



# Best Practices for Rapid Containment of Incidents

Noam Syrkin  
Sr. Technical Marketing Engineer, RedSeal

# Forward-Looking Statements

During the course of this presentation, we may make forward-looking statements regarding future events or the expected performance of the company. We caution you that such statements reflect our current expectations and estimates based on factors currently known to us and that actual events or results could differ materially. For important factors that may cause actual results to differ from those contained in our forward-looking statements, please review our filings with the SEC.

The forward-looking statements made in this presentation are being made as of the time and date of its live presentation. If reviewed after its live presentation, this presentation may not contain current or accurate information. We do not assume any obligation to update any forward-looking statements we may make. In addition, any information about our roadmap outlines our general product direction and is subject to change at any time without notice. It is for informational purposes only and shall not be incorporated into any contract or other commitment. Splunk undertakes no obligation either to develop the features or functionality described or to include any such feature or functionality in a future release.

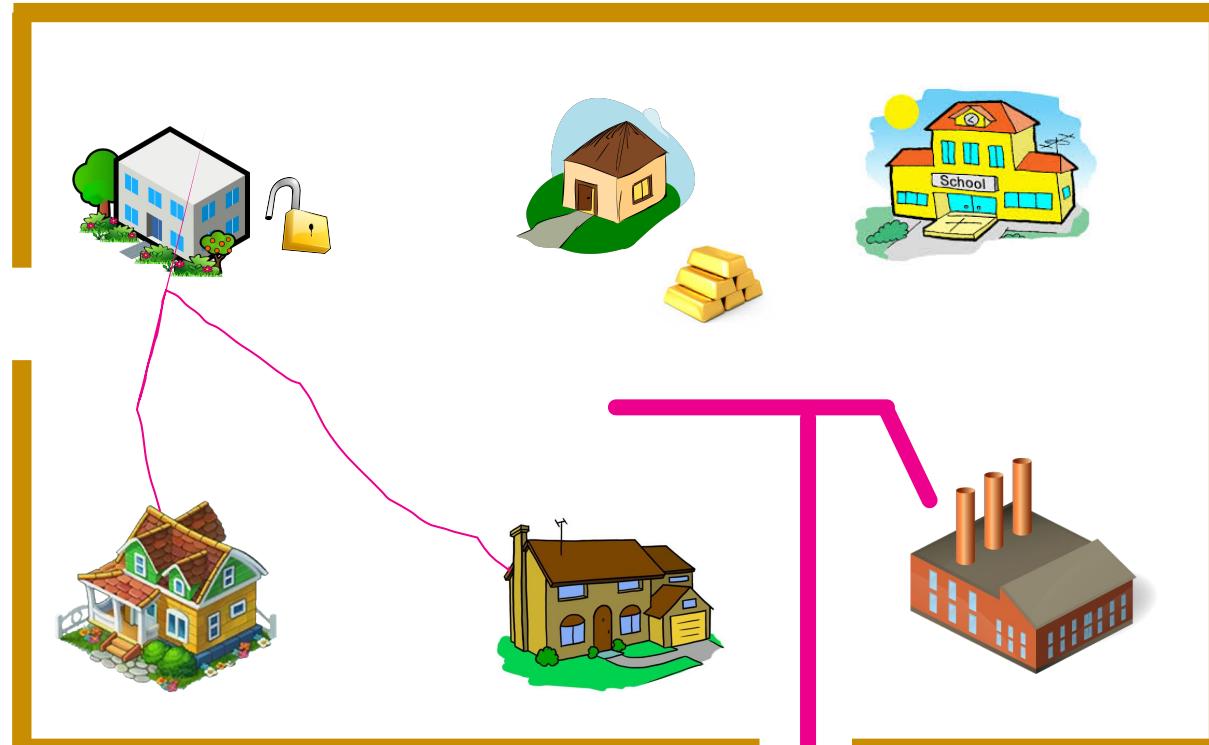
Splunk, Splunk>, Listen to Your Data, The Engine for Machine Data, Splunk Cloud, Splunk Light and SPL are trademarks and registered trademarks of Splunk Inc. in the United States and other countries. All other brand names, product names, or trademarks belong to their respective owners. © 2019 Splunk Inc. All rights reserved.

# Agenda

- ▶ The importance of network terrain
- ▶ The shifting terrain
- ▶ Splunk ES and RedSeal
- ▶ Summary
- ▶ Q&A

# Defending a City

## What do you need to know?



What is in the city?

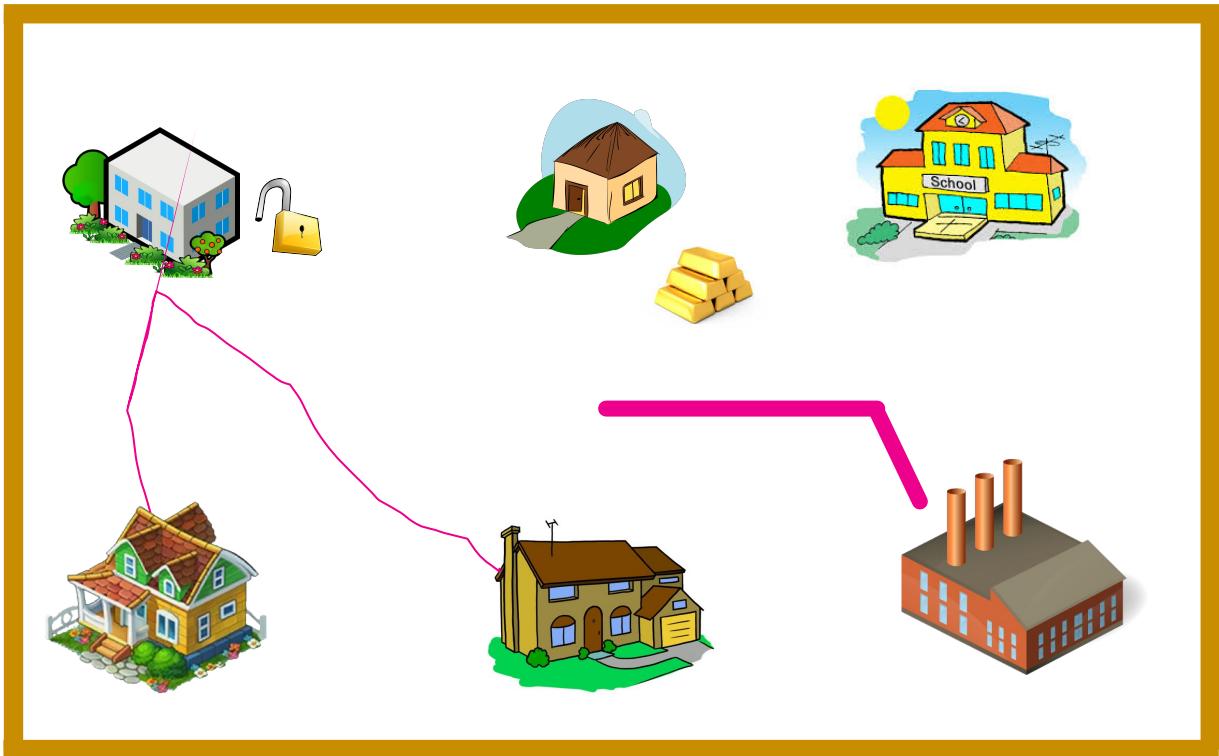
Where is the valuable stuff?

How would attacker get in?

How would the attacker move around?

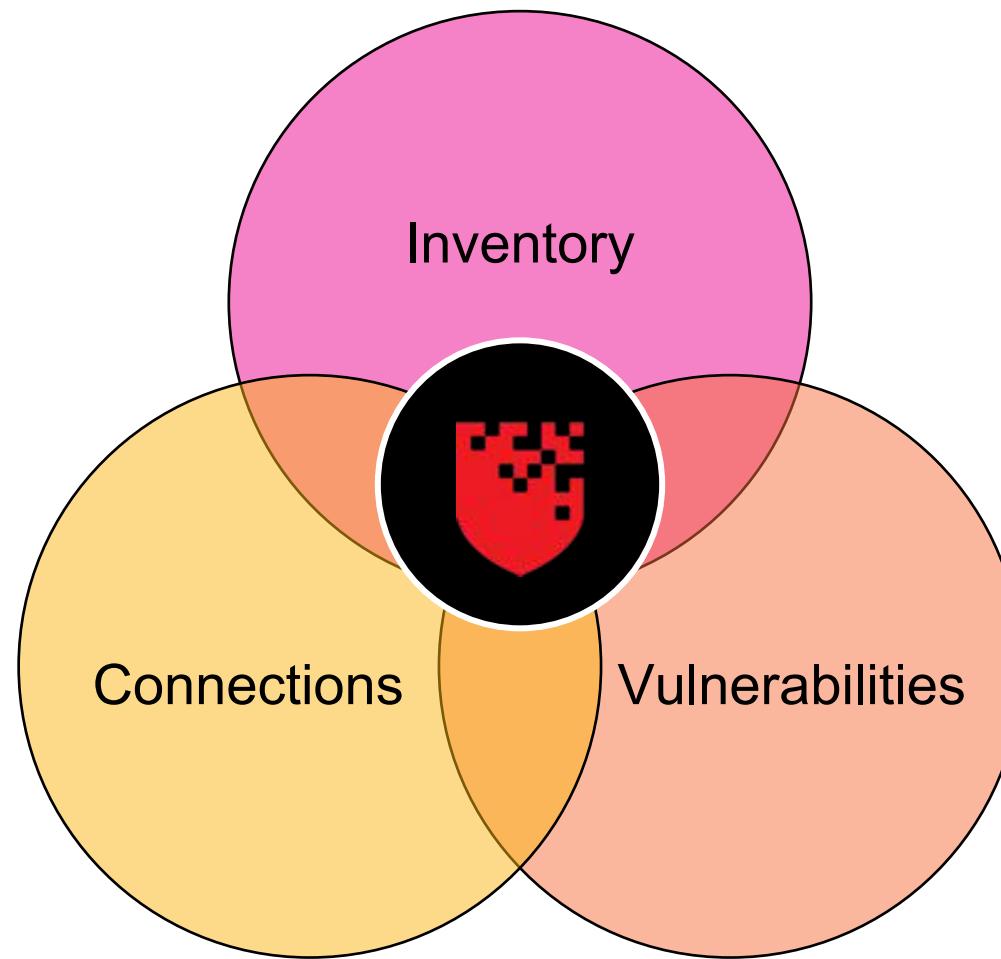
# How We Try to Identify Cyber Terrain Today...

- ▶ What is in the city?
  - Hosts, routers, switches, firewalls, etc.
  - CMDB
  - Vulnerability Scans
  - Endpoint Protection
- ▶ Where is the valuable stuff?
  - Data Discovery
  - Tagging
  - Tribal knowledge?
- ▶ How would an attacker get in?
  - Security Awareness
  - Pen Testing
- ▶ How would an attacker move around?
  - Traceroute, Ping
  - Live Traffic



# RedSeal Helps You Understand All Your Cyber Terrain

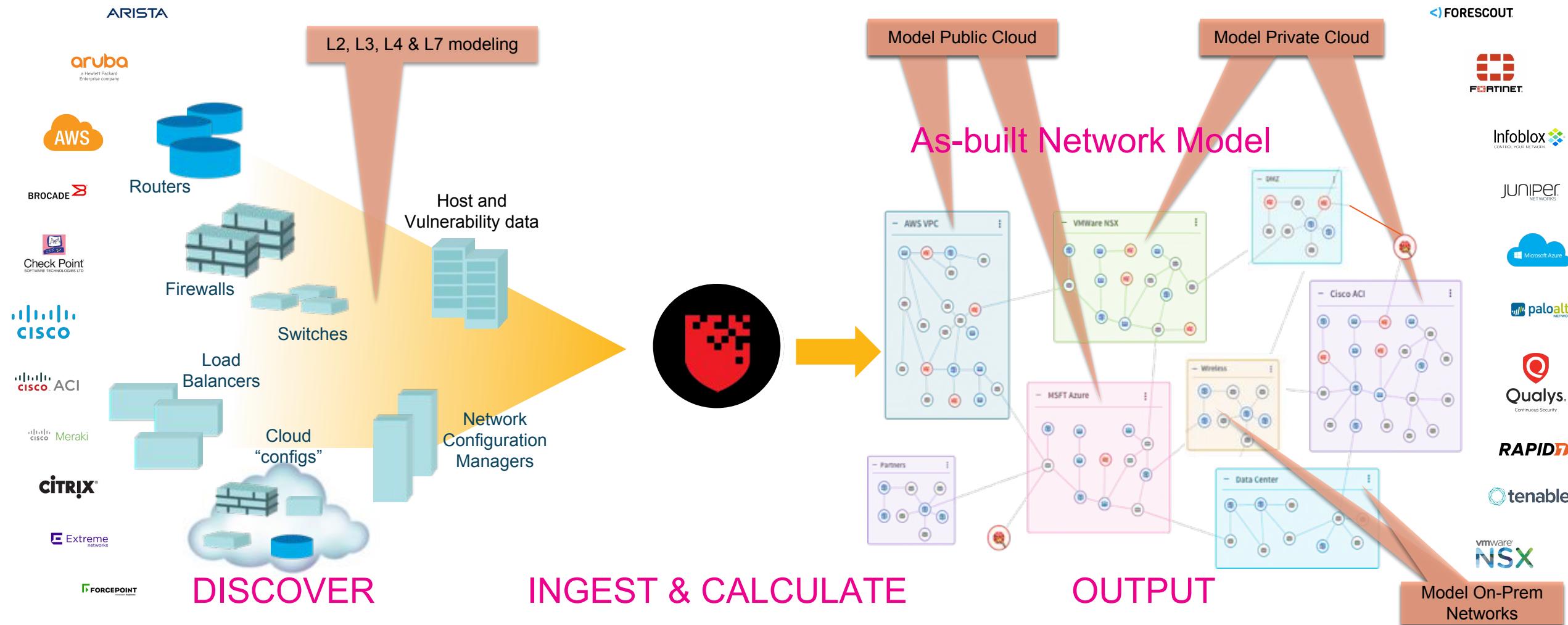
Across public cloud, SDN and physical environments



Knowing what you have and how it's all connected

# The Platform

Ingest Information to Create a Model



# The Shifting Terrain

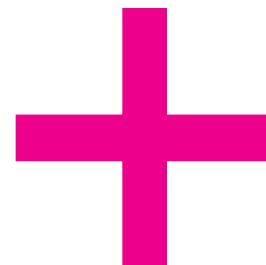
---

.conf19  
splunk>



# Why Is The Terrain Shifting?

- ✓ Software defined everything
- ✓ Digital transformation
- ✓ Hybrid datacenters
- ✓ Internet of things
- ✓ Shadow IT



## Skills Shortage

**82%**

of global IT leaders  
report significant labor  
shortages in  
cybersecurity

Source | April 2016  
TechCrunch CIO Report

# What Should Be One Integrated World ...



# Is Really a Complex Ecosystem

## Your Fabric



## Cloud & SDN



## Security Technologies



Network Engineers  
Access & Policy



Security Auditor  
Audit & Compliance



Security Engineers  
Prioritization & Speed

# With Serious Gaps

## Your Fabric



Separate Worlds

Incomplete Information



## Cloud & SDN



Too Many Interfaces



Security Technologies

# Splunk + RedSeal

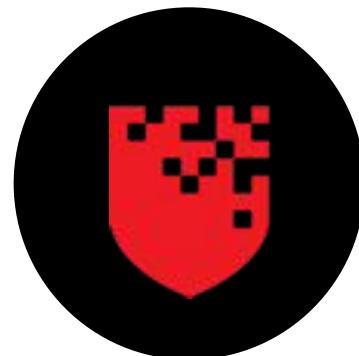
---

Minimizing the time to contain incidents



# Integration with RedSeal

Observe Point Products → Orient Analytics → Decision Making → Acting



Understand your network terrain

Valuable Threat Source Data

Where is it located?  
Both logically and physically?  
What other assets can it reach?  
What is the access path and the source to the target?

Accelerate Containment

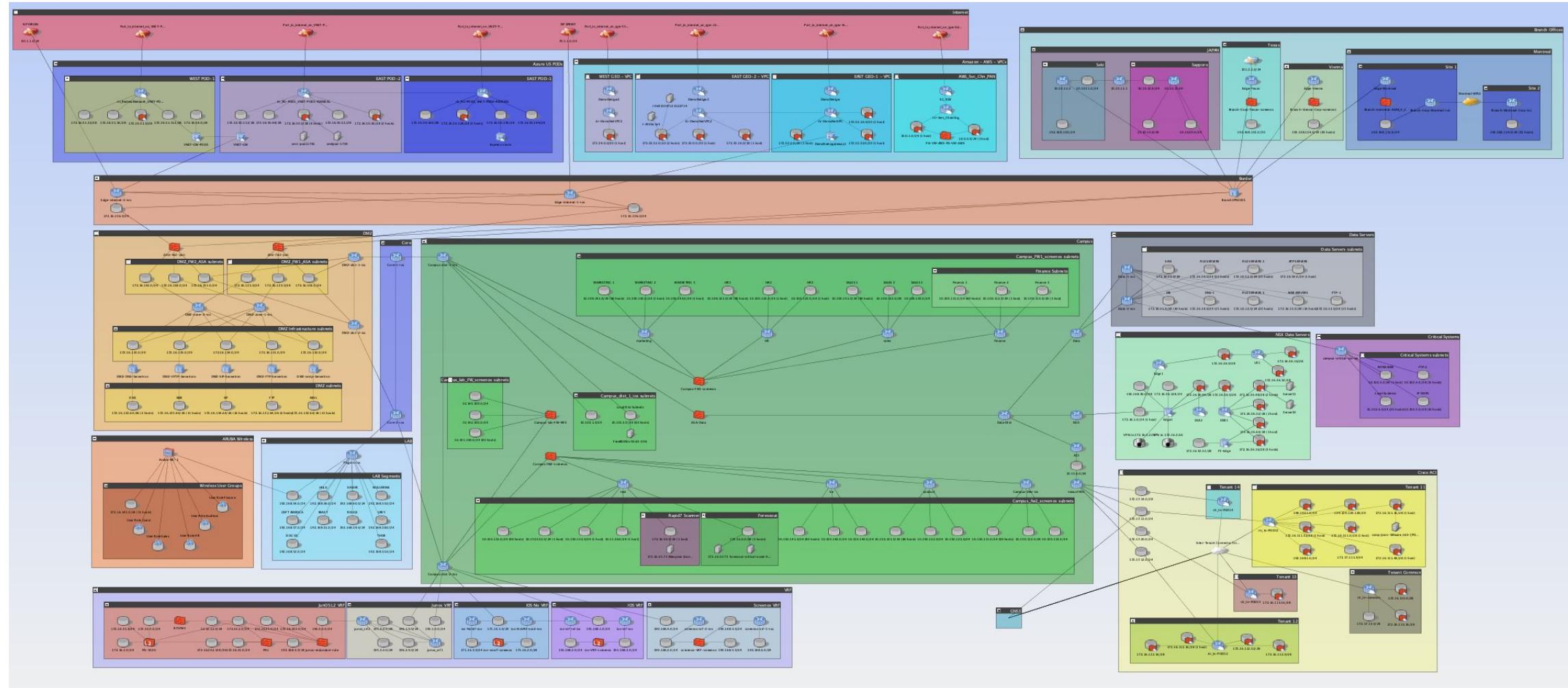
# Model & Understand Hybrid Environments

Bring all your assets into one place...



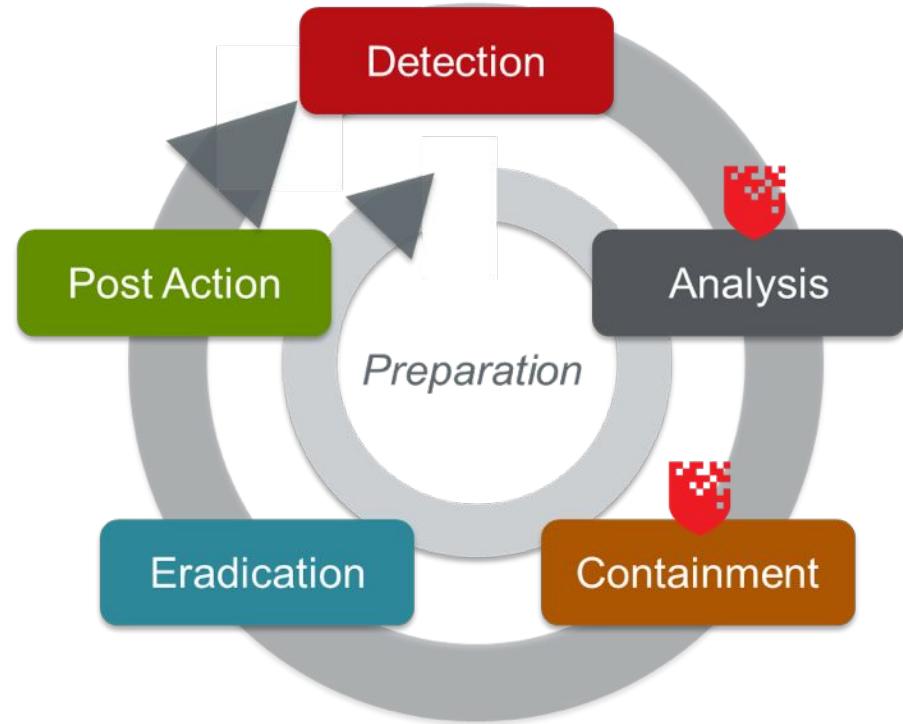
# Model & Understand Hybrid Environments

Bring all your assets into one place...



# Incident Investigation

A threat is detected, now what?

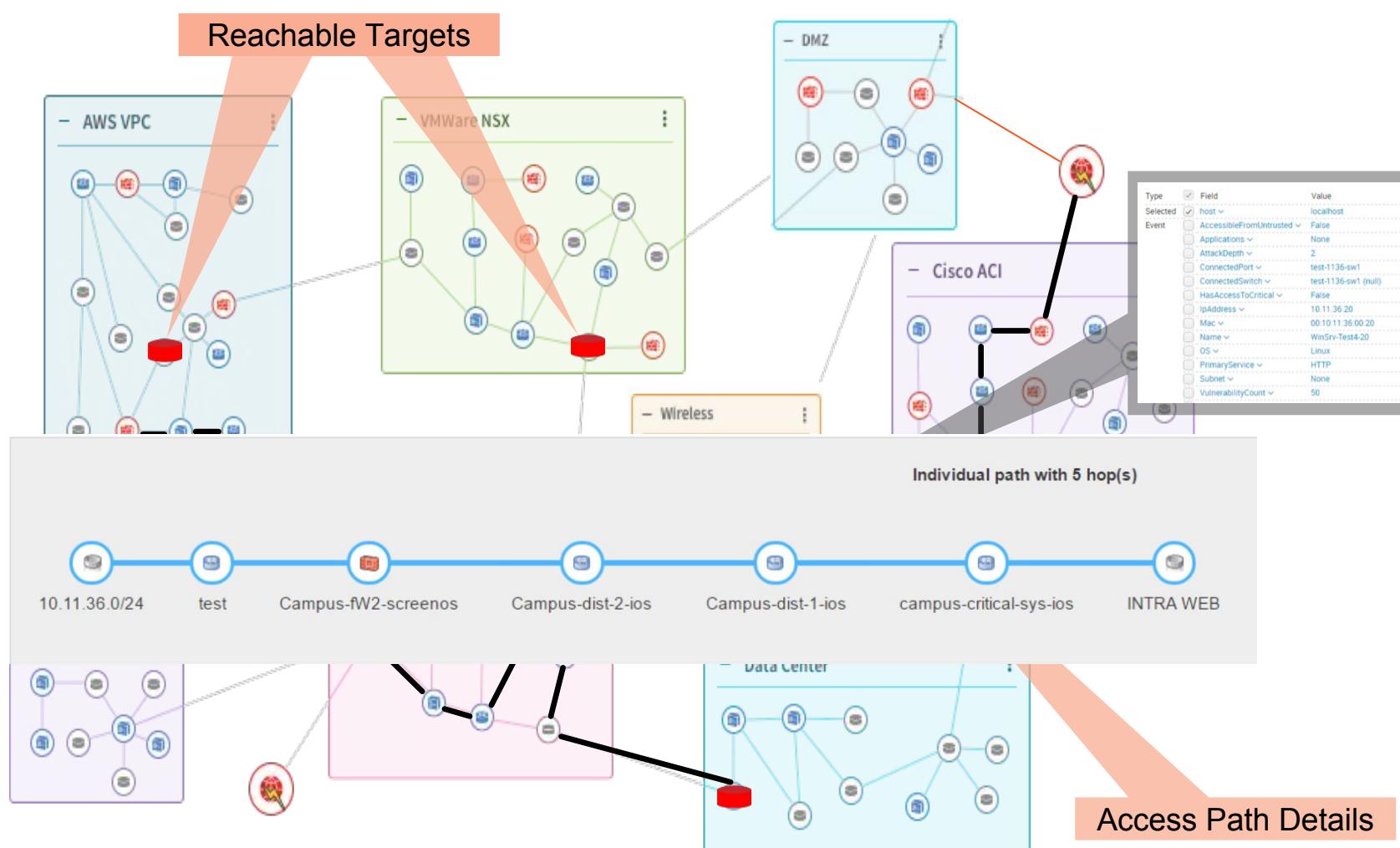


## ► Top 4 questions:

- What are the details of Threat Source?
- Where is it located? Both logically and physically?
- What other assets can it reach?
- What is the access path and the devices from Threat source to the destination target?

## ► Can you answer these questions within minutes?

# How does RedSeal Help?



1 Model and understand hybrid environments, compute access paths

2 Rapidly provide data on IoC – location, OS, services, switch port, etc.

3 Identify top reachable target groups

4 Details on access path and devices along the path

5 Identified all needed information to implement containment of IoC





**splunk> App: Enterprise Security**

Administrator **3** Messages Settings Activity Help Find

Security Posture Incident Review My Investigations Glass Tables Security Intelligence Security Domains Audit Search Configure Enterprise Security

## Incident Review

**Urgency**

|          |     |
|----------|-----|
| CRITICAL | 5   |
| HIGH     | 119 |
| MEDIUM   | 556 |
| LOW      | 0   |
| INFO     | 0   |

Status  Name

Owner  Search

Security Domain  Time

Tag

✓ 680 events (2/3/17 12:00:00.000 PM to 2/4/17 12:23:08.000 PM)

Format Timeline

1 hour per column

[Edit Selected](#) | [Edit All 680 Matching Events](#) | [Add Selected to Investigation](#)

| i | <input type="checkbox"/> | Time <input type="button" value="▼"/> | Security Domain <input type="button" value="▼"/> | Title <input type="button" value="▼"/>                               | Urgency <input type="button" value="▼"/>    | Status <input type="button" value="▼"/> | Owner <input type="button" value="▼"/> | Actions <input type="button" value="▼"/>  |
|---|--------------------------|---------------------------------------|--|--|---|---|--|---|
| v | <input type="checkbox"/> | 2/3/17 9:10:52.000 PM                 | Network  | Abnormally High Number of HTTP CONNECT Request Events By 10.11.36.20 | <span style="color: red;">⚠ Critical</span> | New                                     | unassigned                             | <input type="button" value="Add Event to Investigation"/> <input type="button" value="Create notable event"/> <input type="button" value="Build Event Type"/> <input type="button" value="Extract Fields"/> <input type="button" value="Run Adaptive Response Actions"/> <input type="button" value="Share Notable Event"/> <input type="button" value="Suppress Notable Events"/> <input type="button" value="Show Source"/> |

**Description:**  
A system (10.11.36.20) was detected as generating an abnormally high number of CONNECT request events.

**Additional Fields**

|                                | Value   |
|--------------------------------|---|
| HTTP Method                    | CONNECT   |
| Source                         | 10.11.36.20 <span style="background-color: red; border-radius: 50%; padding: 2px 4px;">240</span> |
| Source Business Unit           | americas  |
| Source Category                | pci   |
| Source City                    | splunk  |
| Source Country                 | Pleasanton  |
| Source IP Address              | USA   |
| Source Expected                | 10.11.36.20   |
| Source Latitude                | true  |
| Source Longitude               | 37.694452   |
| Source Owner                   | -121.894461   |
| Source PCI Domain              | Bill_williams   |
| Source Requires Antivirus      | trust   |
| Source Should Time Synchronize | false   |
| Source Should Update           | true  |

**Event Details:**

**Correlation Search:**  
[Web - Abnormally High Number of HTTP Method Events By Src - Rule](#)

**Action**

**History:**  
[View all review activity for this Notable Event](#)

**Contributing Events:**  
[View Web Activity on 10.11.36.20](#)

**Adaptive Responses:**

| Response      | Mode  | Time                     | User  | Status                                       |
|---------------|-------|--------------------------|-------|--|
| Notable       | saved | 2017-02-03T21:10:52-0800 | admin | <span style="color: green;">✓ success</span> |
| Risk Analysis | saved | 2017-02-03T21:10:52-0800 | admin | <span style="color: green;">✓ success</span> |

[View Adaptive Response Invocations](#)

**Next Steps:**

Adaptive Response Actions

**Adaptive Response Actions**

Select actions to run.

+ Add New Response Action

Category All

Show only recommended actions

- RedSeal : Display Source Details**  
View L2 and other details  
Category: Information Gathering | Task: scan | Subject: endpoint | Vendor: RedSeal
- RedSeal : List Top Reachable Groups**  
Reachable groups prioritized by network access risk  
Category: Information Gathering | Task: scan | Subject: endpoint | Vendor: RedSeal
- RedSeal : View Detailed Path**  
View access path details  
Category: Information Gathering | Task: scan | Subject: network | Vendor: RedSeal
- Stream Capture**  
Creates stream capture  
Category: Information Gathering | Task: create | Subject: network.capture | Vendor: Splunk
- Nbtstat**  
Runs the nbtstat command

**RedSeal Adaptive Response Actions**

Description:  
A system (10.11.36.20) was detected as generating an abnormally high number of CON

Additional Fields

| Value                               |
|-------------------------------------|
| CONNECT                             |
| Source 10.11.36.20 240              |
| Source Business Unit americas       |
| Source Category pci                 |
| Source City pleasanton              |
| Source Country USA                  |
| Source IP Address 10.11.36.20       |
| Source Expected true                |
| Source Latitude 37.694452           |
| Source Longitude -121.894461        |
| Source Owner Bill_williams          |
| Source PCI Domain trust             |
| Source Requires Antivirus false     |
| Source Should Time Synchronize true |
| Source Should Update true           |

Event Details:

Contributing Events:  
View Web Activity on 10.11.36.20

Adaptive Responses: **Notable** saved 2017-02-03T21:10:52-0800 admin ✓ success

Risk Analysis saved 2017-02-03T21:10:52-0800 admin ✓ success

View Adaptive Response Invocations

Next Steps:

Job ▾ Smart Mode ▾ 1 hour per column 180 100

00 AM Feb 4 6:00 AM

3 4 5 6 7 8 9 10 next »

Owner unassigned

splunk> .conf19

Splunk > App: Enterprise Security

Administrator 3 Messages Settings Activity Help Find

Security Posture Incident Review My Investigations Glass Tables Security Intelligence

Enterprise Security

## Incident Review

**Urgency**

|          |     |
|----------|-----|
| CRITICAL | 5   |
| HIGH     | 124 |
| MEDIUM   | 550 |
| LOW      | 0   |
| INFO     | 0   |

**Status**

|     |  |
|-----|--|
| All |  |
|-----|--|

**Name**

**Owner**

|     |  |
|-----|--|
| All |  |
|-----|--|

**Search**

**Security Domain**

|     |  |
|-----|--|
| All |  |
|-----|--|

**Time**

 Last 24 hours

**Tag**

**Submit**

[Edit Selected](#) | [Edit All 679 Matching Events](#) | [Add Selected to Investigation](#)

| i | <input type="checkbox"/> | Time                  | Security Domain | Actions                  |
|---|--------------------------|-----------------------|-----------------|--------------------------|
| v | <input type="checkbox"/> | 2/3/17 9:10:52.000 PM | Network         | <a href="#">C - Rule</a> |

**Description:**

A system (10.11.36.20) was detected as generating an abnormally high number of CON

**Additional Fields**

|                                | Value  |
|--------------------------------|--|
| HTTP Method                    | CONNECT  |
| Source                         | 10.11.36.20 <span style="border: 1px solid red; padding: 2px;">24</span> |
| Source Business Unit           | americas   |
| Source Category                | pci  |
| Source City                    | splunk   |
| Source Country                 | Pleasanton   |
| Source IP Address              | USA  |
| Source Expected                | 10.11.36.20  |
| Source Latitude                | true   |
| Source Longitude               | 37.694452  |
| Source Owner                   | -121.894461  |
| Source PCI Domain              | Bill_williams  |
| Source Requires Antivirus      | trust  |
| Source Should Time Synchronize | false  |
| Source Should Update           | true   |

**Event Details:**

**Adaptive Response Actions**

i ! "RedSeal : Display Source Details" has been dispatched. Check the status of the action in the notable event details.

i ! "RedSeal : List Top Reachable Groups" has been dispatched. Check the status of the action in the notable event details.

Select actions to run.

+ Add New Response Action

**Run**

| Response                         | Mode  | Time                     | User   | Status    |
|----------------------------------|-------|--------------------------|--------|-----------|
| RedSeal : Display Source Details | adhoc | 2017-02-04T12:24:02-0800 | system | ✓ success |
| Notable                          | saved | 2017-02-03T21:10:52-0800 | admin  | ✓ success |
| Risk Analysis                    | saved | 2017-02-03T21:10:52-0800 | admin  | ✓ success |

[View Adaptive Response Invocations](#)

**Next Steps:**

Job ▾ II Smart Mode ▾ 1 hour per column 180 100 6:00 AM 12:00 PM

« prev 1 2 3 4 5 6 7 8 9 10 next »

| Urgency  | Status | Owner      | Actions           |
|----------|--------|------------|-------------------|
| Critical | New    | unassigned | <a href="#">v</a> |

splunk > .conf19

Splunk > App: Enterprise Security

Administrator 3 Messages Settings Activity Help Find

Security Posture Incident Review My Investigations Glass Tables Security Intelligence Security Domains Audit Search Configure Enterprise Security

## Incident Review

**Urgency**

|          |     |
|----------|-----|
| CRITICAL | 5   |
| HIGH     | 124 |
| MEDIUM   | 550 |
| LOW      | 0   |
| INFO     | 0   |

**Status**

|       |                      |
|-------|----------------------|
| x All | <input type="text"/> |
|-------|----------------------|

**Owner**

|       |                      |
|-------|----------------------|
| x All | <input type="text"/> |
|-------|----------------------|

**Security Domain**

|       |               |
|-------|---------------|
| x All | Last 24 hours |
|-------|---------------|

**Tag**

**Submit**

✓ 679 events (2/3/17 1:00:00.000 PM to 2/4/17 1:30:54.000 PM)

Format Timeline ▾ Zoom Out + Zoom to Selection Deselect 1 hour per column

6:00 PM Fri Feb 3 2017 12:00 AM Sat Feb 4 2017 6:00 AM 12:00 PM

[Edit Selected](#) | [Edit All 679 Matching Events](#) | [Add Selected to Investigation](#)

| i | <input type="checkbox"/> | Time                  | Security Domain | Title  | Urgency  | Status | Owner      | Actions           |
|---|--------------------------|-----------------------|-----------------|--|----------|--------|------------|-------------------|
| v | <input type="checkbox"/> | 2/3/17 9:10:52.000 PM | Network         | Abnormally High Number of HTTP CONNECT Request Events By 10.11.36.20 | Critical | New    | unassigned | <a href="#">▼</a> |

**Description:**  
A system (10.11.36.20) was detected as generating an abnormally high number of CONNECT request events.

**Additional Fields**

|                                | Value  |
|--------------------------------|--|
| HTTP Method                    | CONNECT  |
| Source                         | 10.11.36.20 <span style="background-color: red; border: 1px solid red; padding: 2px;">240</span> |
| Source Business Unit           | americas   |
| Source Category                | pci  |
| Source City                    | Pleasanton   |
| Source Country                 | USA  |
| Source IP Address              | 10.11.36.20  |
| Source Expected                | true   |
| Source Latitude                | 37.694452  |
| Source Longitude               | -121.894461  |
| Source Owner                   | Bill_williams  |
| Source PCI Domain              | trust  |
| Source Requires Antivirus      | false  |
| Source Should Time Synchronize | true   |
| Source Should Update           | true   |

**Action**

**Correlation Search:**  
[Web - Abnormally High Number of HTTP Method Events By Src - Rule](#)

**History:**  
[View all review activity for this Notable Event](#)

**Contributing Events:**  
[View Web Activity on 10.11.36.20](#)

**Adaptive Responses:** ○

| Response                            | Mode  | Time                     | User   | Status    |
|-------------------------------------|-------|--------------------------|--------|-----------|
| RedSeal : List Top Reachable Groups | adhoc | 2017-02-04T13:43:32-0800 | system | ✓ success |
| RedSeal : Display Source Details    | adhoc | 2017-02-04T12:24:02-0800 | system | ✓ success |
| Notable                             | saved | 2017-02-03T21:10:52-0800 | admin  | ✓ success |
| Risk Analysis                       | saved | 2017-02-03T21:10:52-0800 | admin  | ✓ success |

**RedSeal AR Reports**

**Event Details:**

New Search

Save As &gt; Close

tag=modaction\_result orig\_sid=scheduler\_\_admin\_REEtRVNTLUS1dHdvcmQcm90ZWN0aW9u\_\_RMD55df51155da61e965\_at\_1486185000\_7294 orig\_rid=0 orig\_action\_name=get\_host\_metrics

Date time range &gt;



✓ 1 event (2/4/17 12:19:02.000 PM to 2/4/17 12:29:02.000 PM) No Event Sampling &gt;

Job &gt; II ⏪ ⏩ ⏴ ⏵ Smart Mode &gt;

Events (1) Patterns Statistics Visualization

Format Timeline &gt; - Zoom Out + Zoom to Selection × Deselect

1 minute per column

List &gt; Format &gt; 50 Per Page &gt;

| < Hide Fields   | ☰ All Fields | i Time                      | Event   |
|-----------------|--------------|-----------------------------|---|
|                 |              | > 2/4/17<br>12:24:04.000 PM | Name=WinSrv-Test4-20, PrimaryService=HTTP, OS=Linux, AttackDepth=2, VulnerabilityCount=50, AccessibleFromUntrusted=False, HasAccessToCritical=False, Applications=None, IpAddress=10.11.36.20, Subnet=None, Mac=00:10:11:36:00:20, ConnectedSwitch=test-1136-sw1 (null), ConnectedPort=test-1136-sw1 (null)<br>host = localhost |
| Selected Fields | a host       |                             |   |

## Interesting Fields

a AccessibleFromUntrusted 1

a Applications 1

# AttackDepth 1

a ConnectedPort 1

a ConnectedSwitch 1

a eventtype 3

a HasAccessToCritical 1

a index 1

a ipAddress 1

# linecount 1

a Mac 1

a Name 1

a orig\_action\_name 1

# orig\_rid 1

a orig\_sid 1

a OS 1

a PrimaryService 1

a source 1

a sourcetype 1

a splunk\_server 1

a Subnet 1

a tag 1

a tag:eventtype 1

a timestamp 1

  
Basic host details

splunk> App: Enterprise Security >

Administrator > 3 Messages > Settings > Activity > Help > Find

Security Posture Incident Review My Investigations Glass Tables Security Intelligence > Security Domains > Audit > Search > Configure >

Enterprise Security

New Search

Save As > Close

Date time range > 

tag=modaction\_result orig\_sid=scheduler\_\_admin\_REEtRVNTLU51dHdvcmtQcm90ZWN0aW9u\_\_RMD55df51155da61e965\_at\_1486185000\_7294 orig\_rid=0 orig\_action\_name=get\_host\_metrics

✓ 1 event (2/4/17 12:19:02.000 PM to 2/4/17 12:29:02.000 PM) No Event Sampling >

Job >    Smart Mode >

Events (1) Patterns Statistics Visualization

Format Timeline > - Zoom Out + Zoom to Selection × Deselect 1 minute per column

List > Format > 50 Per Page >

< Hide Fields  i Time Event

Selected Fields  
a host 1

Interesting Fields  
a AccessibleFromUntrusted 1  
a Applications 1  
# AttackDepth 1  
a ConnectedPort 1  
a ConnectedSwitch 1  
a eventtype 3  
a HasAccessToCritical 1  
a index 1  
a ipAddress 1  
# linecount 1  
a Mac 1  
a Name 1  
a orig\_action\_name 1  
# orig\_rid 1  
a orig\_sid 1  
a OS 1  
a PrimaryService 1  
a source 1  
a sourcetype 1  
a splunk\_server 1  
a Subnet 1  
a tag 1  
a tag:eventtype 1  
a timestamp 1  
# VulnerabilityCount 1

2/4/17 12:24:04.000 PM Name=WinSrv-Test4-20, PrimaryService=HTTP, OS=Linux, AttackDepth=2, VulnerabilityCount=50, AccessibleFromUntrusted=False, HasAccessToCritical=False, Applications=None, IpAddress=10.11.36.20, Subnet=None, Mac=00:10:11:36:00:20, ConnectedSwitch=test-1136-sw1 (null), ConnectedPort=test-1136-sw1 (null)

Event Actions >

| Type     | Field                   | Value  | Actions |
|----------|-------------------------|--|---------|
| Selected | host                    | localhost  | < >     |
| Event    | AccessibleFromUntrusted | False  | < >     |
|          | Applications            | None   | < >     |
|          | AttackDepth             | 2  | < >     |
|          | ConnectedPort           | test-1136-sw1  | < >     |
|          | ConnectedSwitch         | test-1136-sw1 (null)   | < >     |
|          | HasAccessToCritical     | False  | < >     |
|          | IpAddress               | 10.11.36.20  | < >     |
|          | Mac                     | 00:10:11:36:00:20  | < >     |
|          | Name                    | WinSrv-Test4-20  | < >     |
|          | OS                      | Linux  | < >     |
|          | PrimaryService          | HTTP   | < >     |
|          | Subnet                  | None   | < >     |
|          | VulnerabilityCount      | 50   | < >     |
|          | eventtype               | get_detailed_path_modaction_result ( modaction_result )<br>get_host_metrics_modaction_result ( modaction_result )<br>get_incident_response_modaction_result ( modaction_result )<br>get_host_metrics | < >     |
|          | orig_action_name        | 0  | < >     |
|          | orig_rid                |  | < >     |
|          | orig_sid                | scheduler__admin_REEtRVNTLU51dHdvcmtQcm90ZWN0aW9u__RMD55df51155da61e965_at_1486185000_7294   | < >     |
|          | tag                     | modaction_result   | < >     |
|          | timestamp               | none   | < >     |

Time \_time > 2017-02-04T12:24:04.000-08:00

Host Details:  
Attack Depth  
Port ,Switch,  
Access to Critical Assets

splunk> App: Enterprise Security >

Administrator > 3 Messages > Settings > Activity > Help > Find

Security Posture Incident Review My Investigations Glass Tables Security Intelligence > Security Domains > Audit > Search > Configure >

Enterprise Security

## New Search

Save As > Close

tag=modaction\_result orig\_sid=scheduler\_\_admin\_REEtRVNTLU51dHdvcmtQcm90ZWN0aW9u\_\_RMD55df51155da61e965\_at\_1486185000\_7294 orig\_rid=0 orig\_action\_name=get\_incident\_response Date time range >

✓ 1 event (2/4/17 1:38:32.000 PM to 2/4/17 1:48:32.000 PM) No Event Sampling >

Events (1) Patterns Statistics Visualization

Format Timeline > - Zoom Out + Zoom to Selection × Deselect 1 minute per column

|               | i          | Time                    | Event   |
|---------------|------------|-------------------------|---|
| < Hide Fields | All Fields | > 2/4/17 1:43:35.000 PM | Source=10.11.36.20 ReachableGroups="Critical Systems subnets (95),DMZ subnets (14),Data Servers subnets (10),NSX Data Servers (9),Wireless User Groups (7),Campus_dist_1_ios subnets (5),MPLS (5),Campus_FW1_scre...<br>nos_subnets (5) Finance Subnets (5) Campus_FW2_screens Subnets (0)" rsServer=pm-rsa-1 lab.redseal.net rsPort=443 rsUri=/redseal/a/incidentResponse/queryResult?source=10.11.36.20<br>ReachableGroups = Critical Systems subnets (95),DMZ subnets (14),Data Servers subnets (10),NSX Data Server...<br>Source = 10.11.36.20 host = localhost |

List > Format > 50 Per Page >

**Selected Fields**

- a host 1
- a ReachableGroups 1
- a Source 1

**Interesting Fields**

- a eventtype 4
- a index 1
- # linecount 1
- a orig\_action\_name 1
- # orig\_rid 1
- a orig\_sid 1
- # rsPort 1
- a rsServer 1
- a rsUri 1
- a source 1
- a sourcetype 1
- a splunk\_server 1
- a tag 2
- a tag:eventtype 2
- a timestamp 1

+ Extract New Fields

Reachable Groups from IoC

**splunk> App: Enterprise Security**

Administrator **3** Messages Settings Activity Help Find

Security Posture Incident Review My Investigations Glass Tables Security Intelligence Security Domains Audit Search Configure Enterprise Security

New Search

Save As Close

tag:modaction\_result orig\_sid:scheduler\_\_admin\_REEtRVNTLU5ldHdvcmtQcm90ZWN0aW9u\_\_RMD55df51155da61e965\_at\_1486185000\_7294 orig\_rid:0 orig\_action\_name:get\_incident\_response Date time range

✓ 1 event (2/4/17 1:38:32.000 PM to 2/4/17 1:48:32.000 PM) No Event Sampling Job II Smart Mode

Events (1) Patterns Statistics Visualization

Format Timeline - Zoom Out + Zoom to Selection Deselect 1 minute per column

List Format 50 Per Page

| Event    |                  |  |
|----------|------------------|--|
| Type     | Field            | Value  |
| Selected | ReachableGroups  | Critical Systems subnets (95),DMZ subnets (14),Data Servers subnets (10),NSX Data Servers (9),Wireless User Groups (7),Campus_dist_1_ios subnets (5),MPLS (5),Campus_FW1_screenos subnets (5),Finance Subnets (5),Campus_few2_screenos subnets (0) |
| Event    | Source           | 10.11.36.20  |
|          | host             | localhost  |
|          | eventtype        | get_detailed_path_modaction_result ( modaction_result )<br>get_host_metrics_modaction_result ( modaction_result )<br>get_incident_response_modaction_result ( modaction_result )<br>nix_errors ( error )   |
|          | orig_action_name | get_incident_response  |
|          | orig_rid         | 0  |
|          | orig_sid         | scheduler__admin_REEtRVNTLU5ldHdvcmtQcm90ZWN0aW9u__RMD55df51155da61e965_at_1486185000_7294   |
|          | rsPort           | 443  |
|          | rsServer         | pm-rsa-1.lab.redseal.net   |
|          | rsUri            | /redseal/a/incidentResponse/queryResult?source=10.11.36.20   |
|          | tag              | error  |
|          | modaction_result | modaction_result   |
|          | timestamp        | none   |
| Time     | _time            | 2017-02-04T13:43:35.000-08:00  |
| Default  | index            | main   |
|          | linecount        | 1  |
|          | source           | localhost  |
|          | sourcetype       | redseal_data   |
|          | splunk_server    | pm-splunk-1  |

**Reachable Groups**

Splunk > App: Enterprise Security >

Administrator 3 Messages > Settings > Activity > Help > Find

Security Posture Incident Review My Investigations Glass Tables Security Intelligence > Security Domains > Audit > Search > Configure >

Enterprise Security

## New Search

Save As > Close

tag:modaction\_result orig\_sid:scheduler\_\_admin\_REEtRVNTLU5ldHdvcmtQcm90ZWN0aW9u\_\_RMD55df51155da61e965\_at\_1486185000\_7294 orig\_rid=0 orig\_action\_name=get\_incident\_response Date time range <span></span>

✓ 1 event (2/4/17 1:38:32.000 PM to 2/4/17 1:48:32.000 PM) No Event Sampling >

Events (1) Patterns Statistics Visualization

Format Timeline > - Zoom Out + Zoom to Selection X Deselect 1 minute per column

List > Format > 50 Per Page >

< Hide Fields > All Fields > Time Event

Selected Fields:  
a host 1  
a ReachableGroups 1  
a Source 1

Interesting Fields:  
a eventtype 4  
a index 1  
# linecount 1  
a orig\_action\_name 1  
# orig\_rid 1  
a orig\_sid 1  
# rsPort 1  
a rsServer 1  
a rsUri 1  
a source 1  
a sourcetype 1  
a splunk\_server 1  
a tag 2  
a tag:instancetype 2  
a timestamp 1

+ Extract New Fields

Event Actions >

- Launch RedSeal
- Add Event to Investigation
- Create notable event
- Build Event Type
- Extract Fields
- View Adaptive Response Invocations
- View Adaptive Response Results
- Show Source

Value Actions

| orig_rid  | 0  |
|-----------|--|
| orig_sid  | scheduler__admin_REEtRVNTLU5ldHdvcmtQcm90ZWN0aW9u__RMD55df51155da61e965_at_1486185000_7294 |
| rsPort    | 443  |
| rsServer  | pm-rsa-1.lab.redseal.net   |
| rsUri     | /redseal/a/incidentResponse/queryResult?source=10.11.36.20                                 |
| tag       | error  |
| timestamp | modaction_result   |
| Time      | _time  |
| Default   | index  |

2/4/17 1:43:35.000 PM

Source=10.11.36.20 ReachableGroups="Critical Systems subnets (95),DMZ subnets (14),Data Servers subnets (10),NSX Data Servers (9),Wireless User Groups (7),Campus\_dist\_1\_ios subnets (5),MPLS (5),Campus\_FW1\_screens subnets (5),Finance Subnets (5),Campus\_fw2\_screens subnets (0)" rsServer=pm-rsa-1.lab.redseal.net rsPort=443 rsUri=/redseal/a/incidentResponse/queryResult?source=10.11.36.20

Launch RedSeal

**splunk > .conf19**

**REDSEAL**

Control Center Network Map Network Access Threats Vulnerabilities Configuration Issues Security Impact Detailed Path Incident Response

Find Threat Source 10.11.36.20

**IP of IoC**

**What is it?**

Name 10.11.36.20  
Operating System Linux  
Applications HTTPD, OpenSSH, rquotad, vsFTPD  
  
Groups  
Policy Groups Trusted  
Topology Groups  
Topology  
IP Address 10.11.36.20  
Subnet 10.11.36.0/24  
  
Layer 2 Location  
MAC Address 00:10:11:36:00:20  
Connected Switch test-1136-sw1 (null)  
Connected Port GigabitEthernet0/20

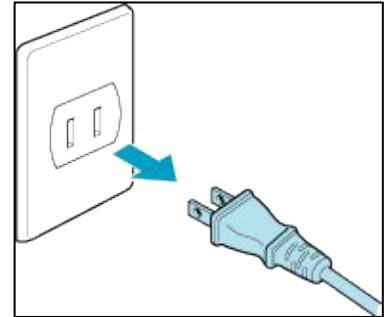
**Reachable Groups**

| Group                       | Value |
|-----------------------------|-------|
| Critical Systems subnets    | 95    |
| DMZ subnets                 | 14    |
| Data Servers subnets        | 10    |
| NSX Data Servers            | 9     |
| Wireless User Groups        | 7     |
| Campus_dist_1_ios subnets   | 5     |
| MPLS                        | 5     |
| Campus_FW1_screenos subnets | 5     |
| Finance Subnets             | 5     |
| Campus_fw2_screenos subnets | 0     |

**Reachable Targets**

**Reachable Target Overview**

**Where is it at?**



**REDSEAL**

Control Center Network Map Network Access Threats Vulnerabilities Configuration Issues Security Impact Detailed Path Incident Response 1

Find Threat Source 10.11.36.20

Where can they go?

Threat Source Overview

Host Information

- Name 10.11.36.20
- Operating System Linux
- Applications HTTPD, OpenSSH, rquotad, vsFTPD

Groups

- Policy Groups Trusted
- Campus\_fw2\_screenos subnets
- Topology Groups

Topology

- IP Address 10.11.36.20
- Subnet 10.11.36.0/24

Layer 2 Location

- MAC Address 00:10:11:36:00:20
- Connected Switch test-1136-sw1 (null)
- Connected Port GigabitEthernet0/20

Reachable Groups

| Group                       | Value |
|-----------------------------|-------|
| Critical Systems subnets    | 95    |
| DMZ subnets                 | 14    |
| Data Servers subnets        | 10    |
| NSX Data Servers            | 9     |
| Wireless User Groups        | 7     |
| Campus_dist_1_ios subnets   | 5     |
| MPLS                        | 5     |
| Campus_FW1_screenos subnets | 5     |
| Finance Subnets             | 5     |
| Campus_fw2_screenos subnets | 0     |

Reachable Targets

show 100 targets/page Page: 1

| Name                 | Value |
|----------------------|-------|
| crit-web-srv-70      | 100   |
| crit-sys-sql-srv-120 | 95    |
| crit-sys-sql-srv-119 | 95    |
| crit-sys-sql-srv-118 | 95    |
| crit-sys-sql-srv-117 | 95    |
| crit-sys-sql-srv-116 | 95    |
| crit-sys-sql-srv-115 | 95    |
| crit-sys-sql-srv-114 | 95    |
| crit-sys-sql-srv-113 | 95    |
| crit-sys-sql-srv-112 | 95    |
| crit-sys-sql-srv-111 | 95    |
| crit-sys-sql-srv-110 | 95    |
| crit-sys-sql-srv-109 | 95    |
| crit-sys-sql-srv-108 | 95    |
| crit-sys-sql-srv-107 | 95    |
| crit-sys-sql-srv-106 | 95    |
| crit-sys-sql-srv-105 | 95    |
| crit-sys-sql-srv-104 | 95    |
| crit-sys-sql-srv-103 | 95    |
| crit-sys-sql-srv-102 | 95    |
| crit-sys-sql-srv-101 | 95    |
| crit-sys-nfs-srv-120 | 95    |

Reachable Target Overview

**REDSEAL**

Control Center Network Map Network Access Threats Vulnerabilities Configuration Issues Security Impact Detailed Path Incident Response ?

Find Threat Source 10.11.36.20

**Where can they go?**

Selected Target: crit-web-srv-70 Detailed Path Set As Source

| Reachable Groups            |       | Reachable Targets    | Reachable Target Overview |
|-----------------------------|-------|----------------------|---------------------------|
| Group                       | Value | Name                 | Value                     |
| Critical Systems subnets    | 95    | crit-web-srv-70      | 100                       |
| DMZ subnets                 | 14    | crit-sys-sql-srv-120 | 95                        |
| Data Servers subnets        | 10    | crit-sys-sql-srv-119 | 95                        |
| NSX Data Servers            | 9     | crit-sys-sql-srv-118 | 95                        |
| Wireless User Groups        | 7     | crit-sys-sql-srv-117 | 95                        |
| Campus_dist_1_ios subnets   | 5     | crit-sys-sql-srv-116 | 95                        |
| MPLS                        | 5     | crit-sys-sql-srv-115 | 95                        |
| Campus_FW1_screenos subnets | 5     | crit-sys-sql-srv-114 | 95                        |
| Finance Subnets             | 5     | crit-sys-sql-srv-113 | 95                        |
| Campus_fw2_screenos subnets | 0     | crit-sys-sql-srv-112 | 95                        |
|                             |       | crit-sys-sql-srv-111 | 95                        |
|                             |       | crit-sys-sql-srv-110 | 95                        |
|                             |       | crit-sys-sql-srv-109 | 95                        |
|                             |       | crit-sys-sql-srv-108 | 95                        |
|                             |       | crit-sys-sql-srv-107 | 95                        |
|                             |       | crit-sys-sql-srv-106 | 95                        |
|                             |       | crit-sys-sql-srv-105 | 95                        |
|                             |       | crit-sys-sql-srv-104 | 95                        |
|                             |       | crit-sys-sql-srv-103 | 95                        |
|                             |       | crit-sys-sql-srv-102 | 95                        |
|                             |       | crit-sys-sql-srv-101 | 95                        |
|                             |       | crit-sys-nfs-srv-120 | 95                        |

RedSeal

Not Secure https://pm-rsa-1.lab.redseal.net/redseal/a/map/2c90030557546a1e015754780b7b18b7

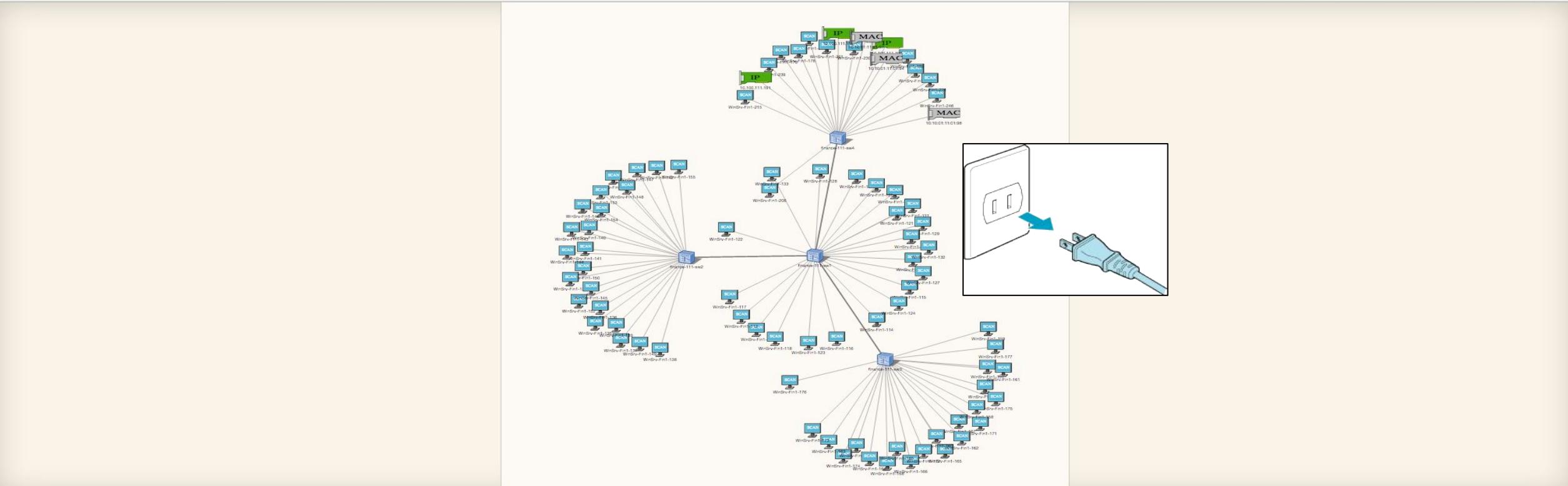
Apps IT Computer and P... Salesforce Blocking Factor -... Confluence JIRA-Systems Das... Pivotal Tracker Bugzilla TriNet Passport Basecamp Projects RedSeal Community RedSeal Support FSCOUNTACT boa... Part 1: QRadar Ris... Other Bookmarks

Launch Java App Help Logged in as: uadmin

# REDSEAL

Control Center Network Map Network Access Threats Vulnerabilities Configuration Issues Security Impact Detailed Path Incident Response ?

Layer 2 Network Map for subnet 10.100.111.0/24

Zoom: 57% 

| Switch          | Port                | Mode   | Peer            | Peer Interface  | Peer IP Address | Peer MAC Address  | Peer VLAN |
|-----------------|---------------------|--------|-----------------|-----------------|-----------------|-------------------|-----------|
| finance-111-sw3 | GigabitEthernet0/15 | access | WinSrv-Fin1-170 | WinSrv-Fin1-170 |                 | 10:10:01:11:01:70 | 10        |
| finance-111-sw4 | GigabitEthernet0/7  | access | WinSrv-Fin1-208 | WinSrv-Fin1-208 |                 | 10:10:01:11:02:08 | 10        |
| finance-111-sw1 | GigabitEthernet0/11 | access | WinSrv-Fin1-122 | WinSrv-Fin1-122 |                 | 10:10:01:11:01:22 | 10        |
| finance-111-sw4 | GigabitEthernet0/6  | access | WinSrv-Fin1-206 | WinSrv-Fin1-206 |                 | 10:10:01:11:02:06 | 10        |

**REDSEAL**

Control Center Network Map Network Access Threats Vulnerabilities Configuration Issues Security Impact Detailed Path Incident Response ?

Find Threat Source 10.11.36.20

Selected Target: crit-web-srv-70 Detailed Path Set As Source

### Threat Source Overview

**Host Information**

Name 10.11.36.20  
Operating System Linux  
Applications HTTPD, OpenSSH, rquotad, vsFTPD

**Groups**

Policy Groups Trusted  
Topology Groups Campus\_fw2\_screenos subnets

**Topology**

IP Address 10.11.36.20  
Subnet 10.11.36.0/24

**Layer 2 Location**

MAC Address 00:10:11:36:00:20  
Connected Switch test-1136-sw1 (null)  
Connected Port GigabitEthernet0/20

### Reachable Groups

| Group                       | Value |
|-----------------------------|-------|
| Critical Systems subnets    | 95    |
| DMZ subnets                 | 14    |
| Data Servers subnets        | 10    |
| NSX Data Servers            | 9     |
| Wireless User Groups        | 7     |
| Campus_dist_1_ios subnets   | 5     |
| MPLS                        | 5     |
| Campus_FW1_screenos subnets | 5     |
| Finance Subnets             | 5     |
| Campus_fw2_screenos subnets | 0     |

### Reachable Targets

show 100 targets/page Page: 1

| Name                 | Value |
|----------------------|-------|
| crit-web-srv-70      | 100   |
| crit-sys-sql-srv-120 | 95    |
| crit-sys-sql-srv-119 | 95    |
| crit-sys-sql-srv-118 | 95    |
| crit-sys-sql-srv-117 | 95    |
| crit-sys-sql-srv-116 | 95    |
| crit-sys-sql-srv-115 | 95    |
| crit-sys-sql-srv-114 | 95    |
| crit-sys-sql-srv-113 | 95    |
| crit-sys-sql-srv-112 | 95    |
| crit-sys-sql-srv-111 | 95    |
| crit-sys-sql-srv-110 | 95    |
| crit-sys-sql-srv-109 | 95    |
| crit-sys-sql-srv-108 | 95    |
| crit-sys-sql-srv-107 | 95    |
| crit-sys-sql-srv-106 | 95    |
| crit-sys-sql-srv-105 | 95    |
| crit-sys-sql-srv-104 | 95    |
| crit-sys-sql-srv-103 | 95    |
| crit-sys-sql-srv-102 | 95    |
| crit-sys-sql-srv-101 | 95    |
| crit-sys-nfs-srv-120 | 95    |

### Reachable Target Overview

**Host Information**

Name crit-web-srv-70  
Operating System Windows  
Applications SSL  
Value 100

**Groups**

Policy Groups Trusted  
Critical Systems subnets

**Topology**

IP Address 10.102.3.70  
Subnet INTRA WEB

**Layer 2 Location**

MAC Address 10:10:20:03:00:70  
Connected Switch campus-critical-3-sw1 (null)  
Connected Port GigabitEthernet0/1

Detailed Path Query

Sources:

x 10.11.36.20

Destinations:

x crit-web-svr-70

Protocols:

Type Protocols, Protocol Range

Ports:

Type Ports, Port Range

 Query Exhaustive Query

## DETAILED PATH RESULT Tools

Fully Open Path

1 Path(s) Discovered:

Row count: 1

Result

Not Filtered

5

10.11.36.0/24 (connected to test4)

10.102.3.0/24 INTRA WEB

Individual path with 5 hop(s)



How do they get there?

## Path Details

## Access Details

| Access | Device | Interface | VRF Table | Protocol | Source IP | Source Port | Destination IP | Destination Port |  |
|--------|--------|-----------|-----------|----------|-----------|-------------|----------------|------------------|--|
|--------|--------|-----------|-----------|----------|-----------|-------------|----------------|------------------|--|

Detailed Path Query

Sources:

10.11.36.20

A

Destinations:

crit-web-svr-70

B

Protocols:

Type Protocols, Protocol Range

Ports:

Type Ports, Port Range

Query

 Exhaustive Query

Individual path with 5 hop(s)



**Honeypot**

Internal Network → Firewall → Internet  
Honeypot → Firewall → Internet

**Network-based IDS System**

Attacker → Host 1 → Network Switch → Network-based IDS System

| Source Port | Destination IP | Destination Port |
|-------------|----------------|------------------|
| any         | 10.102.3.70    | any              |
| any         | 10.102.3.70    | any              |

## Filter/NAT Rules and Routes

Row count: 2

 Search 

| Device              | Type        | Config   | First Line |
|---------------------|-------------|--|------------|
| Campus-fW2-screenos | Filter Rule | set policy id 3 from "Test" to "dist" "Any" "Any" "Any" permit | config:111 |
| Campus-fW2-screenos | Filter Rule | (implicit) deny all  |            |

## Detailed Path Query

Sources:

10.11.36.20

 Exhaustive Query

## Hop Details: Campus-fW2-screenos

## Access Details

| Access | Device              | Source IP                  | Source Port | Destination IP | Destination Port |
|--------|---------------------|----------------------------|-------------|----------------|------------------|
| Input  | Campus-fW2-screenos | 10.150.103.1 (ethernet4)   | trust-vr    | any            | 10.11.36.20      |
| Output | Campus-fW2-screenos | 10.100.150.130 (ethernet1) | trust-vr    | any            | 10.102.3.70      |

## Filter/NAT Rules and Routes

Row count: 2

Search

| Device              | Type        | Config   | First Line |
|---------------------|-------------|--|------------|
| Campus-fW2-screenos | Filter Rule | set policy id 3 from "Test" to "dist" "Any" "Any" "Any" permit | config:111 |
| Campus-fW2-screenos | Filter Rule | (implicit) deny all  |            |

## Config File Viewer: config

```
111 set policy id 3 from "Test" to "dist" "Any" "Any" "Any" permit
112 exit
113 set policy id 4 from "KE" to "dist" "Any" "Any" "Any" permit
114 exit
115 set policy id 5 from "dist" to "Dev" "Any" "Any" "Any" deny
116 exit
117 set policy id 6 from "dist" to "Product" "Any" "ANY" "Any" deny
118 exit
119 set policy id 7 from "dist" to "Test" "Any" "10.11.36.0/24" "Any" permit
120 exit
121 set policy id 8 from "dist" to "KE" "Any" "Any" "Any" deny
122 exit
123 set policy id 9 from "dist" to "Test" "Any" "172.16.30.0/24" "Any" permit
124 exit
125 set policy id 10 from "dist" to "Test" "Any" "172.16.0.0/24" "Any" permit
```



Export

OK

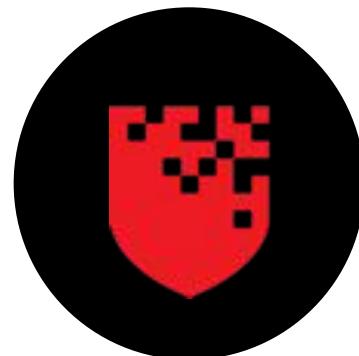
Ports:

Type Ports, Port Range

Query

# Integration with RedSeal

Observe Point Products → Orient Analytics → Decision Making → Acting



Understand your network terrain

Valuable Threat Source Data

Where is it located?  
Both logically and physically?  
What other assets can it reach?  
What is the access path and the source to the target?

Accelerate Containment

.conf19

splunk>

Thank  
You!

Go to the .conf19 mobile app to  
**RATE THIS  
SESSION**