CO-LO "VALUE STATEMENT 2.0":

THE INTERNET OF THINGS, THE EDGE DATA CENTER

AND DETERMINING THE RIGHT FIT FOR YOUR ENTERPRISE

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SUMMARY

- Many organizations will develop a **need for Edge Data Centers** to support both rich content and the explosion of data generated by the Internet of Things
- For some enterprises, the **existing footprint of co-location facilities** may provide the ideal solution
- The "consulting answer" applies- **"it depends."** There are creative options available to suit your needs

THE NEED FOR EDGE DATA CENTERS

We turn to industry source Gartner to frame the discussion:

> To optimize the (digital business) experience, Gartner believes the topology of networked data centers will push... from a centralized, mega data center approach, to one augmented by multiple, smaller, distributed sources and sinks of content and information, whether located in distributed, enterprise-owned data centers, hosting providers, colocation or the cloud.[i]

Gartner estimates that, by the end of 2020, there will be approximately 21 billion Internet-connected things, from healthcare instruments to tracking devices to wearables.

According to Nik Rouda, senior analyst at Enterprise Strategy Group (ESG), much of the information from IoT will likely be compressible because most of the data points may be unchanged. "I expect to see a lot more *aggregation into metadata and local/edge-based analysis taking place*, rather than shipping every data point back to the data center," he said. [ii]

DOES THE EXISTING FOOTPRINT OF CO-LOCATION FACILITIES SOLVE YOUR PROBLEM?

At first blush, this seems a fairly easy answer. If you need processing at the edge, the map of co-location facilities in the US looks similar to the map in the back of your favorite airline magazine.

Figure 1: United States data center market, with focus on colocation, IP transit, cloud and various hosting services.
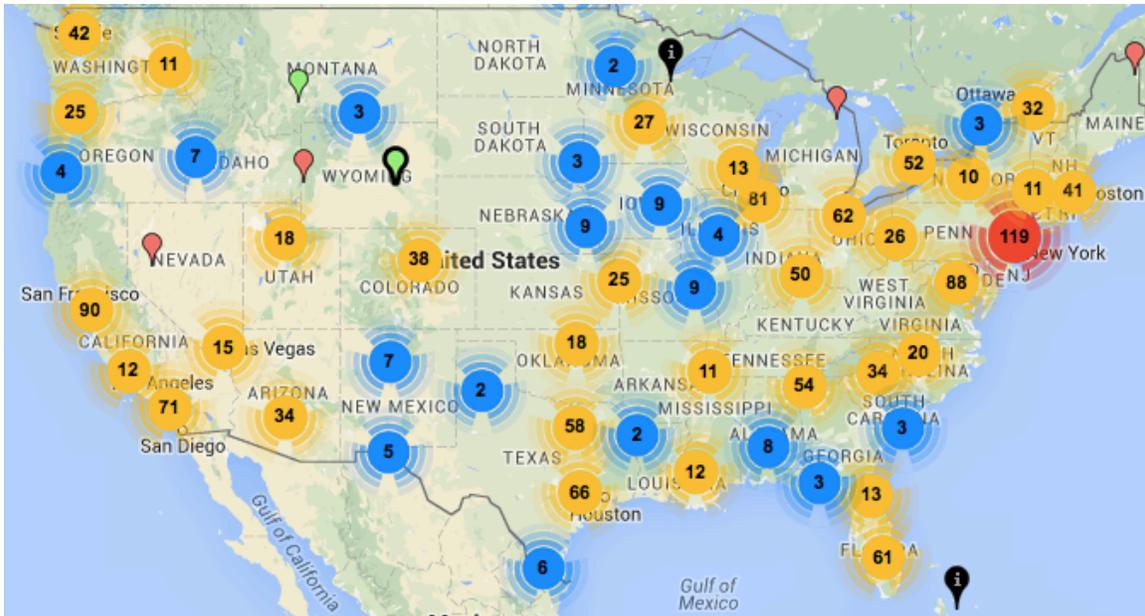
Source: datacentermap.com, accessed 02.01.16

The density of this map has increased: over the past several years, tier two markets have been built out in addition to the big core markets. [iii] [iv] The original impetus may have been consumer desire for predominantly entertainment-purposed video. However, IoT-driven need for processing and aggregation at the edge will inevitably add demand to these facilities.

There's also some discussion as to what truly constitutes an edge data center. One writer asserts that not all co-los in tier two markets properly qualify as edge DCs. He suggests seven characteristics, without which a facility is merely a "data center in a tier two market." These include breadth of service, percent of the local internet usage, a shift in peering traffic from the core to the new metro, measurable cost and performance benefits, a richer media experience, improved security, and construction as at Tier 3/N+1 data center.[v]

Our view is that there is certainly a difference between the two concepts, and that questions about the scale and connectivity of the co-lo are valuable. In the end, different characteristics will clearly be important in varying degrees to different industries. The terminology is secondary to the architecture and contract structure(s) which best meet the evolving needs of the enterprise. In other words, "it depends."

"IT DEPENDS"- WHAT'S THE ANSWER FOR YOU?

Every enterprise will need to answer two questions:

- Do you need edge data centers as part of your architecture, and
- Does the existing footprint of co-location options meet your need (and if not, what are the alternatives)?

Question 1: Do you need the concept of the edge?

You may or you may not: but consider this:

- Annual Global IP traffic will pass a zettabyte—that's a one followed by 21 zeros-by 2016– and surpass 1.6 zettabytes by 2018
- This traffic volume has increased five fold in just the past five years
- By 2018 over half of the traffic will be generated by non-PC devices, the number of which will be double the global population.[vi]

We may safely conclude that internet-connected devices and internet traffic are growing at a rate that is not predictable over the horizon of traditional data center planning.

The very least that is required, then, is an analysis of your data center's capability to handle the increases in demand that you will face… and to meet the performance requirements placed on it by different demands for access.

Given the growth in demand, as well as the short useful life of some of the data, edge data centers need to be a consideration. To utilize a couple of extreme illustrations: If you're processing text for a monthly print publication, perhaps you don't.   The other extreme might be represented by oil industry telemetry.[vii] Your need for edge data centers will increase to the extent that growth in dependence on Internet-connected things, and to the extent that real-time processing is important to the usefulness of this newly available data.

There are also customer-facing apps emerging from development efforts pushed out to the edge and run active/active/active… in as many instances as there are datacenters.

Edge is also a new home for apps that require ultra-low latency to user audience. It also invites a new resiliency model that leverages Edge DCs versus a small number of enterprise DCs.

Question 2: *if you do need "edge",* ***does the co-lo footprint meet your need****? If it does not, then what DO you need?*

These are architectural questions which can only be answered in the detail of each enterprise.

Considerations include

- Location: user concentration, availability of interconnection, last mile
- Performance and latency considerations:
    - specifically, there is a trend toward placing new co-location centers where power efficiency is greatest, which for many firms conflicts with latency requirements.
    - Most colos have traditional internet-based transit- focused on bulk capacity. What some Edge DCs will require is that capability **plus** incredibly low-latency special-purpose interconnects.
- Risk and Flexibility:
    - What is the duration of the contract a client is willing to sign?

- What is their confidence in sizing their need- given Gartner's forecast of a 44% CAGR in connected devices by 2020?
- Preference for capex vs opex
- Price: for a large data center, the build/buy breakpoint is sometimes estimated at 6 years. Does this breakpoint shrink for the micro/edge DC, to be lower than the standard duration of a colocation contract?

and the myriad of other factors which go into a build/buy decision.

Other alternatives can include smaller, portable data centers established at strategic locations. For more regionally concentrated organizations, this may be particularly appealing.

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While we're biased, we believe that a firm with <u>both</u> business analysis and architectural and operational skills is perfectly suited to help.   The concern with looking at only half of the equation is that you'll get an emphasis on either of

- the financial and contractual aspects, or the
- architectural relationship of the infrastructure to the applications that it is there to support

without a perspective to balance the two.

We'd like to help you to think this through. Call us at (877) 467-9885 to set up a consultation. Thanks.

i https://blog.equinix.com/2015/08/living-on-the-edge-gartners-edge-manifesto/   accessed 02.01.16

ii http://internetofthingsagenda.techtarget.com/feature/Plan-an-Internet-of-Things-architecture-in-the-data-center accessed 02.01.16

iii Source: http://www.datacenterknowledge.com/archives/2015/08/26/how-edge-data-center-providers-are-changing-the-internets-geography/ accessed 02.01.16

iv http://datacenterfrontier.com/local-frontier-data-centers-second-tier-cities/   accessed 02.01.16
v http://www.networkworld.com/article/2926448/cisco-subnet/7-key-criteria-for-defining-edge-data-centers.html
vi http://www.compassdatacenters.com/data-centers-on-the-edge-2/   accessed 02.01.16

vii Gartner, Top 10 IoT Technologies for 2017 and 2018, 22 January 2016, Nick Jones, accessed 02.18.16