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#CiscoLive



The bridge to possible

# Practical Tips & Tricks and the power of Intent-Enabled

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BRKCRS-2503b



#CiscoLive

# Cisco Webex App

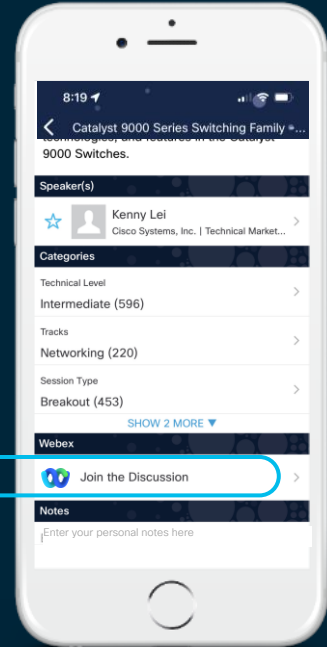
## Questions?

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 17, 2022.



<https://ciscolive.ciscoevents.com/ciscolivebot/#BRKCRS-2503b>



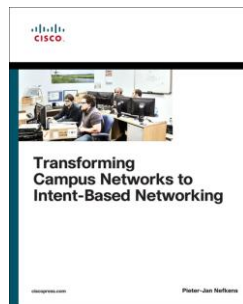
# Agenda

- Overview
- IBN is a way of life
- Tip #1: Operations
- Tip #2: Change is hard work
- Tip #3: Templates & Standardization
- Tip #4: SD-Access
- Tip #5: Organizational aspects
- Q&A

# Who are we?



- 22+ years in IT
- Consultant, Creator, Engineer, Software Developer, Early Adopter
- Cisco Champion & TechFieldDay delegate
- Blogger, Trainer
- Married, 2 daughters
- Hobbies: Cyclist, Photography, Cooking



- 15+ years @ Cisco
- Technical Marketing Engineer SD-Access and Catalyst switching portfolio
- Distinguished Hall of fame Speaker
- Hobbies: Reading, Golf, Bowling, Movies





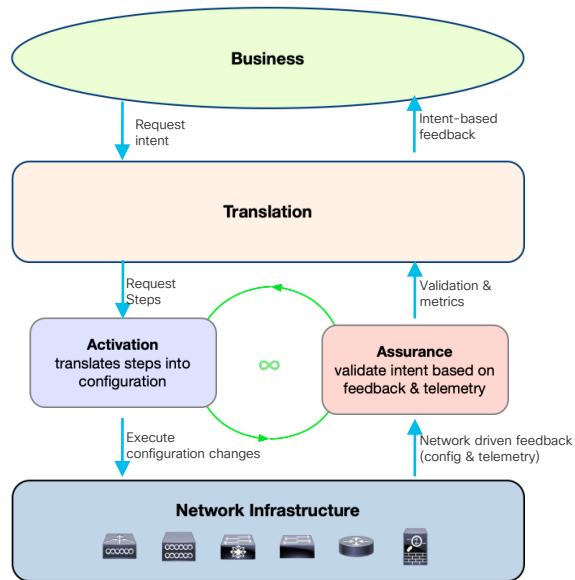


# IBN is a way of life

# Intent-Based Networking is a way of life

$$\text{IBN}(t) = \text{Base network} + \sum(\text{intent})$$

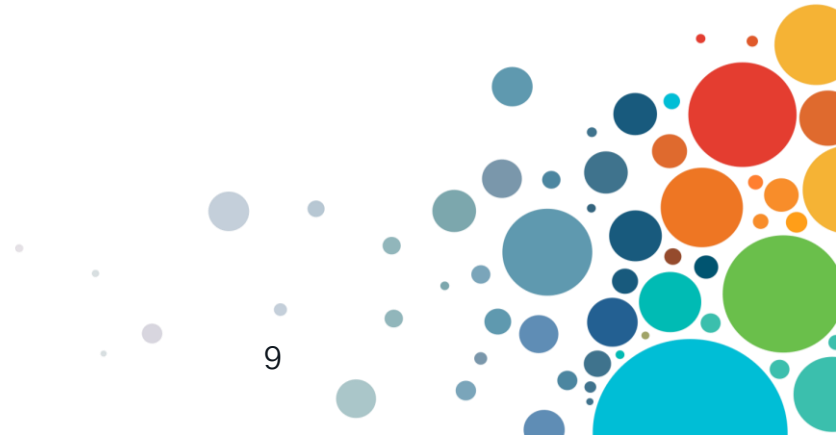
- IBN is not about technology, it is about how to operate and organize your network
- Management by exception
- Let tooling do the work for you



# IBN in real life



# Operations



# Day-to-Day Challenges

Is your operations team involved?

- Operations Team is usually in "firefighting" response mode
  - Too busy responding to tickets
  - Still using the older architecture
  - Need to keep proving: "It's not the network"
- Projects decisions made without operations and then do handover
- Operations team is usually "too busy" for change

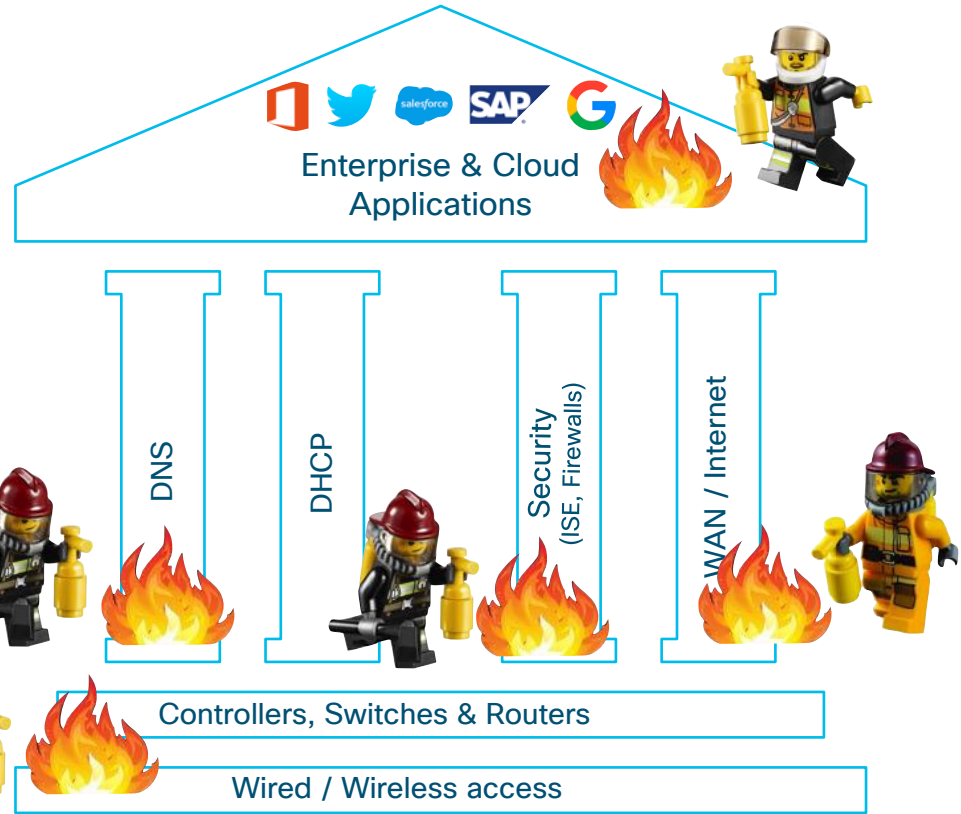


Image is copyright by Lego™

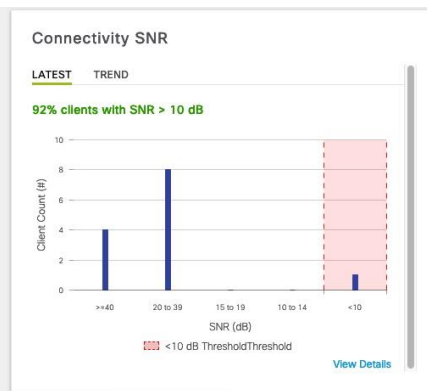
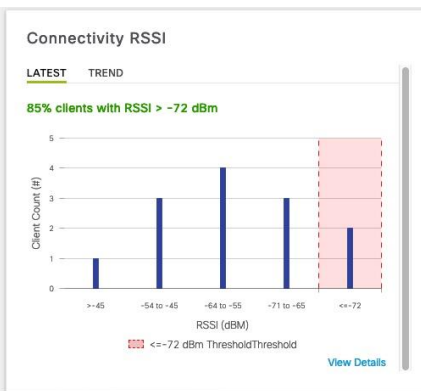
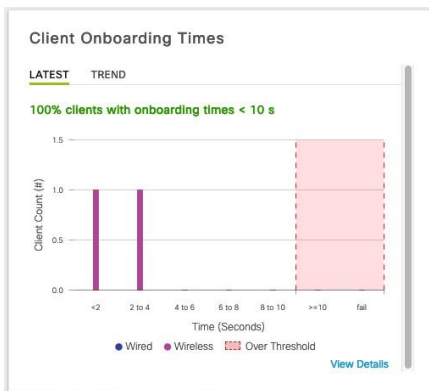
# Introducing Assurance

Cisco DNA Assurance can be deployed without using DNAC Automation or SDA

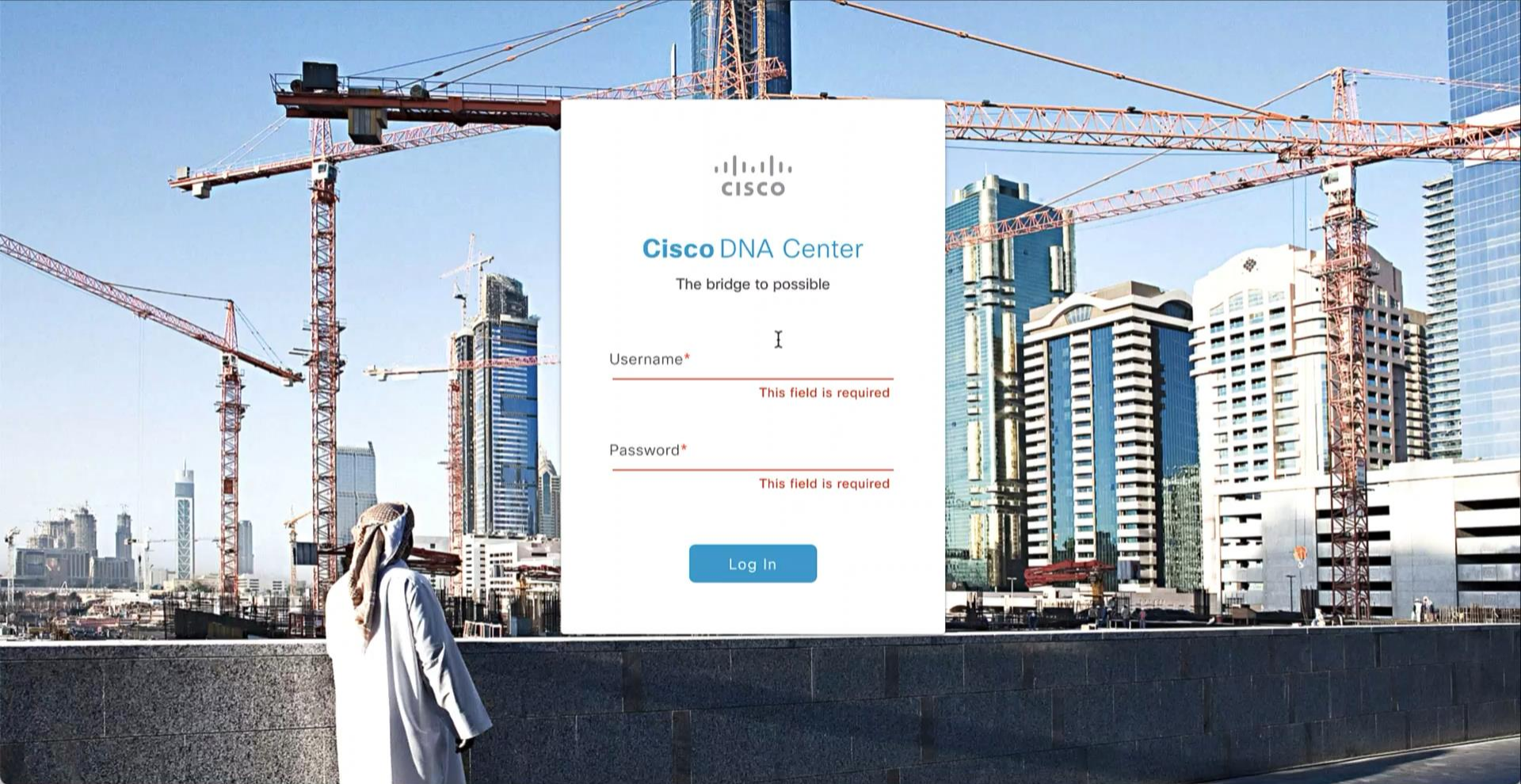
- 1 Install an Appliance
- 2 Run Discovery
- 3 Enable Assurance
- 4 Look at the Data

Filter

Identifier	IPv4 Address	Device Type	Health	Onboarding Health	Connected Health	Last Seen	AP Name	Location	SSID
10.254.5.28	10.254.5.28	Apple-iPad	10			Jan 22, 12:33 pm	nl-grm-ap01	--	col...
10.254.5.251	10.254.5.251	Linux-Workst...	10			Jan 22, 12:33 pm	nl-grm-ap02	--	col...
10.254.5.31	10.254.5.31	Un-Classifie...	10			Jan 22, 12:33 pm	nl-grm-ap01	--	col...
10.254.5.29	10.254.5.29	Apple-iPad	10			Jan 22, 12:32 pm	nl-grm-ap01	--	col...
10.254.5.21	10.254.5.21	Apple-Device	10			Jan 22, 12:32 pm	nl-grm-ap01	--	col...
10.254.5.90	10.254.5.90	Un-Classifie...	10			Jan 22, 12:32 pm	nl-grm-ap02	--	col...
10.254.5.13	10.254.5.13	Apple-Device	10			Jan 22, 12:31 pm	nl-grm-ap02	--	col...
10.254.5.34	10.254.5.34	Un-Classifie...	10			Jan 22, 12:31 pm	nl-grm-ap02	--	col...



# Demo: DNA Center Assurance



## Cisco DNA Center

The bridge to possible

Username\*

This field is required

Password\*

This field is required

Log In



"Ops is key"



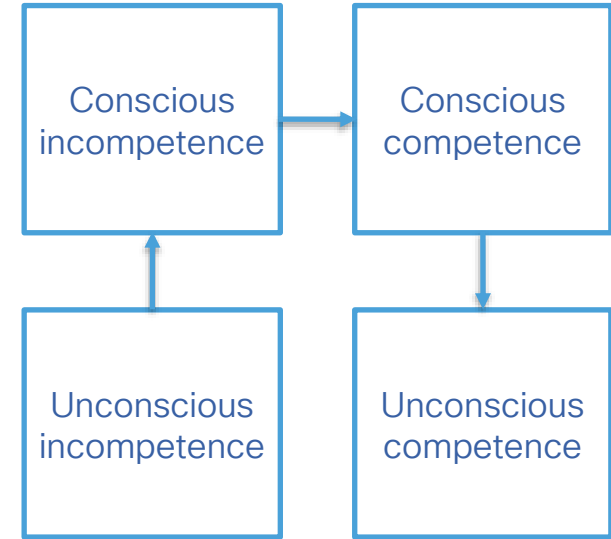


# Let's talk about change



# Human change

- Most human's don't like change
- Change introduces fear (losing job, losing flexibility)
- Brain works in two modes
  - Lizard brain (our automated mode, which works quick but with faults (Human Bias))
  - Considerate brain (slower, but more balanced decisions, costs more energy)
- Change takes time



# Quid pro Quo

Latin for “Something for Something”

## Effectively an Incentive



- Use it to introduce new technologies or work methods to the team
- Show them why a change is directly beneficial to them, for example
  - Software upgrades executed via automation
  - Changes on my switches using templates
  - Introduce DNAC Assurance to help proving it's not the network



# "Change is hard work"

*(and you need to be patient...)*



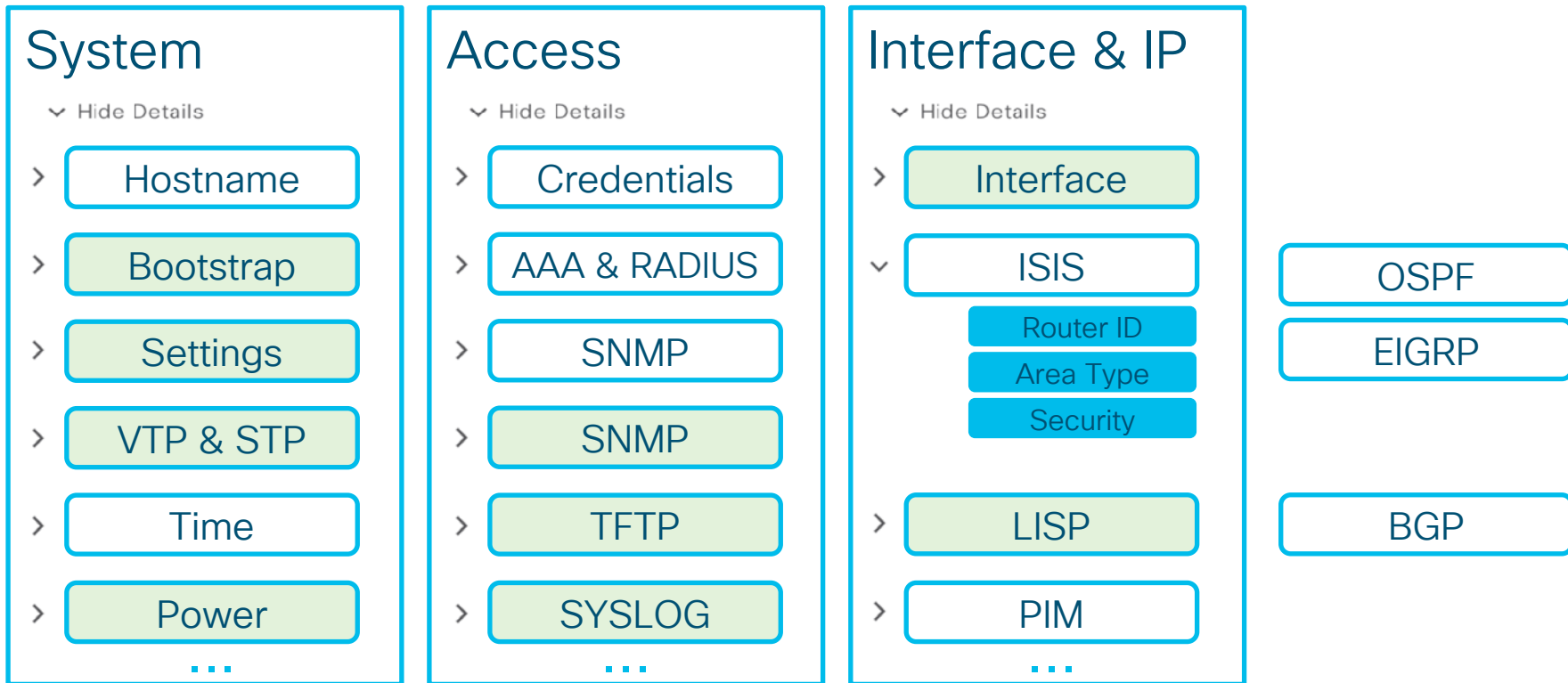


"Templatification helps  
with standardization"



# Cisco configurations are like Lego™

Split total configuration into smaller building blocks that can be reused





# Config Building Blocks

## L3 Routed Interfaces

User Input

Variable

Prescriptive

```
interface tengigabit1/1/4
```

```
description $Port : Underlay : $Protocol
```

```
no switchport
```

```
dampening
```

```
ip address $Pool.$Site.$Port $Mask
```

```
ip router isis
```

```
logging event link-status
```

```
load-interval 30
```

```
carrier-delay msec 0
```

```
bfd interval 500 min_rx 50 multiplier 3
```

```
isis network point-to-point
```

Interface

Description

\$Description

Interface + Protocol  
Best Practice

IP Address

\$IP\_Mask

Interface + Protocol  
Best Practice

Could be done  
on a per Subnet  
or Site basis  
(vs. per Port)

# Building block Radius / Dot1x

User Input

Variable

Prescriptive

```
aaa new-model
aaa group server radius dnac-client-radius-group
  server name dnac-radius_172.26.204.151
  ip radius source-interface Loopback0
aaa group server radius dnac-network-radius-group
  server name dnac-radius_172.26.204.151
  ip radius source-interface Loopback0
aaa authentication login VTY_authen group dnac-network-radius-group local
aaa authentication dot1x default group dnac-client-radius-group
aaa authorization exec VTY_author group dnac-network-radius-group local
aaa authorization network default group dnac-client-radius-group
aaa authorization network dnac-cts-list group dnac-client-radius-group
aaa accounting dot1x default start-stop group dnac-client-radius-group
aaa accounting exec default start-stop group dnac-network-radius-group
!
aaa server radius dynamic-author
  client 172.26.204.151 server-key cisco
ip radius source-interface Loopback0
radius server dnac-radius_172.26.204.151
  address ipv4 172.26.204.151 auth-port 1812 acct-port 1813
  timeout 5
  retransmit 3
  pac key cisco
```

## AAA/RADIUS

### AAA Best Practices

Server Security

\$AAA-Key

Source Port

\$Radius\_Port

Server IP/Ports

\$Radius\_IP

\$Radius\_Ports

### RADIUS Best Practice

# Leverage Template Editor



Cisco DNA Center provides a built-in “Template Editor” to create automated configs

## Interface & IP

Hide Details

> Interface

▼ ISIS

Router ID

Area Type

Security

> LISP

> PIM

...



Template Editor

Router ISIS

Actions Edit Router ISIS

Template

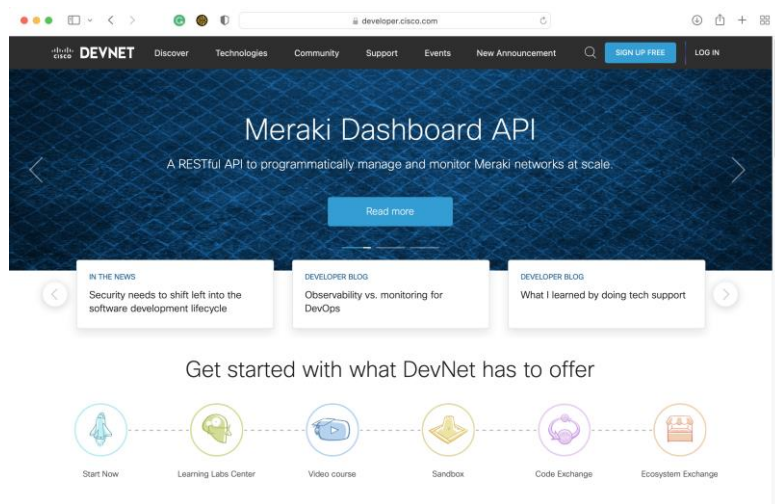
```
1 router isis
2 net 49.$IPO_A.$IPO_B.$IPO_C.$IPO_D.00
3 is-type level-2-only
4 domain-password $isis_dom_pass
5 authentication key-chain $isis_auth_key
6 metric-style wide
7 log-adjacency-changes
8 nsf ietf
9 passive-interface Loopback0
10 bfd all-interfaces
```

Success  
Template Router ISIS updated successfully

Success  
Template has no errors

# TIP #3: Templatification helps in automation & move to policy-centric

- Ask developers to help you in templatification
- Start creating templates in Prime/DNAC/Existing tools



<https://developer.cisco.com/>

# Demo templatification

# Templatification

Wireless Guest  
Services

Wireless for  
employees

IoT Wireless internet  
Access

Try to create  
templates from similar services

## Template Name: Wireless Network Intents

*Use this template for deploying wireless intents*

Parameter	Description
\$SSIDName	Name of SSID
\$BroadcastSSID	Whether or not to broadcast SSID
\$externalVLAN	VLAN Identifier for SSID
\$securityMethod	Certificate   Pre-Shared-Key   Portal
\$securityValue	Pre-Shared-Key,CA to use for cert-based authentication, or portalURL



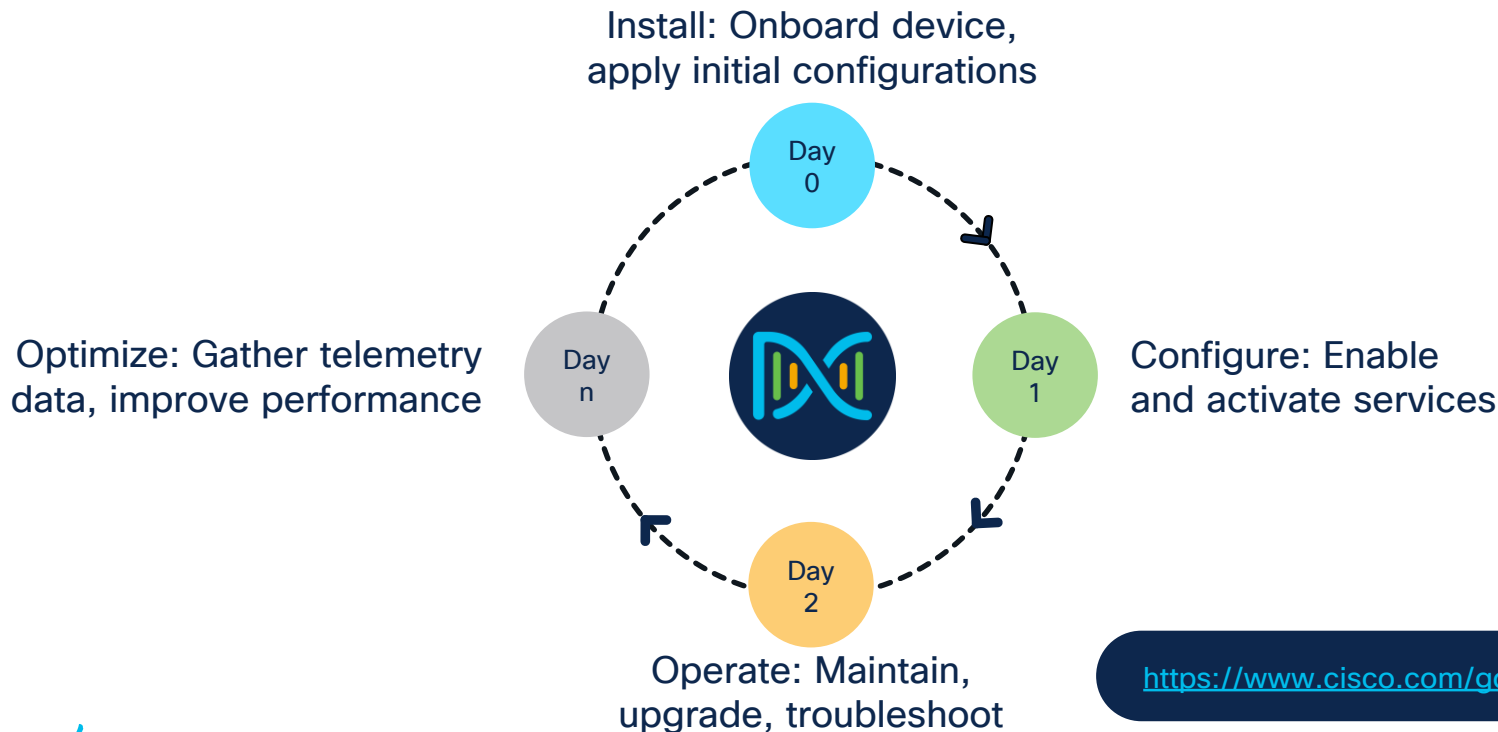


# SD-Access Tips



# Cisco SD-Access

Day-0 to Day-N onboarding, configuration, assurance, and optimization



<https://www.cisco.com/go/dnaautomation>



Home - Cisco DNA Center x +

← → ↻ https://10.1.200.52/dna/home 80% ★

Cisco DNA Center

Welcome, admin [Take a Tour](#) [Explore](#)

⚠ Some of your license compliance requirements have not been met. [Learn More](#)

### Assurance Summary

#### Health ⓘ

Healthy as of Jun 6, 2022 5:23 PM

91%

Network Devices

--%

Wireless Clients

--%

Wired Clients

[View Details](#)

#### Critical Issues

Last 24 Hours

1

P1

3

P2

[View Details](#)

#### Trends and Insights

--

AP Performance Advisories

0

Trend Deviations

[View Details](#)

### Network Snapshot

#### Sites

As of Jun 7, 2022 1:32 AM

8

DNS Servers : 0  
NTP Servers : 0

[Add Sites](#)

#### Network Devices

As of Jun 7, 2022 1:32 AM

11

Unclaimed: 0  
Unprovisioned: 2  
Unreachable: 1

[Find New Devices](#)

#### Application QoS Policies

As of Jun 7, 2022 1:32 AM

0

Successful Deploys: 0  
Errored Deploys: 0  
Stale Policies: 0

[Add New Policy](#)



# Organizational



# Maturity of Organization

Are you ready for Digital Transformation?

Level	Type	Description
1	Ad Hoc	Everything IT related is executed on a responsive ad-hoc method. Just buy a computer or printer when necessary
2	Repetitive but Intuitive	Standardizing vendors, creating repeatable configurations, but not documented
3	Defined	Documented procedures, including a vision, vendor strategy, roadmap
4	Managed and Measurable	Checkpoints in the procedures, auditable, [L] and risk identifications [SEP]
5	Optimized	Alerting if procedures are not followed, management programs to continuously improve



The background of the slide is decorated with a cluster of circles of various sizes and colors, including shades of blue, green, orange, red, and yellow, concentrated on the right side. Scattered, smaller, light-colored circles are also visible across the top and left portions of the slide.

*How mature is  
your organization?*

# Network (IT) operations

IBN changes how the network is managed and operated

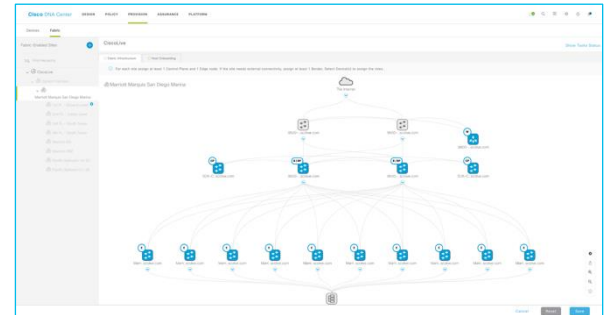
Monitoring the network is based on “Management by Exception”

- An (approved) IBN network change is deployed automatically using API's
- Network Engineers are not necessarily required to perform those changes
- A Mindshift from per-box to policy-based modelling and operation
- Roles within IT operations will change too.
- More focus on:
  - Standardization of Services
  - Programmability of Services
  - Design & Testing



[Inside the Cisco Live 2019  
Network Operations Center](#)

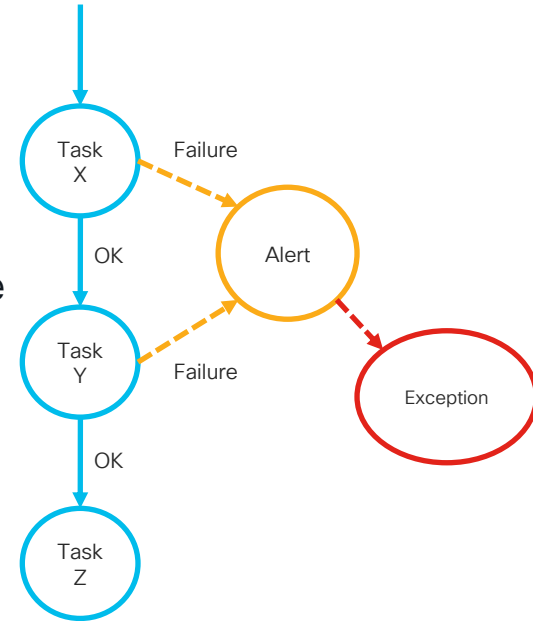
Watch (17:36)



# Management by Exception

## The 1% Rule

- A generic methodology on how processes (or teams) can be managed
- Basic principle: “Assume happy flows and alert ONLY if an exception occurs”
- Usually applied when “monitoring everything” becomes impossible
- Commonly applied principle in Logistics, Customs, Large data flows
- Some Examples:
  - Processing of e-orders at [amazon.com](https://www.amazon.com), [bol.com](https://www.bol.com)
  - Inspection of import containers at Port of Rotterdam



# Stakeholders & Governance

Transformation to IBN is strategic and may take Years

- External factors can threaten the road to IBN
- Keep the stakeholders updated
  - formal meetings
  - informal coffee breaks
  - make the transition theirs (vs yours)
- Sometimes use a Stick, instead of a Carrot, to force a small piece of change



# Training & Demonstration

Learning skills requires training



- Allow & Schedule for Training
- Provide Organized Trainings
- Use demos to show the benefits
- Allow them to “play” on the lab
- Training reduces fears





Define transformation  
as programme, not  
project



# Q&A



# Technical Session Surveys

- Attendees who fill out a minimum of four session surveys and the overall event survey will get Cisco Live branded socks!
- Attendees will also earn 100 points in the Cisco Live Game for every survey completed.
- These points help you get on the leaderboard and increase your chances of winning daily and grand prizes.





# Cisco Learning and Certifications

From technology training and team development to Cisco certifications and learning plans, let us help you empower your business and career. [www.cisco.com/go/certs](https://www.cisco.com/go/certs)

## Pay for Learning with Cisco Learning Credits

(CLCs) are prepaid training vouchers redeemed directly with Cisco.



## Learn

### Cisco U.

IT learning hub that guides teams and learners toward their goals

### Cisco Digital Learning

Subscription-based product, technology, and certification training

### Cisco Modeling Labs

Network simulation platform for design, testing, and troubleshooting

### Cisco Learning Network

Resource community portal for certifications and learning



## Train

### Cisco Training Bootcamps

Intensive team & individual automation and technology training programs

### Cisco Learning Partner Program

Authorized training partners supporting Cisco technology and career certifications

### Cisco Instructor-led and Virtual Instructor-led training

Accelerated curriculum of product, technology, and certification courses



## Certify

### Cisco Certifications and Specialist Certifications

Award-winning certification program empowers students and IT Professionals to advance their technical careers

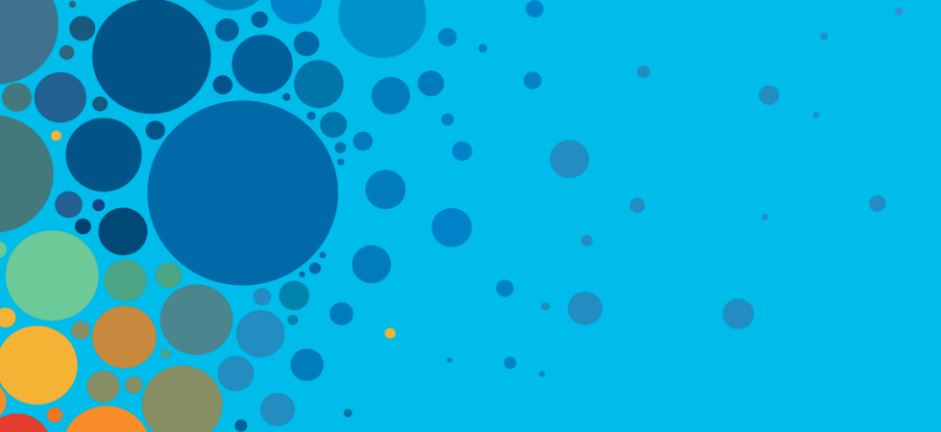
### Cisco Guided Study Groups

180-day certification prep program with learning and support

### Cisco Continuing Education Program

Recertification training options for Cisco certified individuals

Here at the event? Visit us at **The Learning and Certifications lounge at the World of Solutions**



# 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](https://www.CiscoLive.com/on-demand)



The bridge to possible

# Thank you

CISCO *Live!*

