

Smarter Networks with Cisco SD-WAN and AI

cisco Live !

From Insight to Action

Mateusz Krupiński
Account Executive - Architecture

Ricardo Kaufmann
Solutions Engineer Routing & SD-WAN

Webex App

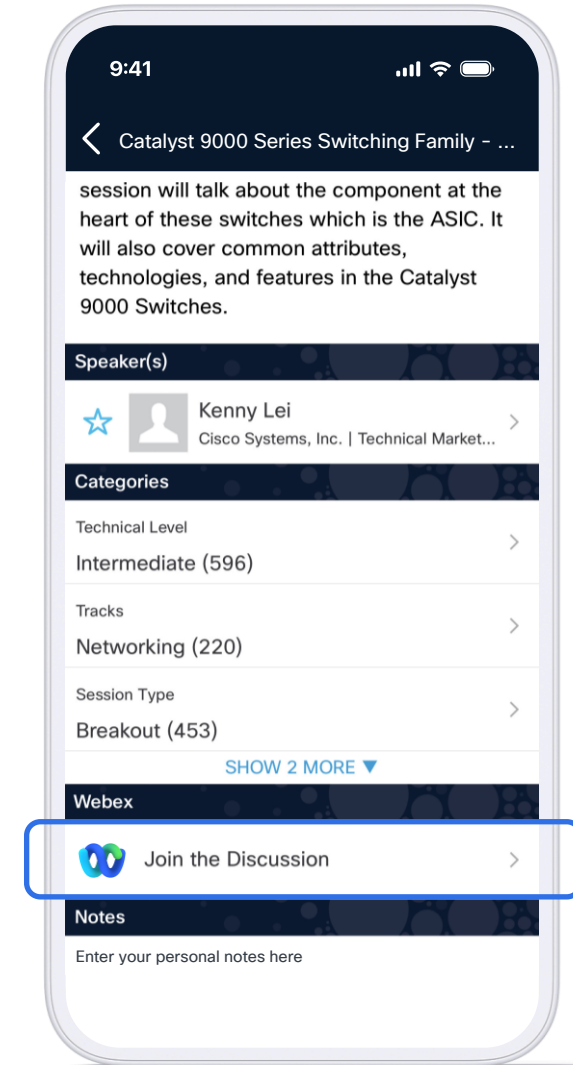
Questions?

Use Webex App to chat with the speaker after the session

How

- 1 Find this session in the Cisco Events 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 February 27, 2026.



Agenda

- 01 Era of AI Agents
- 02 Cisco SD-WAN Agentic Ops
- 03 Receipt of own Agent
- 04 AI Troubleshooting agent
- 05 See it all in action

About Mateusz...



47294



- Proud Dad of 3 kids
- Addicted to sport 😊
- Account Executive Architecture SD-WAN & SASE

17+ years in Networking

5 years as a customer

5 years @ Cisco as Lead Consulting Engineer

7 years @ Cisco Sales

About Ricardo...



2023::66



65507

- Sports & Traveling
- Solutions Engineer Routing & SD-WAN

14+ years in Networking

7 years as customer

2 years as partner

1 year as a competitor

2.5 years at Cisco



The network that called the helpdesk first ...

Ricardo & Mateusz, 2026

Branches



AI Agents



Data Center



SD-WAN



Remote Workers



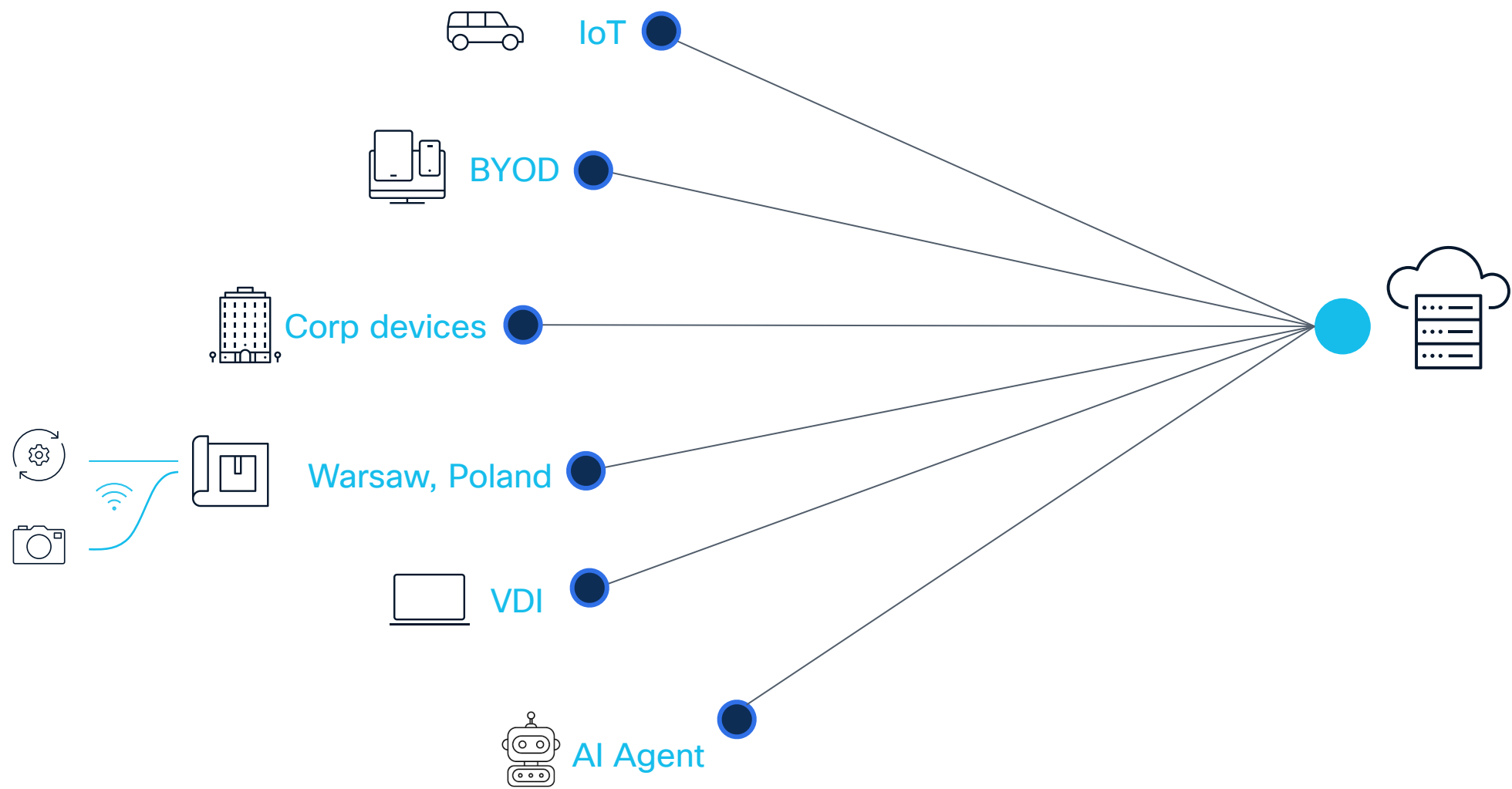
Applications & Services



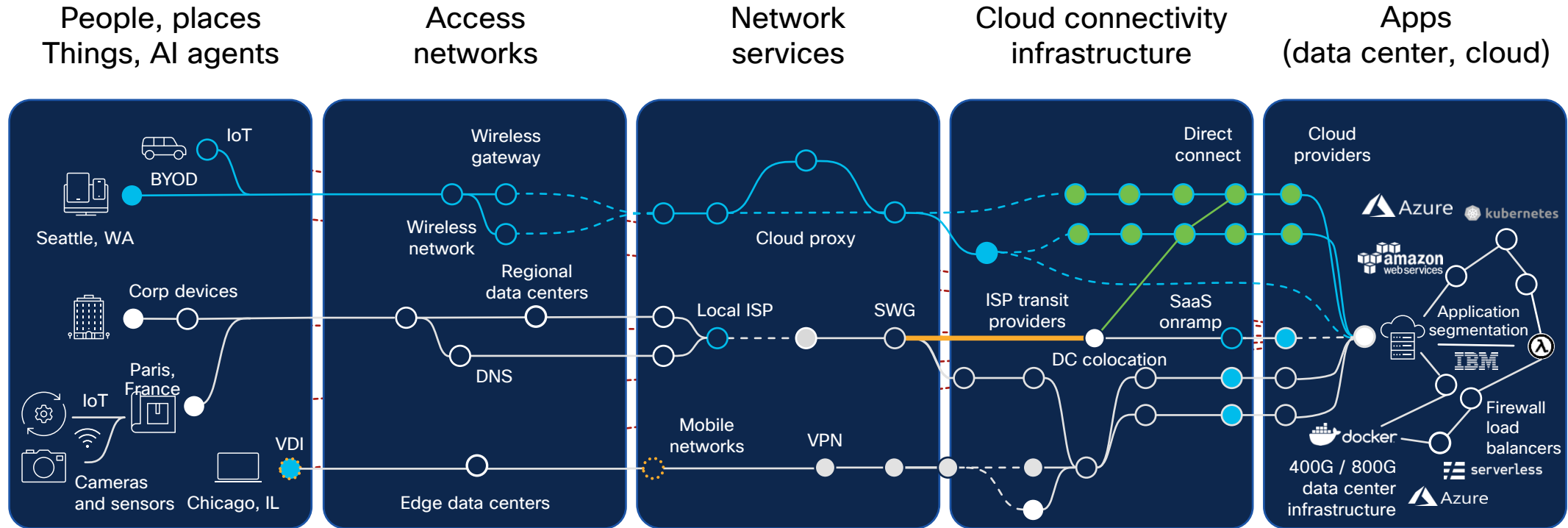
Things



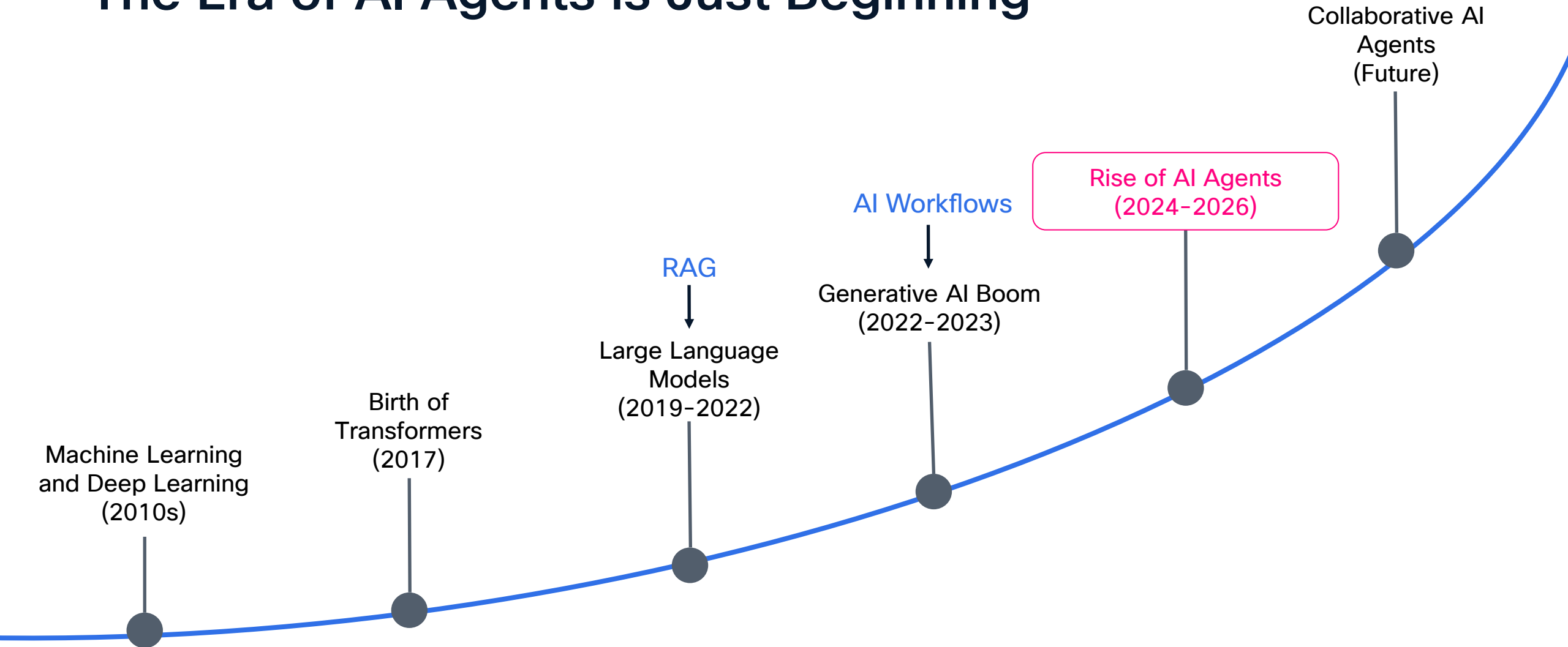
The experience customer wants



But the reality is... complex



The Era of AI Agents is Just Beginning



Massive growth in alerts

170,000

network alerts per hour today

3X

growth with AI

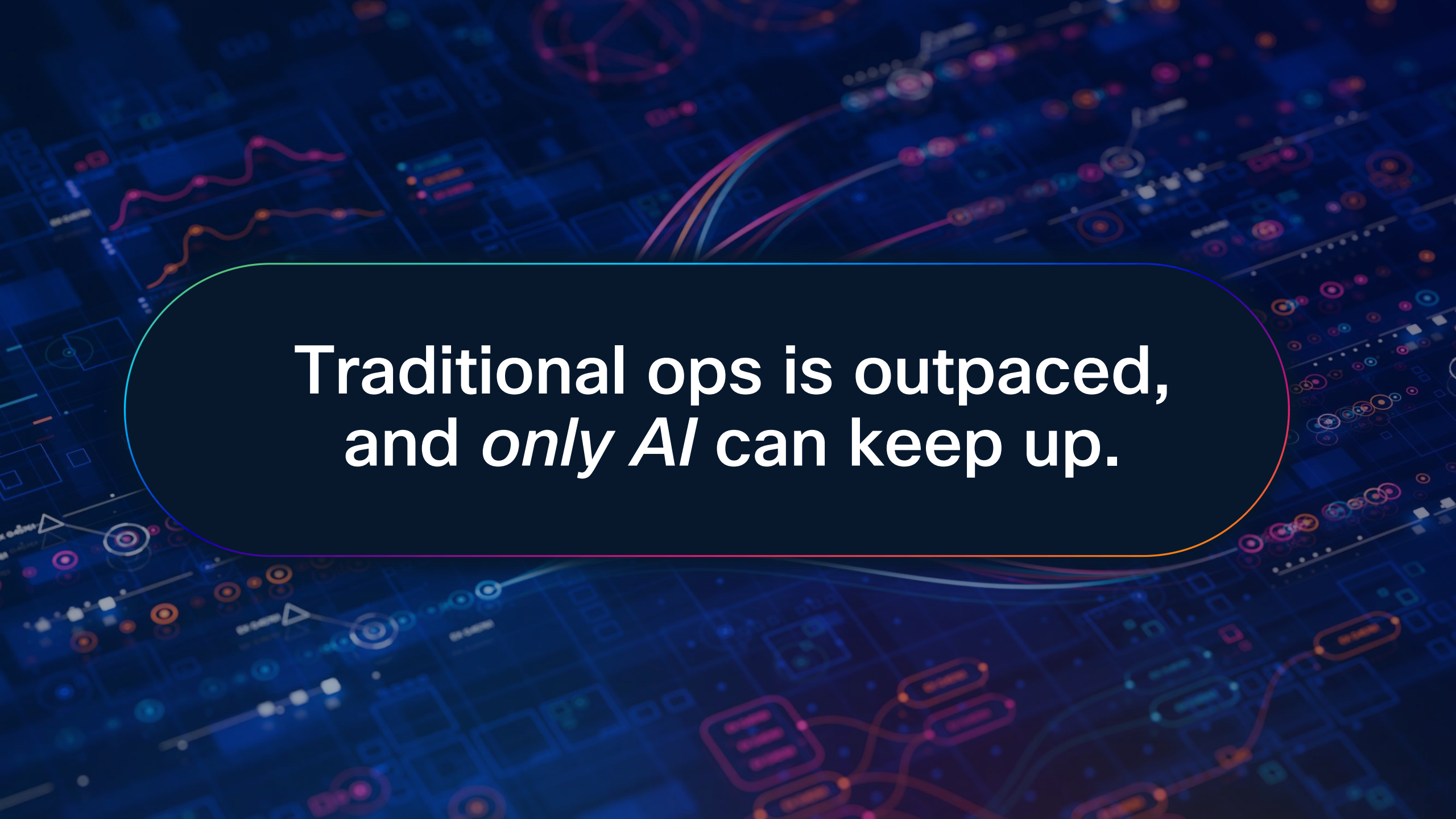
Source: Fortune 50 company

Profound **skill** shortage

64%

of organizations face IT skills shortage by 2026

Source: Gartner

The background is a dark blue field filled with intricate, glowing digital patterns. These include a network of interconnected nodes and lines, some resembling a circuit board, and others like a line graph with fluctuating data points. The colors of the glowing elements range from light blue and white to vibrant orange, red, and purple. The overall effect is one of high-tech complexity and data flow.

Traditional ops is outpaced,
and *only AI* can keep up.

Let's dive into real world



Where would we start the troubleshooting?

Call your ISP

Sometimes... it's them 😊

Use ipconfig

Refresh your IP address

```
ipconfig /release
```

```
ipconfig /renew
```



Ping and latency

Check connectivity

```
ping appA.com
```

```
tracert appA.com
```



Ports & Protocols

Is TCP/UDP port open?

```
telnet appA 443
```



Network devices

Interface errors & CPU



Review logs

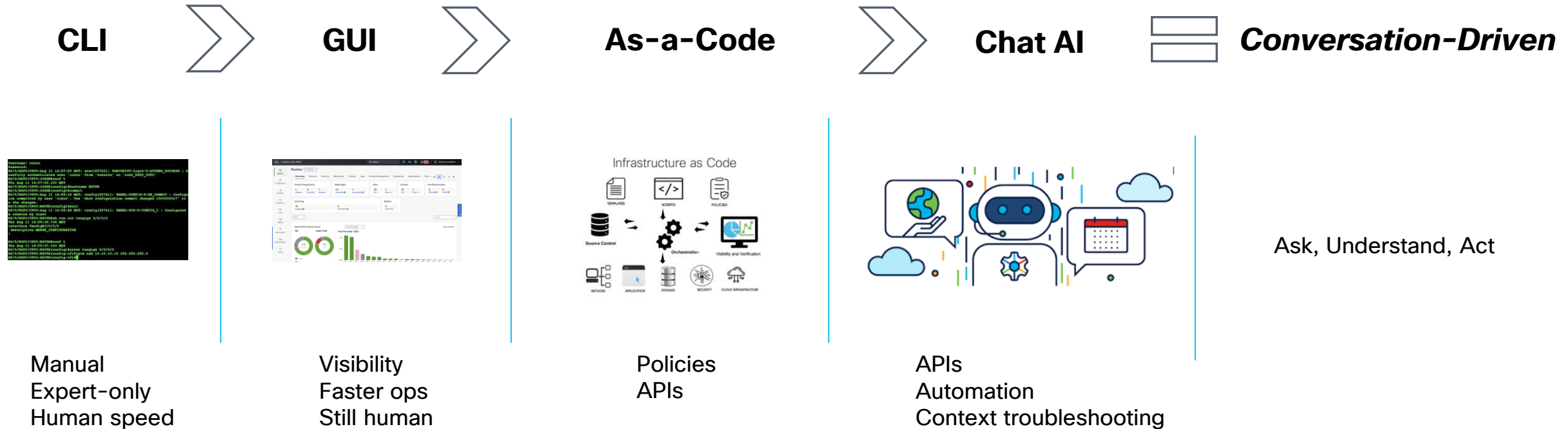
Router / firewall logs

Any recent rule changes?



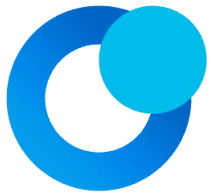
What's MTTR?

The Evolution of Network Interaction



From manual Troubleshooting → to Conversation

AI driven Cisco SD-WAN Analytics & Autonomous Insights



CISCO
AI Assistant

AI driven Cisco SD-WAN – AIOps

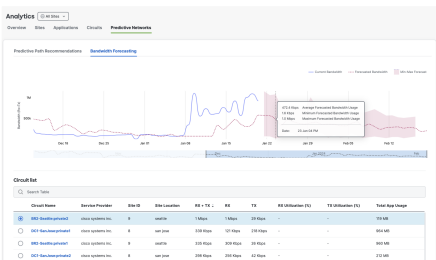


Mitigate issues before they impact. In case issues do occur, offer **root cause analysis** to **reduce MTTR**



Optimize network and application performance to achieve higher operational efficiency

Bandwidth Forecasting



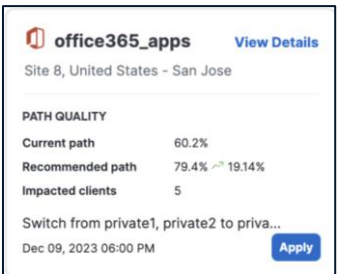
AI/ML-based forecasting
Capacity planning

Anomaly Detection



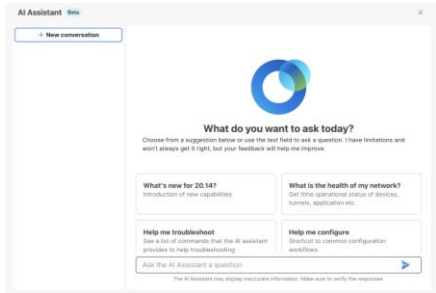
Detect Network Anomalies

Predictive Path Recommendations



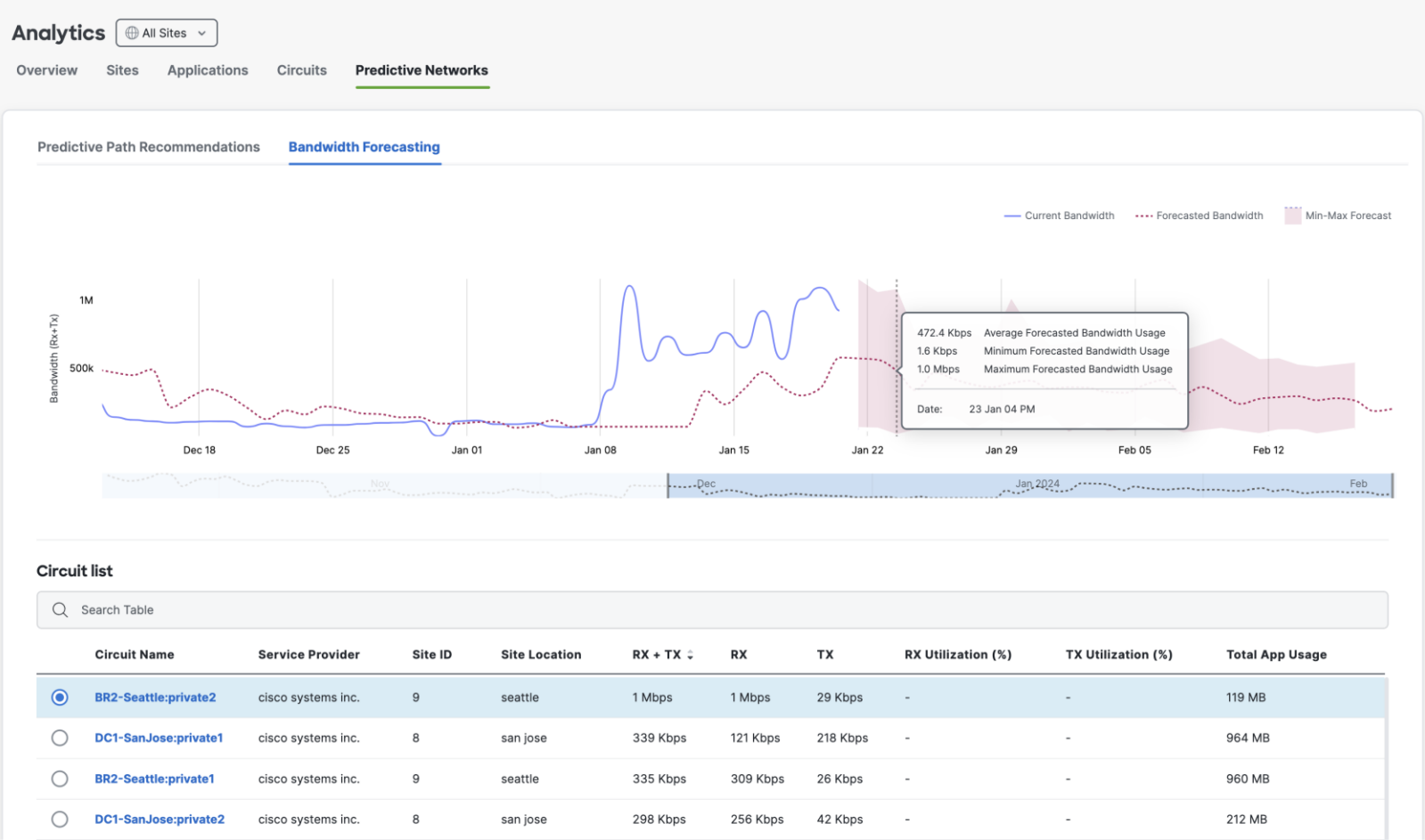
Path recommendations to
Improve Application
Performance

AI Assistant for Networking



Interactive LLM-based AI
Assistant for Networking
(Gen AI)

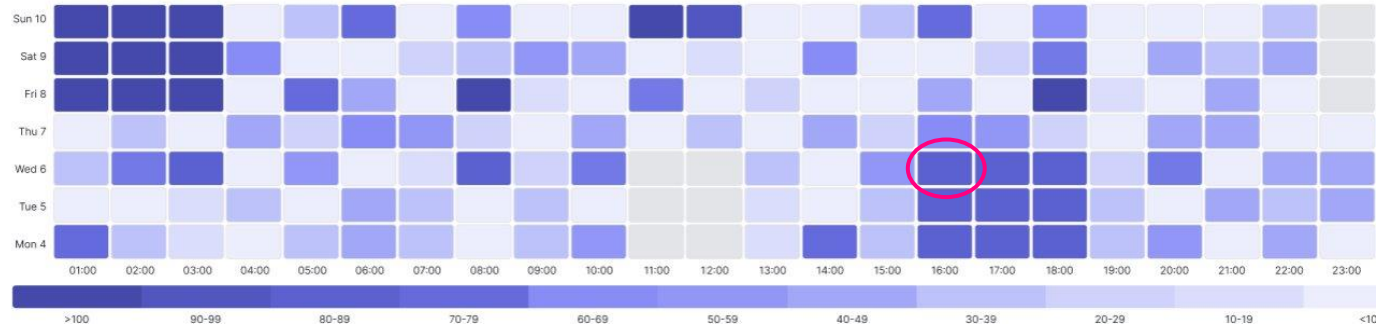
Forecast WAN Bandwidth needs



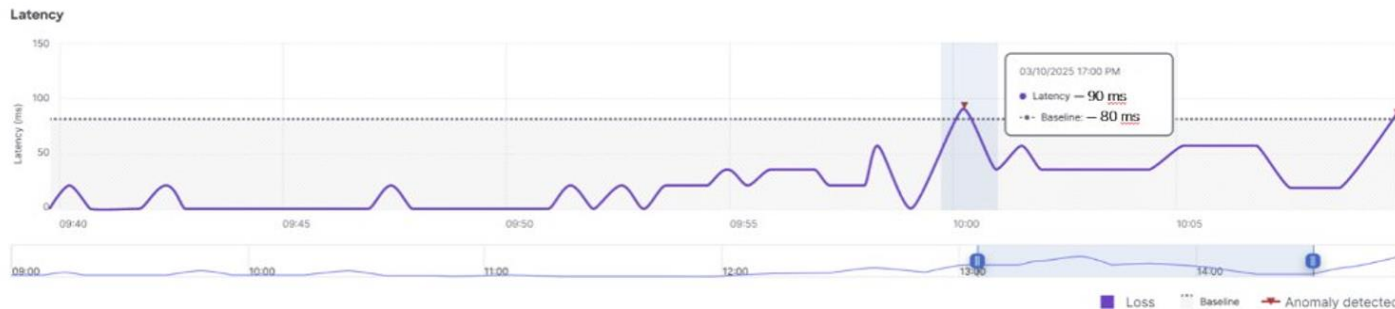
- Helps organizations with capacity planning
- Track historical usage of individual links and forecast future usage (Top 50 links)
- Provide forecast for several weeks in future
- Compare historical & forecasted bandwidth usage

Anomaly Detection: SD-WAN Tunnel KPIs

Establish baseline and detect anomalies in tunnel KPIs



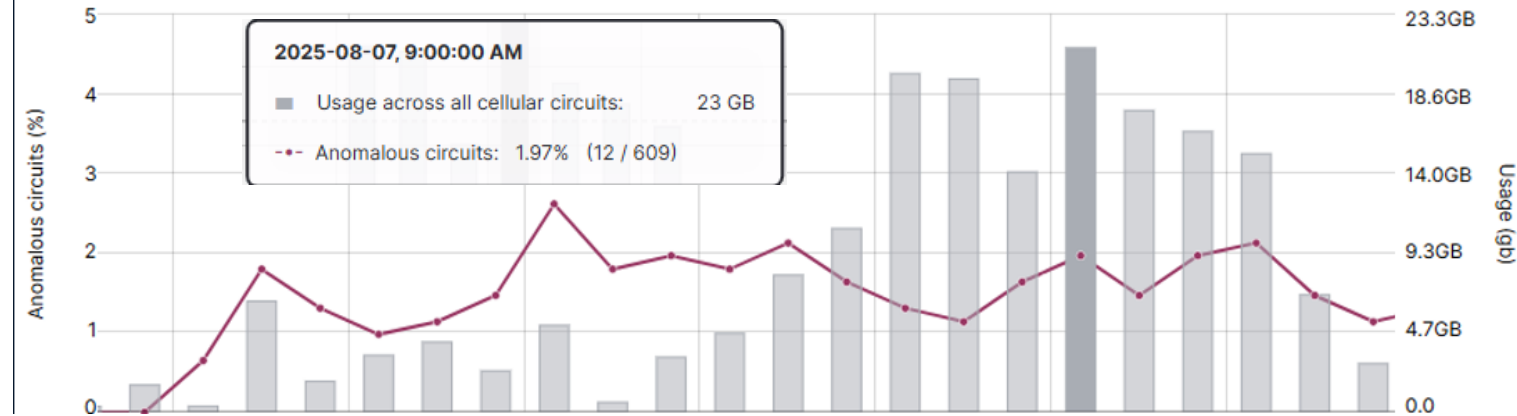
- Identify unusual patterns in key network KPIs (loss, latency, jitter) across your SD-WAN tunnels
- Identify sites and site pairs with high anomalies
- Determine if it's a chronic issue by viewing the trend information



Anomaly Detection: Cellular Link Usage

Detect anomalies in usage of Cellular links

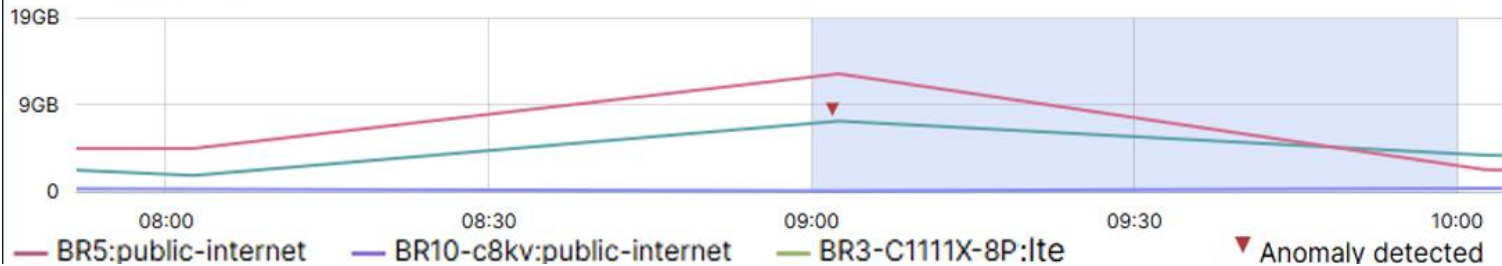
Cellular usage consumption & anomalous circuit trends



- Identify unusual usage patterns of cellular links across your SD-WAN
- Perform RCA (root cause analysis) using supporting insights into usage & availability of other links at that site
- Gain visibility into applications & clients that contributed to anomalous usage

Circuits usage Circuits availability Application Top clients

Circuits trend usage



Predictive Path Recommendations with Policy Automation

Forecast issues, Make policy recommendations, and Automate policy changes

1. Ingest Telemetry

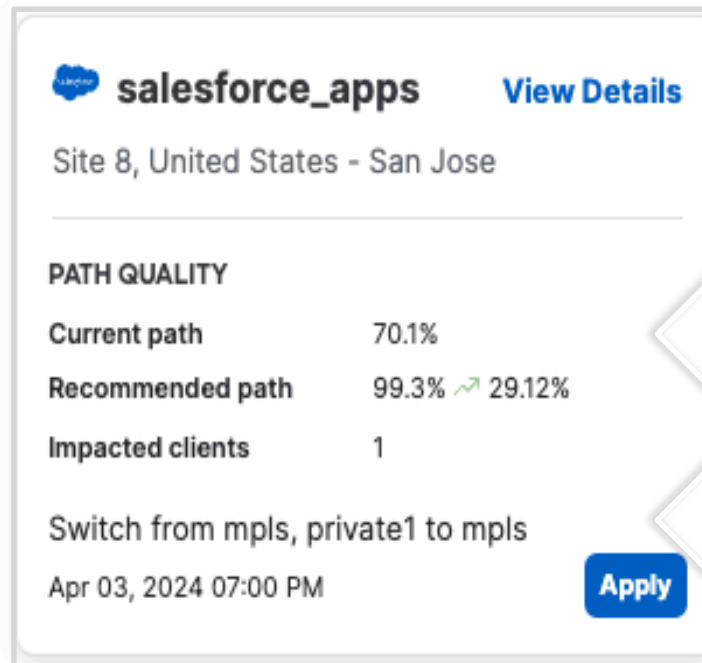
Collect network telemetry thru SD-WAN Analytics Engine

2. Data Analysis

Predictive modeling to forecast & make path recommendations

3. Feedback Loop

Automated update of policies to make path changes to improve App experience



The screenshot shows a dashboard for 'salesforce_apps' with a 'View Details' link. It indicates 'Site 8, United States - San Jose'. A table titled 'PATH QUALITY' shows the 'Current path' at 70.1% and the 'Recommended path' at 99.3% with a 29.12% gain. It also notes 'Impacted clients' as 1. A recommendation to 'Switch from mpls, private1 to mpls' is shown with a timestamp of 'Apr 03, 2024 07:00 PM' and an 'Apply' button.

PATH QUALITY	
Current path	70.1%
Recommended path	99.3%  29.12%
Impacted clients	1

Switch from mpls, private1 to mpls
Apr 03, 2024 07:00 PM [Apply](#)

Current & Recommended Path's quality with estimated % gain

Recommendation for the alternate path to improve App experience

Out-of-the-box Application Groups



Office 365



Webex



Google Workspace



Salesforce



GoTo Meeting



Voice

AI Assistant: Doc Search, Troubleshoot & Support Case

Use-case: Documentation Search

what is cloud onramp for saas?

AI Assistant

Cloud onRamp for SaaS allows you to easily configure access to SaaS applications, either direct from the Internet or through gateway locations. It continuously probes, measures, and monitors the performance of each path to each SaaS application, and it chooses the best-performing path based on loss and delay. If impairment occurs, SaaS traffic is dynamically and intelligently moved to the updated optimal path.

Source: <https://www.cisco.com/c/en/us/td/docs/solutions/CVD/SDWAN/cisco-sdwan-design-guide.html>
<https://www.cisco.com/c/en/us/td/docs/routers/sdwan/configuration/cloudonramp/ix-17/cloud-onramp-book-xe/m-cloud-onramp-iaas-wan.html>

- Contextual help & query assistance – LLM trained on Cisco documents
- Ask any product or feature related questions. Examples below:
 - What is cloud onramp for SaaS?
 - What is multi region fabric?
 - What is Application aware routing?

Use-case: Monitoring & Troubleshooting

what applications are going over both tunnel and DIA?

Working on your query...

I'll analyze applications that are using both tunnel and DIA paths, focusing on their traffic distribution and patterns

Here are the applications using both tunnel and DIA paths, grouped by category:

Microsoft Applications:

1. SharePoint (Web)

- Tunnel: 64 MB (85.3%) across 4 sites
- DIA: 11 MB (14.7%) across 2 sites

2. MS Services

- Tunnel: 58 MB (85.3%) across 4 sites
- DIA: 10 MB (14.7%) across 2 sites

- Health monitoring and troubleshooting
- Ask network related questions. Examples below:
 - Show top used applications?
 - How are my sites doing?
 - What applications are going over both DIA and tunnel?

Use-case: Support Case

I want an update on a support case

AI Assistant

Here are your most recent 6 open cases.

1. Frequent downtime of VICKY firewall affecting traffic flow

- **Case number:** 698255897
- **Date opened:** 12/11/2024
- **Status:** New

- Create & view TAC Support cases
- View a summary of TAC cases by priority and status
- Get detailed information for TAC case of interest

Usecase: Monitoring & Troubleshooting

Application Performance Degradation

Assess Application performance across WAN

Troubleshoot Application experience due to SLA Violations

Circuit & Tunnel Performance Troubleshooting

Circuit outages and performance degradation due to high latency/loss

Tunnel Issues

Troubleshooting utilization spikes

Security

Troubleshooting threats powered by Talos Intelligence

SIG/SSE Tunnel Utilization Insights

Site and Devices Troubleshooting

Site Performance and Availability issues

Troubleshoot Device Bandwidth Utilization

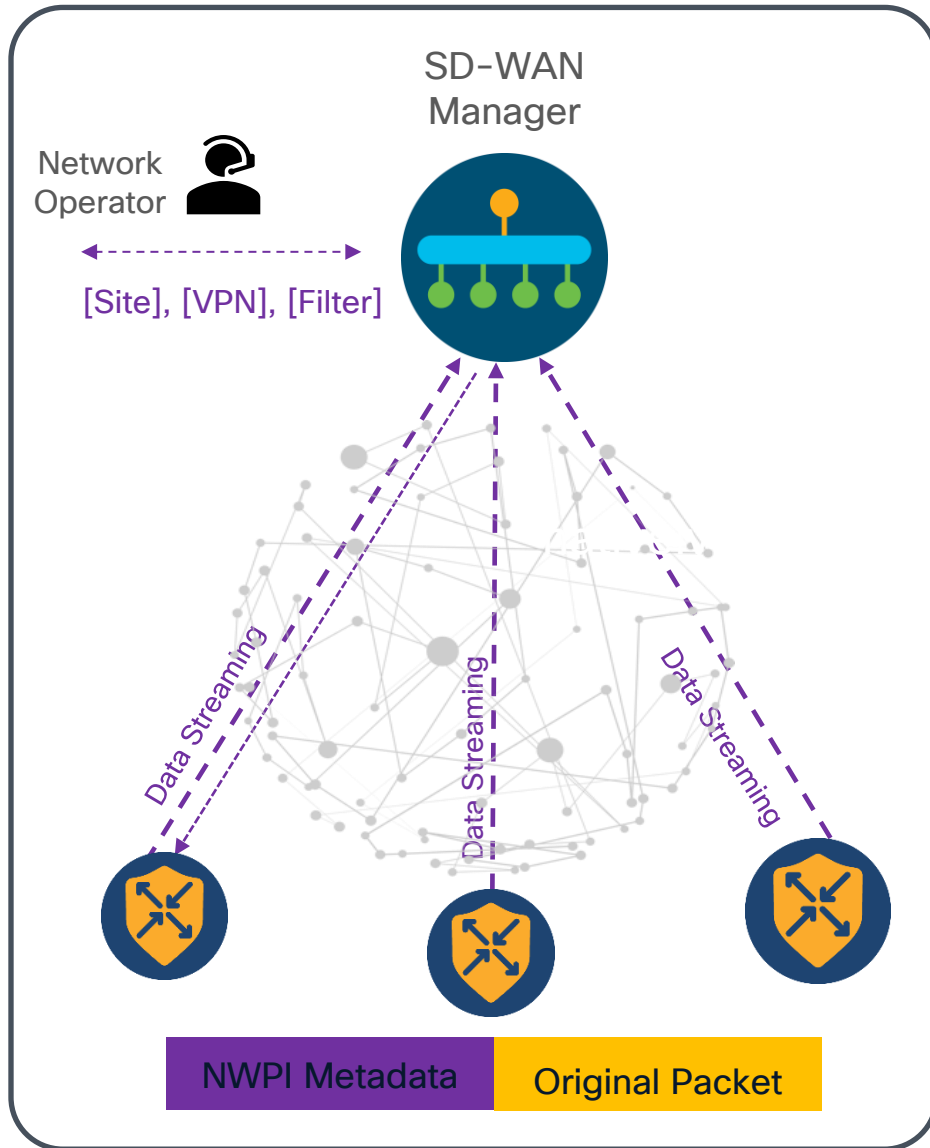
Network Planning and Discovery

Troubleshooting circuit capacity constraints to upgrade/downgrade circuits

Discovery questions about network Infrastructure (Apps/sites/circuits)

A dynamic, non-prescriptive approach to unlock limitless troubleshooting insights

Network Wide Path Insights (NWPI)



- A **comprehensive troubleshooting tool** natively built within the SD-WAN Manager
- **On-demand, End-to-End tracing of the live application traffic flow**
- Network operator initiates a network-wide trace and SD-WAN Manager correlates NWPI metadata from all routers

Key Use-cases

- 1 **Real-Time Analysis of Application Performance**
- 2 **Design/Policy Validation**
- 3 **Troubleshooting with Ease**
- 4 **Targeted user-specific troubleshooting w/ ISE**
- 5 **End-to-End Underlay w/ UMTS & ThousandEyes**

Demo of the new feeling...



Monitor

Configuration

Analytics

Workflows

Tools

Reports

Maintenance

Administration

Explore

Monitor

All Sites

- Overview
- Devices
- Security
- Multicloud
- Tunnels
- Logs
- Energy Management
- Advisories
- Applications
- Sites
- Circuits











Control Components

1 Validator

4 Controller

1 Manager

WAN Edges

14 Reachable

1 Unreachable

Sites

10 Up

1 Down

Circuits

23 Up

3 Down

Certificate Status

0 Warning

0 Invalid

Licensing

15 Assigned

0 Unassigned

Reboot

0 Last 24 hrs

6 Hours

Actions

Application Experience

Top 20 by usage

QoE

Usage (Total)

Top 20 by usage

46 Applications

49 GB

50 GB

share-point

webex-meeting

apple-location-ser...

cisco-meraki

ms-services

ms-office-365

cisco-umbrella

box

ms-diagnostics

ms-teams

ping

google-services

skype

cisco-thousandeyes

icloud

unknown

apple-services

whatsapp

quic

ssl

Good QoE: 8 - 10

Fair QoE: 5 - < 8

Poor QoE: 0 - < 5

Unknown (No QoE)

View Details

Site Health

Availability

Good Performing Sites

View Details

Site name

Availability

Branch-Barcelona

100

100

Tunnel Health

Latency (ms)

Poor Tunnels

View Details

Tunnel

Latency (ms)

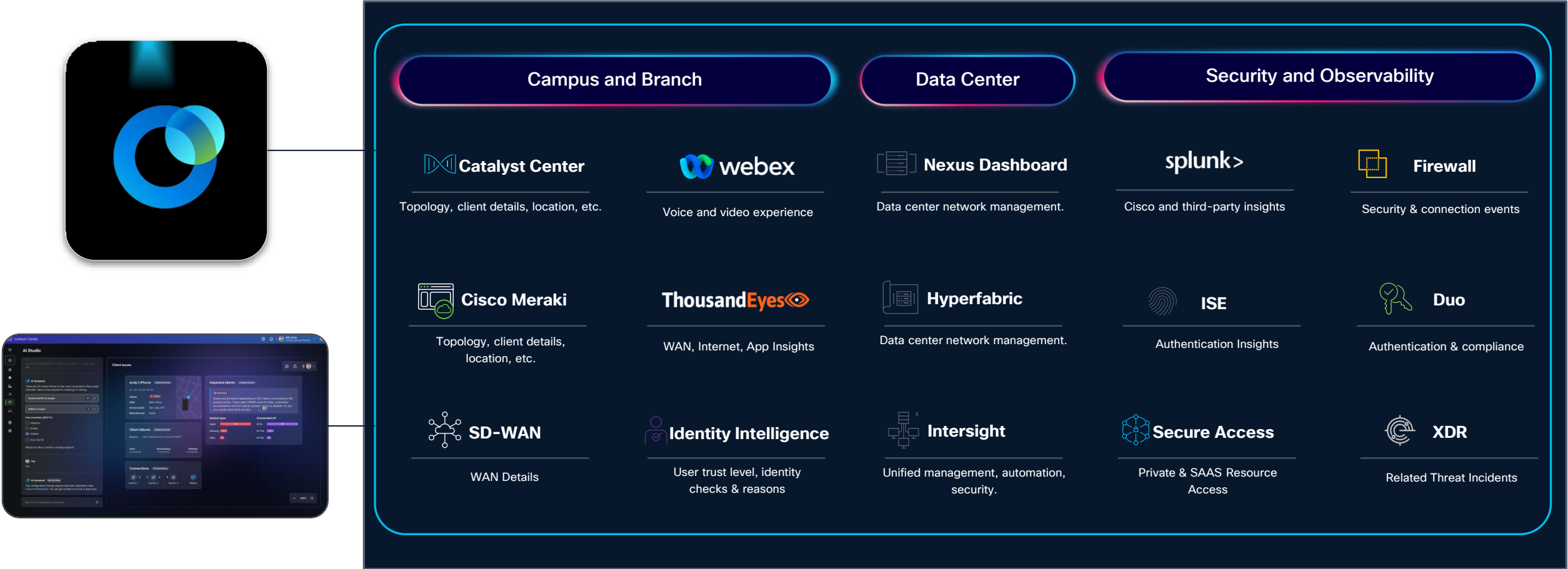
LAX_BR_ER1:mpls-MIA_...

180.00

165.46

Unifying AI Assistants Enabling a Network of AI Agents

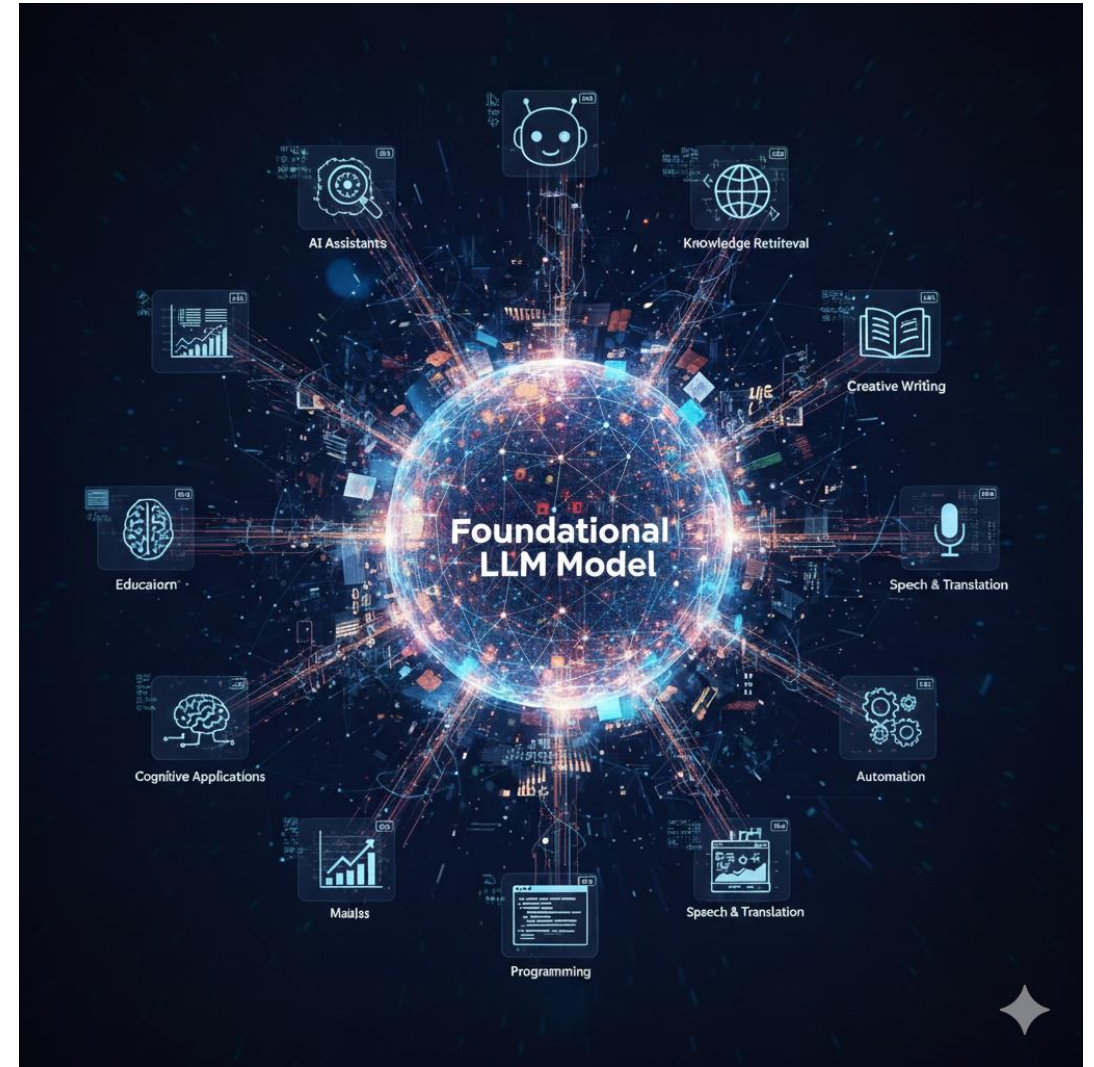
Agentic Ops Across IT and SecOps



AI Troubleshooting Agent

A Foundational LLM Model

- Pre-trained on massive, diverse datasets (text, code, etc.)
- Capable of handling a wide range of questions across domains
- Flexible and general-purpose, making it a great starting point for many AI tasks

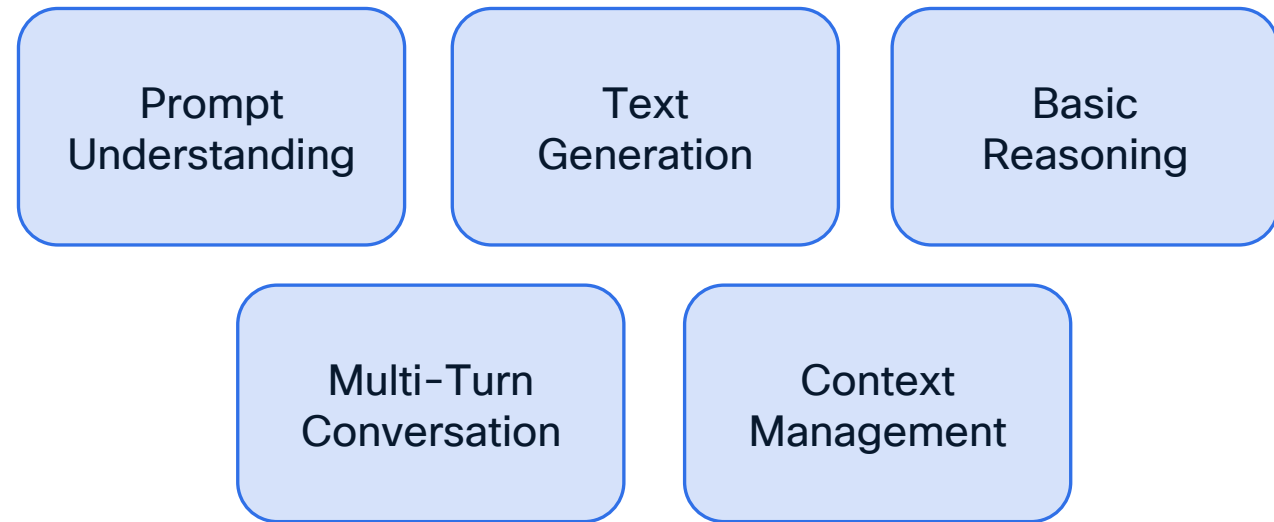


Capabilities of Foundational LLM-Powered Models

LLM Experience



Capabilities

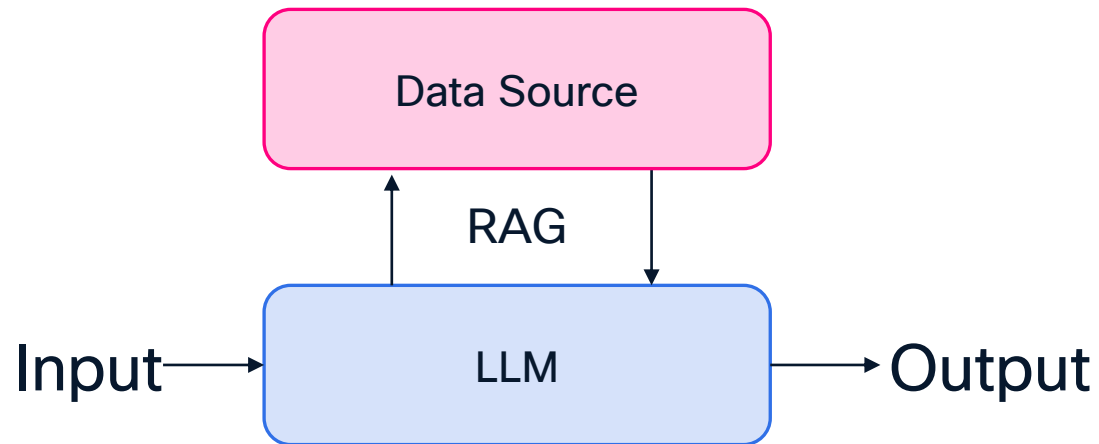


However, LLM models do
have limitations...

Can't access real-time data from the network
✗ Result: Hallucinations or outdated answers

Introducing How RAG Improves the LLM Experience

LLM + RAG Experience



Capabilities

Expanded knowledge without retraining

Access external and private data

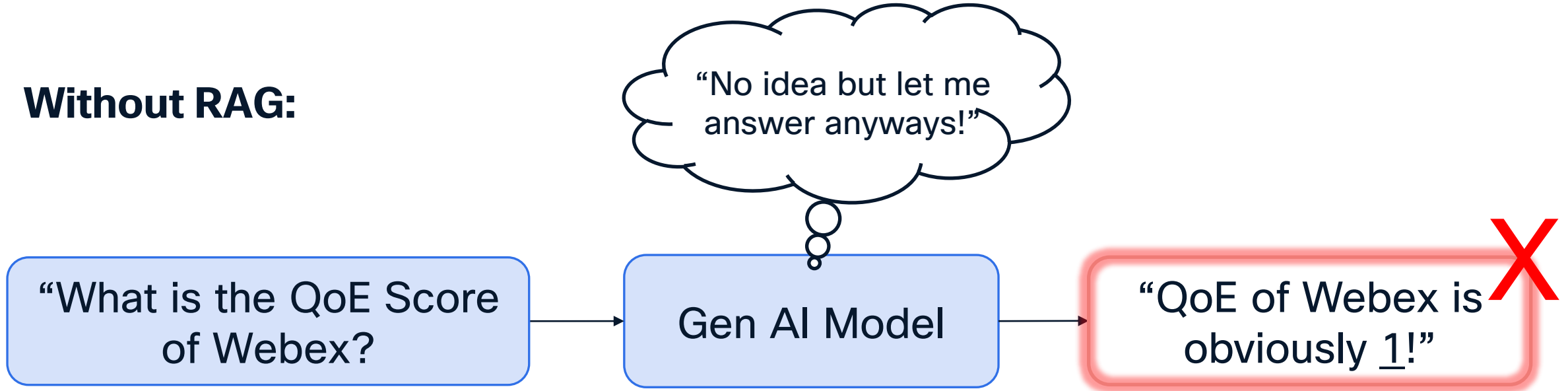
Retrieve real-time information

Ground responses in trusted content

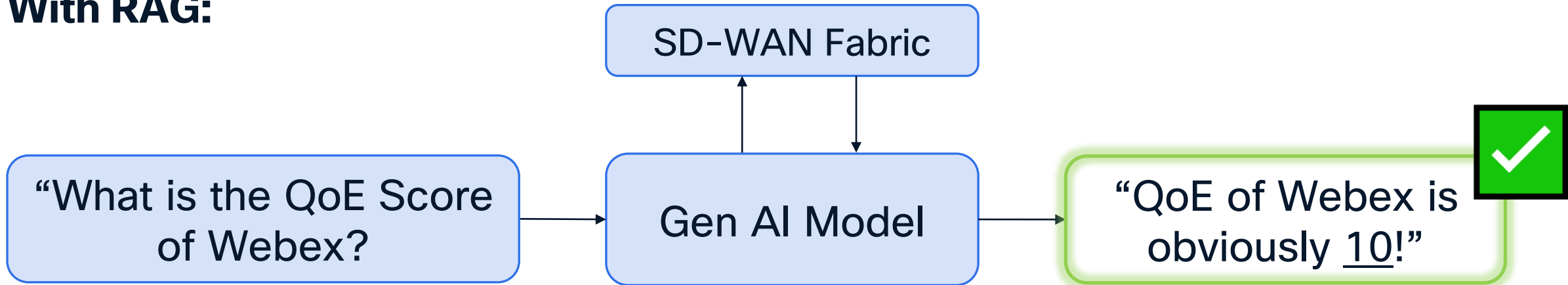
Minimize hallucinations

Retrieval Augmented Generation Example

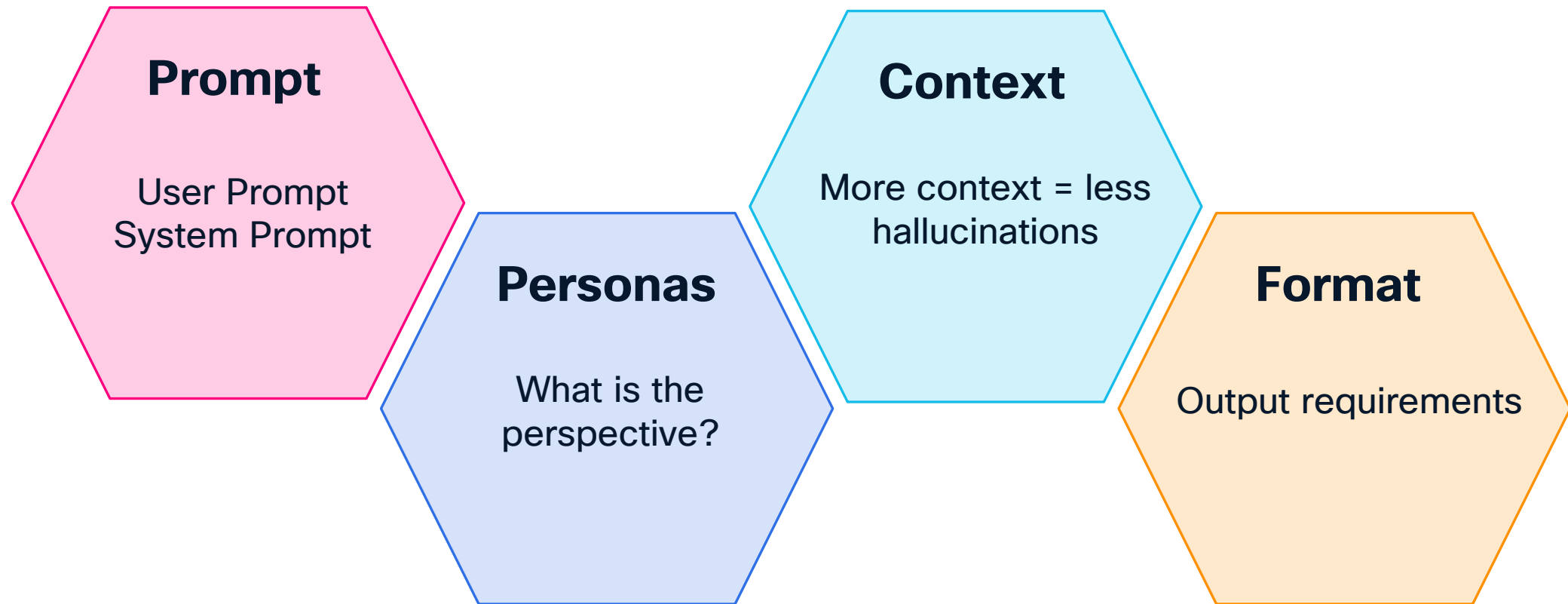
Without RAG:



With RAG:



Prompting



Prompting

Bad prompt:

“Webex video doesn’t work. What’s wrong?”

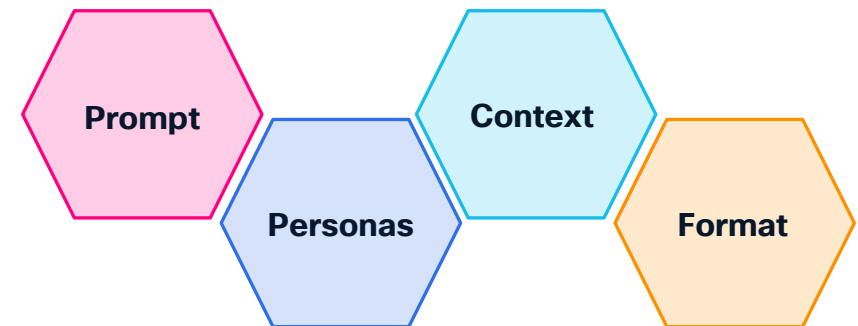
Why this is a bad prompt

- ✗ No user identified
- ✗ No location or site context
- ✗ No timeframe (when it started)
- ✗ No goal (troubleshoot? explain? fix?)

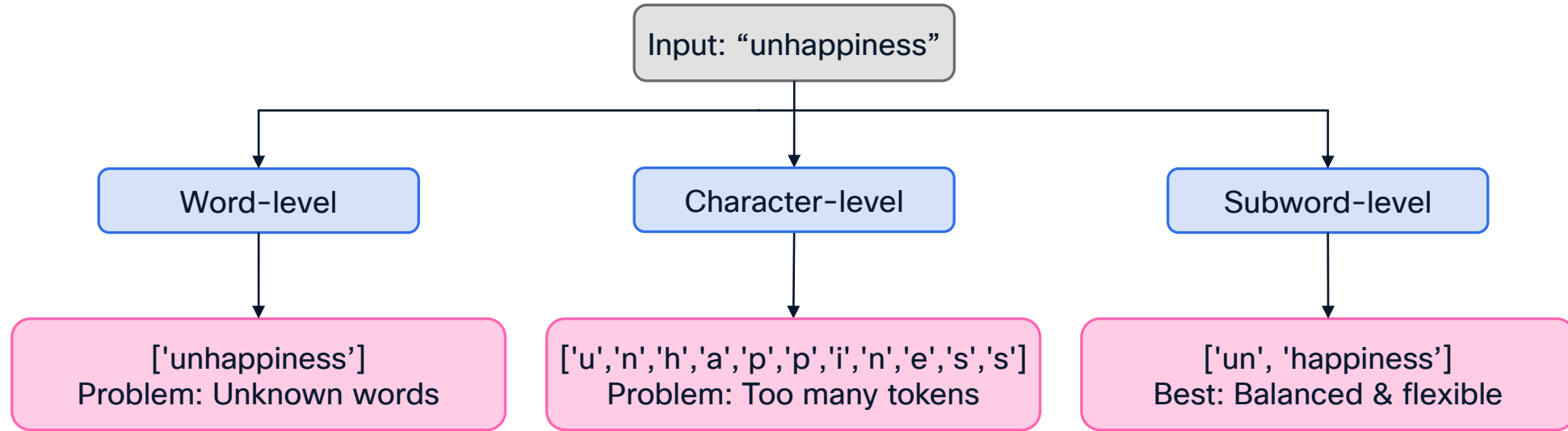


Good prompt:

“I've received a call from user "Ricardo" located at site Branch Athen. The user is complaining about bad Webex video quality. The issue started appearing today, yesterday everything was working fine. Can you help me to troubleshoot the issue?”



Tokenization



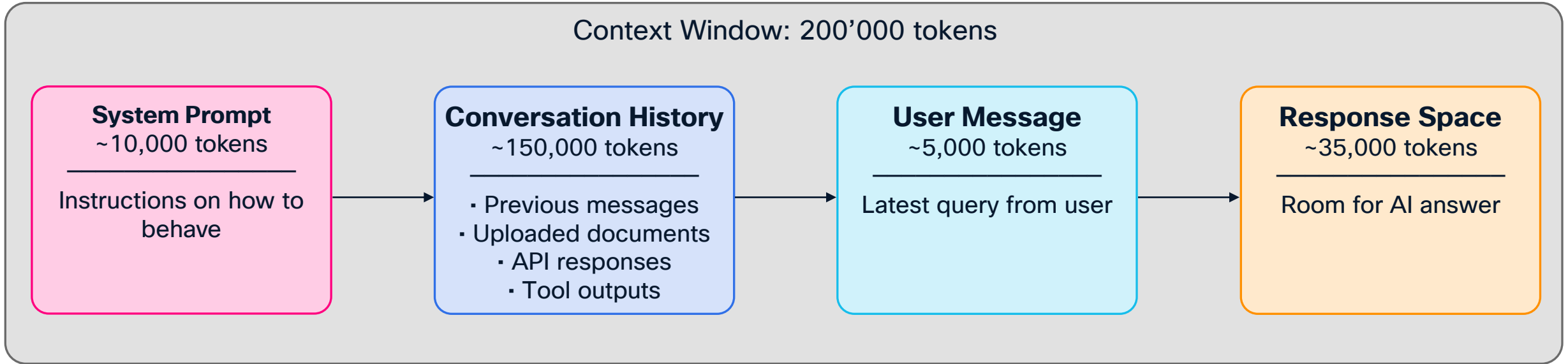
How it Works:

- Text is split into tokens (words, sub words, or characters).
- Tokens are split into vectors (num values) so the model can process it.

Analogy:

- Teaching a child to break down sentences into words & letters.

Context Window

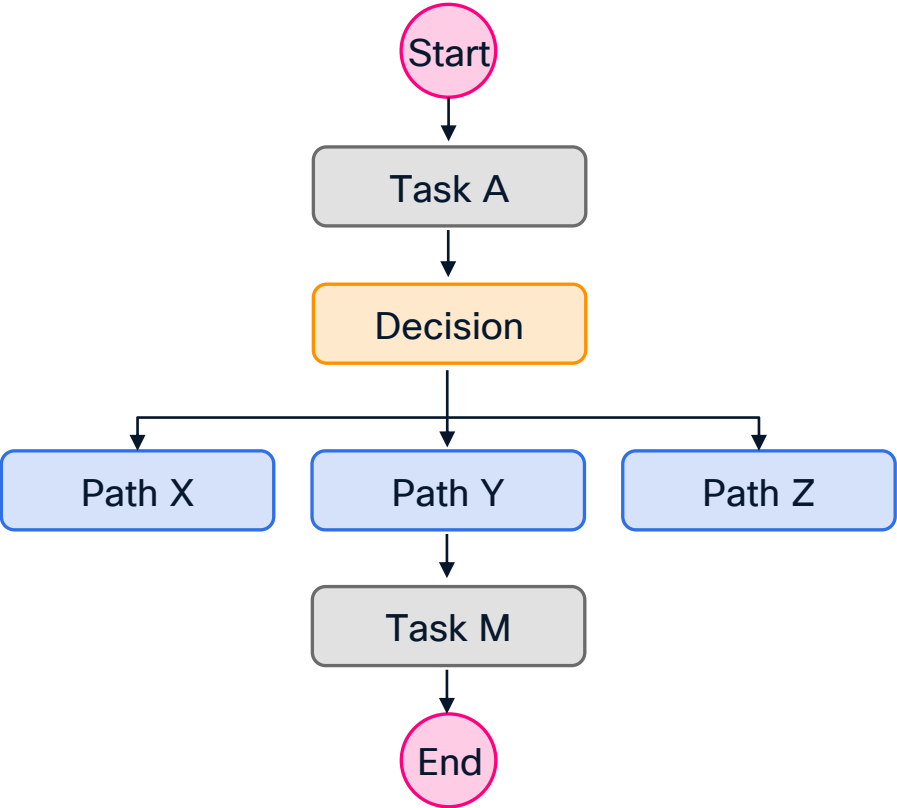


An AI agent **without enough context** behaves like:
“A junior engineer seeing only one CLI output”

An AI agent **with a large context window** behaves like:
“A senior architect who remembers the whole incident, design intent, and history”

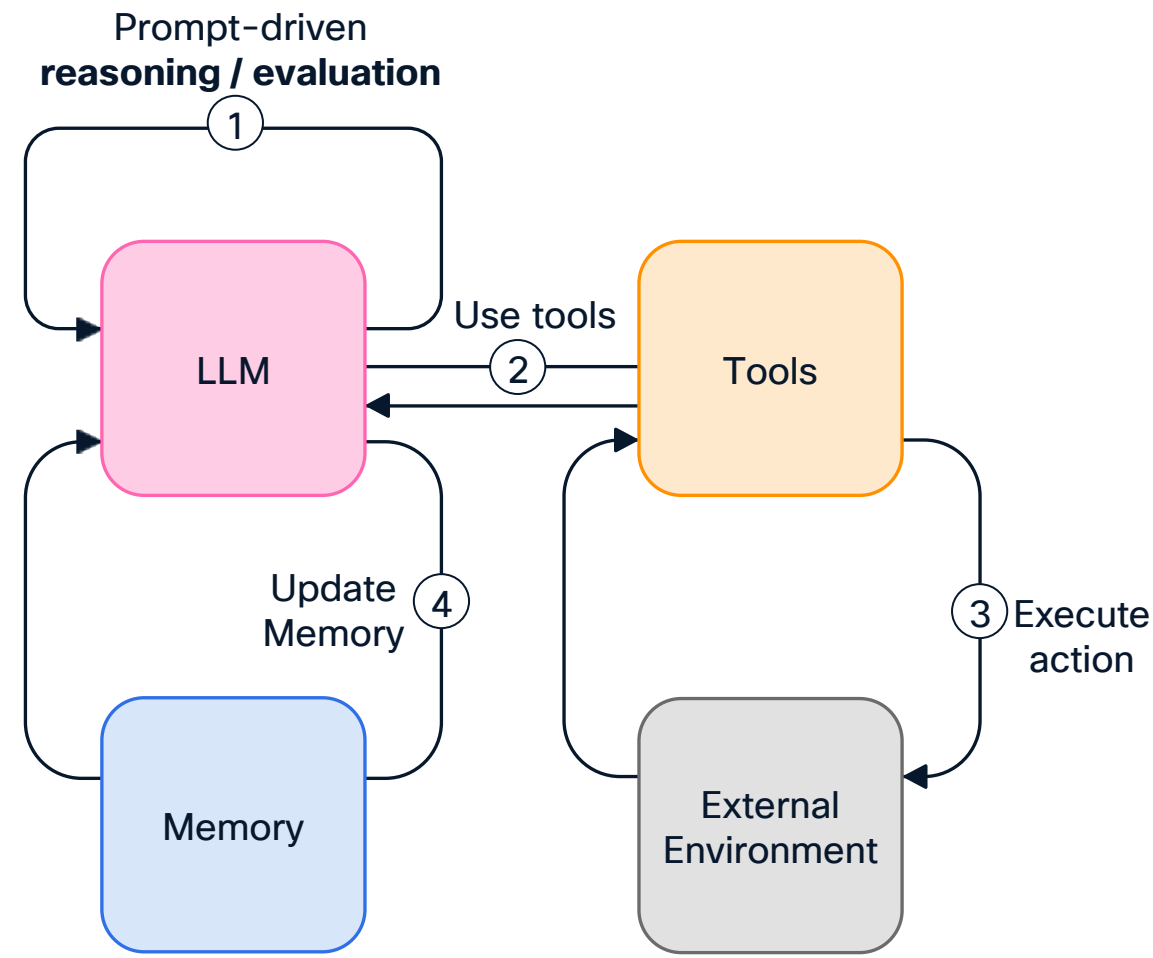
AI Workflow vs AI Agent

AI Workflow

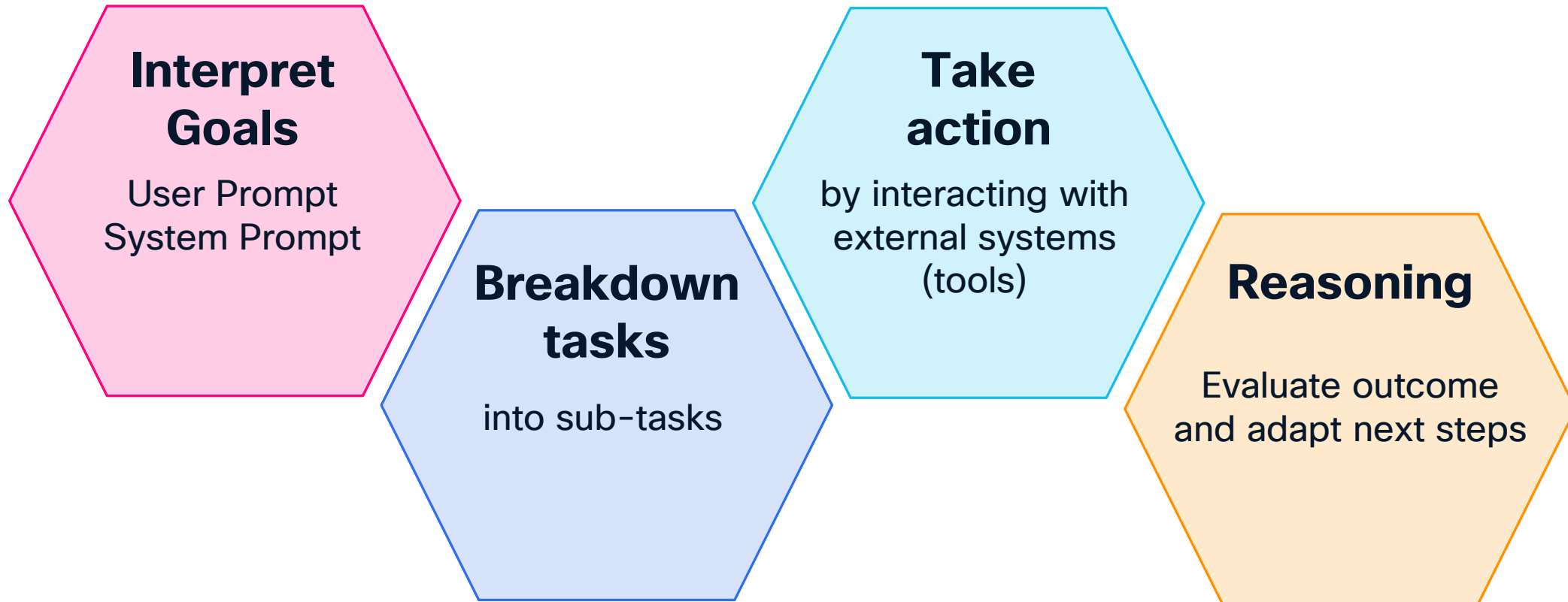


Still Not Autonomous
❌ Tasks are assembled manually

AI Agent



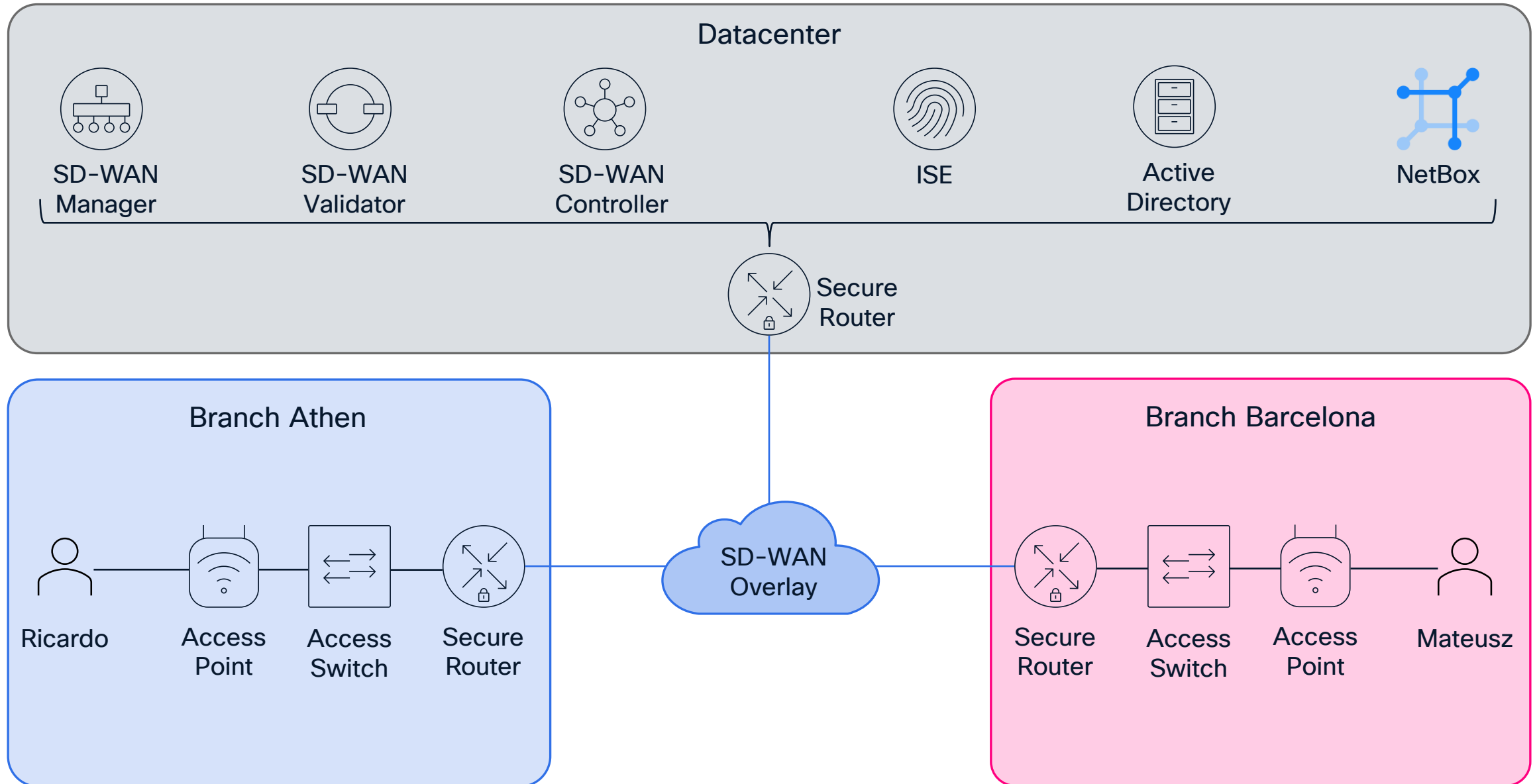
AI Agent



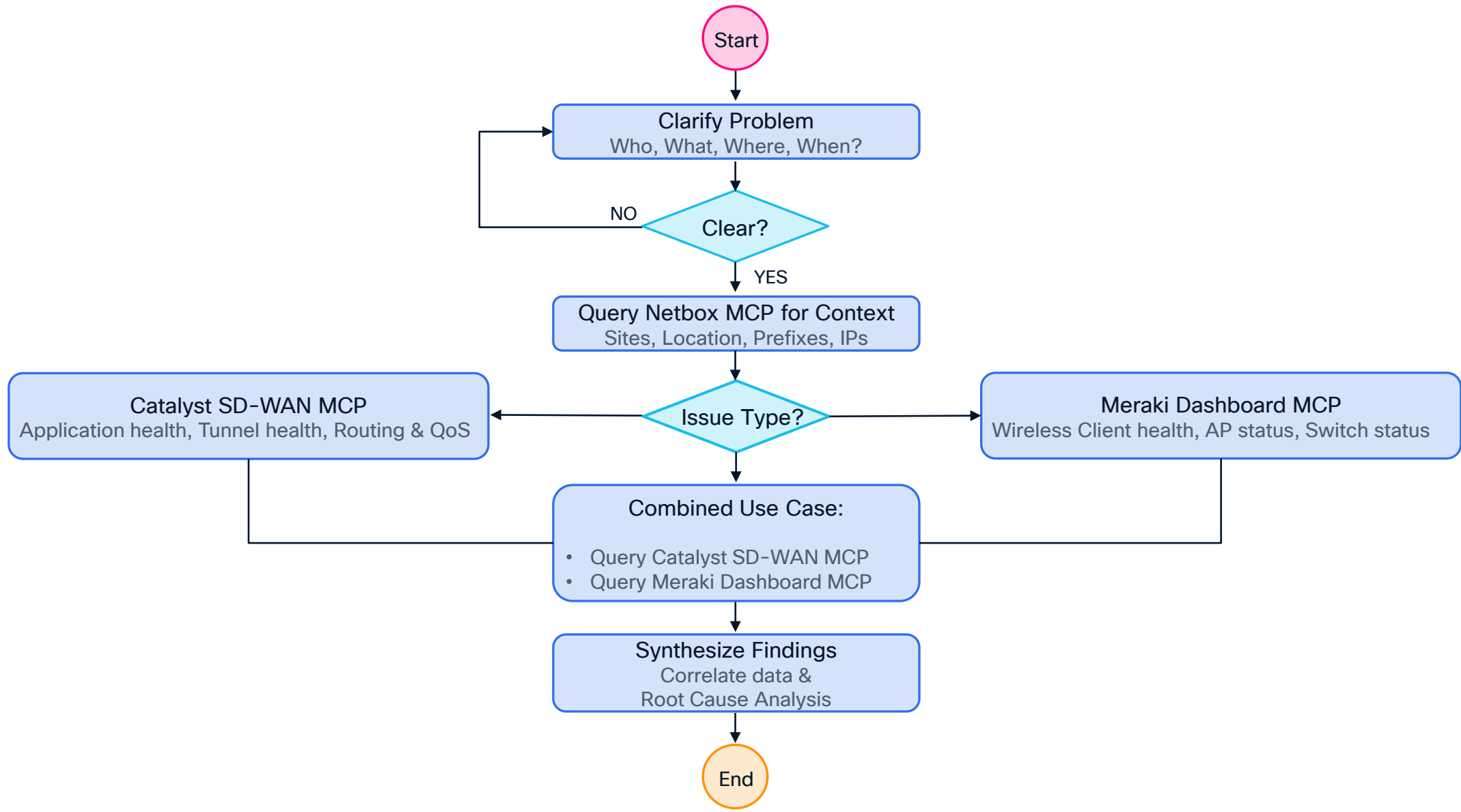
You've mastered the Basics!



Network Topology



Troubleshooting Methodology



Components



NetBox MCP

Network and Infrastructure Management
Source of Truth



Dashboard (Meraki) MCP

Provides access to Meraki Dashboard API functionality



Catalyst SD-WAN MCP

Provides access to Catalyst SD-WAN Manager API functionality



Ubuntu Server

Used to host the MCP and LibreChat docker containers



LibreChat

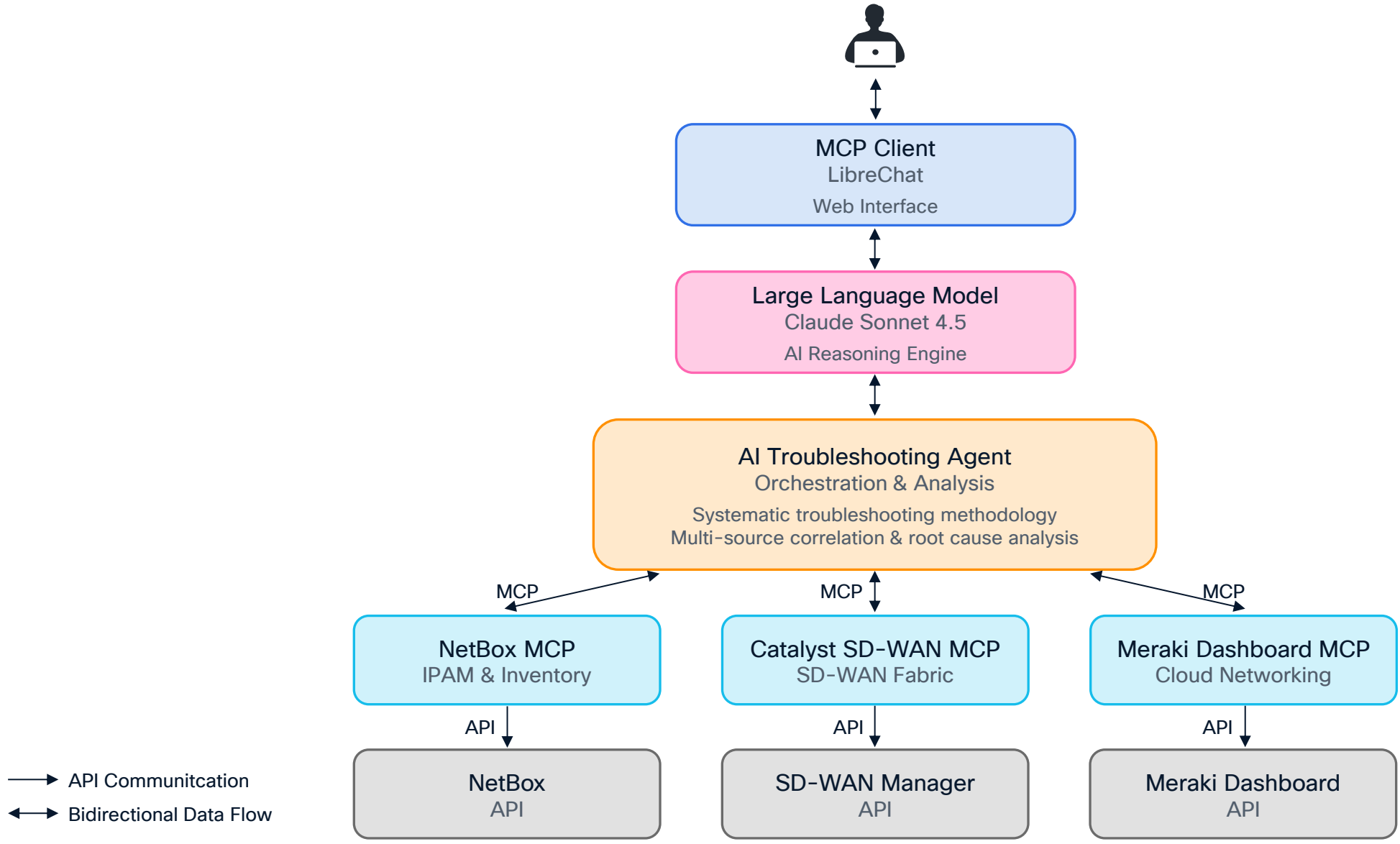
Self-hosted chat interface with support for multiple AI providers
MCP Server integration



Claude LLM

Currently Anthropic's most advanced AI model
Large Context Window

Agent Architecture





Troubleshooter



Troubleshooter

Message Troubleshooter



Lessons learned

Per-domain MCP
servers

MCP tools naming and
description

Well organized tools are
easy to navigate

Don't create
overlapping tools

Load MCP servers
contextually

Write Prompts as
specific as possible

Key takeaways

Traditional operations are not efficient – AI helping to scale

Alert storms + skills shortage demand machine-speed operations.

**Agentic Ops is the new model:
Ask → Understand → Act**

From dashboards to conversation-driven, outcome-based networking.

AI needs live network context to be operational

RAG + telemetry turns LLMs from “chatbots” into troubleshooting engines

The future is leaning towards a Network of AI Agents

WAN, LAN, Security, Identity, and Internet visibility collaborating for one coherent answer

Continue your education



Visit the Cisco Showcase for related demos



Book your one-on-one Meet the Engineer meeting

Visit the Technical Solutions Clinics to discuss your technical questions



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



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

Complete your session surveys



Complete your surveys in the Cisco Events App.



Complete a minimum of 4 session surveys and the overall event survey to receive a unique Cisco Live t-shirt.
(from 11:30 on Thursday, while supplies last)

Create your own AI Agent



Thank you

CISCO Live !

