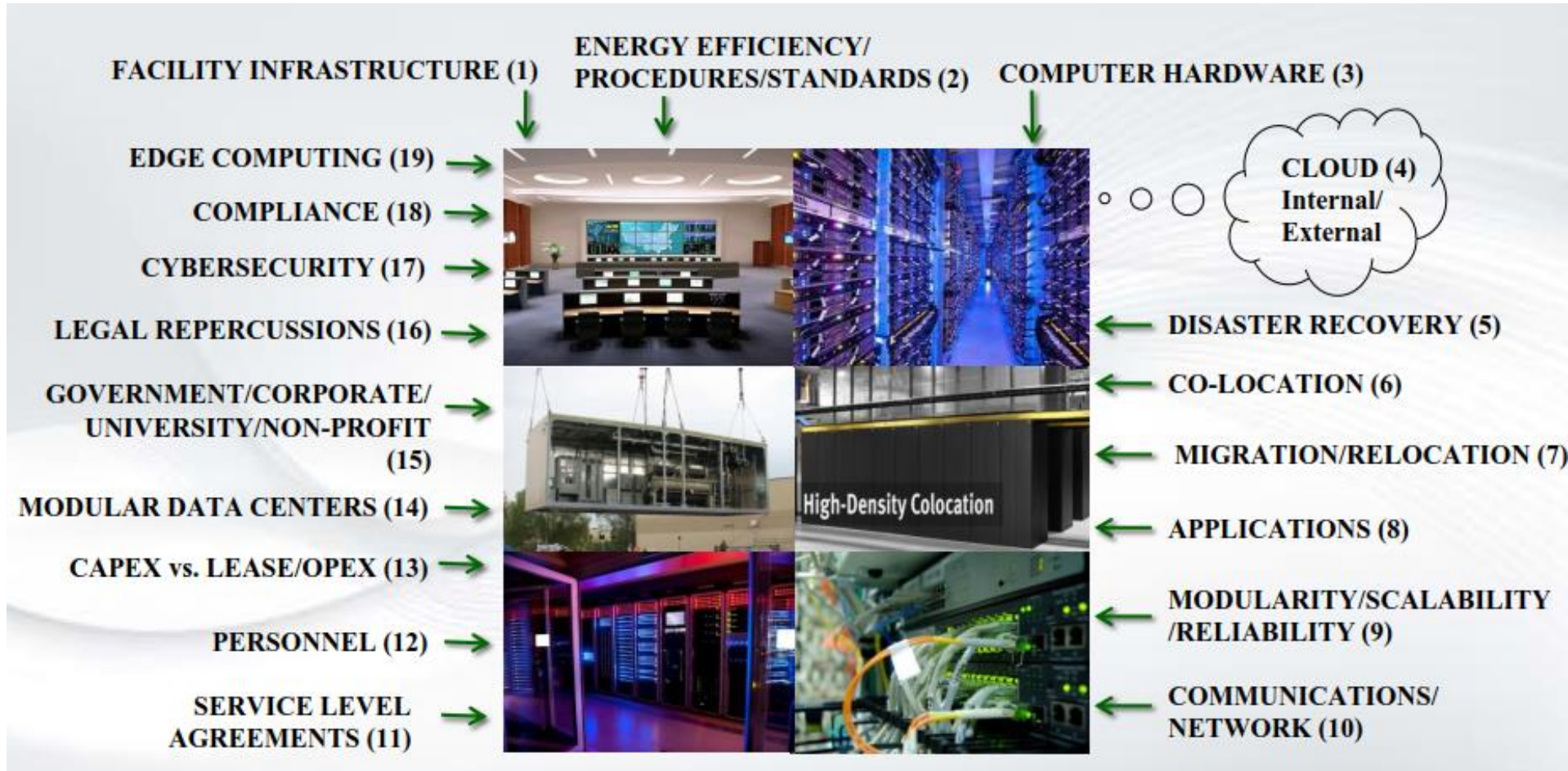
## Section I:

# *The Data Center 2020 Hybrid 19 Elements – Update and Overview*



# The Hybrid “2020 Transformation”

## Enterprise Data Center Elements



# *The Data Center 2020 Hybrid 19 Elements – Update and Overview*

## 1) Cybersecurity continues to evolve and have many enterprise data center impacts

- *Brand*
- *Financial Liability*
- *Responsible Parties*
- *Boards/Trustee Concerns*
- *Risk*



# *The Data Center 2020 Hybrid 19 Elements – Update and Overview*

## **2) The transformation of 2020 of data center enterprise solutions encompasses a hybrid approach optimizing total cost of ownership vs. risk**

- *Enterprise*
- *Co-location*
- *Cloud*
- *Disaster Recovery*
- *Edge Computing*
- *Modular Data Center*
- *Cybersecurity*
- *Regulatory/Compliance*
- *Opex vs. Capex*
- *Total Cost of Ownership vs. Risk vs. Best Practices*





# *The Data Center 2020 Hybrid 19 Elements – Update and Overview*

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## **3) The 2020 evolution of client “leased” enterprise data centers on premise**

- *Opex Expenditure*
- *30 Year*
- *Ongoing 24x7 support part of Opex expenditure*
- *“Pay As You Grow”*

## **4) The impact of consolidated/transforming**

- *Co-location Providers*
- *Cloud Providers*
- *Third Party Support*
- *Legal language of “Damages” entering 3<sup>rd</sup> party provider contracts*
- *Edge Computing and Latency*



# *The Data Center 2020 Hybrid 19 Elements – Update and Overview*

## 5) Considerations of scalability

- *Low Density (1-3 kW)*
- *Mid-Range Density (4-10 kW)*
- *Mid/High Level Range (8-20 kW)*
- *HPC (20-70 kW) \*Trending*

## 6) “Candidacy” of different types of data requiring different type of data center enterprise facilities/reliability

- *Tier I Critical*
- *Tier II*
- *Tier III*
- *Tier IV Test/Development*





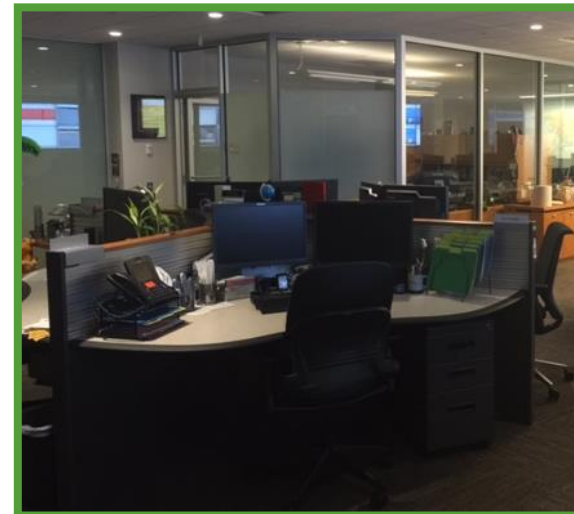
# *The Data Center 2020 Hybrid 19 Elements – Update and Overview*

## **7) The “Instant Delivery” of goods/services/information and the impact to the data center solution**

- *Artificial Intelligence*
- *Work Process*
- *“Brick and Mortar” vs. On-Line*
- *Driverless Vehicles*
- *Education*
- *Payment Methods*
- *Video Conference vs. Travel*

## **8) Overall impact of cybersecurity**

- *? 2020 and Beyond*
- *See 2020 Survey Results*



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## **9) European Union General Data Protection Regulation (GDPR)**

- *May 2018*
- *Lawful, fair and transparent processing*
- *Limitation of purpose, data and storage*
- *Data subject rights*
- *Consent*
- *Personal data breaches*
- *Privacy by Design*
- *Data Protection Impact Assessment*
- *Data transfers*
- *Data Protection Officer*
- *Awareness and training*



## **10) California Passes Sweeping Law to Protect Online Privacy**

- *June 2018*
- *Can sue companies*



## Section II:

### ***COVID 19 Impacts***

- ▶ ***Cloud***
- ▶ ***Colocation***
- ▶ ***Enterprise***



# *COVID 19 Impacts*

## 1) **COVID 19 and the Impacts to Continuous Data Processing have Moved Forefront to the “Concern List” of Data Center Operations (March 2020)**

- *Cloud*
- *Colocation*
- *Enterprise*
- *Continuous Support / Operations*
- *Remote Interface*



# COVID 19 Impacts

## 2) Cloud

- A. Managed services*
- B. Internal vs. external*
- C. Migration to the cloud*
- D. Migration Back?*
- E. Moves/adds/changes*
- F. Trouble shooting*
- G. True “partner” of equal financial stability*
- H. Downtime: Who Pays? – Evolving 2020*
- I. Security Breach: Who Pays? – Dominating 2020*
- J. Terms and conditions (Legal Beagles!!!) 2020+ in motion*
- K. Production vs. Test/Development*



# COVID 19 Impacts

- L.** *Applications conducive to Cloud – General Common Platform – Candidacy*
- M.** *Where is my data? Who manages? Do you care?*
- N.** *“New” 2020 United States Legislation – “Company” liability for data – See California*
- O.** *Speed to delivery of applications*
- P.** *The 2020 contract language for cloud contracts – cybersecurity / damages*
- Q.** *Critical vs. non-critical data*
- R.** *Moves/adds/changes*
- S.** *Amazon, Microsoft, Google, etc.  
If interruption – What is impact?*





# COVID 19 Impacts

## 3) Co-Location

- A. *Leased data center constructed space*
- B. *Capex schedule of delivery minimized*
- C. *ROI – see total cost of ownership – 4+?*
- D. *Other tenants? – Impact of Security - Dominating 2020*
- E. *Downtime: Who pays? - Dominating 2020*
- F. *Security Breach: Who pays? - Dominating 2020*
- G. *Terms and conditions (Legal Beagles 2020)*
- H. *“New” United States Legislation – Progressing – Class action lawsuits??  
Settlements*
- I. *Financial strength of service providers, survey of “economics” 2020 report –  
**DANGER!***
- J. *Moves/Add/Changes*
- K. *New 2020 “Internal” self funded co-location “Lease” data center solutions -  
Trending*



# COVID 19 Impacts

## 4) Facility Infrastructure

- A. Architectural*
- B. Civil*
- C. Electrical*
- D. Fire Protection (EPO Code Change) – Update NEC/NFPA vs. Factory Mutual*
- E. Mechanical - CFD Models*
- F. Security - Physical*
- G. Site*
- H. Structural*
- I. Geographic Regional Considerations... i.e. southwest hurricanes, west earthquakes, etc.*



# COVID 19 Impacts

## 5) Energy Efficiency/Procedures/Standards

### A. ASHRAE 9.9 – Higher Inlet Temperatures

- ✓ 80° F
- ✓ 90° F
- ✓  $\Delta t$  of 20-25° F

### B. Containment

- ✓ Hot Aisle
- ✓ Cold Aisle
- ✓ Impact to people

### C. DCIM

- ✓ Gartner “Magic Quadrant”
- ✓ Per data centre (UK)
  - Reduction in costs*
  - Integration*
  - Valuable insights*
  - Increased productivity*
  - Environmental benefits*



# COVID 19 Impacts

*f. Management*

*g. Envelope*

- ❖ Applications
- ❖ Computer Hardware
- ❖ Data Center Facility
- ❖ Network
- ❖ Data Center Operations



*D. CFD Models*

- ✓ Why
- ✓ Updates

*E. Outside Air to Cool Data Centers*

*F. Virtualization of Servers*

*G. LEED – New Data Center Guidelines*

- ✓ Written to save “dollars” and be more green
- ✓ Office of Management and Budget to create a strategy
- ✓ DOE and EPA to study server and data center efficiency trends
- ✓ New “data center energy practitioner program”

# *COVID 19 Impacts*

- ✓ New “metrics”
- ✓ Data center LEED guidelines – New – LEED v4  
US Green Building Council (USGBC)

## *H. Unity (close to) Power Factors on UPS Systems*

## *I. Electrical Utility Costs*

- ✓ \$.03 per kWh vs. \$.12 kWh vs. \$.18 kWh

## *J. Procedures*

- ✓ Operating
- ✓ MEP
- ✓ Fire Protection
- ✓ Concurrent Maintenance
- ✓ MOP'S / SOP'S

## *K. Standards*

- ✓ Data Center Operating
- ✓ Guidelines



## Section III:

# *The “New” 2020 Work Place and Data Processing Environment*





# *The “New” 2020 Work Place and Data Processing Environment*

## 1) Work Place

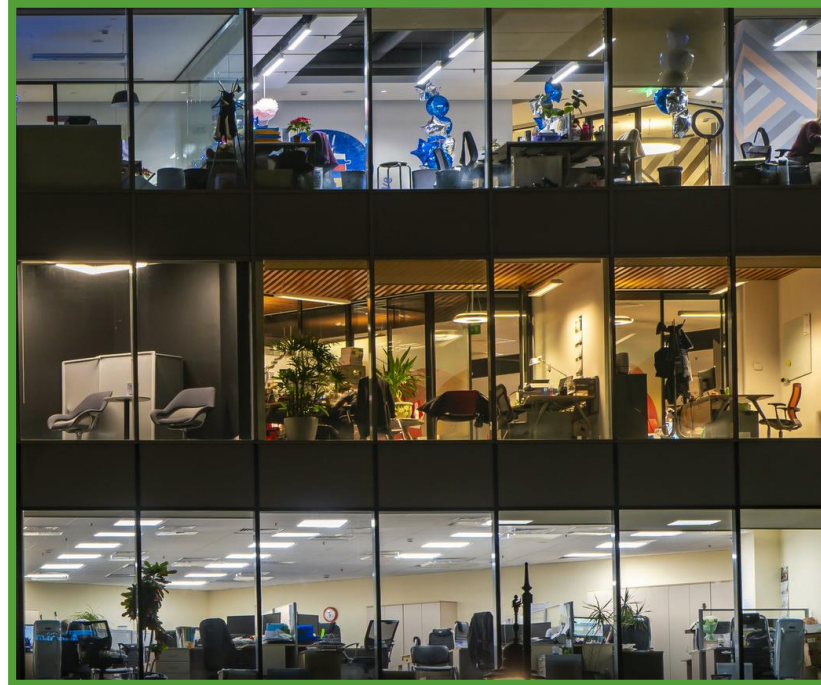
- A. *Work from Home*
- B. *Accountability Software*
- C. *Consolidated Offices*
  - ✓ **Hot Aisle**
- D. *Cybersecurity Concerns*
  - ✓ **Home/Remote**
- E. *Zoom*
- F. *Master Cities Multi-Story Office Buildings?*
- G. *Testing Protocols*
- H. *Meetings*
- I. *Confidential Documents*



# *The “New” 2020 Work Place and Data Processing Environment*

## 2) Data Center

- A. *Cloud*
- B. *Co-location*
- C. *Enterprise*



## Section IV:

# *Projected Impacts of the Data Center Community Moving Forward*



# *Projected Impacts of the Data Center Community Moving Forward*

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- 1) **Remote Monitoring Oversight**
- 2) **DCIM – Monitor / Control**
  - A. *Processors*
  - B. *Network*
  - C. *Facilities*
- 3) **Backup / Contingency Planning**
- 4) **Explosion of Remote “Accountability” Software**
- 5) **Video Conference**
- 6) **Cybersecurity Challenge**
- 7) **Edge Compute Rollout!!**
- 8) **Artificial Intelligence**
- 9) **High Performance Compute Clusters**
- 10) **Consolidation**



## Section V:

# *Questions and Answers*



# ***Thank You!***

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