Capacity Planning in the Application Driven Economy

Jeremy Rossbach
Richard Gimarc

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Abstract

The Application Driven Economy is upon us. Businesses today are currently faced with a rapidly growing number of applications that must succeed on the first try to gain competitive edge. Their success is enabled by the supporting IT infrastructure and data center. So how does this affect our job as capacity planners? Is it business as usual, or do we need to revise our approach?

This session will examine the new Application Driven Economy and explore how our job as capacity planners must adapt to the new demand. The good news is that we have the tools and methodologies today to address this challenge, we simply need to change our focus.

Our Speakers

Jeremy Rossbach has spent the last 8 years at CA Technologies in a variety of roles, including Pre Sales Engineer to Product Management and currently supports the CA Capacity Management solution . Prior to CA, he spent 15 years in IT, across public and private sectors, managing data centers for startups, healthcare, financial and federal system integrators. Previous roles as data center administrator, engineer, architect and manager have provided him invaluable insights into the challenges and goals of IT consumers.

Richard Gimarc, CA Technologies,   is a member of the capacity management services team at CA Technologies. In that role he works with customers during the planning, design, implementation and institutionalization of the CA Capacity Management Solution.

Richard is a recognized industry expert in capacity planning, performance engineering and performance analysis. Over the years he has developed and applied his performance and capacity planning expertise to a variety of complex, diverse and challenging environments. Richard has authored 30+ papers covering a wide range of performance related topics including application scalability, green capacity planning and cloud performance. He is also a regular speaker at both CMG international and regional conferences.

Capacity Planning in the Application Driven Economy

Global transformation [REF01]
- We are in the midst of a global transformation in the way people consume & interact with information
- The transformation is being fueled by software & mobile devices

Application-driven economy [REF02]
- Customers are no longer loyal to a brand, product or service
- Customers are loyal to the complete experience & that is dependent on the application
- This means that applications must deliver the expected functionality & performance

Requirements to support the Application-Driven economy
- Applications, IT infrastructure and the data center are the bedrock of the application driven economy
  - Applications - driven by business requirements
  - Hardware - driven by application requirements
  - Facilities - driven by hardware requirements

Telling A Story
We are going to talk about a number of ideas and show how they are related

Internet of Things

IT Supply Chain

Application Driven Economy

Application Capacity Planning

Capacity Planning Stack

Stack Metrics

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Poll Question #1

Have you seen an increased emphasis on application-level capacity planning over the past year?

a) No change – today is the same as it was last year

b) Some change – people are talking about application capacity planning

c) Large change – org changes made for app capacity planning

Where does IoT fit in a world driven by applications?

"With IoT, IT is becoming an integral part of the product itself. It is doing this by infusing sensors, processors and software in every product imaginable and coupling it with analytics. That combination will change how businesses operate, how they deliver their products and how they interact with customers."

- Harvard Business Review
[REF03]

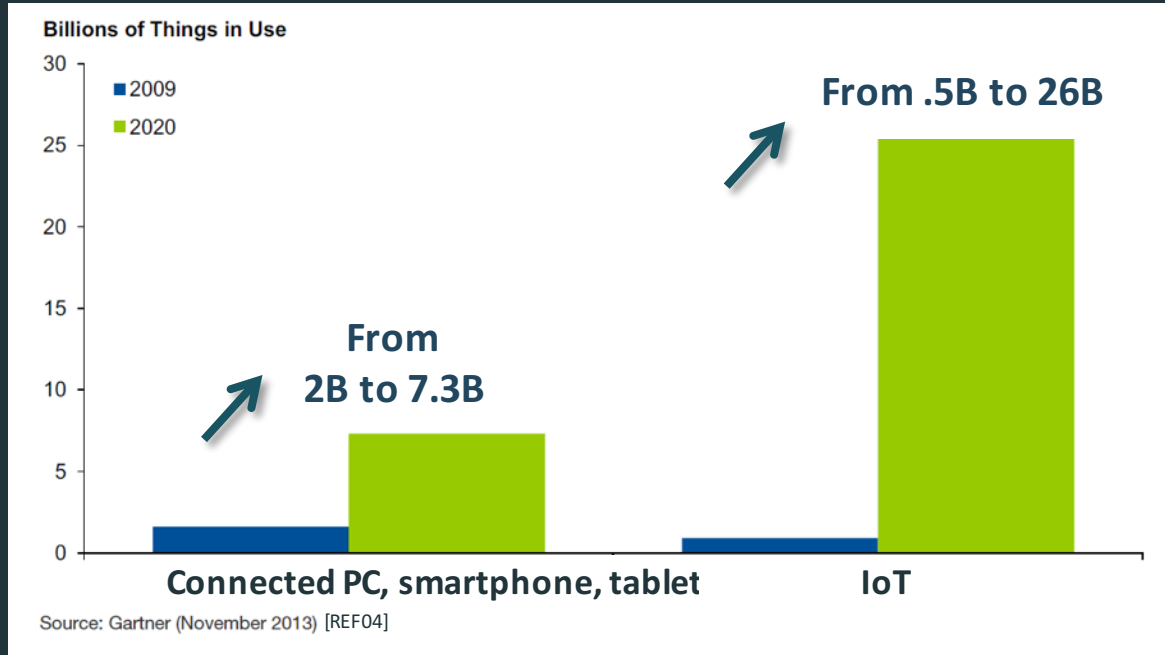# IoT is all around us

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Applications are changing the world of business
...and the web is going away

IoT will be a driver of the Application Economy
The proliferation of connected devices will drive the number of new apps

Billions of Things in Use

Legend:
- 2009
- 2020

From .5B to 26B

From 2B to 7.3B

Chart axis values: 30, 25, 20, 15, 10, 5, 0

Categories:
- Connected PC, smartphone, tablet
- IoT

Source: Gartner (November 2013) [REF04]

2.6M IoT applications in the next 5 years*

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Application quality & user experience will be impacted
The result of doing nothing...

25%
of users will abandon a web application after just three seconds of delay*

80-90%
of all consumer applications will only be used once

$500M
cost of trading losses during Facebook IPO due to *"system problems"*

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Are You Ready?
Processed in real time will increase workloads and data center investments

Big Data

Storage

Servers

**Network**

Data Center

Cloud

"The enormous number of devices, coupled with the sheer volume, velocity and structure of IoT data, creates challenges...managers need to deploy more forward-looking capacity management in these areas to be able to proactively meet the business priorities associated with IoT." [REF08]

Poll Question #2

Does your organization have separate capacity planning groups – application & infrastructure?

a) Yes

b) No
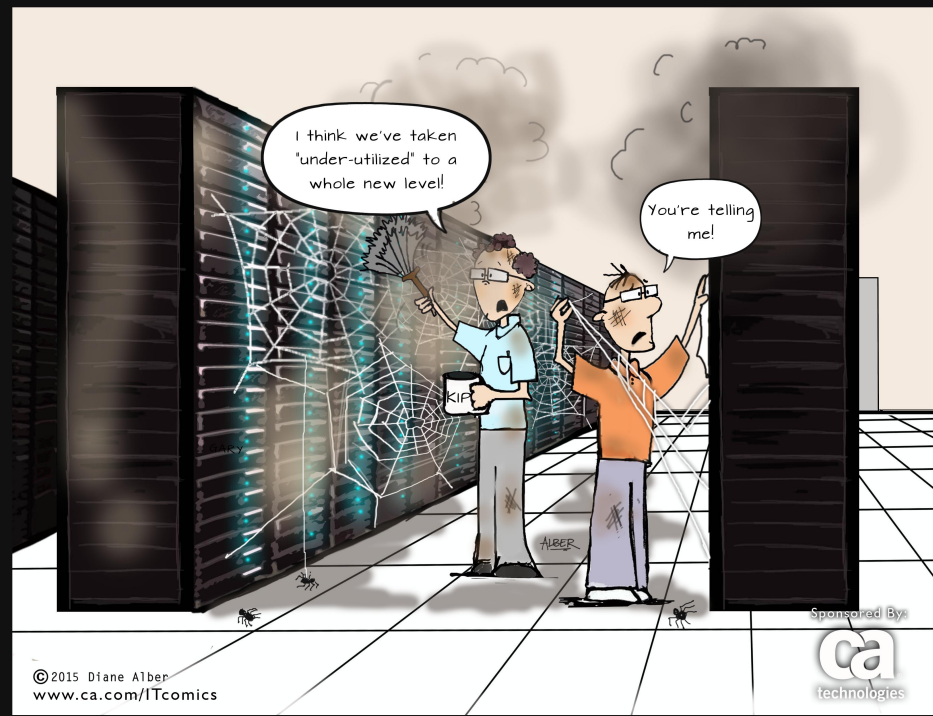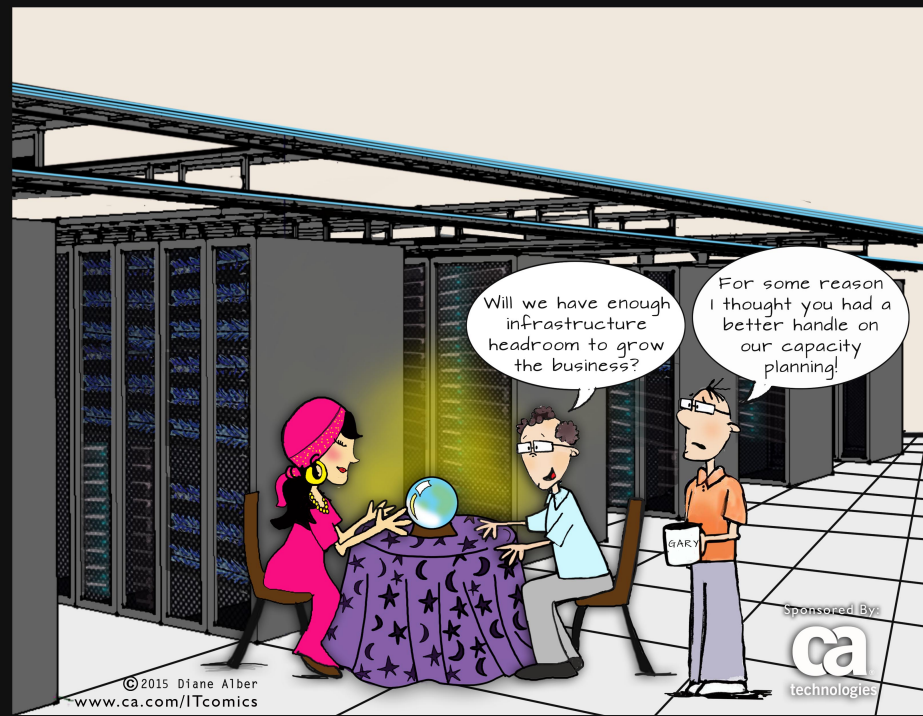
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Recent IT Blunders

Sources: [REF09], [REF10] & [REF11]

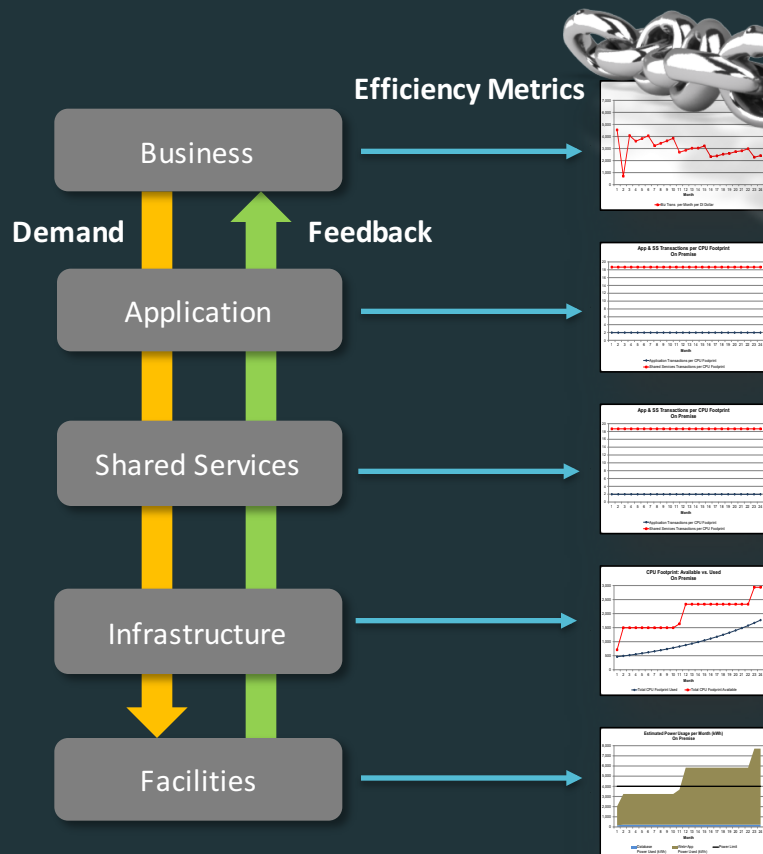# Something has to change!!
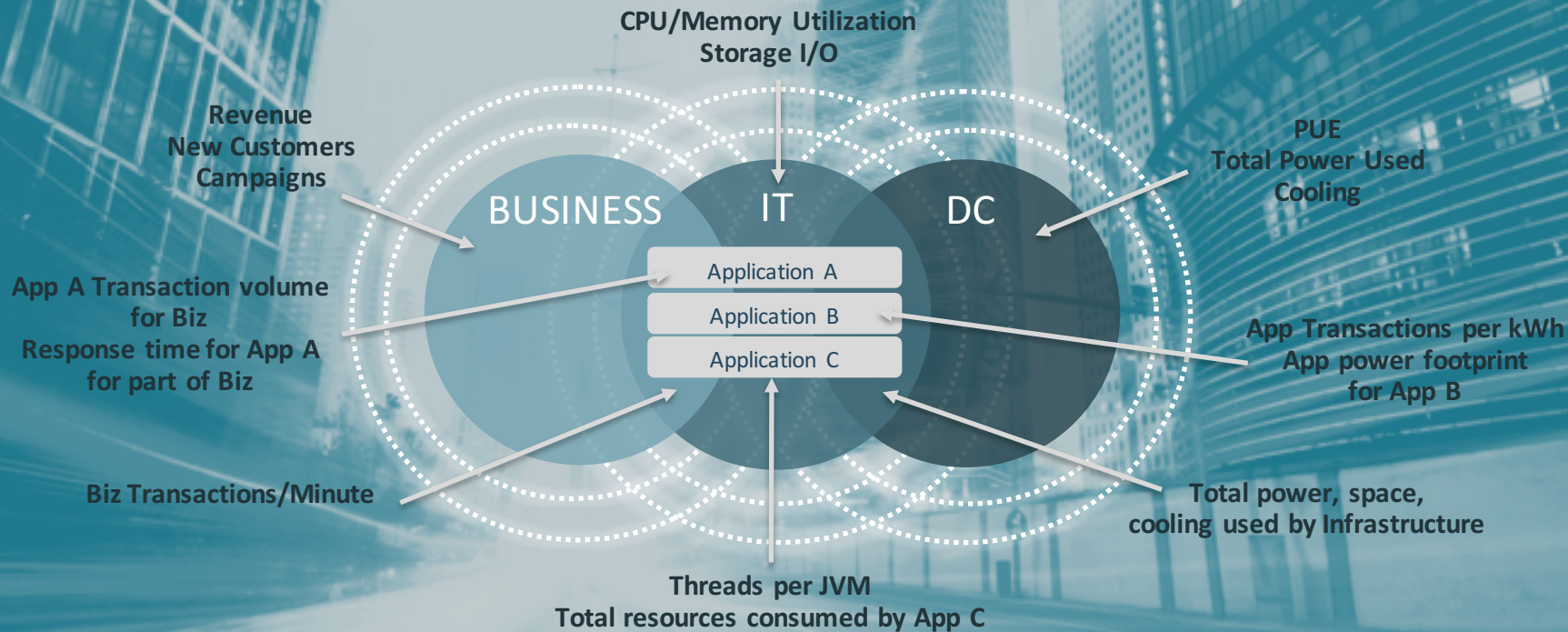*The app must succeed on the first try*

BUSINESS

INFRASTRUCTURE

DATA CENTER

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Ensure resiliency throughout the IT Supply Chain

Efficiency Metrics

Business

Demand — **Feedback**

Application

Shared Services

Infrastructure

Facilities

The Capacity Planning Stack [REF12]
- Driven by business requirements
- End-to-end view across the Digital Infrastructure
- Efficiency metrics used as "measures of success"
- Conceptually transparent and straightforward
- Cost allocation across all components of the Digital Infrastructure

We have the data...it's what we do with it

CPU/Memory Utilization
Storage I/O

Revenue
New Customers
Campaigns

PUE
Total Power Used
Cooling

BUSINESS   IT   DC

Application A
Application B
Application C

App A Transaction volume
for Biz
Response time for App A
for part of Biz

App Transactions per kWh
App power footprint
for App B

Biz Transactions/Minute

Total power, space,
cooling used by Infrastructure

Threads per JVM
Total resources consumed by App C

Source: [REF13]

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A good start to a resilient IT supply chain

A more detailed example based on the Stack

1 Business Demand

- Current business transaction volume
- Projected new business transaction volume

3 Infrastructure Capacity Planners

- Instance count
- Application transaction volume
- IT resources

Business

1

Application	**2**

3

Infrastructure

Facilities
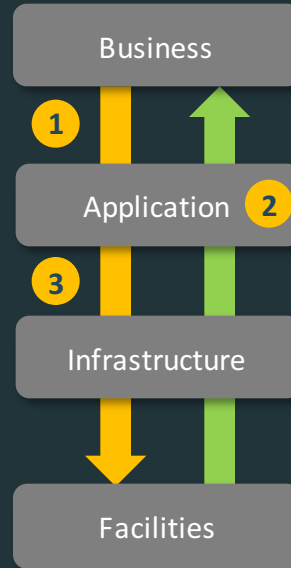
Application Capacity Planners 2

- Translate
  - Current application transaction volume
  - Projected new application transaction volume
- Estimate new IT resource demand based on current application profile
  - Instances
  - CPU
  - Memory
  - I/O
  - Network

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A resilient IT supply chain model servicing the App Economy

User

Application Capacity

10 tx/s

5 tx/s

Application Resources

APM

Infrastructure Capacity

VM

Disk

z/OS

Request capacity

Allocate capacity

Infrastructure Resources

VMware
EMC
UIM

Data Center Capacity

Request capacity

Allocate capacity

Data Center Resources

Power
Space
Cooling

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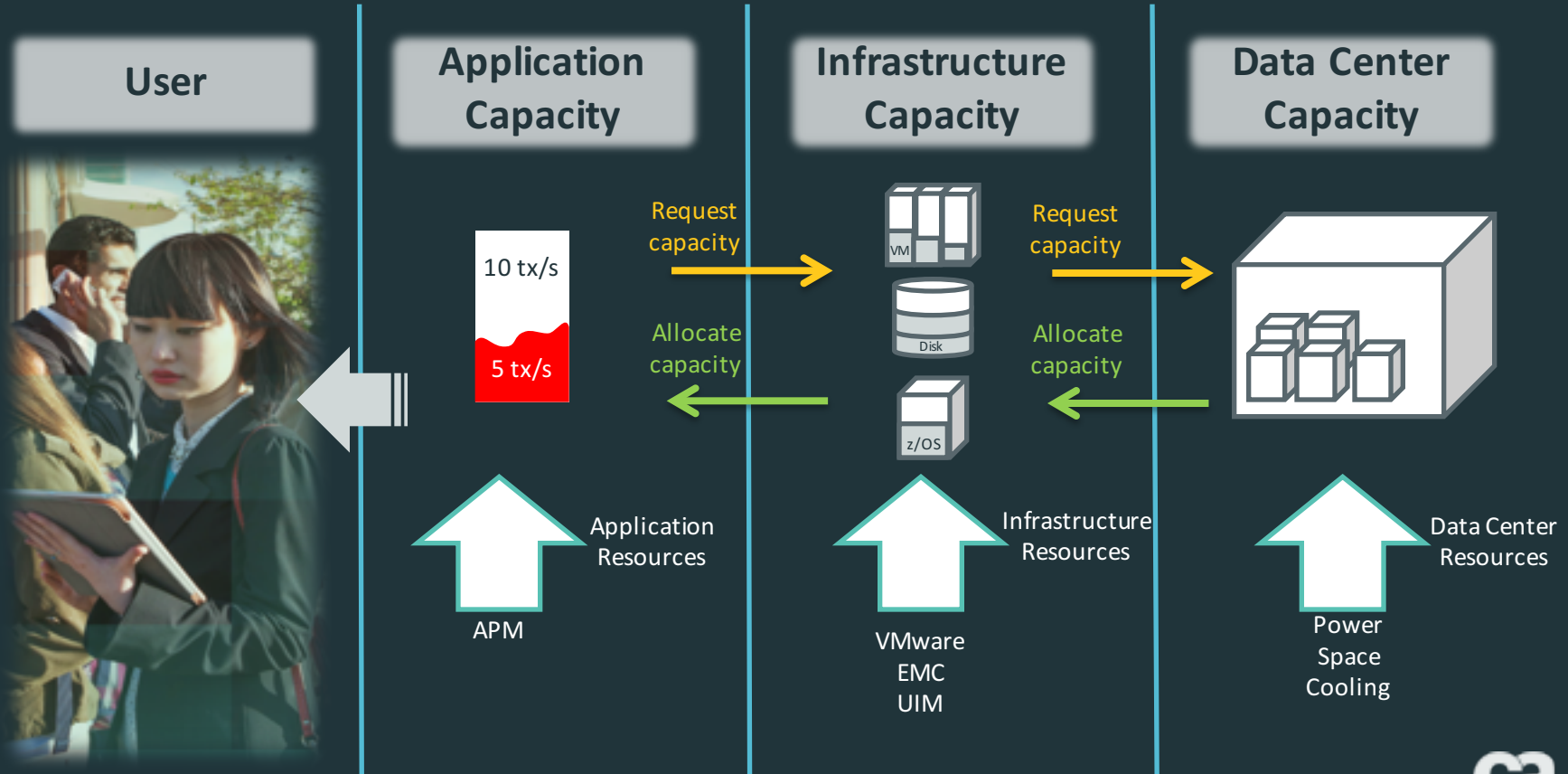
Poll Question #3

How closely does your capacity planning group work with the data center (facilities) planners?

a) No communication

b) Some communication

c) Work very closely

The Application-Centric Dashboard

The Application-Centric Dashboard
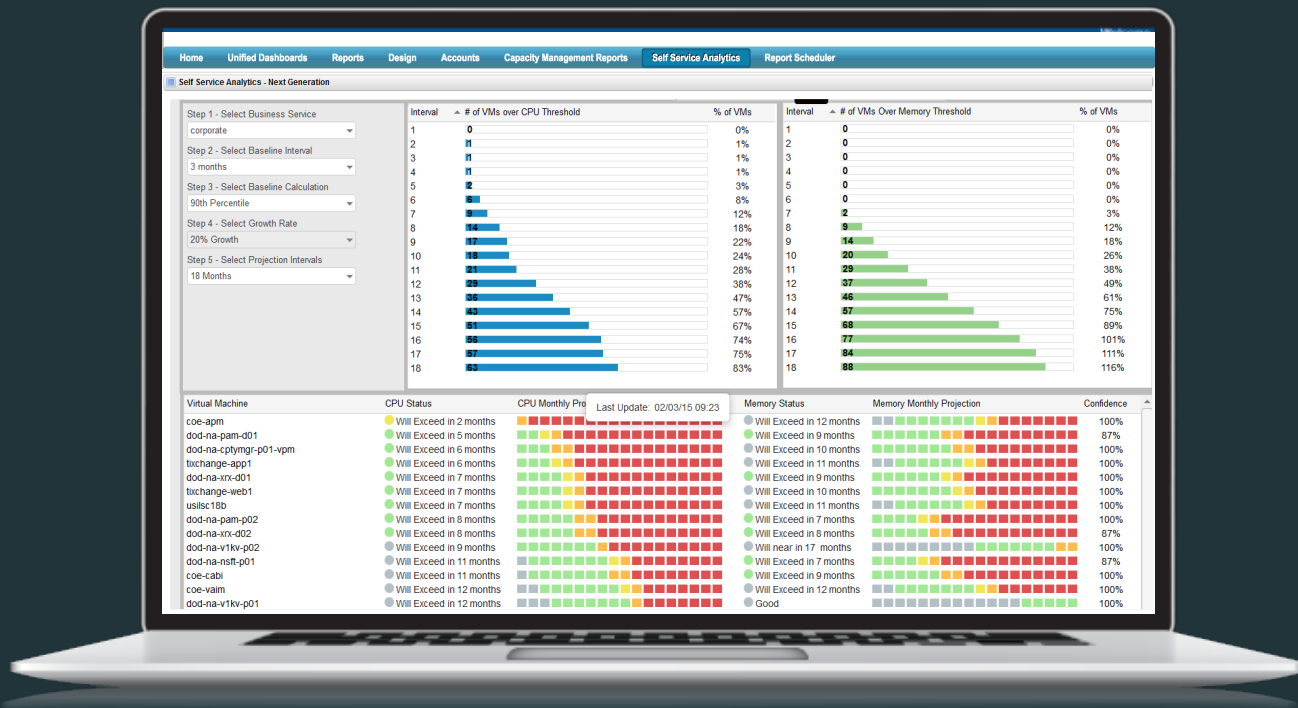
Each link in the IT supply chain is crucial
...and depends on the link before

BIZ

IT

DC

So a _healthy, resilient, cost-effective_ IT supply chain management starts with the application.

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welcome
to the
Application Economy

$153B
Public cloud services market expected to grow 17.8% in 2014 to $153 billion[1]

Sources: [REF14], [REF15] & [REF16]

268B
By 2017, mobile apps will be downloaded more than 268 billion times[3]

50%
By 2018, more than 50% of B2B collaboration will take place through Web APIs[2]

Poll Question #4

What is your biggest challenge to support application capacity planning?

a) The business owners do not work with us

b) We do not have time to look at all of our applications

c) The infrastructure team does not give us the planning data we need

d) All capacity planning work is out-sourced

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- Register here: http://cainc.to/PhpbGt (case sensitive)

- Or register via the webcast email invite

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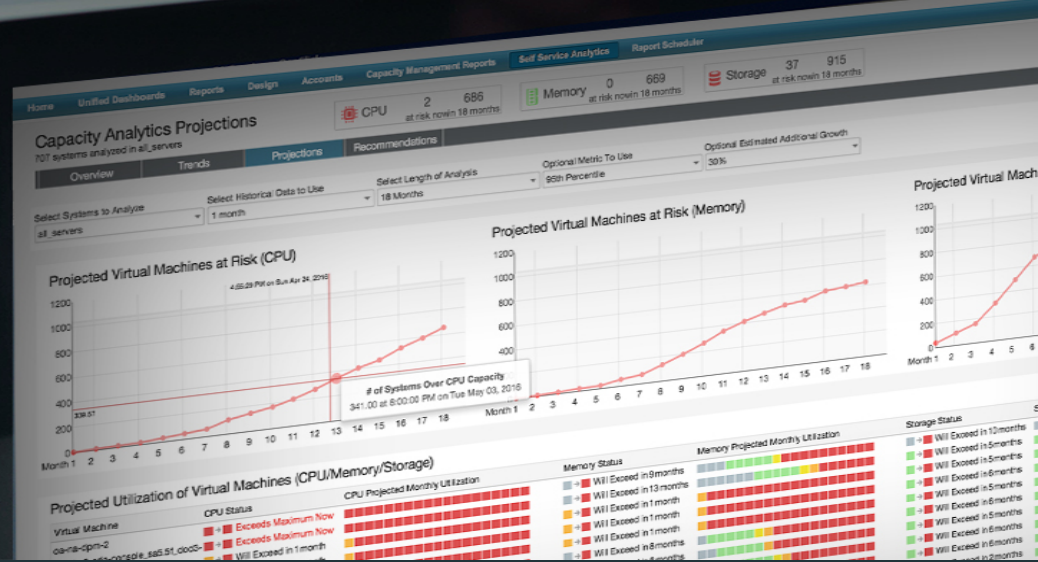
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*****3 blocks to both the Alamo and the Riverwalk*****

Questions?

Thank you

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