ELEPHANT IN THE ROOM WHAT'S THE TCO FOR AN OPENSTACK CLOUD?

ERICH MORISSE

Cloud Management Strategy Director

@emorisse

emorisse@redhat.com

MASSIMO FERRARI

Cloud Management Strategy Director

@crosslogic

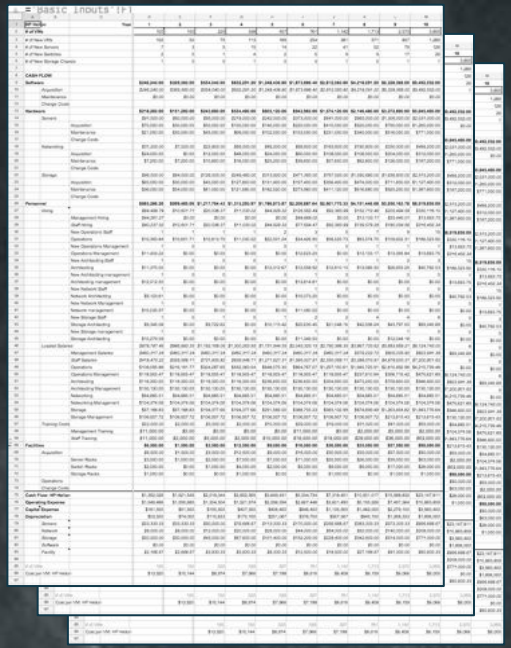
mferrari@redhat.com

redhat.


WHY DID WE NEED
AN OPENSTACK
TCO MODEL?


HOW IS THIS TCO
DIFFERENT?

HOW WE BUILT IT



WE CREATED THE MOST COMPREHENSIVE AND MOST ACCURATE TCO MODEL WE CAN FIND

FULL ACCOUNTING IMPACT ACROSS CASH FLOW, INCOME STATEMENT, AND BALANCE SHEET

SUPPORTS MULTIPLE DISJOINT BUYING CYCLES OF HARDWARE, SOFTWARE, AND HIRING

DESIGNED FOR COMPARATIVE DECISION MAKING

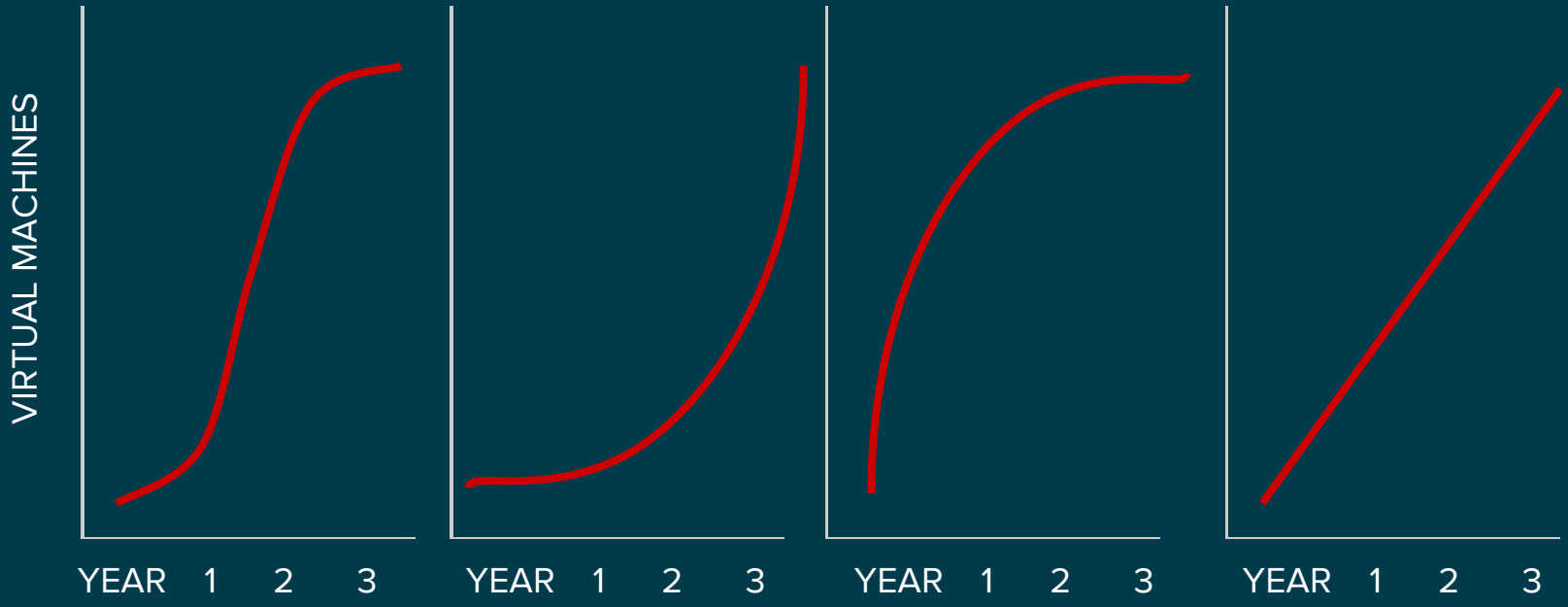
redhat.


SHOW ME THE MONEY!!!!

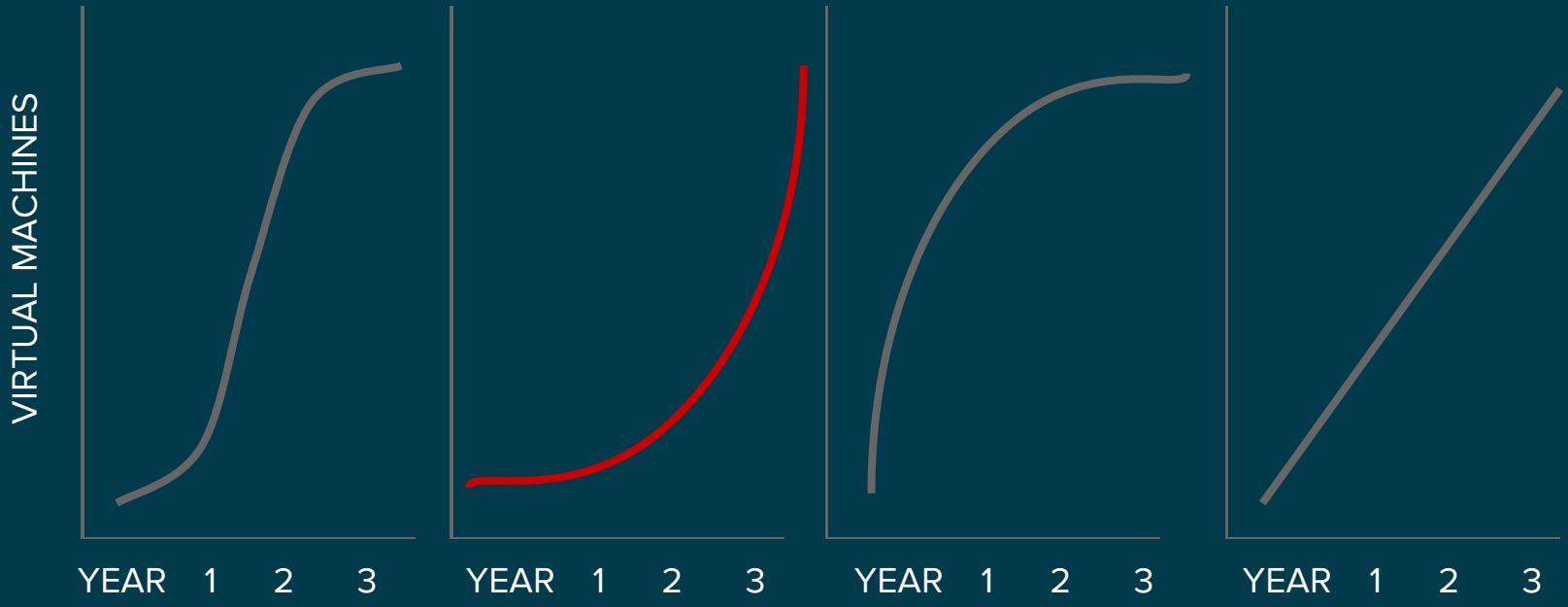

OPENSTACK IS THE LOWEST COST
PRIVATE CLOUD ON THE MARKET.


NO MATTER HOW YOU GROW,
OPENSTACK REMAINS THE
LEAST EXPENSIVE OPTION
redhat.

WE LOOKED AT A LOT OF GROWTH CURVES



WE LOOKED AT A LOT OF GROWTH CURVES



OPENSTACK VS. ?

- OPENSTACK AGAINST NON-OPENSTACK-BASED SOLUTIONS FOR PRIVATE CLOUD COMPUTING (e.g., server virtualization + automation)
- UPSTREAM AGAINST COMMERCIAL DISTRIBUTION

COSTS CONSIDERED

SOFTWARE

PEOPLE

HARDWARE

COSTS CONSIDERED

SUBSCRIPTIONS

LICENSES

SERVER ADMINISTRATORS

SERVER ENGINEERS

STORAGE ADMINS

NETWORKING STAFF

SERVERS

STORAGE

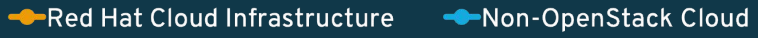
NETWORKING

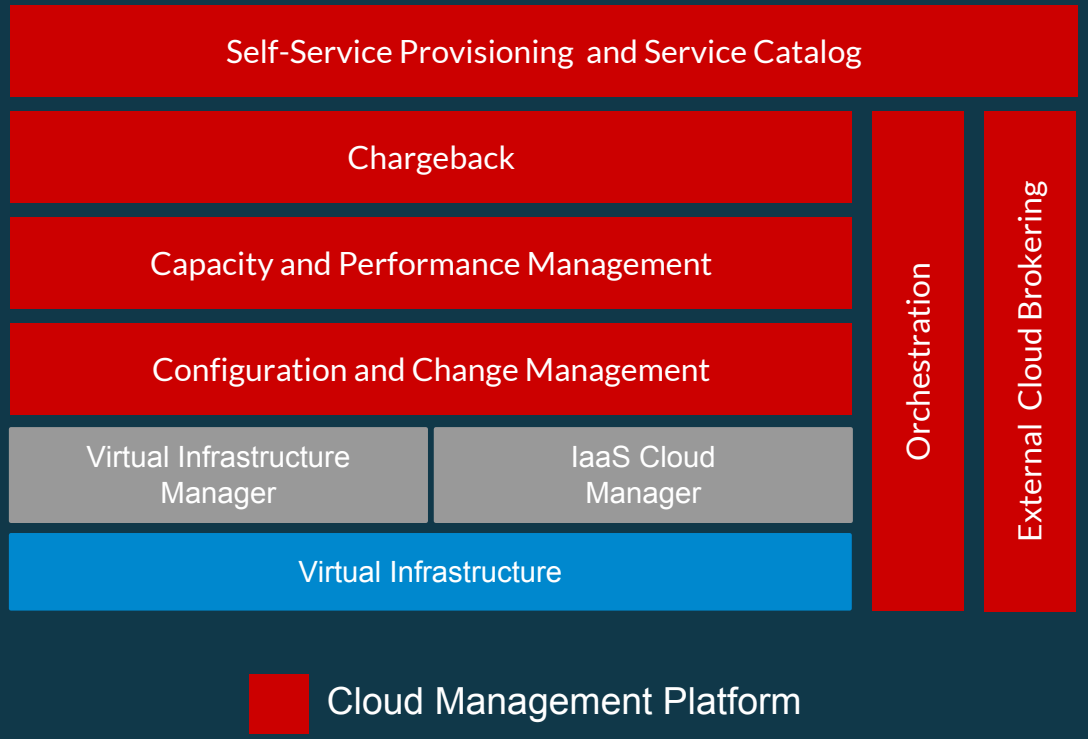
HOW COSTS ARE MITIGATED

SOFTWARE → CLOUD SOLUTION

PEOPLE → IT AUTOMATION

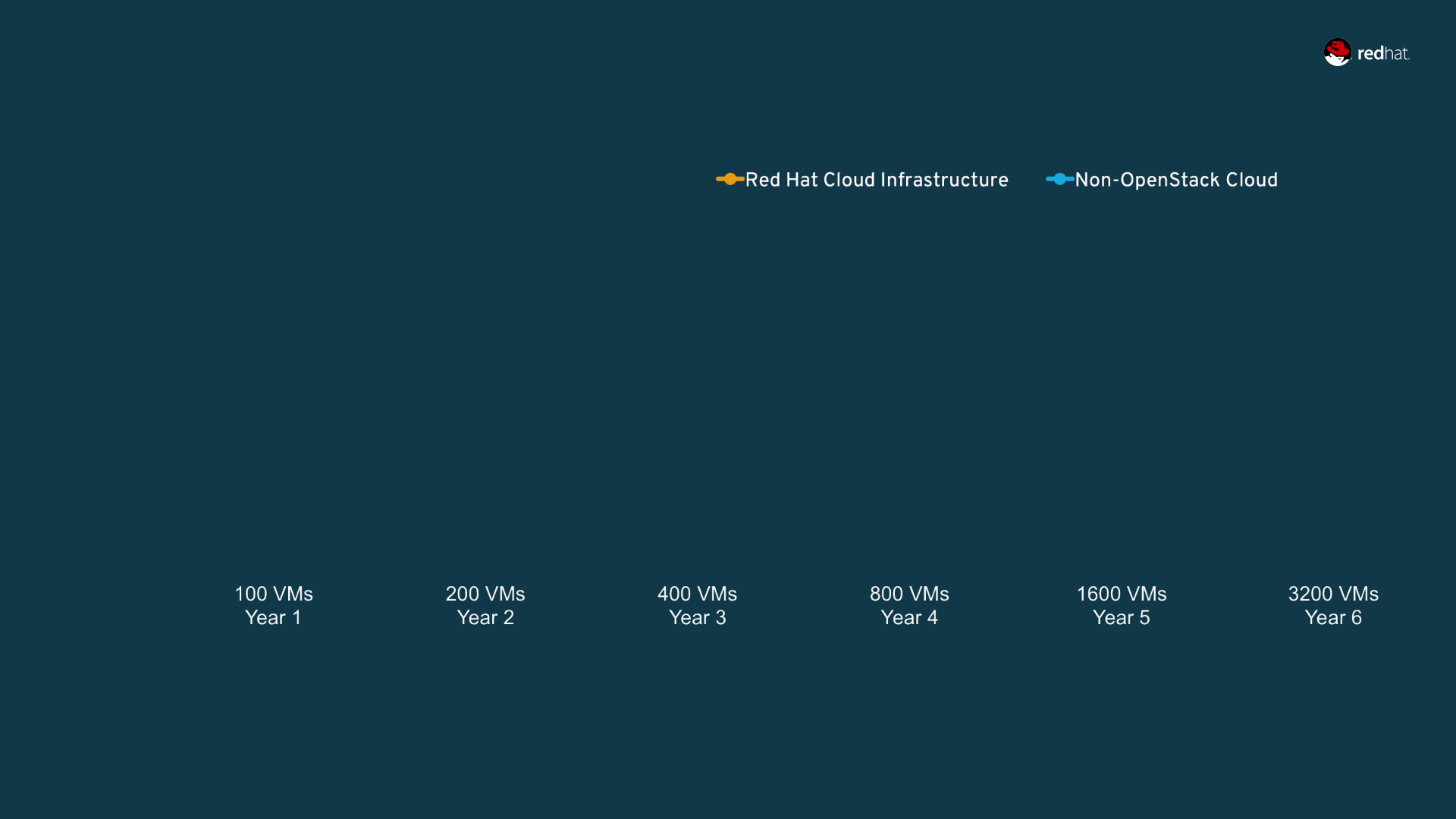
HARDWARE → VM DENSITY

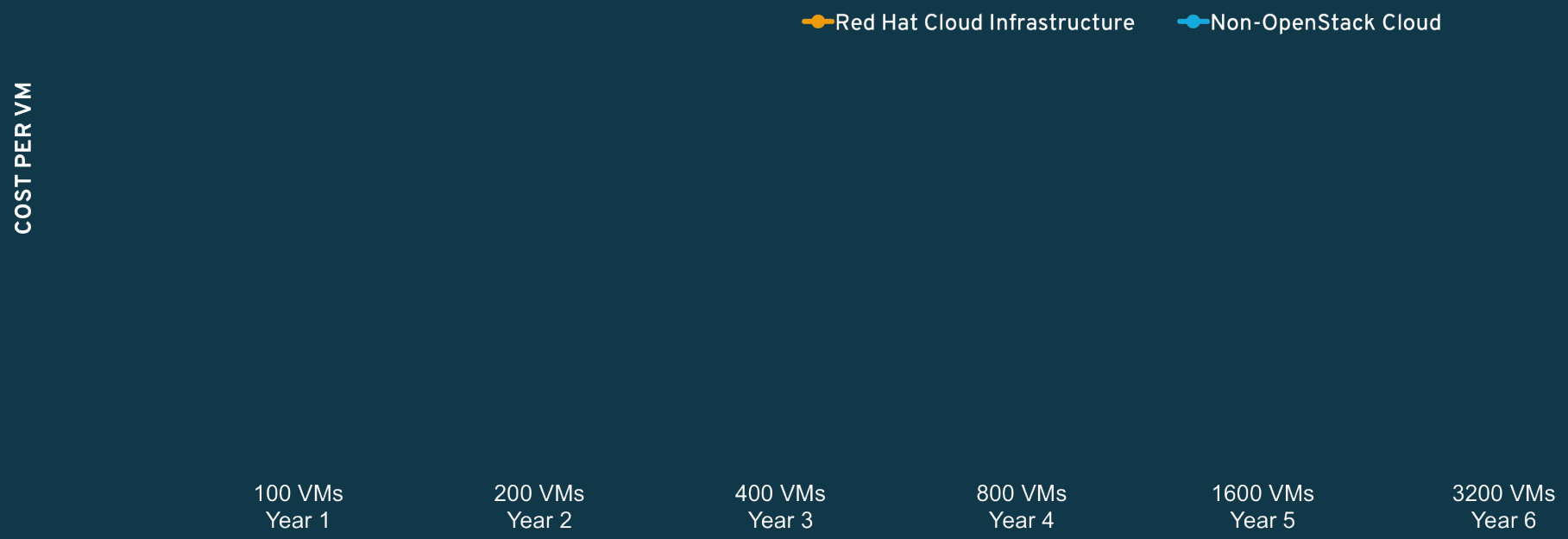

Red Hat Cloud Infrastructure
Non-OpenStack Cloud

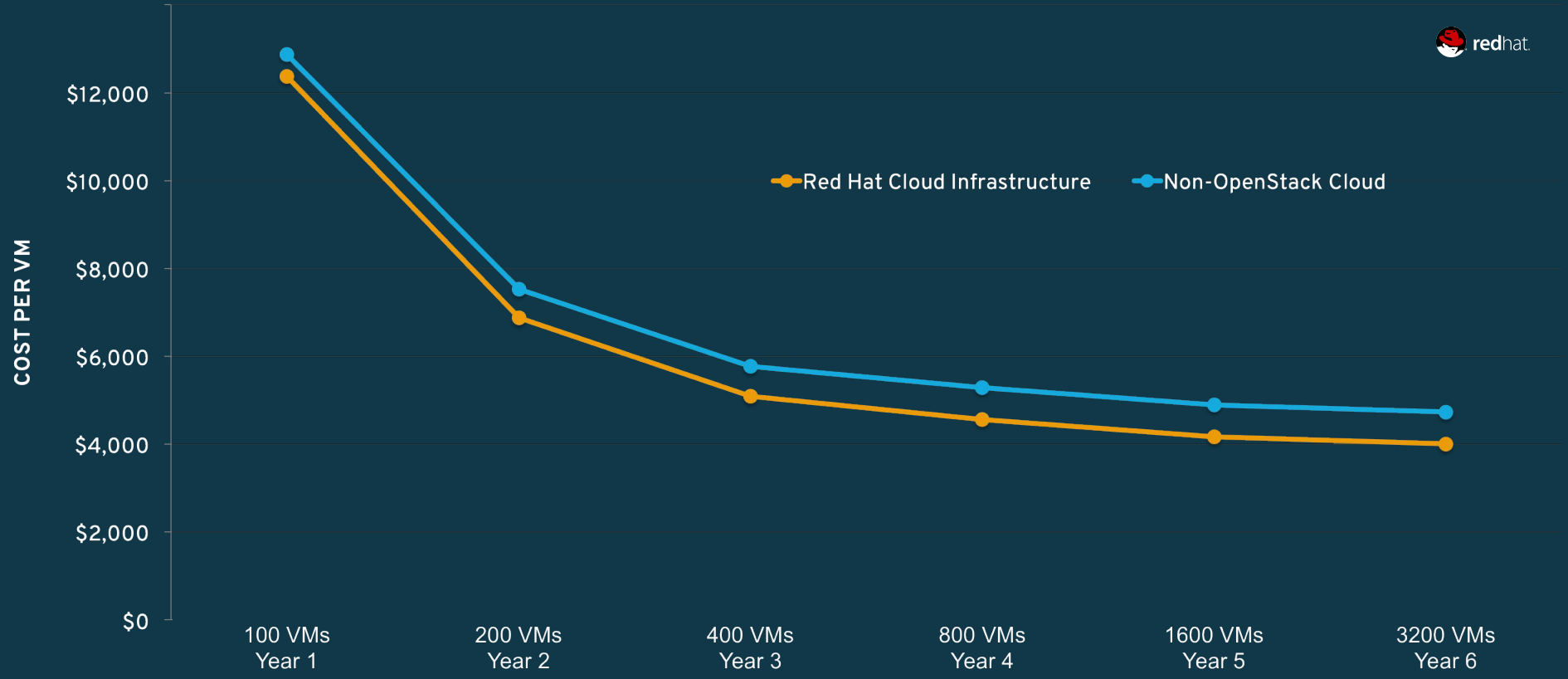


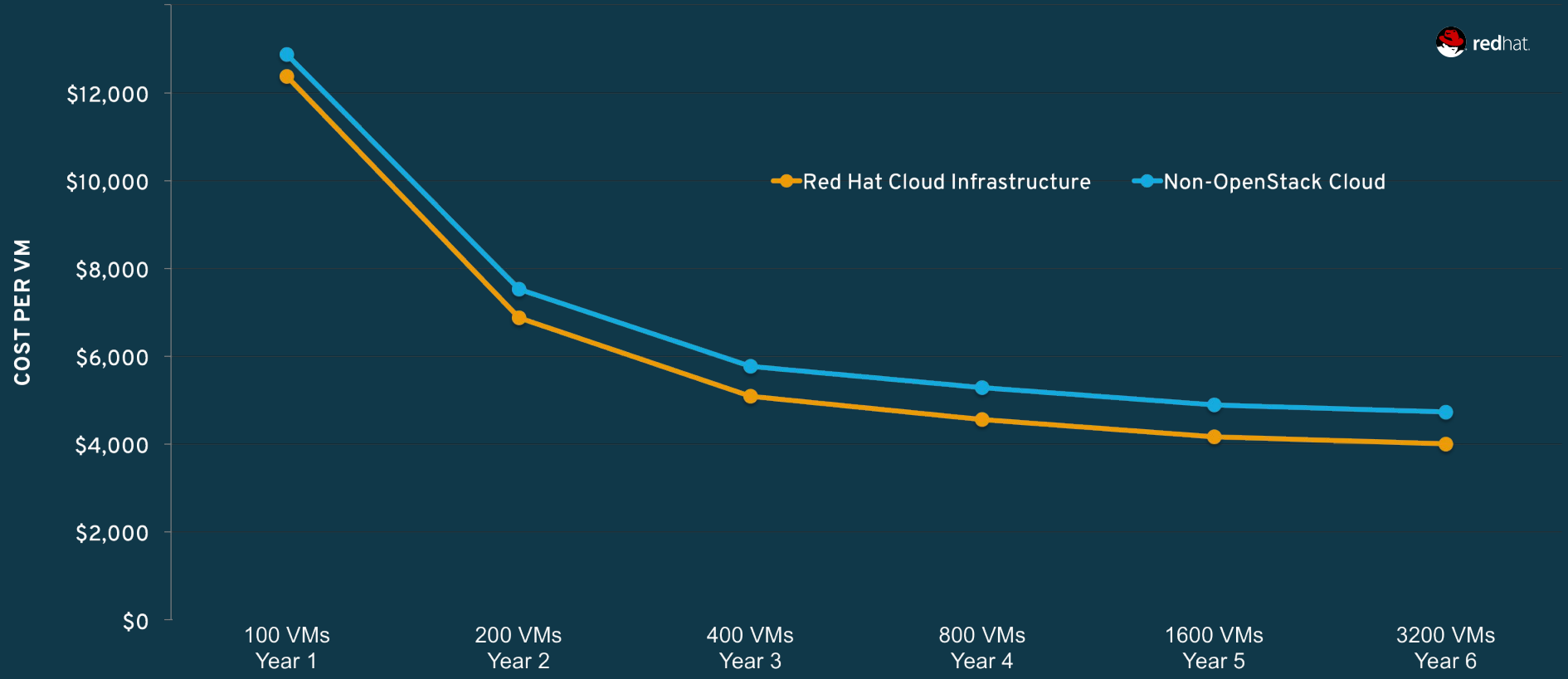
https://www.redhat-cloudstrategy.com/when-and-why-openstack-needs-a-cloud-management-platform/


Red Hat Cloud Infrastructure
Non-OpenStack Cloud
Year 1
Year 2
Year 3
Year 4
Year 5
Year 6

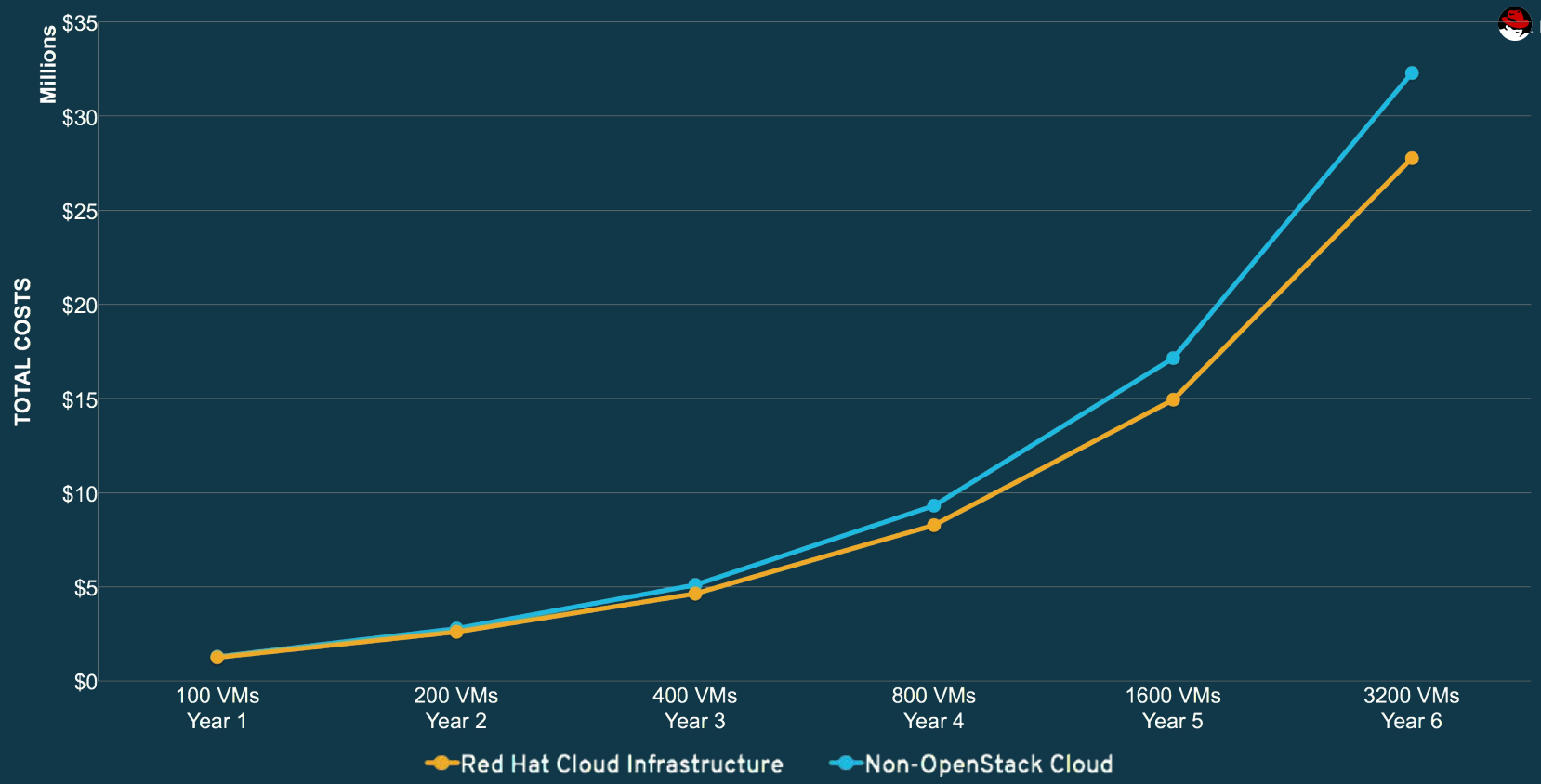

Red Hat Cloud Infrastructure
Non-OpenStack Cloud
100 VMs
Year 1
200 VMs
Year 2
400 VMs
Year 3
800 VMs
Year 4
1600 VMs
Year 5
3200 VMs
Year 6


COST PER VM
Red Hat Cloud Infrastructure
Non-OpenStack Cloud
100 VMs
Year 1
200 VMs
Year 2
400 VMs
Year 3
800 VMs
Year 4
1600 VMs
Year 5
3200 VMs
Year 6

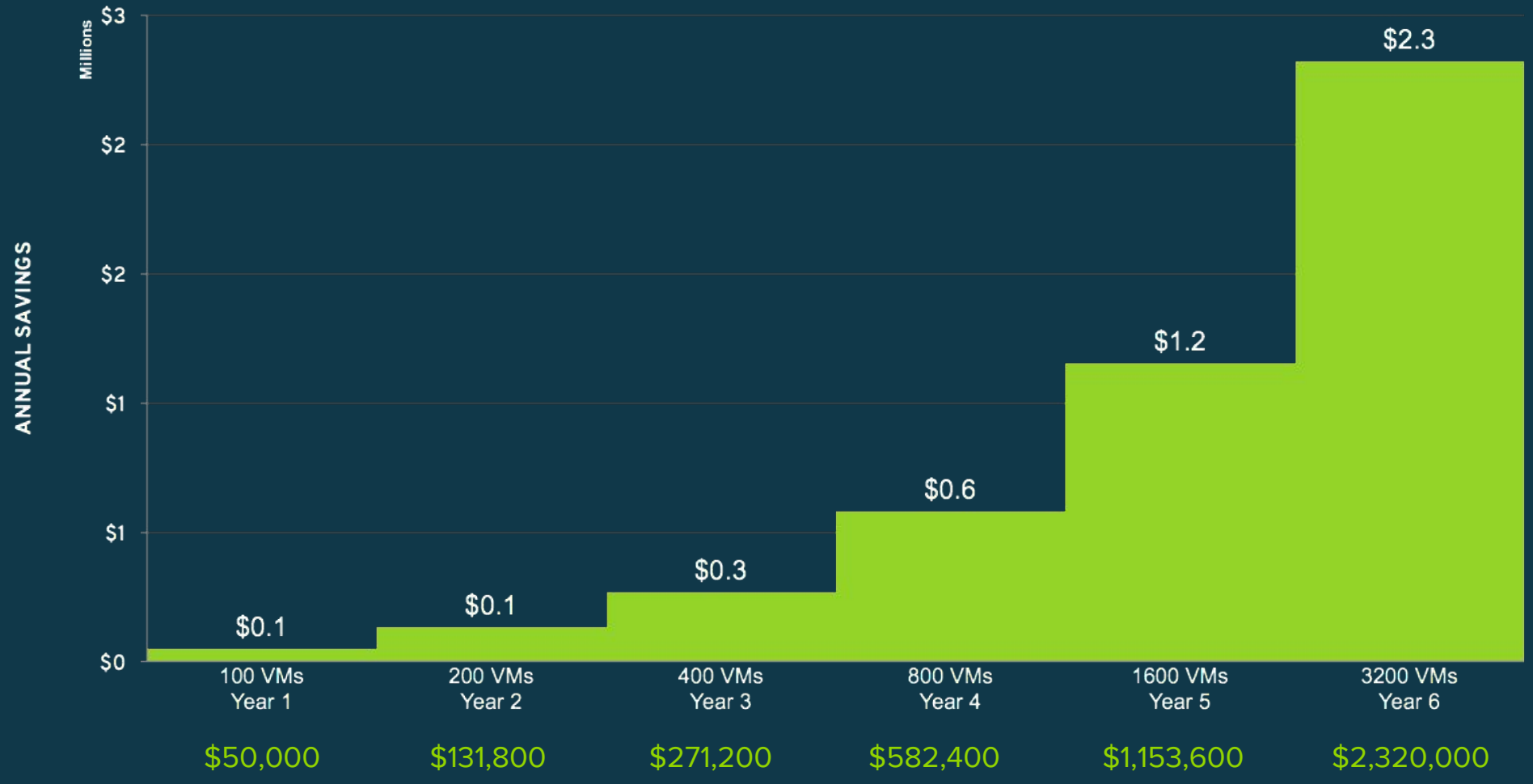

redhat.
COST PER VM
$12,000
$10,000
$8,000
$6,000
$4,000
$2,000
$0
Red Hat Cloud Infrastructure
Non-OpenStack Cloud
100 VMs
Year 1
200 VMs
Year 2
400 VMs
Year 3
800 VMs
Year 4
1600 VMs
Year 5
3200 VMs
Year 6

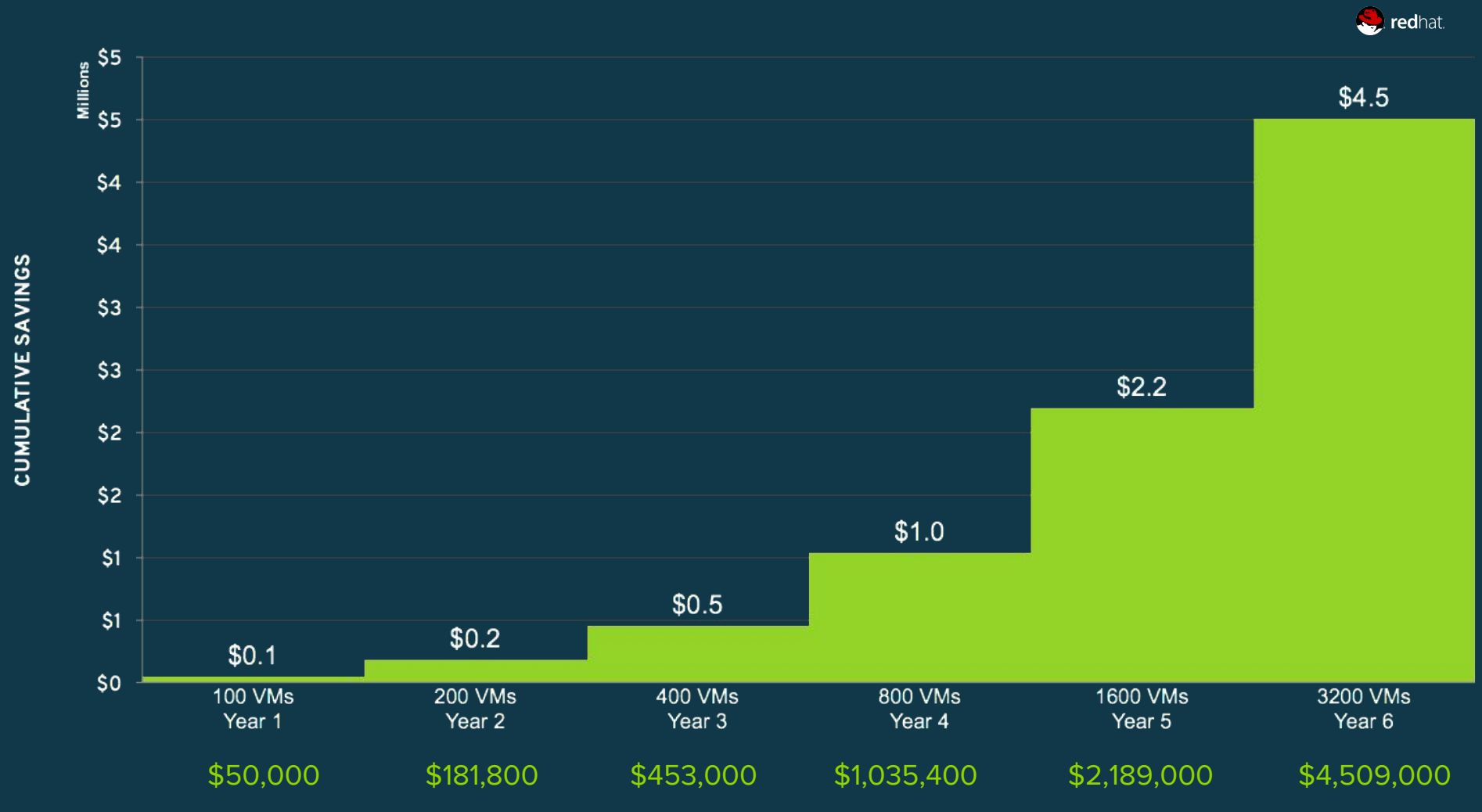


Red Hat Cloud Infrastructure	$12,374	$6,869	$5,089	$4,556	$4,164	$4,006
Non-OpenStack Cloud	$12,874	$7,528	$5,767	$5,284	$4,885	$4,731

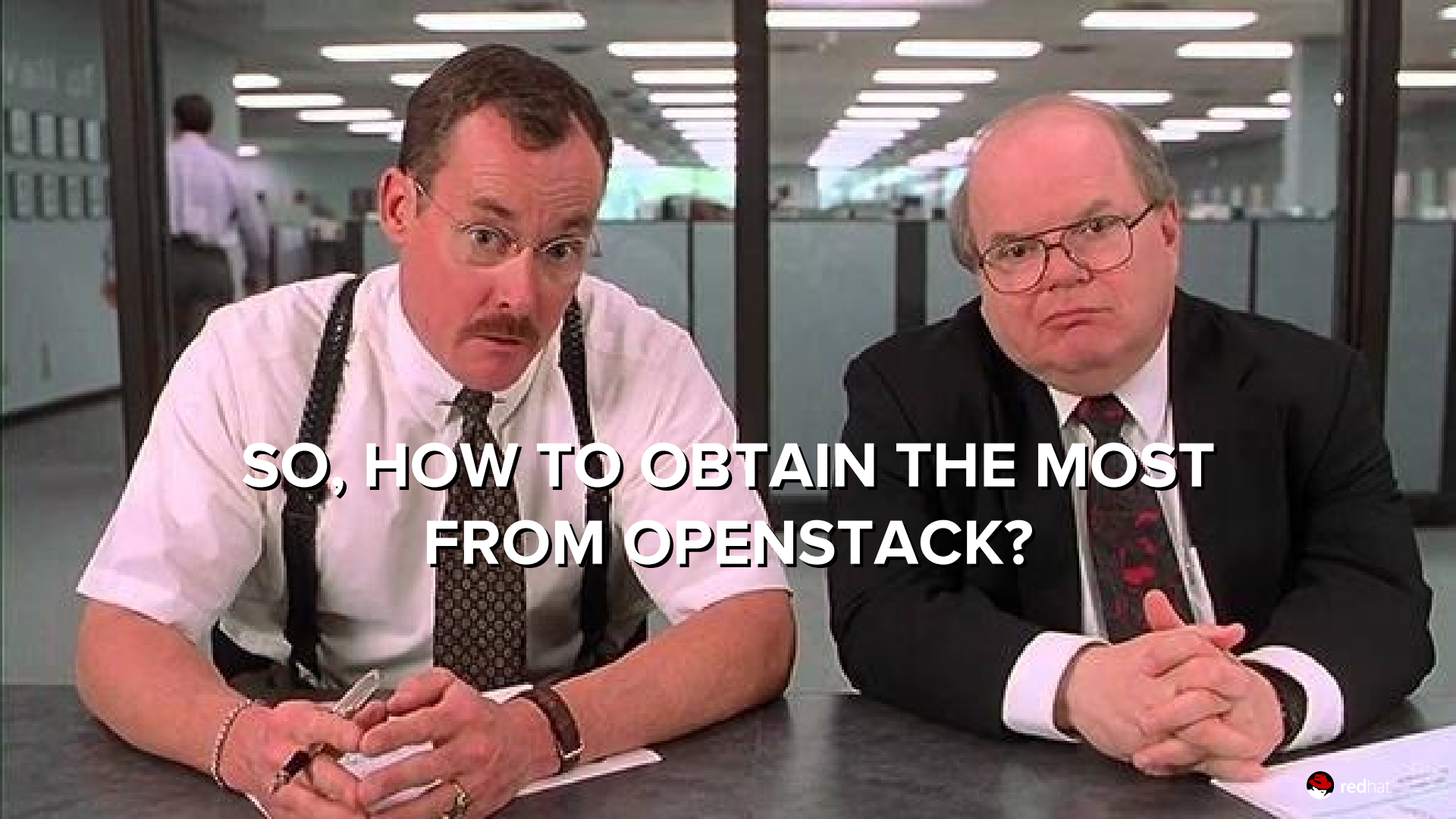


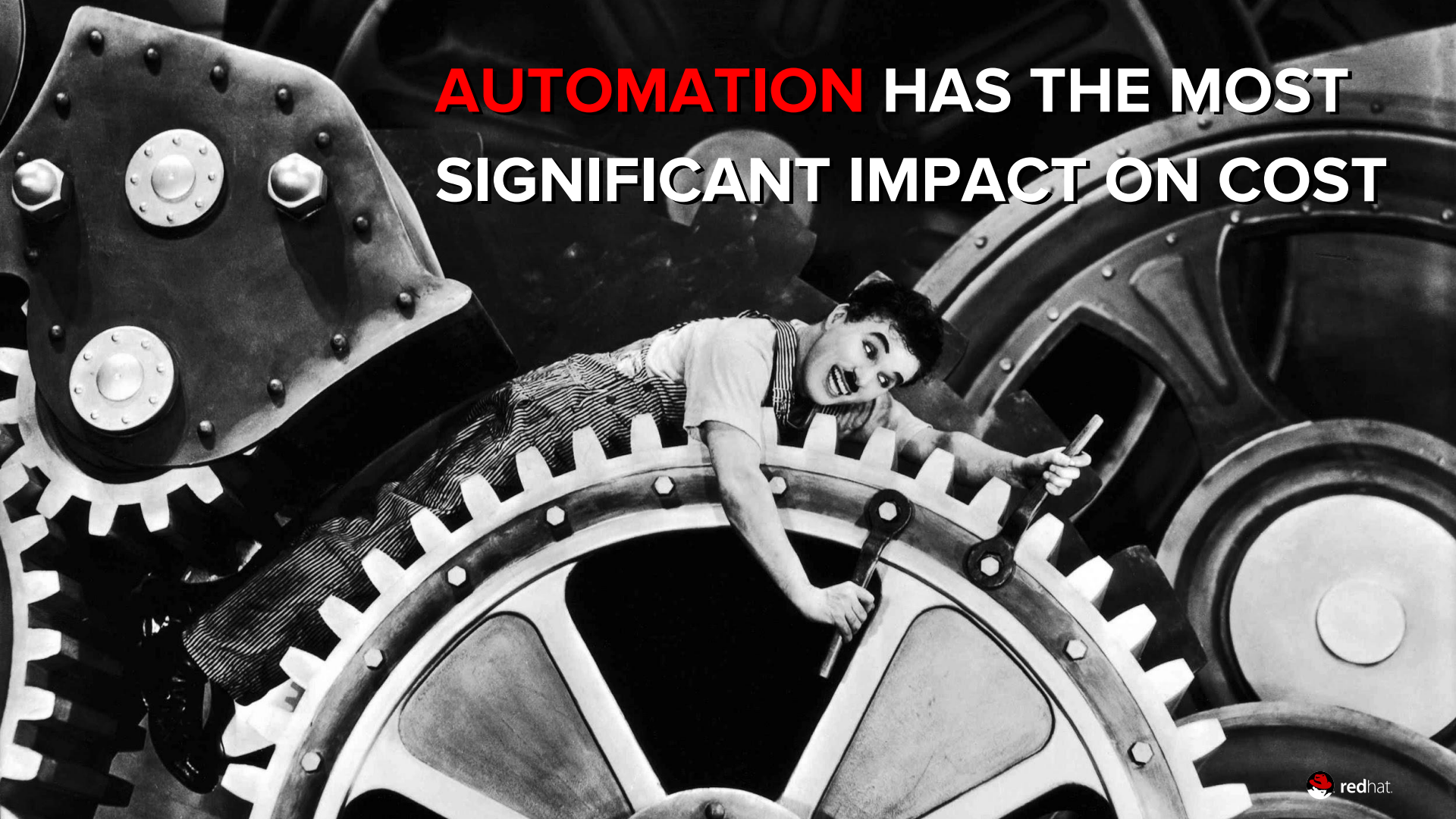
Red Hat Cloud Infrastructure	$1.2M	$2.6M	$4.6M	$8M	$15M	$27.8M
Non-OpenStack Cloud	$1.3M	$2.8M	$5.1M	$9.3M	$17.1M	$32.3M


redhat.
ANNUAL SAVINGS
Millions
$3
$2
$2
$1
$1
$0
$0.1
$0.1
$0.3
$0.6
$1.2
$2.3
100 VMs
Year 1
200 VMs
Year 2
400 VMs
Year 3
800 VMs
Year 4
1600 VMs
Year 5
3200 VMs
Year 6
$50,000
$131,800
$271,200
$582,400
$1,153,600
$2,320,000


redhat.
CUMULATIVE SAVINGS
Millions
$5
$5
$4
$4
$3
$3
$2
$2
$1
$1
$0
$0.1
$0.2
$0.5
$1.0
$2.2
$4.5
100 VMs
Year 1
200 VMs
Year 2
400 VMs
Year 3
800 VMs
Year 4
1600 VMs
Year 5
3200 VMs
Year 6
$50,000
$181,800
$453,000
$1,035,400
$2,189,000
$4,509,000

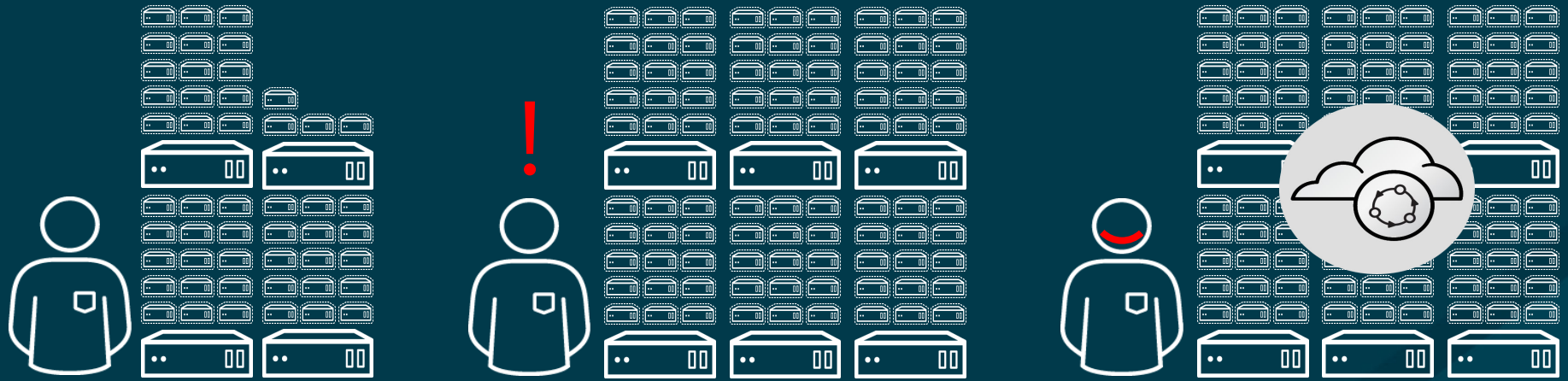
OPENSTACK CAN SAVE YOU MILLIONS OF DOLLARS


SO, HOW TO OBTAIN THE MOST
FROM OPENSTACK?


AUTOMATION HAS THE MOST
SIGNIFICANT IMPACT ON COST

HIGH AUTOMATION DOUBLES OS INSTANCES PER ADMIN

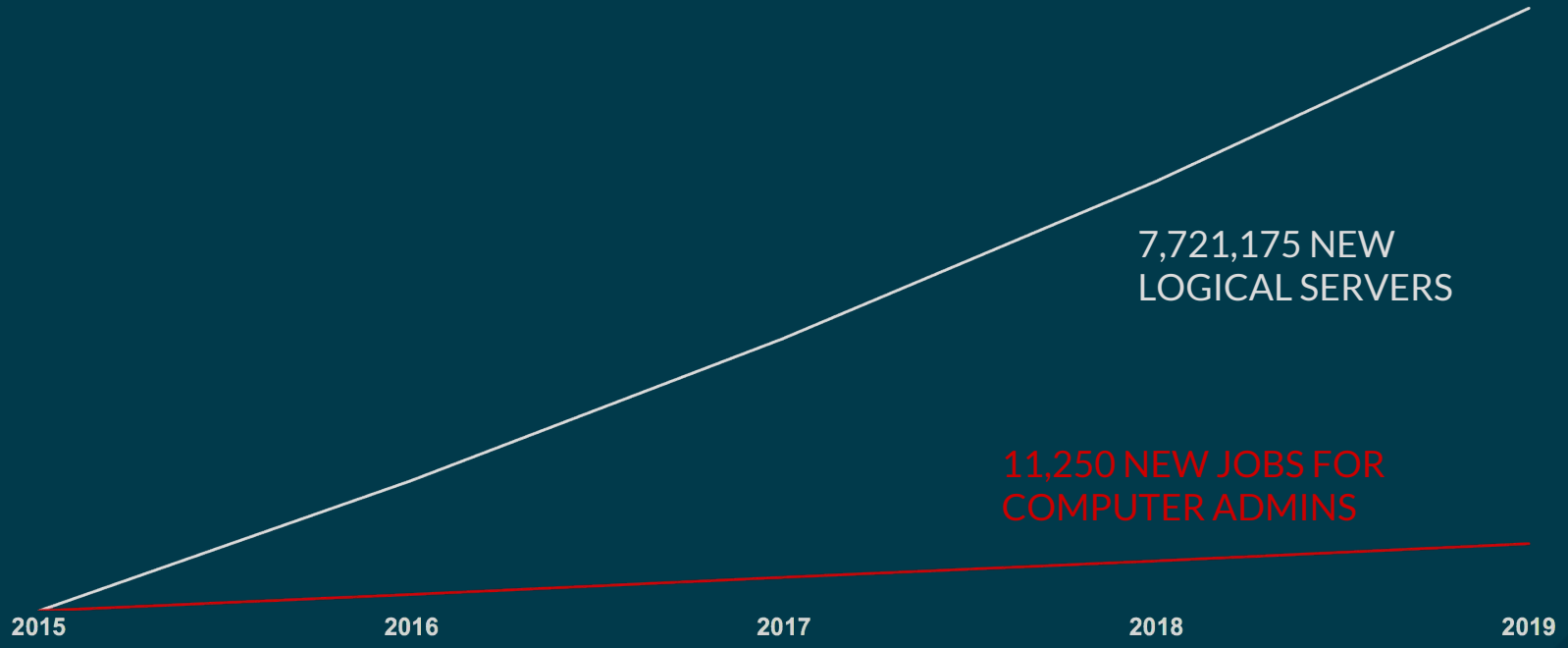
DOUBLE YOUR SERVICE WITHOUT KILLING YOUR ADMINS



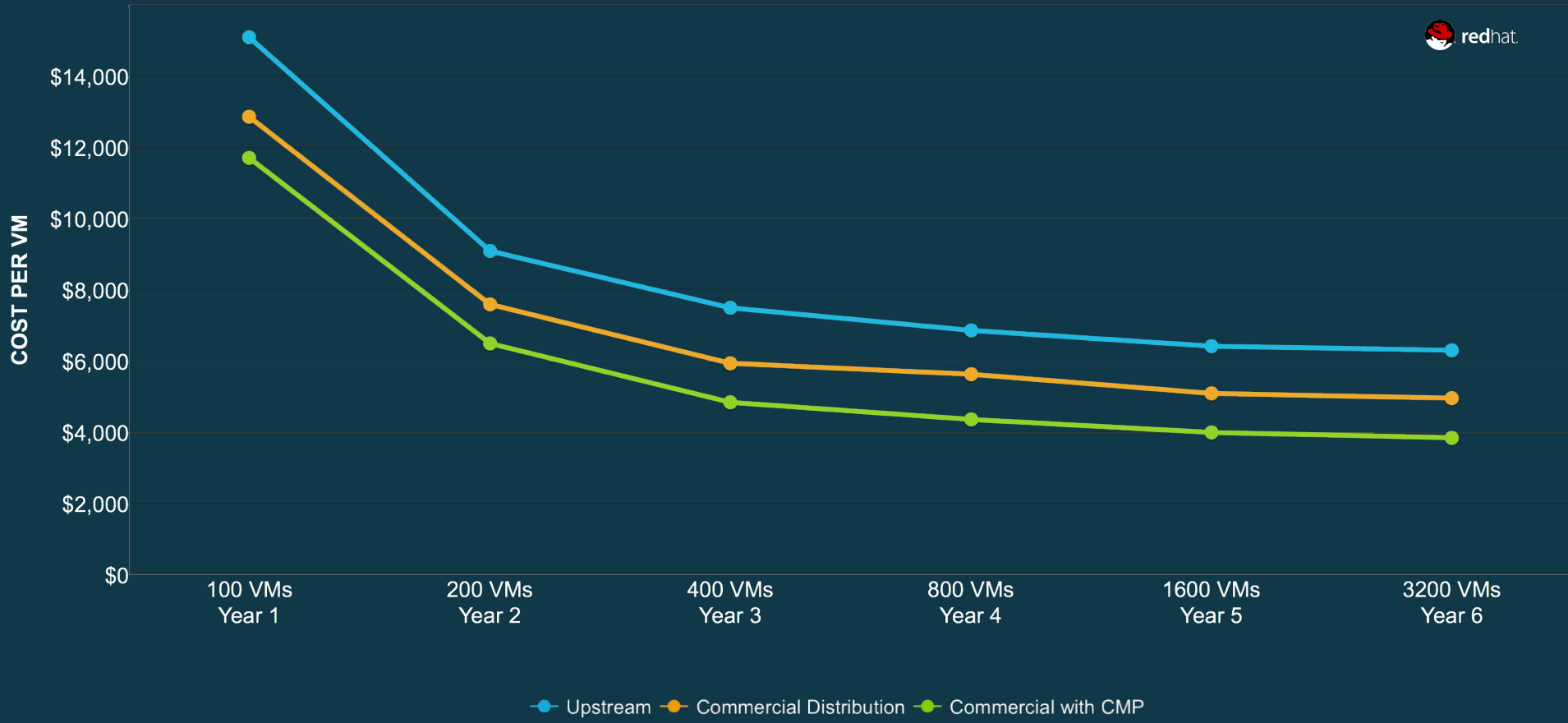
"Server Support Staffing Ratios," Computer Economics, Inc.

DEMAND ON SYSADMINS IS INCREASING EXPONENTIALLY

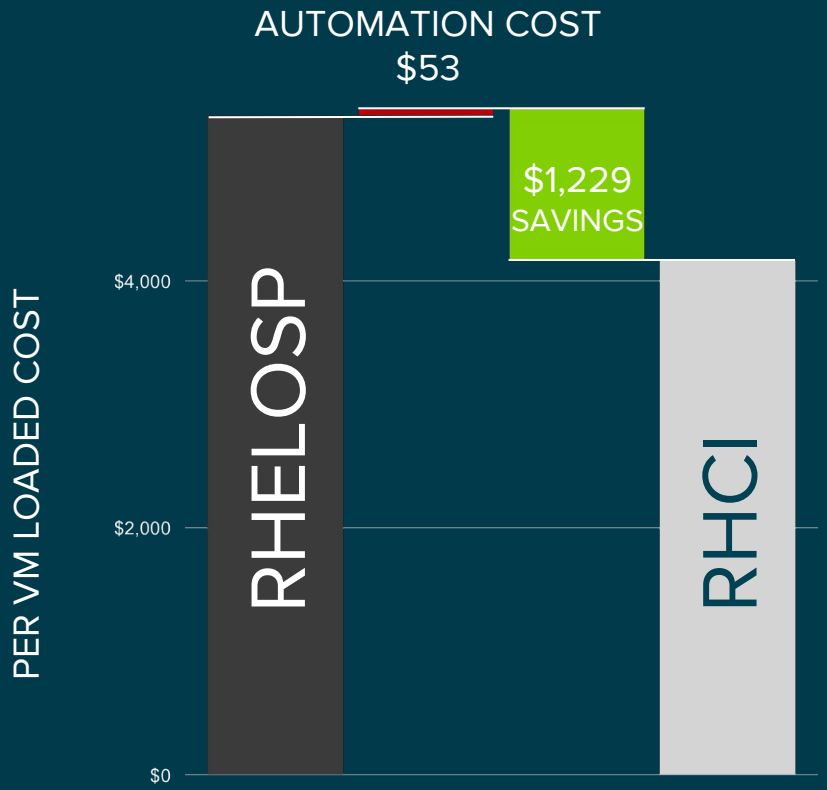
(probably a lot worse because does not include containers)



IDC: Worldwide Cloud IT Infrastructure Hardware Spending Forecast, 2015–2019
Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2016-17 Edition



Upstream	$15,998	$9,666	$7,951	$7,258	$6,788	$6,649
Commercial Distribution	$13,609	$8,043	$6,264	$5,909	$5,340	$5,200
Commercial with CMP	$12,374	$6,869	$5,089	$4,556	$4,164	$4,006



AUTOMATION COSTS AN ADDITIONAL $53 PER VM

BUT GIVES 20x ROI (OR MORE)

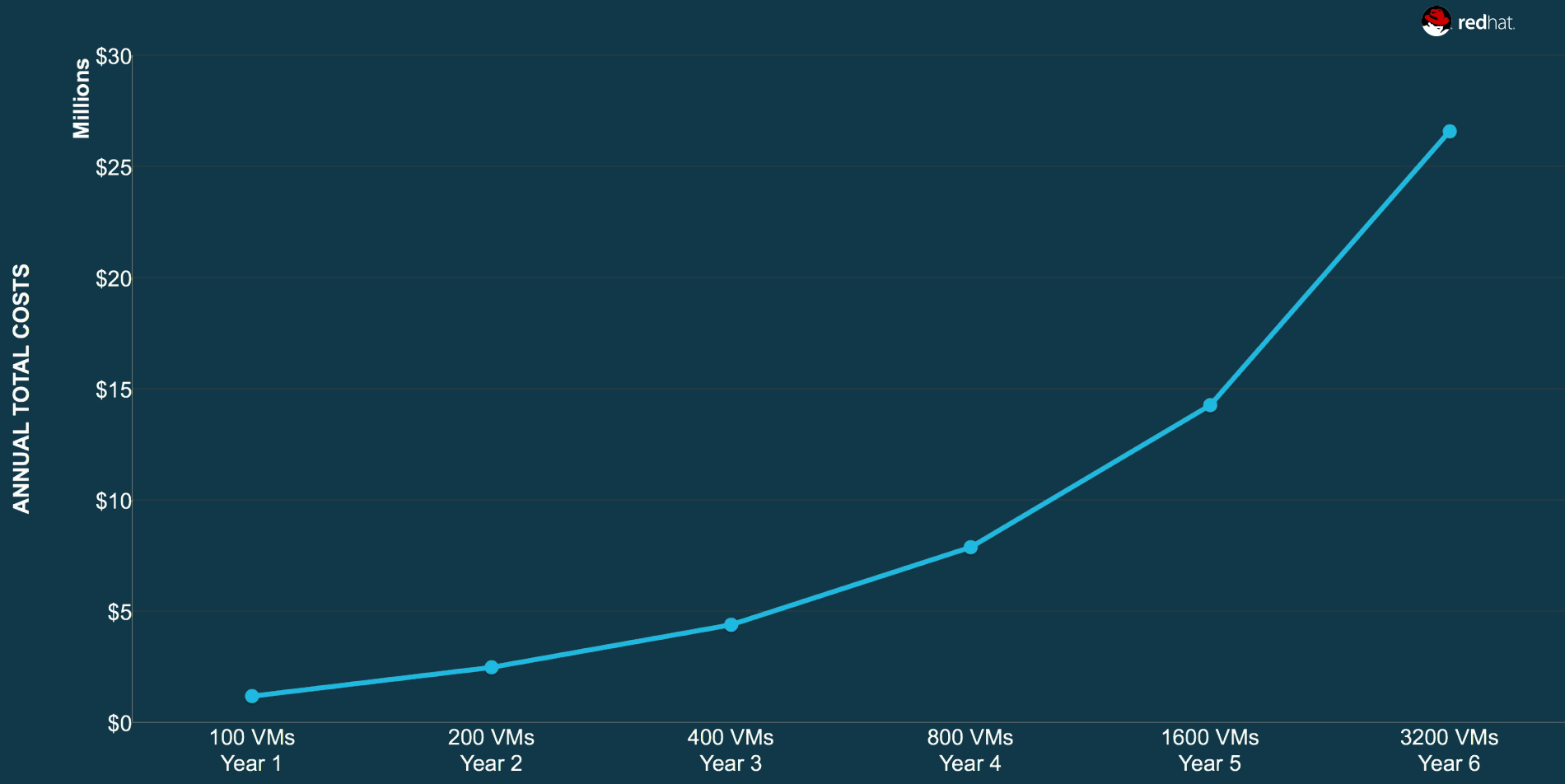
EVEN IN A MATURE CLOUD

(YEAR 5 SHOWN)

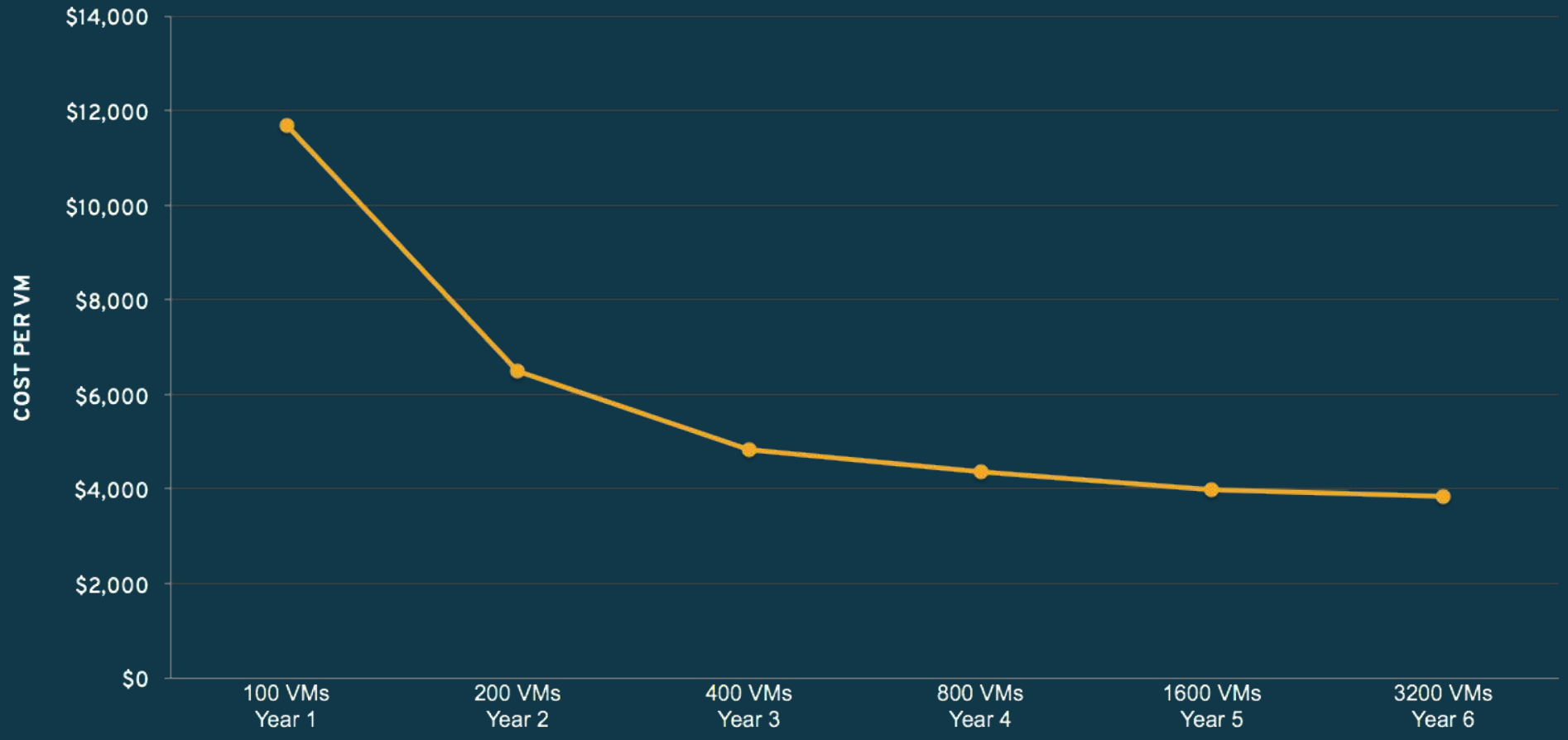
https://www.redhat-cloudstrategy.com/why-did-red-hat-acquire-ansible/


VM COST IS A BETTER INDICATOR OF
HEALTH OF CLOUD THAN TOTAL COSTS

VM COSTS DEPEND ON TIMING


redhat.
ANNUAL TOTAL COSTS
Millions
$30
$25
$20
$15
$10
$5
$0
100 VMs
Year 1
200 VMs
Year 2
400 VMs
Year 3
800 VMs
Year 4
1600 VMs
Year 5
3200 VMs
Year 6

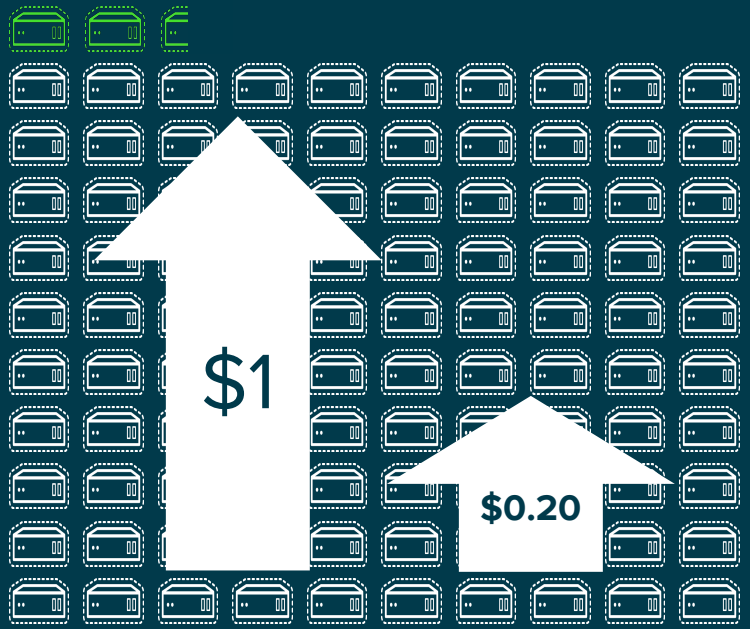
TOTAL COSTS HIDE VM COST IMPROVEMENTS

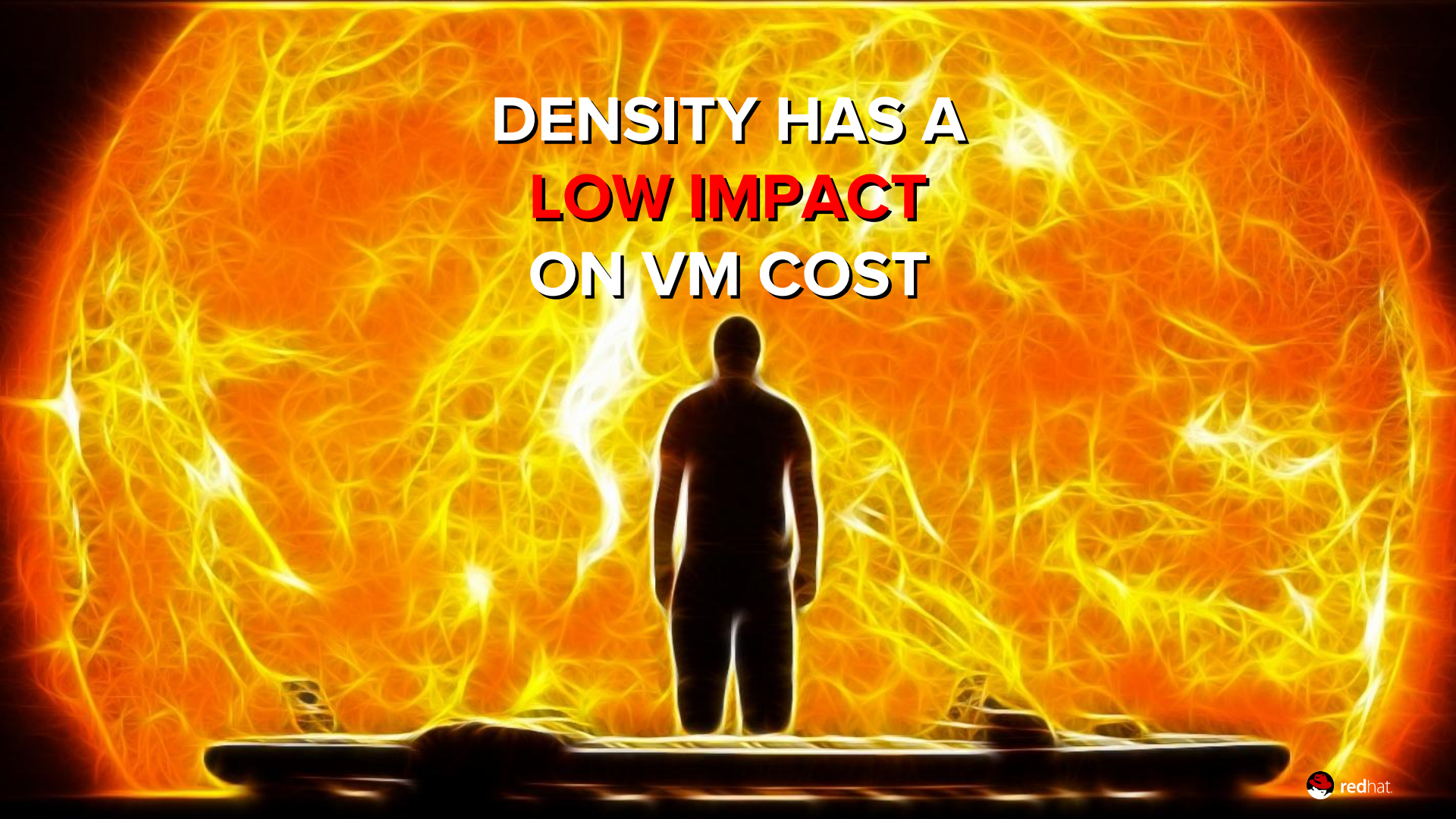



YOU ARE SUCCESSFUL IF
VM COSTS DECREASE
AND
CLOUD COSTS RISE

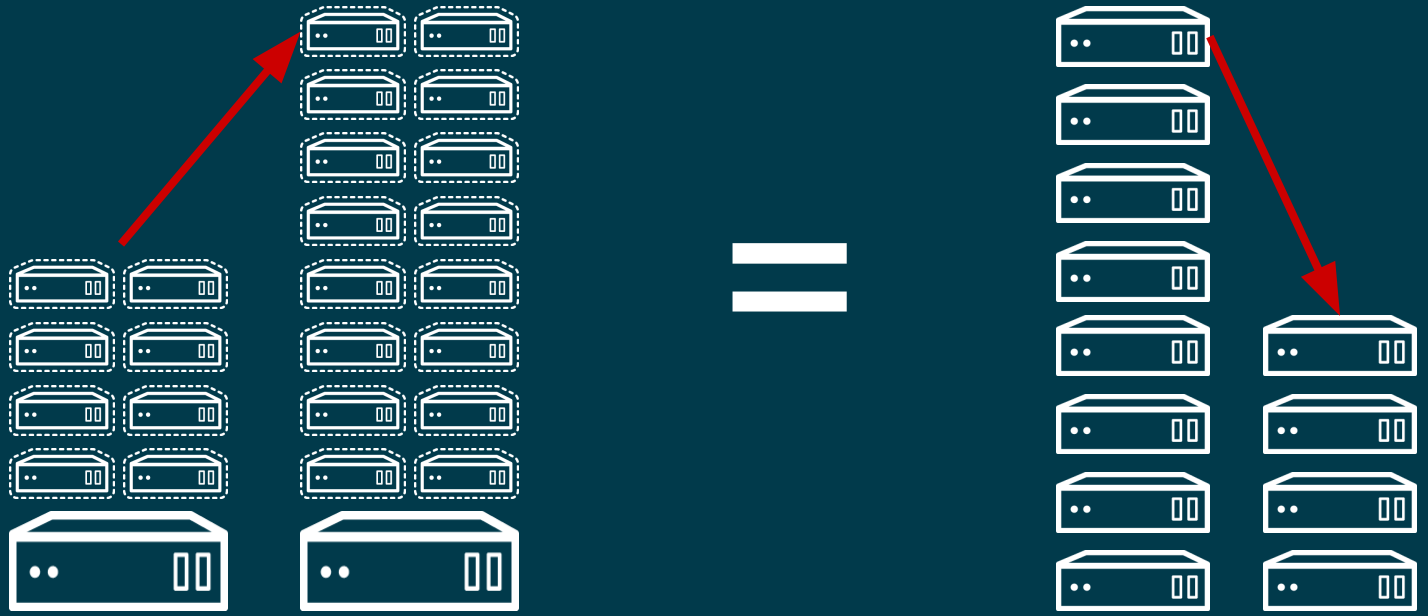

LOWERING VM COSTS WILL
INCREASE USAGE AND
INCREASE TOTAL COSTS
redhat.

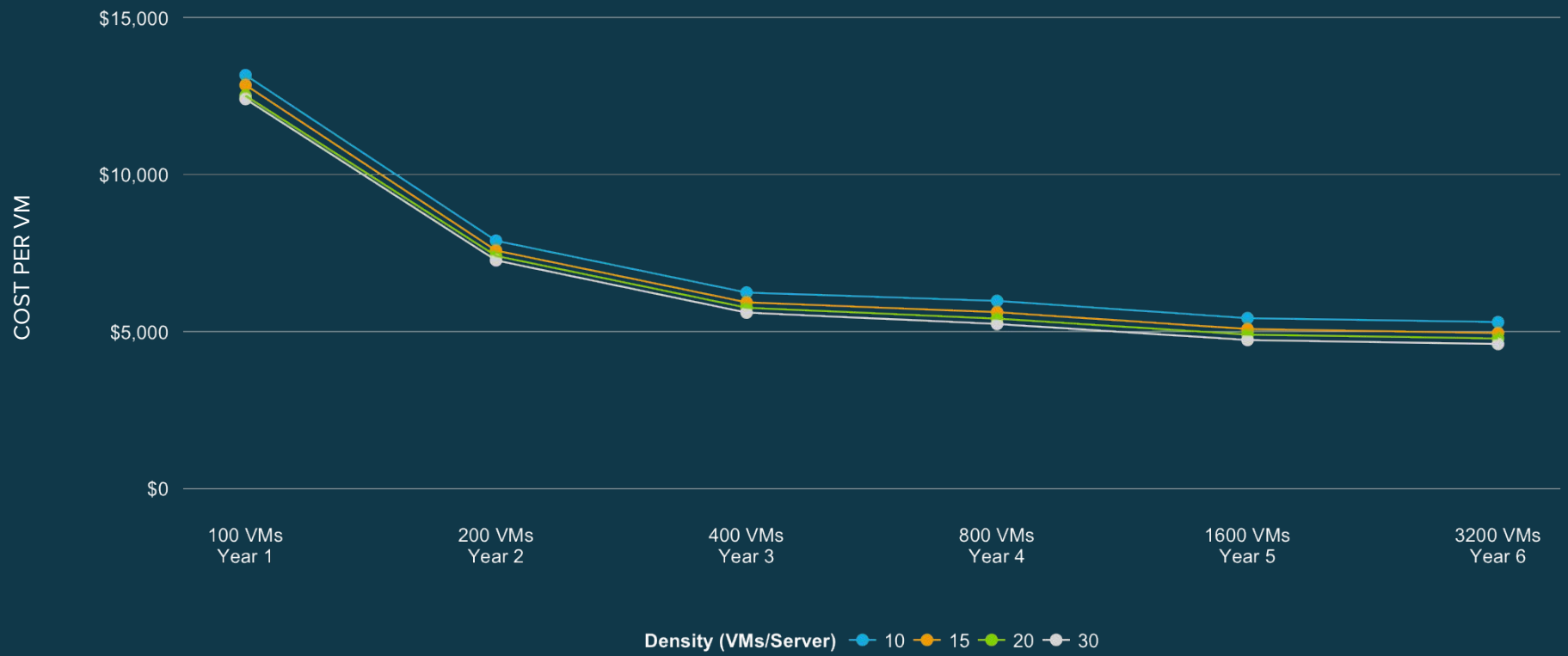
REDUCING PRICE CAUSES MORE USE AND HIGHER TOTAL COSTS




DENSITY HAS A
LOW IMPACT
ON VM COST
redhat.

INCREASING DENSITY MEANS BUYING LESS HARDWARE





30	$12,404	$7,268	$5,604	$5,243	$4,732	$4,605
20	$12,509	$7,410	$5,761	$5,413	$4,904	$4,779
15	$12,849	$7,580	$5,931	$5,618	$5,081	$4,954
10	$13,164	$7,893	$6,243	$5,977	$5,428	$5,302

YOU DID WELL, OPENSTACK IS A GOOD CHOICE!

NOW YOU HAVE TO DO YOUR HOMEWORK...

- IMPLEMENT AUTOMATION. IT'S MORE IMPORTANT THAN DENSITY
- MEASURE AND TRACK VM COSTS
- EXPECT GROWTH, NOT SAVINGS

WHAT CAN YOU CHANGE IN THE MODEL?

ASSUMPTIONS

1. VM as unit for cost
2. 3 year, straight-line depreciation
3. salaries are identical by job across technologies
4. Server specs
5. Recruiting vs internal hire ratio

INDUSTRY DATA

1. Software costs at list
2. VM/admin & VM/server ratios
3. Automation benefits
4. Server and VM costs
5. Employment time
6. Salary and loaded salary bands
7. Network ports per admin
8. Storage per admin

So, Um. What if we “Open Sourced” This?

WANT TO HELP CREATE THE **WHOLE** MODEL?

WANT A REUSABLE, TUNABLE, TOOL SHOWING **THE VALUE OF PRIVATE CLOUD TO YOU**?

LET US KNOW HOW YOU’D LIKE TO CONTRIBUTE!

https://www.redhat-cloudstrategy.com/opentco

redhat.

MORE THAN JUST LINUX.