The world has gone digital.

Data is the lifeblood of the economy.

Customers demand convenience in their experiences.

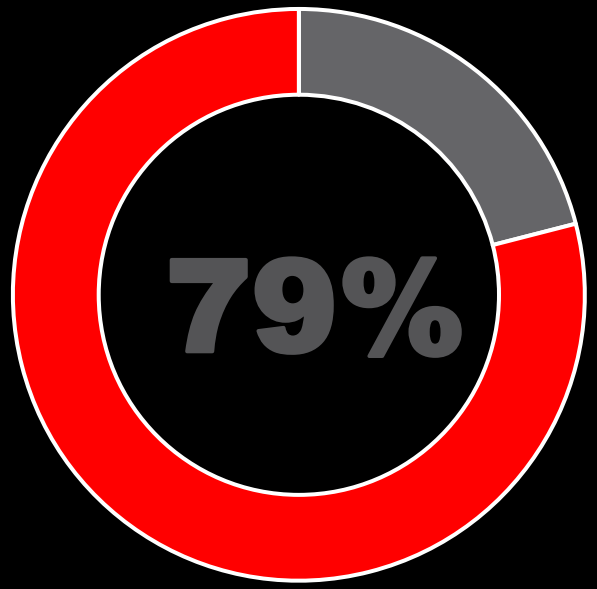
Infrastructure is being called upon to do more than just enable.

To succeed, Digital Leaders will need...

- GREATER AGILITY
- SIMPLIFIED DEPLOYMENT
- IMPROVED COST STRUCTURE
- IMPROVED LATENCY
- EXPANDED GLOBAL REACH
- RICH INTERCONNECTION

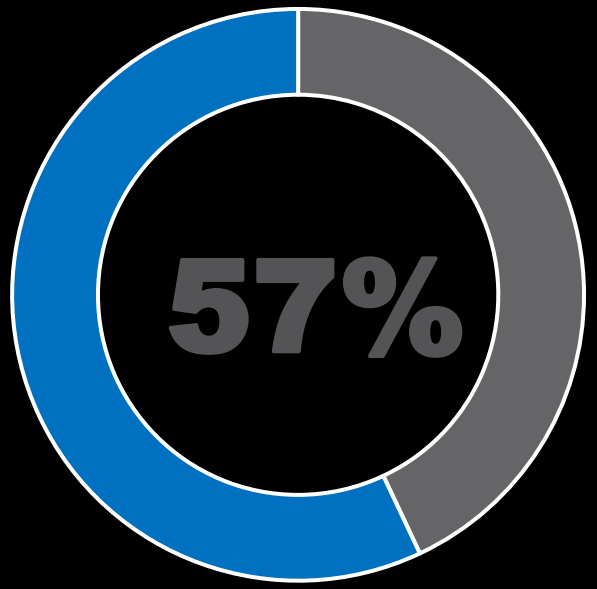
Technology trends are accelerating how infrastructure is evolving

Compute-Distributed



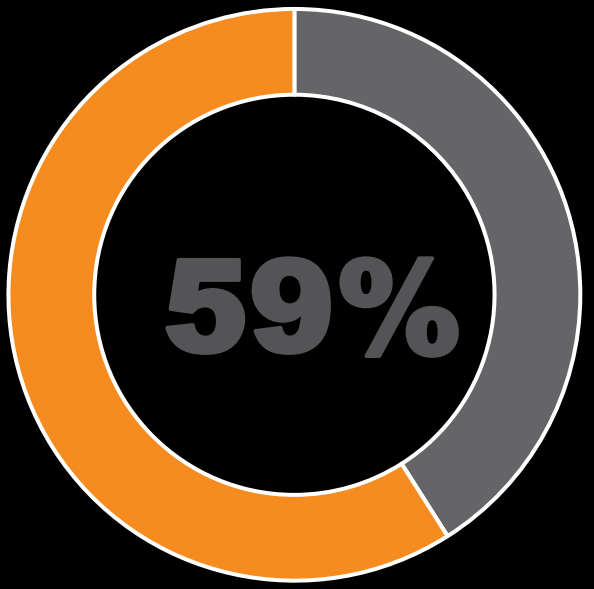
79% of organizations are planning to deploy more IT services at edge locations[1]

Software-Led



57% of decision making is led by strong Software development mindset

Ecosystem-Centric

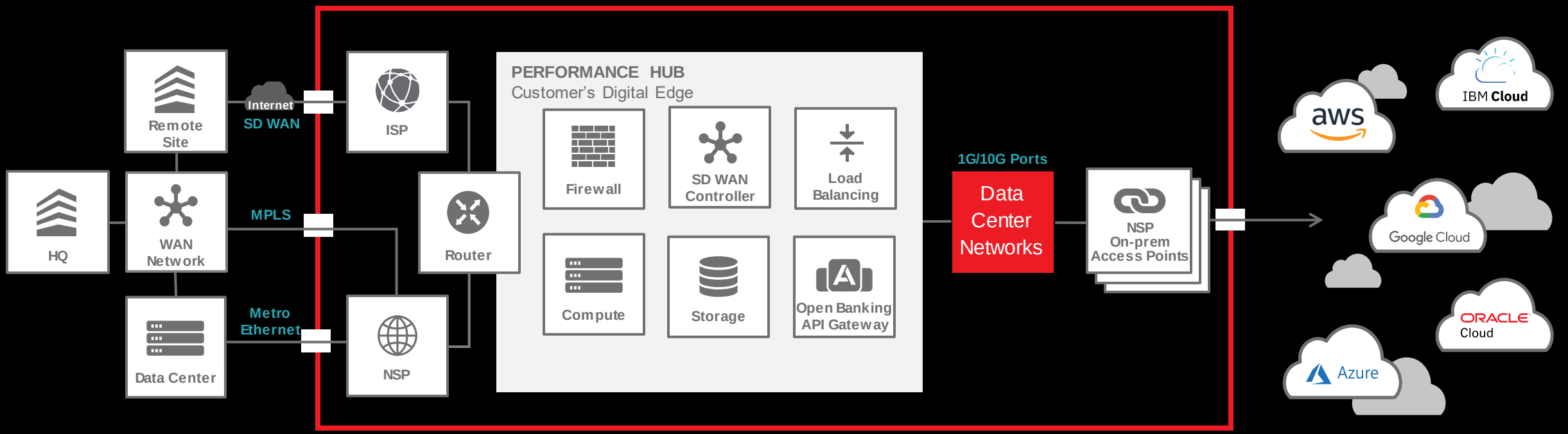


59% of global IT decision-makers report that connecting with new digital ecosystems is a top priority[3]

1. IDC, "Key Findings: 2020 Datacenter Operational Survey—Cloud to Edge Datacenter Trends," Jennifer Cooke, Aug 2020, #US46752920. 2. "2020 Developer Survey," Stack Overflow Advertising, 2020. 3. "Beyond COVID-19: Digital Transformation Trends in the Wake of the Pandemic," Equinix 2020-21 Global Tech Trends Survey, Equinix, 2020

EQUINIX

Distributed Hybrid Environments



Private | On-Prem

Edge | Colocation | Data Centers

Public

Time/Sync - Expectations and Demands in Hybrid Environment

Accurate and Precise
- Precise time globally 24x7
- Average Accuracies between 1-100 microseconds

Traceable and Compliance
- Traceability to national labs
- Meet HIPAA, FINRA, MIFID II standards

Standard Protocol Support
- PTP, NTP

Security and Reliability
- Low-jitter, secure networks
- Bypass Internet
- GNSS backups, anti-spoofing/jamming
- Multi-tenancy, authenticated.

As-a-Service
- Fully managed service, requiring no maintenance.
- Single click installation and service dashboard
- Fully automated provisioning with SLA

Monitoring-enabled
- UI-based monitoring service
- Alerting capabilities

Highly Available
- Multiple levels of service redundancy

EQUINIX

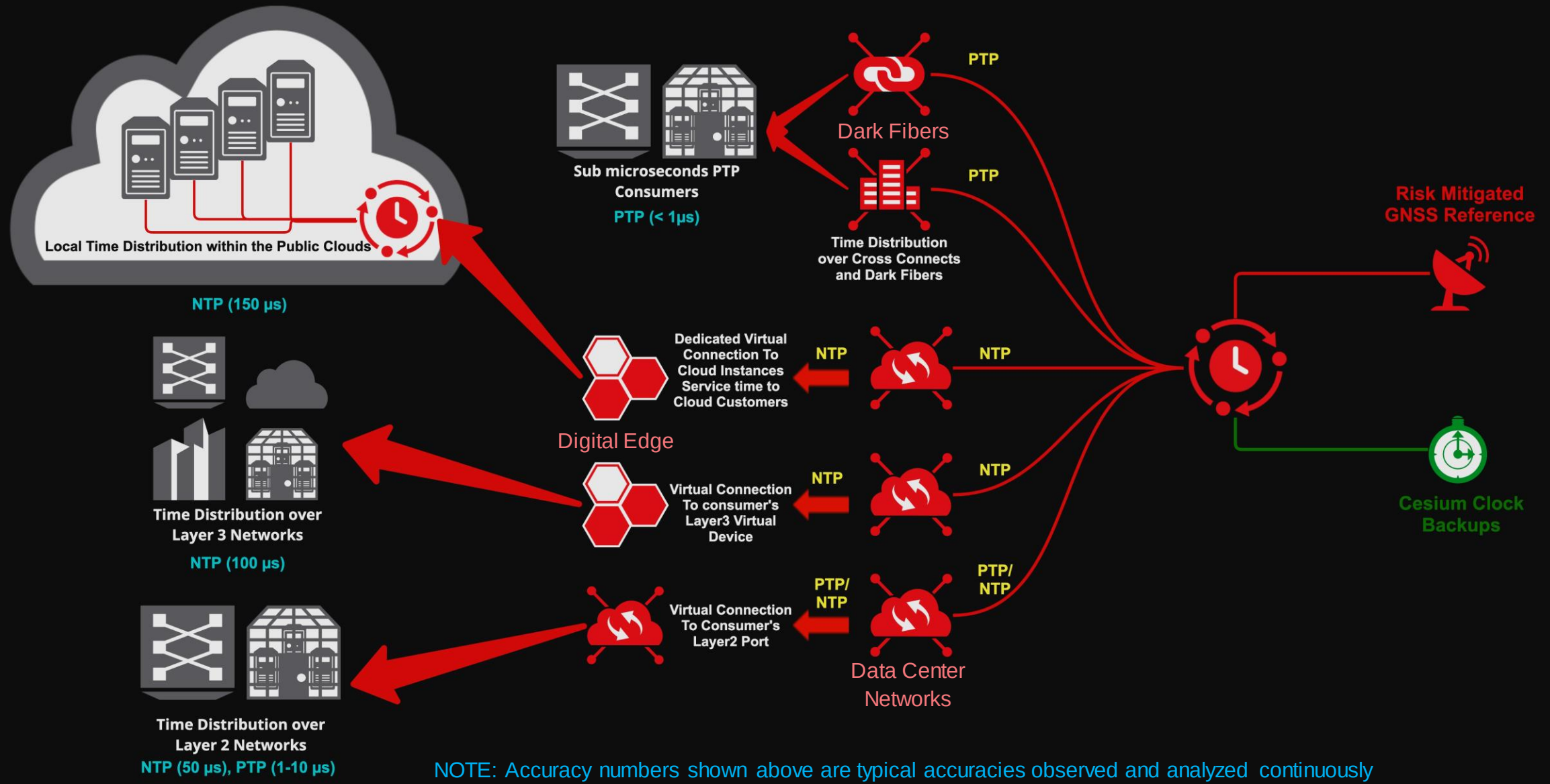
Meeting Expectations and Demands in Hybrid Cloud Environment

Public Internet or VPN not Good for time synchronization across hybrid clouds

Need innovative solutions uniquely suitable for the hybrid cloud environment.

Low-Jitter (and with known asymmetry), Highly Optimized private SD-WANs and NFV schemes
Bare Metal with PTP-HW timestamping NICs
High performance PTP (low jitter, sub microseconds) over direct dark fibers
On-Path PTP support.
AI models
Sub microseconds on the edge. Additional work is required in this area

Time Distribution: Physical, Virtual and Hybrid Presence



NOTE: Accuracy numbers shown above are typical accuracies observed and analyzed continuously over short/long distance networks with over 40 different timing devices deployed across the globe.

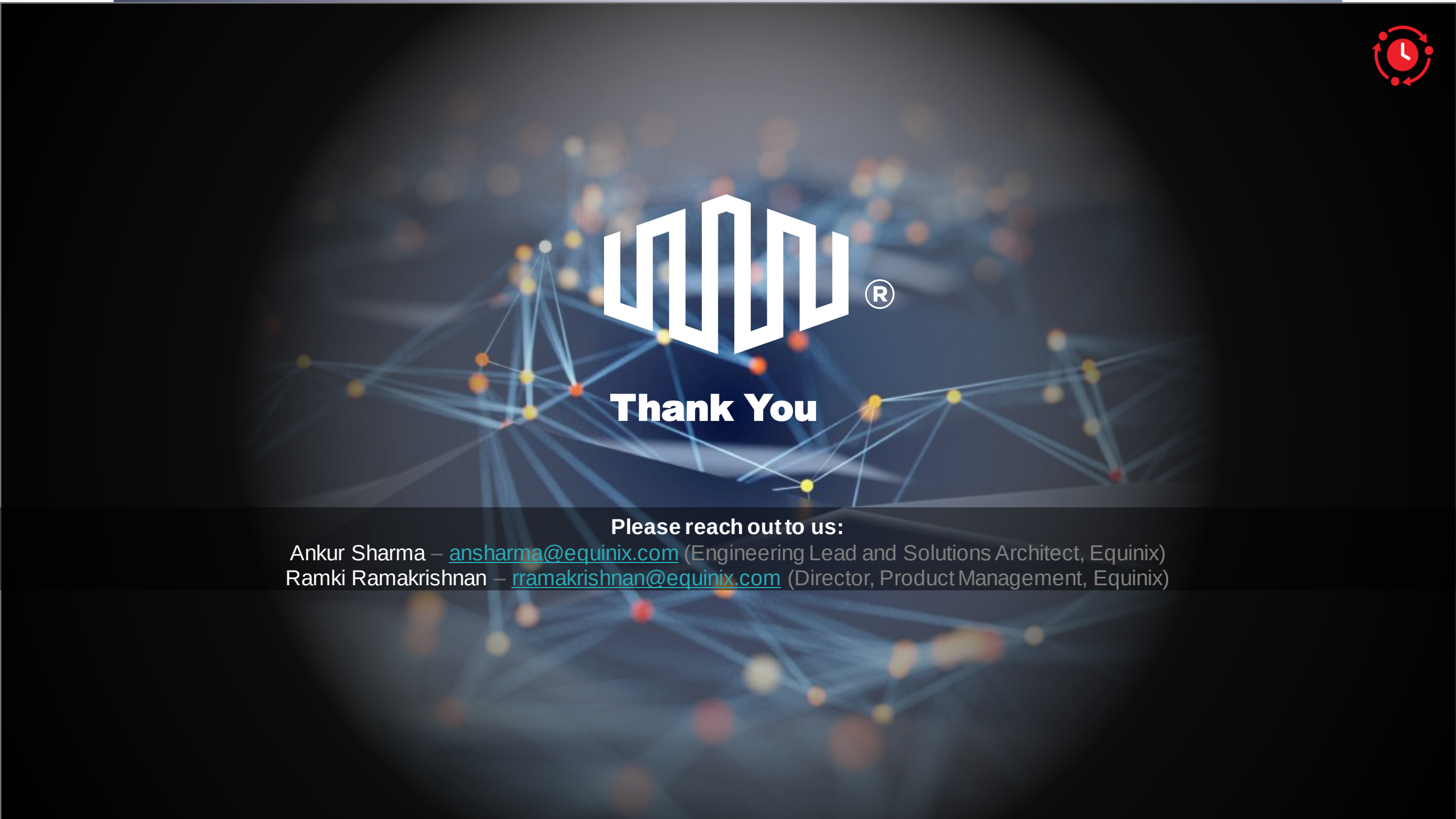
Ensuring Secure and Reliable Time Synchronization

Reliability and Security in Transit

- Private Connectivity
- No exposure to internet
- Use of Private IP spaces
- Secured end-to-end connectivity over private network
- Authenticated Synchronization: Use of MD5, NTS, etc.
- Monitoring and Alerting
- Redundancy/Failovers
- Quick Recovery
- Packet filtering

Reliability and Security at Source

- GNSS Risk Mitigation solutions
- Traceability and Backups
- Audit and Compliance Reporting
- Data Logging, Backup and Retention
- Authenticated Provisioning and configuration process.
- Reliable vendor choices and equipment
- Limited Personnel Access to Infrastructure
- Continuous Infrastructure scans


Thank You
Please reach out to us:
Ankur Sharma – ansharma@equinix.com (Engineering Lead and Solutions Architect, Equinix)
Ramki Ramakrishnan – rramakrishnan@equinix.com (Director, Product Management, Equinix)