The bridge to possible

# Is VPN Really Dead and Replaced by Zero Trust Network Access (ZTNA)?

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BRKSEC-1015

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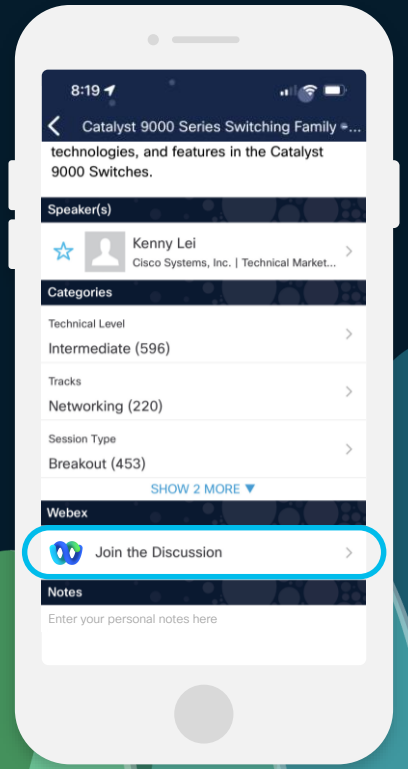
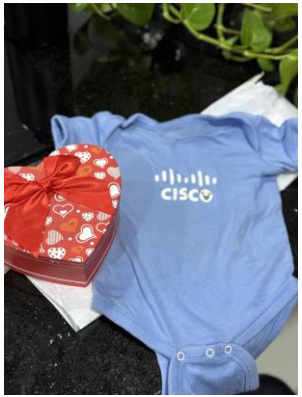


# Agenda

- Introduction
- VPNs vs ZTNA
- Comprehensive Comparison
- Real-World Use Cases
- Conclusion

# $ whoami

- ~~Gus~~tavo Medina
- Technical Solutions Architect
- Costa Rican CR
  - Currently living in Mexico MX
- Joined Cisco (TAC) in 2009
- CCIE Security #51487
- Football Fan




# Introduction

*“ ZTNA augments traditional VPN technologies for application access, and removes the excessive trust once required to allow employees and partners to connect and collaborate. Security and risk management leaders should pilot ZTNA projects as part of a SASE strategy or to rapidly expand remote access.”*

Gartner Market Guide for Zero Trust Network Access – June 2020

# What is ZTNA?

# Gartner Use Cases for ZTNA

## Internal-workforce remote access

- Controlled access to organizational resources for workers using managed devices.
- Full port and protocol support for proprietary, complex, or legacy applications.
- Web application, Secure Shell (SSH), or Remote Desktop Protocol (RDP) access may be sufficient in some cases.

## Privileged remote access

- Control access for privileged IT users.
- Integration with Privileged Access Management (PAM) tools.
- Access to SSH, RDP, or other IT admin tools, including legacy admin tools with nonroutable protocols in some cases.

## Extended-workforce remote access and BYOD

- Includes suppliers, partners, potential acquired companies, and scenarios with less control over identity.
- Limitations on sharing applications using Zero Trust Network Access (ZTNA) due to lack of organizational control over endpoints and users
- Agents may not be an option for this use case

## On-premises access

- Control access to organizational resources within the local or wide-area network.
- Enforces remote access policies for other use cases on-premises.
- May require network rearchitecture to ensure security gateway enforcement.

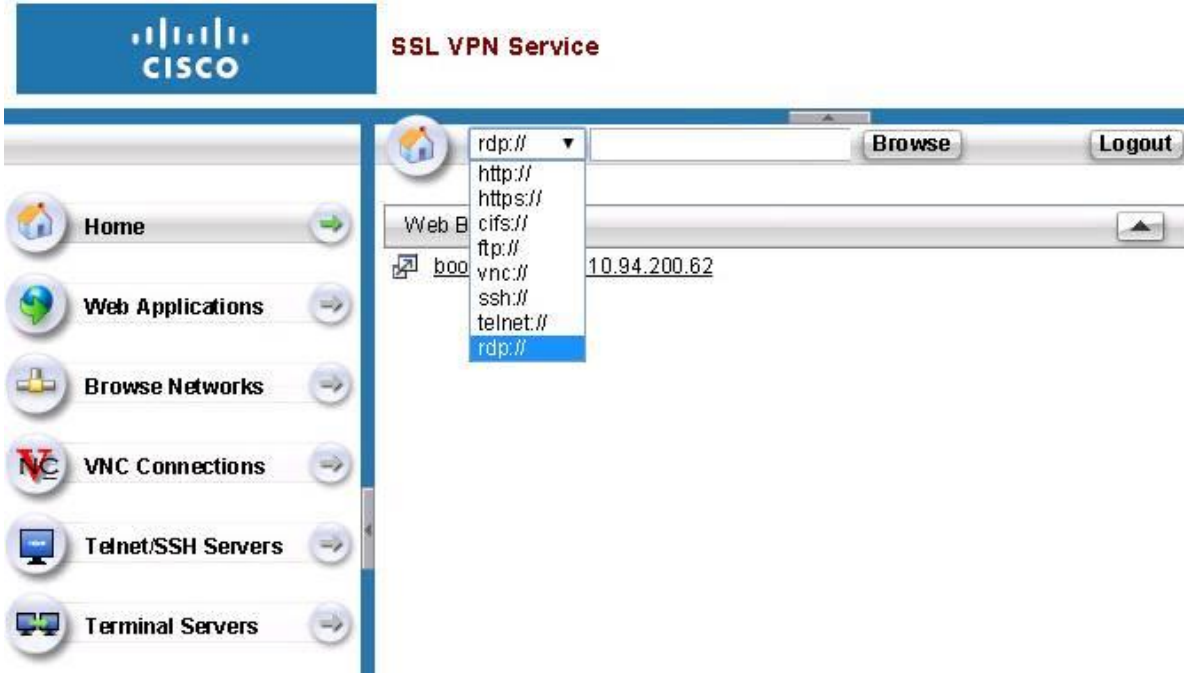
# VPN vs ZTNA

| VPN | ZTNA |
|---|---|
| Requires VPN client software | No client software required * |
| Access to full network or network segment | Access to specific applications |
| Posture assesed once at VPN authentication | Posture assesed at each application access |
| 1:1 Client-to-Headend relationship | Client can connect to different headends per application |

# We had WebVPN Clientless before ZTNA was even a concept

Supported since ASA 7.1
*Deprecated on 9.17

VPN 3000
Series Concentrator
supported Clientless



# Why Zero Trust Network Access (ZTNA)?

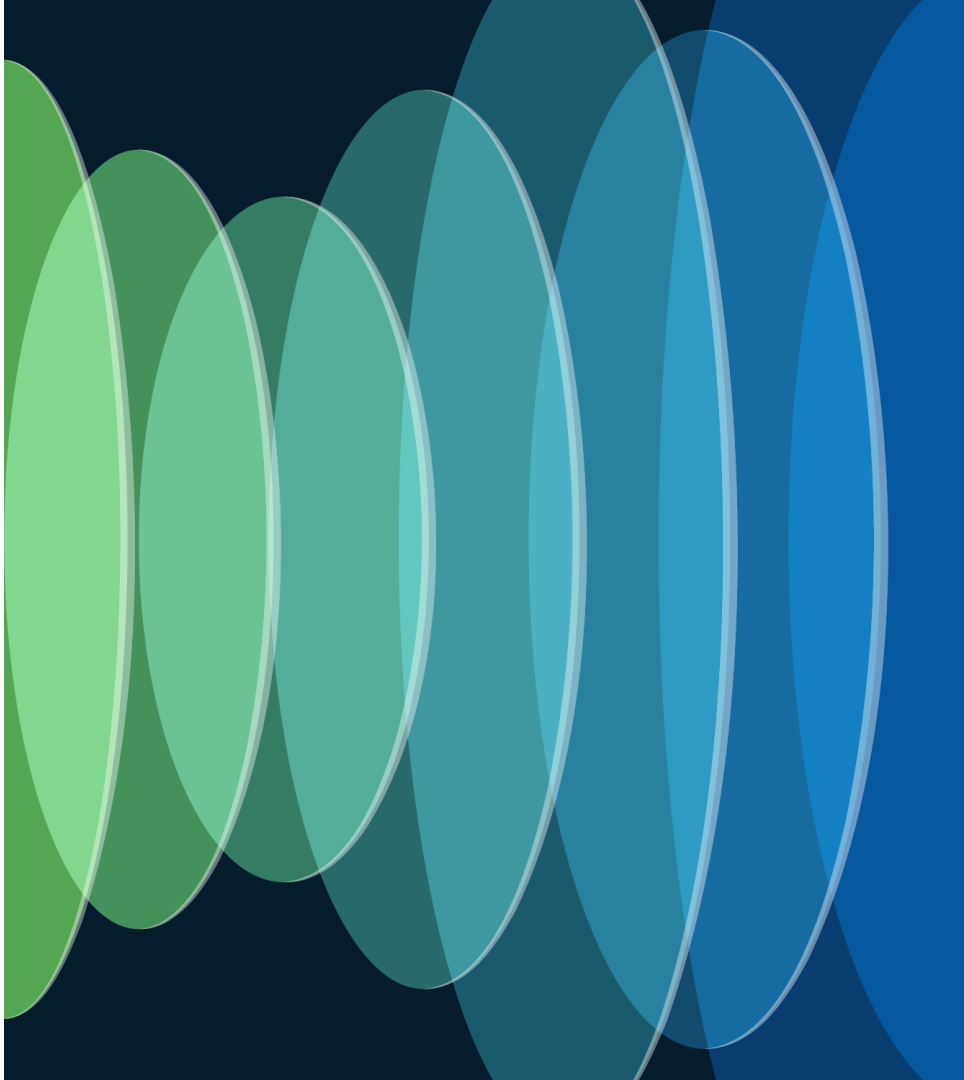
*“Although traditional VPNs have been a mainstay for decades, ZTNA is the natural evolution of VPN and offers better security, more granular control, and a better user experience in light of the complexity of today’s networks, so it can be a smarter choice for securely connecting a remote workforce.”*

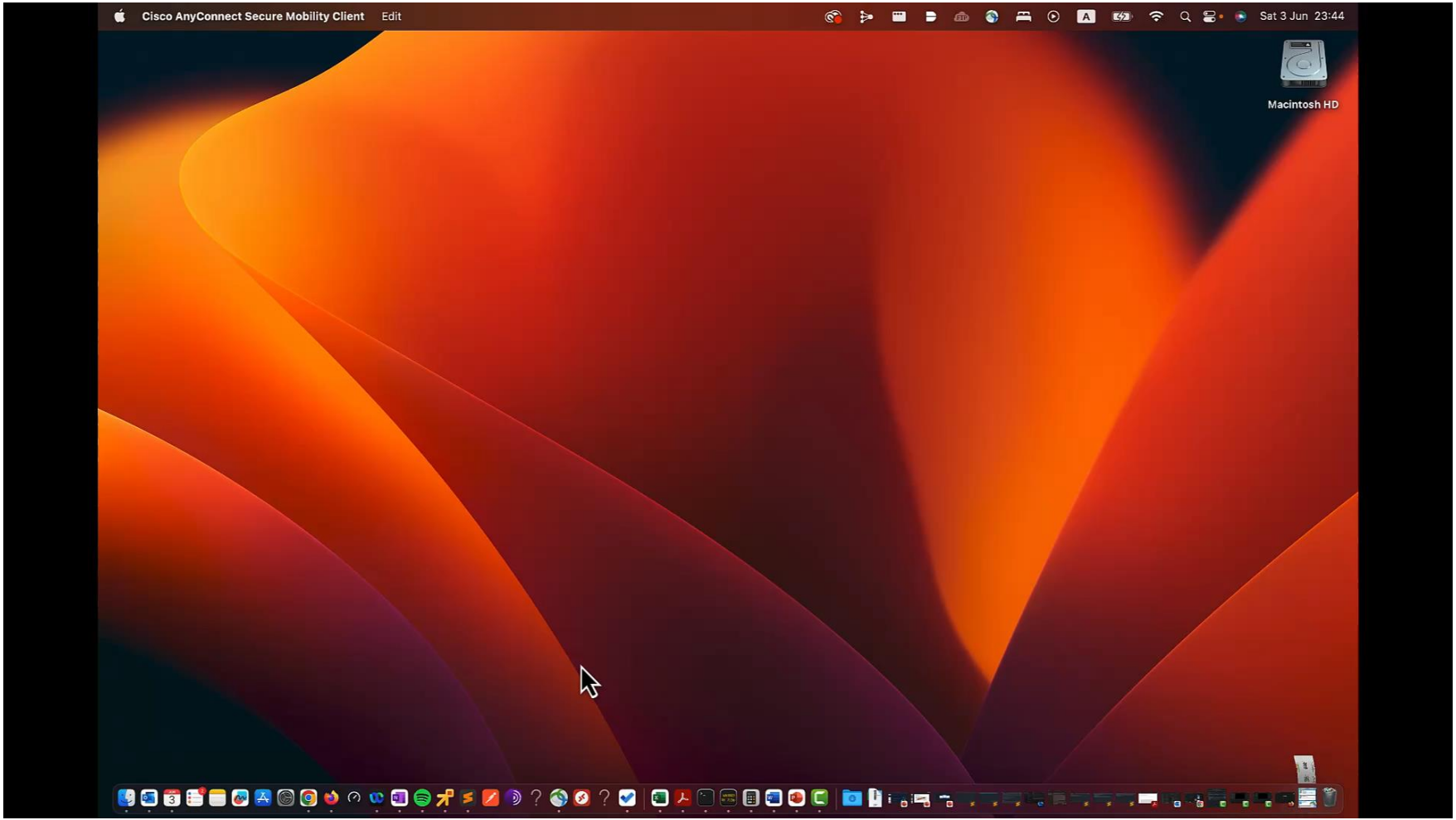
Zero Trust, ZTA, and ZTNA: What’s the difference? – CSO

# VPN objections

- VPNs provide a bad user experience.
- VPN assumes that anyone or anything passing network perimeter controls can be trusted.
- ZTNA (Zero Trust Network Access) takes the opposite approach by not trusting any user or device until proven otherwise.
- ZTNA extends the zero-trust model beyond the network.
- ZTNA reduces the attack surface by hiding applications from the internet.

# AnyConnect Demo





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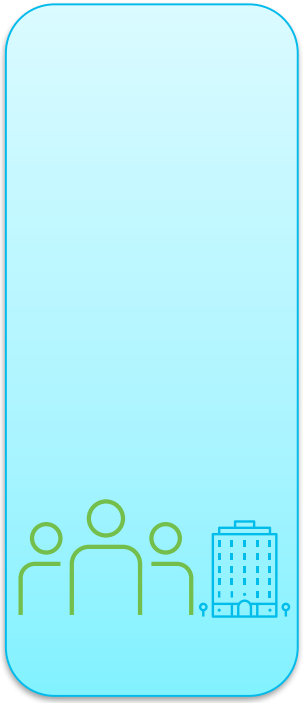
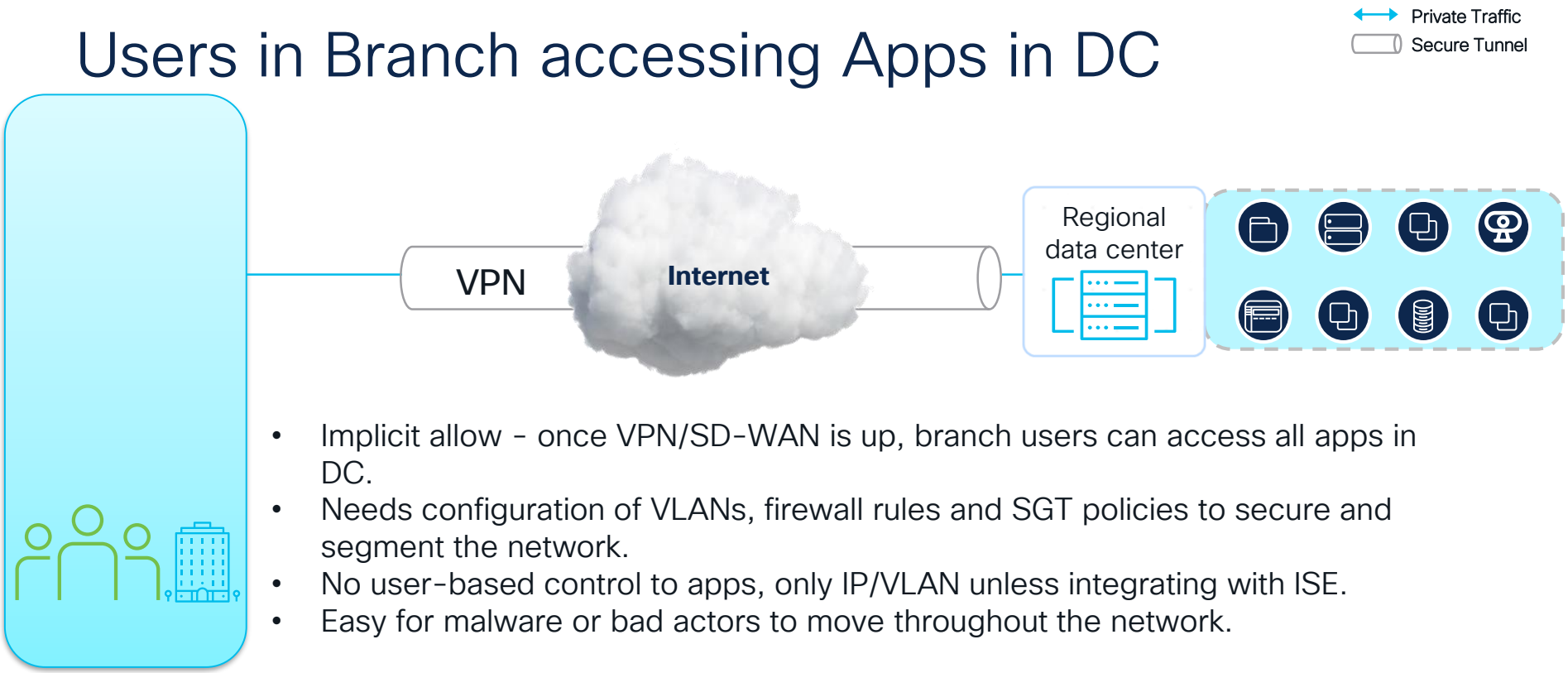
# Users in Branch accessing Apps in DC

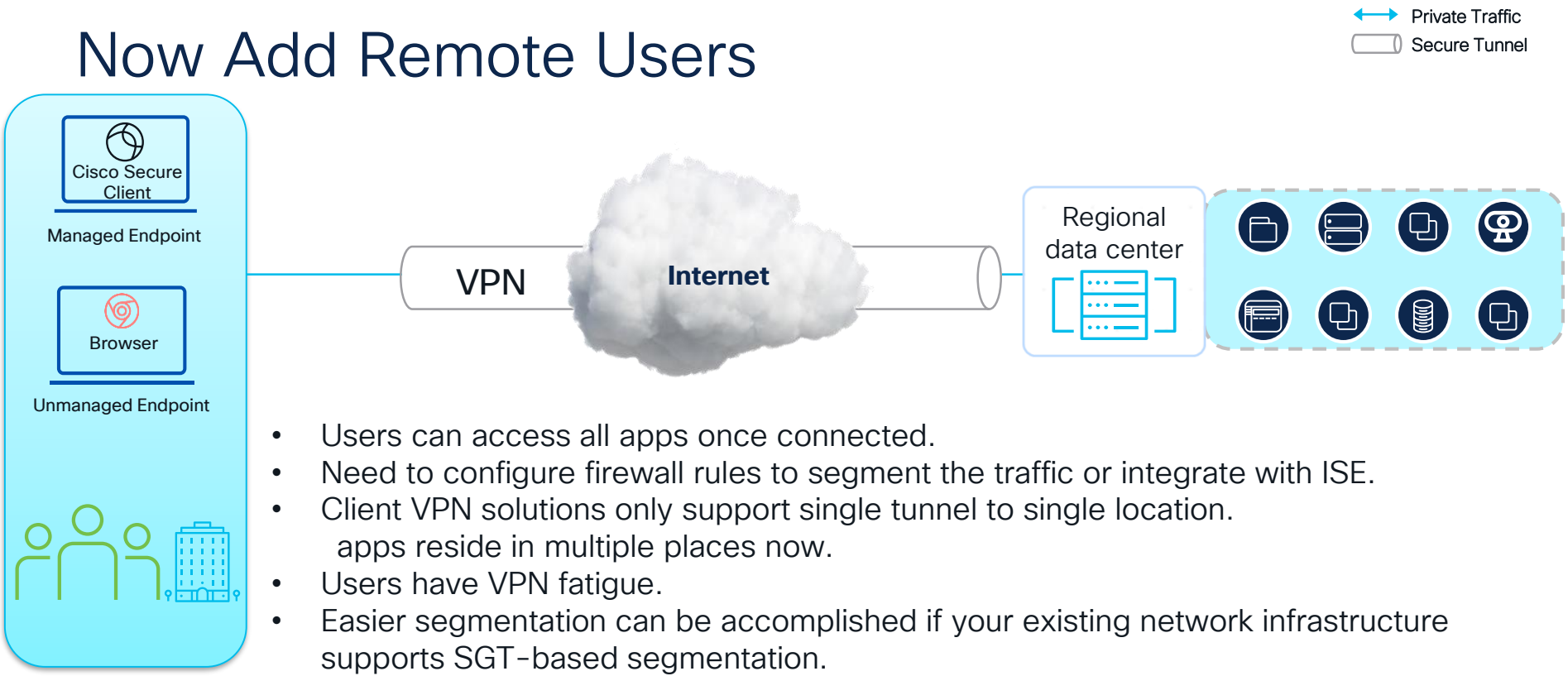



# Users in Branch accessing Apps in DC



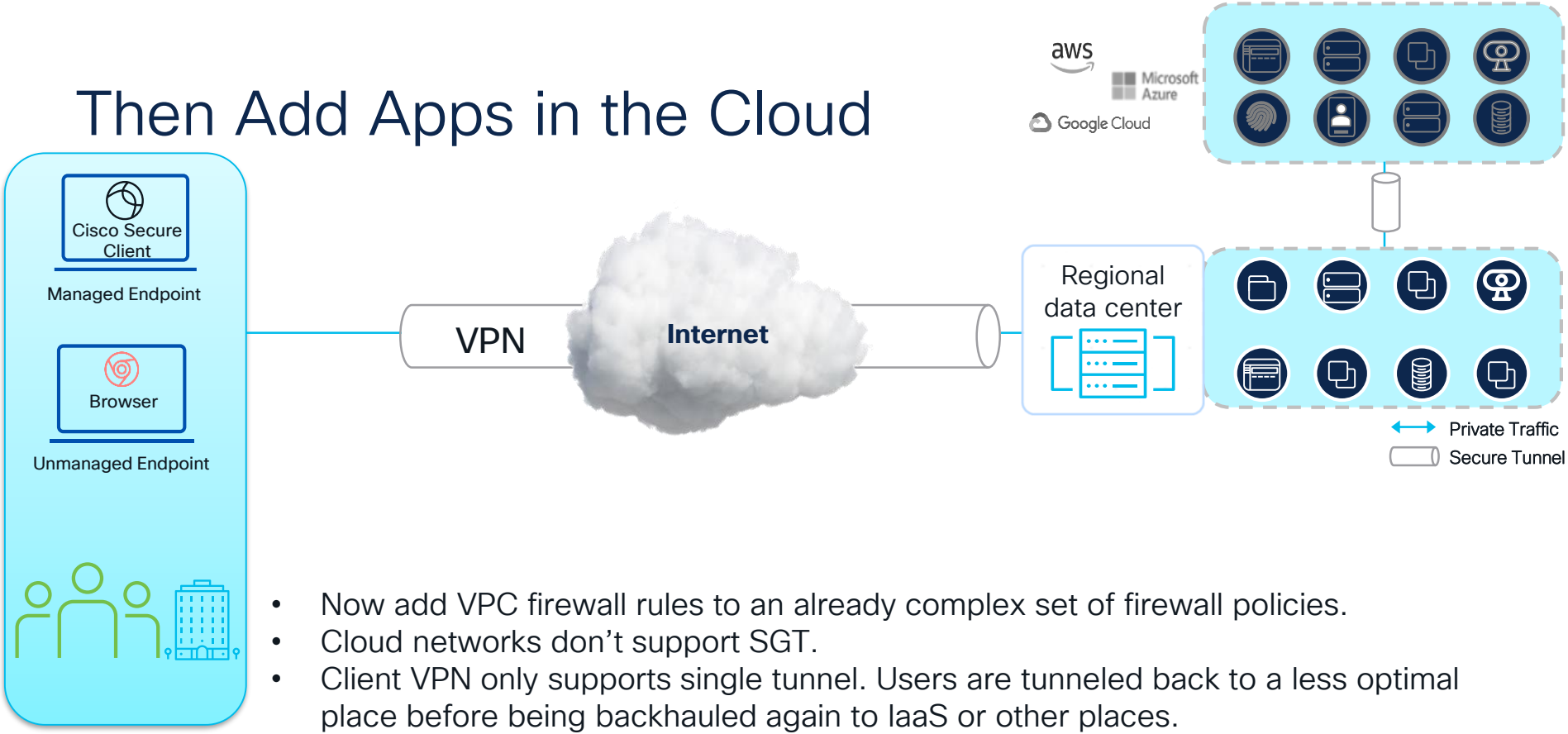

- Implicit allow - once VPN/SD-WAN is up, branch users can access all apps in DC.
- Needs configuration of VLANs, firewall rules and SGT policies to secure and segment the network.
- No user-based control to apps, only IP/VLAN unless integrating with ISE.
- Easy for malware or bad actors to move throughout the network.

# Now Add Remote Users



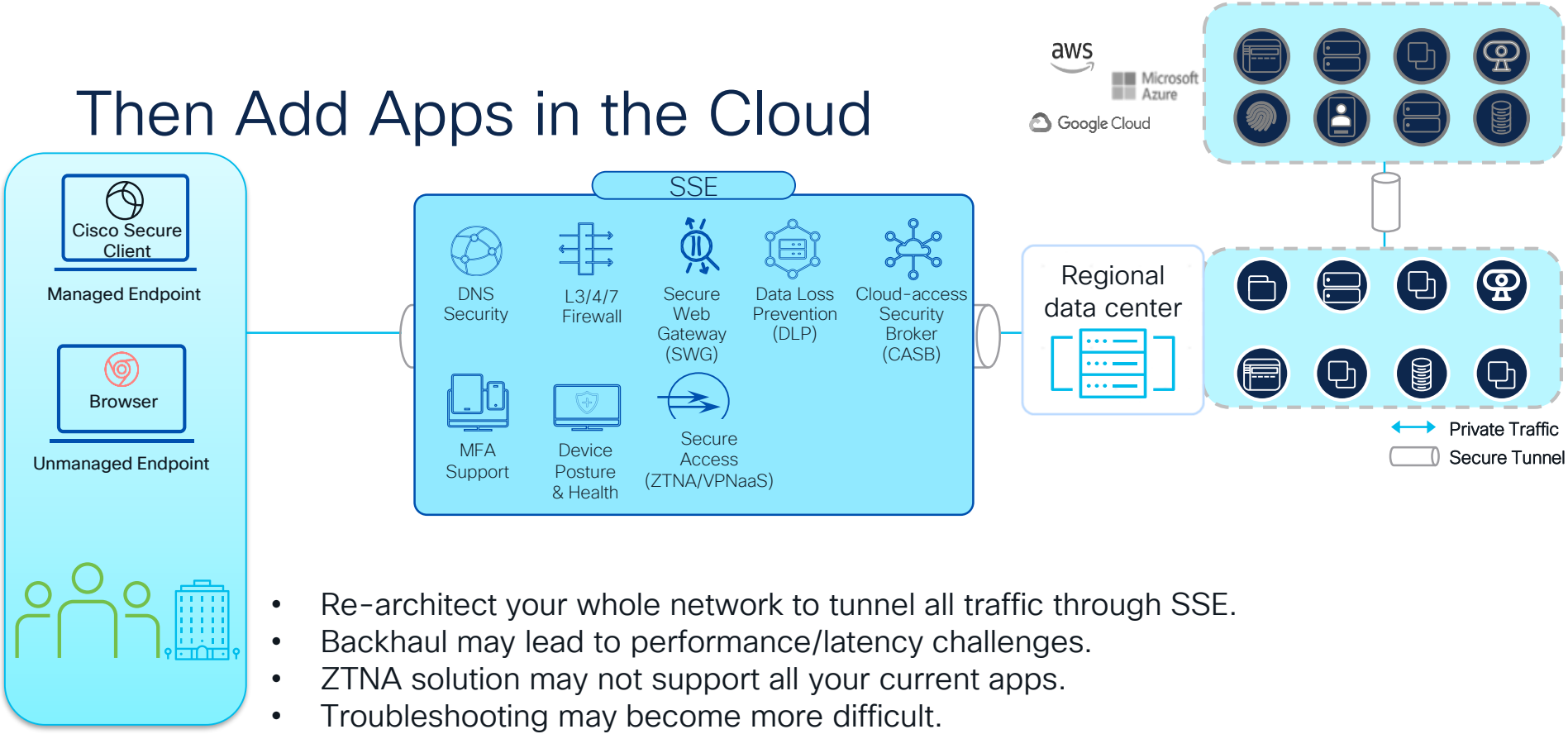

- Users can access all apps once connected.
- Need to configure firewall rules to segment the traffic or integrate with ISE.
- Client VPN solutions only support single tunnel to single location.
  apps reside in multiple places now.
- Users have VPN fatigue.
- Easier segmentation can be accomplished if your existing network infrastructure supports SGT-based segmentation.

# Then Add Apps in the Cloud



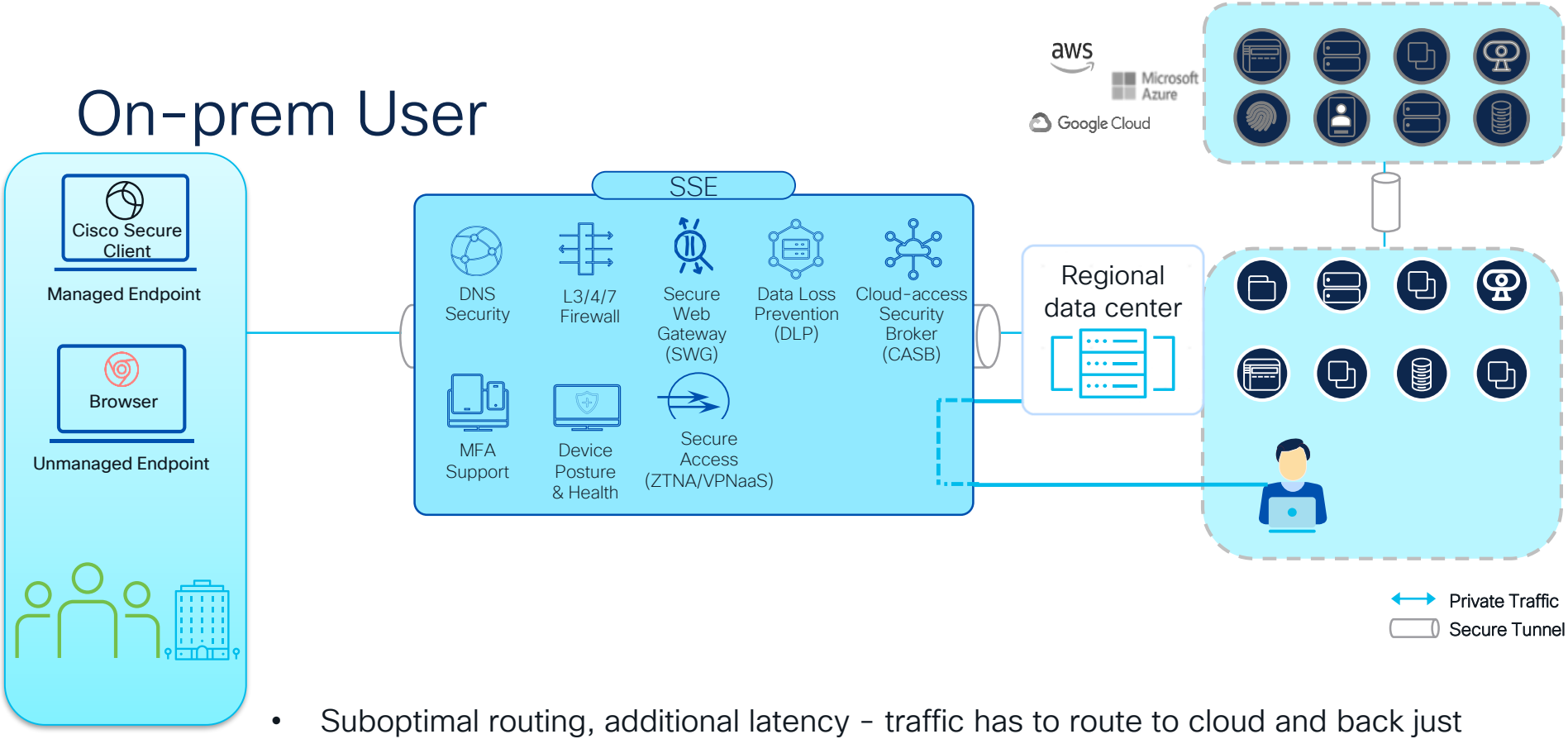

- Now add VPC firewall rules to an already complex set of firewall policies.
- Cloud networks don't support SGT.
- Client VPN only supports single tunnel. Users are tunneled back to a less optimal place before being backhauled again to IaaS or other places.

# Then Add Apps in the Cloud




- Re-architect your whole network to tunnel all traffic through SSE.
- Backhaul may lead to performance/latency challenges.
- ZTNA solution may not support all your current apps.
- Troubleshooting may become more difficult.

# On-prem User




- Suboptimal routing, additional latency - traffic has to route to cloud and back just to traverse inter-vlan.
- Unnecessary WAN utilization just for local routing within a site.

# Cisco ZTNA Options

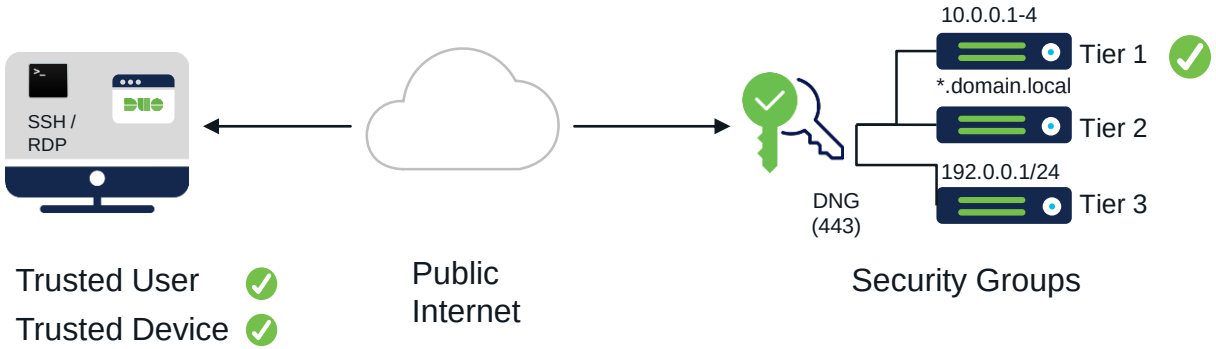
# Cisco ZTNA Options

- ✓ Duo DNG
- ✓ FTD ZTNA 7.4
- ✓ Cisco Secure Access

# Duo DNG

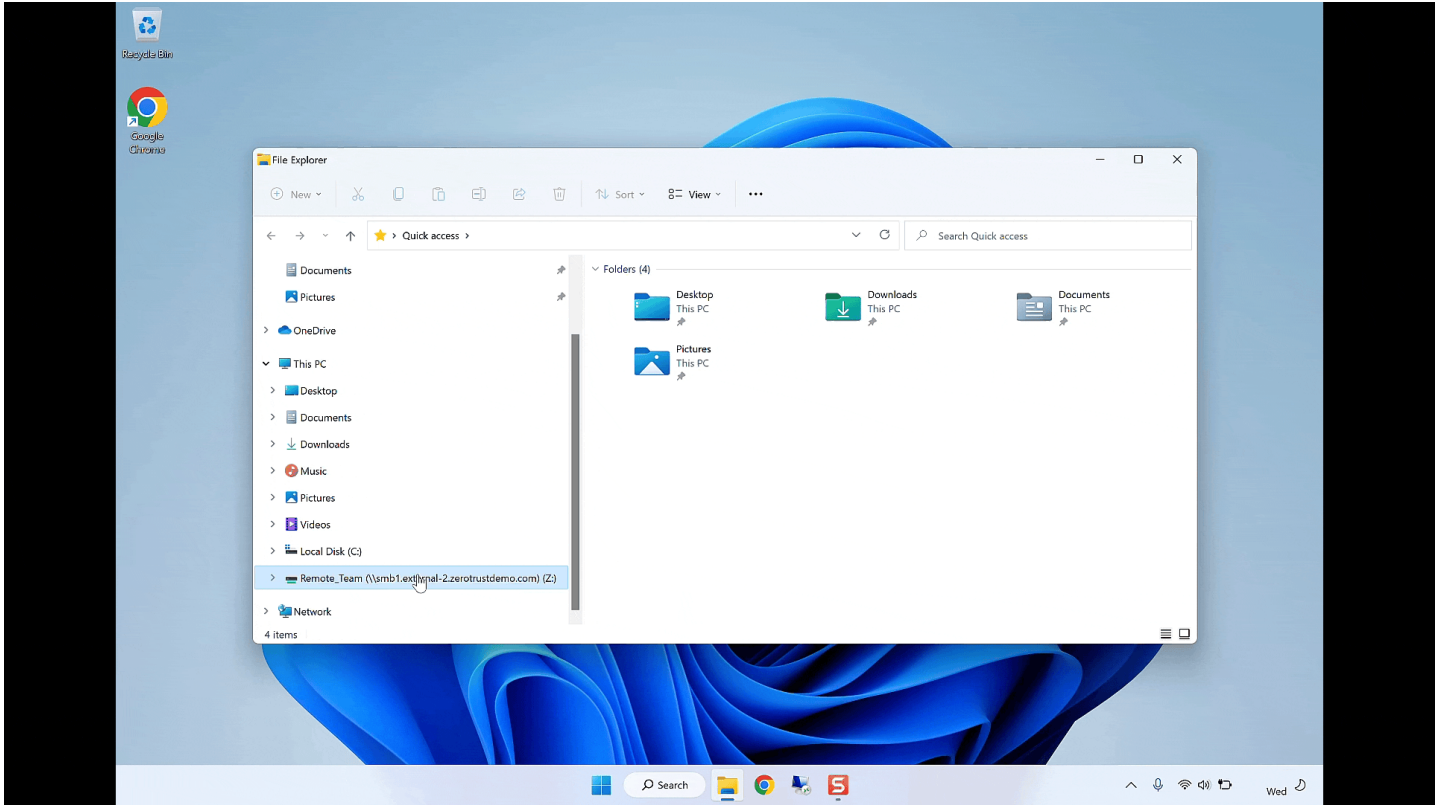
# VPN-less Remote Access to Private Applications

## Detect user & device context for internal apps with the Duo Network Gateway

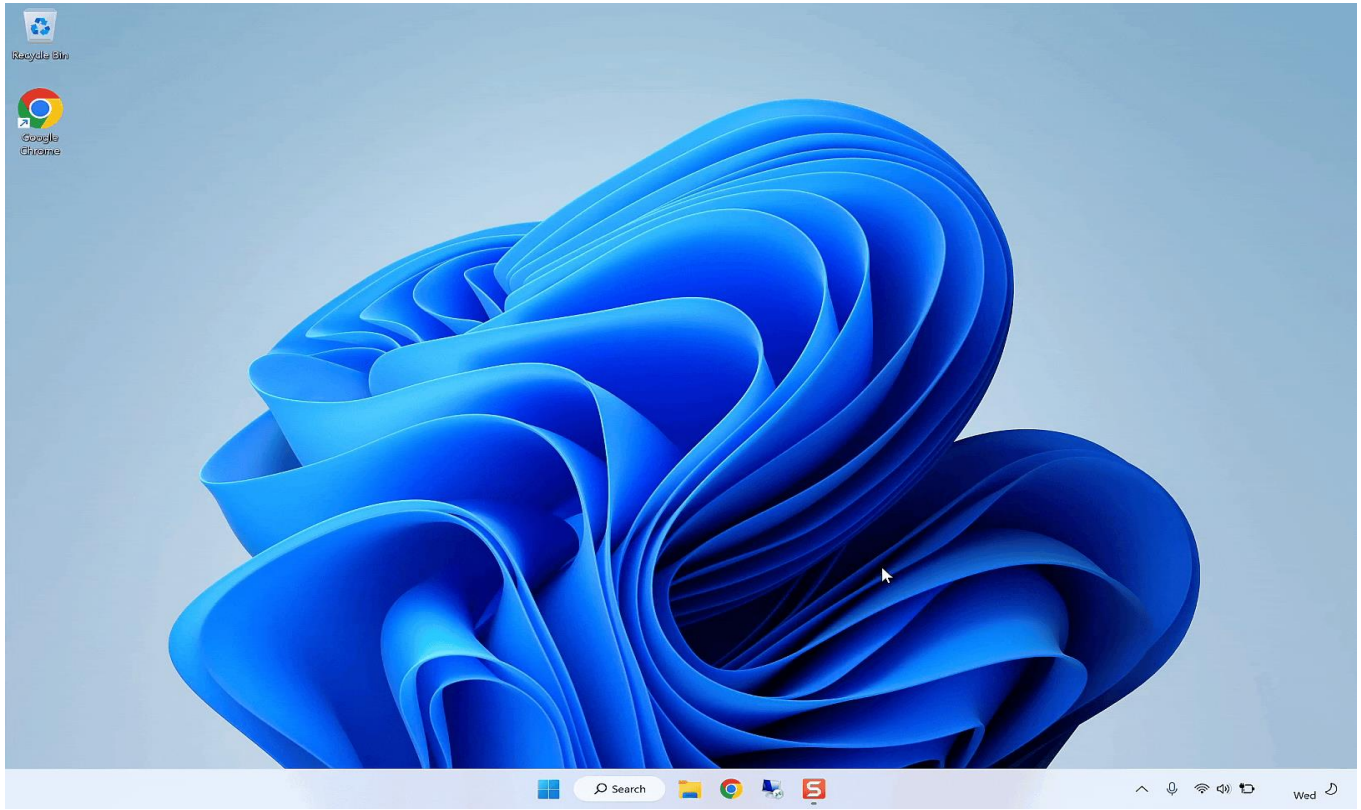



Supports: HTTP/S SSH RDP SMB

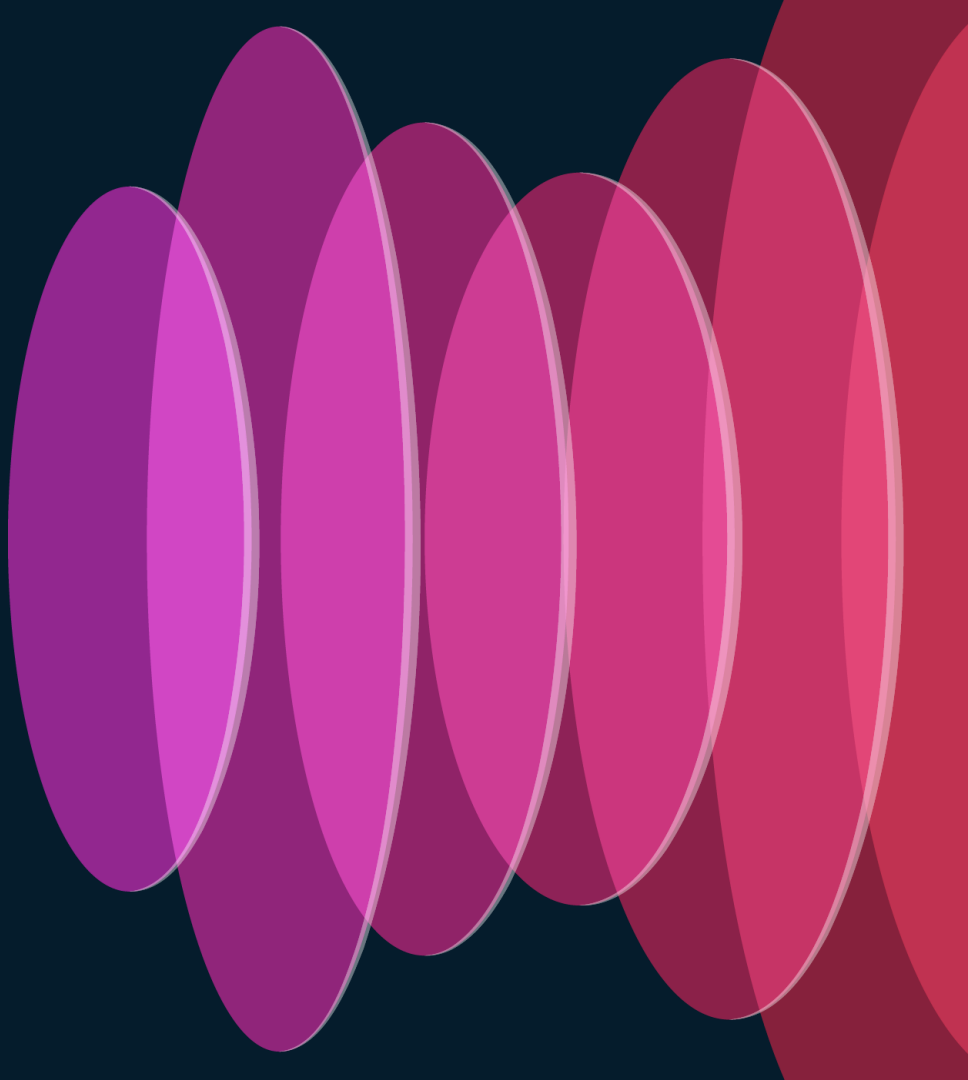
# Demo: Shared Drive Access (SMB)



# Demo: Remote Desktop Access



# Cisco Secure Firewall ZTNA



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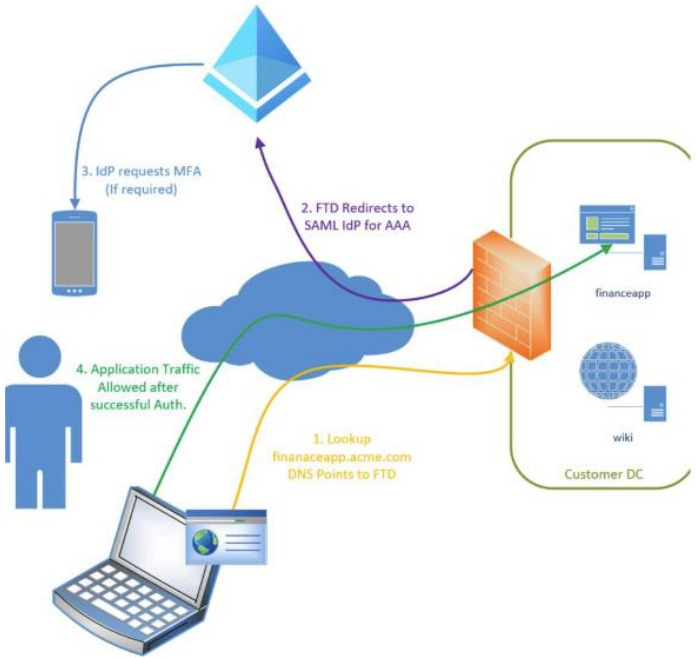
# Clientless ZTNA 7.4

- Allows HTTPS Browser-Based apps to be published through Secure Firewall.
- Requires DNS entry to point to Secure Firewall interface.
- Similar user experience to Duo Network Gateway.



# Clientless (7.4) and Client-Based ZTNA

| | Clientless ZTNA | Client-Based ZTNA |
|---|---|---|
| Endpoint Presence | No client application required on endpoint device | Client software required to be installed on endpoint device |
| Access Type | Can only be accessed through a web browser | Client software handles traffic transparent to the user |
| Application Type | Posture only available through authentication flow (e.g., Duo Health or Intune) | Client software handles posture based on policy (similar to HostScan or ISE Posture) |
| User Types | 1:1 Client-to-Headend relationship | Client can connect to different headends per application |

# Cisco Secure Access

# Cisco Secure Access

## Core SSE

- Secure Web Gateway (SWG)
- Cloud Access Security Broker (CASB) and DLP
- Zero Trust Network Access (ZTNA)
- Firewall as a Service (FWaaS) and IPS

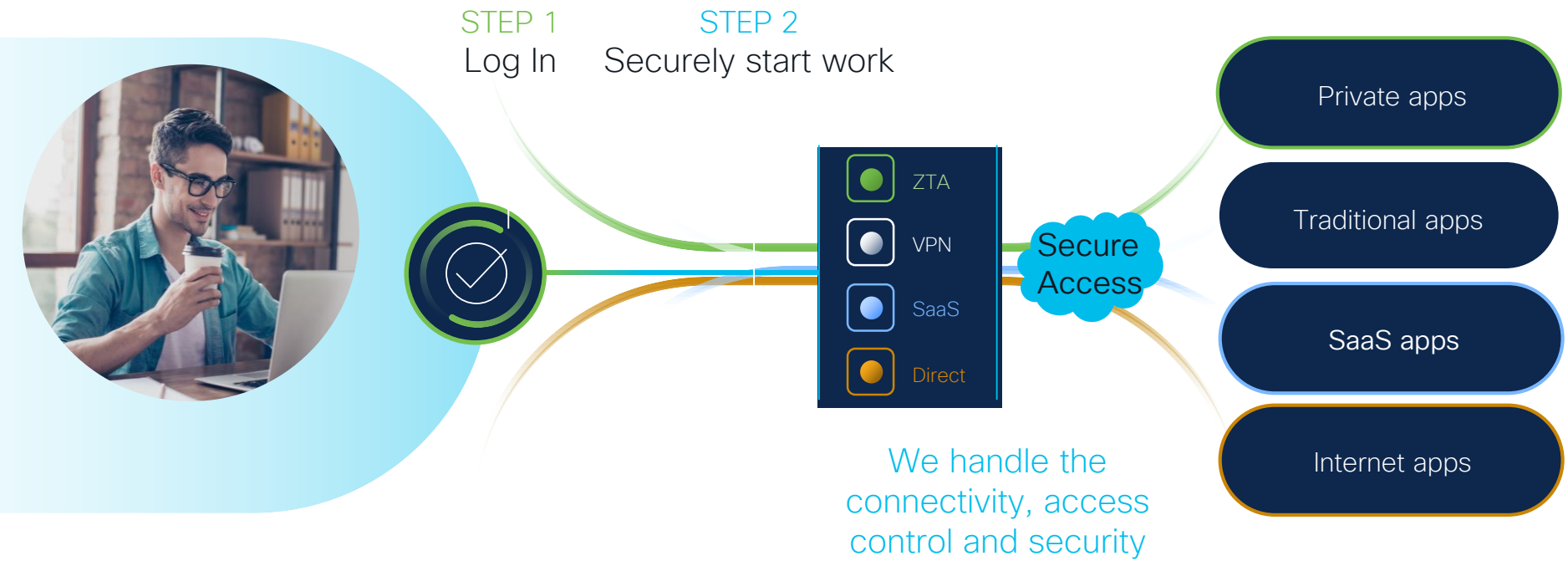
## Cisco delivers the core and more in a single subscription…

- DNS Security
- Multimode DLP
- Advanced Malware protection
- Sandbox
- Talos Threat Intelligence
- VPN as a Service
- Digital Experience Monitoring*
- Remote Browser Isolation*

## Add-on solutions

- SD-WAN
- XDR
- DUO MFA/ SSO
- CSPM

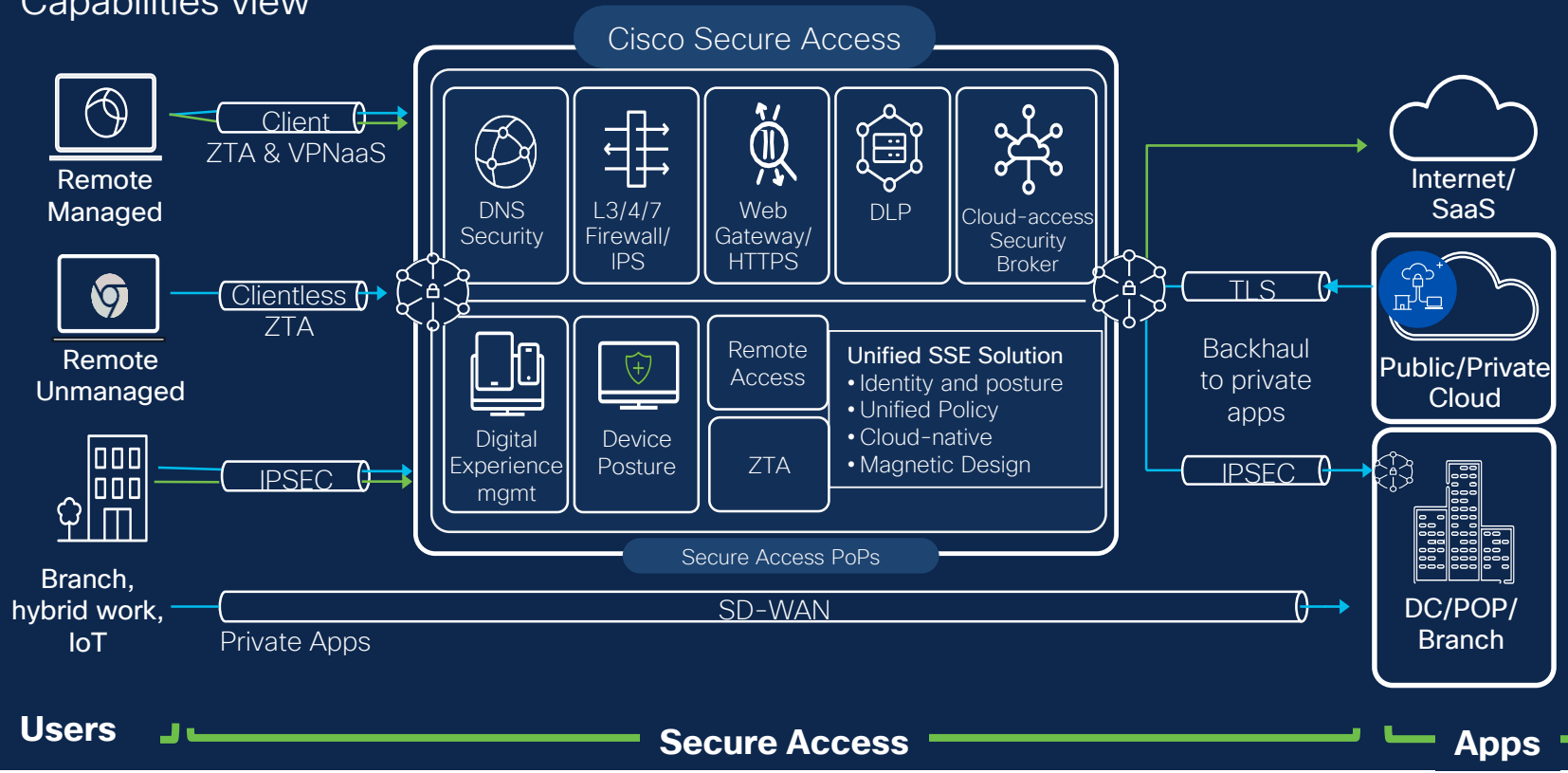
# Cisco Secure Access




Easy, frictionless user experience

# Cisco Secure Access

- Capabilities view



# Cisco Secure Client

- Suite of security service enablement modules

AnyConnect VPN (Core)

ZTA Module

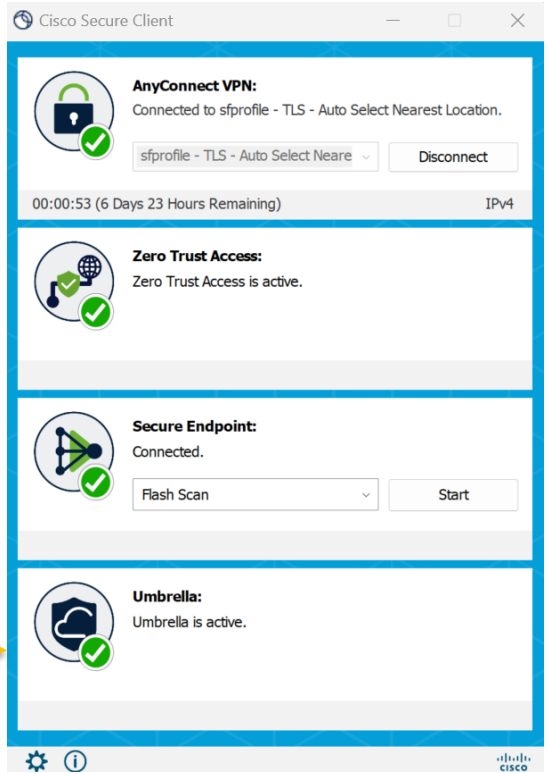
Secure Endpoint (AMP)

Roaming Module

Thousand Eyes (No UI)

Cloud Management Module (No UI)

Diagnostic and Reporting (DART)

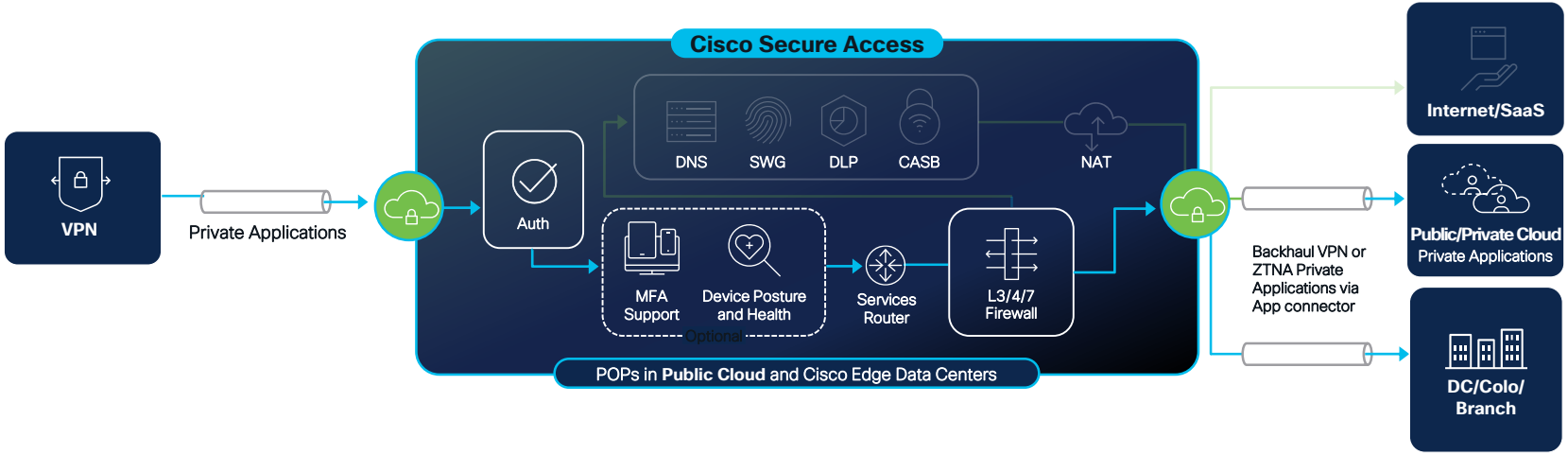


# Secure Private Access Use Cases

- Secure Private Access
  - Via VPN
  - Via ZTNA (Client Based)
  - Via ZTNA (Clientless)

# Secure Private Access

## via VPN



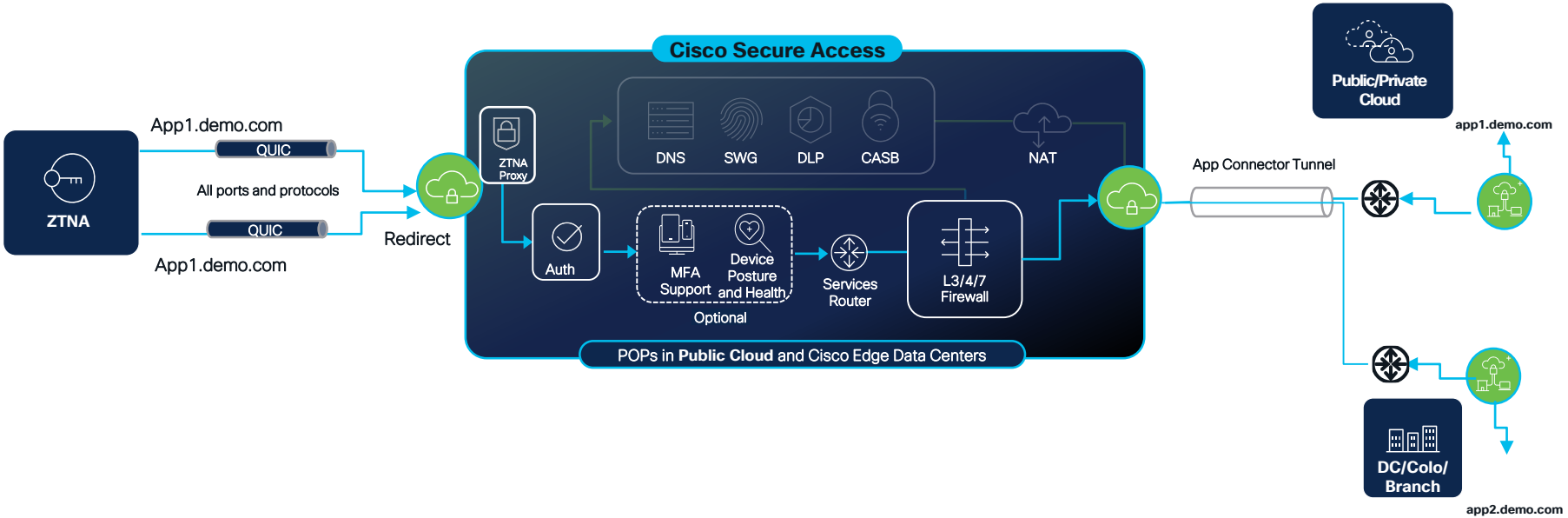

**Benefits**

- SAML 2.0 + cert-based authentication
- Posture verification (optional)
- Trusted Network Detection
- Start before logon
- IPS
- Granular context-based control

# Secure Private Access (Client-based ZTNA)

Private Traffic
Secure Tunnel

## No VPN




**Benefits**

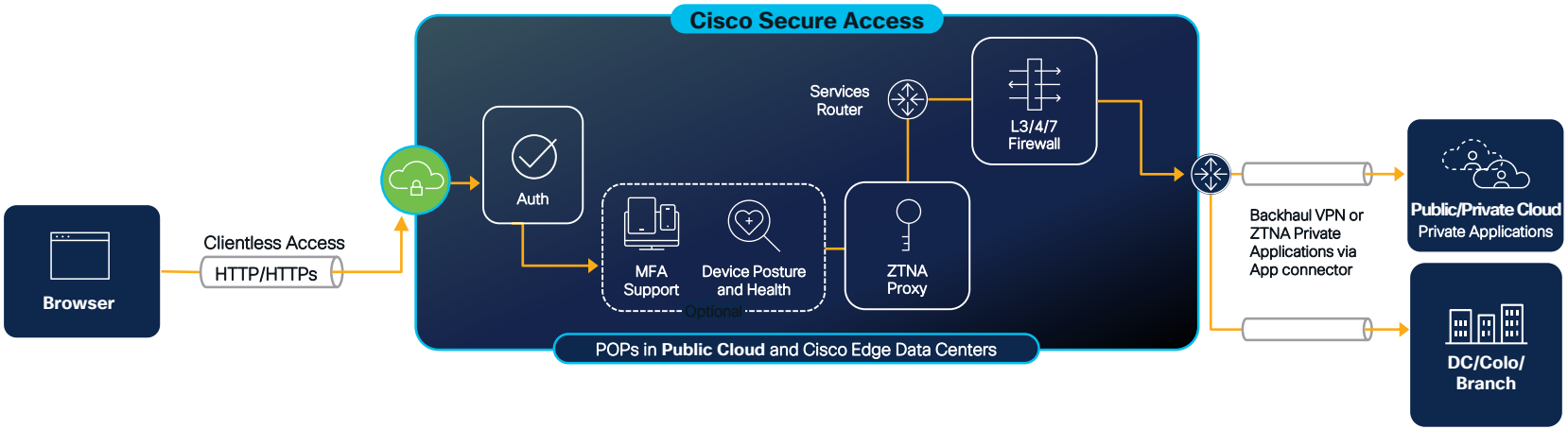
- Improved end-user experience
- Improved Security step up auth
- Always on access

- Performance benefits QUIC & MASQUE
- Per App tunnels
- Cloud bypass for sensitive apps

- No client based VPN
- No routing/network modification on client
- App specific access

# Secure Private Access

## No VPN, No Client




**Capabilities**

- Clientless
- App-specific access
- Undiscoverable IP address
- Least privileged user access
- Reduced threat surface

# Secure Private Access

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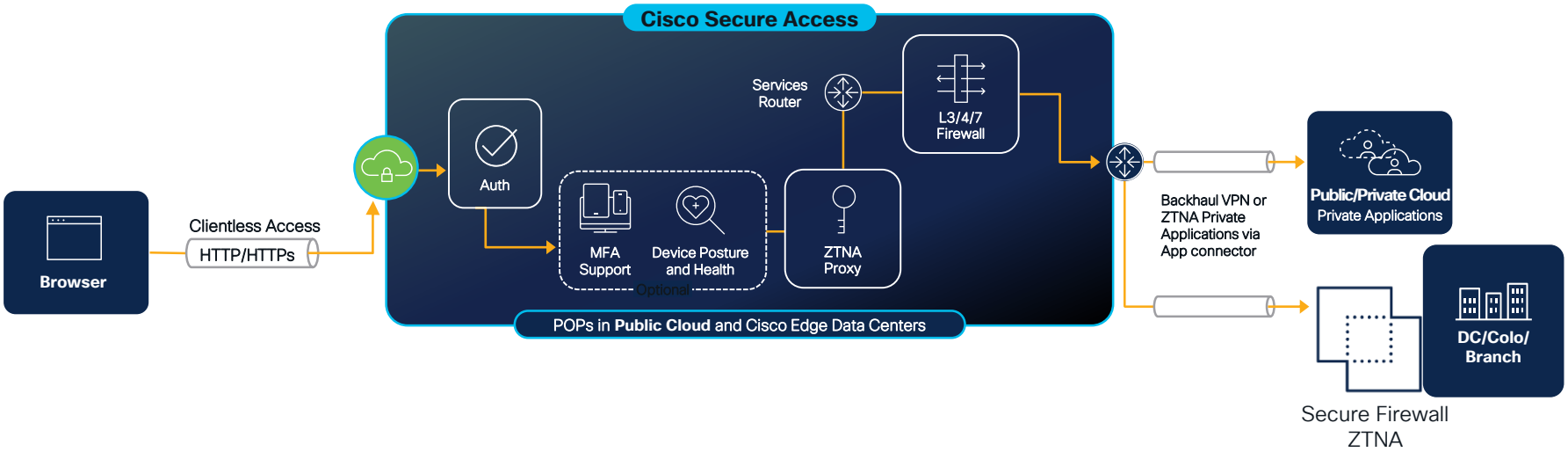


**Capabilities**

- Clientless
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# Key takeaways

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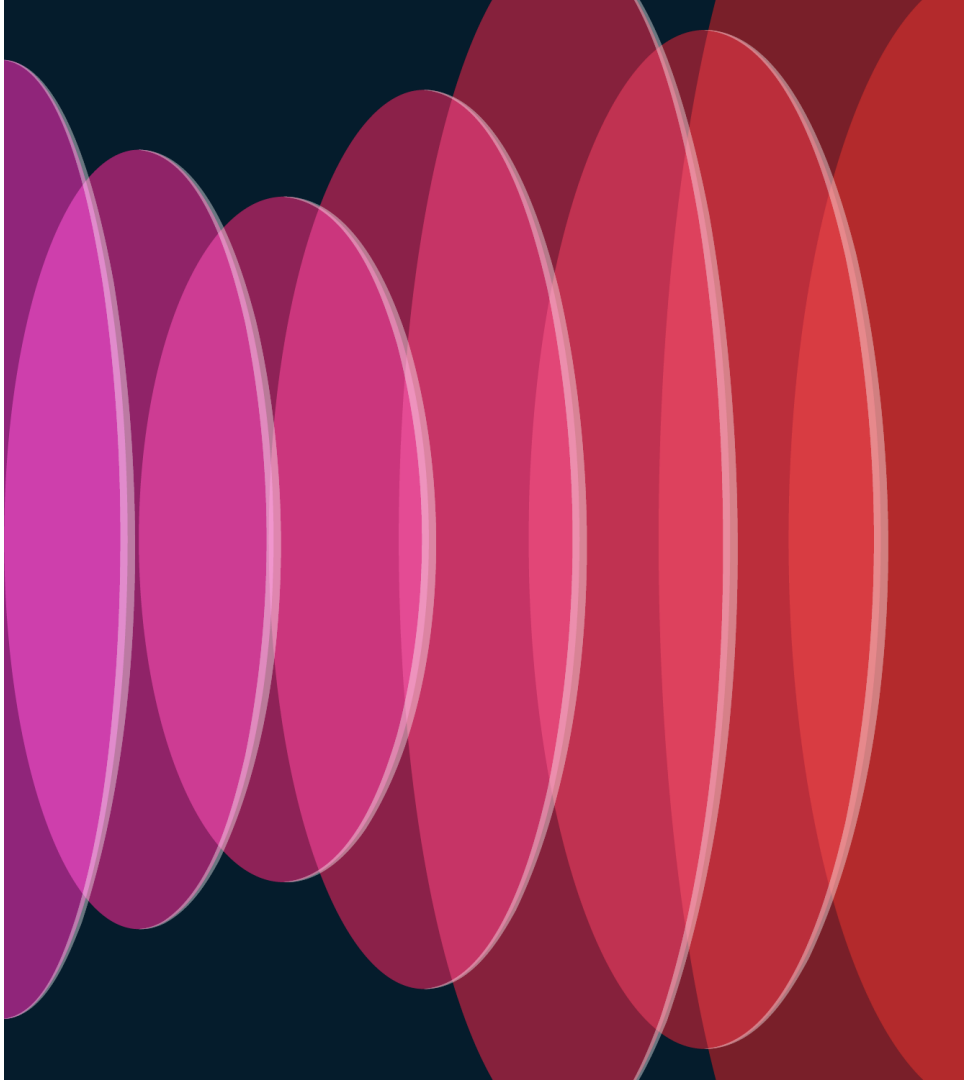
- Both VPN and ZTNA have their strengths and weaknesses. Despite claims of VPN obsolescence.
- Both technologies can be effectively utilized to establish a secure architecture with Zero Trust Principles.
- Evaluate and select the most suitable solution for your organization.
- Contextualize the technologies and consider their implementation based on your organization's specific requirements and objectives.

# Slido



*“The design of the network, where our applications live, and the security infrastructure is a speed bump and adds unnecessary complexity burden on our users.  We need to to provide security, availability, performance and do it in a way that is completely transparent to our users.”*

Jay Young – VPN Technical Leader

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