



Software-Defined Infrastructure Control

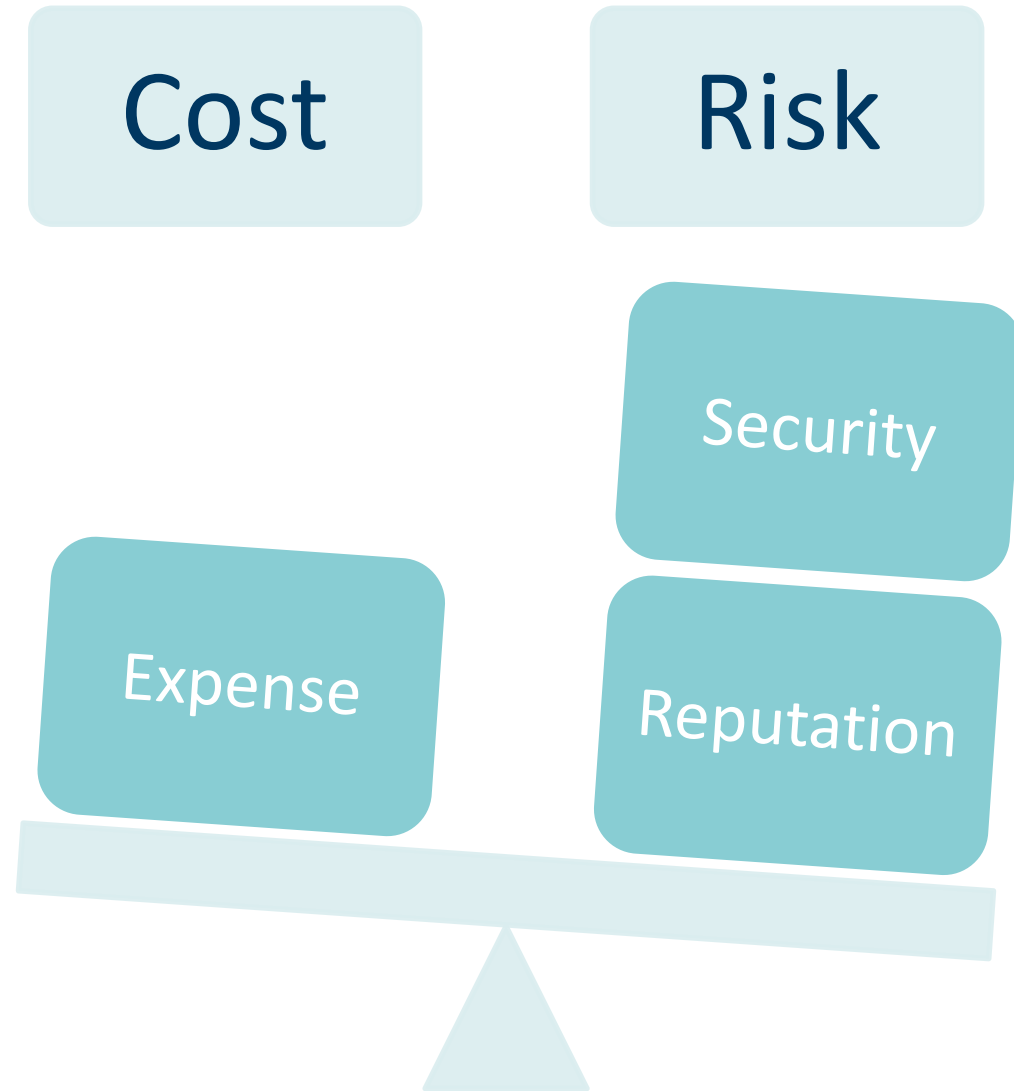
Define Demand. Optimize Supply. Automate.

Capacity Management for Hybrid IT

Dan Adirim

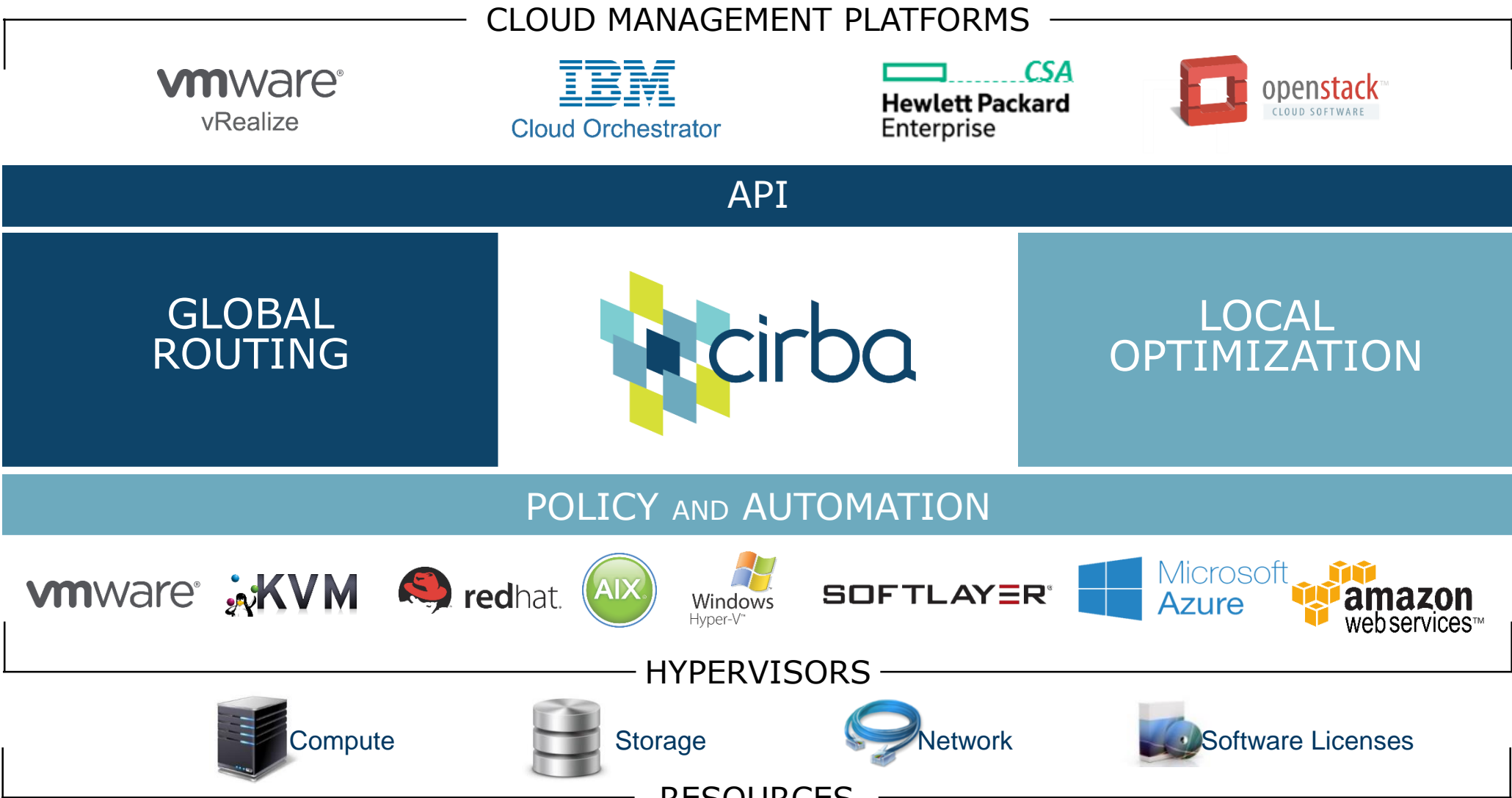
SVP, Customer Management

Capacity Planning Needs to Adjust to Hybrid



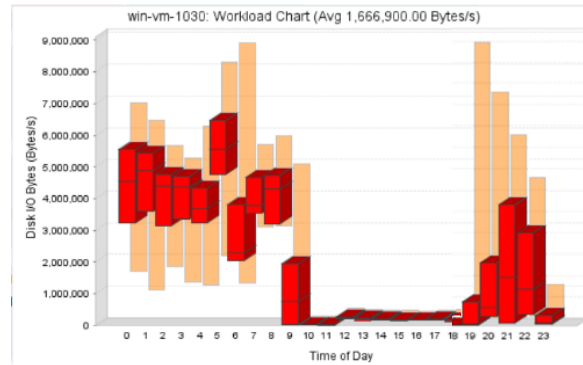
- Factors like cost and risk are now part of every placement decision:
 - Initially for new workloads
 - Ongoing re-evaluation of existing workloads
- Cost paradigm has shifted from capital to expense:
 - Not cost avoidance
 - Provider benefits from overcommit
 - Rightsizing leads to real savings

What is Cirba?

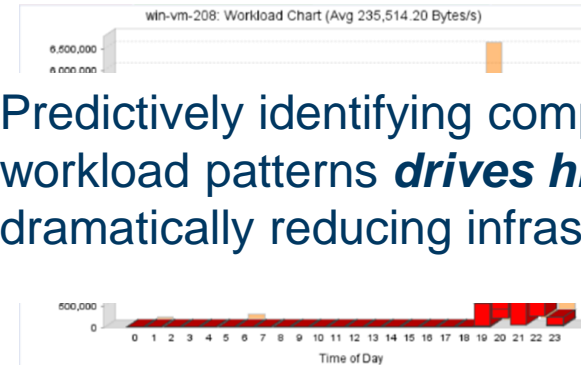


How Does it Work?

- Cirba predictively analyzes workload patterns to optimize workload density



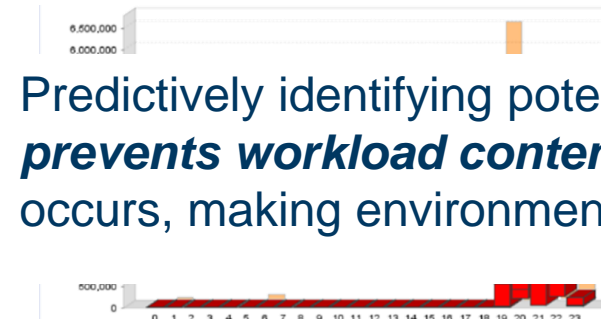
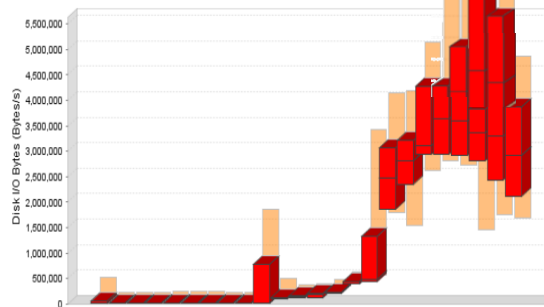
VM1 – Busy in the morning



VM2 – Busy in the evening

Predictively identifying complementary workload patterns **drives higher density**, dramatically reducing infrastructure costs

- While at the same time reducing workload contention and operational risk



Predictively identifying potential conflict **prevents workload contention** before it occurs, making environments run better

The Importance of Being Predictive

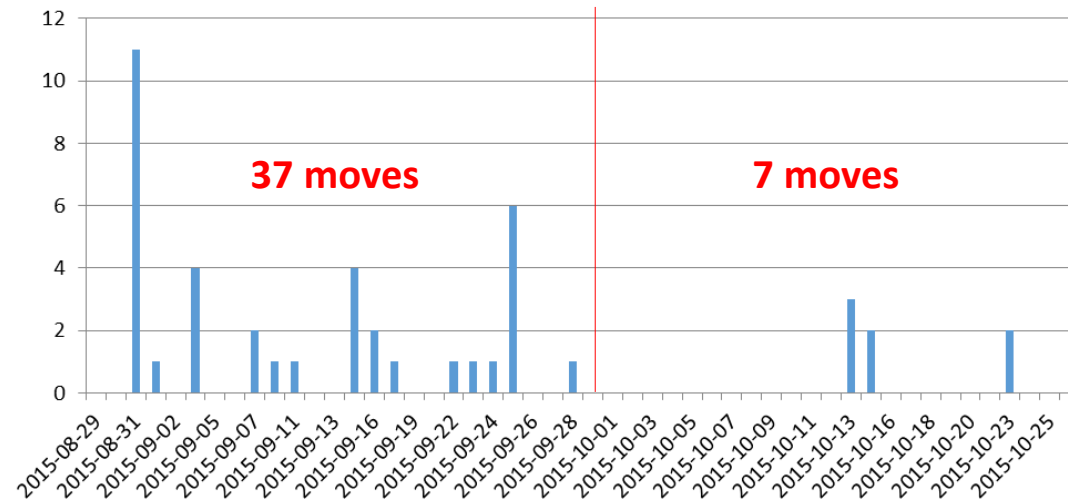
Reactive products only look at recent activity, not predictive models:



Reactive approaches don't move VMs until the damage is already done. Resource contention will have already occurred for at least 5-10 minutes, **significantly impacting end users**

(Note: In this example DRS will never act, as it doesn't look at Disk I/O)

Customer example of the impact of predictive analytics:



In the month after Cirba was enabled the number of reactive VM moves during business hours **dropped over 80%**

This is a clear indication of **reduced resource contention**

Policy Enablement

- Cirba uses a concept we call “policy” to encode how you want to manage your environment
- These rules make the same decisions on the workload you are running

	Production
Density	Low
Performance	High
Availability	N+2
Compliance	Rigorous
Volatility	Low
Operational Cycles	Business Defined
Licensing	Host-based

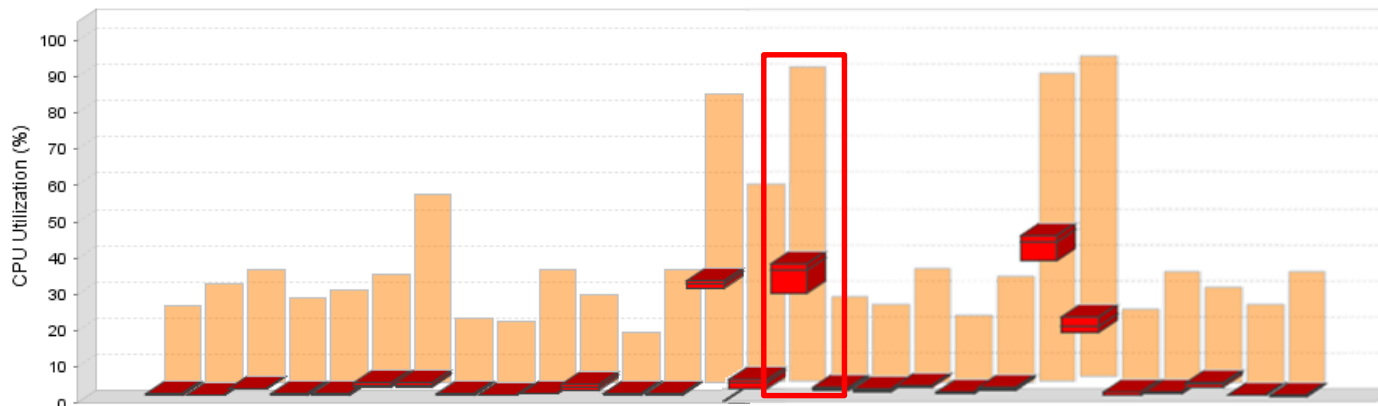


Dev/Test
High
Low
/A
one
igh
one
Developer dition

Rightsizing

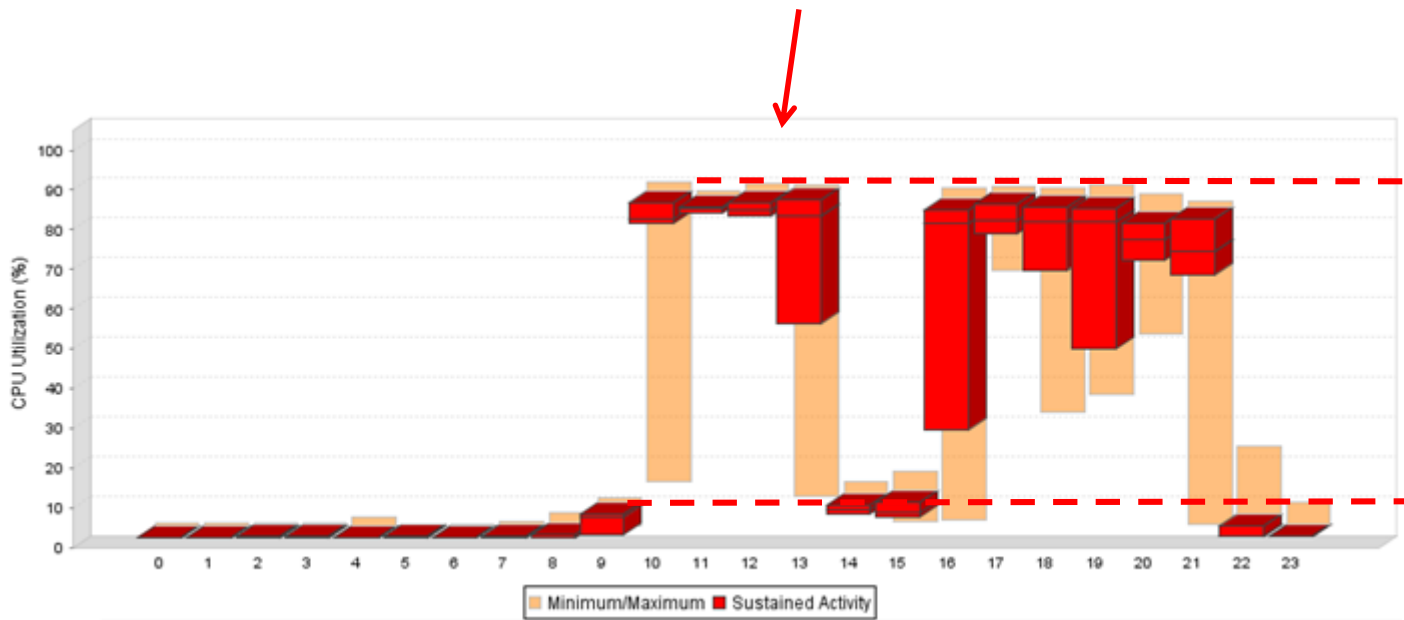
- Cirba's sophisticated analytics and policy can be used to safely rightsize VMs

Last Month
of Activity:



Business cycle has
peaks of high utilization
throughout the month

Busiest
Day:

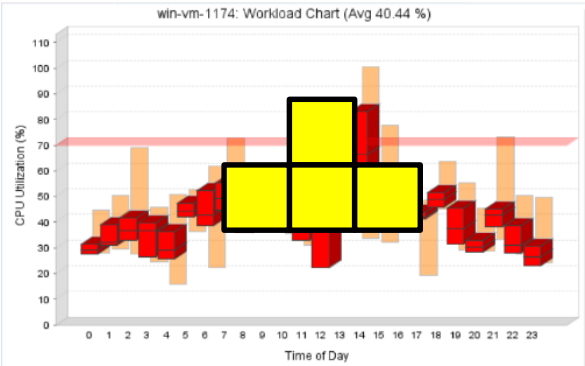


Cirba workload analysis sees
85% utilization and
recommends a bump-up

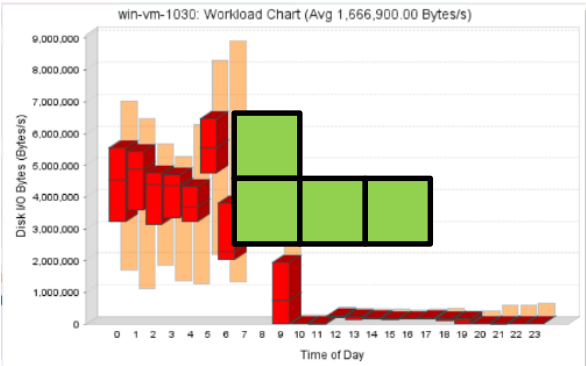
Other solutions using 90th
percentile data see **3.25%**
and recommend a *bump-down*,
which would be catastrophic to the app

The Importance of Analyzing Workload Patterns

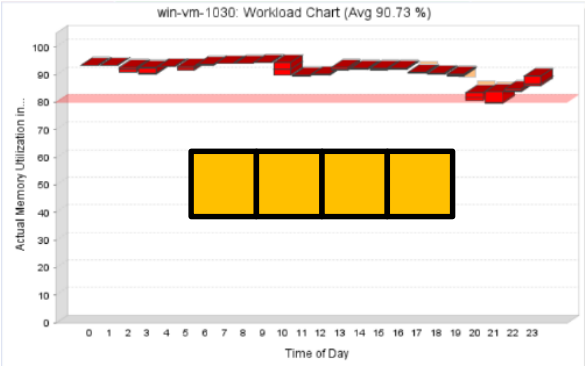
CPU
Intensive



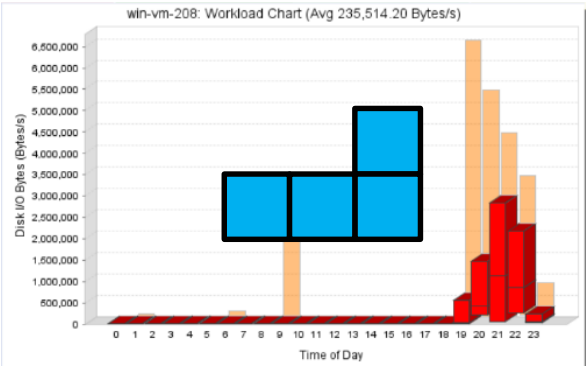
Start of Day



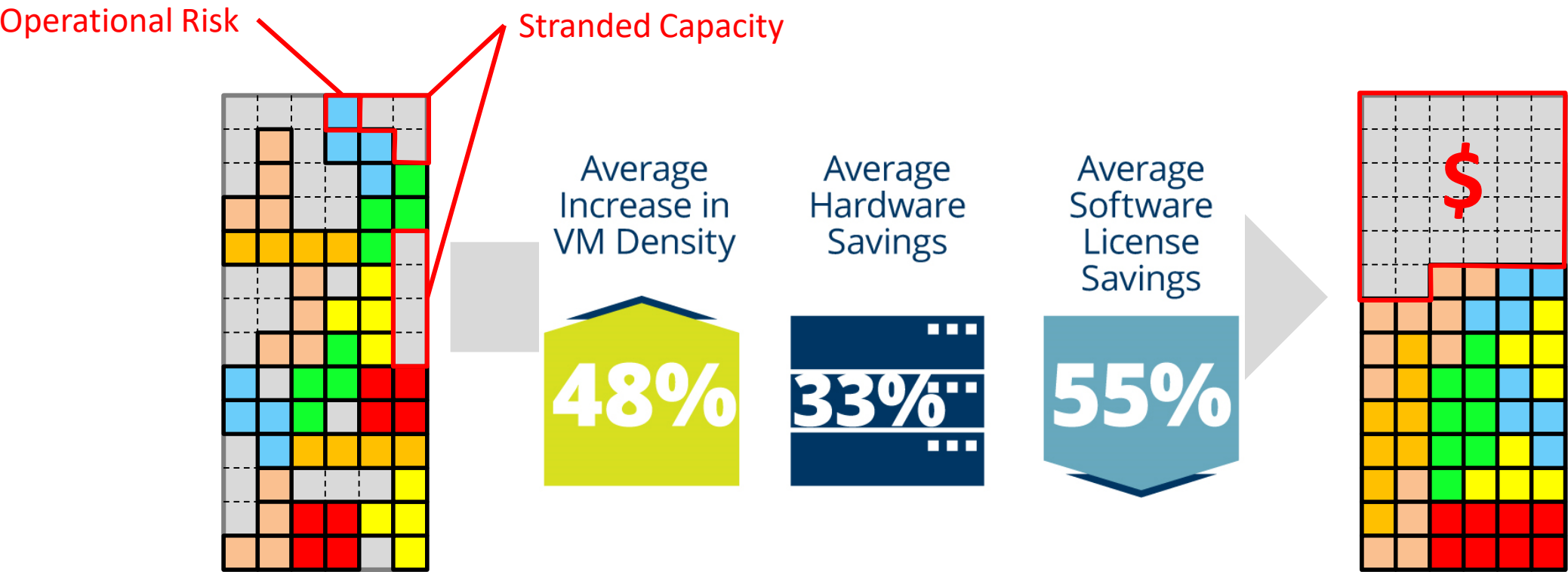
Memory
Intensive



End of Day

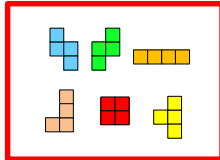


The Importance of Analyzing Workload Patterns

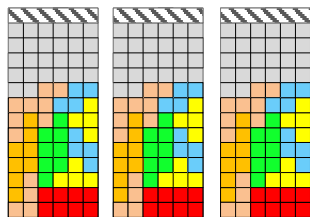
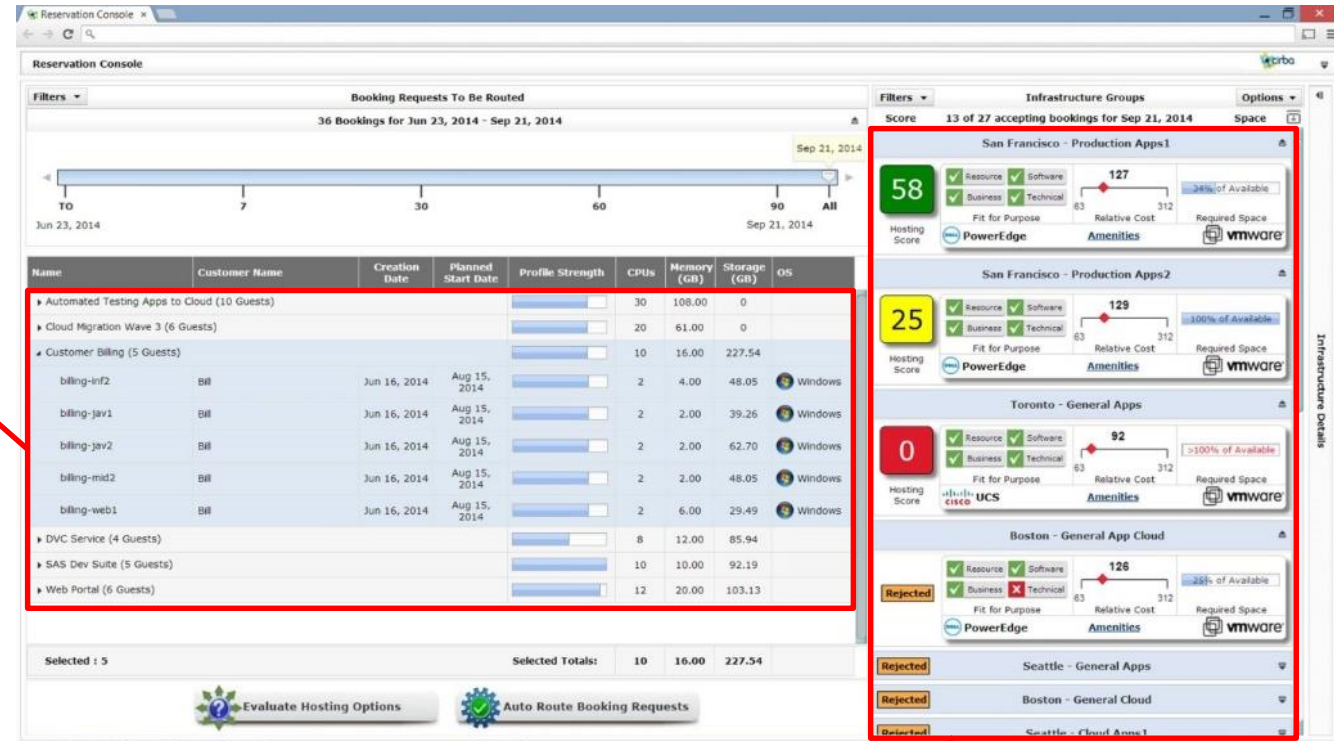


Using Analytics to Automatically Route New Applications

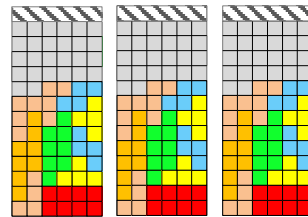
New Application or Cloud Request



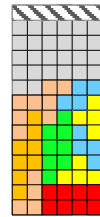
Windows OS
Requires SQL server
Has customer data
Needs Gold tier storage
Must run on west coast



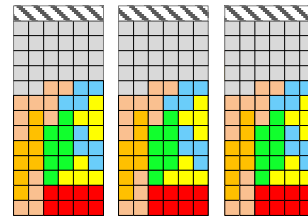
New York



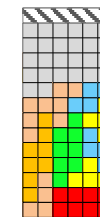
San Francisco



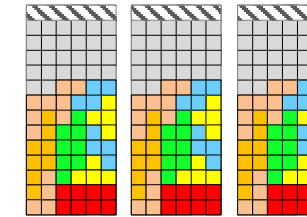
Toronto



London



Singapore



SOFTLAYER®
Bare Metal



Public Cloud

What's Different for Public Cloud?

Challenge with Public Cloud Adoption

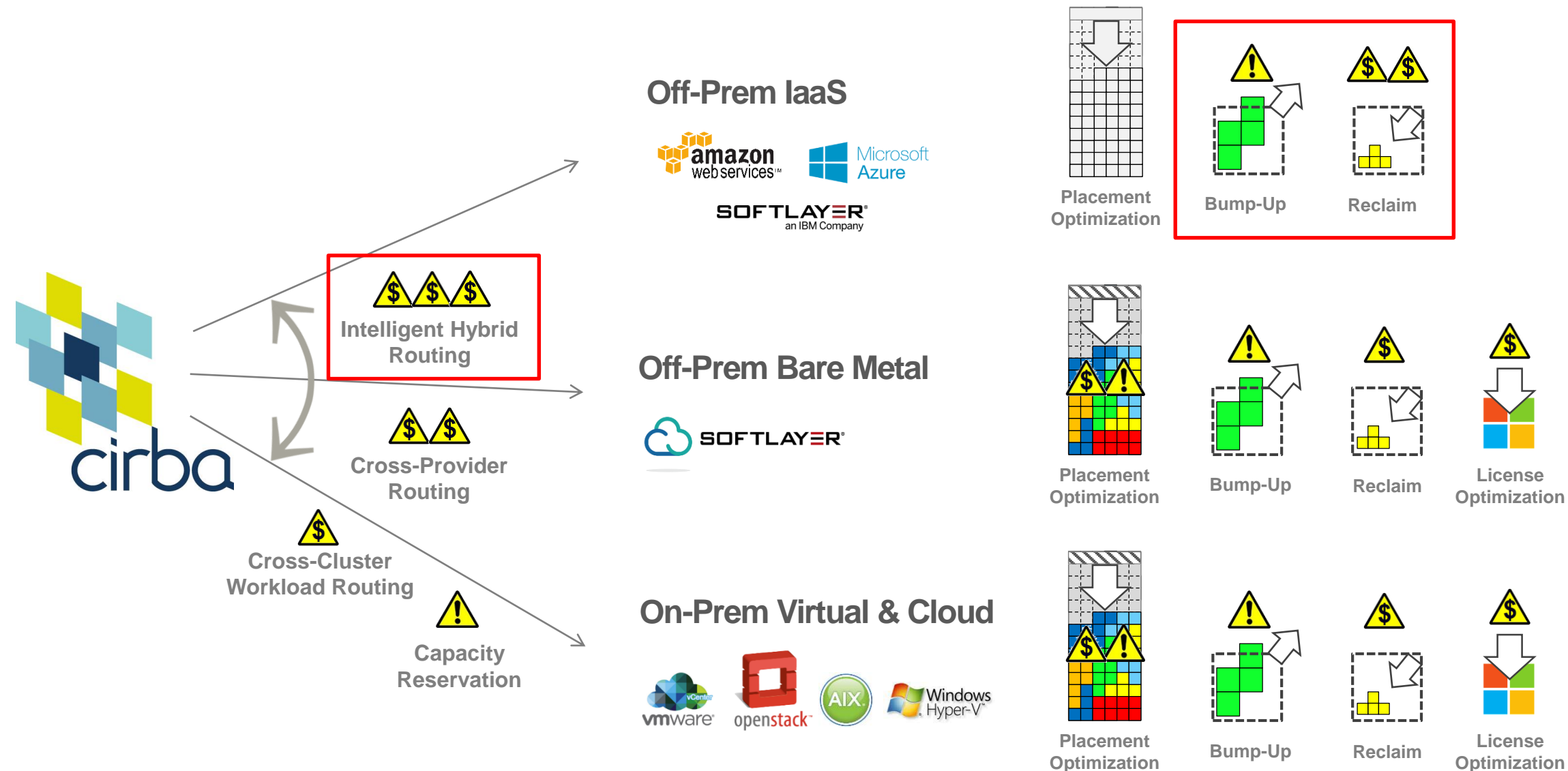
- Customers need agility and real-time provisioning **and** enterprise-class governance and control over hosting decisions
- Security, Compliance, Performance, Proximity, Cost



Codify
Govern
Optimize
Automate

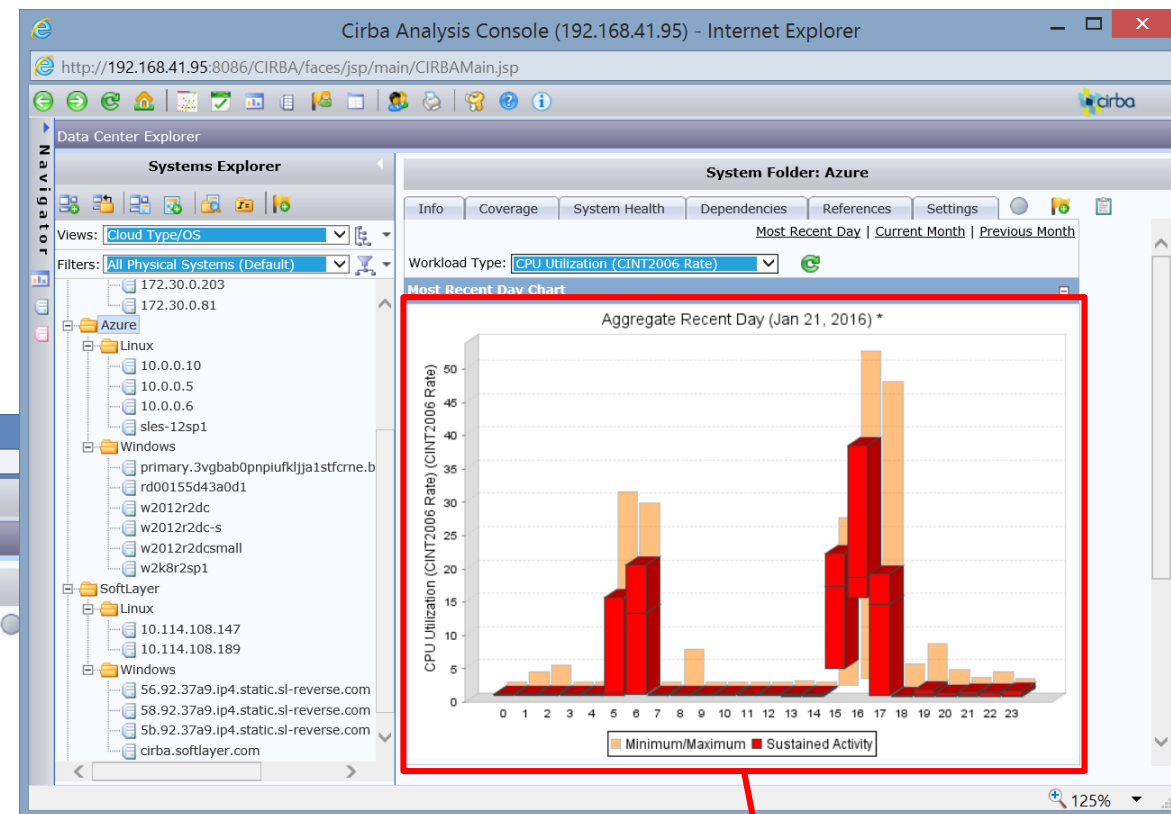
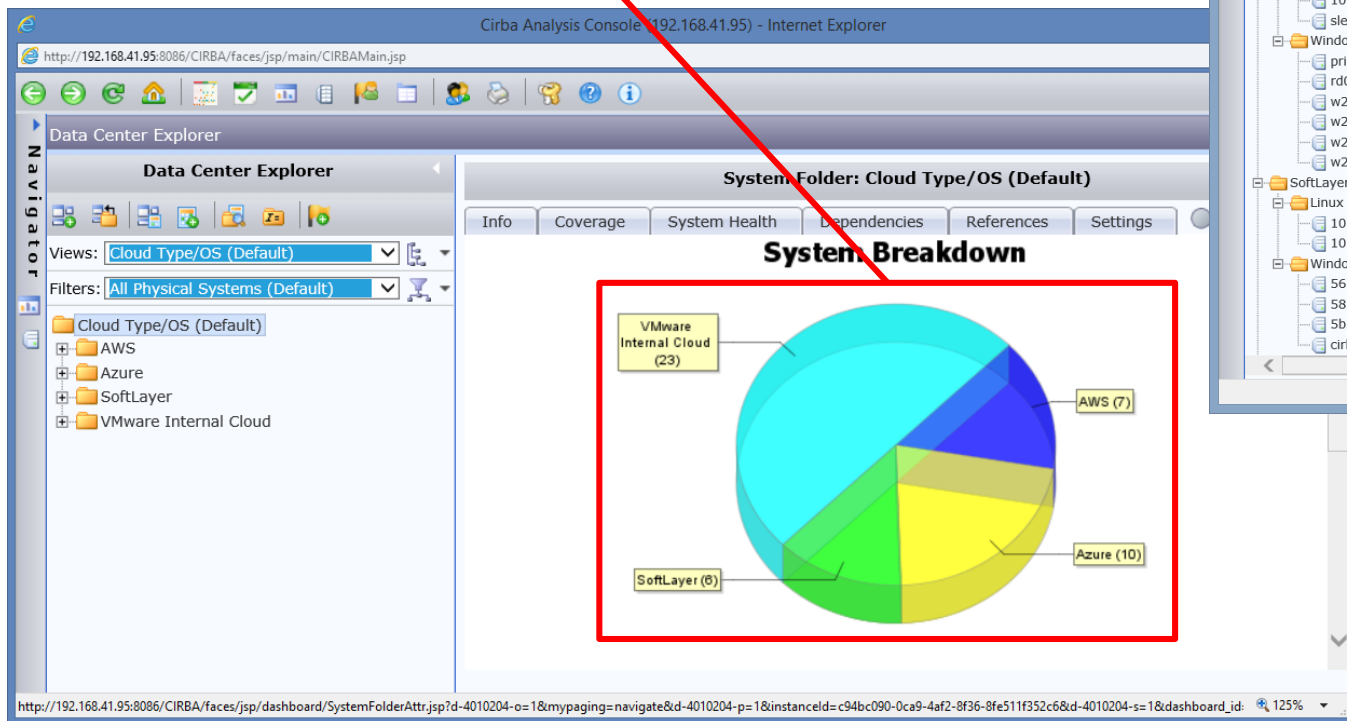


Cirba and Hybrid Cloud Optimization



Public Cloud Workload Analysis

Cirba's public cloud data collection discovers cloud instances running in Amazon, Azure and SoftLayer, providing seamless views and analysis across both on-prem and public cloud workloads

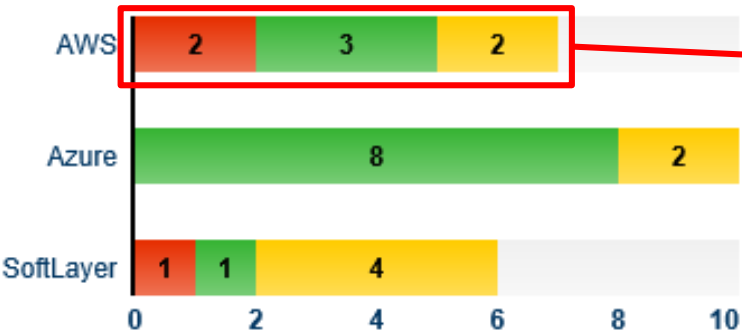


Detailed workload patterns are tracked across CPU, memory, disk and network I/O. Full historical data retention enables analysis of operational patterns and business cycles, and Cirba's benchmark system enables normalization between platforms

Public Cloud Optimization



Data is analyzed against cloud catalogs to uncover allocation risks, which put hybrid cloud initiatives in danger, or inefficiencies, which directly lead to over-spend



Detailed recommendations are generated to remediate issues and optimize public cloud spend

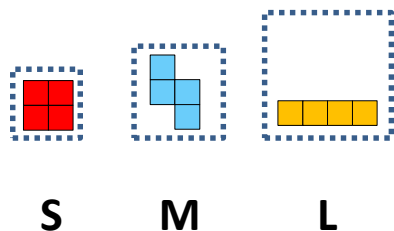
Allocation Risk and Efficiency - System Details

CSV Version

System	Overall Status	OS	Recommended Allocations			
			Platform	CPU	Memory (GB)	Disk Space (GB)
172.30.0.197	At Risk	Linux	m3.medium-1X3.75-Linux	1	4	4
172.30.0.198	Excess Capacity	Windows	m4.large-2X8-Windows	1	4	30
172.30.0.203	Excess Capacity	Windows	m4.large-2X8-Windows	1	4	40
172.30.0.212	At Risk	Linux	m3.medium-1X3.75-Linux	1	4	6

The Impact of Properly Right-Sizing Cloud Workloads

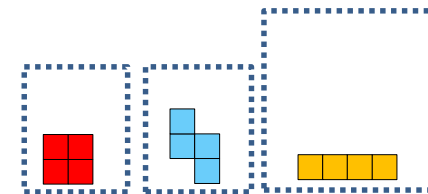
- T-Shirt instance sizing model
- Cost based on catalog size
- Typically sized to peak utilization
- User pays for capacity whether it is used or not (no overcommit)



Cirba analyzed **983 real workloads** to determine the impact of optimization analysis on the 1-year hosting cost in Amazon AWS:

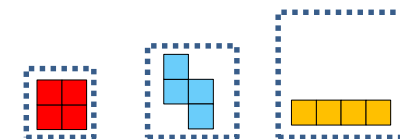
Sized As-Is (No Optimization):

\$2,368,899



Sizing Optimized with Cirba:

\$1,892,733



Net Impact: 20%

Note that more aggressive reclaim policies were found to yield up to
46% savings

Cirba Version 9: Hybrid Routing Analysis

Reservation Console (Server Time Zone: UTC -4:00)

Filters Booking Requests To Be Routed
30 Bookings For Jan 4, 2016 - Jul 2, 2016
Server Time Zone: UTC -4:00

Today Jan 4, 2016 AWS - EU-Frankfurt

Fit for Purpose Details :

Name	Resource	Security	Business	Technical
App to Rout	✓ Operating Systems ✓ Guest Sizes	✗ Data Jurisdiction • Reporting-Server-UK : Required Data Jurisdiction not supported • Reporting-DB-UK : Required Data Jurisdiction not supported ✓ Compliance ✓ Encryption and Key Management ✓ Identity and Access Management ✓ Security Zones ✗ Network Isolation • Reporting-DB-UK : Required Network Isolation not supported ✓ Intel TXT Support	✓ Location ✓ Departments ✓ Service Level	✓ Hosting Platform ✓ Maximum Guest I/O ✓ Operational Environments ✓ Software Licenses ✓ License Groups
Reportin				
Reportin				
Cloud wave				
Customer B				
DVC Service				
SAS Dev Suite				
Web Portal (6 Guests)				

Selected : 0

Routing Strategy
Hosting Preference: External First
Rank Based On: Capacity

Evaluate Hosting Options Auto Route Booking Requests

Selected Totals: 0 0 0

Filters Hosting Venues
Score 19 of 30 accepting bookings Space

SoftLayer - London

100
Hosting Score

✓ Resource ✓ Security
✓ Business ✓ Technical

0% of Available
Fit for Purpose
Required Space

Amenities SOFTLAYER an IBM Company

85 Edinburgh - HV-PRD-App1

85 London SoftLayer - ProdCloud-A...

0 Edinburgh - HV-PRD-App2

AWS - EU-Frankfurt

Rejected

✓ Resource ✗ Security
✓ Business ✓ Technical

>100% of Available
Fit for Purpose
Required Space

Amenities amazon web services

Rejected Azure - EU-Ireland

Rejected Azure - EU-Netherlands

Rejected vCloud - Texas

Rejected AWS - US-East

Rejected SoftLayer - US-West

1 2

Modeling Detailed Application Requirements

Reservation Console (Server Time Zone: UTC -4:00)

Filters

Today Jan 4, 2016

Selected : 1

Routing Strategy

Hosting Preference: External First

Rank Based On: Capacity

Edit Guest Booking Request for Reporting-DB-UK

Profile Strength: 60 Enter requirements in *highlighted sections* to improve Profile Strength.

Guest's Booking Information*

Guest's Resource Request*

Guest's Utilization Profile*

Guest's Security Requirements

Data Jurisdiction: UK

Compliance: ...

Encryption and Key Management: ...

Identity and Access Management: ...

Security Zone: Active Directory, AirWatch, AWS IAM, ISAM/TAM, Keystone

Network Isolation

Intel TXT Support

Guest's Business Requirements

Guest's Technical Requirements

To improve Profile Strength define one or more Security Requirements

Route Save Cancel

Hosting Venues

Options

f 30 accepting bookings

Space

SoftLayer - London

Resource Security 0% of Available

Business Technical

Fit for Purpose Required Space

Amenities SOFTLAYER an IBM Company

nburgh - HV-PRD-App1

SoftLayer - ProdCloud-A...

nburgh - HV-PRD-App2

AWS - EU-Frankfurt

Resource Security >100% of Available

Business Technical

Fit for Purpose Required Space

Amenities amazon web services

Azure - EU-Ireland

Azure - EU-Netherlands

vCloud - Texas

AWS - US-East

SoftLayer - US-West

Hosting Venue Details

< 1 2 >

Cirba Provides Seamless Capacity Planning for Hybrid IT

- Enables truly automated, real-time provisioning
 - Factor security and reputational risk into placements
 - Use policy to place workload in the right cloud environment
- Enables immediate and ongoing cost savings
 - Rightsizing
 - Predict the financial impact of placements
 - Be able to identify and correct poor placements quickly
- Cirba can help you be successful in a hybrid world



Thank You!