



# Possibilities

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# Inside Cisco IT

Intent-based ACI Operations and Service Assurance framework  
using Cisco Network Assurance Engine and NIR

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DGTL-BRKCOC-1001



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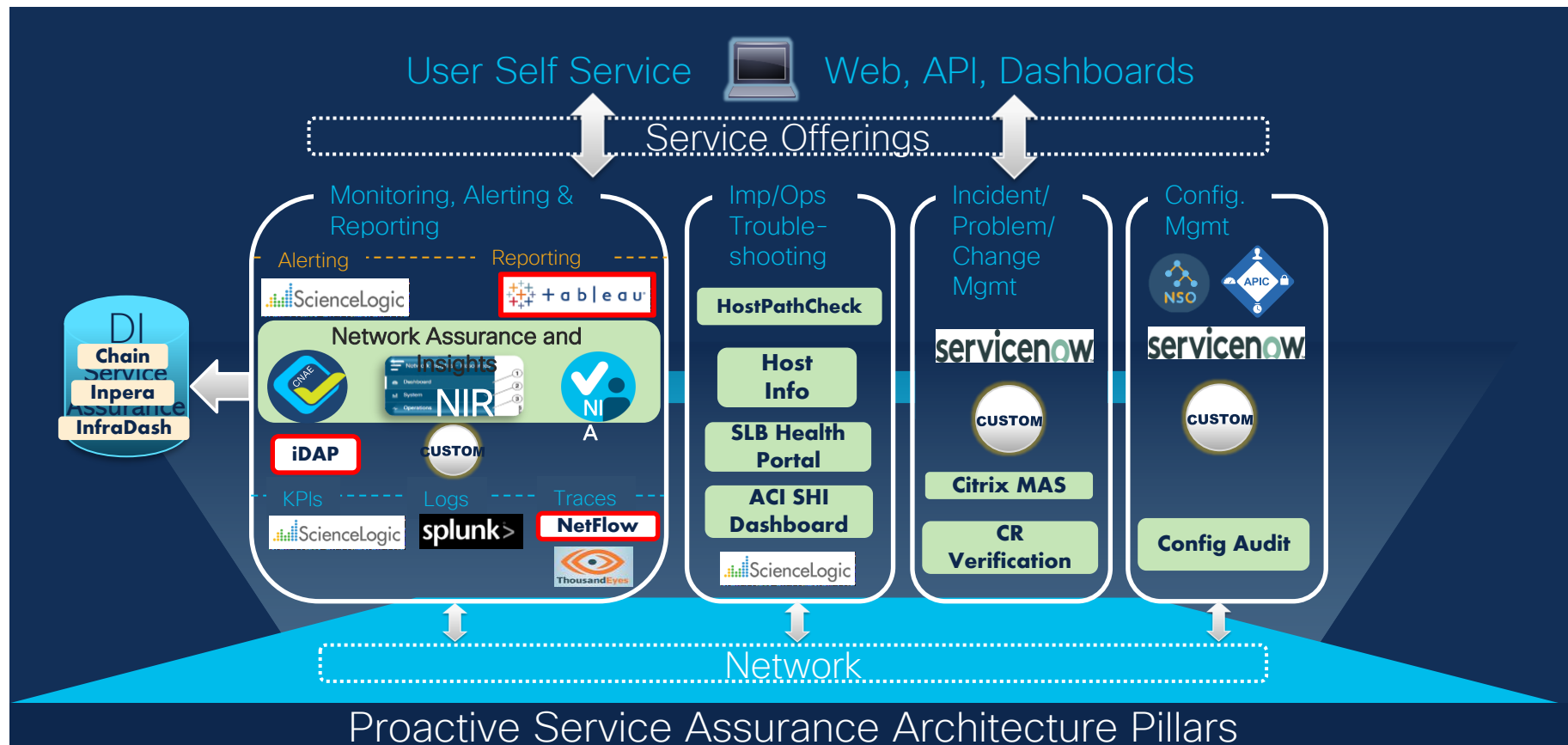




# Agenda

- Introduction – Cisco IT's Proactive Service Assurance Architecture
- Cisco Network Assurance Engine (NAE) Overview
- Inside Cisco IT – Data Center Network Monitoring
- Cisco IT – Installation, Use Cases & Demo
- Business Benefits

# Proactive Service Assurance Architecture



# Data Center Network Assurance Tools

## Cisco BU



## Internal Tools

DCN Self  
Service  
Portal

DCN  
Host  
Path  
Check

I20  
Tool

DCN  
ACI SHI

DCN Host  
Information

splunk>

service  
now



3rd Party

cisco *Live!*

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# Pre-Change Analysis



# Pre-Change Analysis

- Pre-change analysis (PCA) allows modelling the intended changes in Cisco NAE.
- Perform a pre-change analysis against an existing base epoch and verify if the changes generate the desired results.
- The changes can be modelled either on GUI manually, or by importing the config as a JSON/XML file.
- The results are displayed as a Special PCA Epoch Delta to inform the user of potential impacts.

# Pre-Change Analysis - Config

## Pre-Change Analysis Details

Pre-Change Analysis Name	contract_modify_2
Description	Unspecified
Base Epoch	05/19/2020 11:38:42 AM EDT
Change Definition	Changes specified manually

Action: Modify

Changes

Modify

External Routed EPG Networks

uni/tn-bekelly-test/out-dmz-l3Out/instP-infra-eman-extNet

Description

Target DSCP

Unspecified

Preferred Group Member

Exclude

QoS Class

Unspecified

Consumed Contract Name

infra-permitAll-contract

Provided Contract Name

infra-syslog-contract

infra-tftp-contract

infra-ssh-out-contract

infra-snmp-contract

infra-secured-tftp-contract

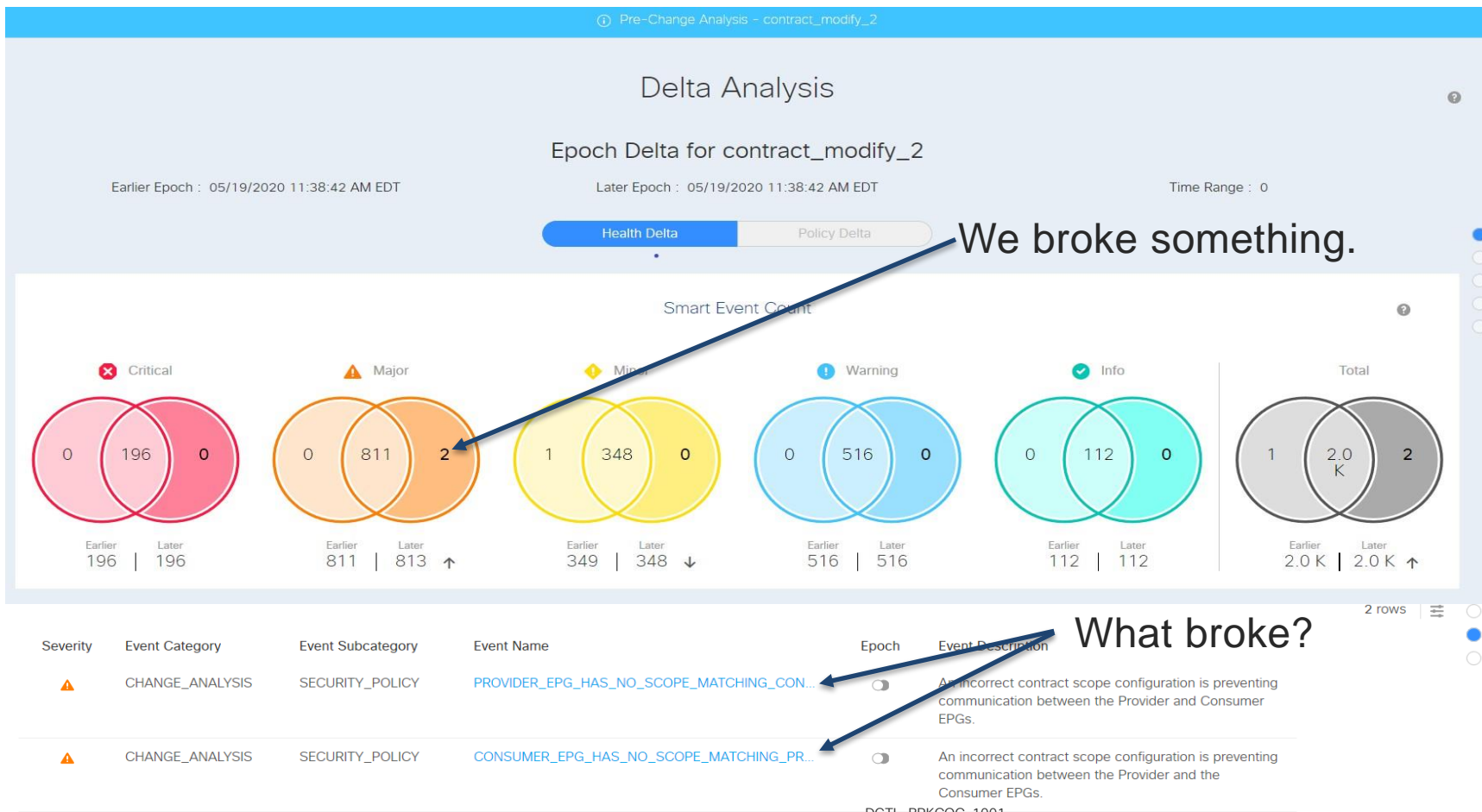
Rows 10 25 50 100

Rows 10 25 50 100

Added a new  
Provided  
Contract to  
existing L3Out.



# Pre-Change Analysis – Result





# IT Service Management Integration

# Integration with ITSM: Bubble up Smart Events. Proactively Remediate.



Smart Events from Network Assurance Engine

What ?

Severity	Event Category	Event Name
	Filter	Filter
▲	TENANT_FORWARDING	OVERLAPPING_SUBNETS_ACROSS_BDS_IN_VRF
▲	CHANGE_ANALYSIS	PERMIT_POLICY_SHADOWED_BY_DENY_POLICY

Where ?

VRF in which overlap is seen	Prefix	VRF's Tenant
prod-vrf *	10.71.0.0/24 *	prod *

Why ?

Failing Condition

Subnets defined under the BDs/EPGs are not unique.

How to fix ?

Suggested Next Steps

- For all the BDs/EPGs listed, determine the correct BD/EPG subnet.
- Configure unique subnets across BDs/EPGs in a VRF.

Incident - INC1902376

Number: INC1902376

Impacted User: Ramesh S (rsm2)

Location: BANGALORE 12

Impacted Service Offering: IT Operations Cloud

Impacted Area: SQL Fail?

Covering CI: sql-object-006-cisco-class.com

Environment: Non-Production

Category: Error

Subcategory: Hardware

Impact: 3 - Low

Urgency: 3 - Low

Priority: 5 - Standard

Event:

Summary: sql-object-006 is down and OOB Mgmt is unreachable

Description: sql-object-006 is down and OOB Mgmt is unreachable. Please work with DC-OpnSQL team to fix the OOB

Open: 2019-10-19 08:48:22

Opened by: Ramesh S (rsm2)

State: Closed

Source: Phone

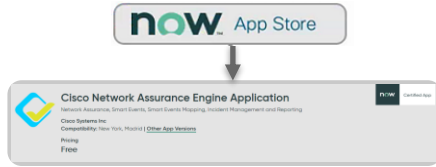
Support Level: Tier 1

Assignment group: SOC Cloud

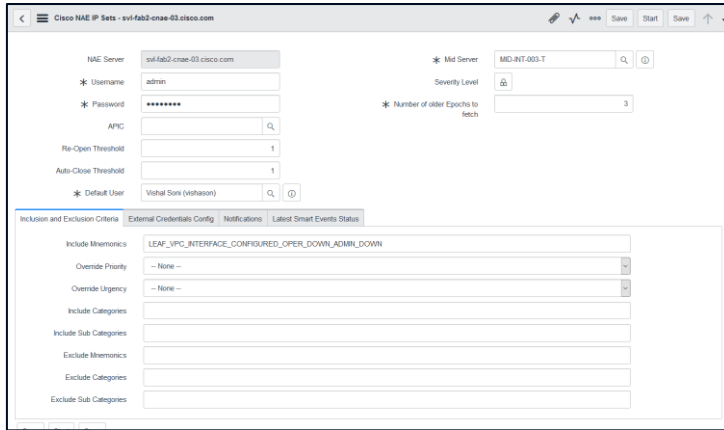
Assigned to: Arvind Kulkarni (arvindk)

# Integration with ITSM ( ServiceNow)

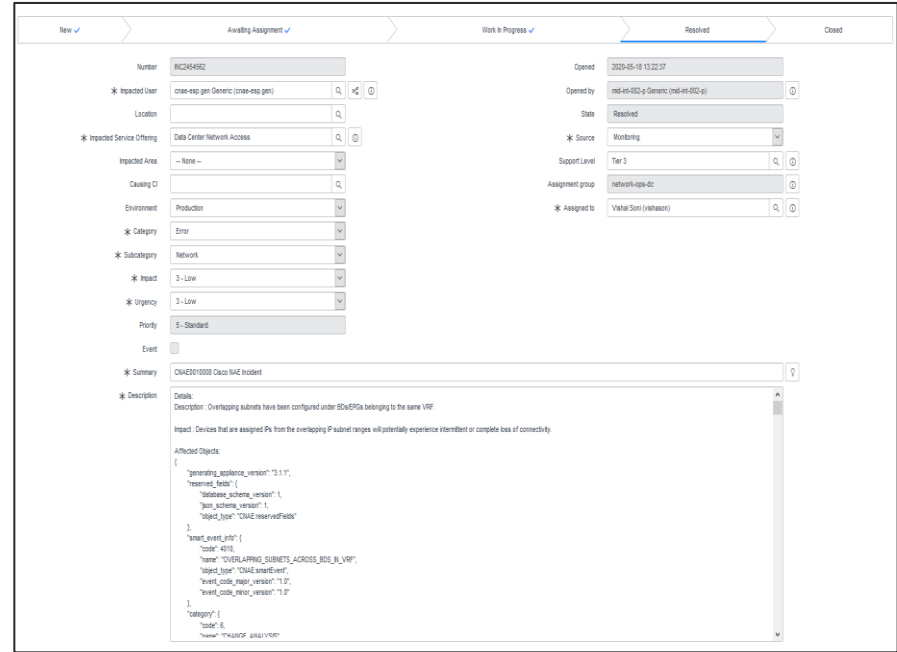
## 1. Download CNAE App for ServiceNow



## 2. Configure NAE IP Set



## 2. Transpose CNAE Incident Table Fields into team specific Incident table.







# RoadMap with NIR, NIA and Thousand Eyes

# Network Insights-Resources (NIR)

## Understand What's Running In Your Network

Flow Anomalies

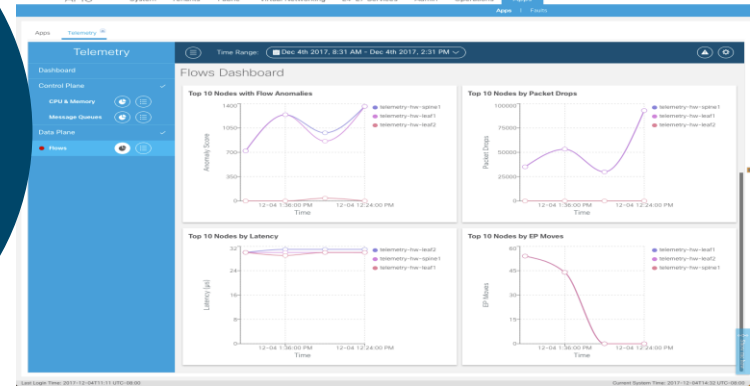
Packet Drops

Latency

End Point Move



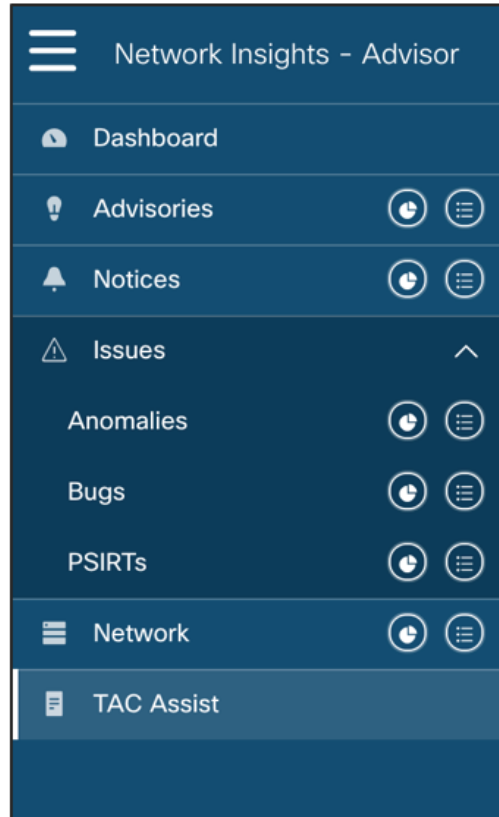
## Flow Analytics Dashboard



**Flow Analytics Dashboard Displays Key Indicators Of Infrastructure Data Plane Health.**

# Network Insights Advisor (NIA)

*proactive support for the fabric*



**Dashboard** "Give me a summary of issues"



## Advisories, Notifications

- Provide Timely updates about your system
- Compliance, Consistency, unplanned events

## Issues

- Track Bugs and PSIRTs

## TAC Assist

- Help to collect logs for TAC SRs



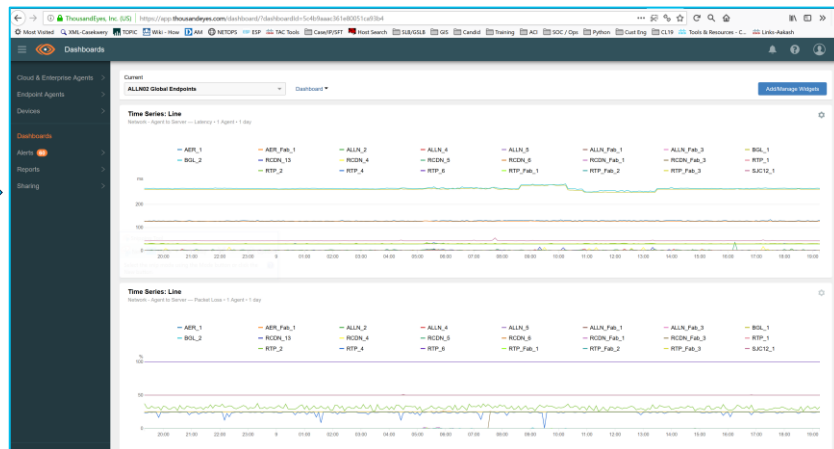


# Latency Monitoring: Thousand Eyes Workflow

# Thousand Eyes GUI / API



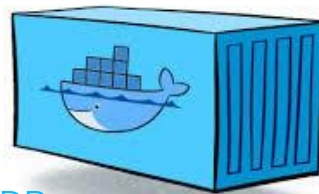
Network  
Engineer  
app.thousandeyes.co  
m



1. Makes API call to TE



## 2. Populate the DB



4. Sends out alert based on pre-defined thresholds

### 3. Computes Anomalies in Latency

# Resources

# Resources

- Inside Cisco IT: Network Monitoring and Service Assurance in Cisco IT Data Centers - BRKCOC-2433

<https://www.ciscolive.com/global/on-demand-library.html?search=John%20Banner#/session/1564415428949001tUQp>

- Assurance and Insights for Datacenters: When mathematical modelling meets big data analytics - BRKACI-2403

<https://www.ciscolive.com/global/on-demand-library.html?search=camillo%20Rossi#/session/1564527374823001cbl2>

- Day-2 Telemetry better - Network Insights for ACI/NX-OS - BRKDCN-2712

<https://www.ciscolive.com/global/on-demand-library.html?search=Network%20Insights#/session/1564526707125001Jc0k>

DEMO:

Thank you



# Possibilities

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