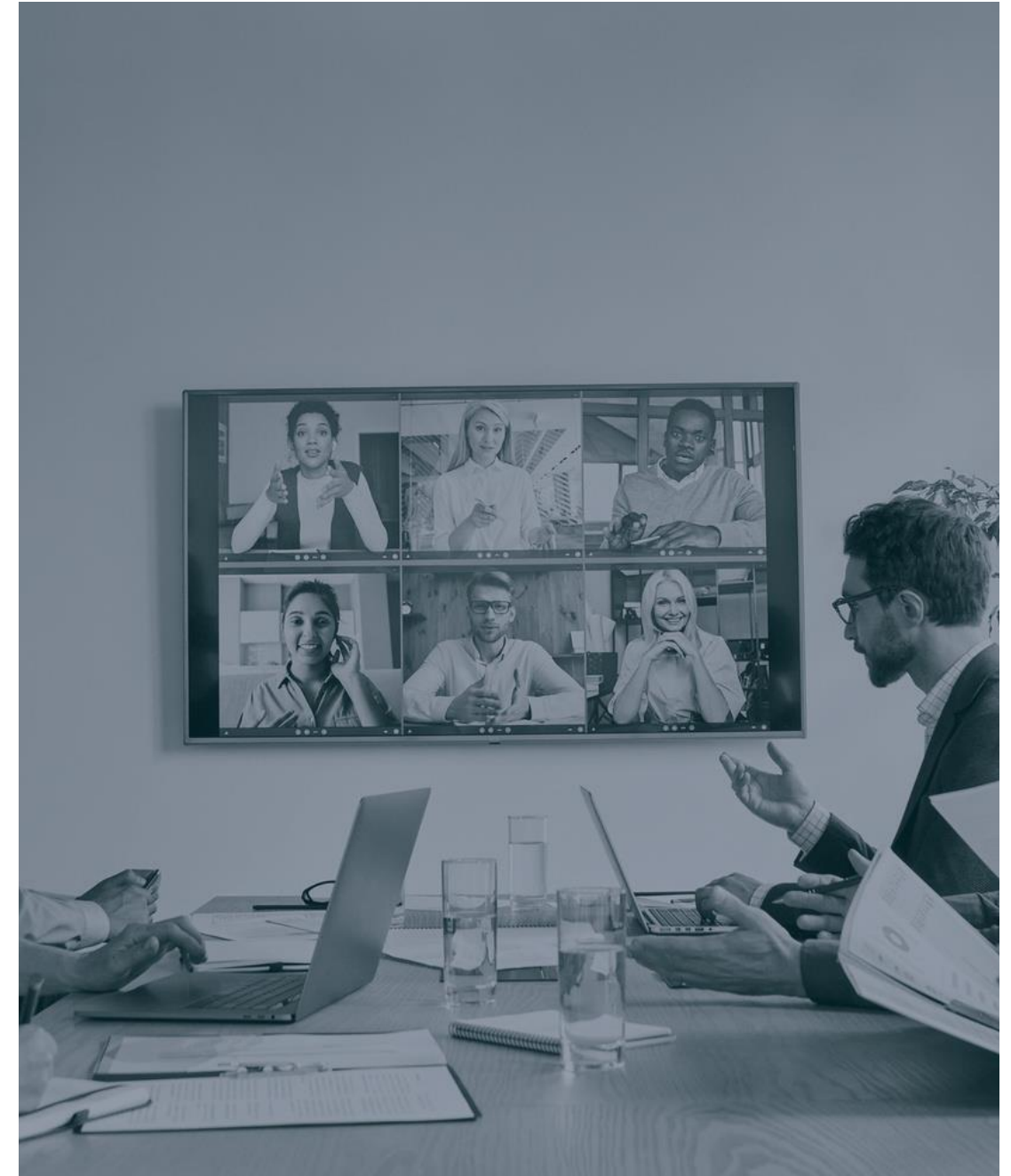


# Streamline and Transform Your IT Operations with Automation

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*Nutanix Workshop Series – Part Three*

*March 5, 2025*



# Meet Your Presenter

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Mike Dent

Field CTO – Hybrid Data Center

[LinkedIn](#)

# Overview

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## Goal

Learn how Nutanix solutions can simplify and automate IT operations.



## Agenda

01

Introduction and Forecasting

02

Planning

03

Monitoring and Optimization

04

Operation and Resource Operation

# One Platform for Hybrid Multi-Cloud

## Nutanix Cloud Platform

Unified Storage Services

Database Services

Desktop Services

### Cloud Infrastructure

Disaster  
Recovery

Container Services

Data + Network  
Security

Advanced HCI

Virtual Networking

Scale-Out Storage

AHV Hypervisor

### Cloud Manager

App Lifecycle Mgmt

Security Central

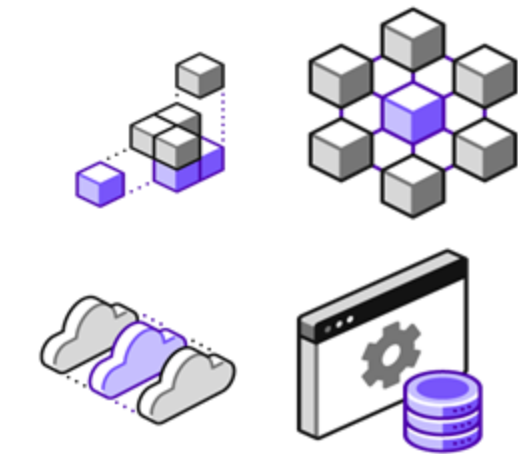
Cost Governance

Self Service Infrastructure

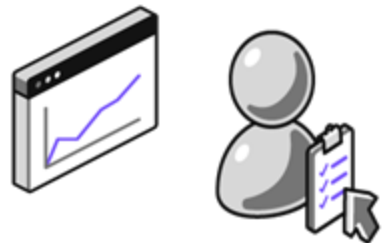
AI Operations

Unified Control Plane | Unified APIs | Security | Lifecycle Management

# Customers are Facing Challenges

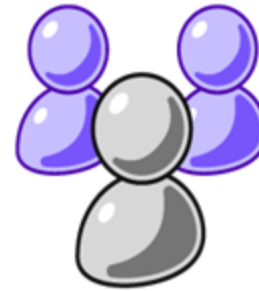


More moving parts



Dynamic demand

Know what to do



Make it simple

Noise



Silos

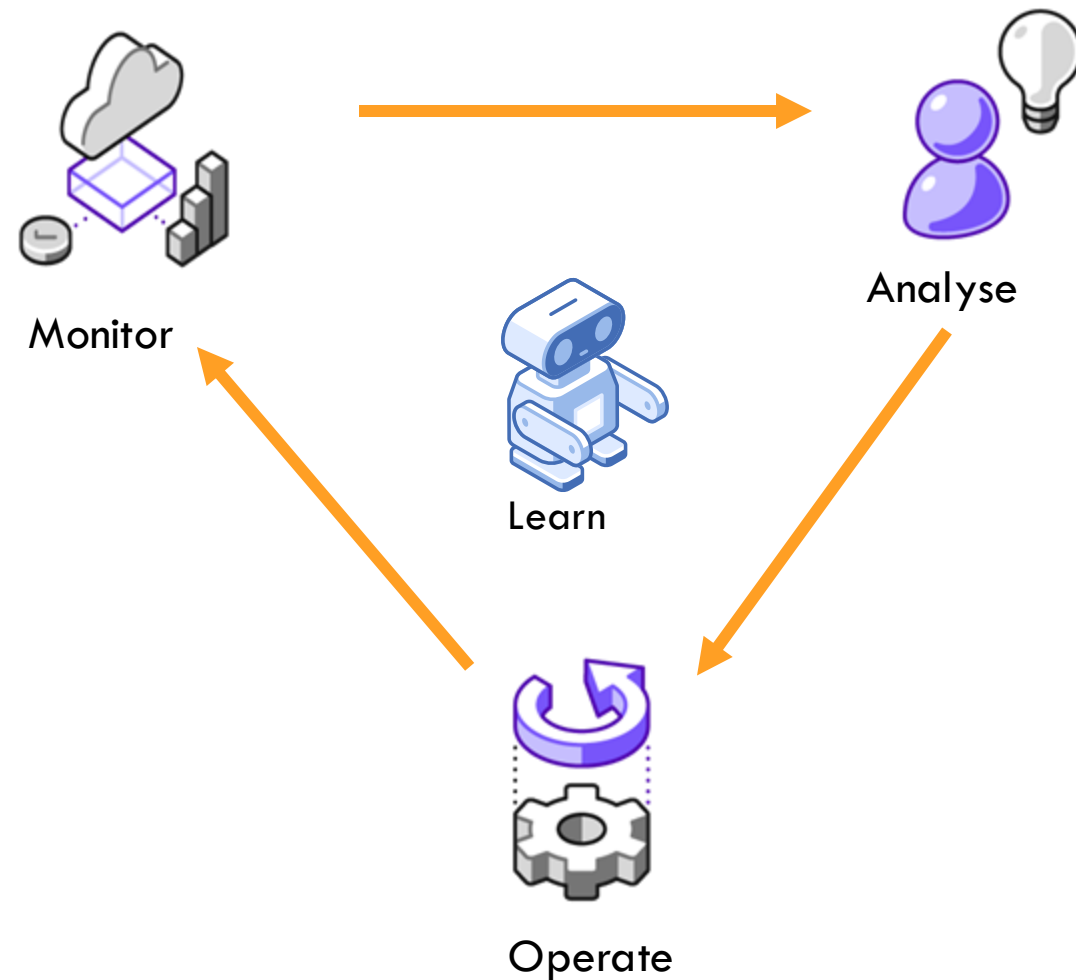
Over-complex



Manual ops



# Unique Approach in PRISM



Broad observability

Actionable signals

Automation with ease

Seamless operations experience

# Use Case Examples



## Efficient use of resources

- Detect waste with machine learning.
- Automate optimization with proper approval.
- Admin can rapidly build and tailor the automation to IT policies.



## Proactive performance remediation

- Detect anomalies based on performance behavior.
- Triage with full-stack visibility.
- Prevent problems from causing a bigger impact.



## Cost optimization

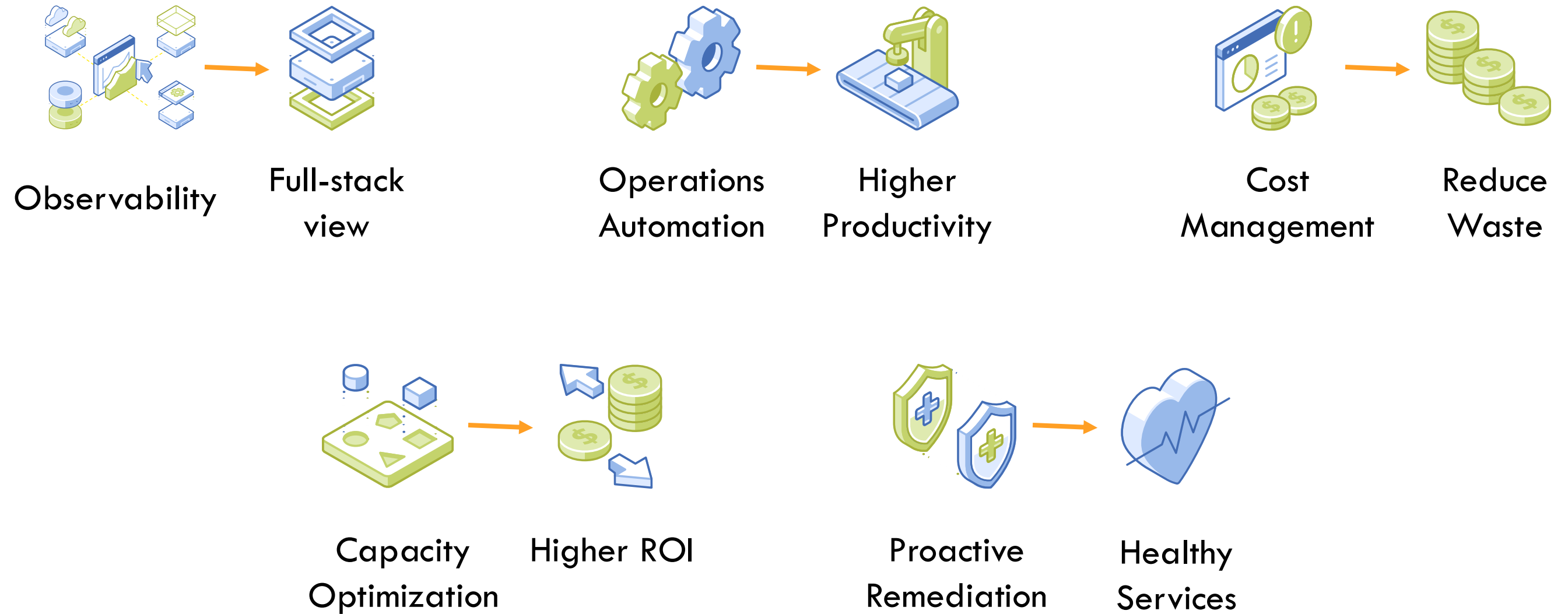
- Report cost visibility based on comprehensive TCO.
- Deliver chargeback reports by cost centers.
- Control spending and budget with policies.



## Cloud-like capacity expansion

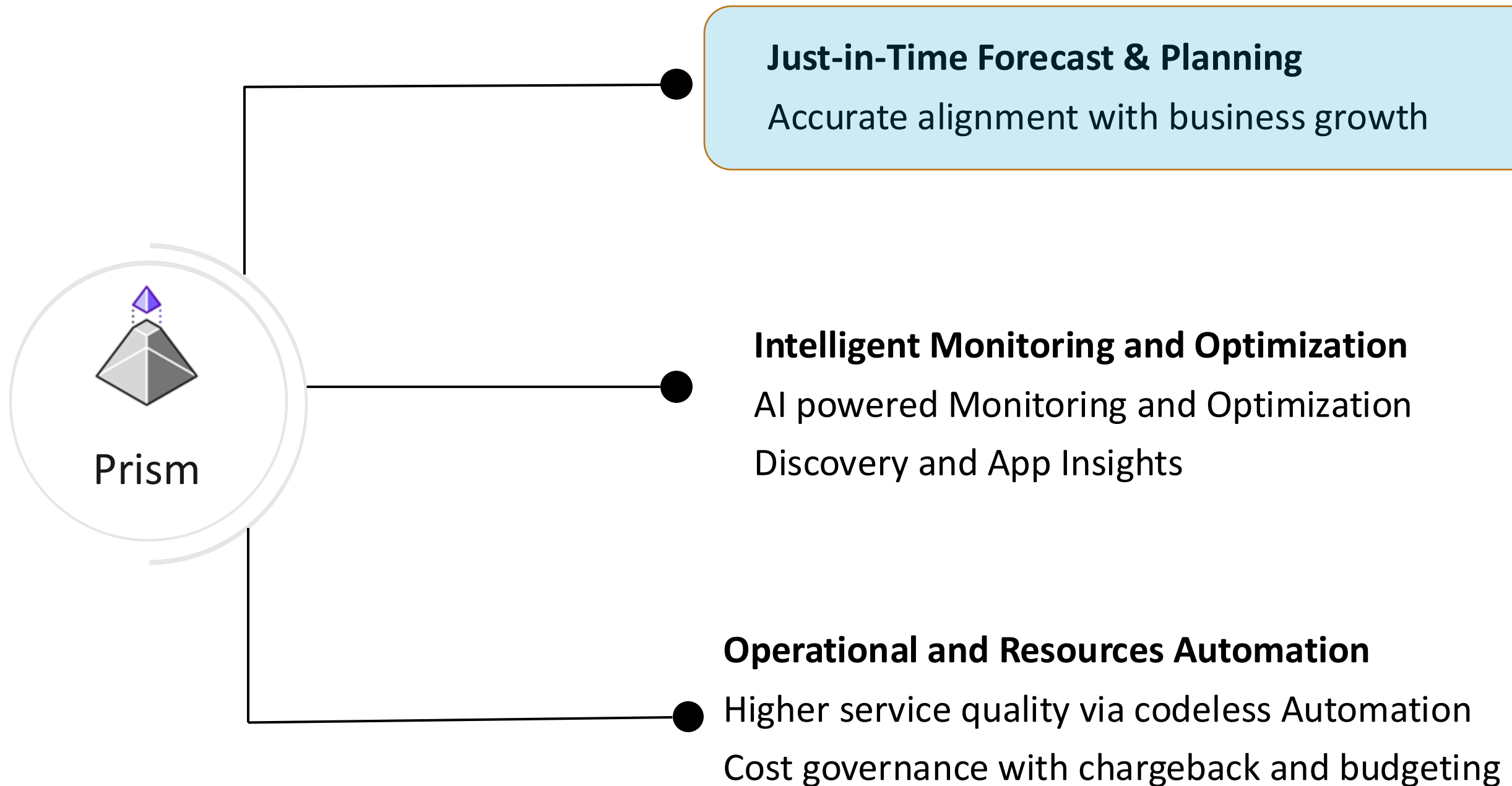
- Forecast capacity shortage with machine learning.
- Automatically Deliver planning reports to management.
- Reduce the capacity waste by over buying.

# Key Capabilities





# Benefits That PRISM Can Deliver



# Capacity Forecast and Planning

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Forecast shortage, detect inefficient resource use, and simplify planning. Prism, powered by machine learning, keeps infrastructure use efficient.

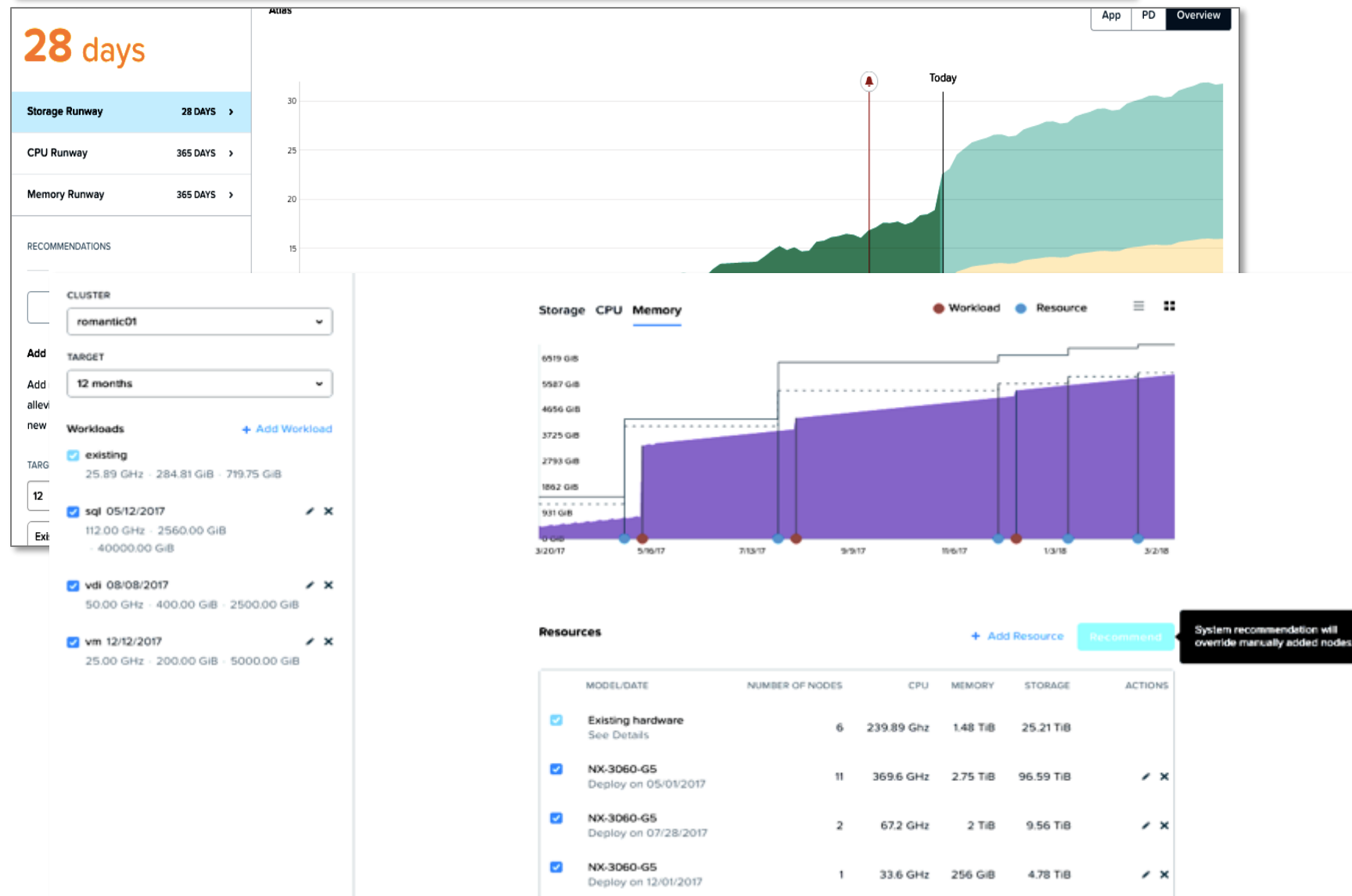
## Features Covered:

- ❖ Capacity forecast
- ❖ Just-in-time planning
- ❖ Reporting

# How to Plan and do JIT Forecasting



Keep resources used efficiently

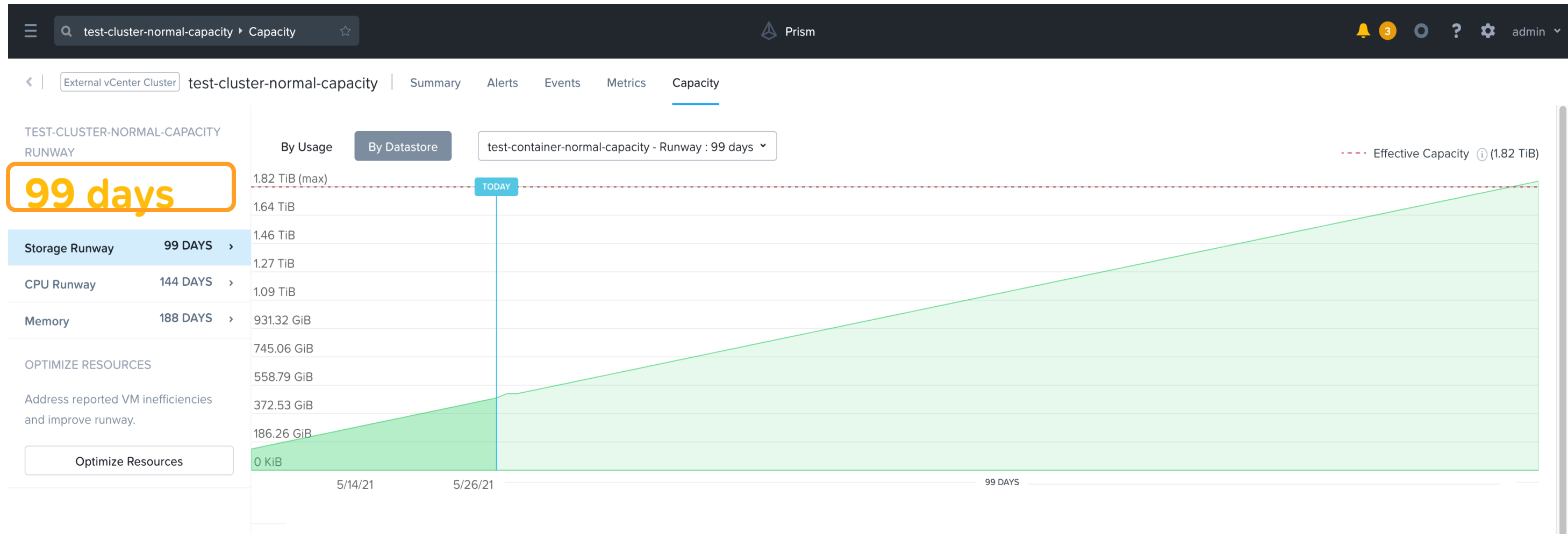


What is it?

- Detailed capacity forecast
- Scenario-based analysis
- One-click recommendation for just-in-time expansion
- Ready-to-present PDF report
- Powered by X-FIT machine learning engine

Benefits:

- Early warning for capacity shortage
- Eliminates guesswork and waste
- Enables pay as you grow capacity expansion to match the business demand



## Background

- With PC 2021.1, we supported intelligent monitoring and optimization as well as codeless task automation for vCenter VM/Host/Cluster
- With PC 2021.5, Capacity calculations algorithms (X-FIT) for non-Nutanix vCenter entities
  - User experience for Nutanix and non-Nutanix entities is now same for capacity planning
  - New alerts for vCenter CPU/memory/storage capacity

# Minimize Service Interruption

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## Reactive

Chasing the problem only after it impacts business

## Distracted

The alert storm buries the real problem

# Capacity Planning

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## Guesswork

Leads to an expensive surprise, inhibiting the business growth

## Waste

Introduces hidden costs, reducing the business profitability



# Reporting

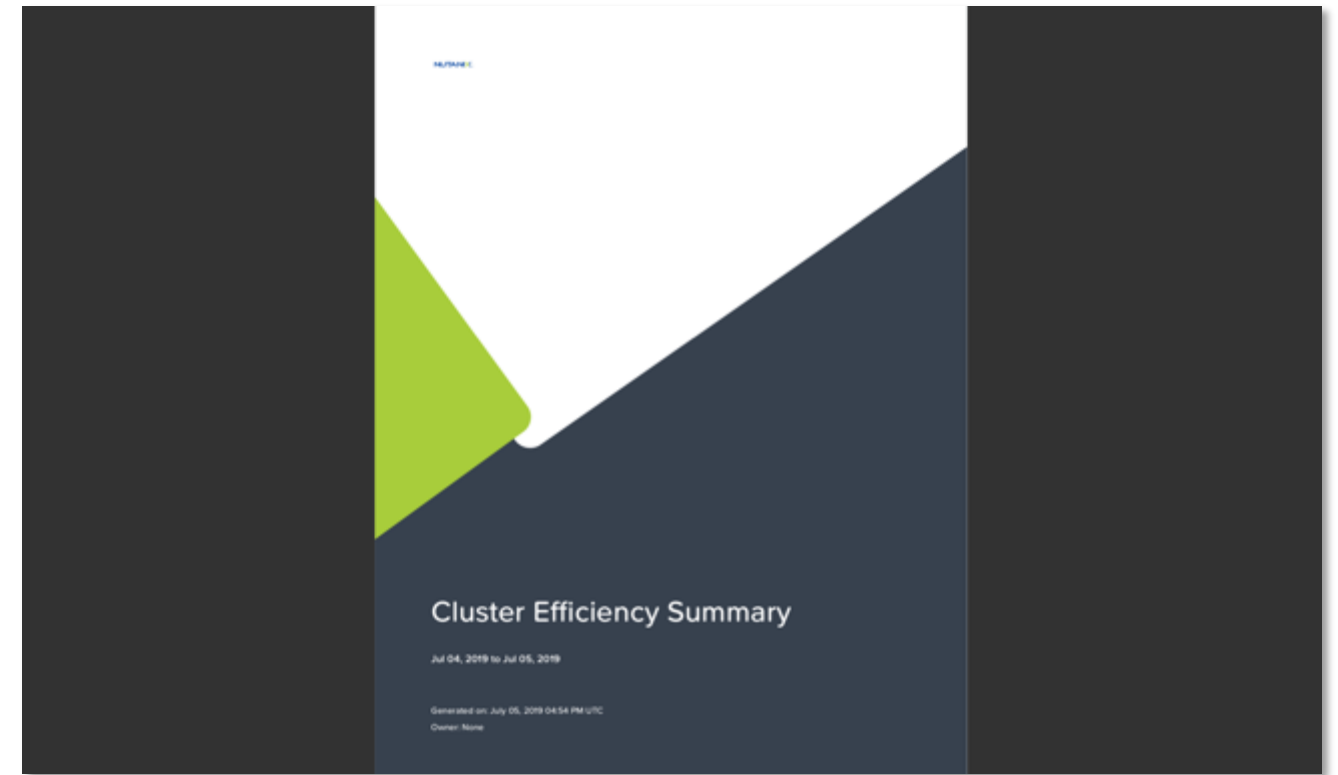
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## Benefit

- Get reports directly to email inbox without needing to access Prism

## Advantages

- Summarize operations signals and insights without needing other tools



## Key Capabilities

- Out-of-the-box reports
- 23 widgets available
- PDF and CSV outputs
- Schedule reports

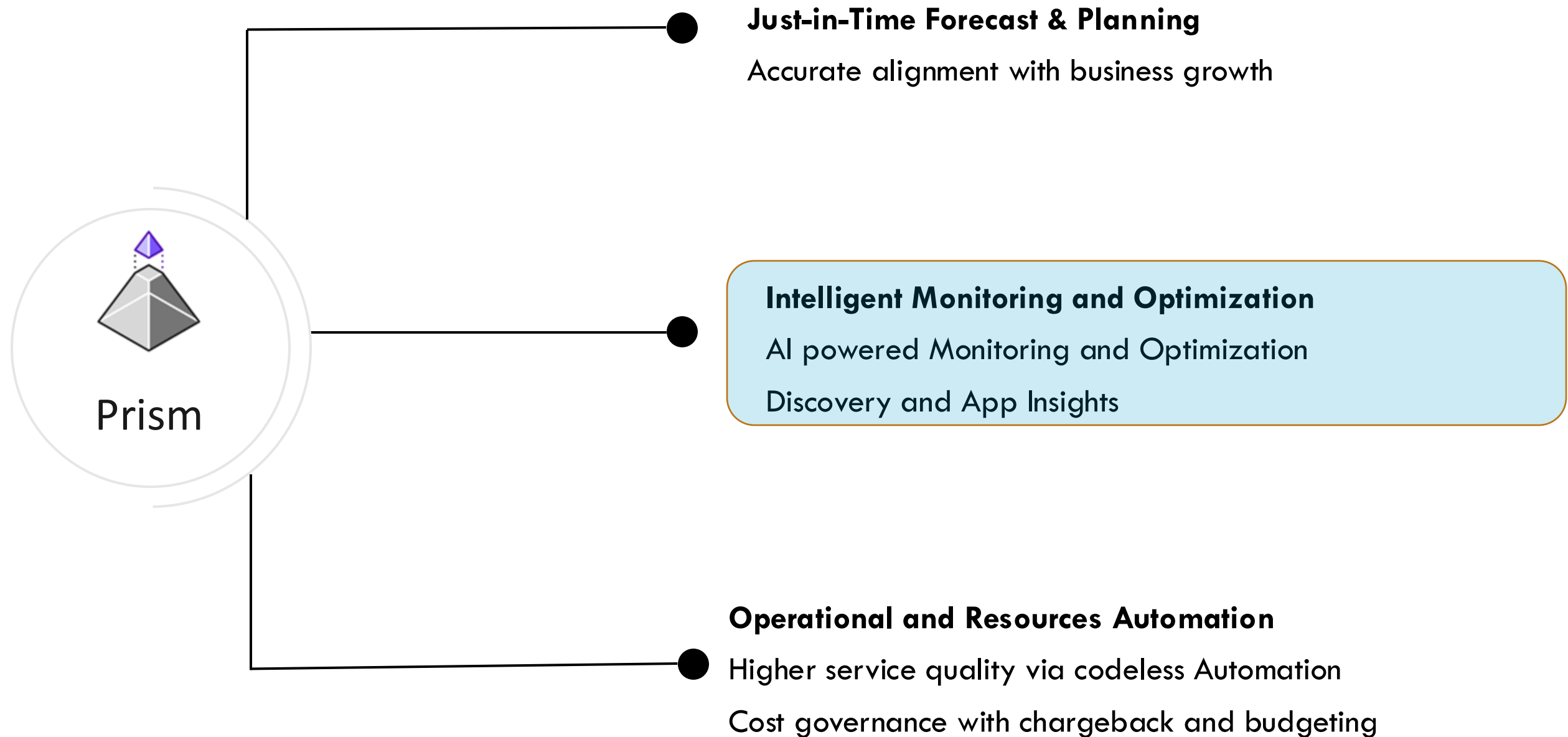
# 02

## Forecasting & RightSizing





# Benefits That PRISM Can Deliver



# Monitoring and Optimization

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Powered by purpose-built machine learning, Prism learns system performance behavior, proactively detects issues before they cause damage, and helps IT admins quickly correlate data and isolate problems.

## Features Covered:

- ❖ Intelligent Monitoring to reduce Alert storm & VM right-sizing
- ❖ Advanced troubleshooting with sessions
- ❖ Discovery & App Insights
- ❖ Monitor non-Nutanix environment

# X-FIT: A Purposed Built Machine Learning Engine

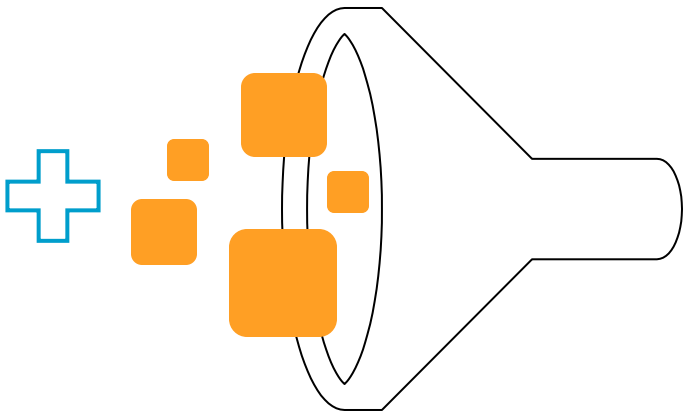
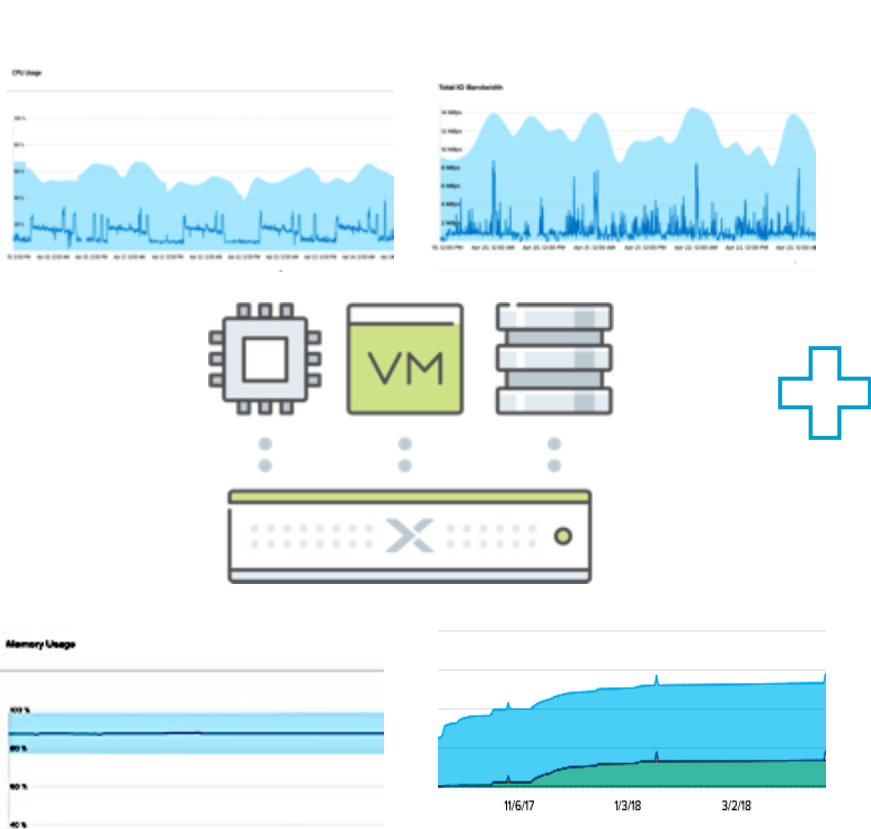


Optimized  
Learning

Scale-proof  
Intelligence

Self-learning  
for the Best Fit

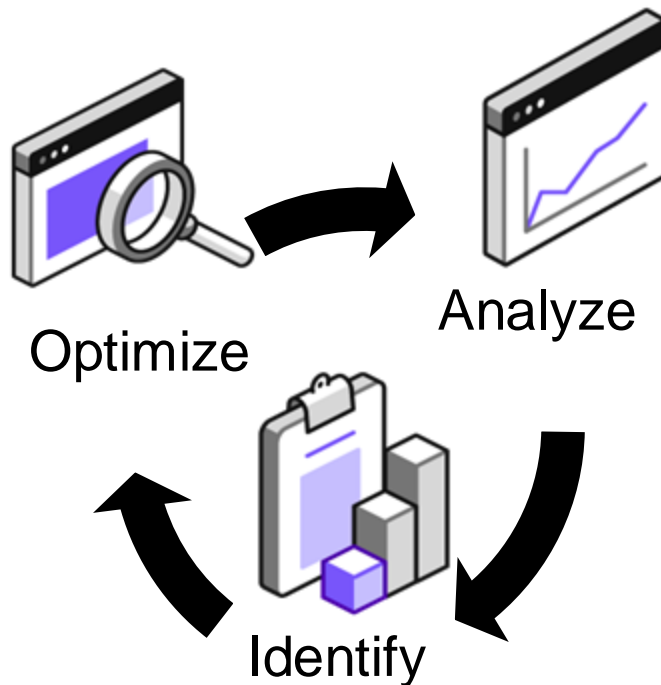
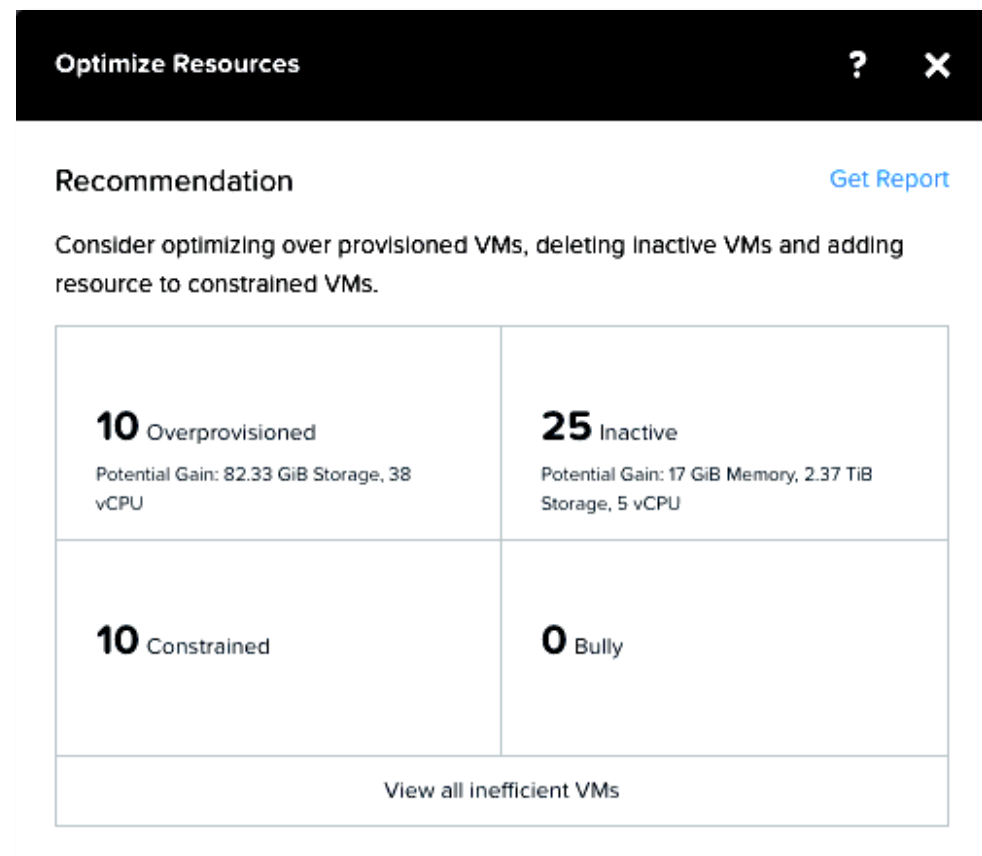
Accurate  
Behavior



# How to Leverage Automated Optimization



## Minimize Spend with Anomaly Detection Optimization backed by ML



### What is it?

- Automatic learning of the performance behavior of VMs
- Detection of the anomaly when a VM deviates from its normal performance behavior.
- Powered by X-FIT VM behavior learning engine

### Benefits:

- Provide an early warning of the performance issue in VMs
- Lower admin overhead – remove the alert storm and let admin focus on what's important

# Pro Tips



## Minimize the service interruption

1. Build your early warning awareness
2. Closely monitor the anomalies of your critical clusters or VMs
3. Properly set up the alert zones to reduce the noise
  - Worst case zone
  - Quiet zone
  - Anomaly detection zone

### Update Alert Policy

ENTITY TYPE

VM

ENTITY

One VM

pmpc-demo-2

METRIC

CPU Usage

IMPACT TYPE

Performance

POLICY NAME

pmpc-demo-2 - VM CPU Usage

DESCRIPTION

\*Optional

☒ Auto resolve alerts

☒ Enable Policy

CPU Usage

Last week

Behavioral Anomaly

☒ Every time there is an anomaly, alert

Warning

☒ Ignore all anomalies between

30

%

and

60

%

Static Threshold

☒ Alert Critical if

<=

%

or

>

90

%

☐ Alert Warning if

<=

%

or

>=

%

Trigger alert if conditions persist for

10 Minutes

Last Updated on 10/04/17, 1:41:50 PM

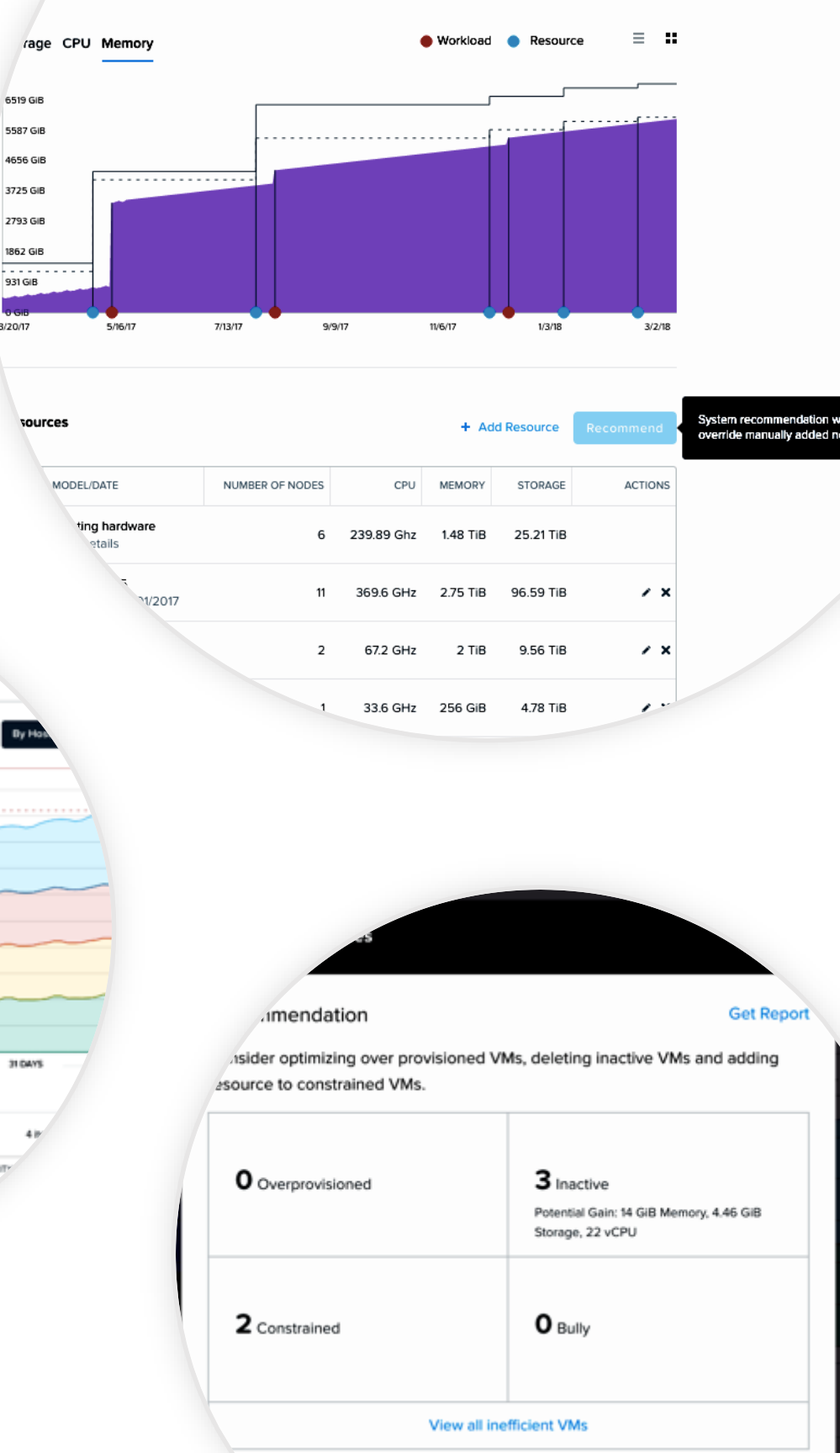
Cancel

Save

# Pro Tips

## Improve efficiency of the resource utilization

- 1. Pay attention to the runway alerts
- 2. Share VM right sizing report to your application teams
- 3. Do just-in-time forecast planning with your management and application teams



# Advanced Troubleshooting



## Benefits

- Speed up troubleshooting with easy metric correlation and comparison

## Advantages

- Customize contextual sessions for efficient troubleshooting



## Key capabilities

- Adjustable time range up to a year
- Add multiple charts at once
- Export of chart data to CSV/JSON
- Correlate data with alert timeline

# Observability & Insights for Apps

---



Gather data from many sources, process it into a meaningful context, discover dependencies, and provide insights. Observability breaks the data silos and provides a full-stack view to help IT admins understand their system better.

Features covered:

- ❖ Discovery
- ❖ App Insights: SQL Server monitoring
- ❖ VM monitoring for non-Nutanix environment



# Discovery

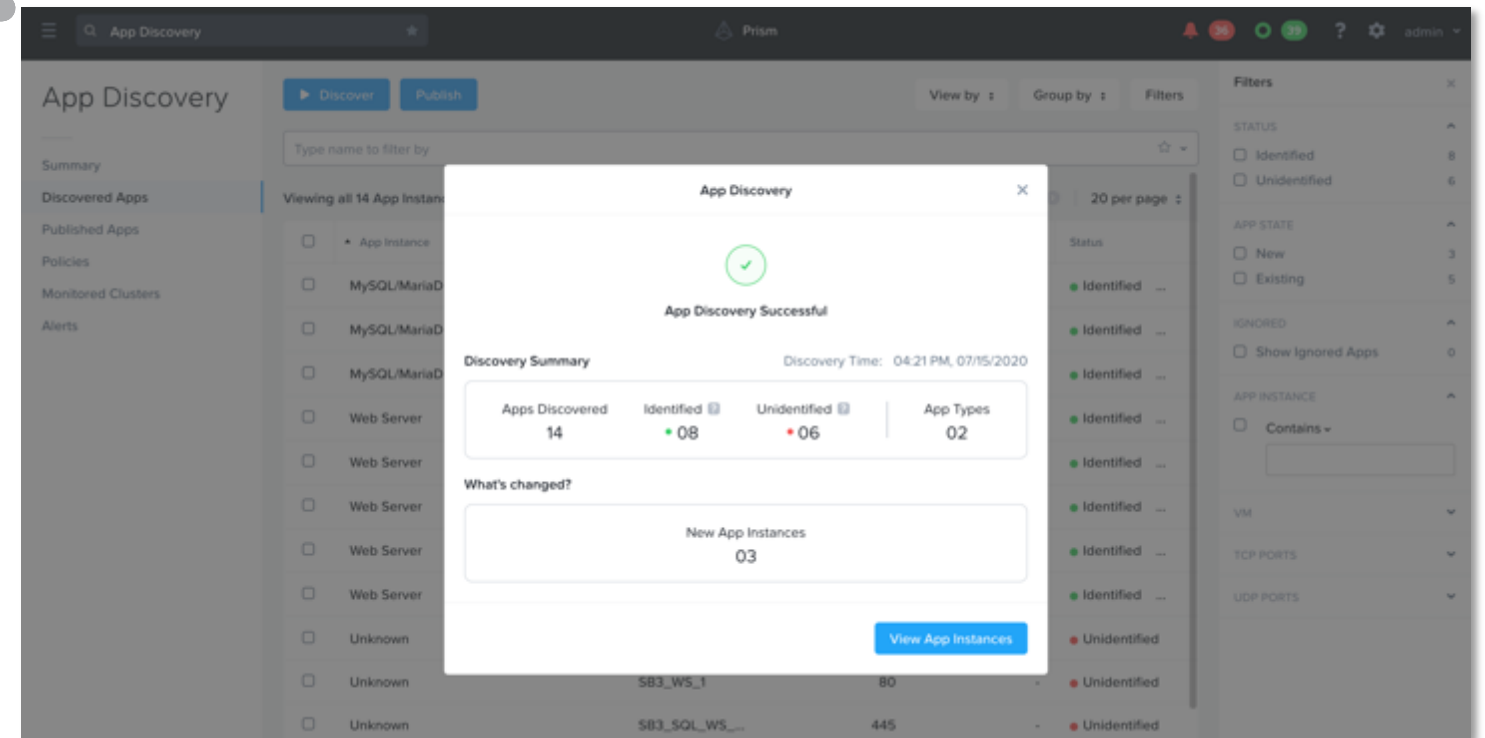


## Benefits

- Identify application to VM dependency
- Understand full-stack

## Advantages

- Agentless
- Fast process with Cloud engine



## Key capabilities

- Out-of-the-box rules
- Real time discovery
- Review flow
- API for CMDB integration

# Discovery Using the Nutanix Cloud



IPFIX data is collected from VMs, no agent necessary, and synced from Prism to the Nutanix Cloud

The Nutanix Cloud analyzes that data and syncs its findings back to Prism

Prism uses the cloud data along with the configured Discovery Policies to store and display the identified applications

# SQL Server Monitoring

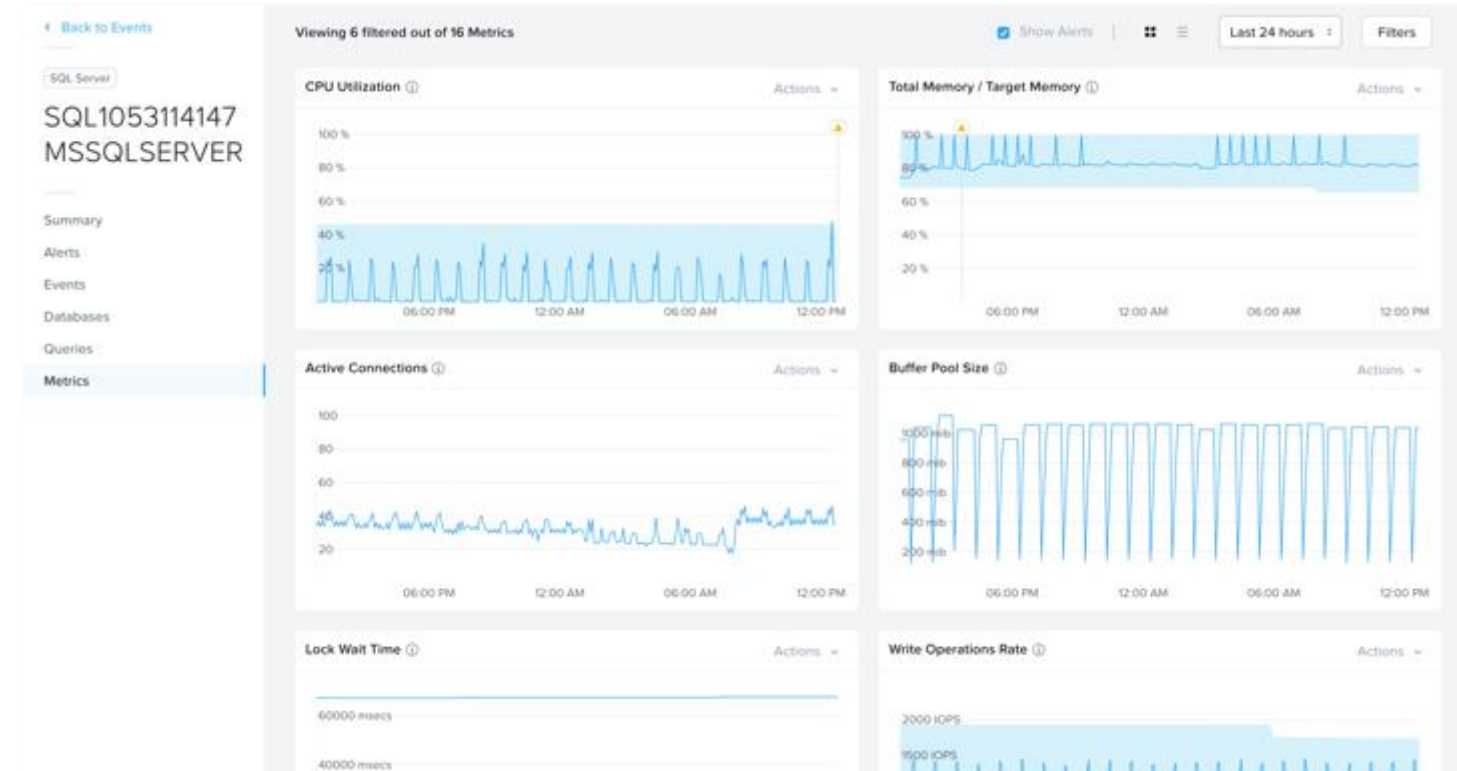


## Benefits

- Understand how infrastructure impacts applications
- Quickly isolate problems between infrastructure and application layer

## Advantages

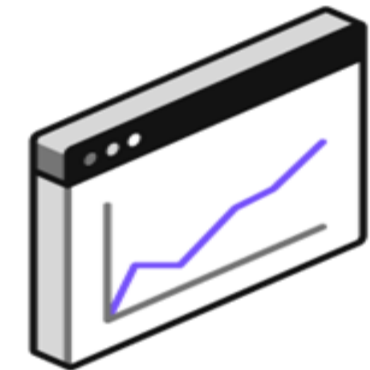
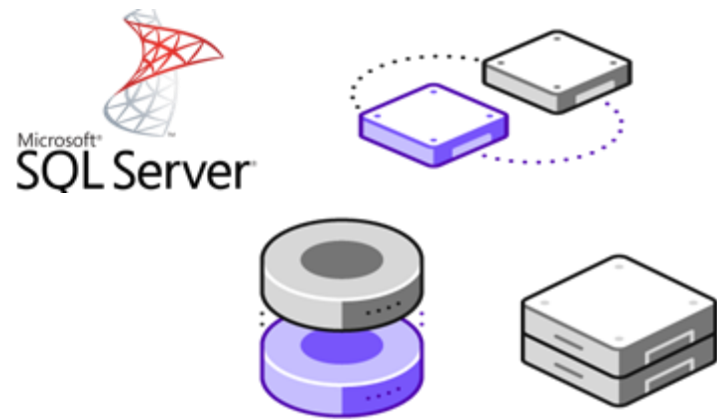
- Agentless
- Reduced RCA time for application issues



## Key capabilities

- Visibility into databases, queries and metrics
- Behavior learning and anomaly detection
- SQL specific alerts and custom alerting policies

# SQL Monitoring with X-Stream



A containerized Nutanix collector in the Prism Central VM gathers data for each configured SQL Instance and uses the X-Stream interface to store them

The X-FIT machine learning engine analyzes that data and uses it to generate insights and alerts

The SQL application data and insights are available for troubleshooting and automation

# Non-AOS VM Monitoring & Remediation



## Benefits

- Single pane of glass for entire virtual env including non-AOS env
- Reduce spend and time managing multiple VM monitoring tools

## Advantages

- Apply X-FIT machine learning to entire virtual infrastructure
- Sole tool for connecting insights across env to smart automation

The screenshot shows the 'vCenter VMs List' interface in the Prism console. It displays a table of 27 VMs. The table has columns for Name, Node Name, Hypervisor, Memory, IP Addresses, Power State, and Cluster Name. The first few rows show VMs like 'NTNX-20FM6H030189-A-CVM' and 'NTNX-20FM6H030189-B-CVM' running on ESXi hypervisors. The 'Power State' column shows 'On' for most VMs and 'Off' for 'Tiny\_VM'. The 'Cluster Name' for all VMs is 'Vcenter\_Collector-2'.

Name	Node Name	Hypervisor	Memory	IP Addresses	Power State	Cluster Name
NTNX-20FM6H030189-A-CVM	10.46.119.30	Esxi	20 GiB	10.46.119.34;fe80::20c:29f...	On	Vcenter_Collector-2
NTNX-20FM6H030189-B-CVM	10.46.119.31	Esxi	20 GiB	10.46.119.35;fe80::20c:29f...	On	Vcenter_Collector-2
NTNX-20FM6H030189-C-CVM	10.46.119.32	Esxi	20 GiB	10.46.119.36;fe80::20c:29f...	On	Vcenter_Collector-2
PC-5.18	10.46.119.32	Esxi	16 GiB	10.46.119.38;fe80::250:56...	On	Vcenter_Collector-2
Tiny_VM	10.46.119.30	Esxi	48 MiB	-	Off	Vcenter_Collector-2
VC_Client_1_1	10.46.119.30	Esxi	2 GiB	192.168.122.1	On	Vcenter_Collector-2
VC_Client_1_2	10.46.119.30	Esxi	2 GiB	192.168.122.1	On	Vcenter_Collector-2
VC_Client_2_1	10.46.119.31	Esxi	2 GiB	192.168.122.1	On	Vcenter_Collector-2
VC_Client_2_2	10.46.119.31	Esxi	2 GiB	192.168.122.1	On	Vcenter_Collector-2
VC_Client_3_1	10.46.119.32	Esxi	2 GiB	192.168.122.1	On	Vcenter_Collector-2
VC_Client_3_2	10.46.119.32	Esxi	2 GiB	192.168.122.1	On	Vcenter_Collector-2
VC_MySQL_WS_1.1	10.46.119.30	Esxi	2 GiB	10.53.112.20;fe80::4353:d...	On	Vcenter_Collector-2

## Key capabilities

- Capacity planning
- Metric visibility in Prism
- Anomaly detection and custom alert policies and Auto-remediation with X-Play

# Value Pro: Prism for Broader IT Ops Capability

## Background

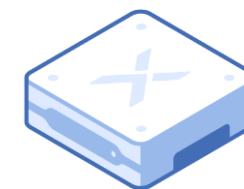
- Prism for IT Ops has anomaly detection for VMs running on AOS only
- X-Play offers low code/no code automation, but VM/Host/Cluster had to be on Nutanix AOS



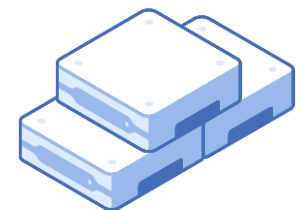
## New Functionality

- Prism for IT Ops expands support for vCenter, becoming the IT Ops tool of choice not just for AOS, but also for VMware infra
- M/L driven anomaly detection now also for vCenter VM/Host/Cluster
- X-Play trigger and action now extend to vCenter VM/Host/Cluster

Nutanix Prism for IT Ops



NUTANIX™

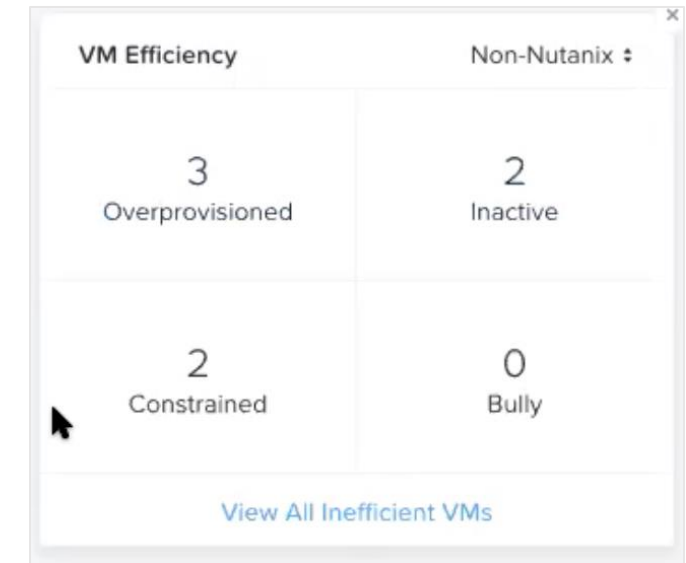


vmware®

# Efficiency Detection for vCenter VMs



- First add vCenter to PC : host id /name/password
  - We need 21 days of continuous data for VM efficiency status to work
- Non-Nutanix VM shown in the dashboard
- Filtering also supported
- Tagged as **Good**, **Inactive**, **Constrained** or **Overprovisioned**.
- Currently SQL monitoring & App Discovery are not applicable to VMs running on non-Nutanix.



vCenter VMs ▸ List				
Prism				
VMs				
Nutanix Non-Nutanix				
49 Total VMs				
Summary				
List				
Alerts				
Events				
Metrics				
<input type="checkbox"/>	test-clone-vm-ateeb-3	NA	-	Vcenter_Collector-2
<input type="checkbox"/>	test_dead_vm_powe...	Inactive VM	Inactive: The VM had low resource utilization during the ...	test-dead-vc-vm
<input type="checkbox"/>	test_good_overprovi...	Good	-	test-overprovisioned-...
<input type="checkbox"/>	test_moderately_ove...	Overprovision...	Overprovisioned: Memory usage was below the minimu...	test-overprovisioned-...
<input type="checkbox"/>	test_severely_constr...	Constrained	Constrained: CPU ready time was above the maximum t...	test-constrained-vc-vm
<input type="checkbox"/>	test_severely_constr...	Constrained	Constrained: CPU usage was above the maximum thres...	test-constrained-vc-vm
<input type="checkbox"/>	test_severely_overpr...	Overprovision...	Overprovisioned: CPU usage was below the minimum t...	test-overprovisioned-...

MEMORY USAGE

CPU USAGE

IOPS READ

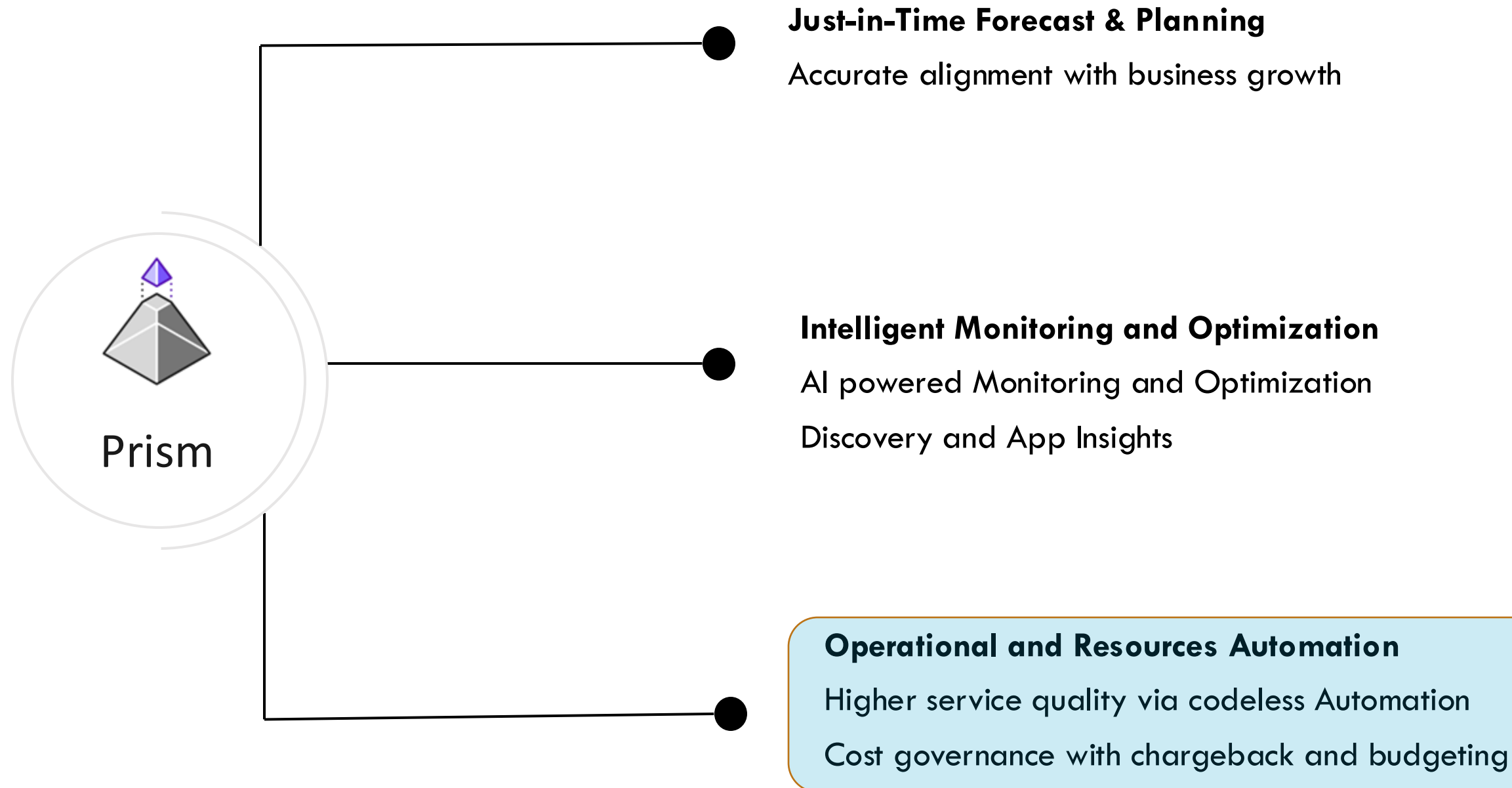
IOPS WRITE

IO BANDWIDTH WRITE

IO READ LATENCY

IO WRITE LATENCY

# Benefits That PRISM Can Deliver





# IF

Shortage

Anomaly

Inefficiency

Slowdown

Bottleneck



# THEN

Expansion  
Plan

Team  
notification

Right sizing

Custom  
actions

Resource relief



# How to Create Operational Automation



## Automate Remediation of Issues

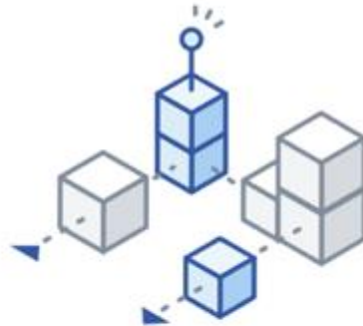
Welcome to Playbooks

Automate tasks needed to bring your environment to a desired state.

In order to create a Playbook, you will need to define an action or set of actions to be triggered.



Set a Trigger



Define Actions

Get Started



Save & Enable

### What is it?

- Automatic links intelligent signal with automated actions
- Powered by X-PLAY, playbook for Codeless task automation
- One-click centralized upgrades to hundreds of clusters without disruption.

### Benefits:

- Smart Automation, helps with scaling business
- Lower admin overhead – remove alert storm and let admin focus on what's important
- Integration with ITSM Tools

# Playbook: If-This-Then-That



Create Playbook Save & Close ? | X

Trigger

★ Select Trigger

Actions

+ Add Action

Select a Trigger

🔔 Alert

Trigger playbook when a certain alert is generated.

Select

👤 Manual

Trigger playbook manually for a VM, Host, or Cluster.

Select

# Suite of Actions



Demo\_VM\_Memory\_Add

Save & Close ? X

- Trigger
- Alert
- Actions
- VM Add Memory
- Email
- Resolve Alert
- New Action
- Add Action

Select an Action

Search for an Action

All Actions

Acknowledge Alert

Mark an Alert as Acknowledged.

Alert ActionSystem

Select

Email

Send an email.

Communication ActionSystem

Select

Generate Forecast Report

Generate a just in time forecast report.

Report ActionSystem

Select

IP Address Powershell

Remotely execute a powershell script for a given VM IP address.

Execution ActionSystem

Select

IP Address SSH

Remotely execute a SSH command for a given VM IP address.

Execution ActionSystem

Select

Wait until Day Of Week

Wait until the next occurrence of a specified day and time of the week.

Wait ActionSystem

Select

Power Off VM

Power Off a VM.

VM ActionSystem

Select

Power On VM

Power On a VM.

VM ActionSystem

Select

Resolve Alert

Mark an Alert as Resolved.

Alert ActionSystem

Select

REST API

Make a call to a REST API endpoint.

Execution ActionSystem

Select

Send to ServiceNow

Send an Alert to ServiceNow [em\_event] table

Alert ActionSystem

Select

Slack

Send a slack message.

Communication ActionSystem

Select

VM Add CPU

Add CPU for a VM.

VM ActionSystem

Select

VM Add Memory

Add memory for a VM.

VM ActionSystem

Select

VM Powershell

Remotely execute powershell script for a given VM.

Execution ActionSystem

Select

VM Reduce CPU

Reduce CPU for a VM.

VM ActionSystem

Select

VM Reduce Memory

Reduce memory for a VM.

VM ActionSystem

Select

VM Snapshot

Captures the state of a VM and saves it.

VM ActionSystem

Select

VM SSH

Remotely execute a SSH command for a given VM.

Execution ActionSystem

Select

Wait for Some Time

Wait for a specified number of minutes.

Wait ActionSystem

Select

Wait until Day of Month

Wait until the next occurrence of a specified day and time of the month.

Wait ActionSystem

Select

# Automation in Action



EBC Increase a constrained VM's memory ▾

Clone

Update

Delete

?

×

Summary Plays

Name

EBC Increase a constrained VM's memory

Description

Increases a VM's memory on a memory constrained alert.

Last Updated Time

01/16/20, 2:13:37 PM

Created Time

01/16/20, 2:13:37 PM

Status

Validation Errors

Trigger

Alert

Actions

VM Snapshot

Power Off VM

VM Add Memory

Power On VM

Resolve Alert

Email

VM Add Memory

Target VM

Alert: Source Entity

Memory to Add

1 GiB

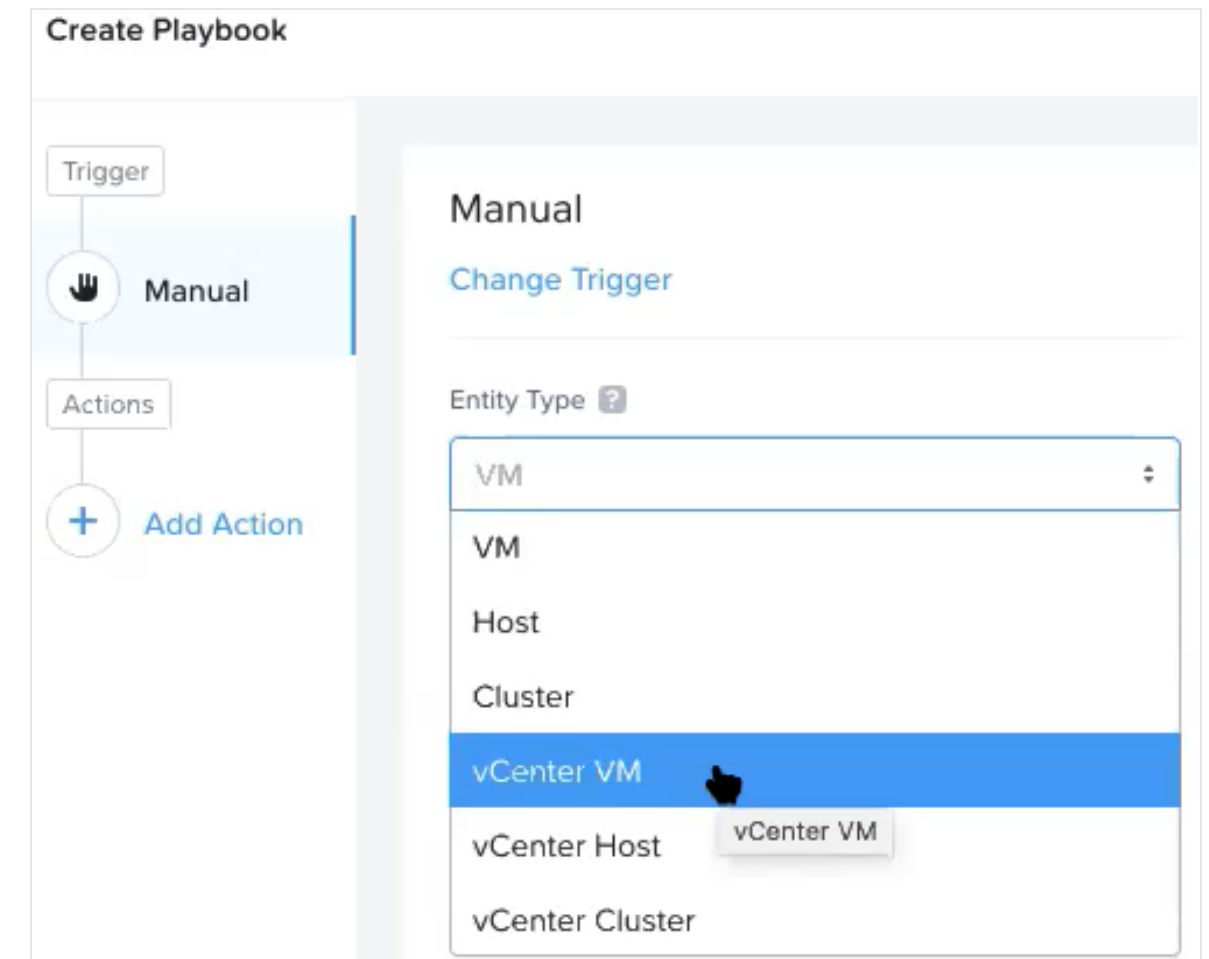
Maximum Limit

32 GiB

# X-Play vCenter Integrations



- First add vCenter to PC : host id /name/password
  - After that PC automatically populates vCenter vm/hosts/cluster
- Entity Type: vCenter VM/Host/Cluster
  - Supported for Trigger and Action
- Most actions on X-Play are supported\*
  - Power Off VM
  - Power On VM
  - VM Add CPU
  - VM Add Disk
  - VM Add Memory
  - VM Expand Disk
  - VM Powershell
  - VM Reduce CPU
  - VM Reduce Memory
  - VM Snapshot
  - VM SSH
  - JITF Report Action



- Everything else just like regular playbook

*\* Unsupported actions will fail with notification on unsupported action; Support to be expanded in future release*

# More Examples...

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- Receive planning reports automatically when a cluster has a resources crunch



- Manually trigger a sequence of actions with just 1-click



- Schedule automation to take place only during a maintenance window



- Control when the automated action happens
- Many more...

# Cost Management

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SaaS based capability that delivers private cloud VM cost metering based on a built-in TCO Model; provides Chargeback capability by mapping resource costs to Cost centers and enables financial control through budget management.

Features covered:

- ❖ VM Cost Metering (using TCO Model)
- ❖ Chargeback
- ❖ Budgeting



# VM Costing

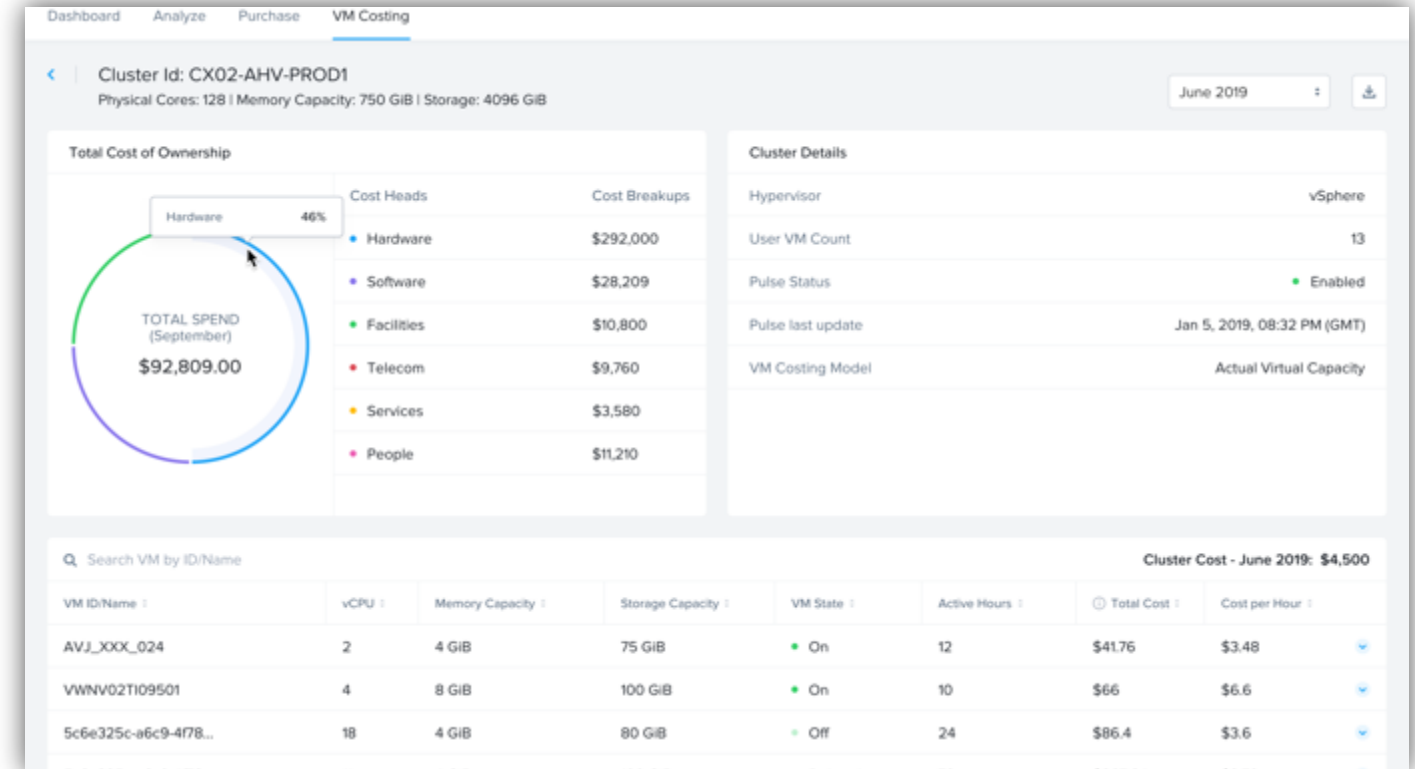


## Benefits

- Out of box visibility to unit VM cost
- Built in TCO framework
- Multiple VM Costing models

## Advantages

- Auto Discovery of Clusters
- VM costing with Snapshots cost



## Key capabilities

- Benchmarked out-of-box TCO inputs
- Analyze feature to slide and dice data
- Daily data sync with SaaS instance

# Chargeback

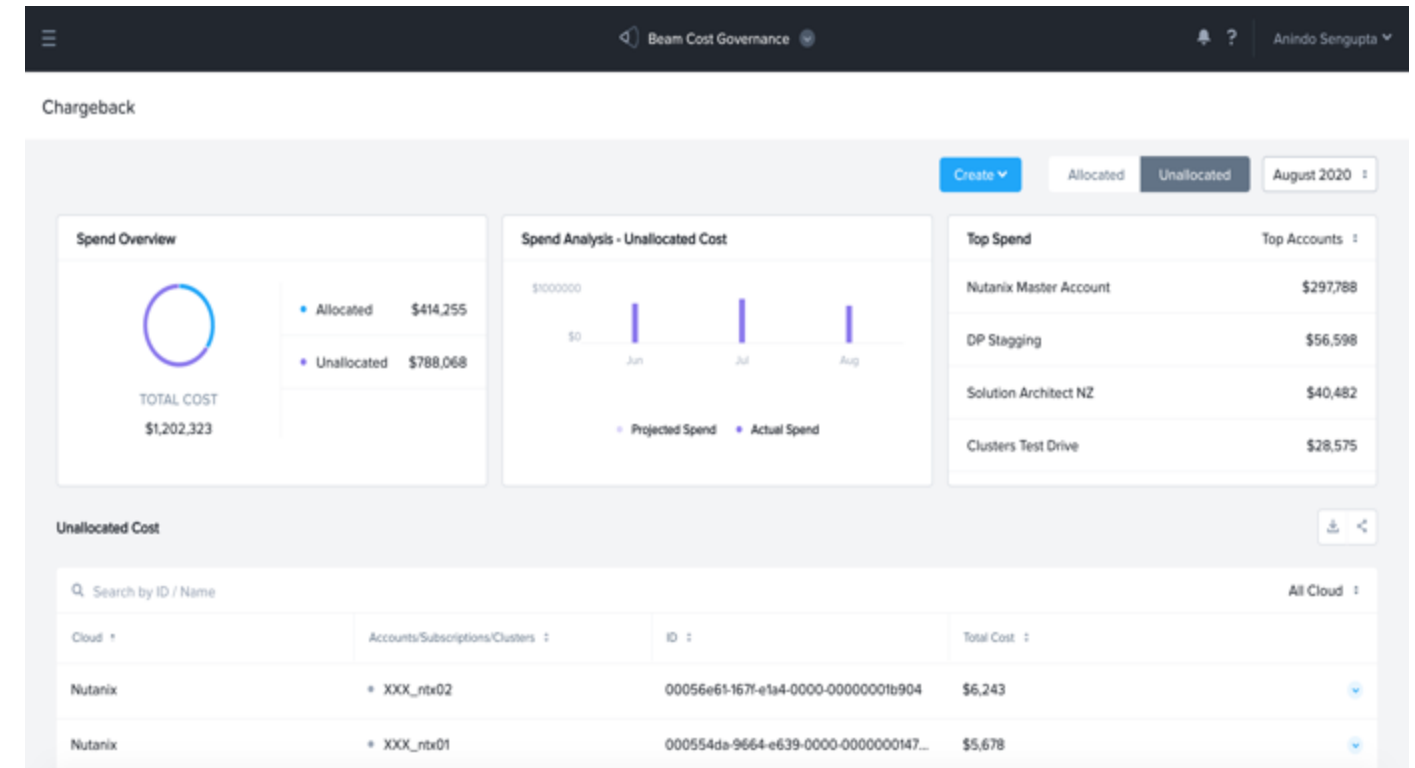


## Benefits

- Highly customizable cost centers using Clusters, Categories mapping
- Prebuilt Cost center detailed reports

## Advantages

- Ensures each cost center has unique resources mapped to it
- Extend to multi cloud use case



## Key capabilities

- Ability to allocate untagged VMs
- Schedule monthly reports to email
- Create Business Unit and Cost center hierarchy

# Budget

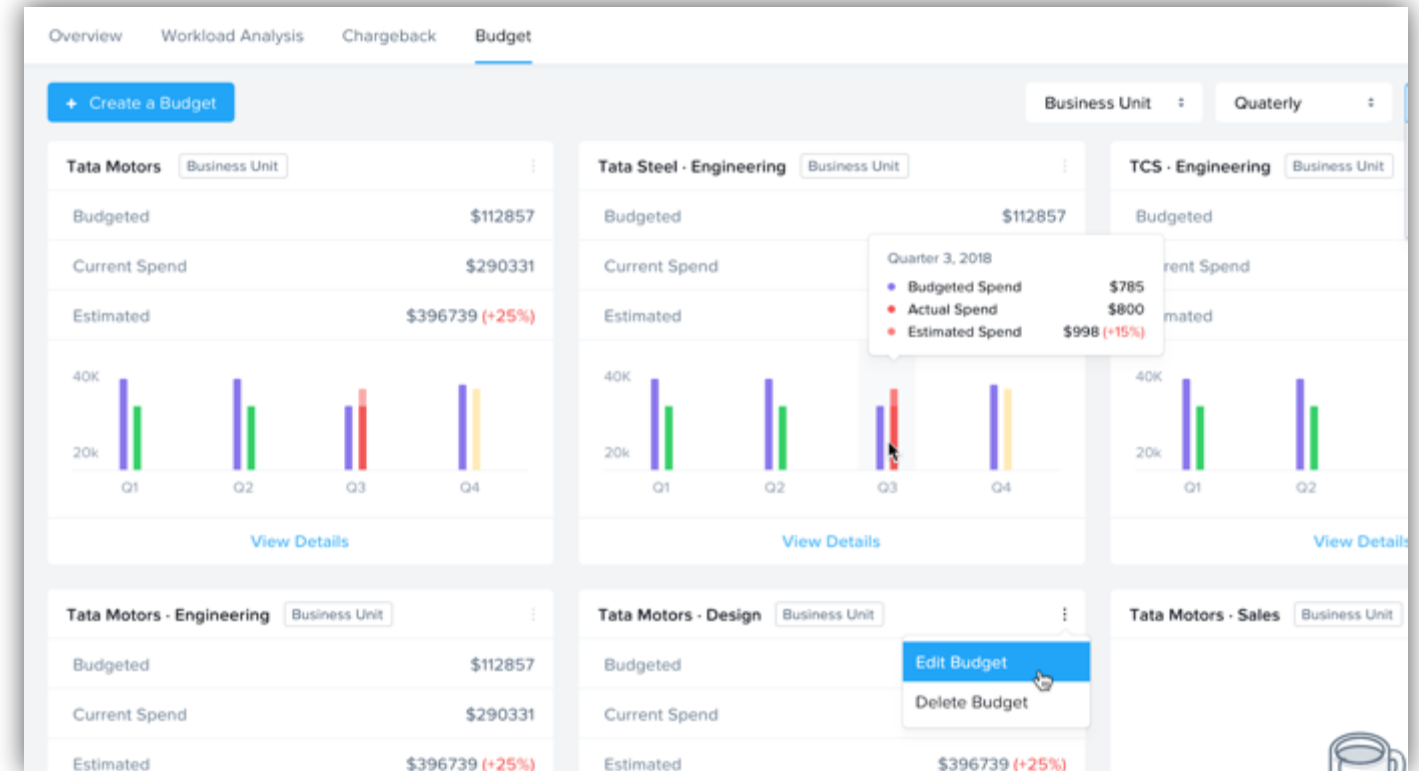


## Benefits

- Automated alerting
- Algorithmic quarterly projections
- Variance Analysis

## Advantages

- Budget setup on resource groups
- Breakdown by service type



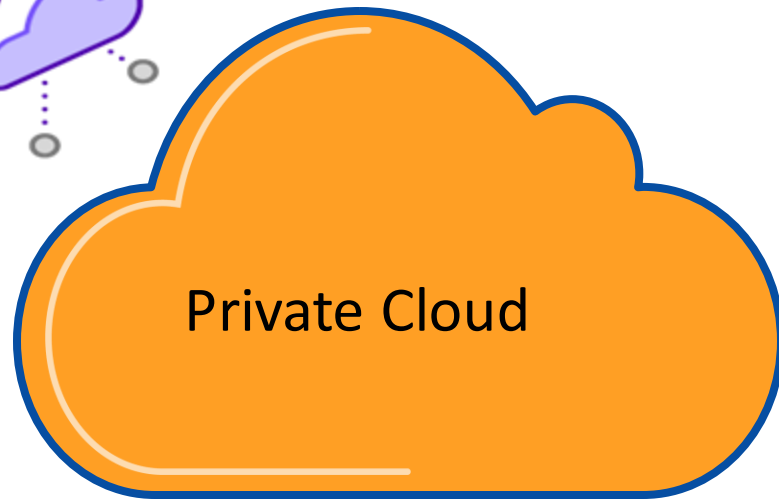
## Key capabilities

- Multiple threshold-based alerts
- Schedule monthly reports to email

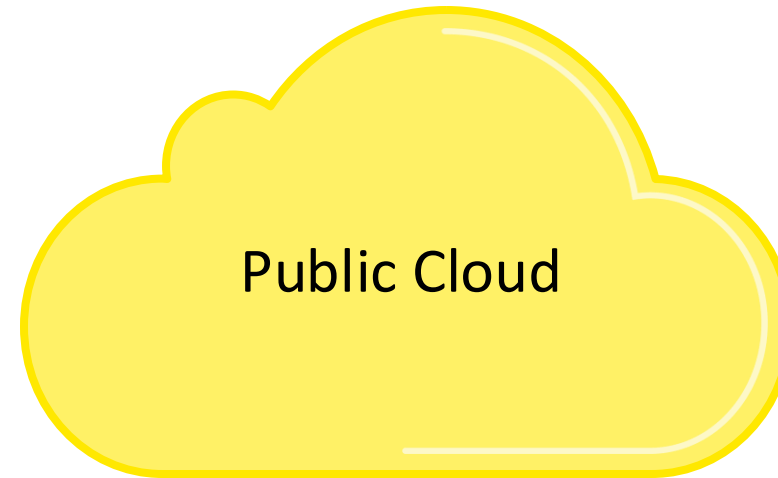
# Comparing Cloud Costs Accurately



aws



Private Cloud



Public Cloud

Hardware License  
Software Licenses  
Power & Cooling  
Datacenter Space  
Ethernet & Telecom  
IT Admin Salary

Cloud Services Cost

Centralize Cost Visibility

Unified console for public and private cloud cost monitoring shows resource config details and amount spend

TCO based Cost Comparison

A built-in TCO model shows true cost of Nutanix resources. TCO model in development for public clouds.

Generate Workload Costs

A tag-based approach allows for easy workload definition & dynamic cost calculation

# To Summarize

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Nutanix **Prism's IT Operations tiers** delivers infrastructure **Automation** that transform **infrastructure Ops** into **IT-as-a-service**, enabling agile application development, **rapid deployment** and **one-click management**

- **IT Task Automation**
  - Remove complexity and operator errors by turning any task into a push-button automation
  - Improve IT efficiency by reducing repetitive tasks
- **Infrastructure Monitoring & Optimization**
  - Identify and optimize under-utilized resources, overprovisioned VMs, and unnecessary cost sinks
  - Gain instant visibility into utilization, growth rates and cost spent
  - Just in time forecasting and planning for infrastructure for Capacity expansion to meet future workload growth

# THANK YOU

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