The Carrier Challenge – Achieving 5-9s availability on 3-9s Cloud infrastructure

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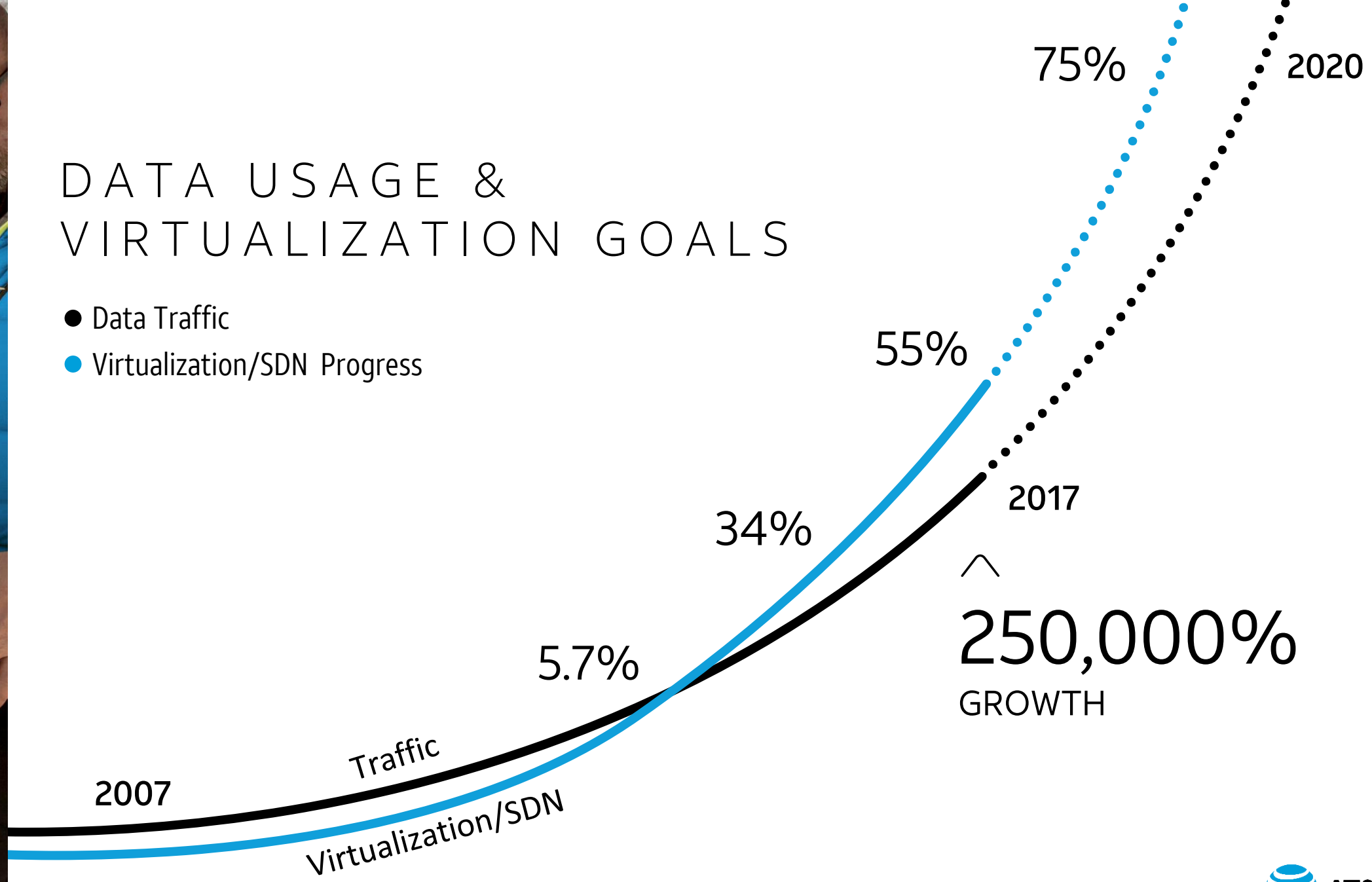
IEEE CQR Emerging Technology Round Table

May 2018

DATA USAGE & VIRTUALIZATION GOALS

- Data Traffic
- Virtualization/SDN Progress



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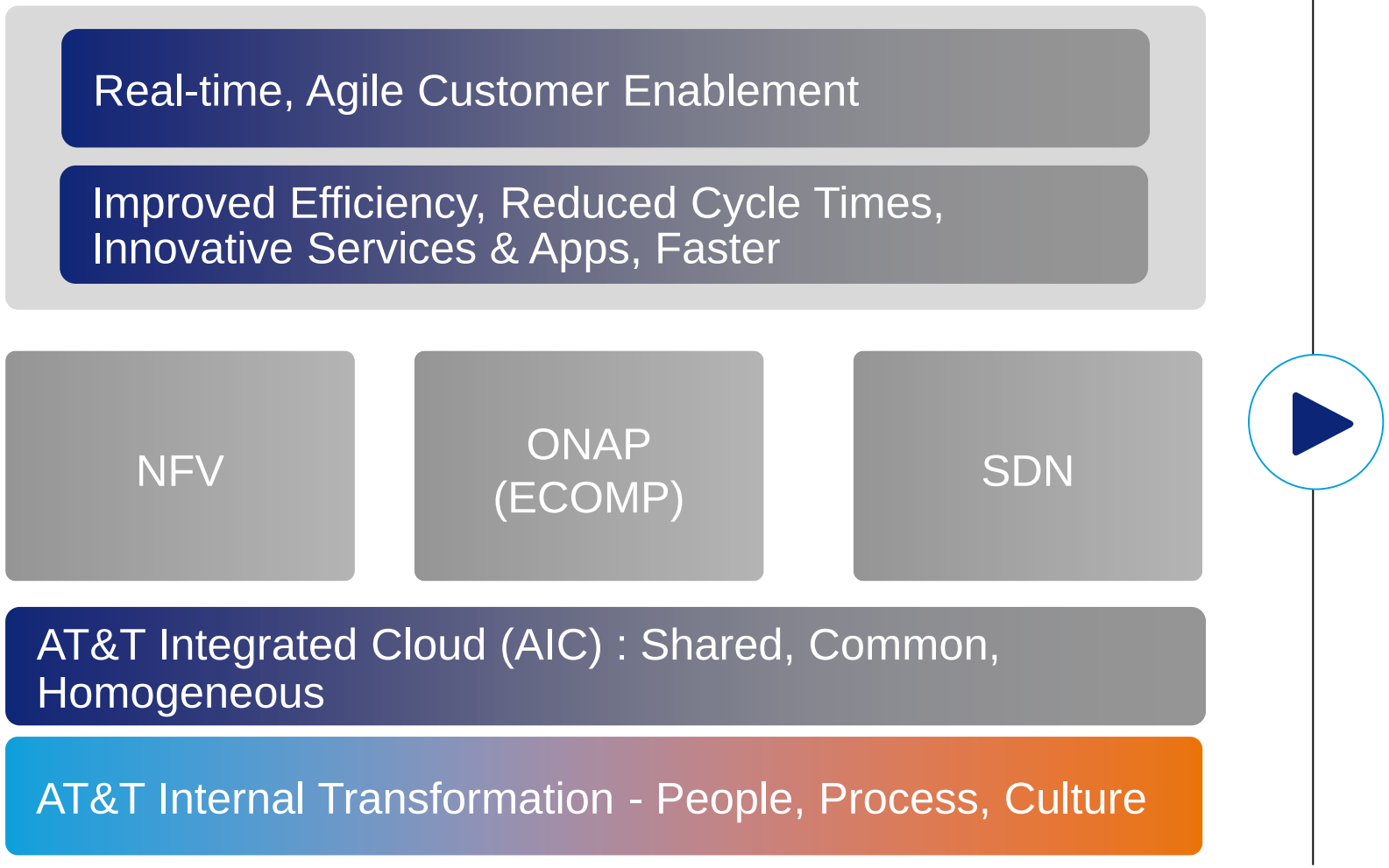
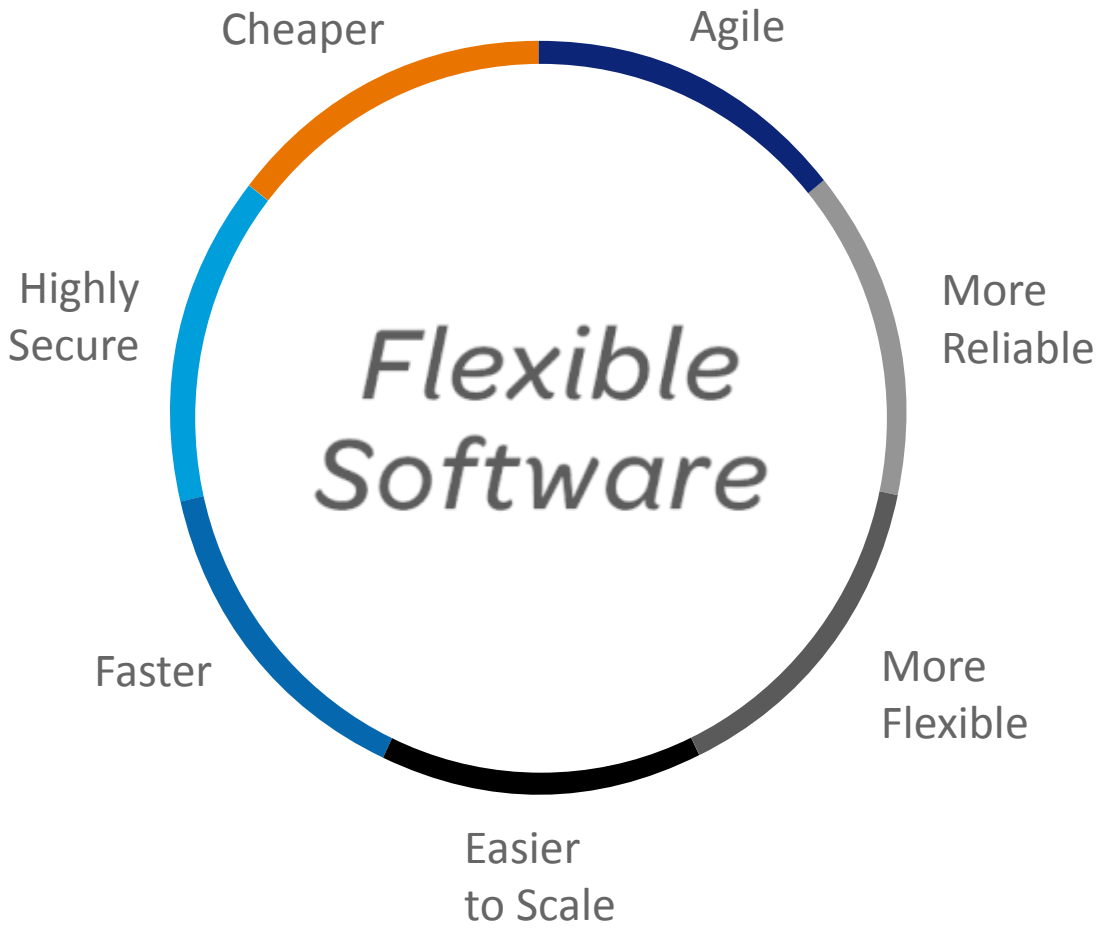
CARRIERS ARE TRANSFORMING to SDN



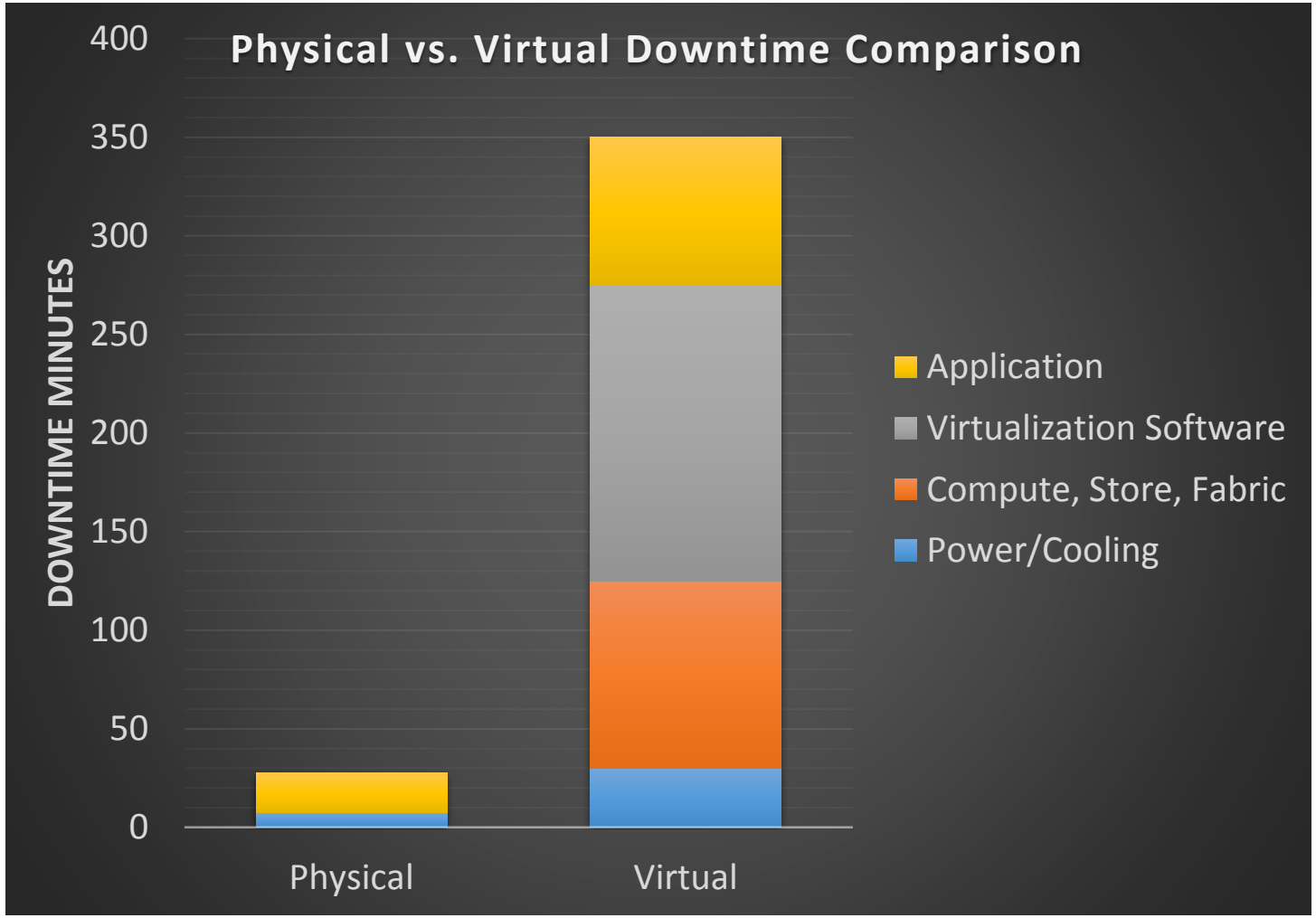
New Paradigms for AT&T and the Telecommunications Industry

RETHINK THE NETWORK

Specialized Hardware



Virtual environment less reliable, but status quo is no longer affordable



Traditional Carrier Grade

- 5 min downtime (5-9s)
- Inflexible
- Expensive

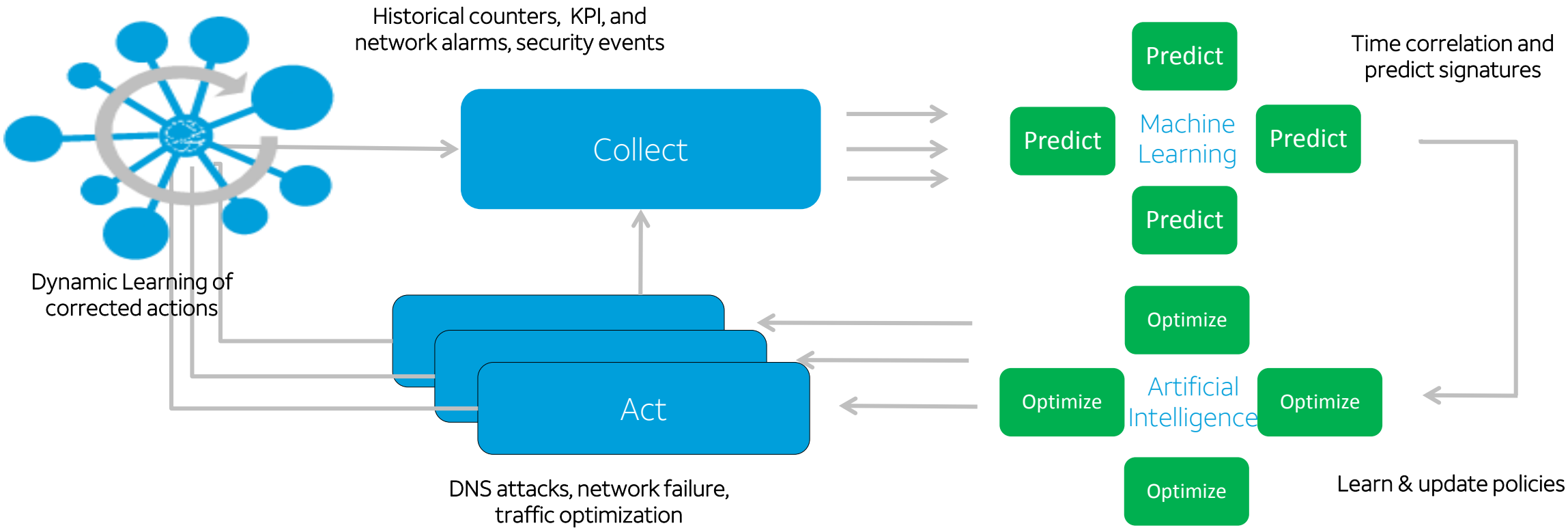
Virtual

- 100s of min downtime (3-9s)
- Flexible
- Cheaper

What's Different with the Cloud?

- Typical Clouds Have long planned outages (days vs. hours)
- Commodity HW and SW fail more often than purpose-built
- Multi-layer and Shared Tenancy
- Software Changes faster

Reliability through Cloud Automation and Analytics



ONAP (www.onap.org) – Open Network Automation Platform

- Real-time, policy-driven orchestration & automation platform for physical and virtual networks

Acumos (www.acumos.org)

- Industry standard for making AI apps reusable and easily accessible to any developer

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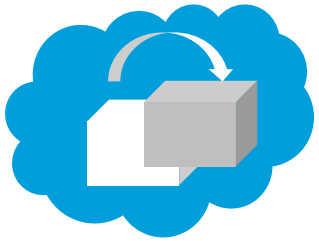
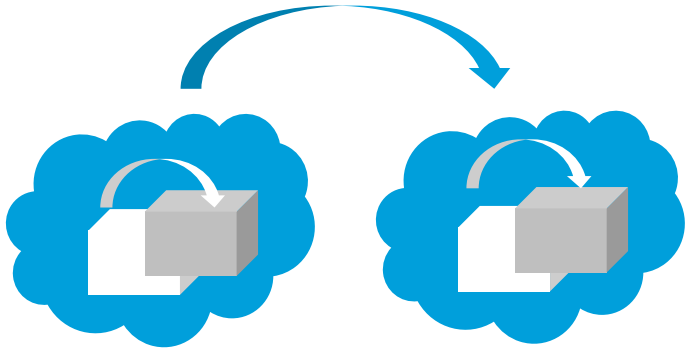
Cloud Instances Have long planned outages -> Mitigate the Effects of Planned Outages with Redundancy

Single site
Downtime = Hours



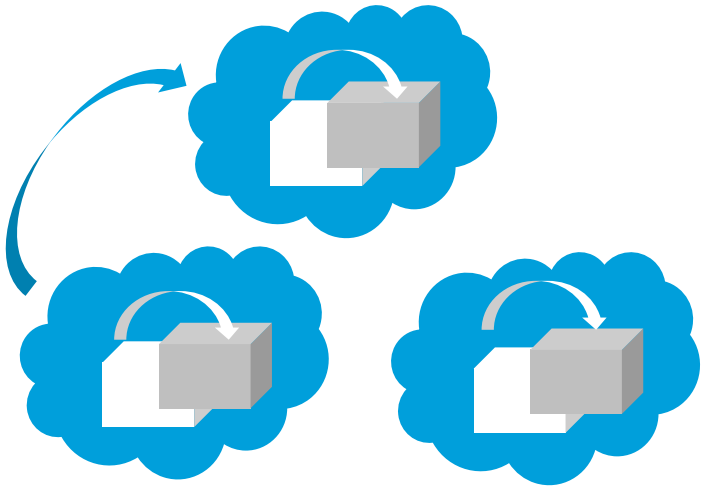
3-9s (500 min/year downtime)

Dual site
Downtime = Minutes



4-9s (50 min/year downtime)

Multi site
Downtime = Seconds



5-9s (5 min/year downtime)

ONAP automates VF migration to locations that are not currently undergoing a planned outage

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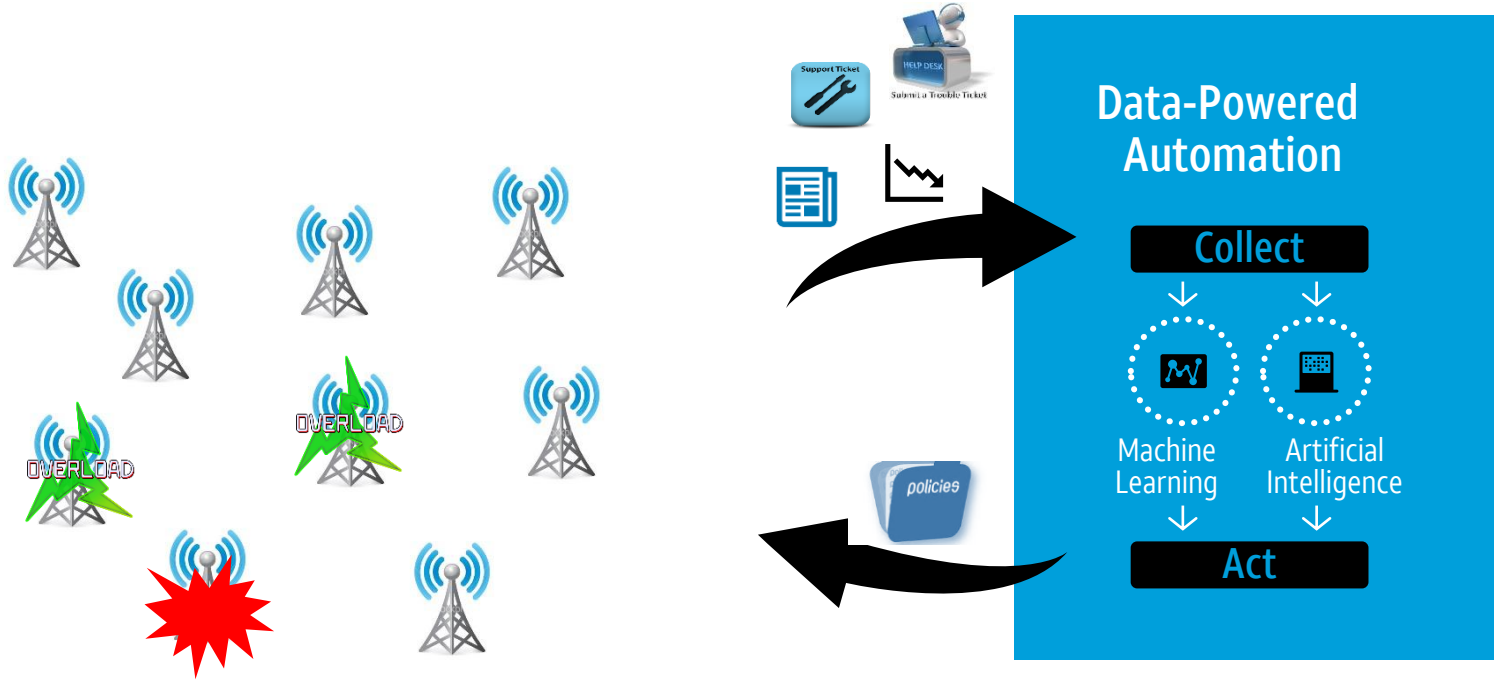
More frequent failures with commodity HW and SW -> Accurate Fault Identification and Automated Failure Recovery

Networks often do not fail gradually

- Focus on root cause, fault classification and fast recovery
- Eliminate duplication between fault, performance and service tickets
- Automated actions based on known signatures



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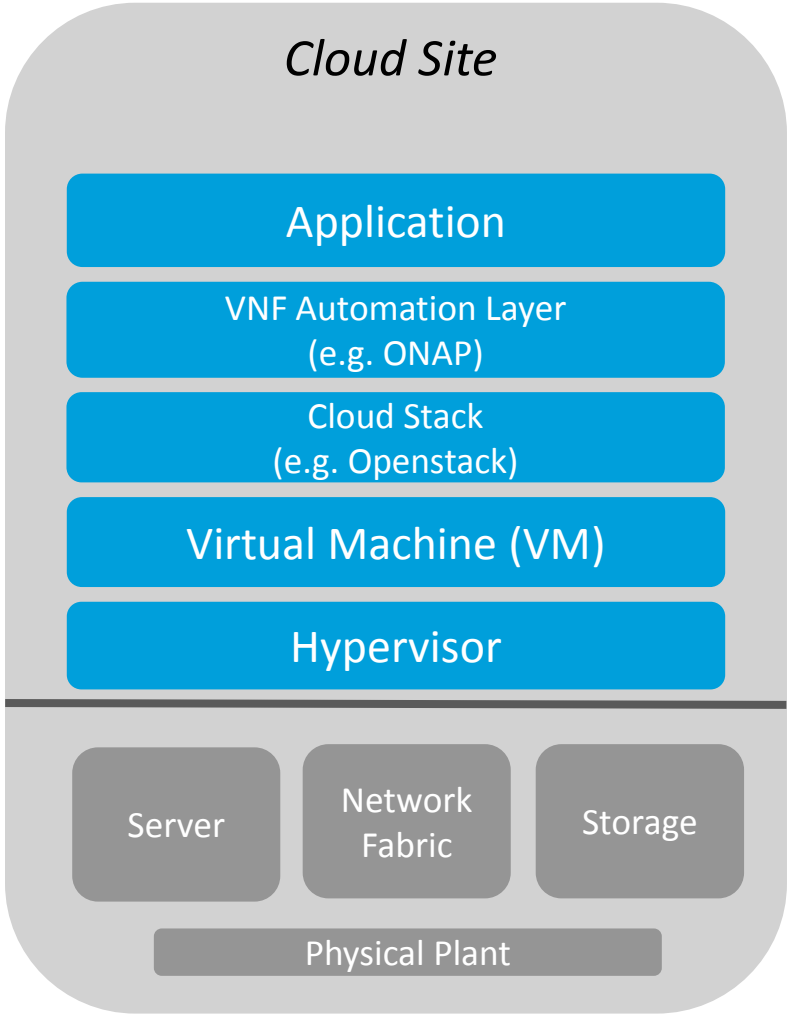
Multilayer and Shared Tenancy -> Requires excellent Instrumentation and Correlation



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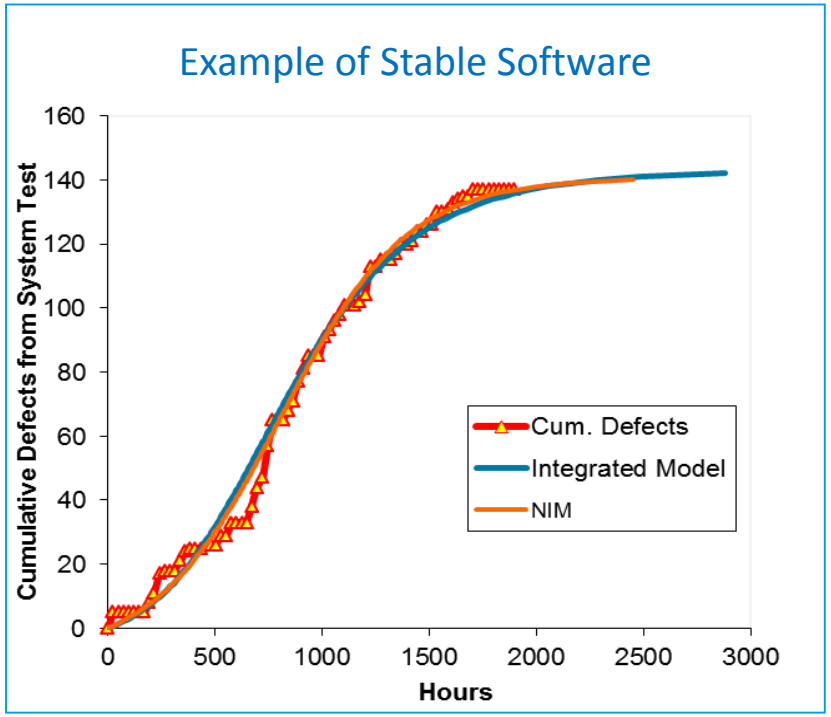
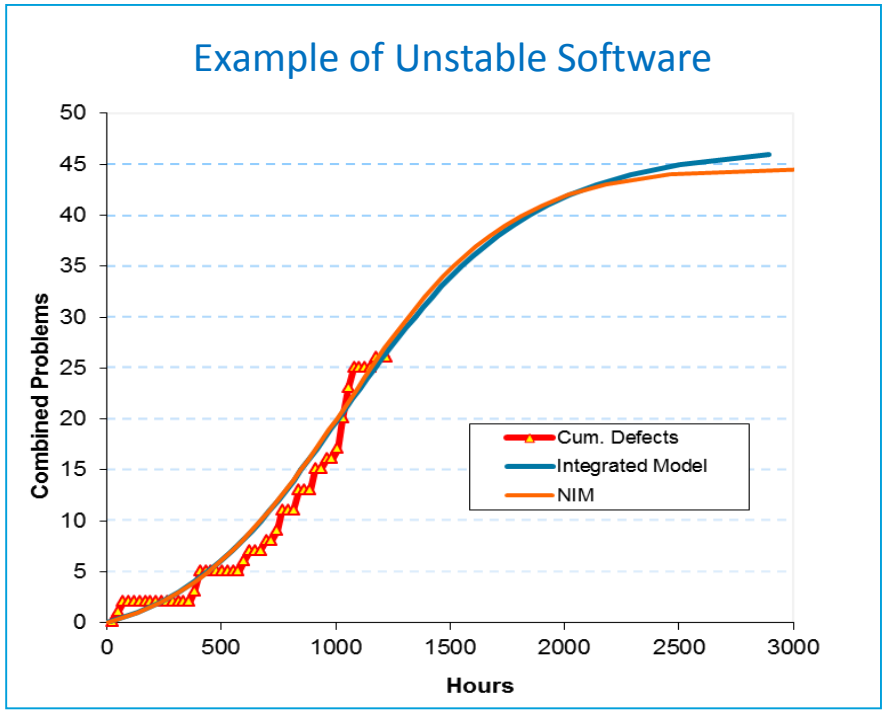
Software Changes faster -> Software Stability for Agile Development





- Need a process for incorporating non-functional requirements in an agile process (DEFINE)
- Instrumentation and testing are critical (MEASURE)
- Use software defects found in testing to predict residual software defects before field deployment. (ASSESS AND IMPROVE)

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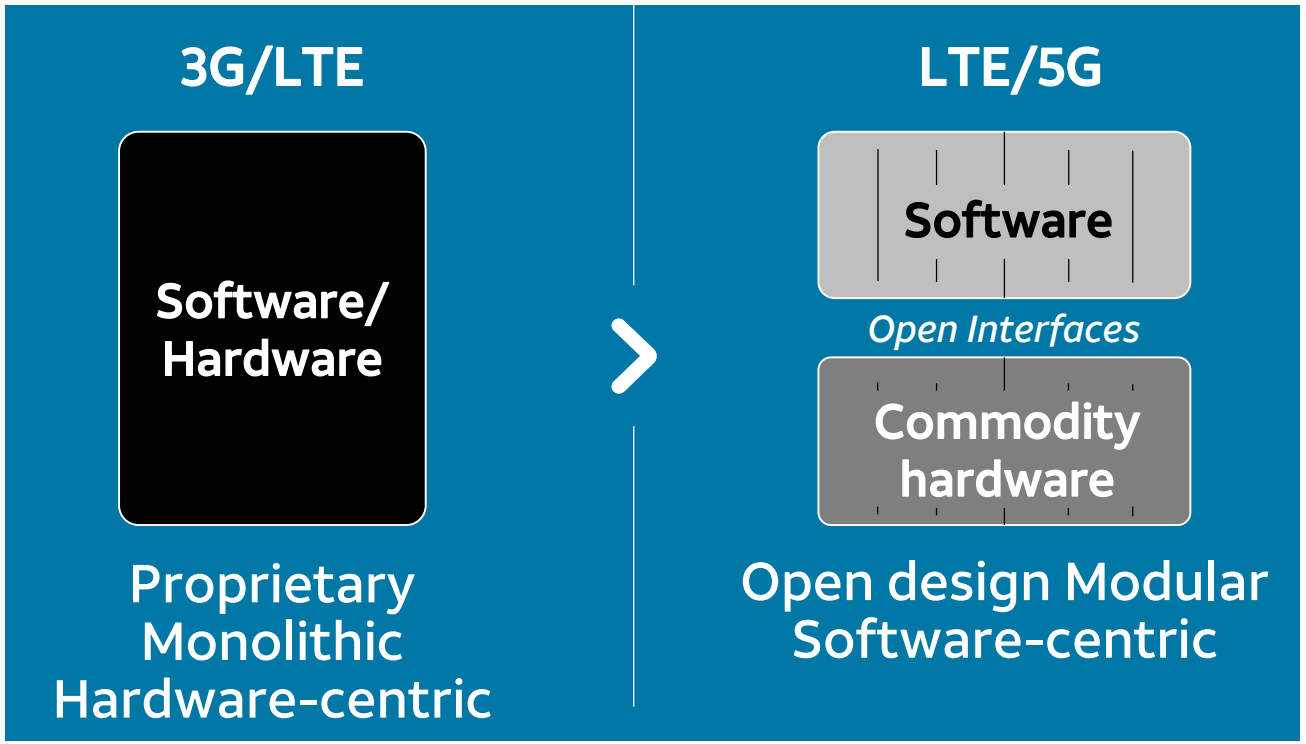
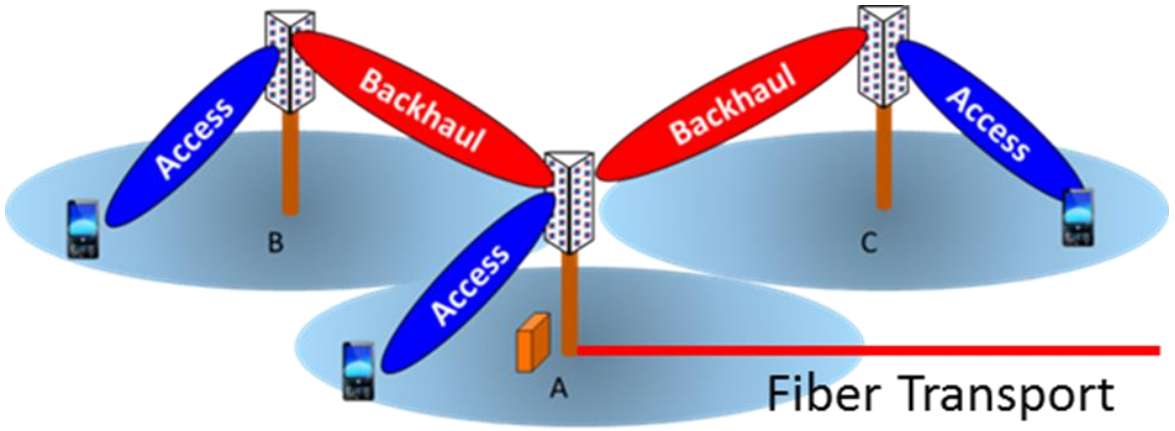
What about 5G?





SDN and NFV

- More open interfaces than LTE
- Separation of control and user plane

Integrated Access and Backhaul

- Integrated Backhaul and access avoids transport densification
- Multi-hop scheduling and route optimization

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Key Takeaways

- Carriers are transforming to SDN for improved efficiency, reduced cycle times, innovative services & apps, faster service delivery
- Commercial clouds are not as reliable as purpose-driven hardware
- Automation and analytics, combined with solid reliability design, can be used to achieve the required availability

SOMEDAY

EVERYDAY.