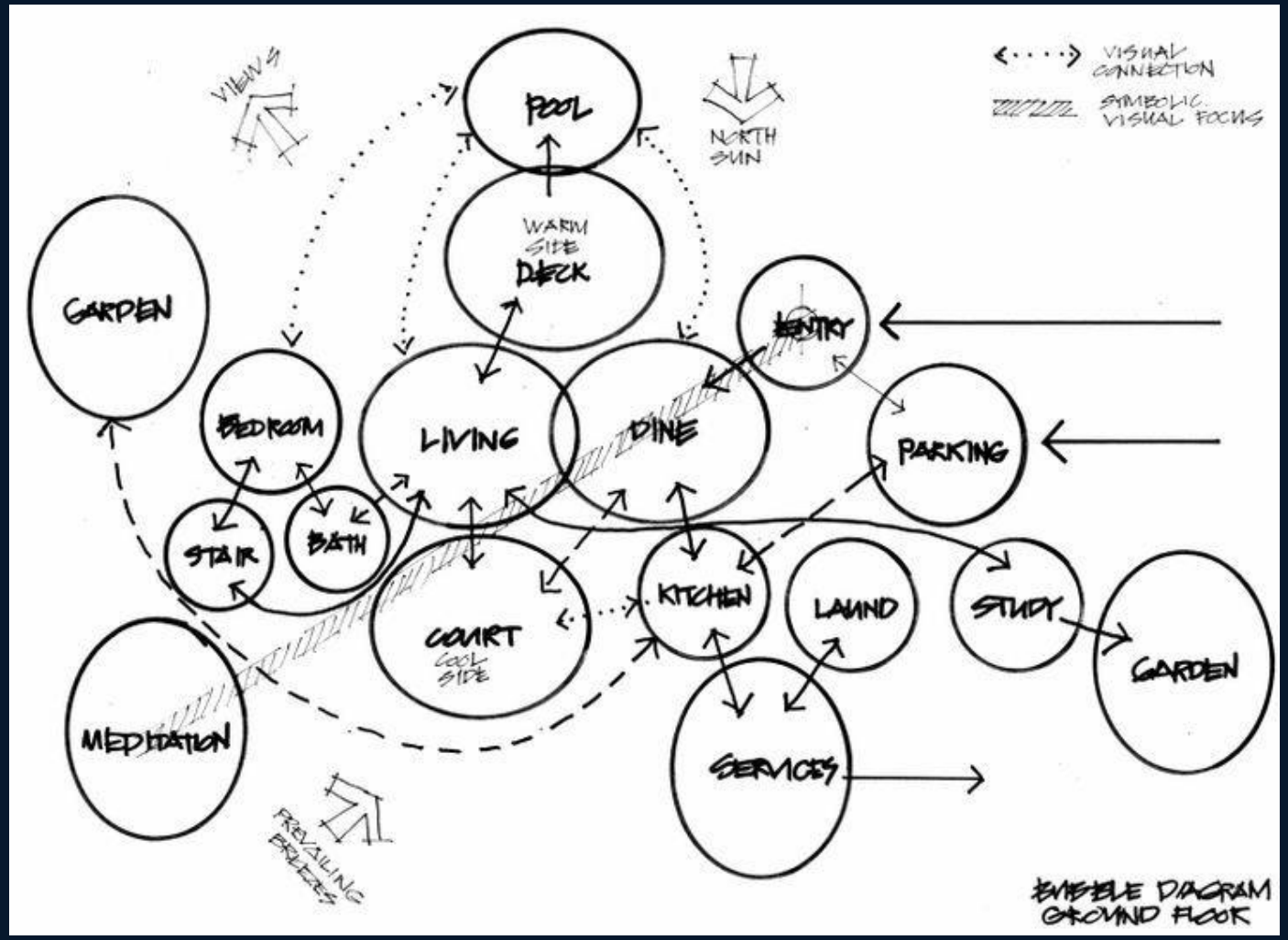
How It's Made: Cisco Secure Access

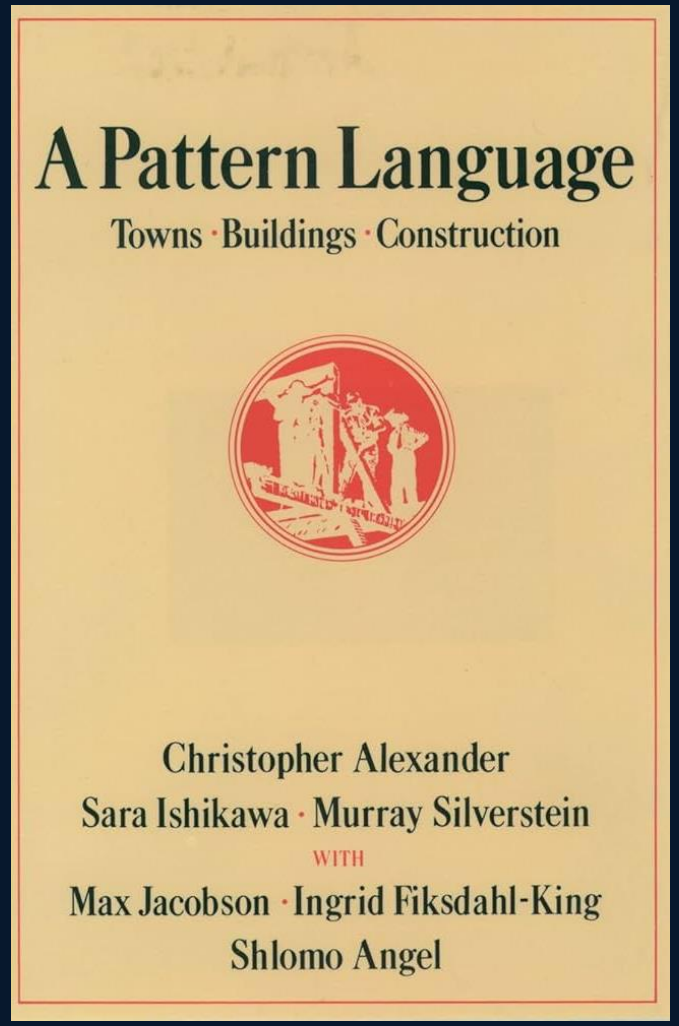
John Rauser
Director of Software Engineering

BRKSEC-2885


QUALITY
CHECKPOINT
METAL
DETECTOR

Patterns

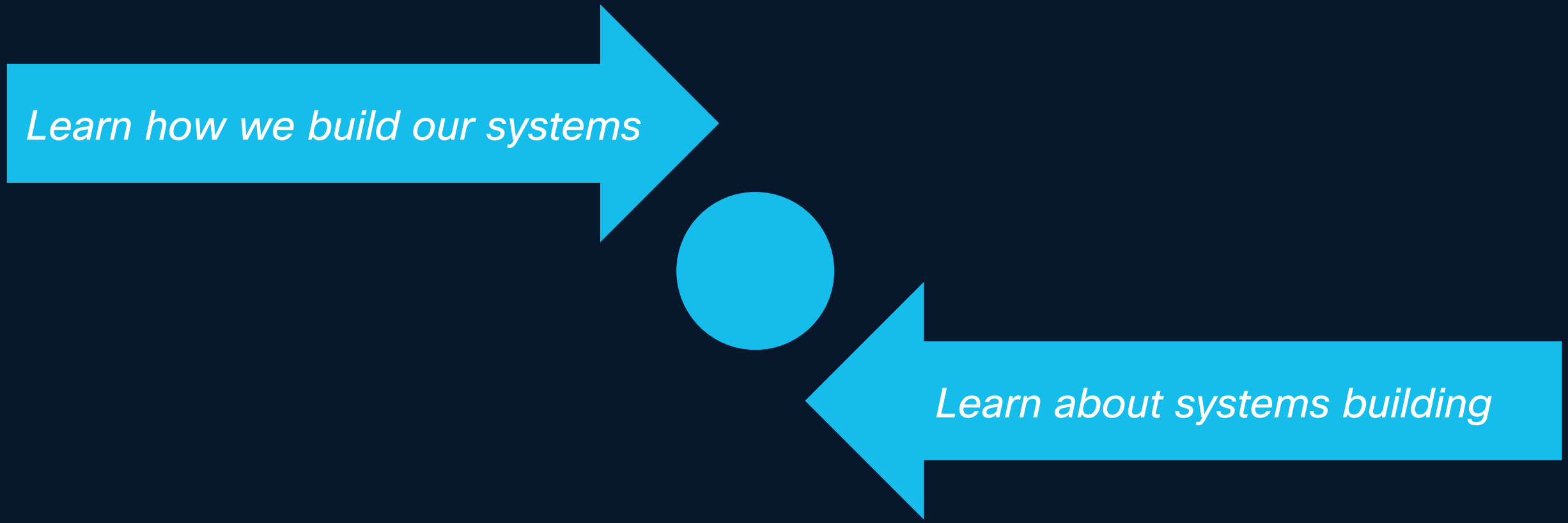




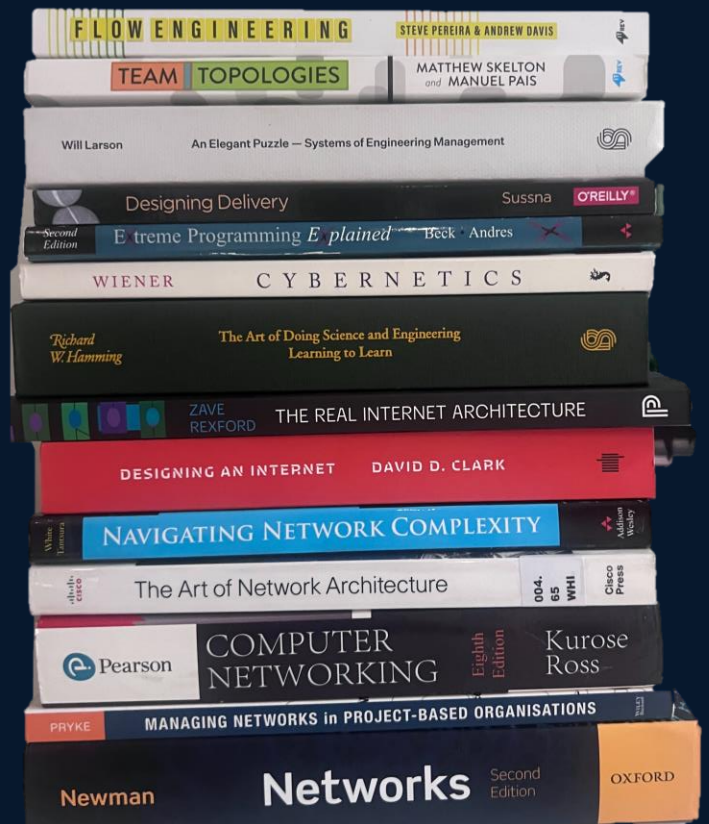
Agenda

1 Product
2 Quality
3 Design
4 Flow
5 Resiliency
6 Reliability
7 Systems Thinking
8 Continuous Learning

Two Goals



Who Am I?



John Rauser

- Director of Software Engineering, Cloud Security

- Working for Cisco for 6 years building high performance, cloud-delivered security solutions
- Developing Zero Trust Access in Secure Access

- Avid reader, speaker, blogger, writer
  - Website: webrauser.com
  - LinkedIn: @jrause

Cisco Webex App

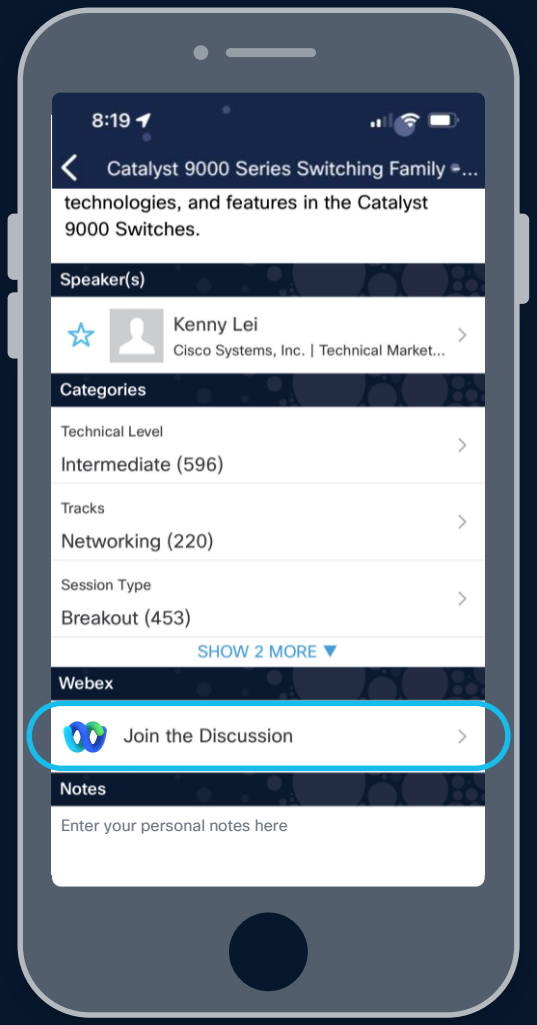
Questions?

Use Cisco Webex App to chat
with the speaker after the session

How

1. Find this session in the Cisco Live Mobile App
2. Click “Join the Discussion”
3. Install the Webex App or go directly to the Webex space
4. Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until June 13, 2025.

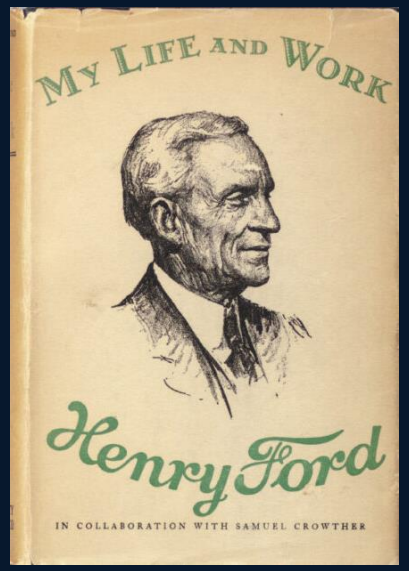


Secure Access Sessions!

- BRKCOC-2040: Cisco ITs Journey to SSE – Enabling Hybrid Work with Cisco Secure Access
- BRKSEC-2285: The Latest in Cisco Secure Access (SSE) Innovation

- BRKSEC-1015: Is VPN really dead and replaced by Zero Trust Network Access?
- BRKSEC-2882: Enterprise Browsers and Secure Client
- BRKSEC-2772: AI Driven Operations and Self–Healing Cisco Secure Access
- BRKSEC-2170: Universal Zero Trust with Cisco Secure Firewall
- BRKSEC-3027: Deep Dive into Cisco’s Use of QUIC, MASQUE, and OS Native Capabilities to Deliver Frictionless Zero Trust Access

Pattern 1: Product



“If I had asked people what they wanted they would have said a faster horse”

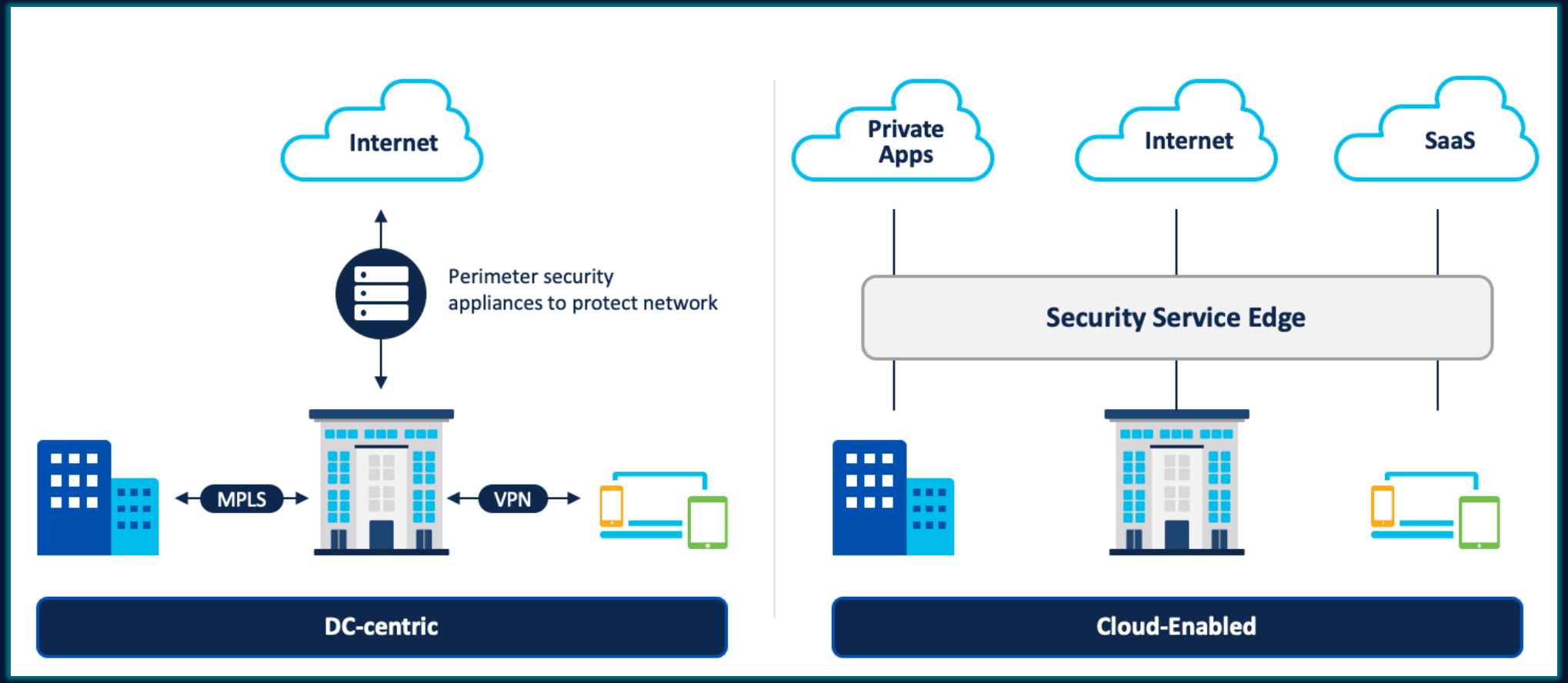
Cisco Secure Access

Unified Platform

Unified Connectivity
Seamless & Transparent connection

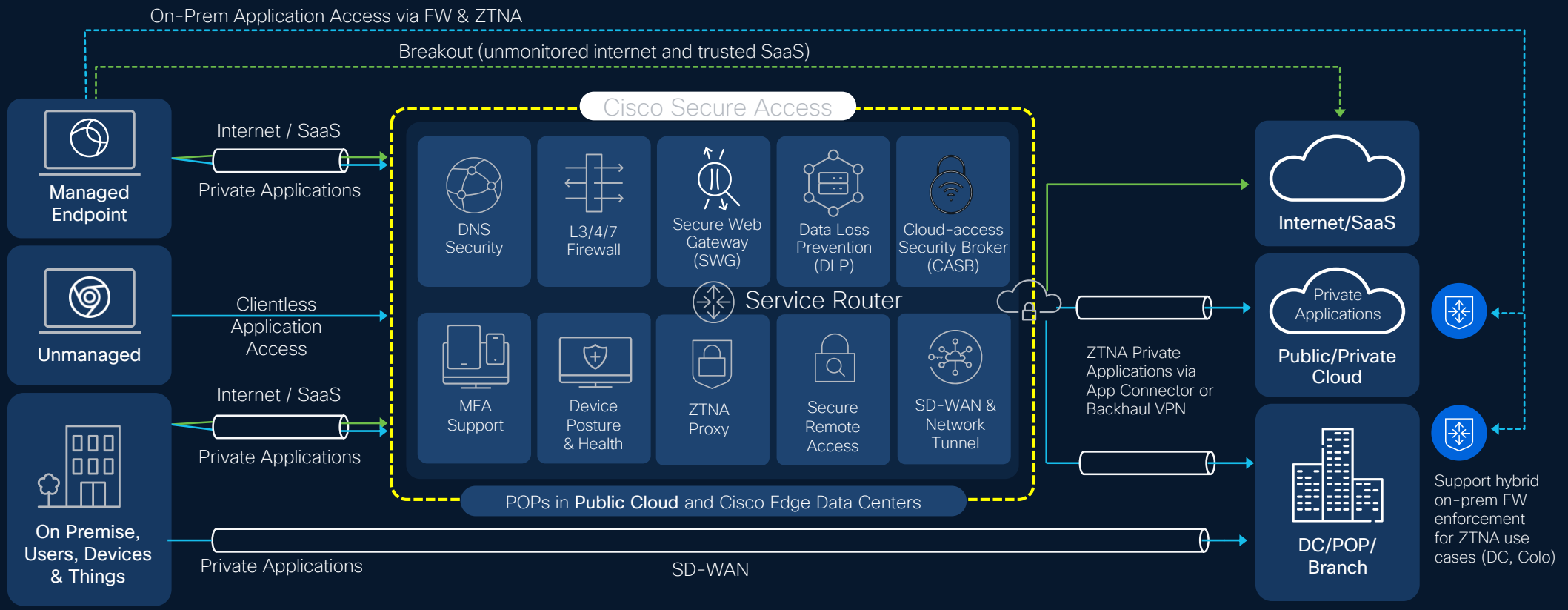
Unified Management
Single console to control both Connectivity & Security

SSE: Network and Security Transformation



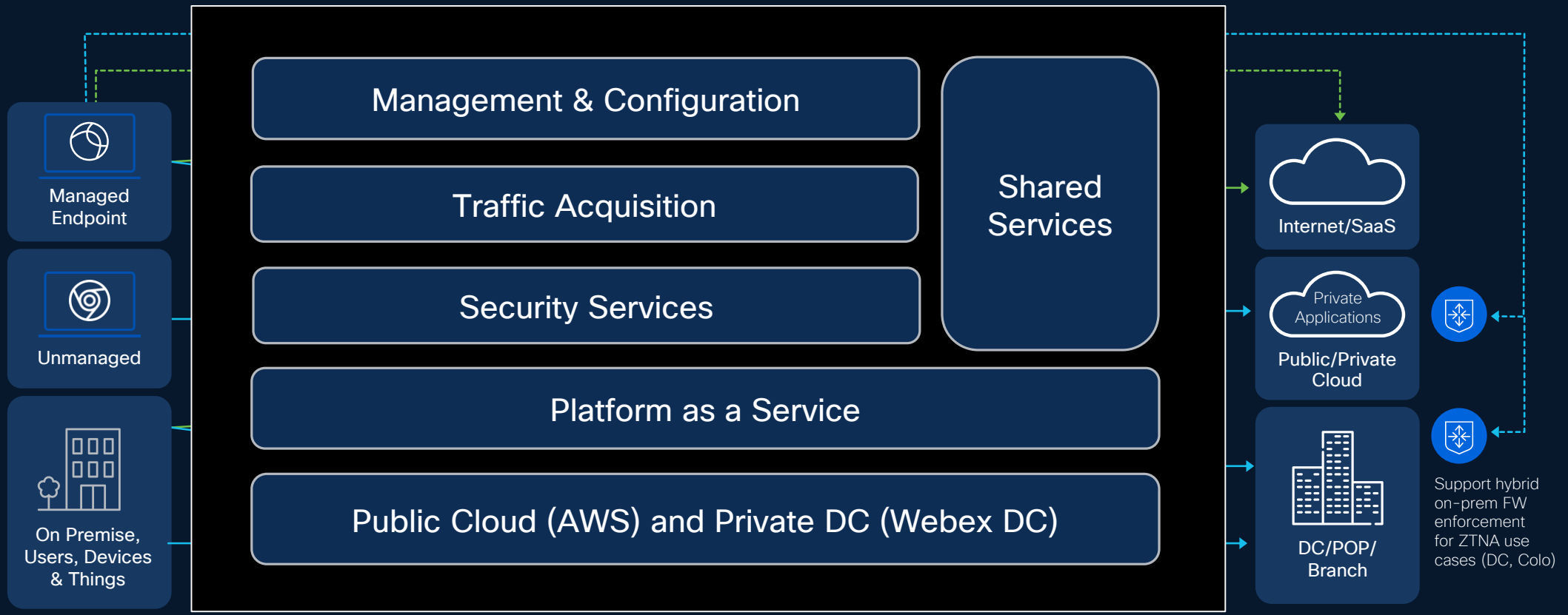
Cisco Secure Access

Overlay security service network with intelligent interconnect

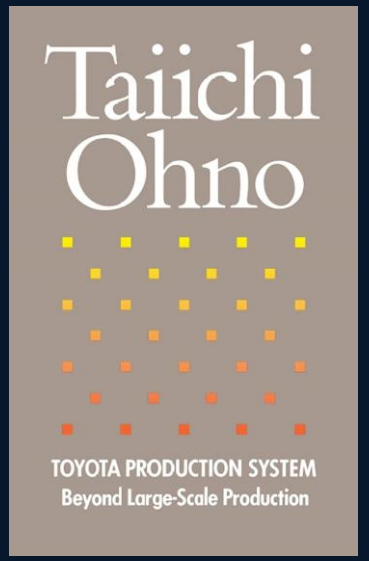


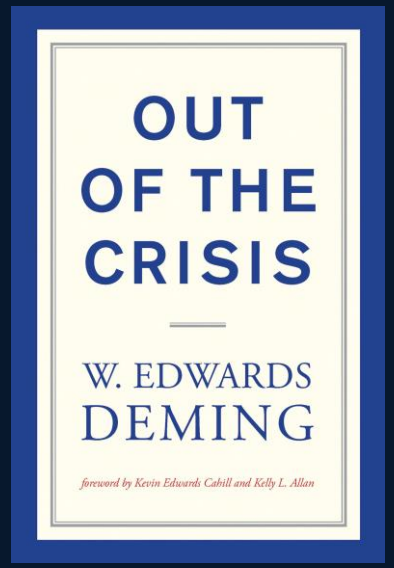
Cisco Secure Access

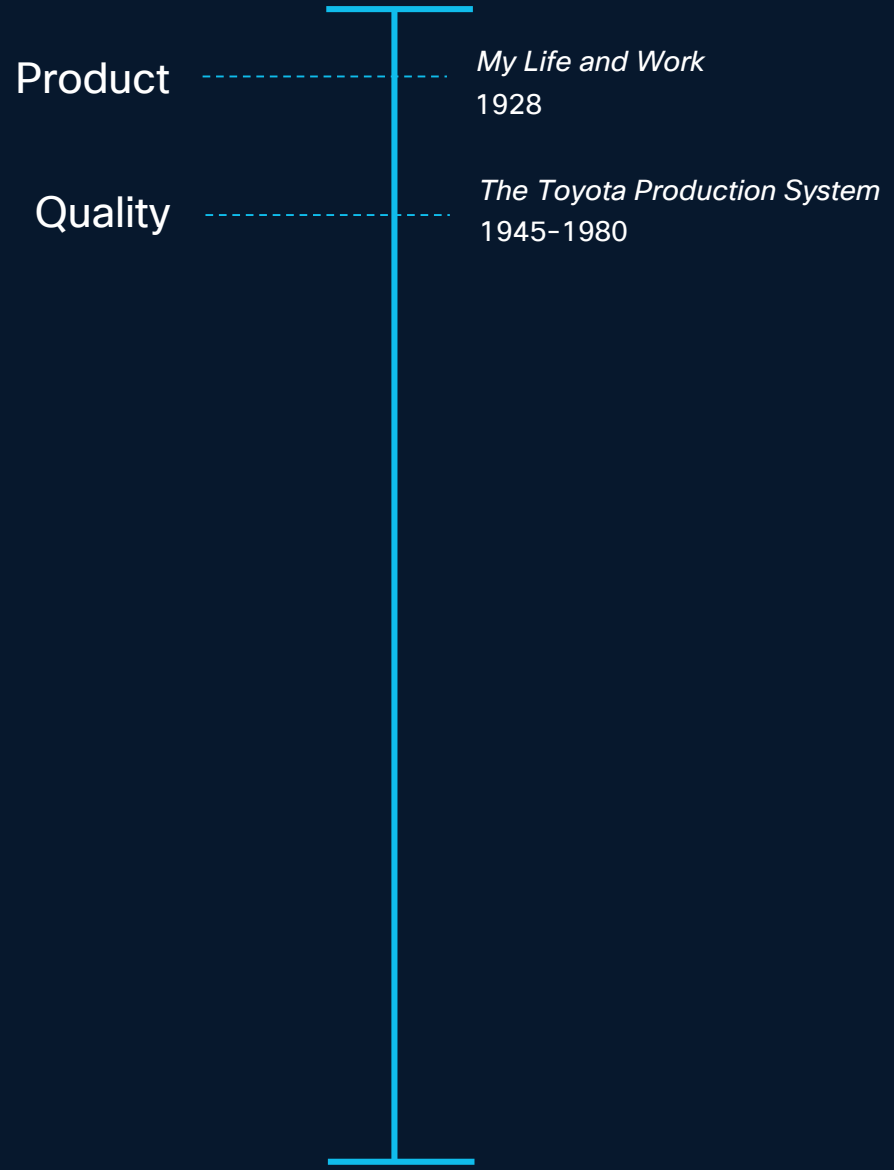
Overlay security service network with intelligent interconnect



Pattern 2: Quality

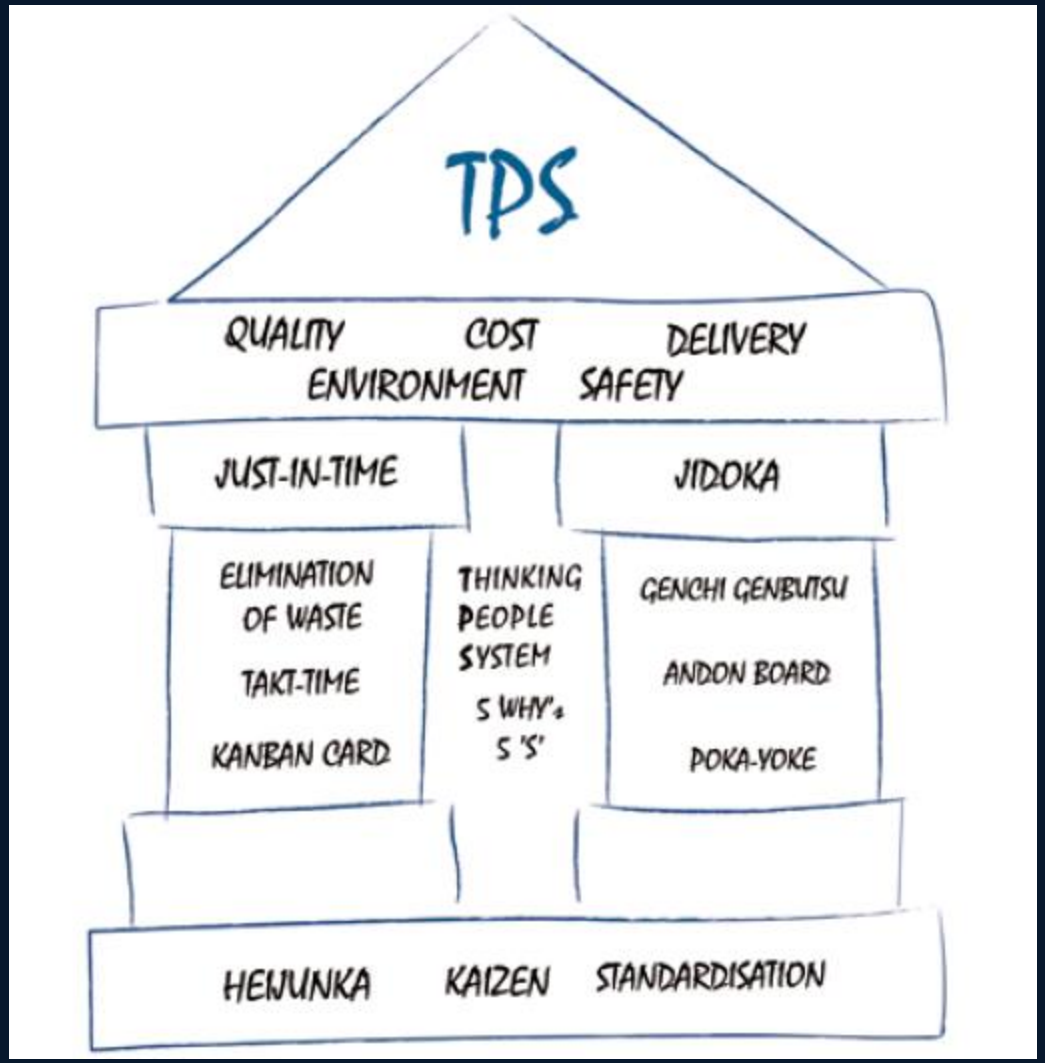




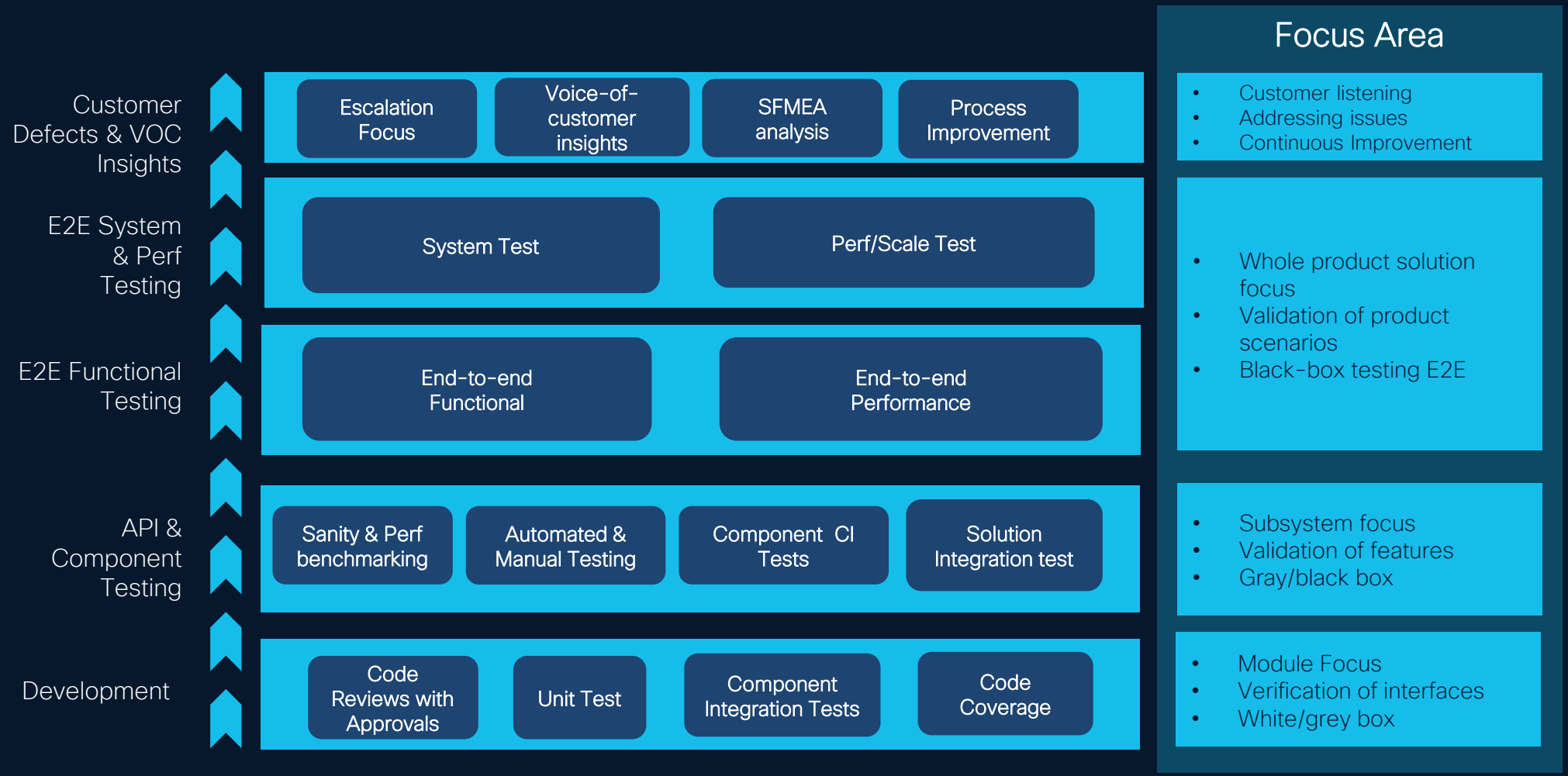


“Quality is everyone's responsibility” – Deming

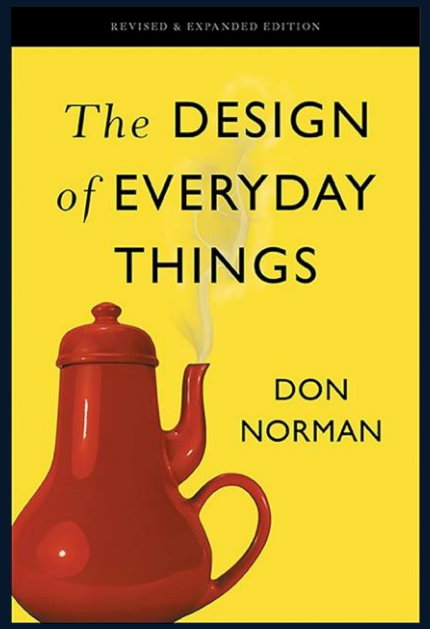
Toyota Production System



Cisco Secure Access – Layered Quality Framework



Pattern 3: Design

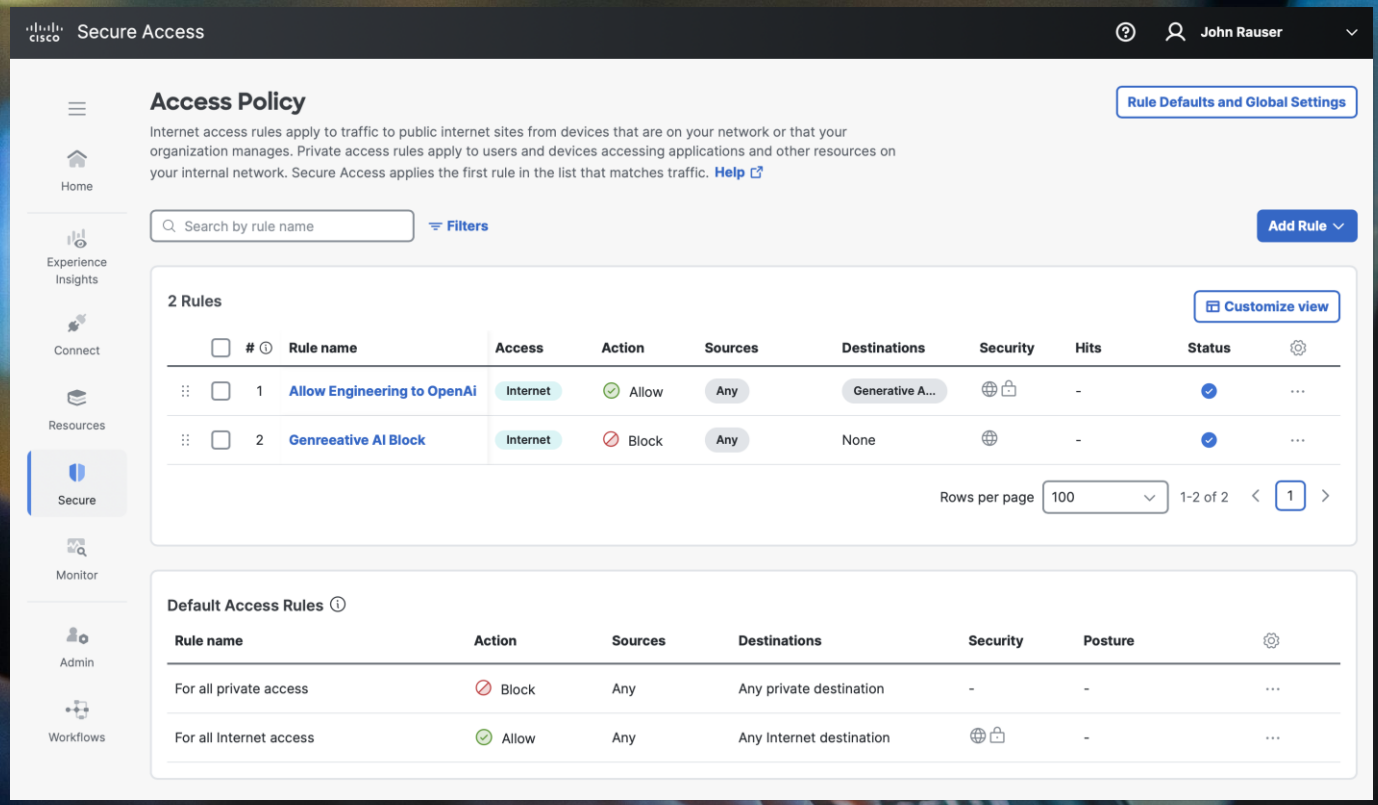


“Good design is actually a lot harder to notice than poor design”

Product — *My Life and Work* 1928

Quality — *Toyota Production System* 1945–1980

Design — *The Design of Everyday Things* 1988



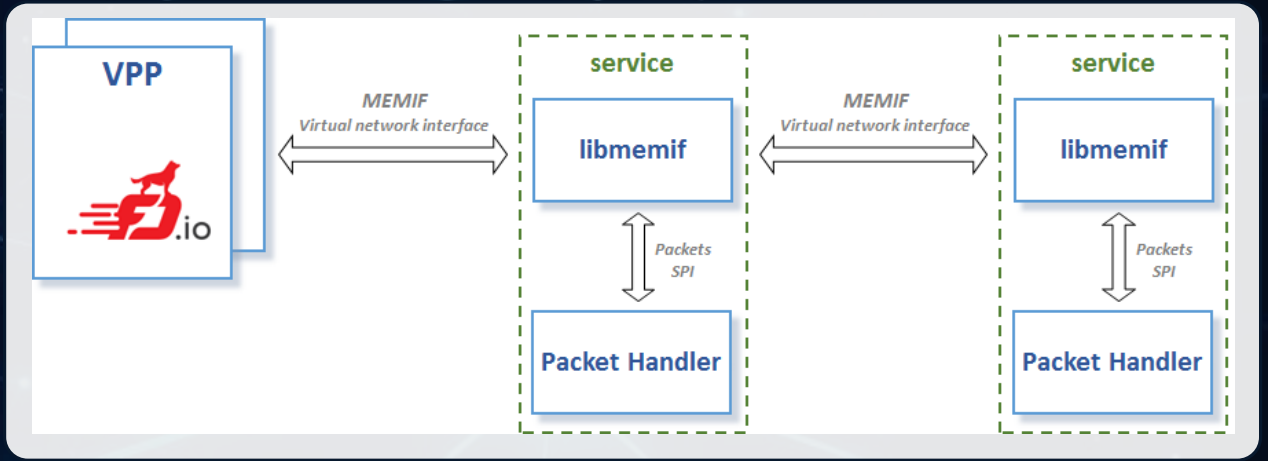
User Experience

Vector Packet Processing

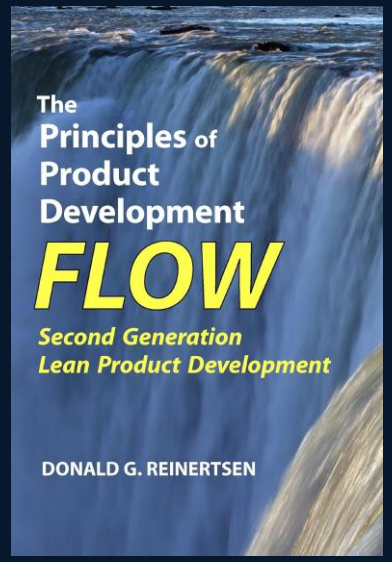
User Space Networking

Vector Processing

Memory Interfaces



Pattern 4: Flow



“Reducing batch size is the single most important change that an organization can make to improve flow”

Product — *My Life and Work* 1928

Quality — *The Toyota Production System* 1945-1980

Design — *The Design of Everyday Things* 1988

Flow — *The Principles of Product Development Flow, 2009*

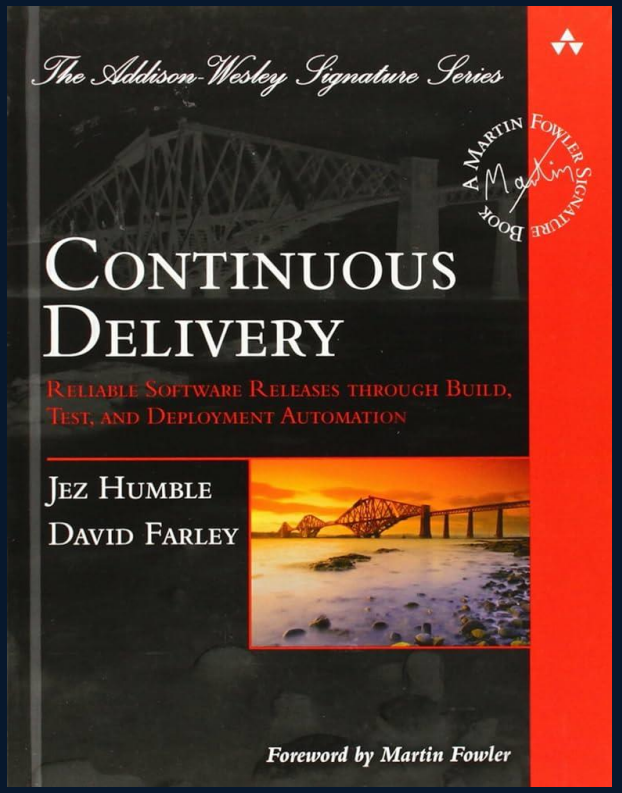
Continuous Delivery

Fundamental to High-Quality Delivery

- Minimizes errors from the interaction of changes
- Allows for fast feedback on changes
- Creates a bounded search for resolving issues

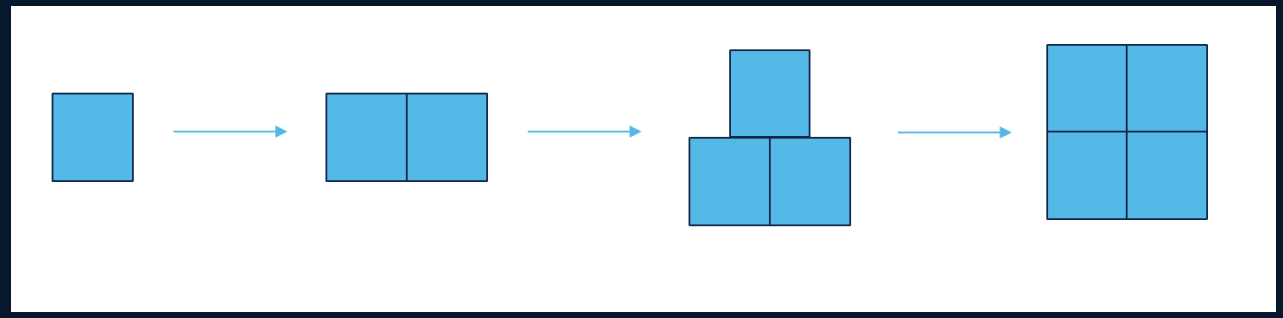
Single piece flow

- Changes are delivered individually
- Each "unit of value" is delivered independently
- Each change flows through the entire pipeline



Continuous Delivery

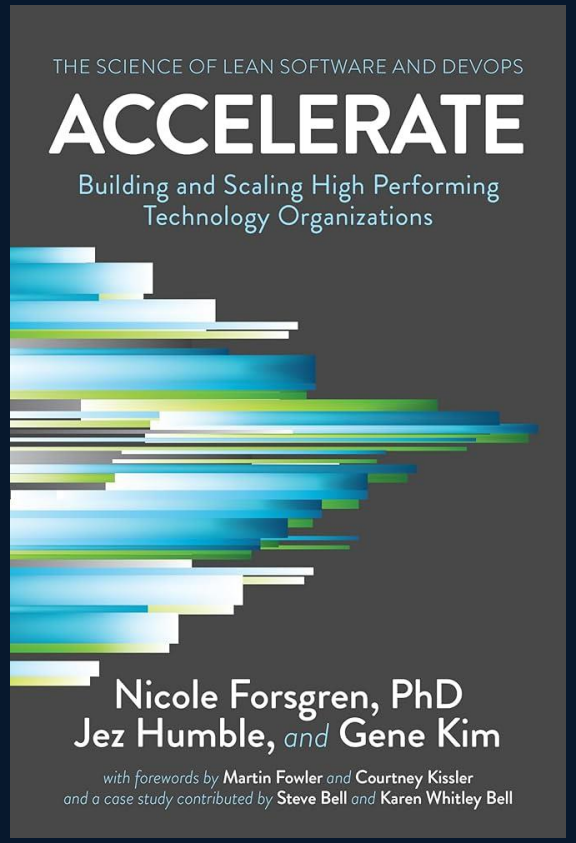
Development is always of **moving from** *working*, to *working*, to *working* (no BIG BANGS)



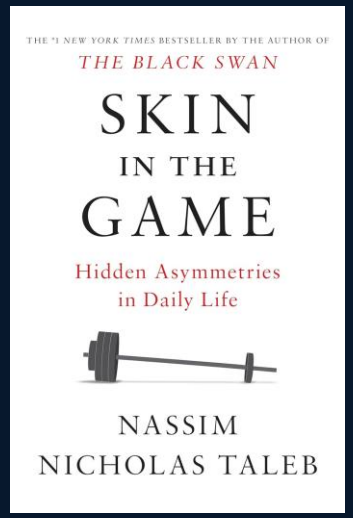
Gall's Law: "A complex system that works is invariably found to have evolved from a simple system that worked."

Success Metrics (DORA)

Software delivery performance metric	Elite	High	Medium	Low
Deployment frequency For the primary application or service you work on, how often does your organization deploy code to production or release it to end users?	On-demand (multiple deploys per day)	Between once per week and once per month	Between once per month and once every 6 months	Fewer than once per six months
Lead time for changes For the primary application or service you work on, what is your lead time for changes (i.e., how long does it take to go from code committed to code successfully running in production)?	Less than one hour	Between one day and one week	Between one month and six months	More than six months
Time to restore service For the primary application or service you work on, how long does it generally take to restore service when a service incident or a defect that impacts users occurs (e.g., unplanned outage or service impairment)?	Less than one hour	Less than one day	Between one day and one week	More than six months
Change failure rate For the primary application or service you work on, what percentage of changes to production or released to users result in degraded service (e.g., lead to service impairment or service outage) and subsequently require remediation (e.g., require a hotfix, rollback, fix forward, patch)?	0%-15%	16%-30%	16%-30%	16%-30%



Pattern 5: Resiliency



"Things designed by people without skin in the game tend to grow in complication"

Product	*My Life and Work* 1928
Quality	*The Toyota Production System* 1945-1980
Design	*The Design of Everyday Things* 1988
Flow	*The Principles of Product Development Flow, 2009*
Resiliency	*Skin in the Game 2018*

On-call Engineering

- On-call is the cornerstone of everything we do …
  - creates skin in the game
  - teaches us about our system
  - forces us to own our risk

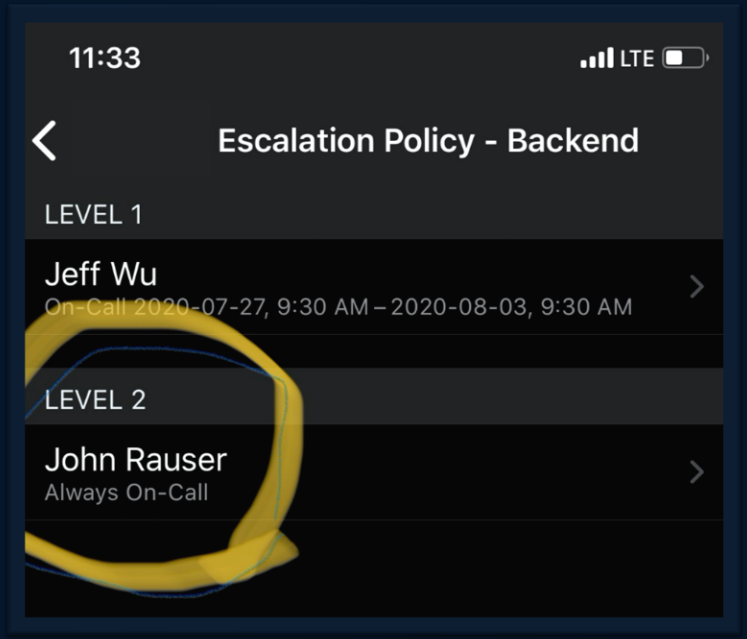
“You Build it, you run it”

Werner Vogels, 2016

Priorities and Responsibilities

Individual 	Architectural 
Team 	Group 

On-call Engineering



Always On-call!

Deployment

CI/CD, build, deploy, staging, rollback, waves, patching, autoscaling, forecasting

Observability

Monitoring, metrics, tracing, measurement, logging, dashboards, alerts, correlation, NOC

Reliability

End to end testing, performance, capacity, health & trend monitor, availability, toil mgmt

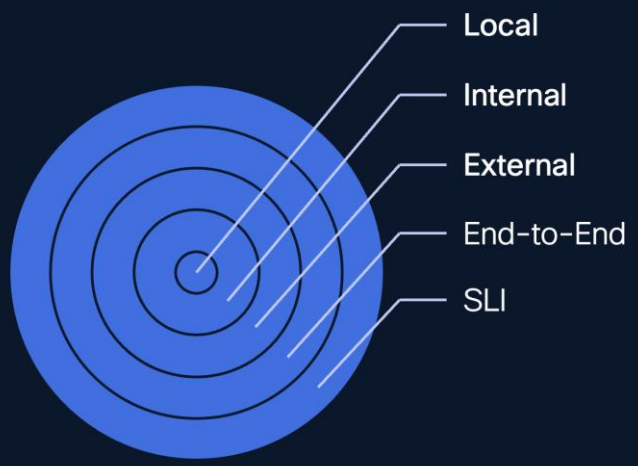
Data Plane

Service chaining, multi-tenancy, DAQ, fault recovery, steering, service discovery

Control Plane

Policy distribution, configuration management, logging & reporting, APIs

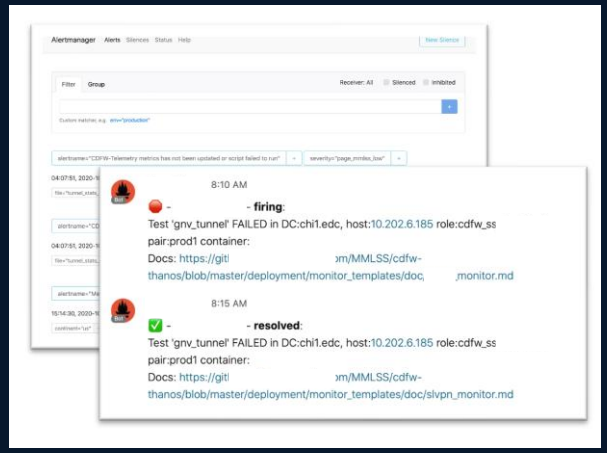
Monitors



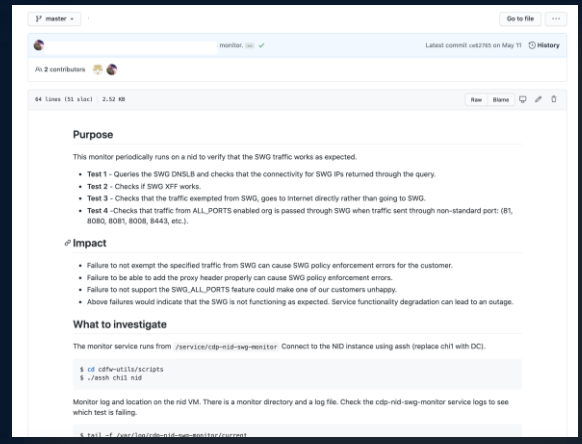
Logs & Metrics

splunk> a cisco company

Alerts



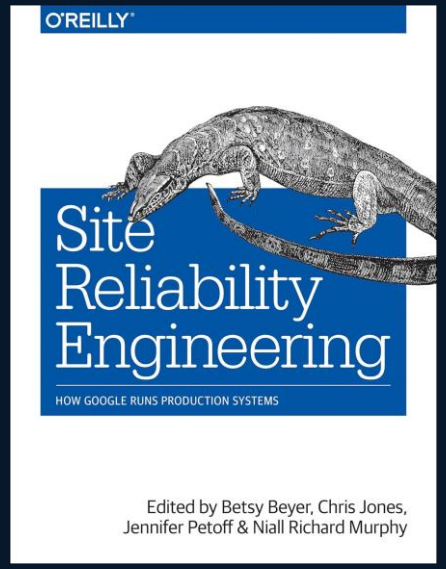
Runbooks



How AI is Changing This

- Tests & Monitors
  - Allows us to extend our coverage
- Logs & Metrics
  - Agents are helping to correlate and understand signals
  - Much quicker time to detect and time to resolve
- Alerts & Runbooks
  - Agents are taking over the initial step of gathering context
  - Recommending actions and remediations for us to take

Pattern 6: Reliability



"Hope is not a strategy."

Product	*My Life and Work* 1928
Quality	*The Toyota Production System* 1945–1980
Design	*The Design of Everyday Things* 1988
Flow	*The Principles of Product Development Flow, 2009*
Resiliency	*Skin in the Game 2018*
Reliability	*Site Reliability Engineering 2016*

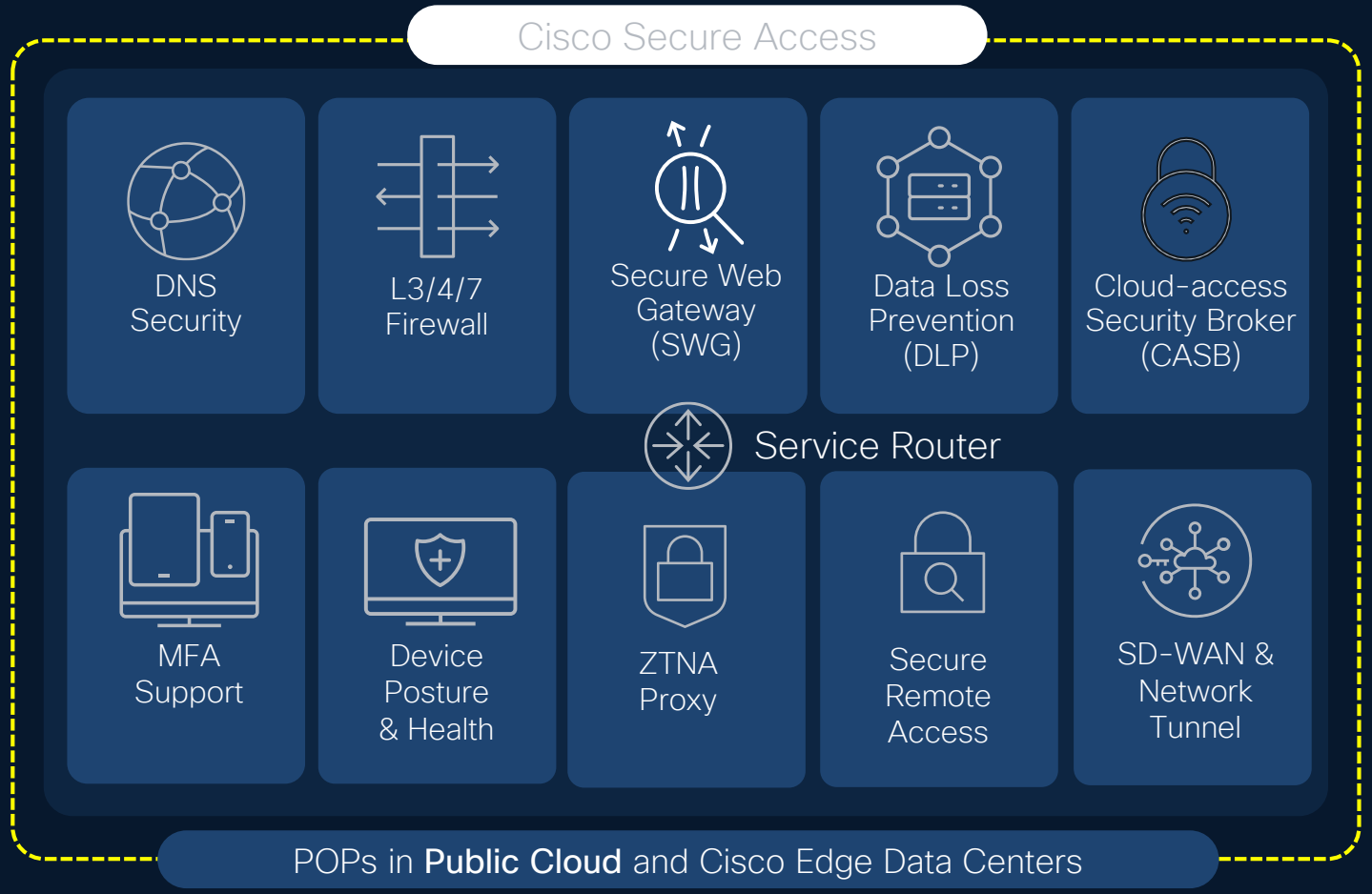
Site Reliability Engineering

Automation

Capacity

Tooling

Practices



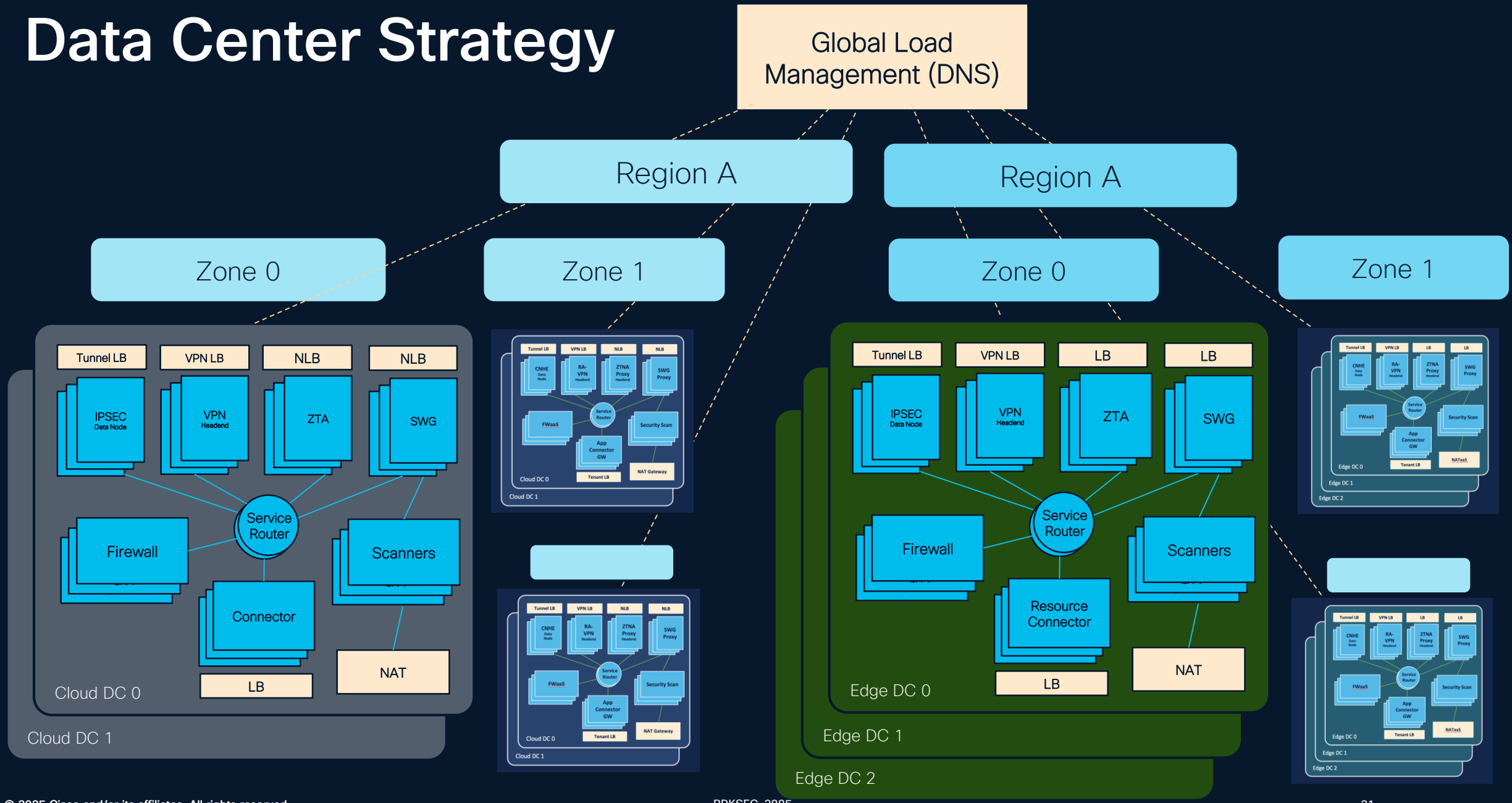
Deployments

SLIs / SLOs

Region Buildouts

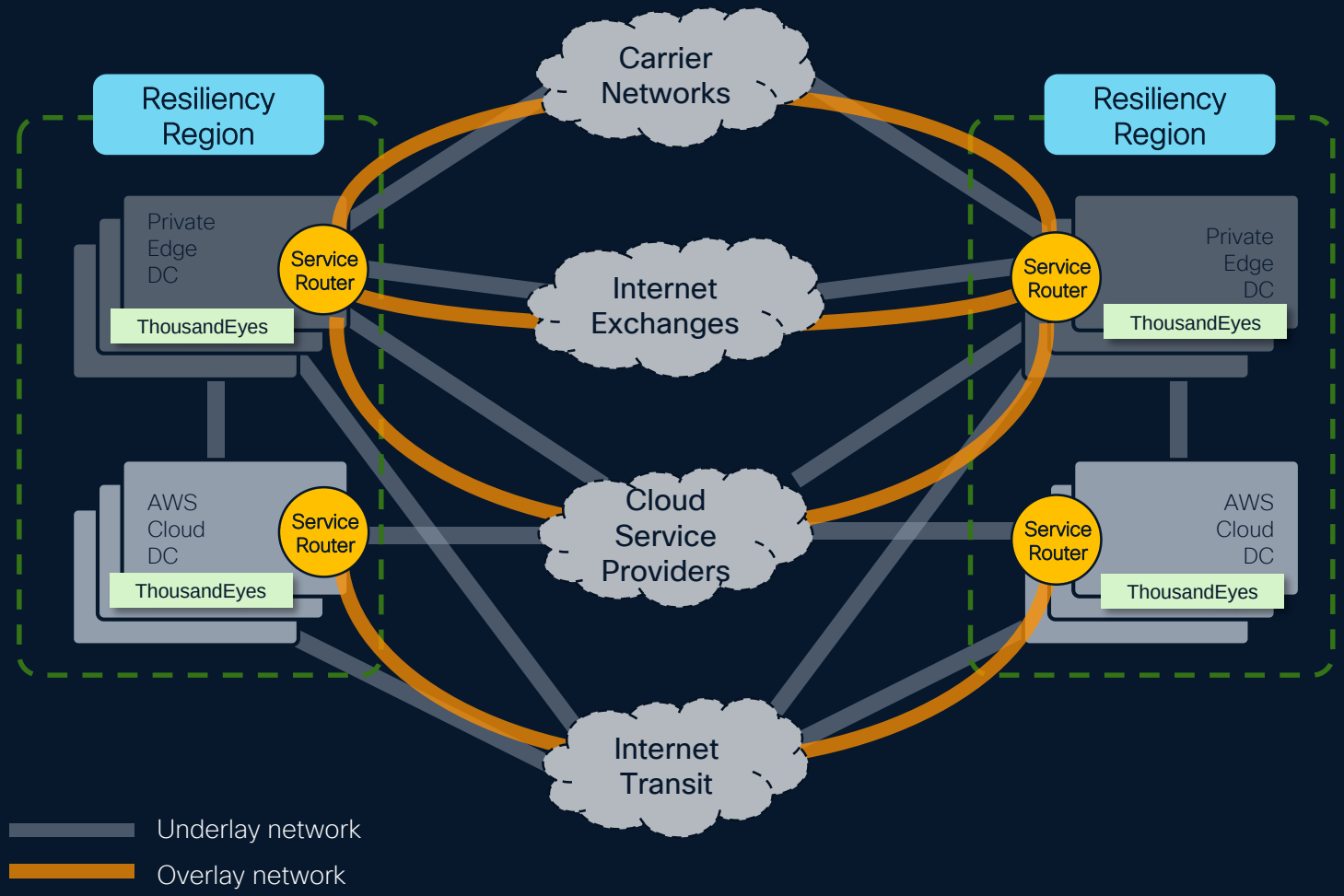
Experience Monitoring

Data Center Strategy

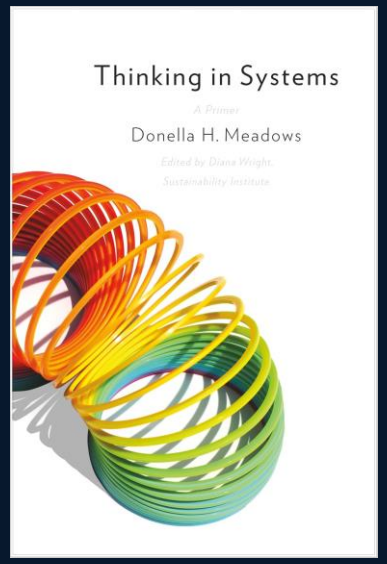


Global Scale Backbone

Connecting users and apps from anywhere to anywhere, with low latency and high availability



Pattern 7: Systems Thinking

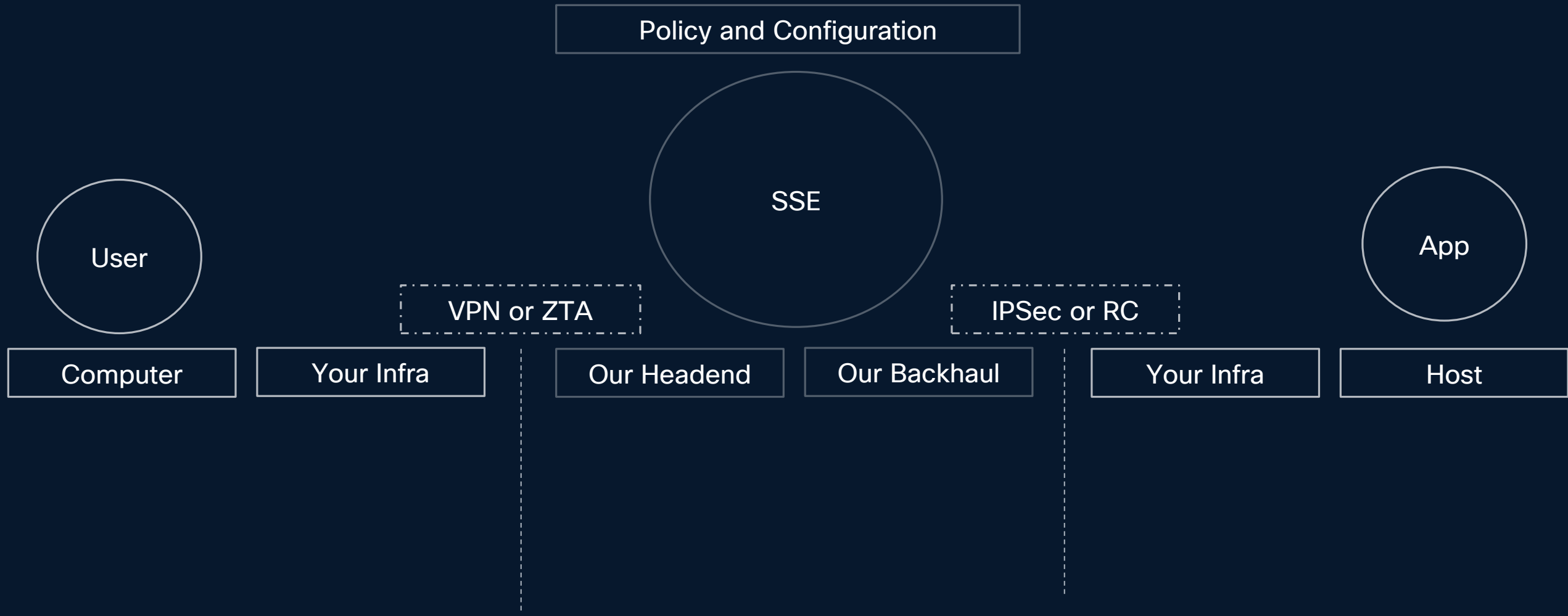


“The world is a continuum. Where to draw a boundary around a system depends on the purpose of the discussion”

Product	*My Life and Work* 1928
Quality	*The Toyota Production System* 1945–1980
Design	*The Design of Everyday Things* 1988
Flow	*The Principles of Product Development Flow, 2009*
Resiliency	*Skin in the Game 2018*
Reliability	*Site Reliability Engineering 2016*
Systems Thinking	*Thinking in Systems 2008*

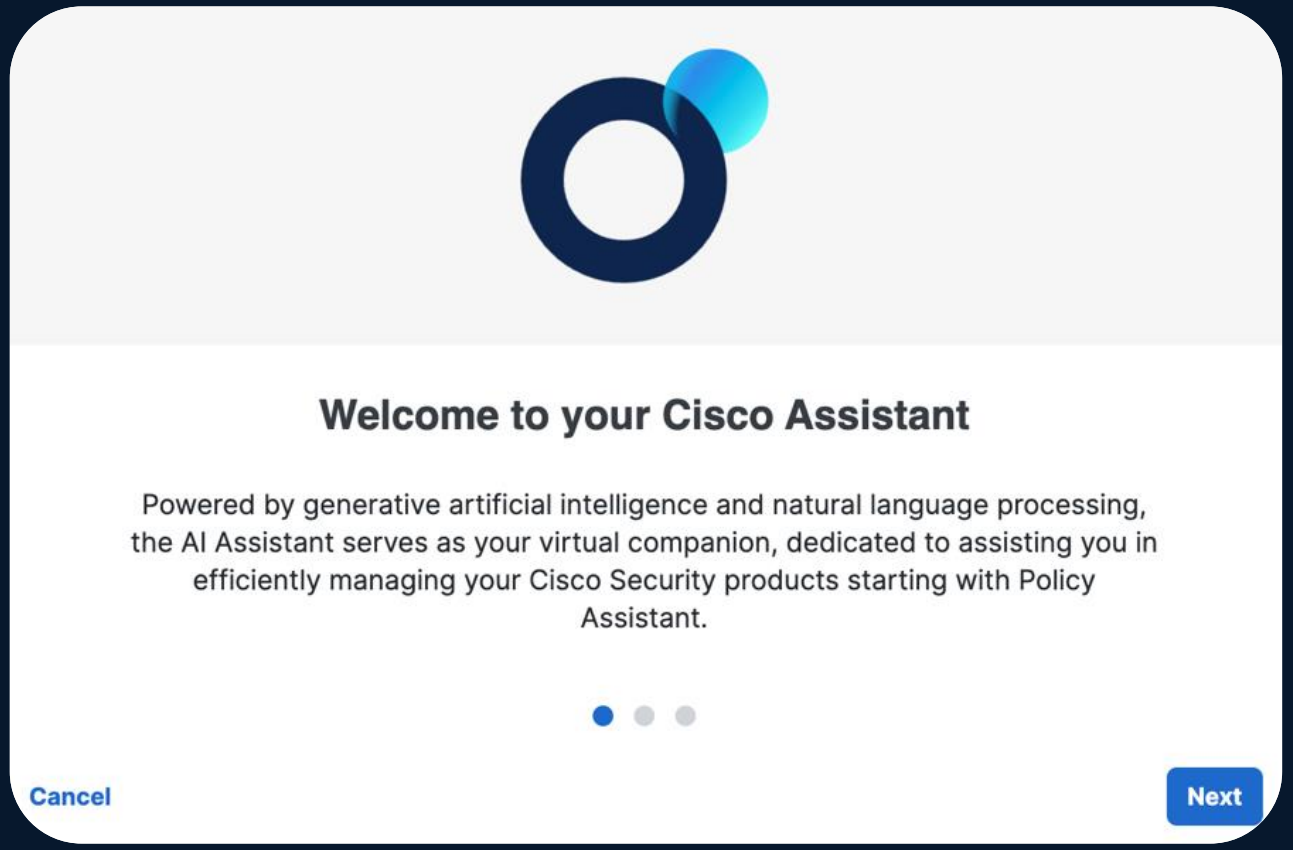
Troubleshooting

Narrowing down the problem across the system

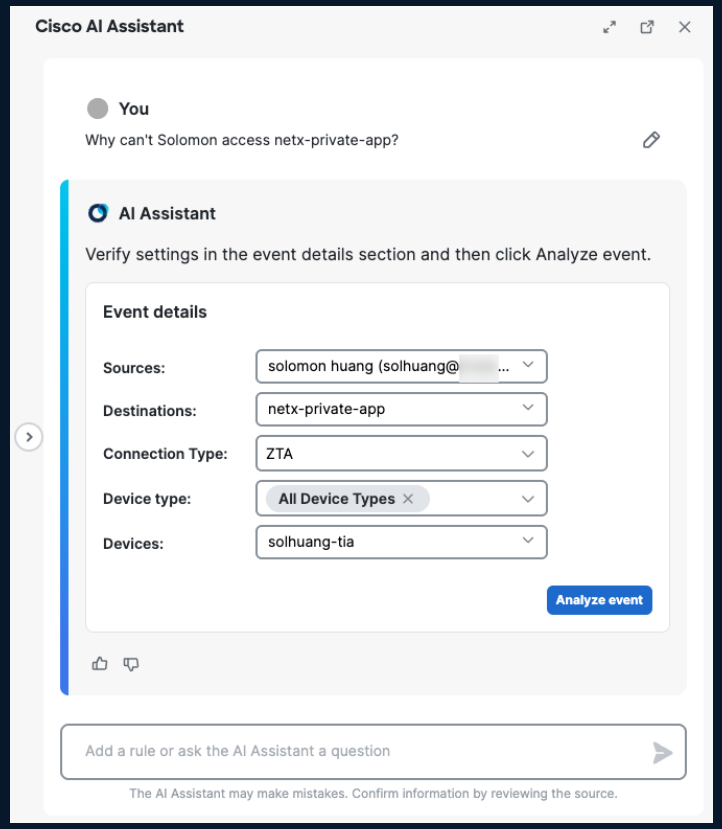


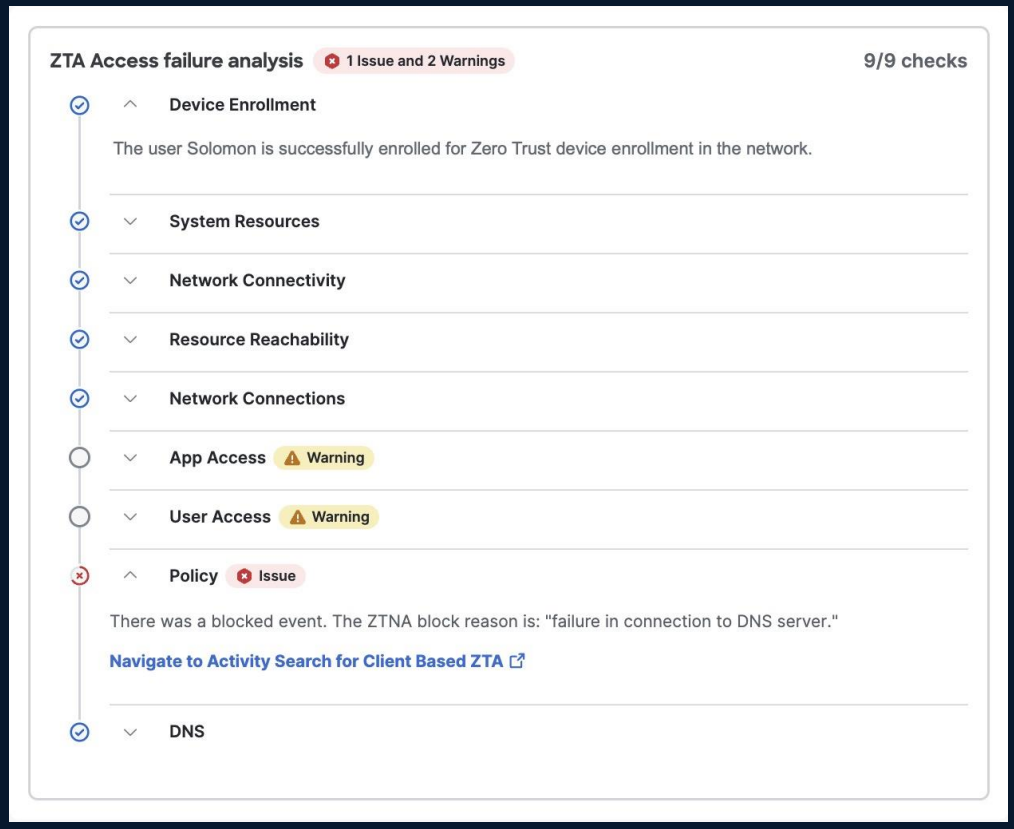
The AI Assistant

- Policy Creation
- Documentation Summarization
- Experience Insights
- Troubleshooting

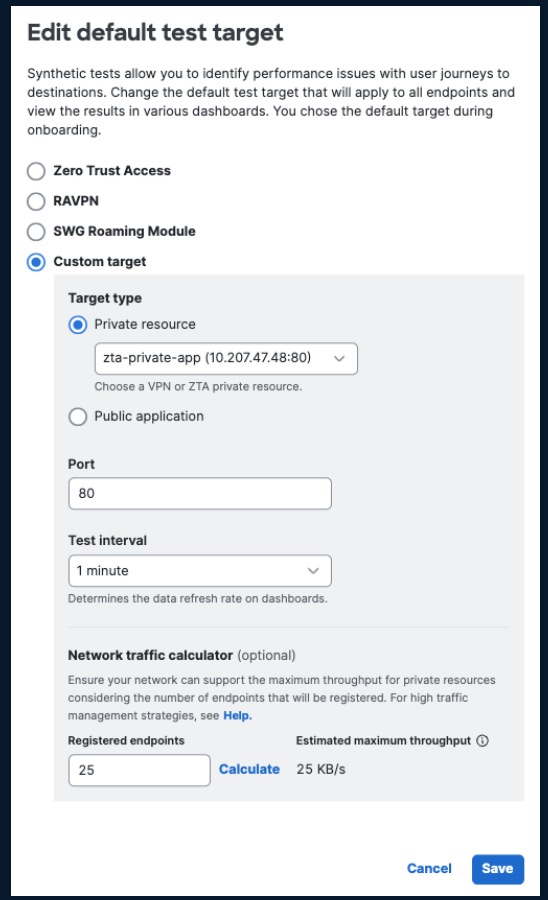


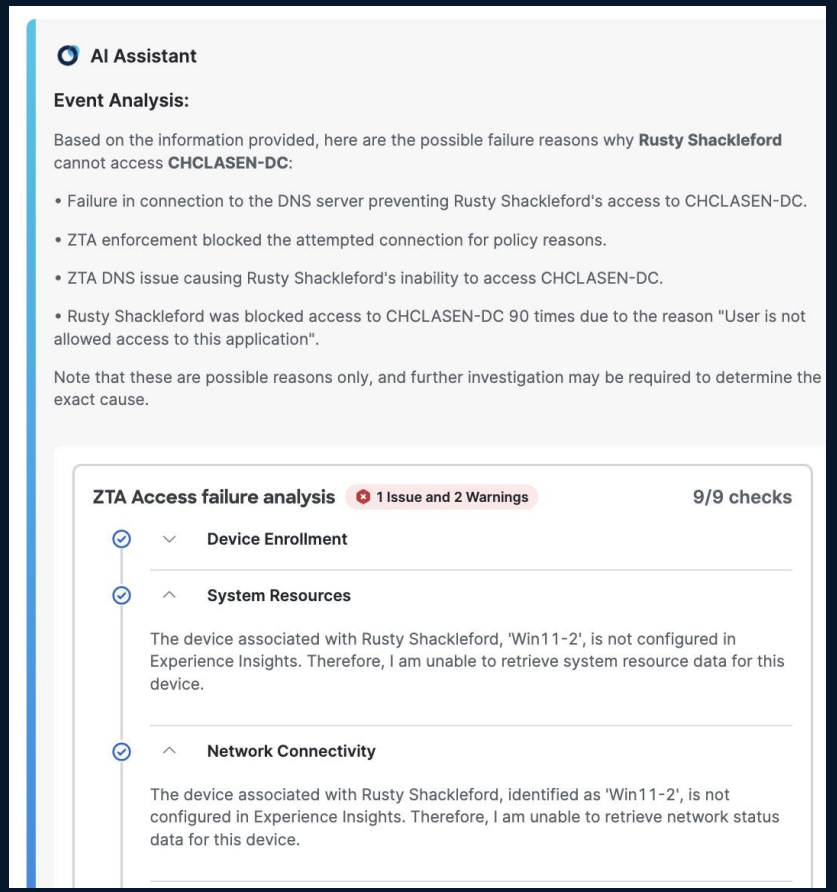
Troubleshooting Assistant



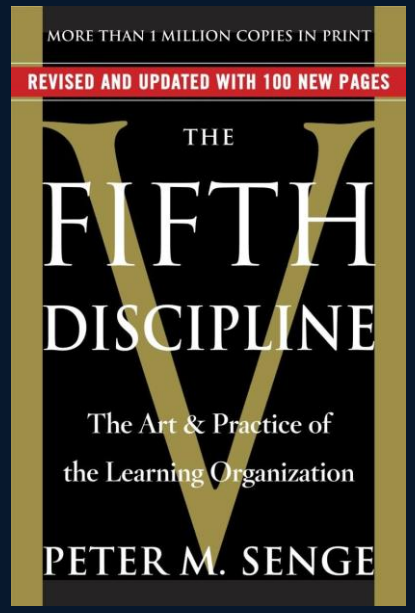


Experience Insights Assistant





Pattern 8: Learning



“A learning organization is a place where people are continually discovering how they create their reality. And how they can change it.”

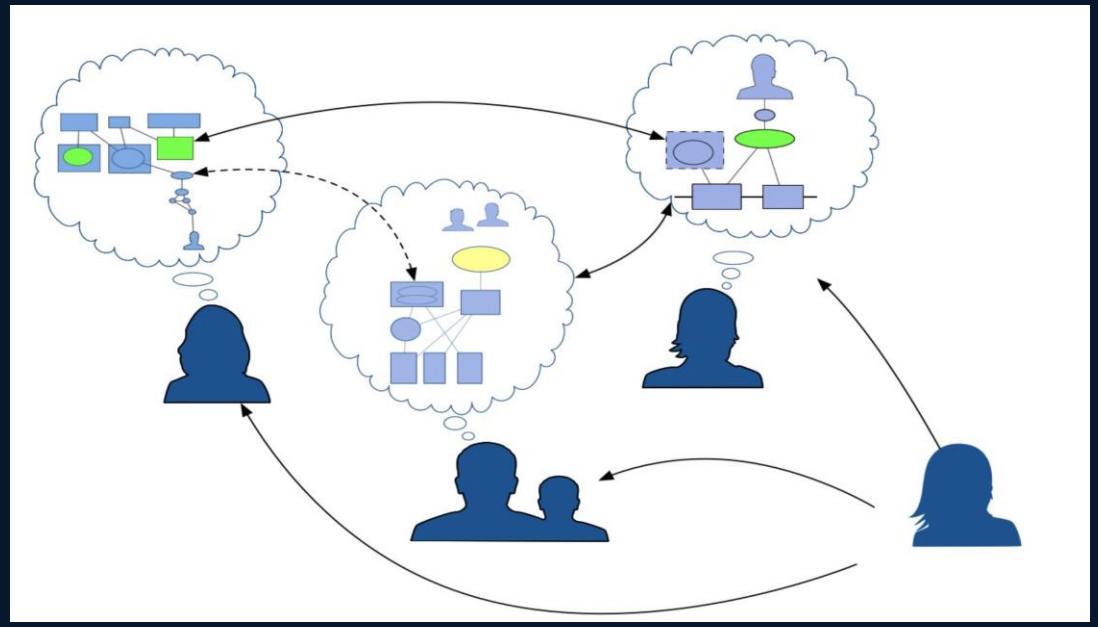
Product	*My Life and Work* 1928
Quality	*The Toyota Production System* 1945–1980
Design	*The Design of Everyday Things* 1988
Flow	*The Principles of Product Development Flow, 2009*
Resiliency	*Skin in the Game 2018*
Reliability	*Site Reliability Engineering 2016*
Systems Thinking	*Thinking in Systems 2008*
Continuous Learning	*The Fifth Discipline* 1990

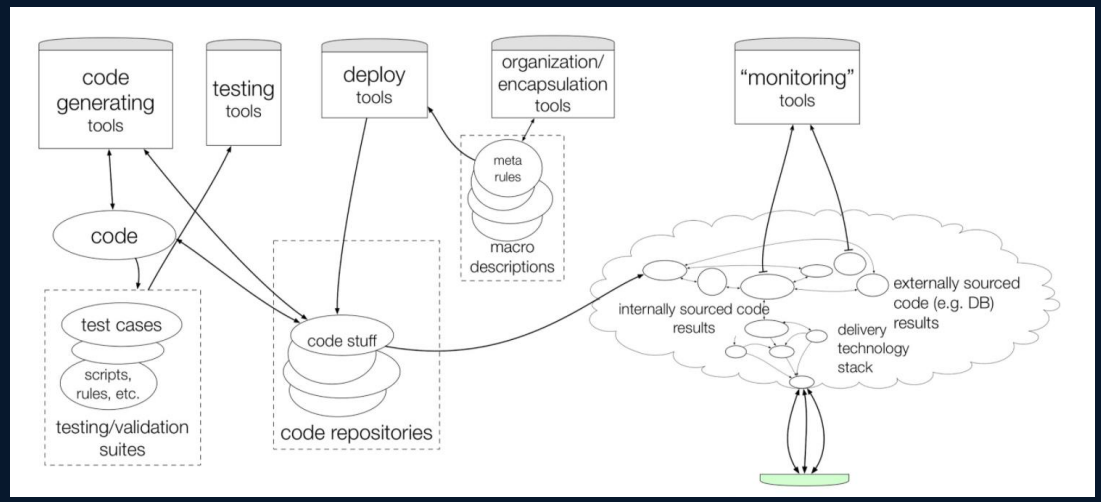
Incidents

- Incident Response is a muscle that the org needs to constantly exercise
- Incident Analysis as a skill that an organization learn and develop

- Two sides of the system:
  - The system and what went wrong
  - The people and what they understood

- Two analytical approaches:
  - Root Cause Analysis (RCA)
  - Learning From Incidents (LFI)
    - *John Allspaw, Dr. David Woods*





https://snafucatchers.github.io

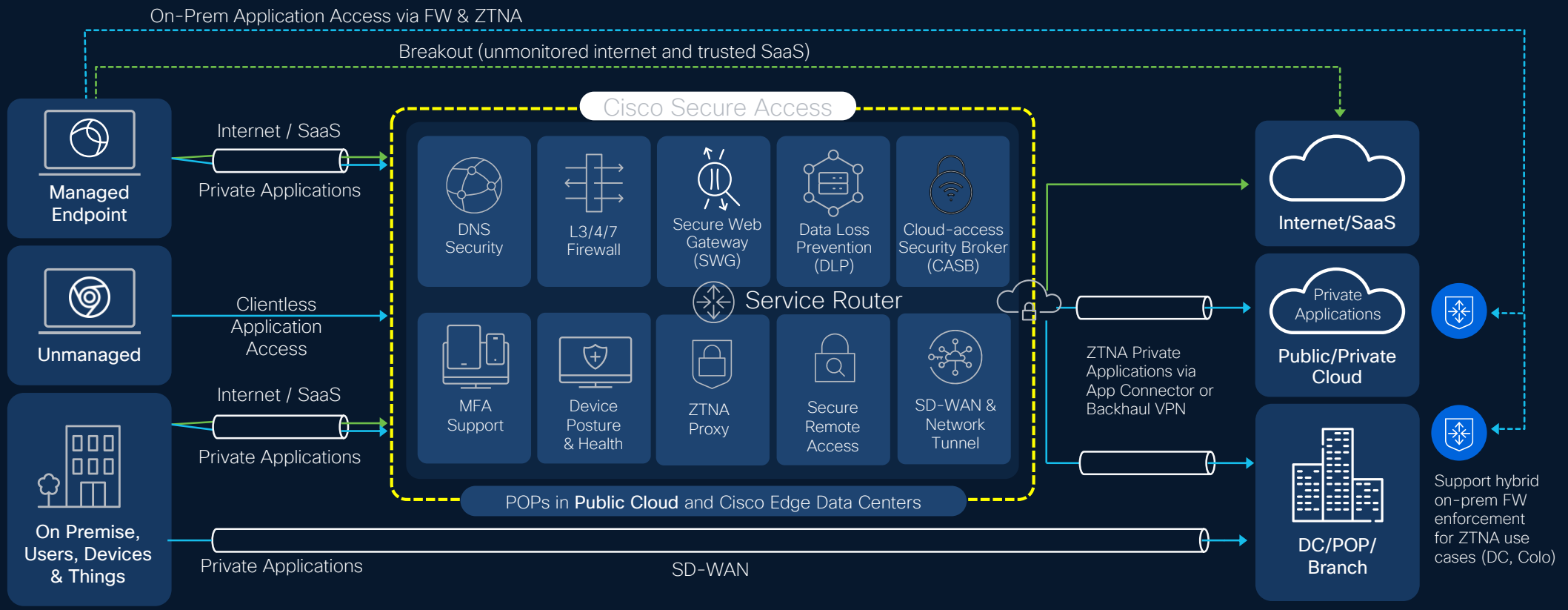
Conclusion

Cisco Secure Access

Overlay security service network with intelligent interconnect

Cisco Secure Access

Overlay security service network with intelligent interconnect



Complete your session evaluations

Complete a minimum of 4 session surveys and the Overall Event Survey to be entered in a drawing to win 1 of 5 full conference passes to Cisco Live 2026.

Earn 100 points per survey completed and compete on the Cisco Live Challenge leaderboard.

Level up and earn exclusive prizes!

Complete your surveys in the Cisco Live mobile app.

Continue your education

Visit the Cisco Showcase for related demos

Book your one-on-one Meet the Engineer meeting

Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs

Visit the On-Demand Library for more sessions at www.CiscoLive.com/on-demand

Contact me at:
Email: jrauser@cisco.com
LinkedIn: @jrause

Thank you


CISCO