Cisco Secure Service Edge

Bezpečnost přichází z cloudu

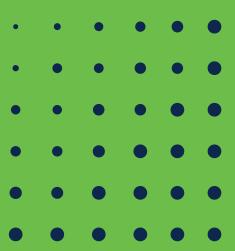
Milan Habrcetl
Cisco Cyber Security Specialist, mhabrcet@cisco.com
28.3.2023



# Agenda

- SASE
- Global cloud architecture
- Threat intelligence
- Umbrella product overview
- Umbrella components / key functionality
  - Connections, integration and logging
  - DNS security
  - Secure web gateway
  - Cloud delivered firewall
  - Cloud access security broker (CASB)
  - Cisco SecureX

# SASE



## Gartner: Secure Access Service Edge (SASE)

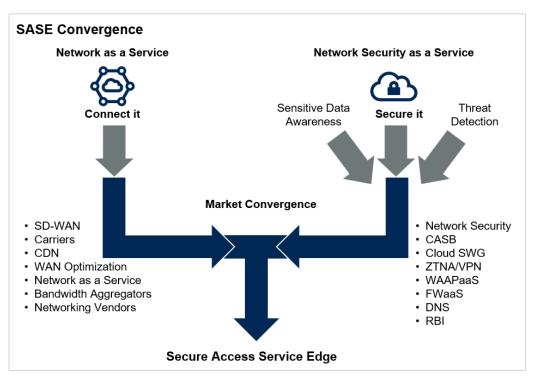
Convergence of networking and security services including SWG, CASB, DNS protection, firewallas-a-service, SD-WAN, and zero trust network access

Benefit rating: Transformational

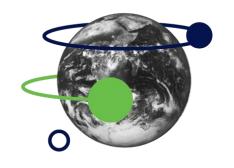
Market penetration: Less than 1% of target audience

Maturity: Emerging

Gartner, The Future of Network Security Is in the Cloud, Neil MacDonald, Aug 30, 2019



# At Cisco, we're uniquely positioned to help







Networking

Security

Zero Trust

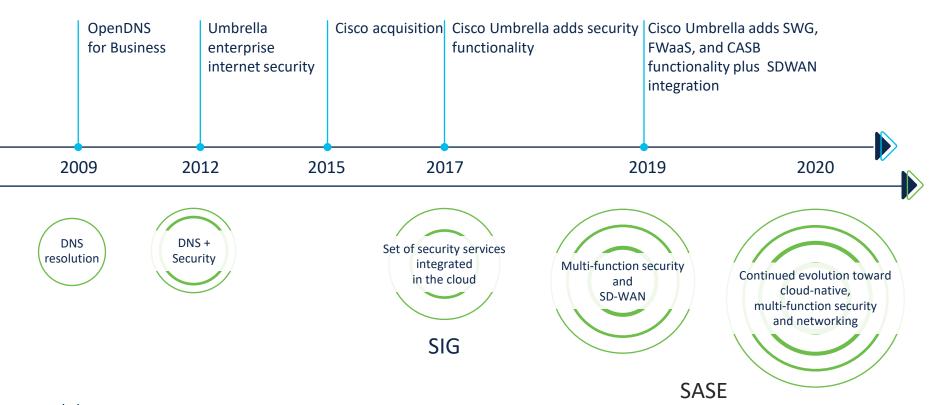
Largest SD-WAN solution provider

Defending 100% of the Fortune 100

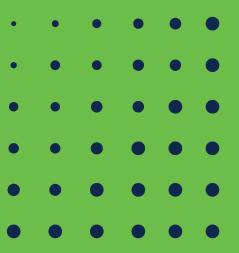
Leader in Zero Trust two years running



### Cisco Umbrella evolution



# Global cloud architecture



## Born in the cloud global architecture

Rapid scalability, continuous innovation, high performance – without downtime



Containerized, multi-tenant architecture powers scalability and reliability



Agile infrastructure delivers continuous innovation without customer downtime



Proven track record since 2006 with global data centers on six continents

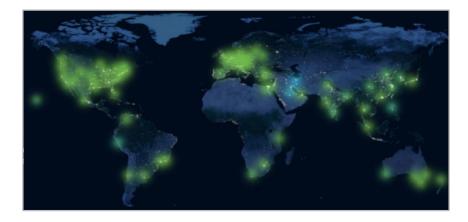


Low latency delivers high performance and up to 73% latency reduction

## Lightning-fast performance

### Reduce latency and speed performance

- 1,000+ peering partnerships with ISPs,
   CDNs and SaaS platforms fastest route
- 6,000 peering sessions to create shortcuts to major ISPs - decrease hop count
- Carrier neutral: locate data centers based purely on best and diverse connections and services



































# Performance validation by Miercom Labs

#### Results

- Reduced hop count by up to 33%
- Improved latency and traffic consistency (jitter) by up to 73%
- Substantive network performance improvement, using real app use cases

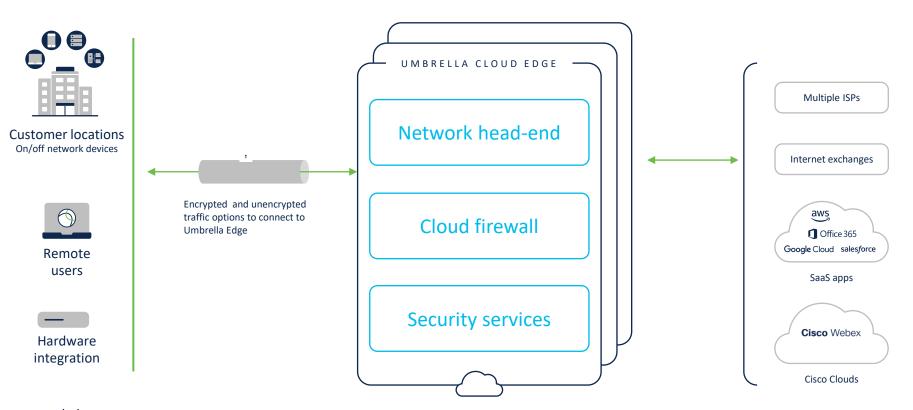
### **Testing setup**

- Connection to seven popular SaaS applications (table below is BOX)
- Compared direct-to-internet vs. through Umbrella with secure web gateway (with decryption) and cloud firewall policies set

	Нор со		Latency (ms)				
Data center location	Before *	After*	Hop count improvement (%)	Before *	After*	Reduction in latency (%)	
New York, NY	15	12	20.0	60	21	65	
San Jose, CA	14	11	21.4	58	14	67.6	
Ashburn, VA	16	13	18.8	62	22	64.5	
Frankfurt, Germany	18	12	33.3	67	18	73.1	

<sup>\*</sup> See "Testing setup" above

## Global cloud architecture: top-line

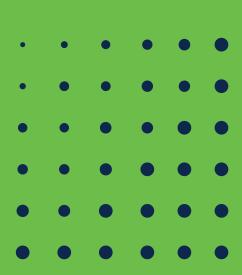




# Cisco Umbrella earns SOC 2 Type II Compliance



# Interactive threat intelligence



# Cisco Talos: the largest threat intelligence organization on the planet

- 400+ full-time threat researchers and data scientists
- 5 billion reputation requests, 2 billion malware samples seen daily
- 5 billion category responses, 200 million IPs & URLs blocked daily.

We see more so you can block more and respond faster to threats.



## **NEW AV-TEST security efficacy report!**

Featuring Cisco Umbrella

Security efficacy is one of the top differentiators for Umbrella.

Umbrella is #1 in security efficacy- again!

- Focus of lab test: assessing each SWG vendor's ability to protect roaming and remote workers
- AV-TEST assessed both our SWG and DNS-layer protection security efficacy



Umbrella consistently performed better than the competition!

Get the report: <a href="https://bit.ly/3jFNVwK">https://bit.ly/3jFNVwK</a>

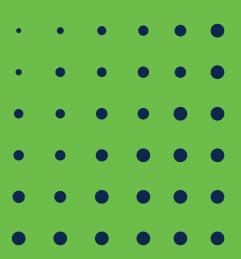
# Efficacy testing: SWG

- Data captured Sep-Oct 2020 by AV-TEST, using their samples (not Cisco's)
- Products configured to provide highest level of protection
- Umbrella SWG also with DNS security policy

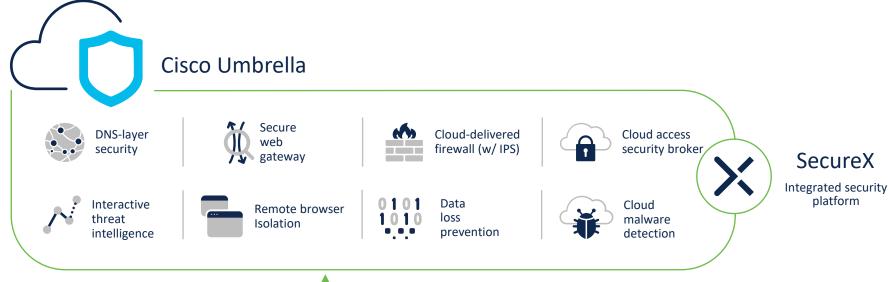
Type of test	Umbrella	Zscaler	Palo Alto	Netskope	Akamai
Malicious PE files (Portable executables)	93.65	87.29	83.88	82.12	61.41
Malicious destinations	99.15	93.28	57.68	55.52	48.35
Phishing links	93.79	85.20	91.51	48.35	74.12
Total detection rate	96.39	89.67	73.15	61.90	58.43

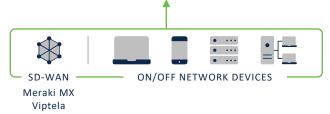
% Detected (higher is better)

# Product overview



### Cisco Umbrella





 Visit our website to learn more www.umbrella.cisco.com/products

## Cisco Umbrella key capabilities

Secure access to the internet & usage of cloud applications

### Visibility

- On & off corporate network
- All internet and web traffic
- All apps
- All devices
- SSL decryption
- Shadow IT
- Sensitive data transmitted

#### Protection

- DNS-layer security
- Web inspection
- File inspection & sandboxing
- Data loss prevention
- Non-web traffic inspection
- Intrusion prevention system
- Remote browser isolation
- Data at rest cloud malware scanning

### Control

- URL block/allow lists
- Port & protocol rules
- Granular app controls
- Content filtering
- App blocking
- Tenant controls

Built-in extended detection and response (XDR) platform with Cisco SecureX



## SIG policy outcome summary



#### DNS

DNS policies are evaluated first, any traffic allowed is evaluated next\*

\*Also applies to traffic where allow rule is not explicitly configured



### **CDFW**

- CDFW evaluates anything not blocked by DNS
- IPS inspects all traffic
- Any 80/443 traffic not blocked is sent to SWG



### **SWG**

SWG evaluates 80/443 traffic not blocked by DNS or CDFW

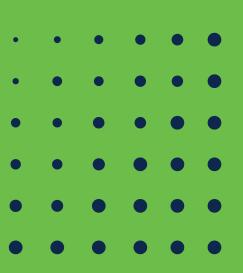


### **CASB**

- Scans data at rest for malware
- Inspects data for corporate compliance

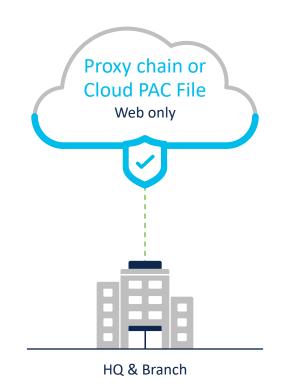


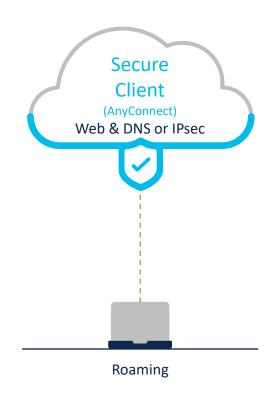
# Connections, integrations and logging



### Flexible connection methods





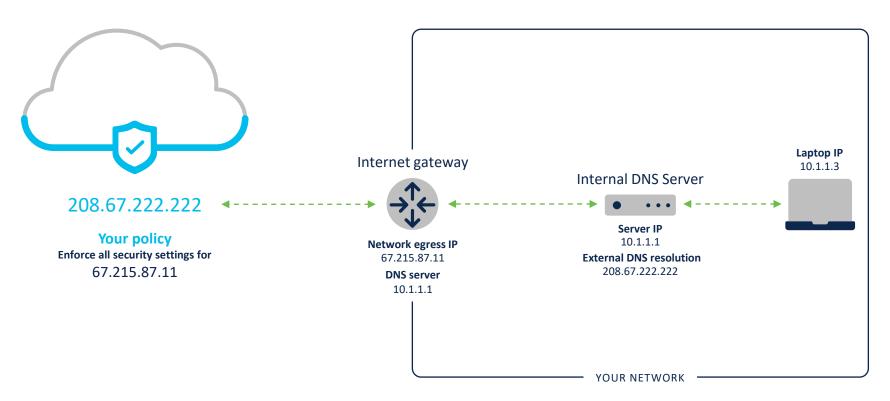


\*Optional customer hosted PAC file



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### Protect on-network devices via DNS server



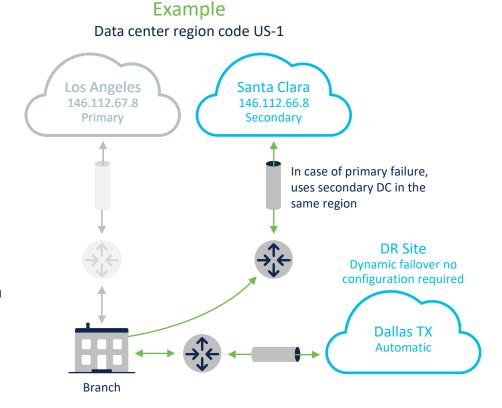
### Tunnel capabilities

### **IPsec capacity**

- 500 Mbps by default, with ongoing development to increase capacity
- Multiple tunnels can be deployed to support higher capacity

### **Availability**

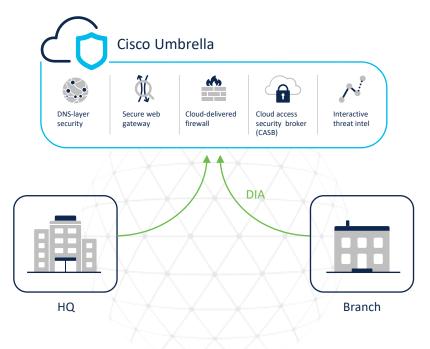
- Hard code primary, secondary (optional)
- Failover to secondary data center and disaster recovery is handled by anycast
- Failure detection uses IKE dead peer detection



### Umbrella for Cisco SD-WAN

### Fast forward time to value with automated security

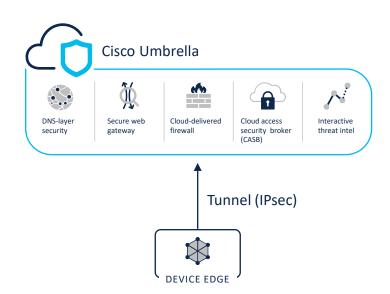
- Hands-off automation: deploy IPsec tunnels across thousands of branches in minutes
- Top notch protection: defend against threats with the leader in security efficacy
- Simplified management: single pane of glass across all offices, users and roaming clients
- Deeper inspection & controls:
   SWG, CASB, and cloud-delivered firewall layer
   3, 4, and 7



### Automated IPsec tunnel creation

### Umbrella for Cisco SD-WAN

- By pushing the SIG feature template, a customer can now setup an IPsec tunnel to Umbrella SIG
- Without this solution, a customer would need to manually establish the tunnel for each WAN Edge device at branch



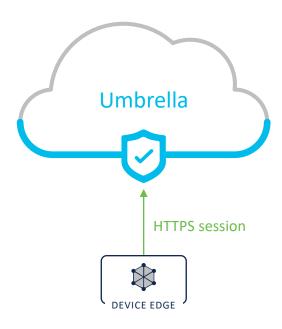
With this feature, SD-WAN will have much deeper integration with Umbrella

## Rapid onboarding: accelerates security and ROI

### Umbrella for Cisco SD-WAN

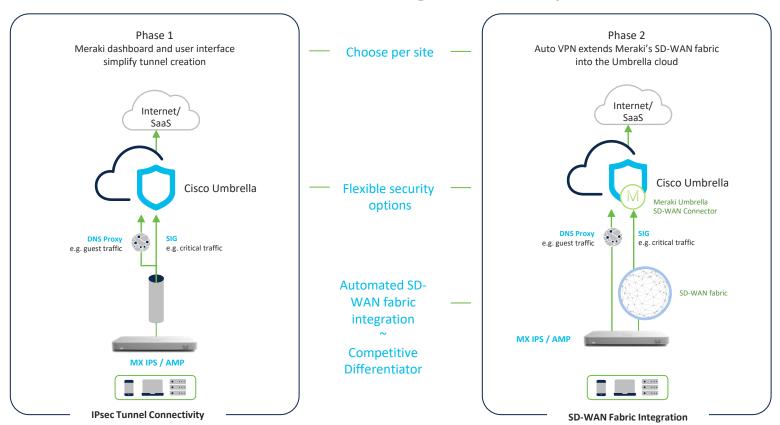
Deploying Secure SD-WAN now takes minutes not months:

- SD-WAN Edge devices are automatically registered to Umbrella
- No need to manually enter API keys
- Secure API key is automatically provisioned on the edge device via an HTTPS session





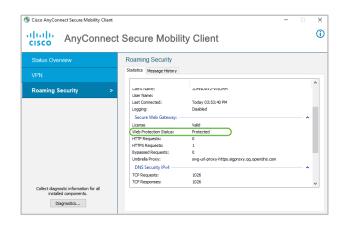
## Meraki MX and Umbrella Integration Options



### Cisco Secure Client

# Entitlement for Umbrella Mobility Client is included Umbrella subscription (excludes VPN functionality)

- AnyConnect can be used across an entire enterprise
- Both Umbrella DNS and Secure Web Gateway services can co-exist
- Protect assets on or off network
- Simple and consistent user attribution
- Choice of fail open or fail closed

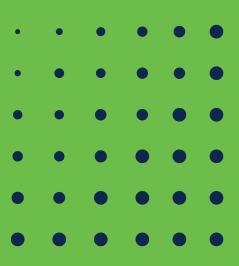






Supports Windows and Mac desktops

# DNS security



## Proven leader in cloud-native security



620B requests per day



500M authentication events every month

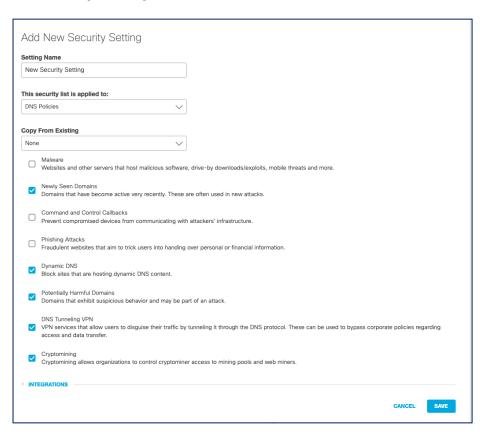


500K global customers



96%
Highest threat detection rate in the industry \*

## Unique protections from DNS-layer security

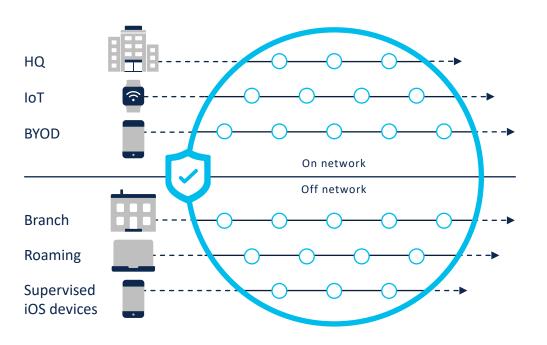


- Good: Umbrella DNS-layer security
- Better: Umbrella cloud-security service using secure web gateway (full proxy) and firewall.
- Best: Both

✓ DNS-layer security provides unique protection

## **DNS** security

### Visibility and protection for all activity, anywhere

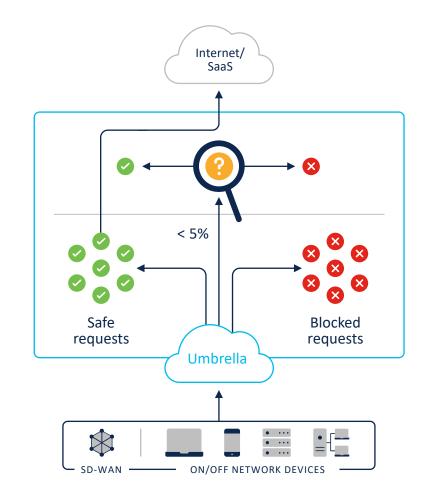


- All office locations
- Any device on your network
- Roaming laptops
- Mobile devices IOS and Android
- Every port and protocol

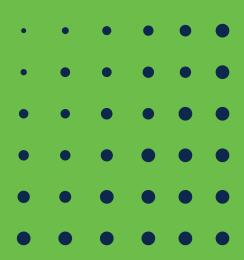
# **DNS-layer security**

### First line of defense

- Deploy enterprise wide in minutes
- Block domains associated with malware, phishing, command and control callbacks anywhere
- Stop threats at the earliest point and contain malware if already inside
- Accelerate threat response with an integrated security platform
- Amazing user experience faster internet access; only proxy risky domains



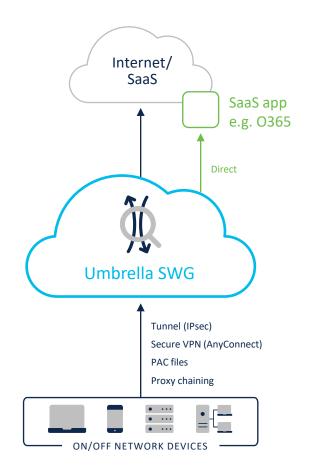
# Secure web gateway



### Umbrella SWG

# Multiple functions and aggregated reporting in one cloud console

- Malware scanning includes two anti-virus engines and Secure Endpoint (AMP) lookup
- File type controls
- Full or selective SSL decryption
- Category or URL filtering for content control
- Secure Malware Analytics (Threat Grid) file sandboxing
- App visibility and granular controls
- Full URL level reporting

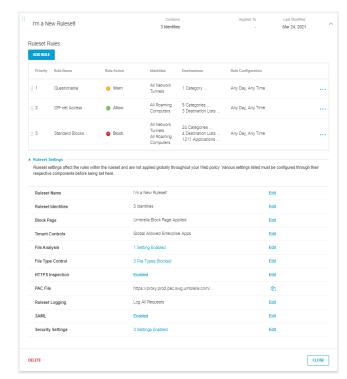


## Umbrella rules-based policies

**Overview:** Umbrella rules-based policies wizard gives granular controls and enabling the creation of more sophisticated policies.

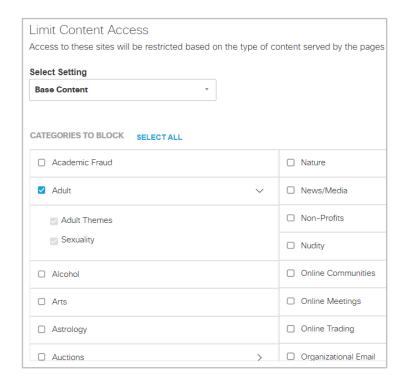
#### **Features**

- Create specific rules for placing allow, block, or warn actions on destinations
- Match rules on identity and destination
- Gain more flexibility when creating web policies
- Create in-policy exceptions



## Categories

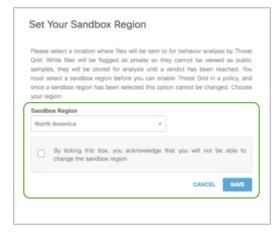
- Apply policy to a large number of sites
  - Content categories are used for "acceptable use policies"
  - Security categories are used for security policies
- Umbrella SWG uses Talos categories for both content and security
- Over 100+ categories
- Dynamic Cloud updates (full dataset)



# Cisco Secure Malware Analytics (Threat Grid) sandboxing

- Ability to detect hidden threats in files that are being downloaded
- A set of new or higher risk files are placed in a sandbox environment and checked for malicious activity/content
  - Alerts posted on files that do show bad activity
  - Umbrella threat intelligence is updated for that file





### Regions: Europe

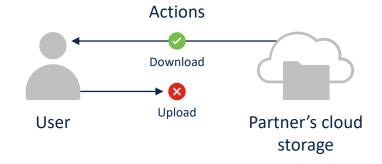
or North

SIG Essentials now has a Cisco Secure Malware Analytics limit of 500 files per day
SIG Advantage includes unlimited submissions and access to the full sandbox console for 3 users



## Granular controls for popular SaaS apps

- Block posts/shares to social media apps
- Block attachments to webmail apps
- Block uploads to cloud storage, collaboration, office productivity, content management, and media apps





## File type control – categories and file types

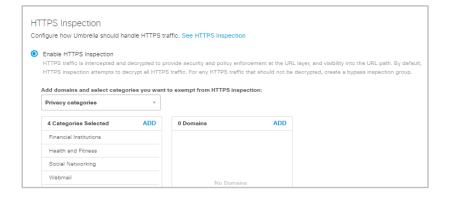




Edit File Control						
Search for and apply policy controls for downloaded file types.						
Search file types						
All Groups / Audio						
aif						
□ cda						
□ mid						
mp3						
□ wav						
wma						
□ wpl						

## SSL/HTTPS decryption in the cloud

- Visibility and set of security measures for the increased amount of encrypted web traffic
- Decryption, reporting and inspection for encrypted web traffic and files
  - No hardware expense
  - No scaling issues as encrypted Internet traffic increases
  - Ability to selectively decrypt



## Microsoft compatibility mode

Organizations rely on M365 to run daily business and require high performance

Microsoft doesn't recommend traffic inspection for M365

- ✓ Compatibility Mode ensures that M365 traffic transparently passes thru Umbrella yet gains native Umbrella backbone performance improvements
- ✓ Uses Microsoft APIs to determine the domains recommended to be bypassed, saving work for the customers trying to keep their devices up to date
- ✓ No policies can be applied to M365 traffic when enabled, (e.g. no tenant controls)
- Umbrella will log all traffic sent to these domains



### User attribution and authentication

- Security Assertion Markup Language (SAML 2.0)
  - Service Provider (SP) Umbrella
  - Identity Provider (IdP) –PingID, Okta, Azure, Duo,
     OpenAM, ADFS, and others via generic support
- Surrogate support options
  - Cookie surrogate-requires HTTP/HTTPS inspection, can specify timeframe expiry
  - IP surrogate-HTTPS inspection not required, more consistent userID auths
- Intended support for browsers, may not work for "desktop apps"



## SWG users and groups

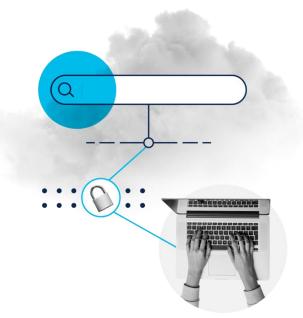
- CSV upload
  - Recommend CSVDE tool on Windows Domain Controller
- AD connector Active Directory sync
  - Group filtering supported with data file
  - Standard AD connector install version 1.3.8+
  - Only one Domain Controller required, no VA required



## New Umbrella remote browser isolation (RBI)

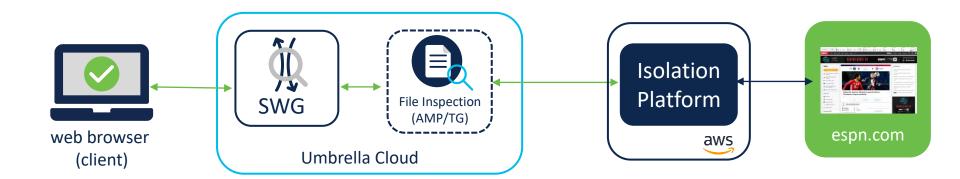
### Added layer of protection for risky destinations and users

- Provide air gap between user device and browser-based threats
- Deploy rapidly without changing existing configuration
- Deliver a secure browsing experience with protection from zero-day threats



## RBI traffic flow overview





## Three RBI package options

### Isolate Risky

- Isolate uncategorized websites
- Isolate security categories (including Potentially Harmful)

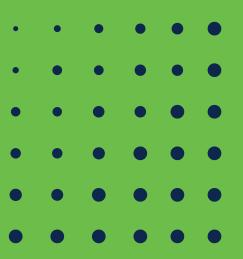
### Isolate Web Apps

- Isolate popular communication and collaboration applications like Box, Slack, Gmail
- Content categories: Chat/IM, Social/Personal Networking, File Storage/Transfer,
   Webmail/Organization Email

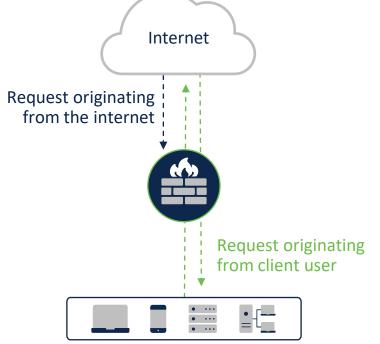
### Isolate Any

- Isolate any chosen destination, including content categories, security categories, destination lists, applications, uncategorized, etc.

## Cloud-delivered firewall



Umbrella firewall protects traffic from requests originating from a client user



Firewall use cases that protect traffic from requests originating from a client user are essential to securing access to the internet and controlling cloud app usage







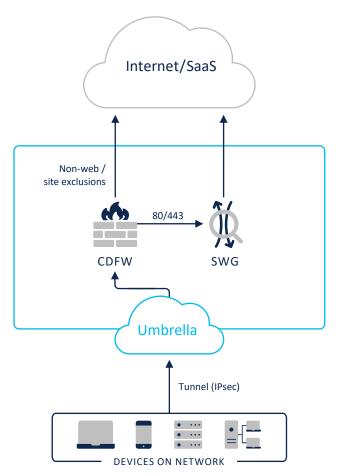
Use this policy to control network traffic based on IP, port, and protocol. Rules are evaluated from the top down. For more information about Firewall Policy, view Manage Firewall.

FILTERS Q Search Firewall Rule names or descriptions											
3 Total											
	Priority	Name	Status	Action	Applications	Protocol	Source Criteria	Destination Criteria	Hit Count	Last Hit	
	1	Block SSH	<ul><li>Enabled</li></ul>	Block	ssh	Any	Any IPs Any Ports	Any IPs 1 Port	▲ 0/24hrs	▲ No Hits	•••
	2	p2p rule	<ul><li>Enabled</li></ul>	Block	Any P2P ftp	Any	Any IPs Any Ports	Any IPs Any Ports	25.0 /24hrs	Aug 24, 2020 - 09:33am	
	3	Default Rule	<ul><li>Enabled</li></ul>	✓ Allow	Any Application	Any	Any IPs Any Ports	Any IPs Any Ports	69.1 k/24hrs	Aug 24, 2020 - 03:15pm	



## Layer 7 application visibility and control

- Tunnel all client-driven traffic to Umbrella
- Block high risk applications and protocols (layer 7 application visibility & control)
- Centrally manage IP, port, protocol and application rules (layer 3, 4 and 7)
- Forward web traffic (ports 80/443) to secure web gateway
- IPsec tunnel termination required



## Application visibility and control

### Extends across enforcement points

# DNS-layer security Visibility into cloud apps used in organization

 Identify potential risk and block specific apps (16K apps discoverable)

### Cloud-delivered firewall

- Layer 7 Application Visibility and Control
- Extends visibility, protection, control to:
  - Non-web (non-HTTP/S) traffic
  - Apps that use hard-coded IP addresses and do not perform DNS lookup
  - Apps where signature-based detection (not based on IP, domain, URL) is required to detect and block

### Secure web gateway

Granular control of web apps over HTTP/S (ports 80/443):

- · Block uploads to cloud storage apps
- Block posts/shares to social media apps
- Block attachments to webmail apps
- Tenant restrictions





## Umbrella Intrusion Prevention System (IPS)

### Capabilities

- Deepen Umbrella cloud firewall protection for client-driven traffic
- Use signature-based detection (Snort 3) to examine network traffic flows & prevent vulnerability exploits
- Add layer of detection/blocking for malware, botnets, phishing, and more
- Leverage Cisco Talos' 40K+ signatures
   (and growing) to detect and correlate
   threats in real-time

### Results

- ✓ Simplify management via Umbrella's single, unified dashboard
- ✓ Remove capacity concerns of appliances by using scalable cloud compute resources
- ✓ Stop more threats with the industry's most effective threat intelligence
- ✓ Detect/block exploitations of vulnerabilities

# Umbrella Intrusion Prevention System (IPS)



Layers of security for high security efficacy

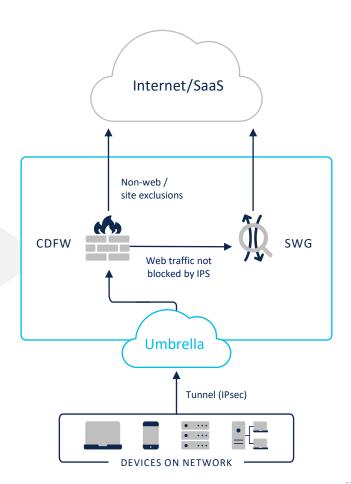


Ā

IPS with signature-based detection

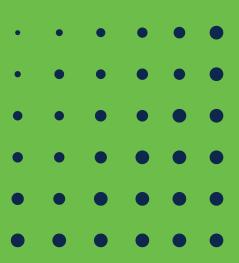
Layer 7 application visibility & control

Layer 3 / 4 firewall: IP, port, protocol rules





## CASB functionality



## CASB types



#### Umbrella

- App visibility & blocking
- Advanced app control
  - Block uploads (i.e. Dropbox/Box)
  - Block attachments (i.e. webmail)
- Tenant controls
- Inline DLP



#### Umbrella

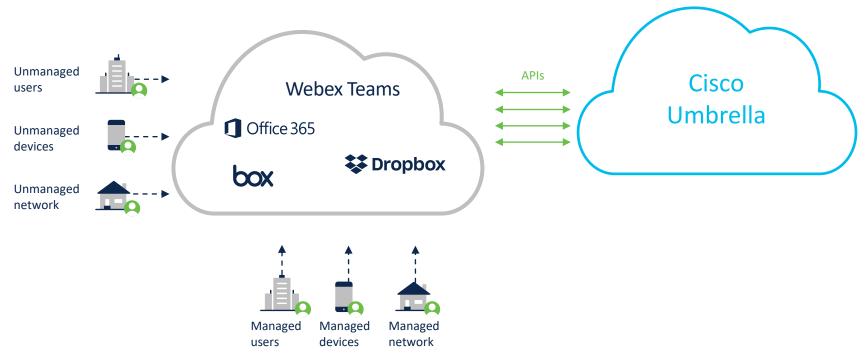
Data-at-rest cloud malware detection

### Cloudlock

- User behavior monitoring/alerts
- Cloud storage policy enforcement
- DLP quarantine and revocation actions (out of band)
- OAuth apps: visibility & control



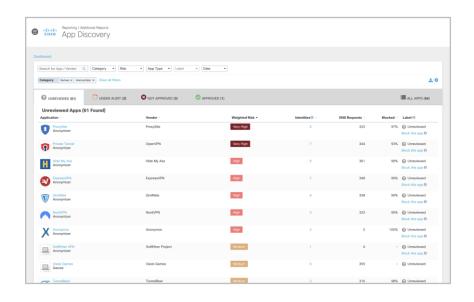
## Malware scanning is API-based, cloud to cloud



## App discovery and controls

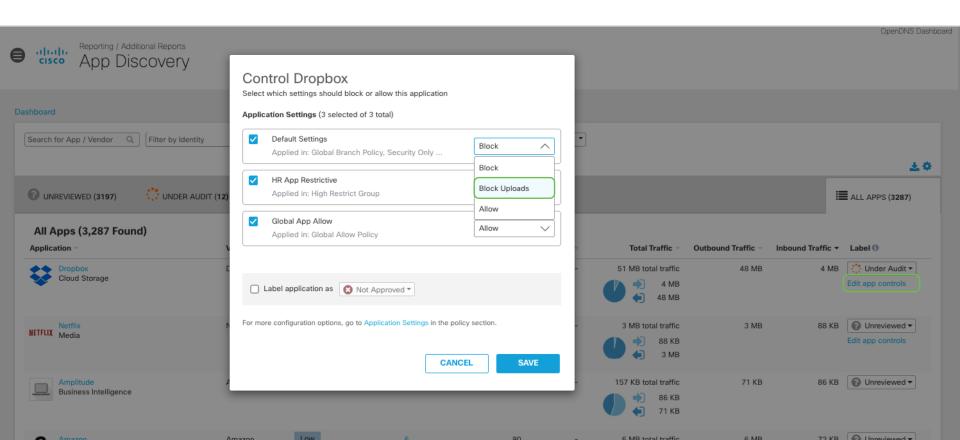
### Visibility into shadow IT and control of cloud apps

- Full list of cloud apps in use
- Reports by category and risk level
- Number of users and amount of incoming and outgoing traffic
- Blocking of high-risk categories or individual apps



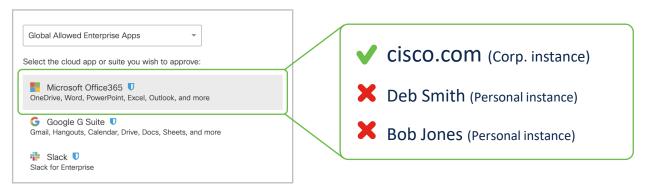


## Granular app controls



### Tenant controls

Select the instance(s) of Core SaaS applications that can be accessed by all users or by specific groups/individuals



### **Key Use Cases**

Security
Ensure, sensitive data is created and stored in approved instances of cloud apps

Productivity
Only provide access to corporate instances of core
SaaS apps

### Inline DLP

### Cloud-native proxy DLP

Leverages SWG for connectivity, routing and SSL decryption

#### Robust DLP classification

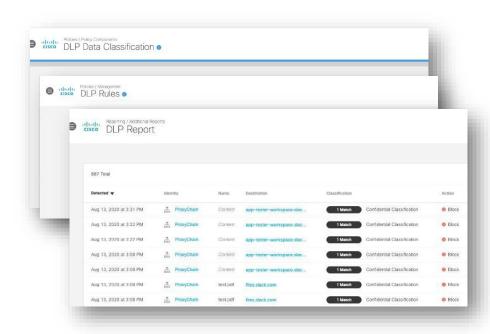
- 80+ built-in data classifiers
- Custom keywords

### Flexible DLP policy

 Apply to specific identities and destinations with defined data classifications

### **Robust Reporting**

- Includes identity, file name, destination, classification, pattern match, excerpt, triggered rule and more
- Native Umbrella Ux



Currently LA. GA target July 2021

## Data-at-rest, cloud malware detection (API-based)

Files that contain malware in cloud repositories can do damage

### Malware enters/exits via:

- Endpoints that aren't covered by Cisco Secure Endpoint (AMP)
- Unmanaged devices
- External sharing- sharing files with other companies

#### Solution:

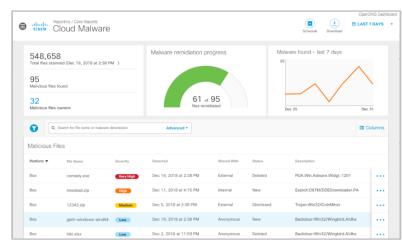
 Scan repositories and ongoing save events for cloud storage







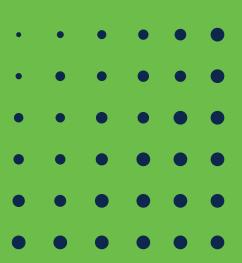




Prevent the malware from spreading to additional endpoints and users

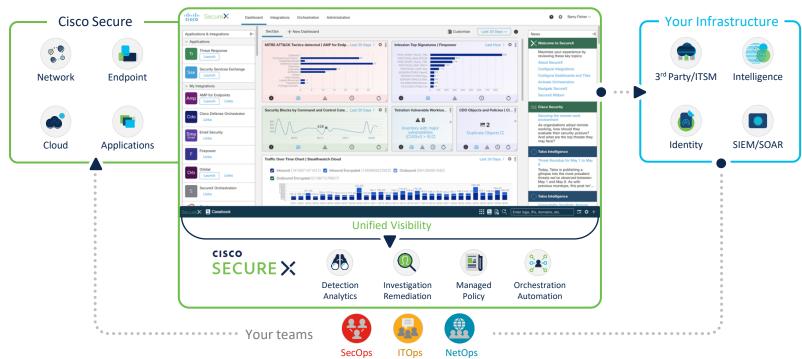


## Cisco SecureX

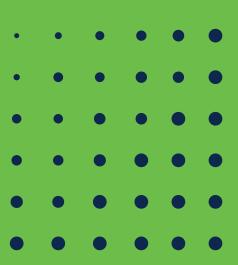


## **Introducing SecureX**

A cloud-native, built-in platform experience within our portfolio



## Appendix



### Umbrella Data Center Availability

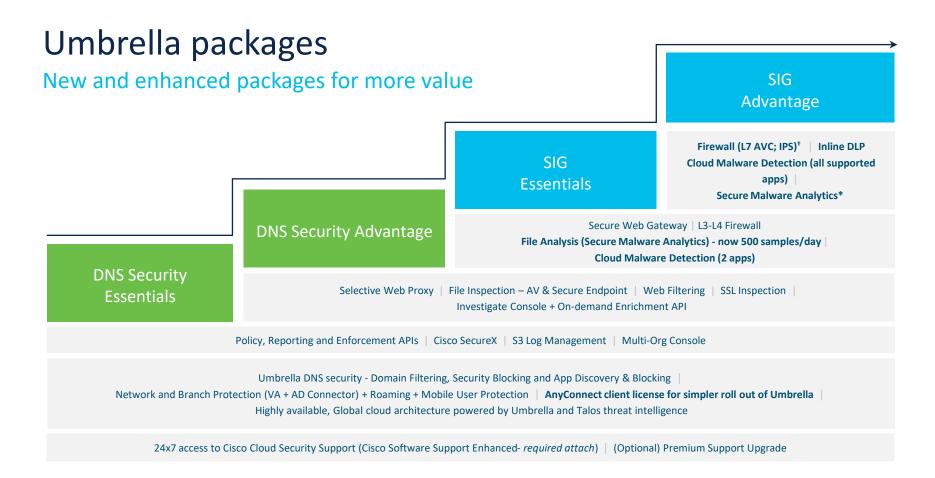
	mint.	DAIC A CATALANTA	CMC A 11-1-111-	F. II SIG (SMC), SDFM , ID-, A CHARLE
Country	Title	DNS Availability	SWG Availability	Full SIG (SWG + CDFW + IPsec) Availability
Australia	Melbourne	Available	Available	Available
Australia	Sydney	Available	Available	Available
Brazil	Rio De Janeiro	Available	Available	Available
Brazil	Sao Paulo	Available	Available	Available
Canada	Toronto, ON	Available	Available	Available
Canada	Vancouver, BC	Available	Available	Available
China	Hong Kong	Available	Available	TBD
Czech Republic	Prague	Available	Available	Available
Denmark	Copenhagen	Available	Available	Available
France	Paris	Available	Available	Available
Germany	Frankfurt	Available	Available	Available
India	Mumbai (1)	Available	Available	FY21 - Q4
Ireland	Dublin	Available	TBD	TBD
Italy	Milan	Available	Available	Available
Japan	Osaka	Available	Available	FY21 - Q4
Japan	Tokyo	Available	Available	Available
Netherlands	Amsterdam	Available	Available	TBD

### Umbrella Data Center Availability

Country	Title	DNS Availability	SWG Availability	Full SIG (SWG + CDFW + IPsec) Availability
Poland	Warsaw	Available	TBD	TBD
Romania	Bucharest	Available	TBD	TBD
Singapore	Singapore	Available	Available	Available
South Africa	Johannesburg	Available	Available	FY22 - Q1
Spain	Madrid	Available	Available	Available
Sweden	Stockholm	Available	Available	Available
United Arab Emirates	Dubai (1)	Available	Available	FY21 - Q4
United Kingdom	London	Available	Available	Available
United States	Ashburn, VA	Available	Available	Available
United States	Atlanta, GA	Available	Available	Available
United States	Chicago, IL	Available	Available	FY21 - Q4
United States	Dallas, TX	Available	Available	FY21 - Q4
United States	Denver, CO	Available	Available	FY21 - Q4
United States	Los Angeles, CA	Available	Available	Available
United States	Miami, FL	Available	Available	Available
United States	New York, NY	Available	Available	Available
United States	Santa Clara, CA	Available	Available	Available
United States	Seattle, WA	Available	FY22 - Q1	FY22 - Q1



As of June 2021. Constantly expanding.





## Děkuji za pozornost

https://umbrella.cisco.com/info/cisco-umbrella-studio









