



The bridge to possible

Getting Started with the Nexus Cloud API

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Cisco Webex App

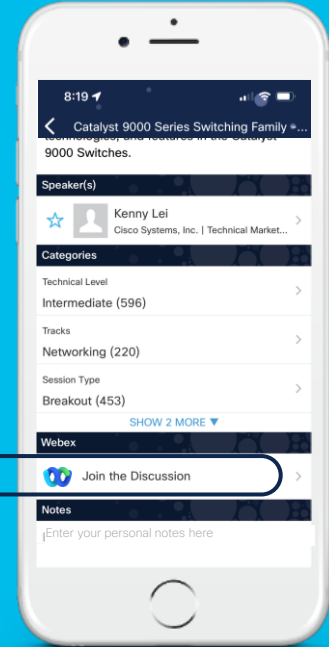
Questions?

Use Cisco Webex App to chat with the speaker after the session

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Webex spaces will be moderated until February 24, 2023.





Agenda

- What is Nexus Cloud
- The API Documentation
- The SDKs
- Examples

Meet Cisco Nexus Cloud



Delivers a simple but meaningful view for Datacenter Operations



Securely Connects On-Prem to Cloud Portal (Intersight)



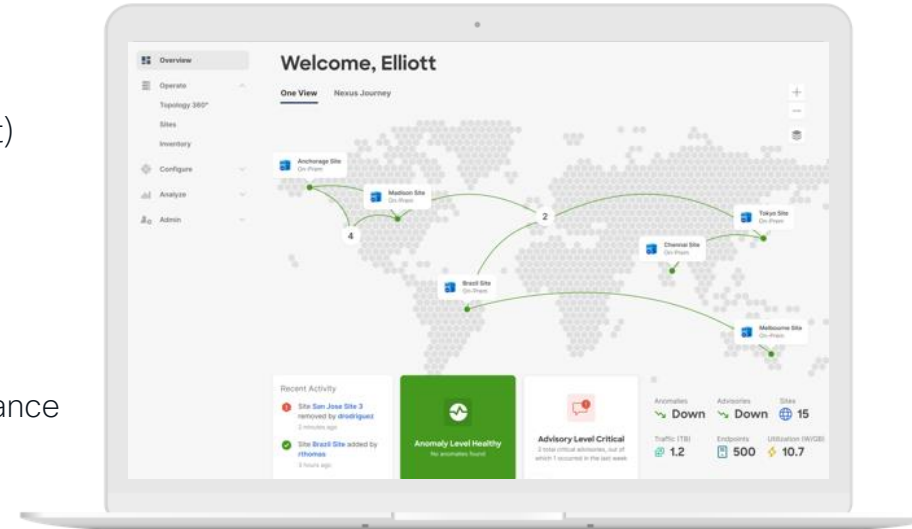
Accelerates MTTR with anomaly detection & workflows



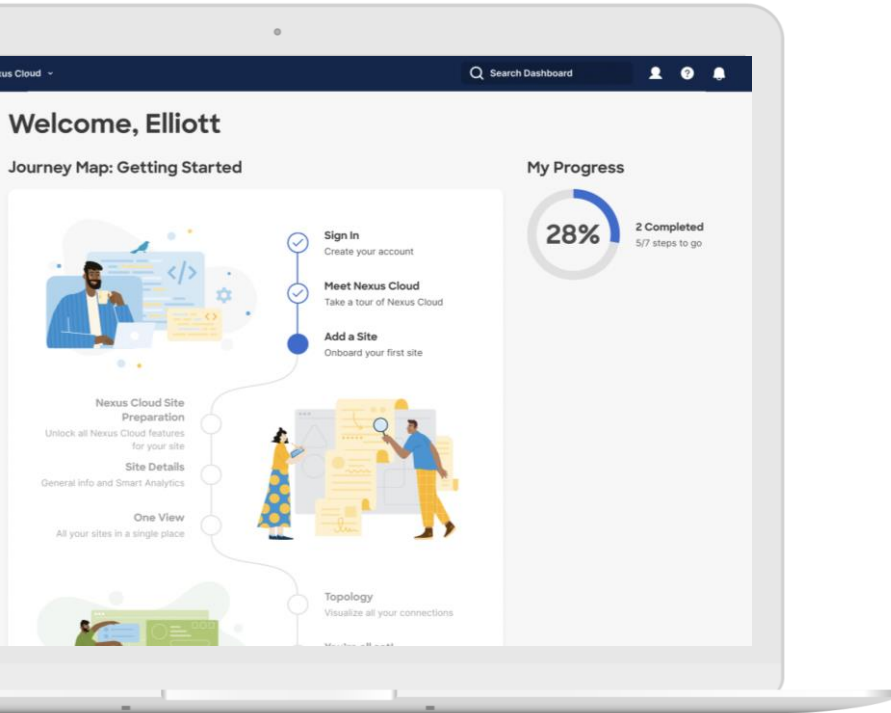
Certifies Compliance by managing HW & SW Conformance



Enhanced Topology View & Endpoint Awareness



Onboard with ease



Start Using it on Day 0

Offers customers immediate value. No upgrades, no fuss



Simplified Setup

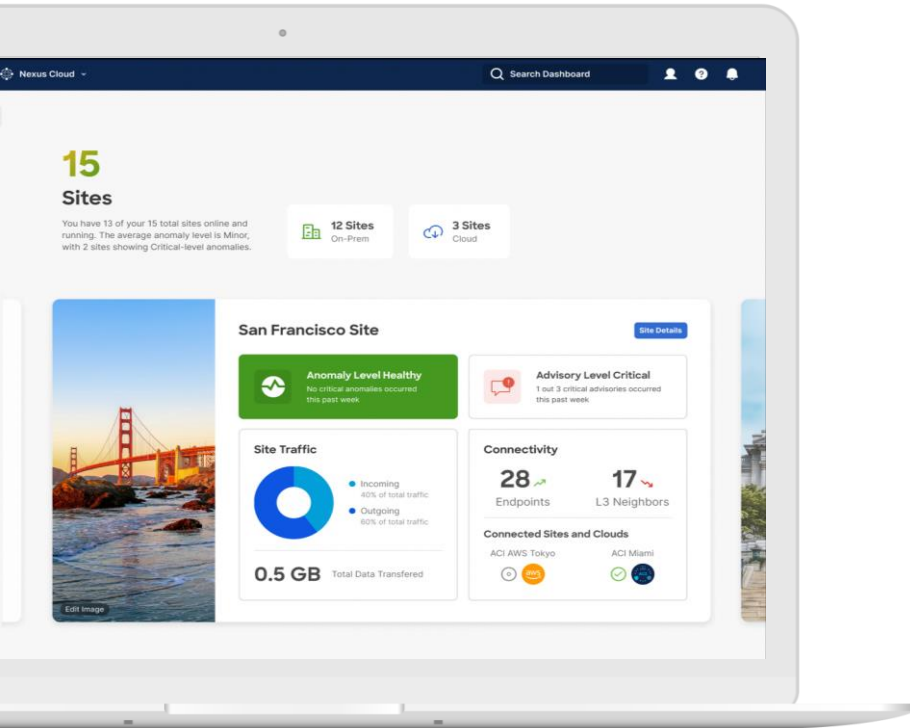
Connectivity Requirements are described in an easy-to-follow manner along the journey map



Cloud Managed

Manage your network infrastructure all from cloud in a single pane of glass

Operate with confidence



See it all

Comprehensive visibility that correlates application and infrastructure telemetry across all sites



Never be caught off guard

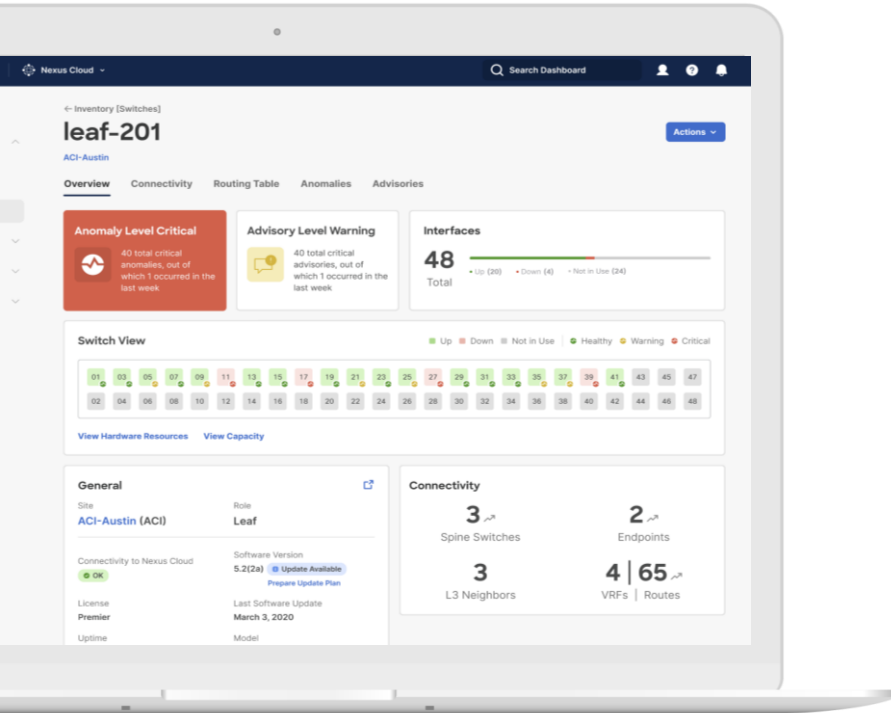
Anomaly detection and reporting quickly identifies deviations from baseline network performance



Always up to date

Proactively mitigate risk with alerts that ensure infrastructure conformance, software upgrades and security vulnerabilities

Analyze for predictability



Intercept the unintended

Pre-change validation evaluates the impact of network configuration changes before you make them



Get to resolution (and innocence) faster

Accelerate root cause analysis with event correlation and advanced analytics



Deliver as promised

Ensure business continuity and prevent compliance violations with proactive checks and prescriptive recommendations

Sustainability by design



Visibility

Gain visibility into network energy consumption and cost



Carbon footprint

Understand greenhouse gases (GHG) of managed devices



Key sustainability metrics

Total Power Utilization Effectiveness (PUE)*



But what would be a Cloud Platform
without an API?



The Nexus Cloud API

- RESTful API
- Designed as API First
- Follows Cisco DevNet API Guideline
- Uses API Keys
- Documented using an OpenAPI v3 specification

Nexus Cloud API Authentication/Authorization

- Nexus Cloud runs on the Intersight Platform
- API authorization schemes supported:
 - [API keys with HTTP signature.](#)
 - OAuth2 client credentials grant.
 - OAuth2 authorization code grant.
 - Session cookies, typically for browser-based sessions.

API Keys with HTTP signature

- An API key is composed of a **Key ID** and a **Secret Key**
- The API key is used to cryptographically sign each HTTP request
- The "signature" is a digital signature of the HTTP headers and body
- The roles associated with the API key are inherited from the user who generated the API keys

Why use API Keys

- No shared secret is sent to Intersight
- A user can generate separate API keys for each client application
- The API key allows you to monitor the application's API usage.
- The API usage and audit logs can be traced to individual client applications.
- An API key can be revoked without affecting other client applications
- Each API key (hence each client application) can be assigned specific roles and privileges.

Audit Logs and API Keys

- The Intersight audit records includes
 - the username of the user who created the API keys
 - the session id (set to the API key ID)

The HTTP Signature Logic

- A cryptographic digest of the body of the HTTP request is calculated using one of the supported cryptographic hash algorithms
- The digest is base-64 encoded in the Digest HTTP header
- A signature is calculated as specified in the HTTP signature scheme, and the signature is added to the Authorization HTTP request header.

API URL Structure

<https://intersight.com/nexus/platform/api/v1/sites>

- Nexus Cloud APIs are located under <https://intersight.com/nexus/>
- Organized into categories: platform, insights
- Versioned

API Versioning and backward compatibility

- Nexus Cloud API is managed as a product
- API version will follow Semantic Versioning
- Mostly backward compatible
- Major release will be increased if backward compatibility breaking changes are implemented

How should API clients behave?

- Clients should allow for new attributes to be present in the responses from the API
- Clients do not have to send all optional attributes.
- This ensure backward compatibility and forward progress of the API

API Pagination

- API endpoints that use pagination accept count and offset
 - **count** denotes the maximum limit of the number of entries in the response
 - **offset** denotes the pagination index in the response

- For example:

<https://intersight.com/nexus/insights/api/v1/anomalies/details?offset=0&count=10>

<https://intersight.com/nexus/insights/api/v1/anomalies/details?offset=10&count=10>

Error Handling

- Uses HTTP status code for errors (RFC 7231)
- HTTP response body contains a JSON document with details
- The human readable message is translated based on the value of the "accept-language" HTTP header
- Nexus Cloud APIs are rate limited
 - HTTP status code 429 Too Many Requests.

What about SDKs?



Nexus Cloud Software Development Kits (SDKs)



nexuscloud-client



Future

Nexus Cloud Python SDK – nexuscloud-client

- Generated from OpenAPI spec
- Available on PyPi (<https://pypi.org/project/nexuscloud-client/>)
- Backward compatible
- Upgrade SDK to get new API bindings
- Python 3.5+
- Tested on Linux, Mac and Windows

References

- Nexus Cloud Documentation:
https://www.intersight.com/help/saas/nexuscloud/ncdocs#nexus_cloud
- Nexus Cloud API Documentation:
<https://intersight.com/apidocs/introduction/overview/>
- Nexus Cloud API References/Swagger:
<https://intersight.com/apidocs/apirefs/nexus/>

Key Takeaways

- Nexus Cloud is Cisco DC Management Platform
- Nexus Cloud is API first
- It uses API Keys with body signature
- Nexus Cloud offers a Python and Golang SDK
- Nexus Cloud DEVNET learning labs coming soon

Meet the Speaker for DEVNET-1892

MTS-1046

Wednesday Feb 08th 11:40 AM

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