Nathan Underwood

Christian. Husband. Father. Aspiring hacker. Martial Arts nerd. Amateur radio guy. Perpetual n00b.

Nathan's fascination with technology started as a hobby in the1980's and evolved into a career. In the years since, Nathan has served in a number of roles from helpdesk to SysAdmin to IT Directory.

Nathan co-founded Cyber Tech Café in 2002 to provide IT Support Services to the SMB market and later co-founded Piratica in 2014 to focus on IT Security.

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Zero Trust Networking

Topics

- Traditional Networks
- Zero Trust Networks
- Why should you adopt Zero Trust?
- “Thinking Different” about Networks
- Technology Behind Zero Trust
- Getting Started with Zero Trust

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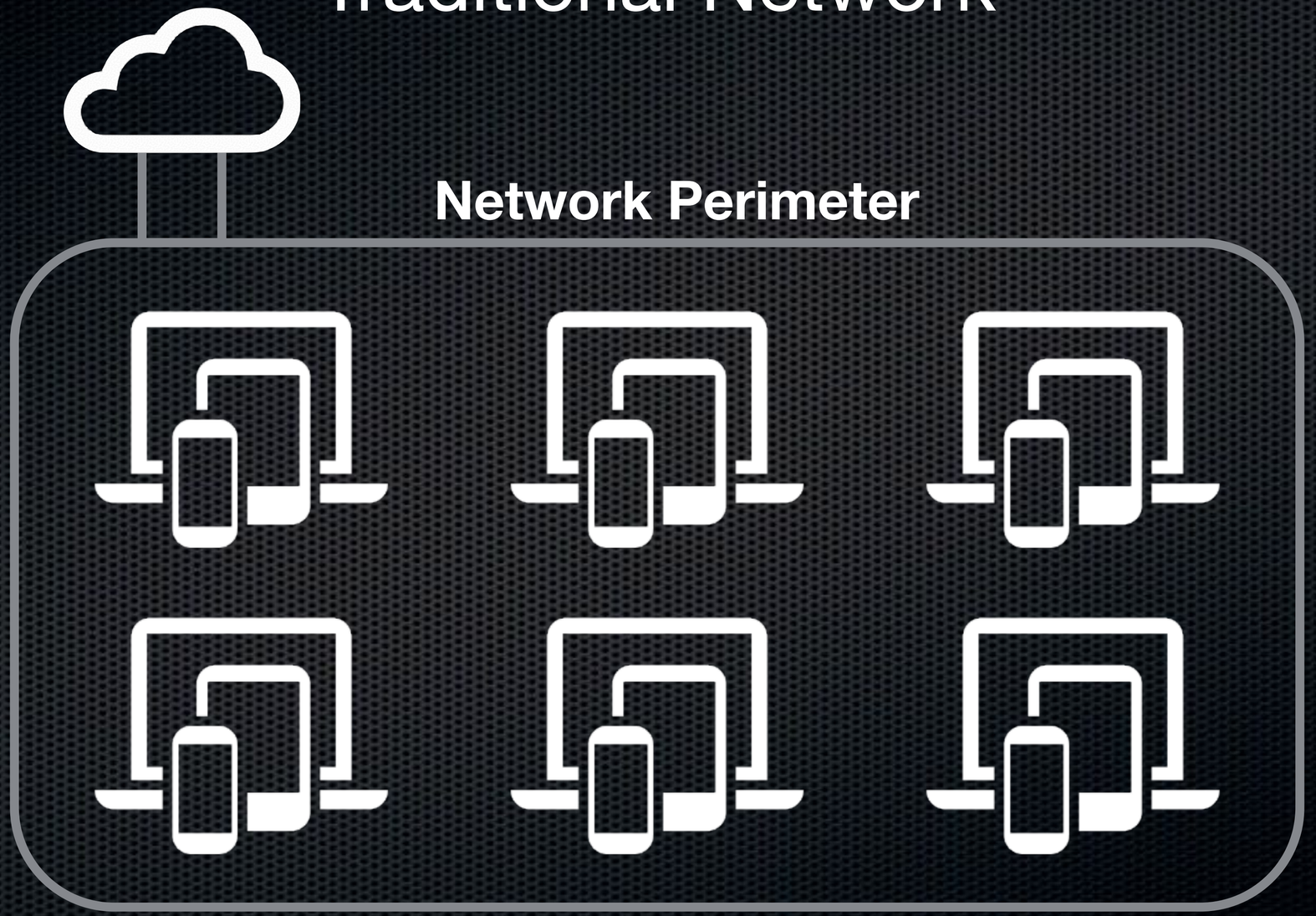
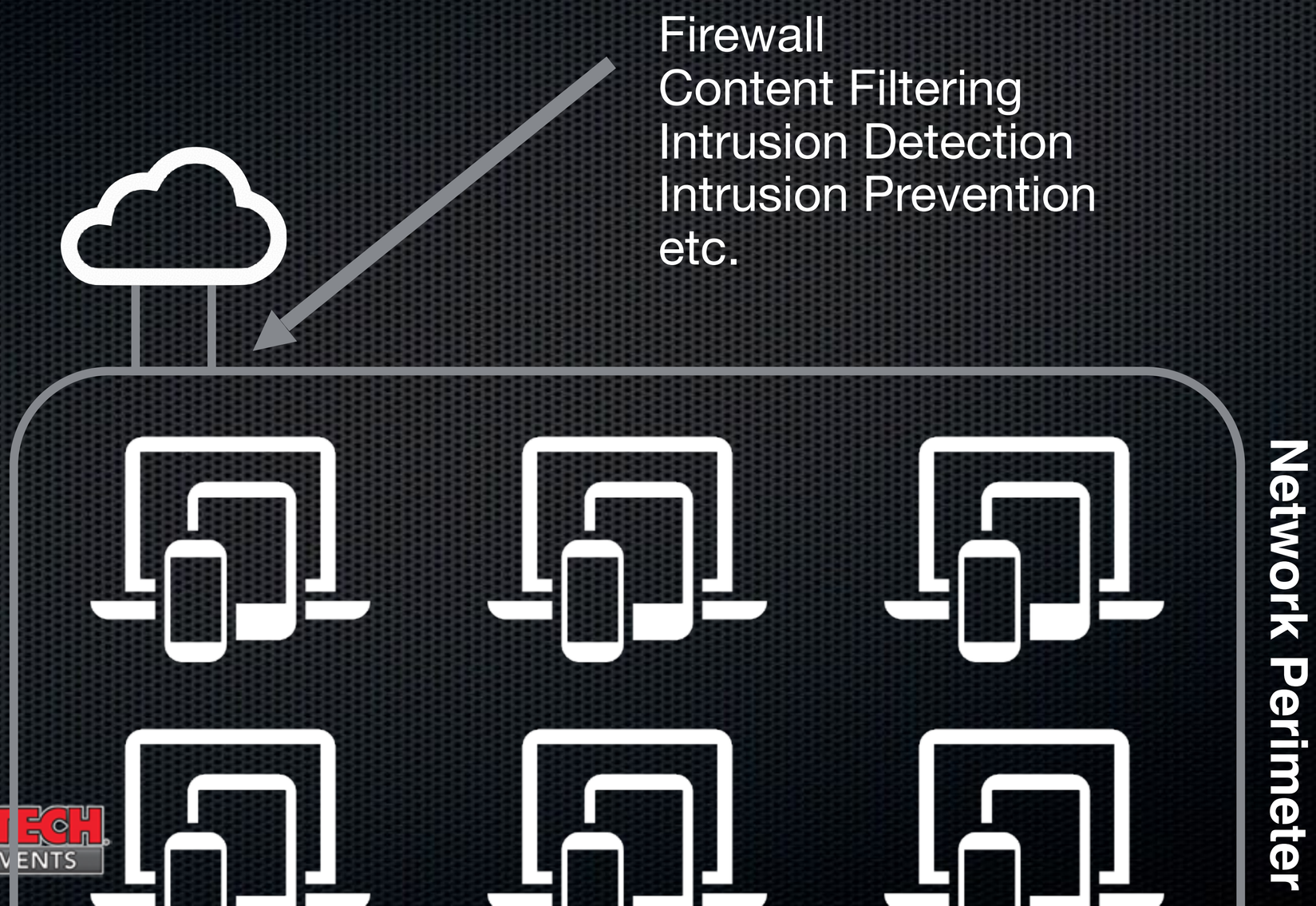
What is a traditional network?

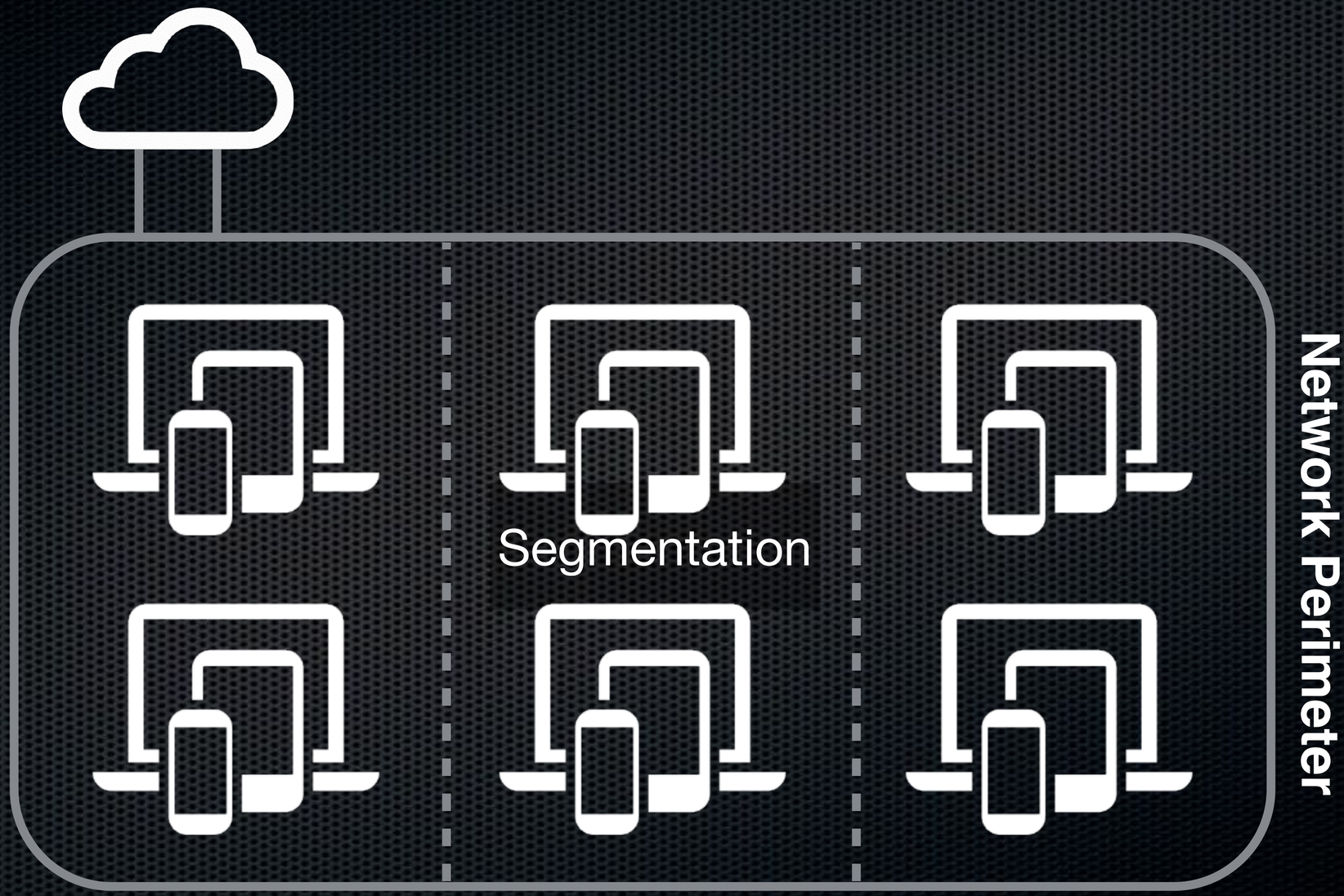
Traditional Network



Traditional Network



Traditional Network



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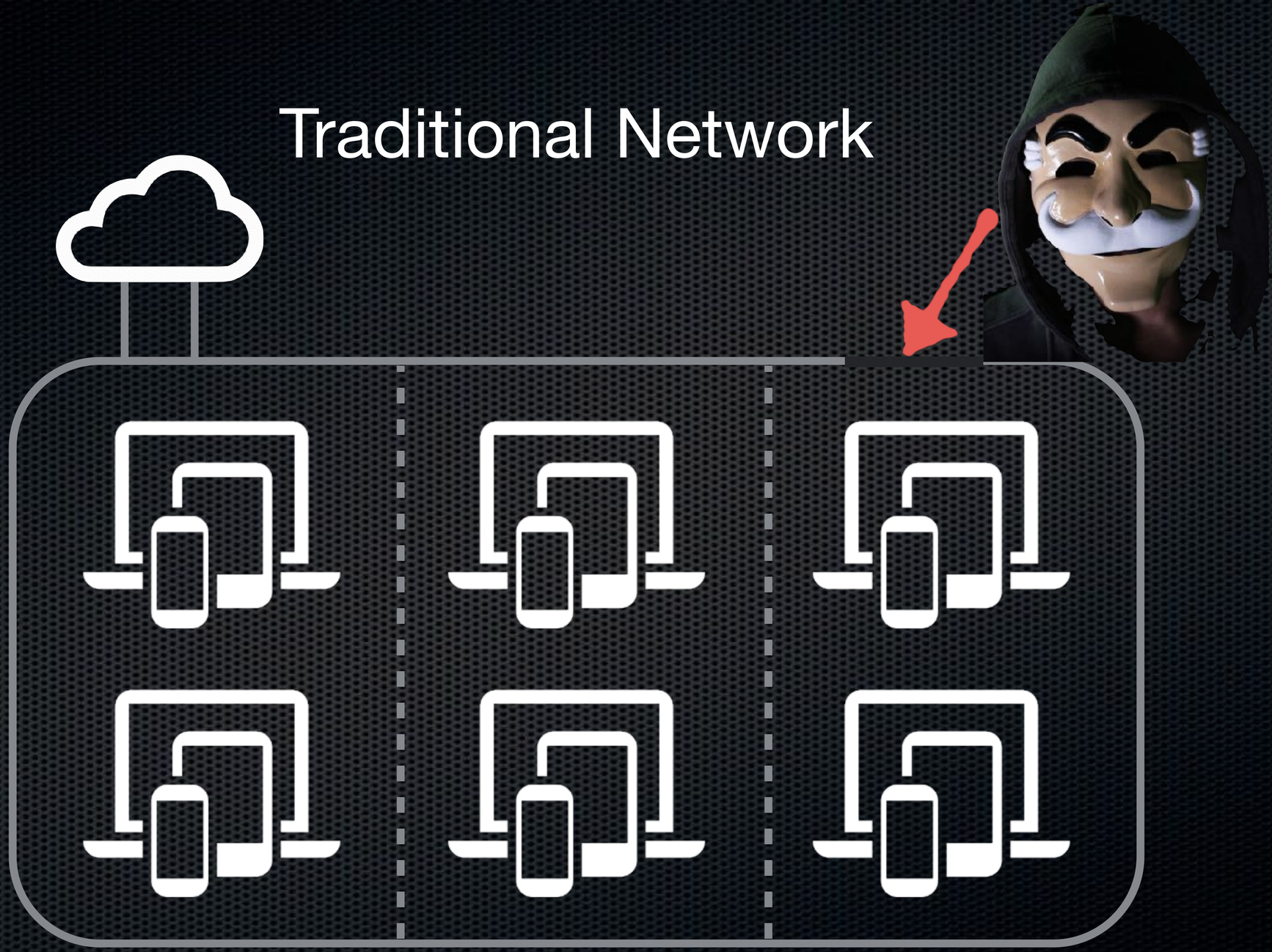
Traditional Network

Segmentation

- Splitting network into sub-networks
- Restricting Communication between Subnets
- VLANs, Firewalls, DMZs

Traditional Network



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Traditional Network

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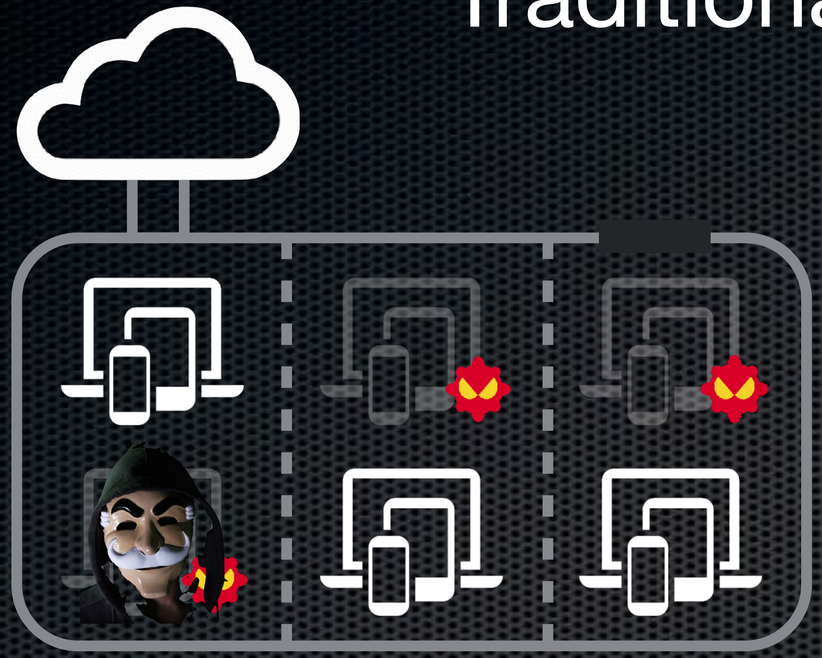
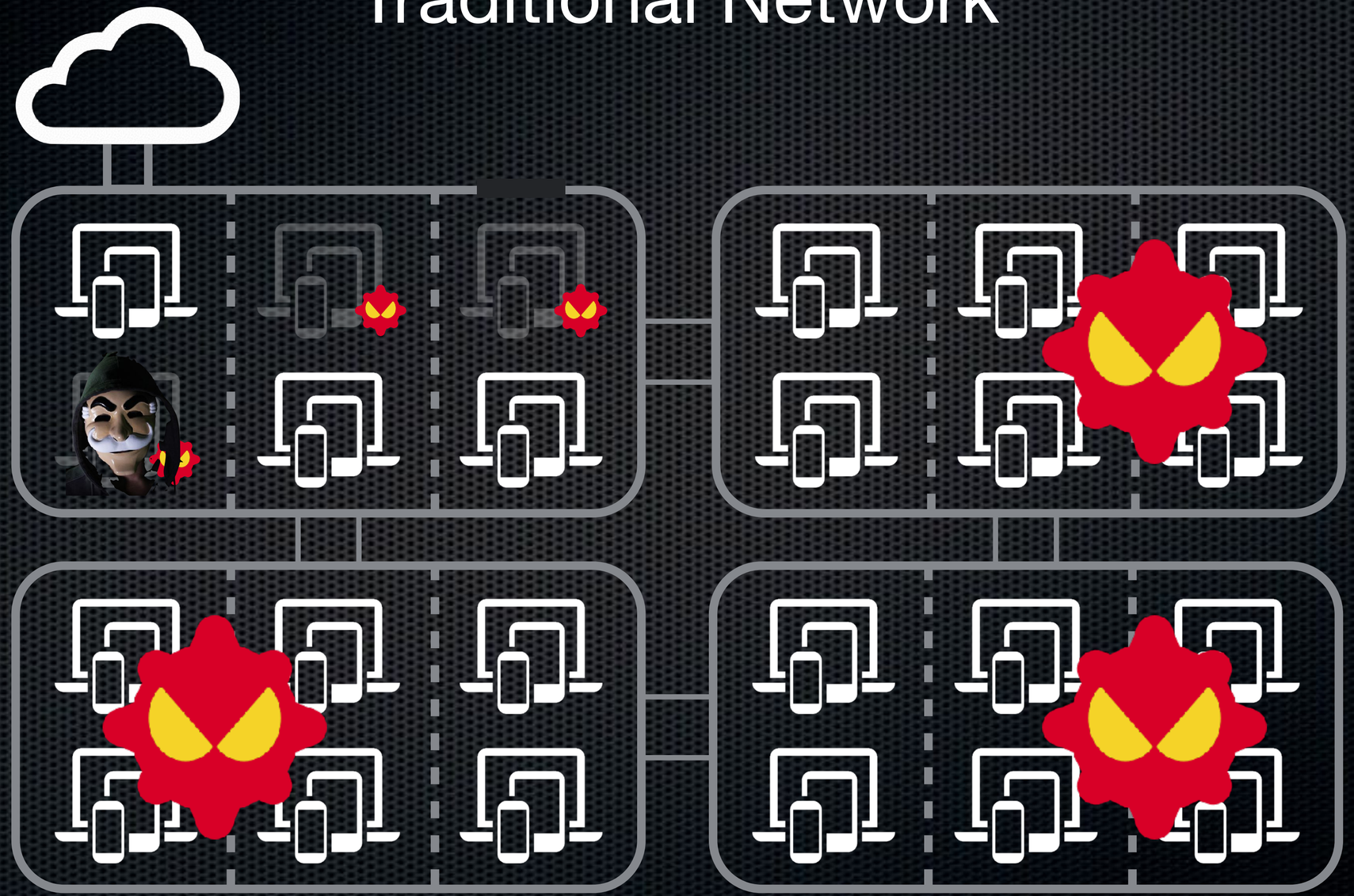
Traditional Network



Traditional Network



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Cost of Cybercrime

$3 Trillion

in 2015

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Cost of Cybercrime

$6 Trillion

in 2021

MACTECH PRO EVENTS

Cost of Cybercrime

$6,000,000,000,000

in 2021

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Cost of Cybercrime

High Profile Breaches

- Stuxnet Worm
- Target Retail
- Sony Pictures
- …many others…

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Traditional Network: Weaknesses

- Multiple points of entry
- Firewall Rules become unmanageable
- Cloud Services are more nuanced
- Insider threat is a major omission
- All-or-nothing security model

Mitigation Strategy?

Head in the Sand

Obscure Reality

Point Fingers

Evade Ownership

Excerpt from "The X-Files S01E24 "The Erlenmeyer Flask" ©1993 Fox

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Trust, but Verify

доверяй, но проверяй

Trust, but Verify

“the old adage is in need of an update.”

John Kerry, Former Secretary of State

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Verify and Verify

Trust no one

Untrusted

Untrusted

What is Zero Trust, and why should I care?

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“Thinking Different” about Networks

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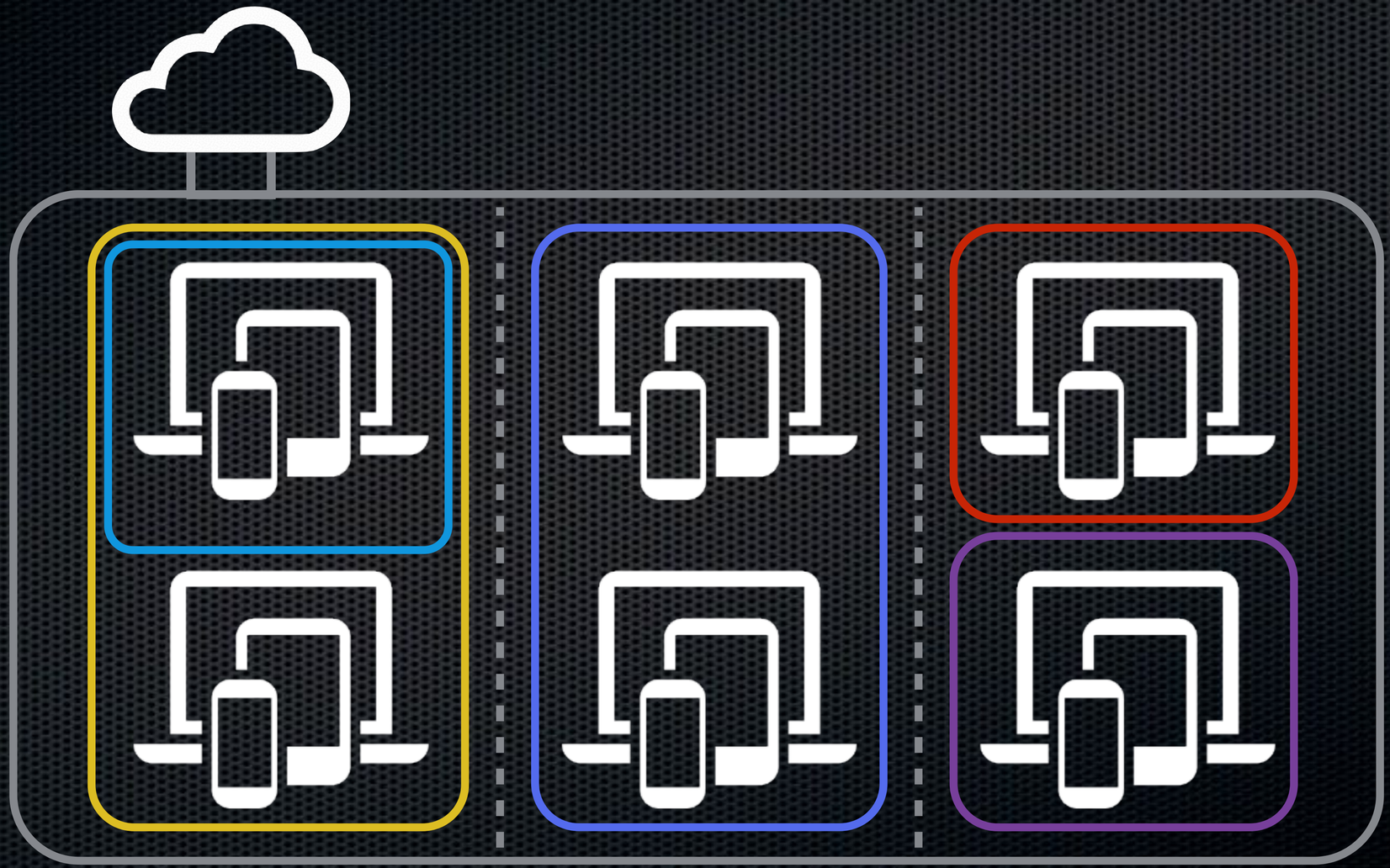
Zero Trust is not a product.

It’s a philosophy.

Why Zero Trust?



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Why Zero Trust?

Why Zero Trust?

- Works on untrusted physical networks
- Identity-based access management (IAM)
- App identity profiles on next-gen firewalls
- Certificate based authentication
- Robust and auditable access controls
- All network traffic logged and inspected

Data Access

- Security based on user and location
- Identify and map traffic / data flow
- Know the users and their apps

Access Control

- Adopt a “Least-Privileged” strategy
- Grant on a “Need to Know” basis
- Data classification

Always Verify

- Log all Traffic
- Inspect All Traffic

Authentication Methods

- Certificates
- Two-Factor (2FA)
- Multi-Factor (MFA)

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Identity Management

- Identify and Add Context
- Keep Roles Up-to-Date

Technology & Processes of Zero Trust Networking

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Technology & Processes

Zero Trust Combines:

- Existing Technologies
- Governance

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Technology & Processes

Micro-segmentation of networks

Granular Perimeter Enforcement

- User
- Location
- Device / Computer
- Application

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Technology & Processes

- Multi-Factor Authentication
  - 2FA
  - TOTP
- Identity & Access Management (IAM)
- IAM can be combined with MFA
  - Examples: Apple ID, O365 + Ping/Duo

Technology & Processes

- Policy orchestration
- Network traffic analytics
- Baseline encryption
- Scoring based on analytics

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Technology & Processes

- File system permissions
- Databases
- Does this user need access to *all* of this?

Technology & Processes

- Certificates
- 802.1x Networking

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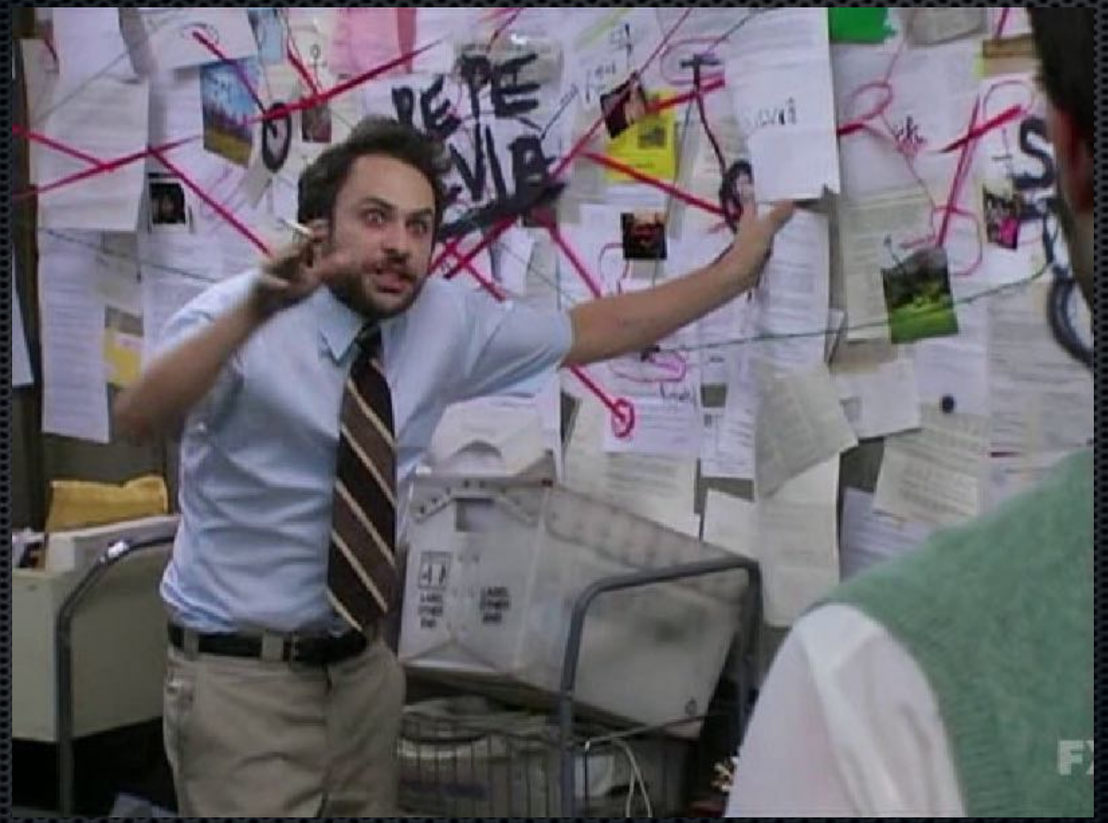
Getting Started with Zero Trust



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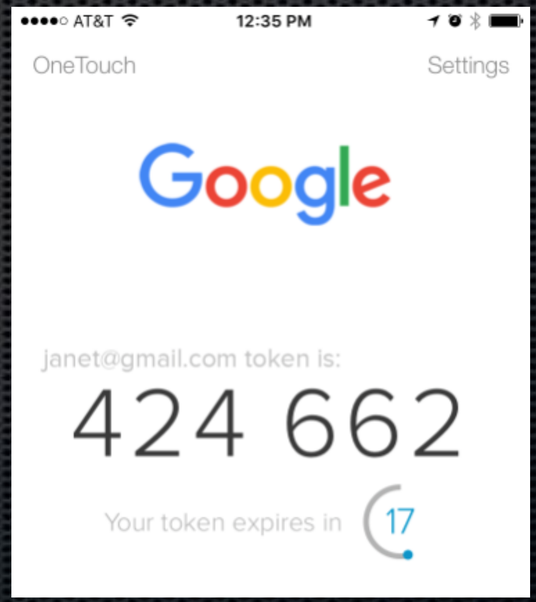
Getting Started with Zero Trust

- M cation



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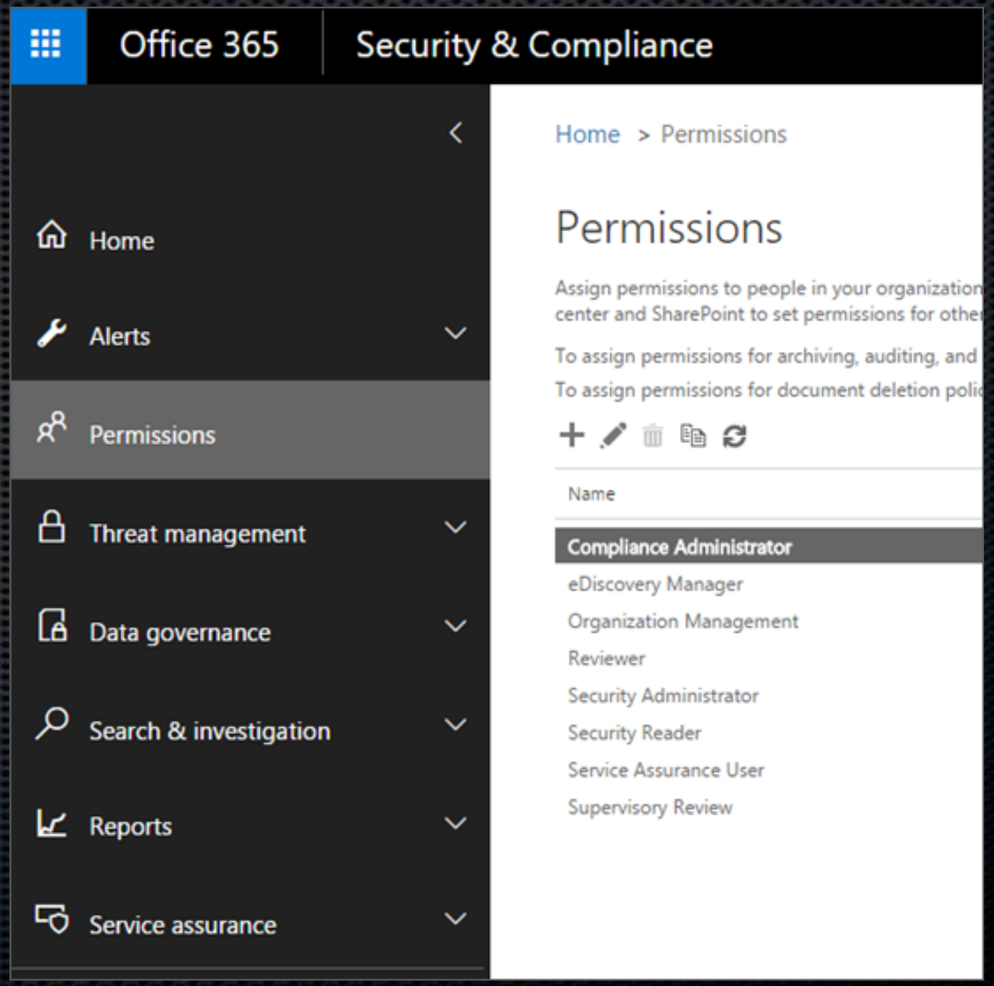
Getting Started with Zero Trust

- Identity & Access Management (IAM)
- Single Sign-on (SSO)

Getting Started with Zero Trust

- Permissions



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Getting Started with Zero Trust

- Multi-Factor Authentication (MFA)
- Identity & Access Management (IAM)
- Single Sign-on (SSO)
- Appropriate permissions
- Thorough process audit

MACTECH PRO EVENTS

Getting Started with Zero Trust

- Multi-Factor Authentication (MFA)
- Identity & Access Management (IAM)
- Single Sign-on (SSO)
- Appropriate permissions
- Thorough process audit
- Next-Gen Access (NGA)

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Zero Trust

Untrusted

Untrusted

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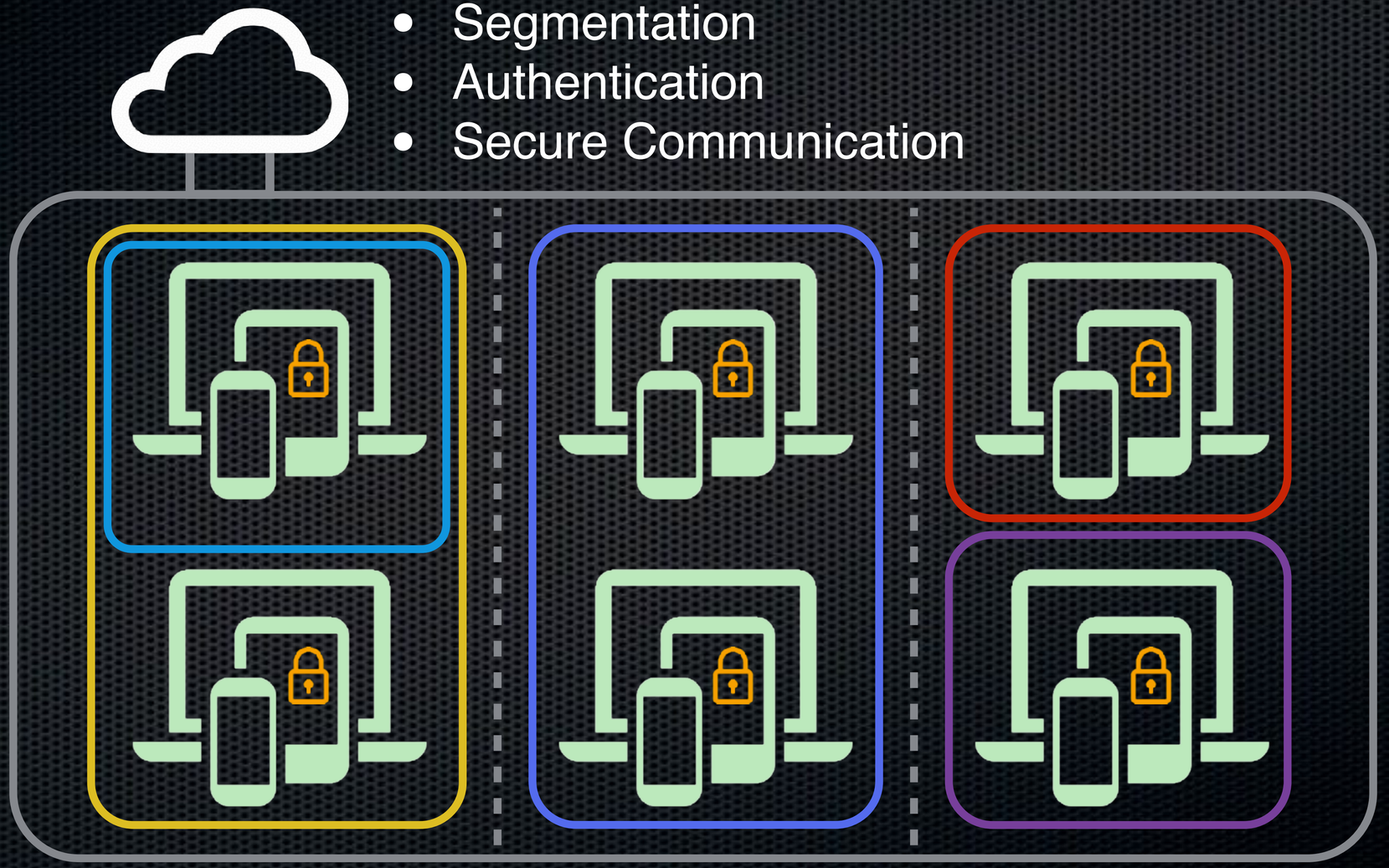
Zero Trust

- Segmentation
- Authentication
- Secure Communication



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Why Zero Trust?

Resources

- The Zero Trust Network Architecture by John Kindervag
  (google… DNA zero trust network forrester filetype:pdf)
- Integrate Jamf Pro with Intune for compliance
- Integrating with Microsoft Intune to Enforce Compliance on Mac Computers Managed by Jamf Pro
- Centrify: What is Zero Trust Privilege?
- O'Reilly: Zero Trust Networks
  book by Evan Gilman, Doug Barth

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Resources

- haveibeenpwned.com
- NIST SP 800-63B
- https://krebsonsecurity.com/2016/03/seagate-phish-exposes-all-employee-w-2s/
- SANS Institute Case Study: Target Breach
- Endpoint protection:
  - intego.com / flextivity.com
  - github.com/google/santa
  - objective-see.com

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Questions?

Nathan Underwood
nathan@piratica.us

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