



The bridge to possible

# Modern On-premises Observability for Self-hosted Applications

AppDynamics Virtual Appliance

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BRKAPP-2036

CISCO *Live!*

#CiscoLive

# Cisco Webex App

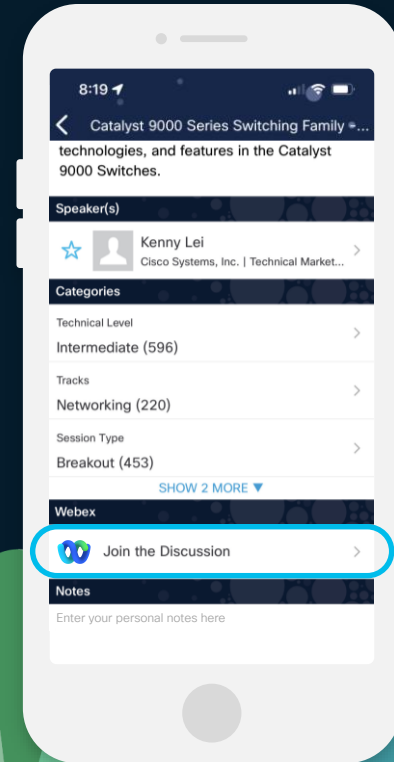
## Questions?

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

## How

- 1 Find this session in the Cisco Live Mobile 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 June 7, 2024.





# Agenda

- Why an Appliance?
  - Purpose
  - Benefits
- What is an Appliance?
  - Goals
  - Concepts
- How did we build it?
  - Design
  - Deployment
- Conclusion
  - Key Takeaways
  - Q&A

# Cisco Full-Stack Observability portfolio

## Full-Stack Observability use cases

*GenAI Powered Unified Observability Experience*

### Splunk IT Service Intelligence

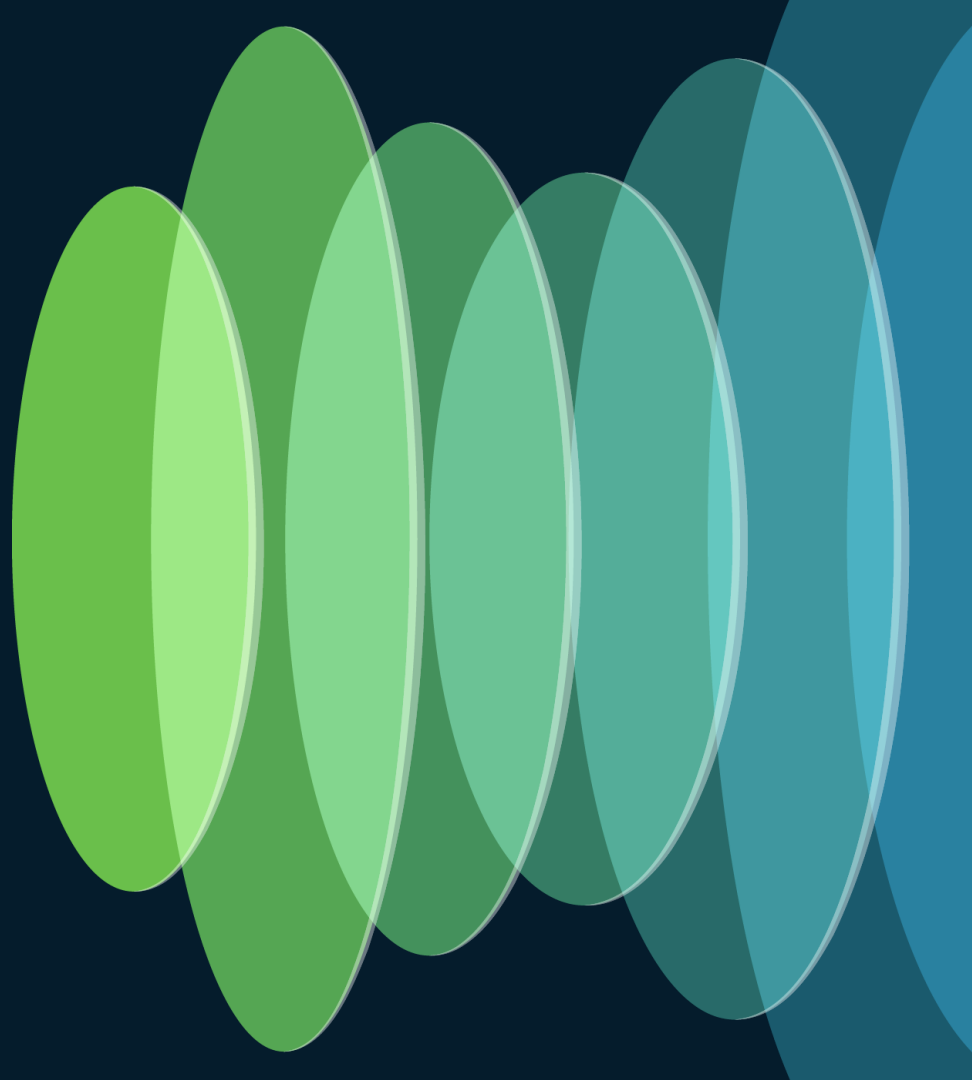
Business Service Monitoring, Event Aggregation, AIOps

AppDynamics SaaS | On-Premises

Splunk Observability Cloud

Splunk Enterprise | Splunk Cloud

# AppDynamics On-Premises



# Need for “on-premises” deployments



Sensitive data restrictions may limit SaaS observability for the workload

Data residency restrictions

Air-gapped requirements

Observe workloads in Regions where a SaaS observability instance is not present

“On-prem” deployments are evolving to **self-hosted** in cloud

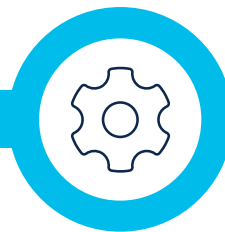
# Pain points for self-hosted offerings



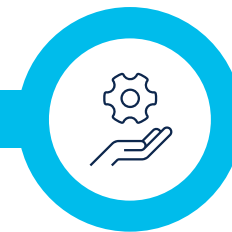
Managing  
infrastructure  
and associated  
overhead



Scalability  
of self-hosted  
platform



Operational  
complexity of  
maintaining  
binaries/artifacts  
and lifecycle



Parity with  
capabilities in  
SaaS offerings  
and new  
technologies

“

Cisco modernizes  
On-Premises Observability  
with a new self-hosted  
Virtual Appliance package





# AppDynamics Virtual Appliance: Highlights



## Modern Deployment and Packaging Flexibility

Scale up/down infrastructure

Modern foundation for supporting multiple packaging formats

Faster time-to-value, support new services



## AI and Security Services

Cisco Secure Application and Anomaly Detection

Application security with business risk observability

AI-powered anomaly detection and root cause analysis



## SAP Monitoring

Build resiliency into your SAP landscape

Improve application performance, business process performance, and security related issues





## Flex Licensing

Choice of SaaS and on-premises

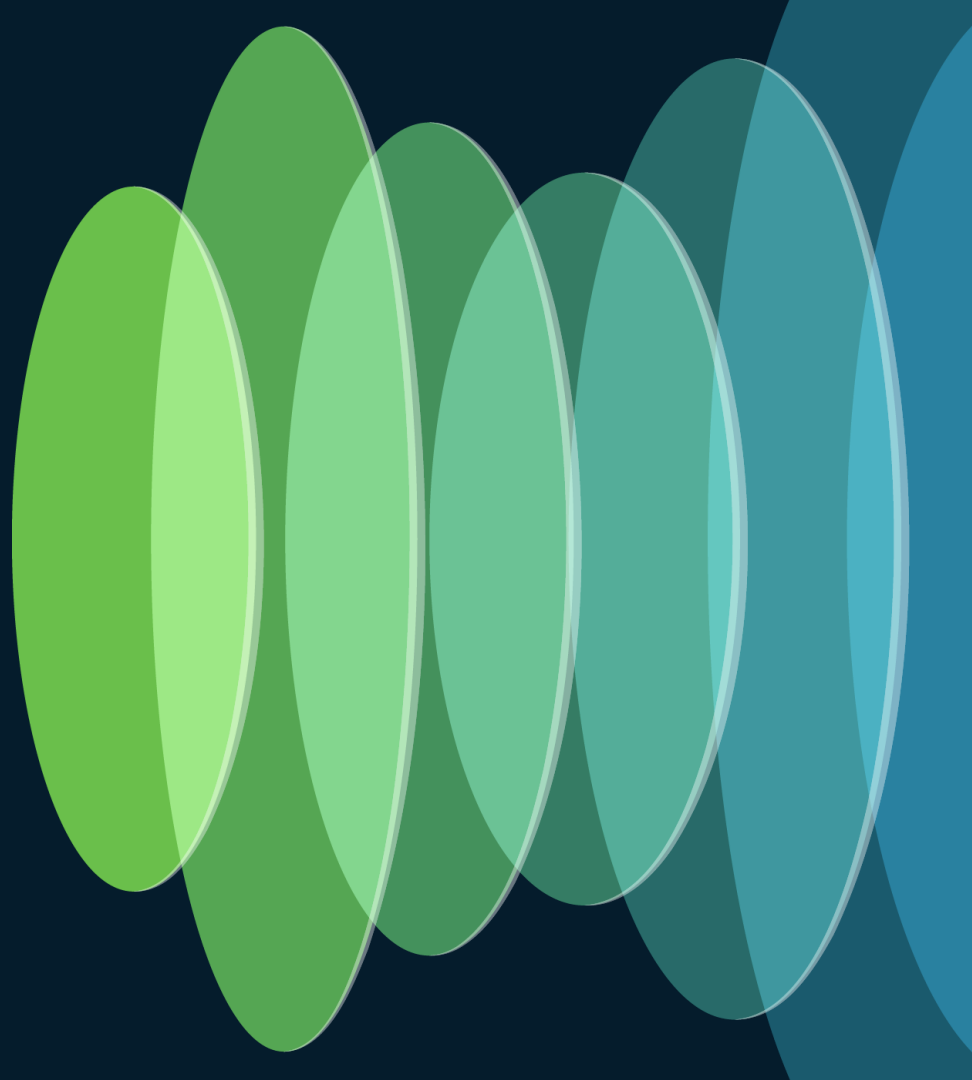
Value shift from on-premises to SaaS with flexible entitlements

# Observability: Self-Hosted or SaaS?

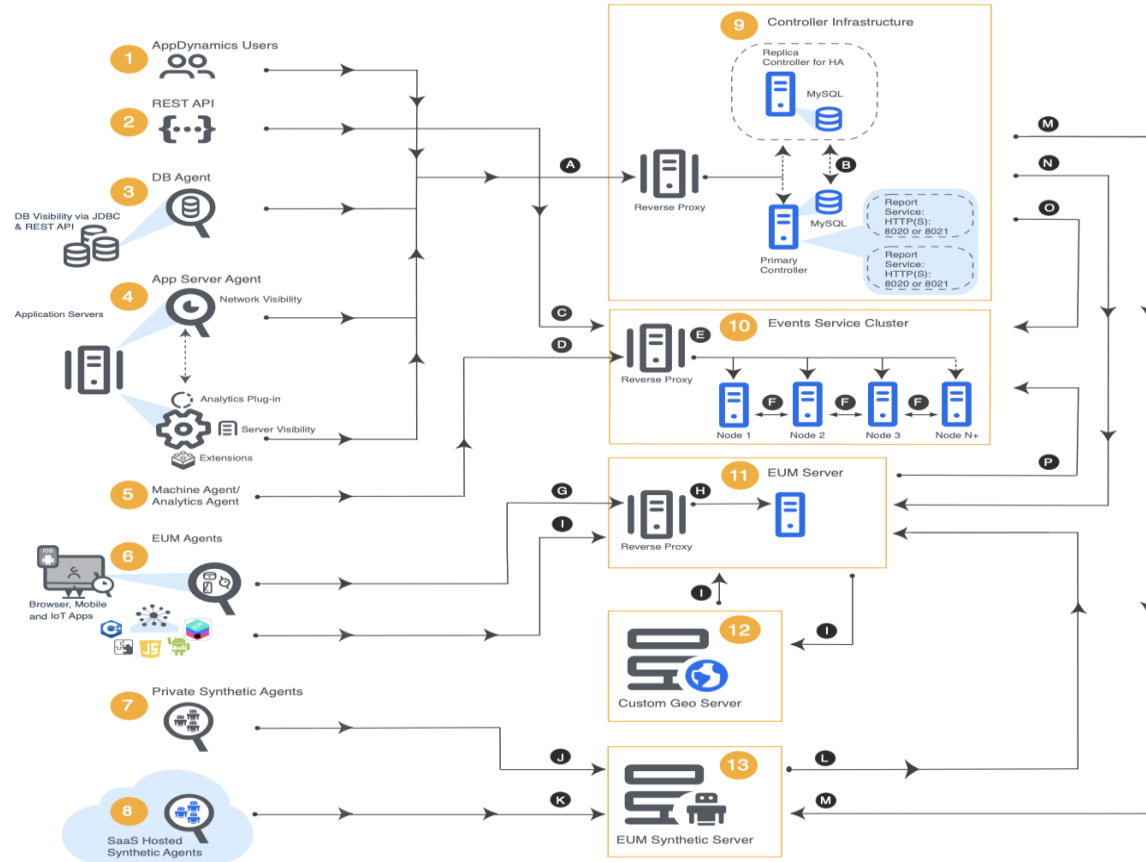
	Self-Hosted	SaaS
Management	Customer-managed. Available as OVA, AMI*, VHD* and KVM* packages	Cisco-managed (agents managed by customer)
Suitable for monitoring	Regulated workloads or highly protected environments	All others
 Business Risk Observability	Available now (requires virtual appliance)	Available today
 Anomaly detection / Root Cause Analysis	Available now (requires virtual appliance)	Available today
OpenTelemetry	Roadmap	Available today
Disaster Recovery	Customer-managed	Roadmap
ThousandEyes integration	Partial (dashboards available)	Available today
Agent Management via Smart Agent	Available today	Available today
LLM monitoring	No	Available today

\* Generally available by July 2024

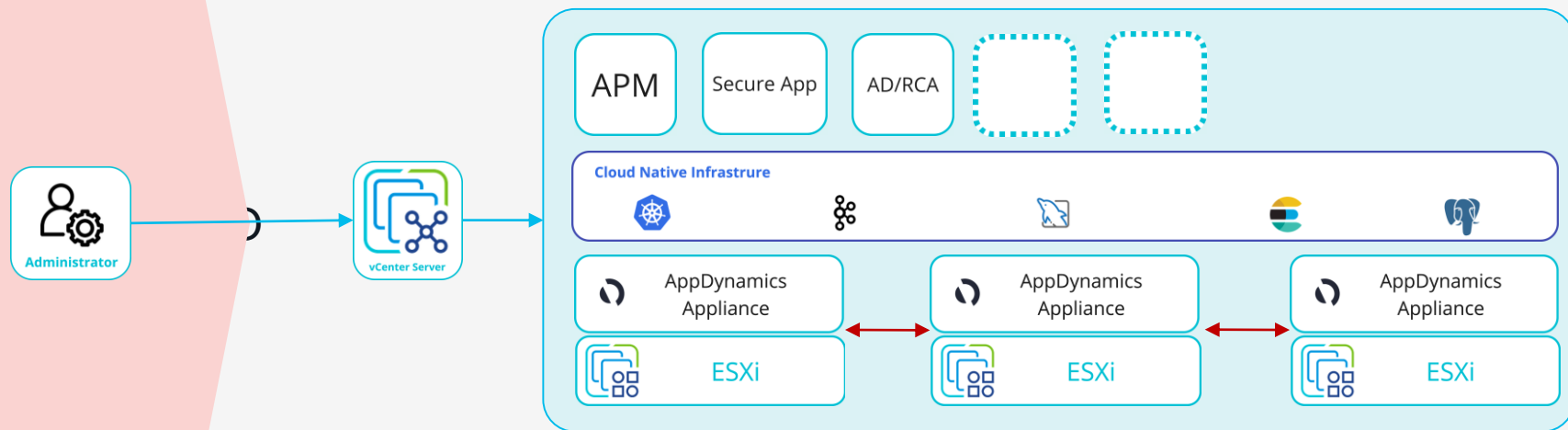
# Virtual Appliance Deep dive



# AppDynamics On-Prem Deployment



# AppDynamics Virtual Appliance Deployment



# Inside the AppDynamics Virtual Appliance

## Small Profile

- 16 vCPUs
- 64 GB RAM
- 500 GB Disk

## Medium Profile

- 32 vCPUs
- 128 GB RAM
- 3 TB Disk

Applications

Infra Services

MicroK8S

Cisco Secure Linux



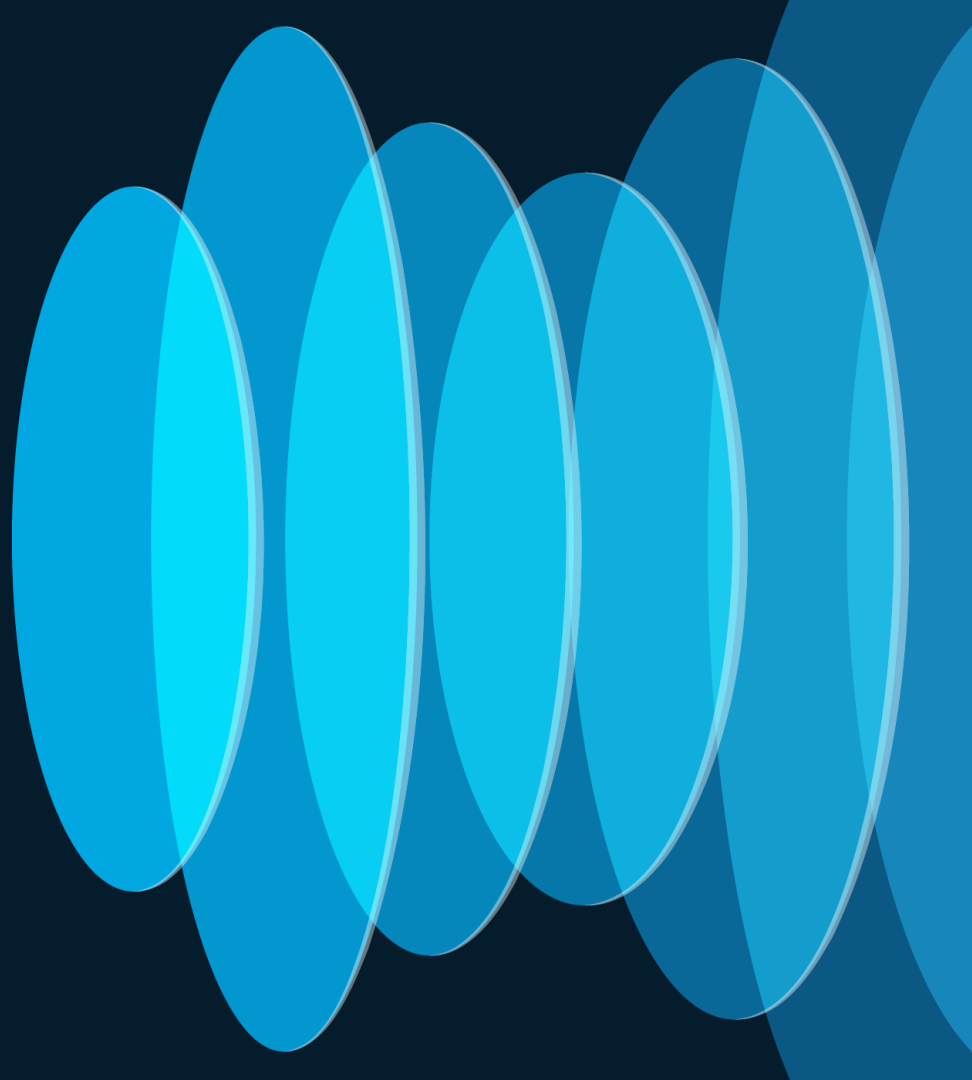
AppDynamics  
Appliance



# Before you build the cluster

- VMWare Version: 7.x or higher
- Anti-affinity: Ensure each VM is on a separate ESX
- NTP: enable on all hypervisors
- Network latency: < 100ms
- Network throughput: > 1gbps
- Disk performance: SSD or better
- Capacity: Do not oversubscribe the CPU/RAM

# Appliance Demo





## Deploy OVF Template

### 1 Select an OVF template

#### 2 Select a name and folder

#### 3 Select a compute resource

#### 4 Review details

#### 5 Select storage

#### 6 Ready to complete

## Select an OVF template



Select an OVF template from remote URL or local file system

Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.

☒ URL

<http://10.0.202.120:8001/ova/appd-va-24.4.0-481.ova>

☐ Local file

UPLOAD FILES

No files selected.

CANCEL

NEXT

## Deploy OVF Template

1 Select an OVF template

2 **Select a name and folder**

3 Select a compute resource

4 Review details

5 Select storage

6 Ready to complete

### Select a name and folder




Specify a unique name and target location

Virtual machine name:

Select a location for the virtual machine.

▼

 10.0.202.100

>

 appd-sjc1

CANCEL

BACK

NEXT

## Deploy OVF Template

1 Select an OVF template

2 Select a name and folder

3 Select a compute resource

4 Review details

5 Select storage

6 Ready to complete

## Select a compute resource



Select the destination compute resource for this operation

▼ appd-sjcl

> aiops-lab-cluster

> 10.0.202.11

> 10.0.202.13

> 10.0.202.15

> 10.0.202.17

> 10.0.202.19

> 10.0.202.21

> 10.0.202.23

> 10.0.202.25

> 10.0.202.27

> 10.0.202.29

> 10.0.202.31

> 10.0.202.33

> 10.0.202.35

> 10.0.202.37

> 10.0.202.39

> 10.0.202.7

> 10.0.202.9

### Compatibility

✓ Compatibility checks succeeded.

CANCEL

BACK

NEXT

## Deploy OVF Template

- 1 Select an OVF template
- 2 Select a name and folder
- 3 Select a compute resource
- 4 Review details**
- 5 License agreements
- 6 Configuration
- 7 Select storage
- 8 Select networks
- 9 Customize template
- 10 Ready to complete

## Review details



Verify the template details.

The OVF package contains advanced configuration options, which might pose a security risk. Review the advanced configuration options below. Click next to accept the advanced configuration options.

Publisher	No certificate present
Download size	13.2 GB
Size on disk	3.3 GB (thin provisioned) Unknown (thick provisioned)
Advanced configuration	virtualhw.productcompatibility = hosted nvram = appos-file1.nvram

CANCEL

BACK

NEXT

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### License agreements



The end-user license agreement must be accepted.  
Read and accept the terms for the license agreement.

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By accessing the Software herein, you (and the organization you represent) ("You") acknowledge and agree that the use of the Software and open source software are governed by (1) the General Terms found at [https://www.cisco.com/c/dam/en\\_us/about/doing\\_business/legal/Cisco\\_General\\_Terms.pdf](https://www.cisco.com/c/dam/en_us/about/doing_business/legal/Cisco_General_Terms.pdf) and the applicable Product Specific Terms found at <https://www.cisco.com/c/en/us/about/legal/cloud-and-software/software-terms.html> or (2) any other superseding agreement between AppDynamics, or its parent company Cisco Systems, Inc., as applicable, and You. References to End User in any superseding agreement shall mean You.

☒ I accept all license agreements.

CANCEL

BACK

NEXT

## Deploy OVF Template

1 Select an OVF template

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## Configuration



Select a deployment configuration

☒ Small

☐ Medium

### Description

Capacity: 16 vCPUs, 64 GB RAM,  
and 500 GB Disk.

2 Items

CANCEL

BACK

NEXT

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- 1 Select an OVF template
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- 10 Ready to complete

## Select storage



Select the storage for the configuration and disk files

☐ Encrypt this virtual machine (Requires Key Management Server)

Select virtual disk format

Thick Provision Lazy Zeroed

VM Storage Policy

Datastore Default

☐ Disable Storage DRS for this virtual machine

	Name	Storage Compatibility	Capacity	Provisioned	Free	Type	Cluster
<input type="radio"/>	datastore1 (...)	--	95.5 GB	1.41 GB	94.09 GB	VMFS 6	
<input type="radio"/>	hdd1 (9)	--	2.18 TB	530.71 GB	1.66 TB	VMFS 6	
<input type="radio"/>	hdd2 (9)	--	2.18 TB	1.44 GB	2.18 TB	VMFS 6	
<input type="radio"/>	hdd3 (9)	--	2.18 TB	1.44 GB	2.18 TB	VMFS 6	
<input type="radio"/>	hdd4 (7)	--	2.18 TB	1.44 GB	2.18 TB	VMFS 6	
<input checked="" type="radio"/>	nvme1 (8)	--	1.46 TB	2.11 TB	1.09 TB	VMFS 6	
<input type="radio"/>	ssd1 (9)	--	223.5 GB	1.41 GB	222.09 GB	VMFS 6	
<input type="radio"/>	ssd2 (8)	--	893 GB	1.42 GB	891.58 GB	VMFS 6	

Items per page 10 8 items

### Compatibility

✓ Compatibility checks succeeded.

CANCEL

BACK

NEXT

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- 10 Ready to complete

## Select networks



Select a destination network for each source network.

Source Network	Destination Network
bridged	VM-NET
1 item	

### IP Allocation Settings

IP allocation: Static - Manual

IP protocol: IPv4

CANCEL

BACK

NEXT



## Deploy OVF Template

1 Select an OVF template

2 Select a name and folder

3 Select a compute resource

4 Review details

5 License agreements

6 Configuration

7 Select storage

8 Select networks

9 Customize template

10 Ready to complete

## Customize template



Customize the deployment properties of this software solution.

Resource Configuration	1 settings
1. Data Disk Size (GB)	Data disk size (min 500GB, max 1536GB (1.5TB)) <input type="text" value="500"/>
Host Configuration	5 settings
1. Host Name	Enter Hostname Ex: appd-controller1 <input type="text" value="zod-1"/>
2. Host IP and subnet	Enter Host IP/subnet Ex: 192.168.1.100/24 <input type="text" value="10.0.202.140/24"/>
3. Default Gateway IP	Enter Default Gateway IP. Ex: 192.168.1.1 <input type="text" value="10.0.202.1"/>
4. DNS IP	Enter DNS IP. Ex: 8.8.8.8 <input type="text" value="10.148.16.101"/>
6. Domain Name	Enter Domain Name. Ex: example.com <input type="text" value="appd.local"/>

CANCEL

BACK

NEXT

## Deploy OVF Template

1 Select an OVF template

2 Select a name and folder

3 Select a compute resource

4 Review details

5 License agreements

6 Configuration

7 Select storage

8 Select networks

9 Customize template

10 Ready to complete

## Ready to complete

Review your selections before finishing the wizard

### ▼ Select a name and folder

Name	zod
Template name	appd-va-24.4.0-481
Folder	appd-sjc1

### ▼ Select a compute resource

Resource	10.0.202.25
----------	-------------

### ▼ Review details

Download size	13.2 GB
---------------	---------

### ▼ Select storage

Size on disk	Unknown
Storage mapping	1
All disks	Datastore: nvme1 (8); Format: Thick provision lazy zeroed

### ▼ Select networks

Network mapping	1
bridged	VM-NET
IP allocation settings	
IP protocol	IPv4
IP allocation	Static - Manual

### ▼ Customize template

Properties	1. Data Disk Size (GB) = 500
	1. Host Name = zod-1
	2. Host IP and subnet = 10.0.202.140/24
	3. Default Gateway IP = 10.0.202.1
	4. DNS IP = 10.148.16.101
	6. Domain Name = appd.local

CANCEL

BACK

FINISH

zod

ACTIONS

Summary

Monitor

Configure

Permissions

Datastores

Networks

Snapshots

Updates

Settings

VM SDRS Rules

VApp Options

Alarm Definitions

Scheduled Tasks

Policies

Guest User Mappings

vApp Options are enabled

EDIT...

IP Allocation

> Authoring

> Deployment

Properties

ADD

EDIT

SET VALUE

DELETE

	Key	Label	Value	Default Value	Category	Type
	dataDiskSizeMedium	1. Data Disk Size (GB)		3072	Resource Configuration	int(3072..6144)
	com.cisco.appdos.domain_name	6. Domain Name	appd.local		Host Configuration	string
	com.cisco.appdos.dns_ip	4. DNS IP	10.148.16.101		Host Configuration	string(2..45)
	com.cisco.appdos.host_name	1. Host Name	zod-1		Host Configuration	string(4..49)
	com.cisco.appdos.host_ip	2. Host IP and subnet	10.0.202.140/24		Host Configuration	string(4..49)
	com.cisco.appdos.gw_ip	3. Default Gateway IP	10.0.202.1		Host Configuration	string(2..45)
	dataDiskSizeSmall	1. Data Disk Size (GB)	500	500	Resource Configuration	int(500..1536)

## Edit vApp Options | ursa



☒ Enable vApp options

IP Allocation

**OVF Details**

Details

### OVF environment transport

☐ ISO image 

☒ VMware Tools 

### Installation boot

☐ Enable

Delay (s)  

CANCEL

OK

ravi in rc-dev1 in ~ via 🐉 v3.10.12 (mkdocs) took 32m40s

> ssh appduser@10.0.202.142

Warning: Permanently added '10.0.202.142' (ECDSA) to the list of known hosts.

appduser@10.0.202.142's password:

Last login: Fri May 31 19:32:18 2024

WARNING: Your password has expired.

You must change your password now and login again!

Changing password for appduser.

Current password:

New password:

Retype new password:

passwd: password updated successfully

Connection to 10.0.202.142 closed.

ravi in rc-dev1 in ~ via 🐉 v3.10.12 (mkdocs) took 18s

>

ravi in rc-dev1 in ~ via 🐉 v3.10.12 (mkdocs) took 17s

> ssh appduser@10.0.202.140

Warning: Permanently added '10.0.202.140' (ECDSA) to the list of known hosts.

appduser@10.0.202.140's password:

Last login: Fri May 31 19:40:23 2024 from 10.0.202.5

appduser@zod-1:~\$ appdctl show boot

NAME	STATUS	ERROR
netplan	Succeeded	--
reset-first-boot-password	Succeeded	--
storage-setup	Succeeded	--
cert-setup	Succeeded	--
enable-time-sync	Succeeded	--
firewall-setup	Succeeded	--
hostname	Succeeded	--
microk8s-setup	Succeeded	--
ssh-setup	Succeeded	--

appduser@zod-1:~\$

```

appduser@zod-1:~$ appdctl show cluster
  NODE          |  ROLE  |  RUNNING
-----+-----+-----
  127.0.0.1:19001 | voter | true
appduser@zod-1:~$
appduser@zod-1:~$ appdctl cluster init
Error: need two peers to init cluster
appduser@zod-1:~$ appdctl cluster init 10.0.20
appduser@zod-1:~$ appdctl cluster init 10.0.202.141 10.0.202.142
Copying ID: /home/appduser/.ssh/id_rsa.pub to: appduser@10.0.202.141
The authenticity of host '10.0.202.141 (10.0.202.141)' can't be established.
ECDSA key fingerprint is SHA256:wFPDuK/ehbDvJ//KZyV4LLLl4+LHEcucGB664lfhu3k.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
appduser@10.0.202.141's password:
Copied ID: /home/appduser/.ssh/id_rsa.pub to: appduser@10.0.202.141
Fetching host info: appduser@10.0.202.141:/var/appd-os/host-info.yaml
Copied host info from: appduser@10.0.202.141:/var/appd-os/host-info.yaml to: 10.0.202.141.yaml
Copying ID: /home/appduser/.ssh/id_rsa.pub to: appduser@10.0.202.142
The authenticity of host '10.0.202.142 (10.0.202.142)' can't be established.
ECDSA key fingerprint is SHA256:wFPDuK/ehbDvJ//KZyV4LLLl4+LHEcucGB664lfhu3k.
This host key is known by the following other names/addresses:
  ~/.ssh/known_hosts:1: 10.0.202.141
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
appduser@10.0.202.142's password:

```

# Anomaly Detection and Root Cause Analysis

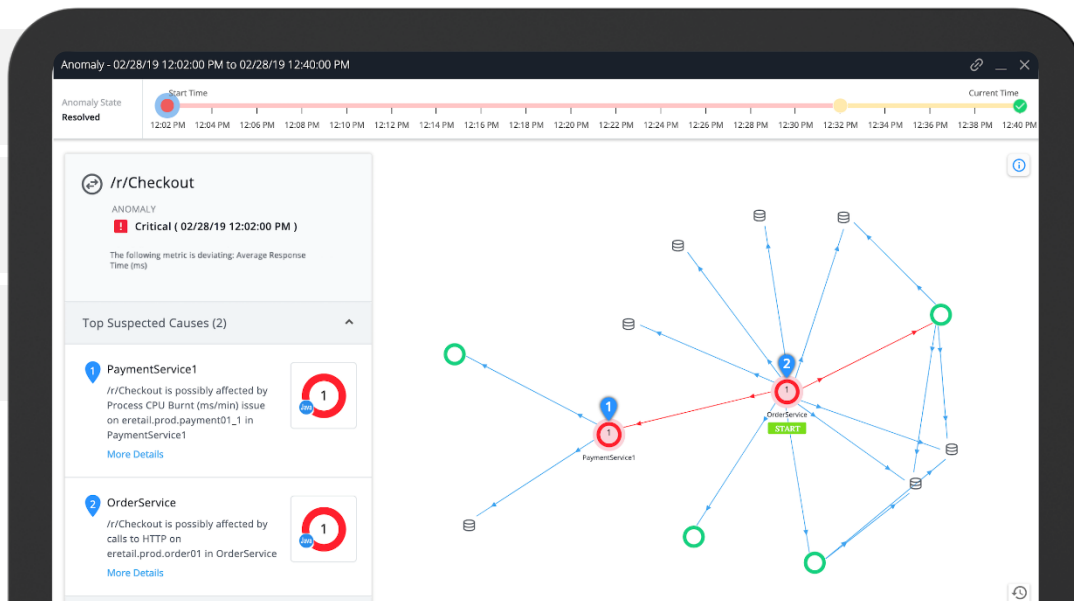
## For Application Performance Monitoring



### Anomaly Detection and Root Cause Analysis for Business Transactions

- Automatically detect issues within an application
- Drill down to identify top suspected causes
- Inspect relevant snapshots to troubleshoot further

**Example:** Automatically detected issue in BT:Checkout, identified suspected causes as PaymentService, and OrderService, and relevant transaction snapshots available for inspection





# Business Risk Observability

## Full-Stack Observability



Provide business context needed to rapidly assess risk and align teams based on potential impact



### Business Context Mapping

Mapping vulnerabilities and attacks to common transactions provides the business context to help you quickly understand the location and impact of threats.



### Vulnerability and Threat Intelligence

Threat intelligence feeds from multiple yet complementary sources provide the threat context to understand the likelihood of exploits.



### Business Risk Score

Scoring composited from analysis of runtime behavior + business impact + intelligence provides complete business risk context to instantly assess and prioritize action across ITOps and Security teams.

+

=

# Cisco Secure Application

## Business risk observability now available with AppDynamics Virtual Appliance



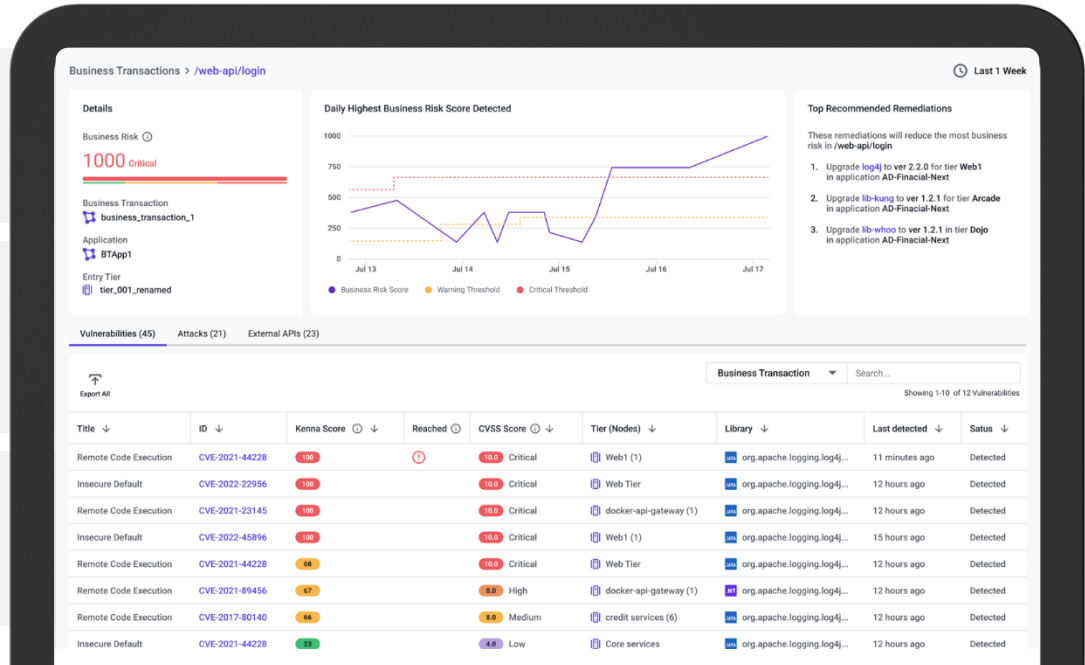
Locate how and where an attack occurs with business transaction mapping from VA



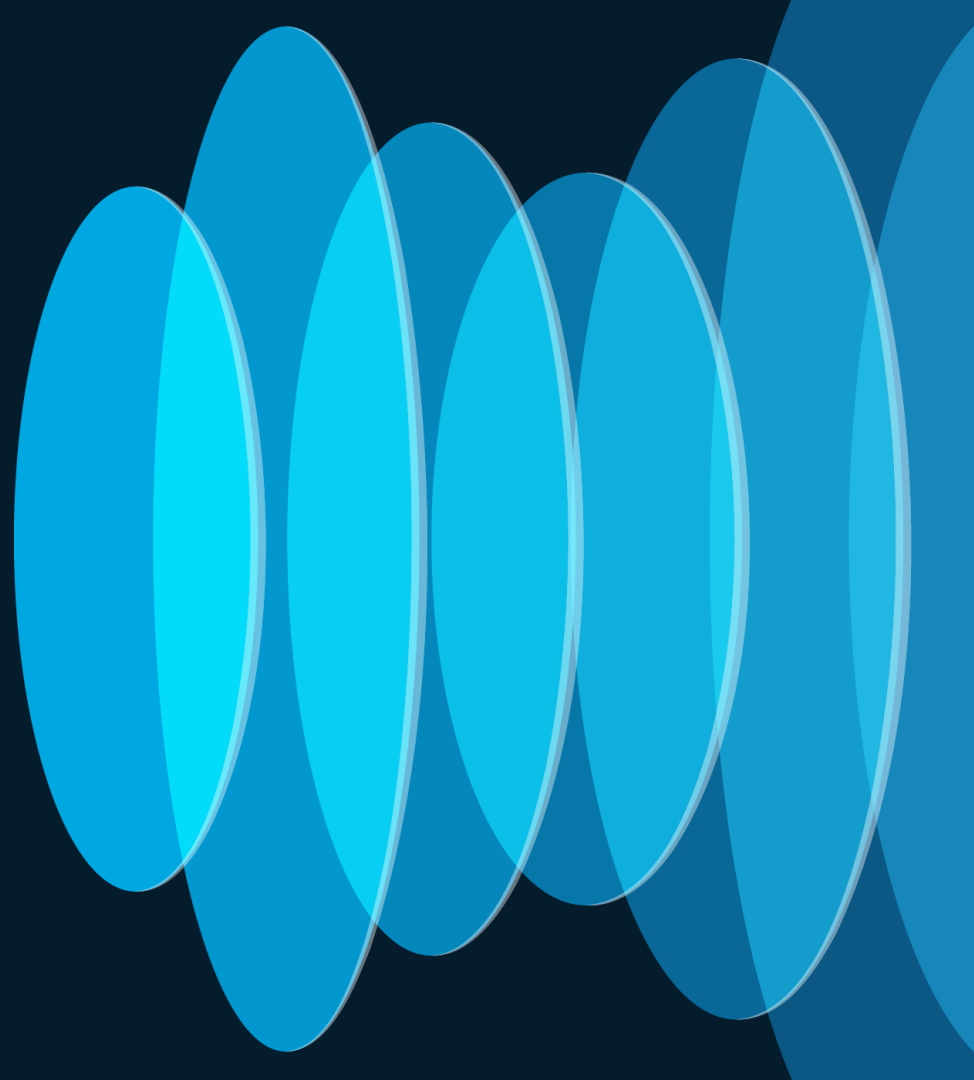
Leverage proprietary security intelligence from Cisco Talos, Cisco Vulnerability Management (Kenna) to quickly uncover your current security posture



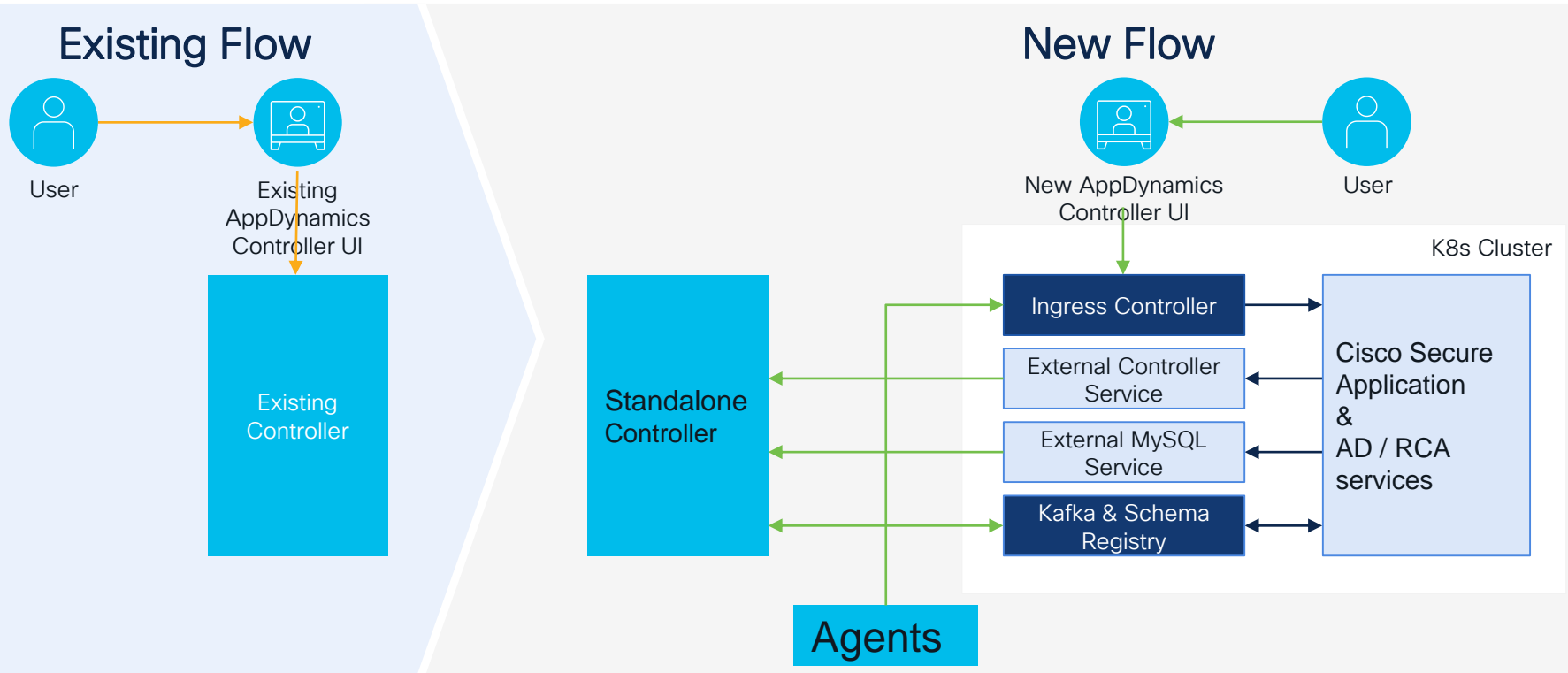
Updated feed support for self-hosted environments supporting Java and .NET



# UI Cluster Demo

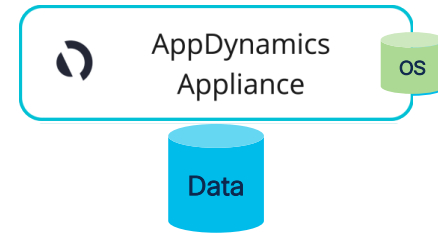


# Virtual Appliance – with Existing Deployments



# Appliance Upgrade Workflow

- Stop microk8s on all VMs
- Run the backup command
- Stop all the VMs and rename
- Bring up new VMs and form the cluster
- Attach the data disks to the new VMs
- Run the restore command
- Start all the services



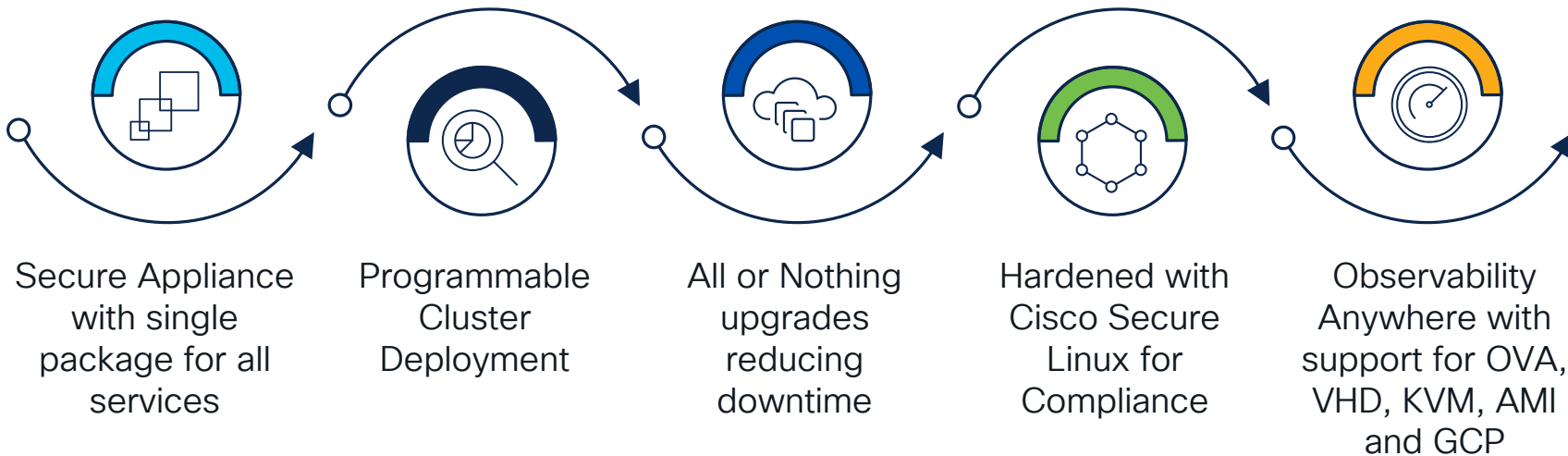
# Virtual Appliance Supported Scale

VA Deployment	24.4 GA Certified Scale with AIOps and SecApp		
	Agents Scale	EUM Scale	Metrics ingested
Small 16 vCPU & 128GB	1500 Agents	Mobile Beacons 15K Browser Beacons 8k	250K/min
Medium 32 vCPU & 256GB	3500 Agents	Mobile Beacons 40K Browser Beacons 20k	700K/min
VA Hybrid Deployment	24.4 GA Certified Scale with AIOps and SecApp		
Small 16 vCPU & 128GB	2500 Agents With Secure Application	Mobile Beacons 20K Browser Beacons 10k	750K/min
Medium 32 vCPU & 256GB	7500 Agents With Secure Application	Mobile Beacons 40K Browser Beacons 20k	2 Million /min

# Troubleshooting Tips

Command	Purpose
appdctl show boot	Examine the bring up status of node (e.g. storage-setup, microk8s-setup etc.)
appdctl cluster show	Examine the nodes that form the cluster
appdcli run infra_inspect	Examine the health of key infra components (e.g., HA state of Kafka brokers)
appdcli ping	Examine the health of application services (e.g., Controller status)
appdcli run list_images	Examine the container images in the registry
appdcli techsupport	Collect logs and key meta info across services from customer appliance for offline analysis
kubectl commands	Regular kubectl commands to examine the K8s cluster

# Key takeaways





# Complete Your Session Evaluations



Complete a minimum of 4 session surveys and the Overall Event Survey to be entered in a drawing to **win 1 of 5 full conference passes** to Cisco Live 2025.

---



**Earn 100 points** per survey completed and compete on the Cisco Live Challenge leaderboard.

---



Level up and earn **exclusive prizes!**

---



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- Visit the Cisco Showcase for related demos
- Book your one-on-one Meet the Engineer meeting
- Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs
- Visit the On-Demand Library for more sessions at [www.CiscoLive.com/on-demand](https://www.CiscoLive.com/on-demand)

Contact me at:  
<https://www.linkedin.com/in/ravinag/>



The bridge to possible

# Thank you

CISCO *Live!*

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