Edge Datacenter Placement

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Why the need for a Edge Datacenter?

- For cloud services, performance at the user end is very important.
- In recent years, the big push has been to improve the quality of these high-bandwidth web services to users outside of the top metros like New York, Los Angeles, or San Francisco.
- This has been done by caching the most popular content or web-application data on servers close to “tier-two markets”, places like Phoenix, Minneapolis, or St. Paul.

[1]http://www.datacenterknowledge.com/archives/2015/08/26/how-edge-data-center-providers-are-changing-the-internets-geography/

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- As a result, a whole new category of data center service providers was created who call their facilities “edge datacenters”

- These are the facilities that quite literally extend the “edge” of the internet further from the traditional internet hubs in places like New York, Northern Virginia, Dallas or Silicon Valley.

- Examples of companies that describe themselves as edge data center providers include **EdgeConneX, Vxchnge,** and **365 Data Centers.**

[1]http://www.datacenterknowledge.com/archives/2015/08/26/how-edge-data-center-providers-are-changing-the-internets-geography/

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- "edge data center" would require a ***different set of considerations*** than building your standard colocation facility.
- "edge data center" is about ***creating interconnection ecosystems*** in cities away from the traditional core markets.
- **Location** is the main way for companies like EdgeConneX to differentiate from the **big colocation players** like **Equinix** or **Interxion**.

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- Edge data center providers are hubs where all the players in the long chain of delivering content or services to customers ***interconnect and exchange traffic.***
- Boston is also an example of a market without a good data center option for CloudFlare, Motta said.
- Boston has an internet exchange and a number of datacenters, but there is no datacenter where **transit providers** (companies that carry traffic over long distances), **access networks** (the home or business internet service providers) and content companies come together and interconnect.
- The above problem maybe specific to CloudFlare, as the company prefers not to pay for peering with access networks.

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Transport Vs Peering : A question of cost

- Companies like Comcast will sell transit services and deliver traffic to the customers.
- In CloudFlare's view, both parties bring something of value to this relationship – the CDN provides the content, and the ISP provides the audience – so one company paying a fee to the other wouldn't be fair.
- If it costs less to use transit services to bring content over a long distance from point A to point B than it is to pay for peering at point B, peering doesn't make a whole lot of business sense.

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What is an Edge Data Center?

- A Edge data center is a result of the combination of location and presence of a critical mass of content and web services companies and **access networks** that truly extends the internet's edge.

- *"You need content to attract ISP's and you need ISPs to attract content"*

- *"Edge Data Center is a place that connects at least 80% of the internet's content with at least 50% of all broadband users in a metro"* else you have not moved the edge of the internet

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Gangnam Style serves as reality check for Phoenix Internet

- Companies like Netflix, Google, and Facebook use CDNs and edge data centers to enhance quality of user experience and **to save money – a lot of money**.
- In a study conducted by ACG Research estimates that caching content locally in a metro with a population of 1 million can save about $110 million (50% savings) in backbone transport costs over five years.
- ACG predicts that within five years, tier-two markets will have the traffic capacity tier-one markets have today.

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Building at the Internet's Edge

- EdgeConneX buys Class C office buildings, guts them, and coverts them to data centers (does not lease from commercial data center providers).
- As demand dynamics change, the design and expansion strategy for EdgeConneX data centers evolves.
- They have 1.2 MW facilities which can scale up to 10MW in 2MW chunks.

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- Power-dense designs are employed, averaging 15kW per rack.
- A typical customer starts with 30kW to cache content.
- As the customer's requirements grow over time and reach about 50 kW, they combine the caching infrastructure with a network node of their own.
- Once a customer has their own node in a facility, they start looking at 100kW with provider that can eventually grow into 200kW deployments.

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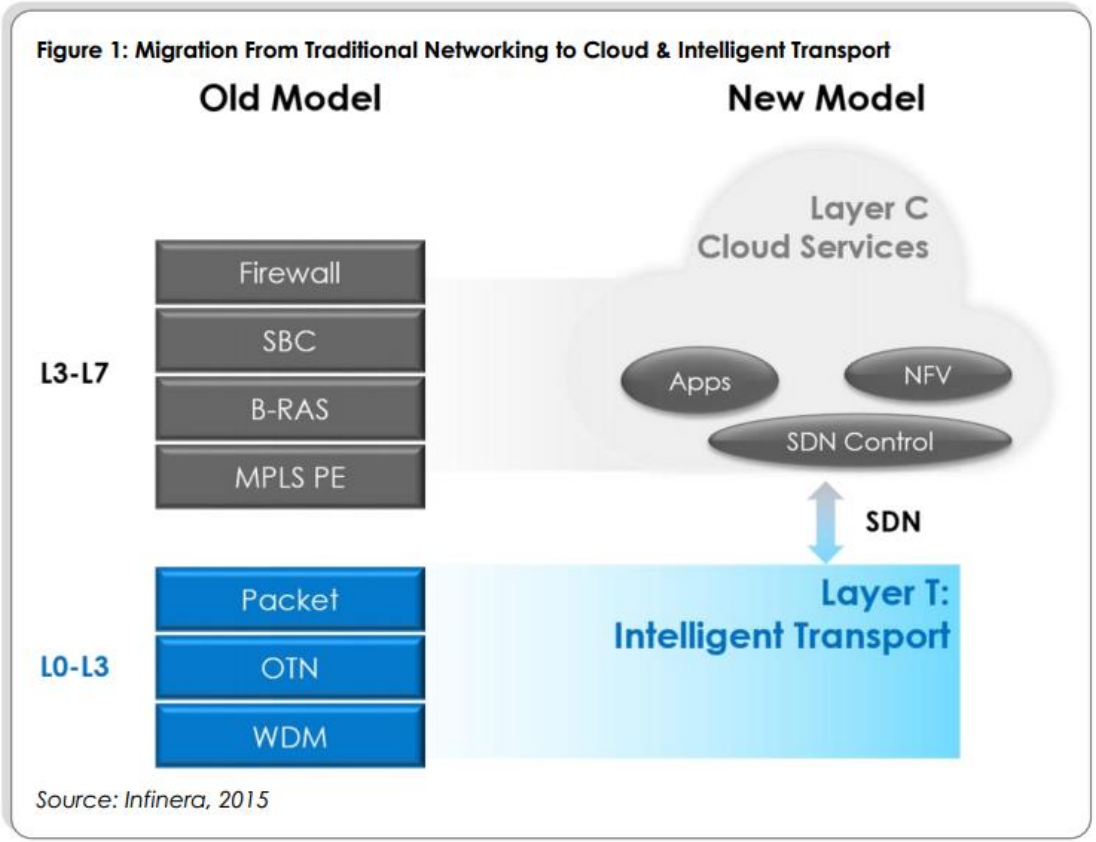
Emergence of Layer T & Layer C



[2] Architecting the new metro network for the cloud era – Heavy Reading

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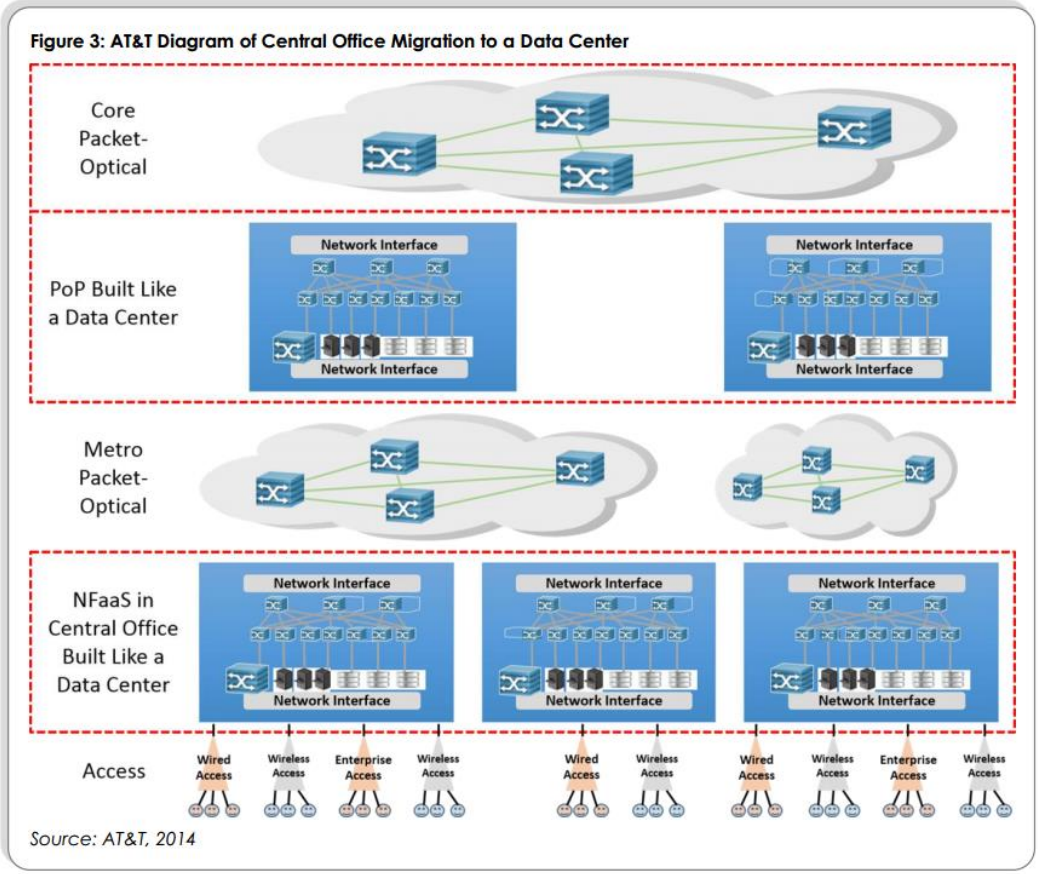

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