

# the network in the cloud

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Distinguished Engineer

Session# 8244

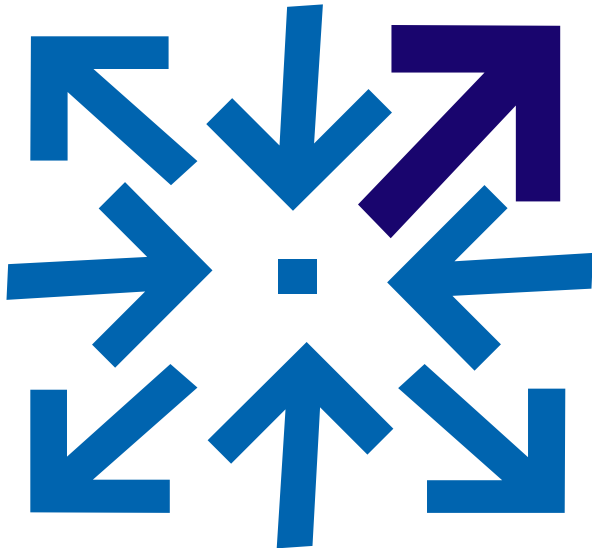



**Everyone talks about putting servers into the cloud and provisioning just the capacity you need, when you need it. But unless you have a standalone application that talks to nothing else, the network is at the core of cloud enablement. Can you manage a “cloud network?”**

**With enterprise integration, manage your entire network on a single pane of glass.**

## the network in the cloud

- Why cloud?
- What are the issues?
- Why do you (or your business) care?
- What's the network impact on cloud?
- What do you need?



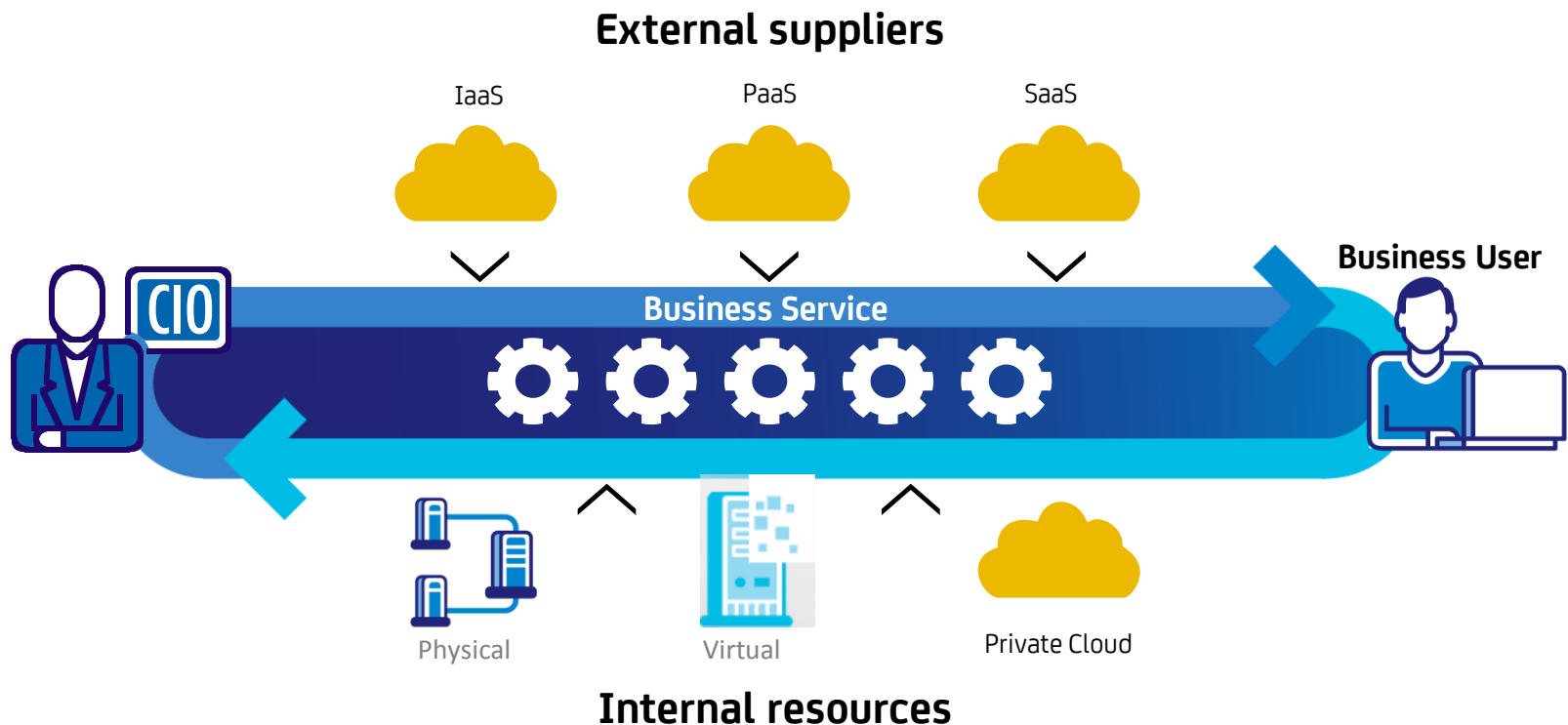


**“I've looked at clouds from both sides now,  
From up and down, and still somehow,  
It's cloud illusions I recall,  
I really don't know clouds, at all. “**

***Judy Collins – Both Sides Now***

# cloud computing presents new opportunities for IT to serve the business and narrow the alignment gap

New options to deploy and source technologies through public and private clouds



# what's so important about the advent of cloud?

## Traditional IT

- Pay for hardware
- Pay for software
- Pay for services
- Pay for carbon based units
- Pay for systems management and maintenance

## Cloud based offerings

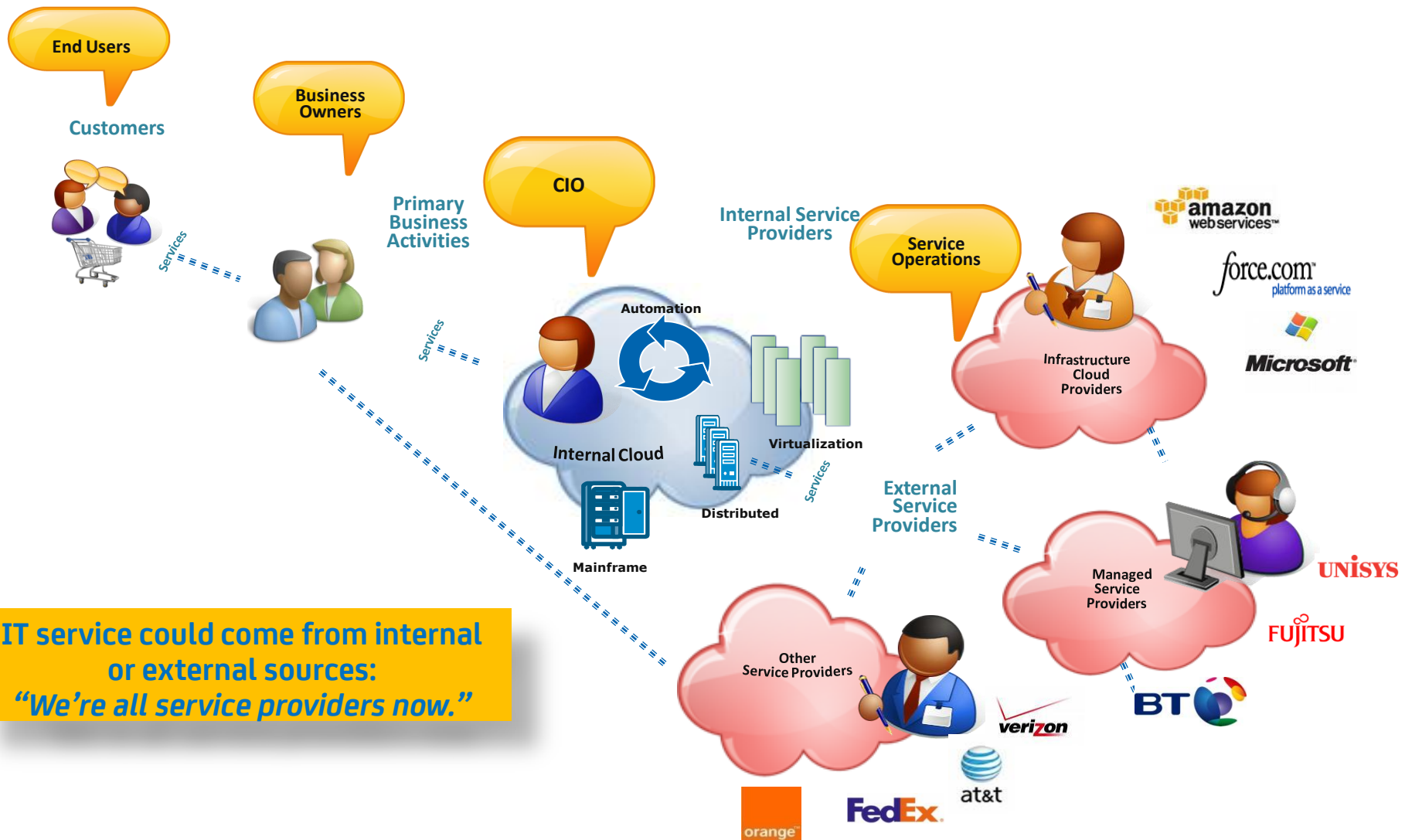
- Pay for the *result*



Cloud changes the economic game:

***Which model do you think is more attractive to your management?***

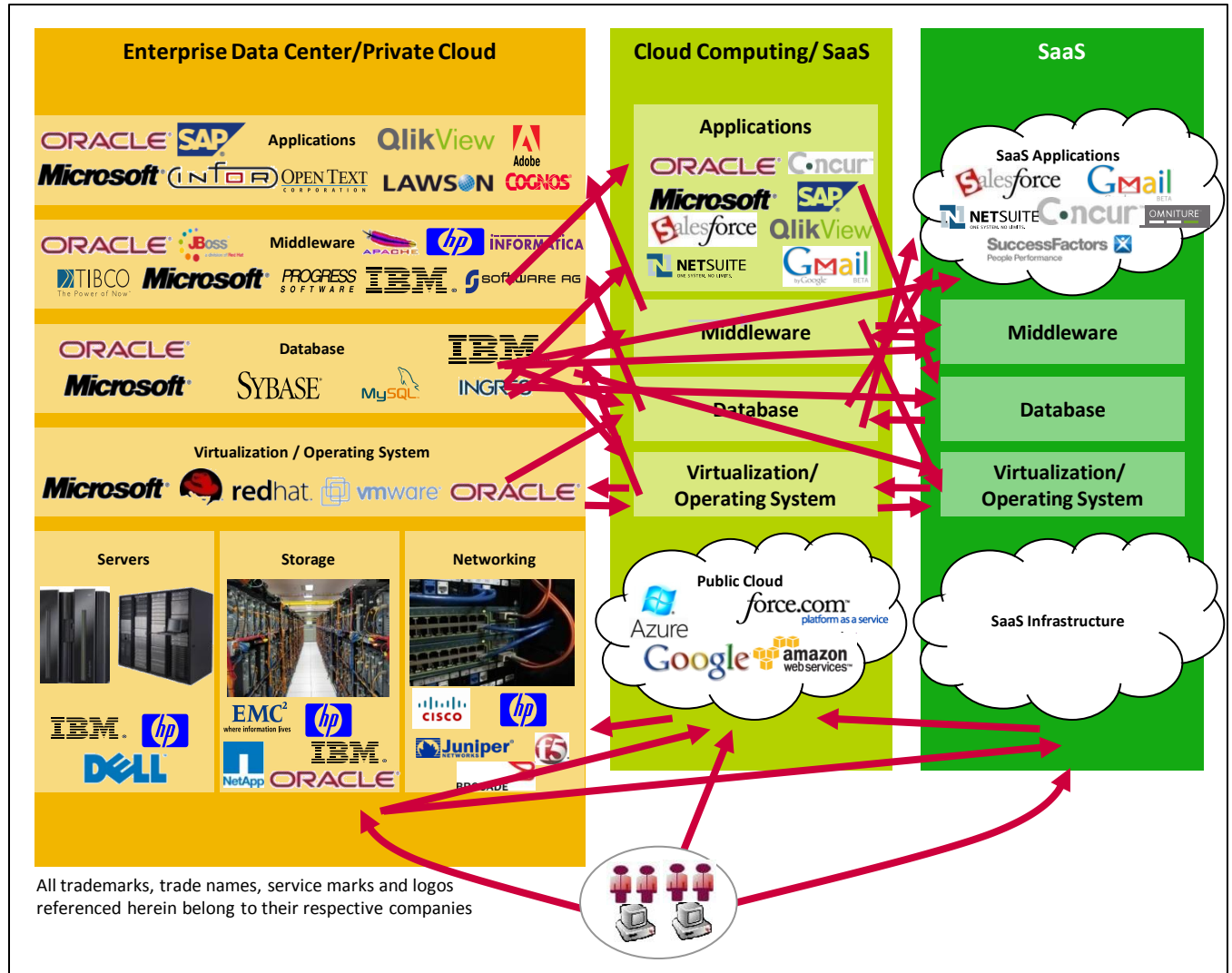
# the CA view: IT is undergoing a disruptive change



IT service could come from internal or external sources:  
*"We're all service providers now."*

# additional complexity is created by the cloud

- Top 5 challenges of cloud computing
- Management of hybrid world
  - Performance monitoring
  - Reliability/service assurance
  - Automating service delivery across platforms
  - Security





# the rules of the road – you are still responsible

Migrating to cloud based assets may increase what you have to monitor and manage. Need to know:

- What you are sending
- Where you are sending it
- Who can access it when it's outside your control
- How the data are controlled after leaving your confines



Do you have a content based management system that will appropriately control data as it flows in/out of your enterprise?

# what can you measure?

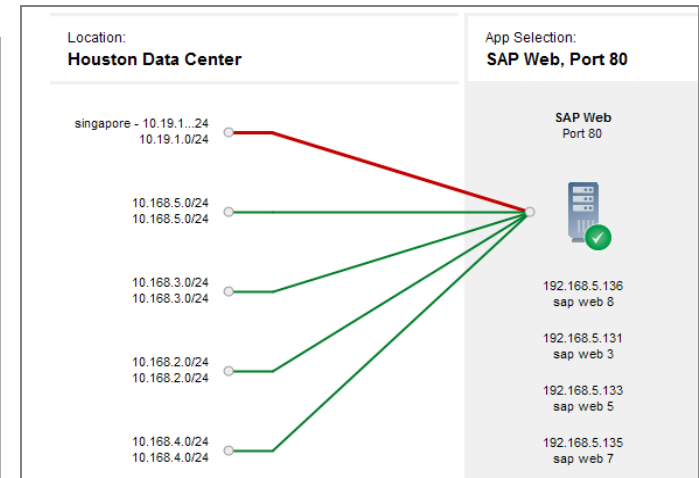


# the cloud management challenge



## “You Can't Manage What You Don't Measure”

CA NetQoS Performance Center



### Interfaces Over Threshold

Status	Interface	Traffic Direction	Speed (bps)	Average Utilization
■	Boston::Boston - Serial 2/0.0 - T1 Link	In	1.54 Mbps	88.77 %
■	Boston::Boston - Serial 2/0.0 - T1 Link	Out	1.54 Mbps	88.93 %
■	London::London - Serial 2/0.0 - T1 Link	In	1.54 Mbps	59.84 %
■	London::London - Serial 2/0.0 - T1 Link	Out	1.54 Mbps	59.27 %
■	Houston::Houston - Serial 2/0.1 - T1 Link	In	1.54 Mbps	56.56 %

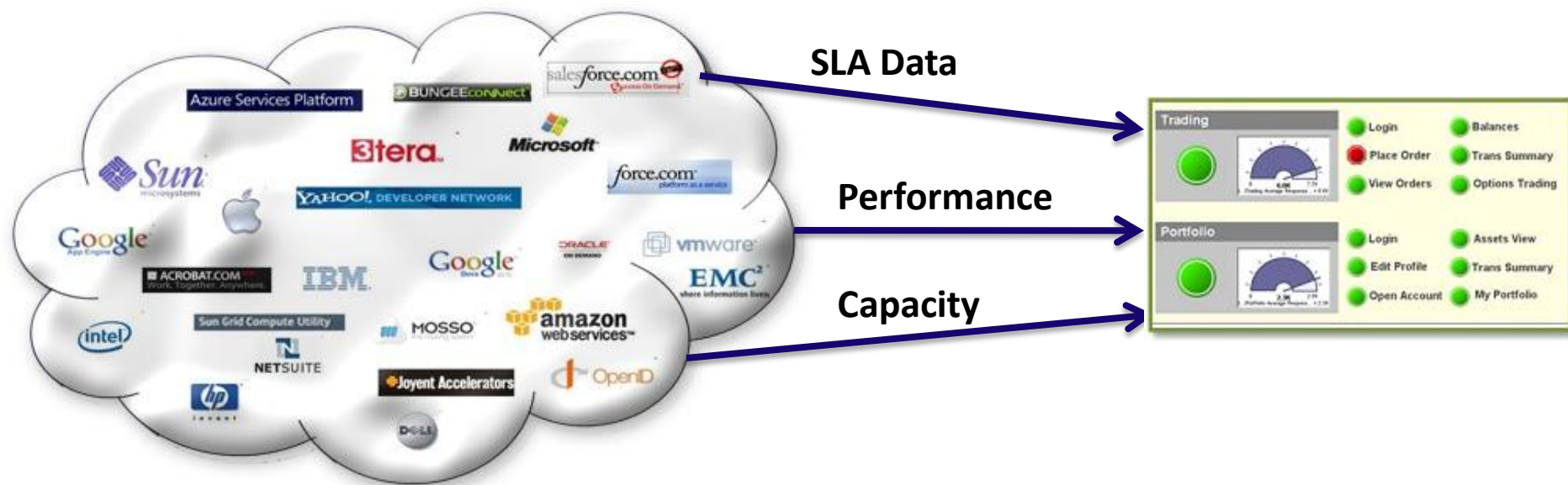
# understanding the Service Assurance challenge

## little issues add up



- Unavailable or slow
- Available, performing as expected

# public cloud metrics







































Do your providers:

- Give you the metrics you need?
- Give you the metrics in the form you need?

# the key challenges? systems & infrastructure complexity

Who's monitoring REAL user experience, based on a BUSINESS SERVICE view?

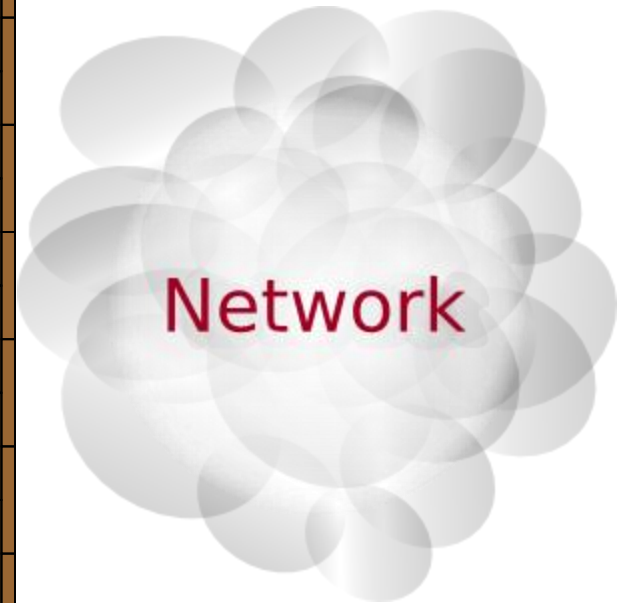
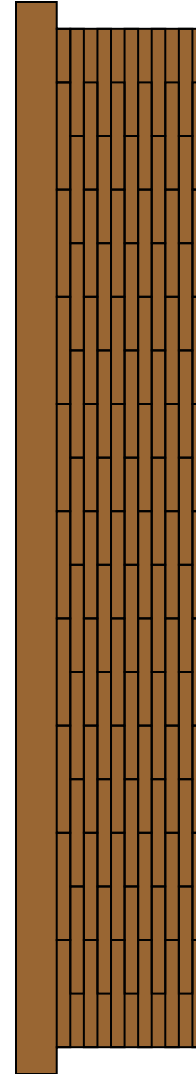
Service Path ?	Online Banking	Call Center	CRM	SAP	B2B	Online Shopping	Service Performance ?
Client Systems							<b>Degraded service performance</b> 1. Losing money and ground to competition 2. Employee productivity severely impacted
Applications							
Databases							99.999% available
Servers							99.999% available
Storage							99.999% available
Network							99.999% available

# the missing issue

APPLICATION PERFORMANCE

Lower Cost

Flexibility

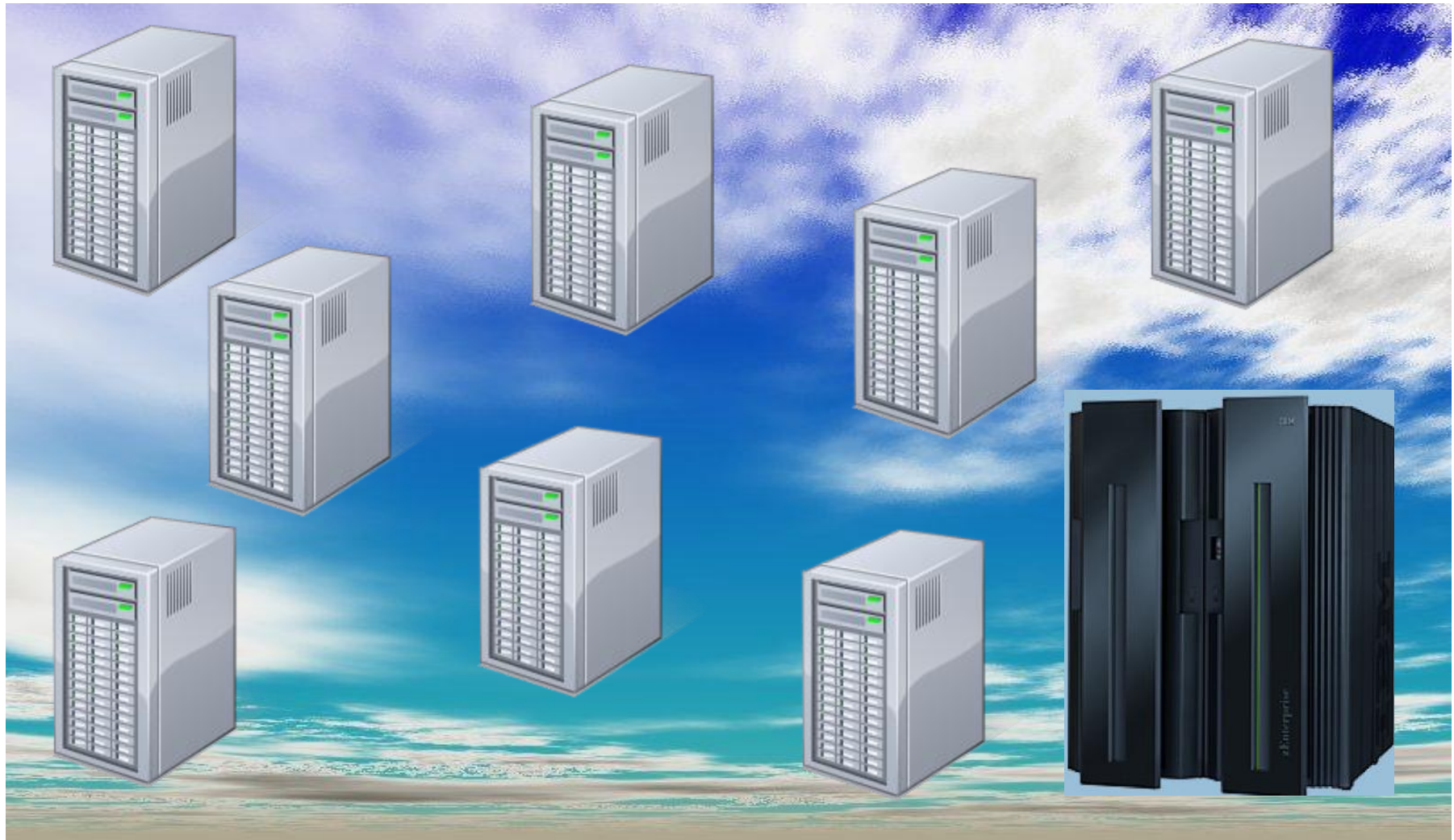


# what do you know?





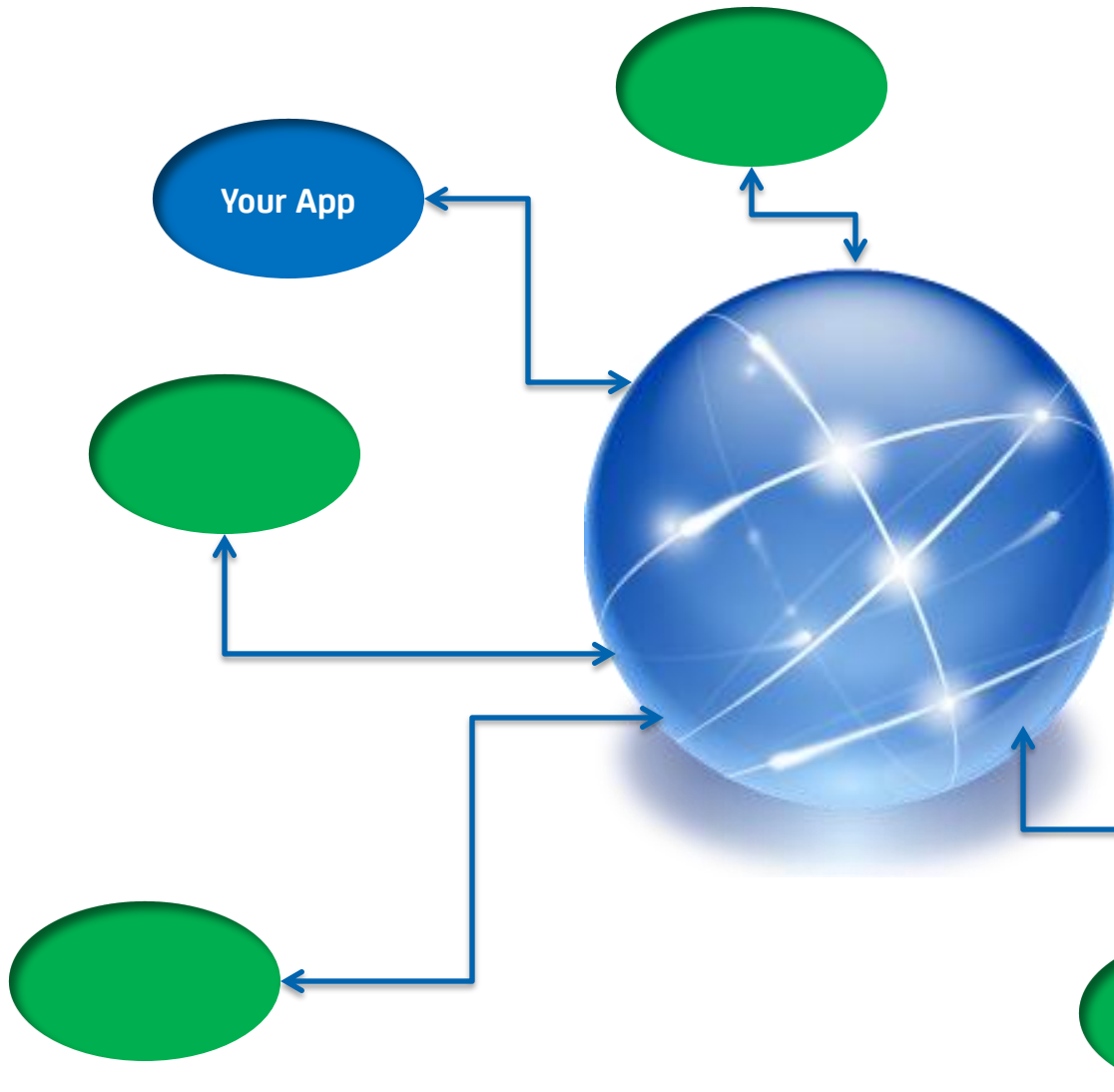
# why the focus on networks?



“It has to be the network.”



# what's different in the cloud



When parts of your business services are in the cloud, network quality of service impacts your customer's experience:

- Physical distance
- Number of hops
- Network bandwidth

Virtualization effects at the cloud provider can impact service delivery to your apps:

- Other users can overrun processor or network bandwidth
- DoS attack against cloud provider may affect all customers

# what's missing?

**Worldview**

- MARJO41A
  - ManagedObjectRoot
    - Domain
    - NetMaster Services
      - MARJO41(CA31)
      - MARJO41(SERVICE)
    - TCP/IP Network
      - 141.202
        - 0
          - 141.202.0.0:Segment.1
            - usilca31.ca.com
              - usilca31.ca.cc
                - NetMaster
                  - MARJO41
                    - Adi
                    - Co
                    - Inte
                    - IP I
                    - Op
                    - Sta
                    - Sta
                    - MARJC

155.35

**ca | wily technology**

### Mainframe Network Overview

**Components**

| Overall | IP Stacks | NetworkInterfaces | IP Applications | IP Nodes | IP Connections |
|---------|-----------|-------------------|-----------------|----------|----------------|
|         |           |                   |                 |          |                |

**IP Stack Health**

| All Stacks | IP Packet Fragmentation | TCP Retransmissions | UDP Datagrams Discarded |
|------------|-------------------------|---------------------|-------------------------|
|            |                         |                     |                         |

**Active TCP/IP Connections**

Time of latest network event ABC

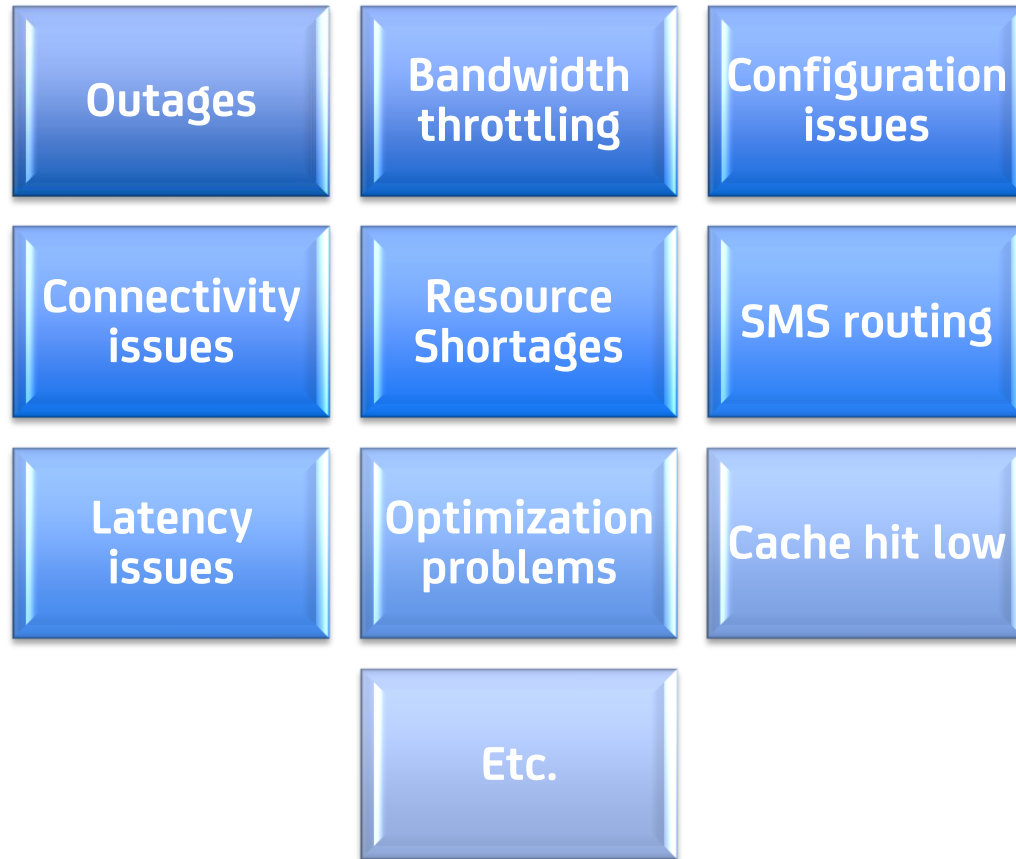
[\*SuperDomain\*...] Test...String Event= Impacted

powered by **NetMaster**

# why do I care?



# common network issues



SSDD

# what else?

Is it the network?



Is it *your* network?



what do you need?

# end-to-end transaction visibility link transactions to the infrastructure

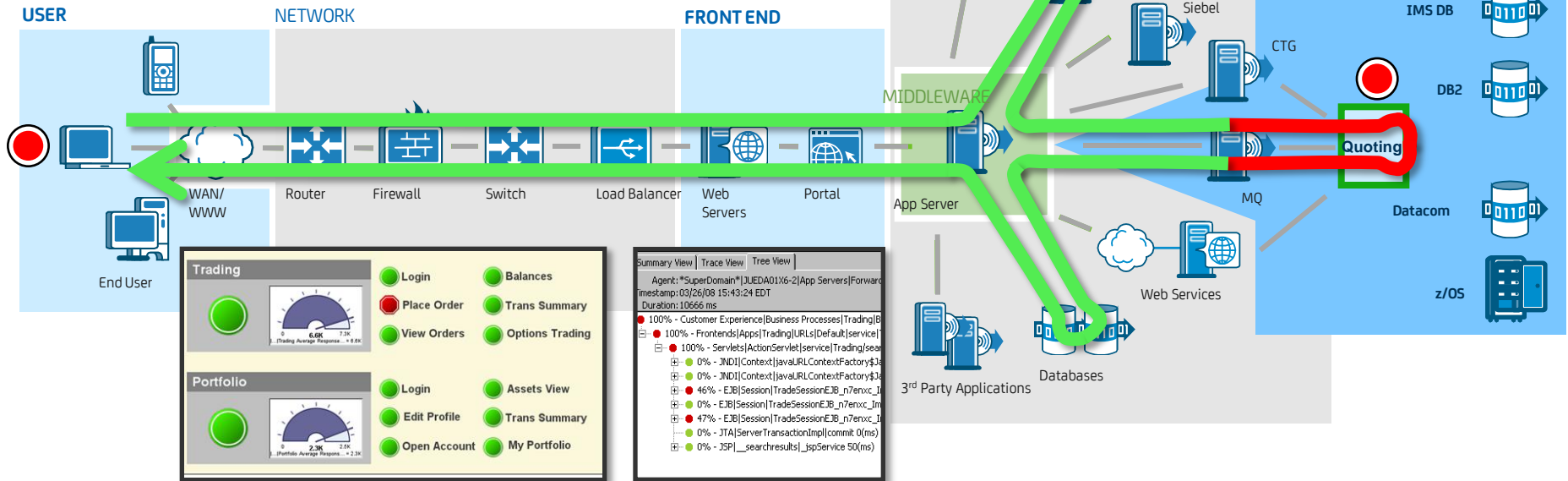
Understand  
End-User experience;  
establish SLAs

Monitor business transactions  
through the IT infrastructure;  
measure response & SLAs

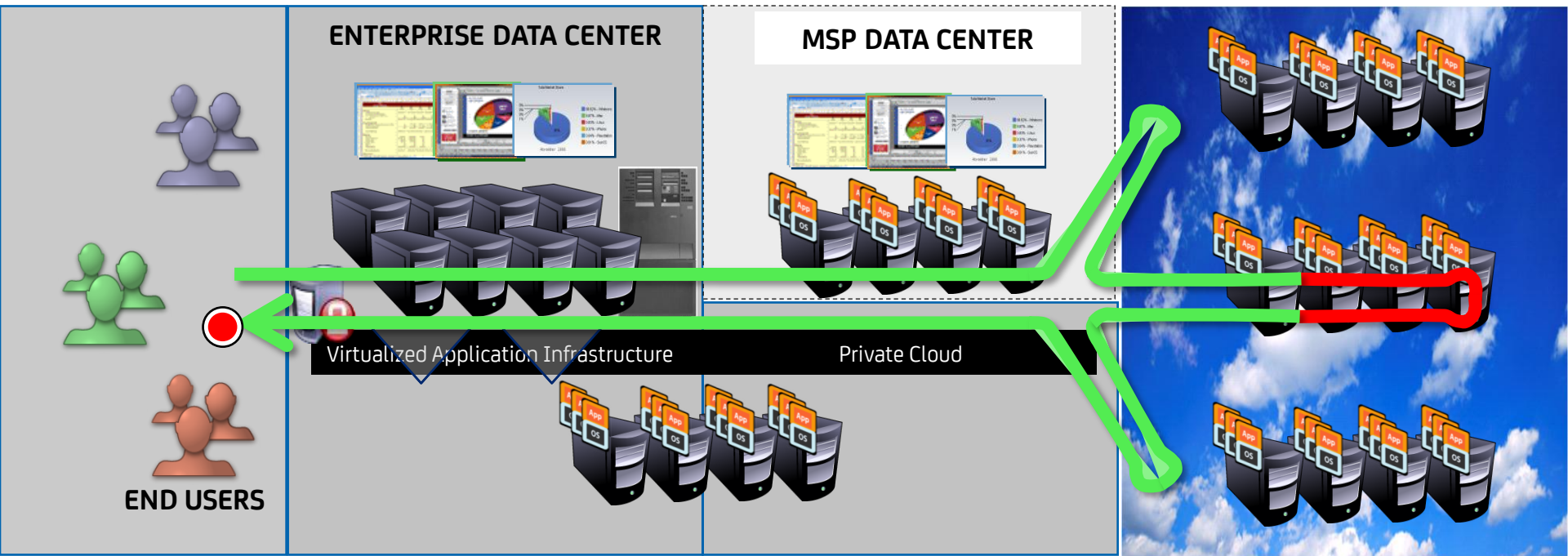
Proactively detect issues; diagnose root cause  
of application-based problems

Affected User List for Incident 1009

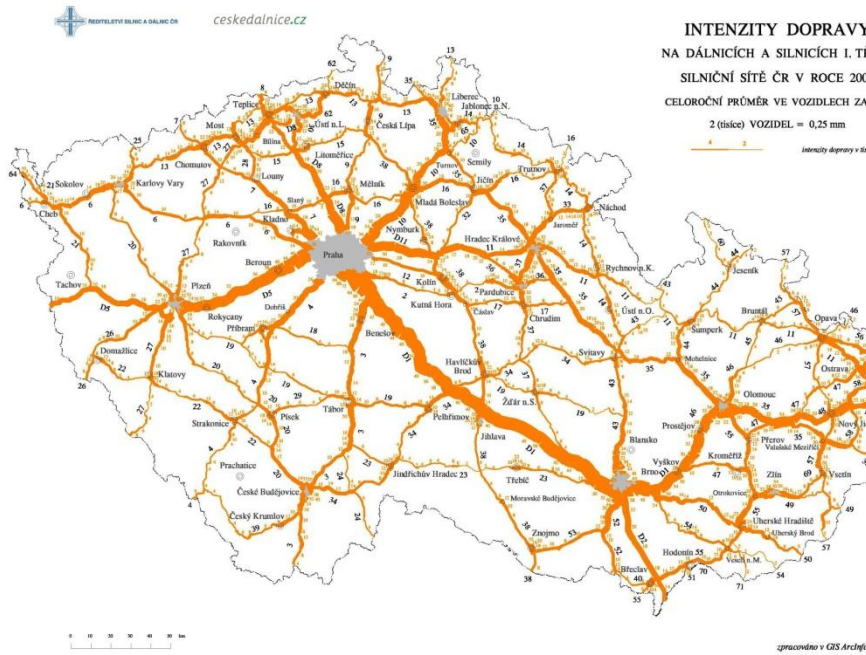
| User               | Login Name | Impact Level     | User Group |
|--------------------|------------|------------------|------------|
| Thorson, Jane      | jthorson   | Critical         | Online     |
| Blumfield, Rose    | rblumfield | Critical         | CallCenter |
| Green, Silas       | sgreen     | High             | Online     |
| Jellico, Mikeal    | mjellico   | High             | Online     |
| McIlroy, Dermot    | dmcilroy   | High             | Online     |
| Tuomo, Jesper      | jtuomo     | High             | Online     |
| Alba, Fiona        | falba      | Medium (Default) | Dublin     |
| Allgood, Stephanie | sallgood   | Medium (Default) | CallCenter |



# how cloud changes the game.... the new application monitoring reality



# where and how much?



# business focus



# mapping IT to business

## Subsystem Traffic Summary

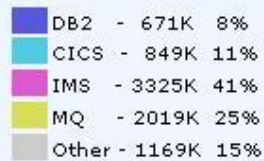
System Name: CA31

Execute

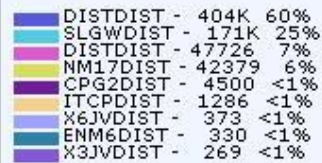
### Subsystem Traffic Summary Results

#### Subsystem Charts

##### Subsystem Summary for CA31



##### DB2 Address Spaces



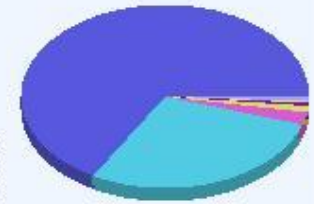
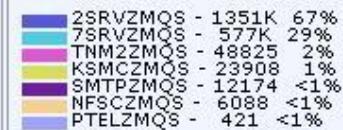
##### CICS Address Spaces



##### IMS Address Spaces



##### MQ Address Spaces



[Back to Top](#)

# where are you?





# TROUBLE

LUCK CAN'T LAST A LIFETIME UNLESS YOU DIE YOUNG.

[www.despair.com](http://www.despair.com)



# manage and prioritize problems on a single pane of glass

NetMaster™ - CSNM22 Home | Log Out | Help

Welcome: Claude Valenti esq.

**WebCenter Menu**

Expand All | Collapse All

- ◆ Diagnostics
  - IP Diagnostics
  - File Transfer Dia
- ◆ Monitoring
  - Alerts
  - Resources
  - IP Resources
  - IP Nodes
  - FT Resources
- ◆ Performance
- ◆ History
- ◆ SYSVIEW
- ◆ Utilities

**Resource Monitor**

Resource List Freeze Search Sort Options Filter Full Action List

Select Resource(s) and: Select an Action from Short List... Go 4-35 of 35

| System...                           | Class | ...     | Actual           | Extended Display                       | ... |
|-------------------------------------|-------|---------|------------------|--|-----|
| <input type="checkbox"/>            | XE61  | CDMGR   | C                | Select an Action from Short List...    | MU  |
| <input type="checkbox"/>            | XE61  | CSM     | C                | Display Alerts for a Resource (AL)     | MU  |
| <input type="checkbox"/>            | XE61  | FTPMGR  | S                | Display Performance History (H)        | MU  |
| <input type="checkbox"/>            | XE61  | FTPMON  | S                | Display Host Interface List (HI)       | MU  |
| <input type="checkbox"/>            | XE61  | FTSCHED | A                | Intensive Monitoring Mode (IMM)        | MU  |
| <input type="checkbox"/>            | XE61  | IPNODE  | 1                | Intensive Monitor Reset (IMR)          | MU  |
| <input type="checkbox"/>            | XE61  | IPNODE  | B                | Display MIBinsight Browser (MIB)       | MU  |
| <input checked="" type="checkbox"/> | XE61  | IPNODE  | B                | Ping & Trace Route an IP Node (PT)     | MU  |
| <input type="checkbox"/>            | XE61  | IPNODE  | MCKJA02          | MCKJA02's workstation ACTIVE DEGRADED  | MU  |
| <input type="checkbox"/>            | XE61  | IPNODE  | NMDCIP2          | NMDCIP2 Ethernet4/0 ACTIVE ACTIVE      | MU  |
| <input type="checkbox"/>            | XE61  | IPNODE  | NMDCIP3          | FastEthernet5/0 ACTIVE ACTIVE          | MU  |
| <input type="checkbox"/>            | XE61  | IPNODE  | RANDY            | Randy ACTIVE ACTIVE                    | MU  |
| <input type="checkbox"/>            | XE61  | IPNODE  | TESTY            | randy ACTIVE ACTIVE                    | MU  |
| <input type="checkbox"/>            | XE61  | IPNODE  | THOLO01          | THOLO01 ACTIVE DEGRADED                | MU  |
| <input type="checkbox"/>            | XE61  | IPNODE  | USH161ME         | SNMPv2 agent versio... ACTIVE ACTIVE   | MU  |
| <input type="checkbox"/>            | XE61  | LOGICAL | FRED             | x ACTIVE INACTIVE                      | MU  |
| <input type="checkbox"/>            | XE61  | NCPMON  | A30N3            | A30NCP ACTIVE INACTIVE                 | MU  |
| <input type="checkbox"/>            | XE61  | OSA     | OSA-02           | OSA Direct Express ACTIVE DEGRADED     | MU  |
| <input type="checkbox"/>            | XE61  | TAPE    | 0786             | TAPE Device 0786 ACTIVE ACTIVE         | MU  |
| <input type="checkbox"/>            | XE61  | TAPE    | 0787             | TAPE Device 0787 ACTIVE INACTIVE       | MU  |
| <input type="checkbox"/>            | XE61  | TAPE    | 0788             | TAPE Device 0788 ACTIVE ACTIVE         | MU  |
| <input type="checkbox"/>            | XE61  | TAPE    | 0789             | TAPE Device 0789 ACTIVE ACTIVE         | MU  |
| <input type="checkbox"/>            | XE61  | STACK   | TCPIP61          | TCP/IP Communication... ACTIVE ACTIVE  | MU  |
| <input type="checkbox"/>            | XE61  | STACK   | TCPIP61A         | TCP/IP Communication... ACTIVE ACTIVE  | MU  |
| <input type="checkbox"/>            | XE61  | XCMGR   | XC301QA1         | Testing ACTIVE ACTIVE                  | MU  |
| <input type="checkbox"/>            | XE61  | XCMON   | XC301QA1.CON...  | Connections Monitor ACTIVE ACTIVE      | MU  |
| <input type="checkbox"/>            | XE61  | XCMON   | XC301QA1.LIST... | Listener Monitor ACTIVE ACTIVE         | MU  |
| <input type="checkbox"/>            | XE61  | XCMON   | XC301QA1.REQ...  | Active Transfer Monitor ACTIVE ACTIVE  | MU  |
| <input type="checkbox"/>            | XE61  | XCMON   | XC301QA1.REQ...  | Held Transfer Monitor ACTIVE ACTIVE    | MU  |
| <input type="checkbox"/>            | XE61  | XCMON   | XC301QA1.REQ...  | Inactive Transfer Mon... ACTIVE ACTIVE | MU  |
| <input type="checkbox"/>            | XE61  | XCMON   | XC301QA1.REQ...  | Suspended Transfer .... ACTIVE ACTIVE  | MU  |
| <input type="checkbox"/>            | XE61  | XCMON   | XC301QA1.STA...  | Stalled Transfer Monitor ACTIVE ACTIVE | MU  |

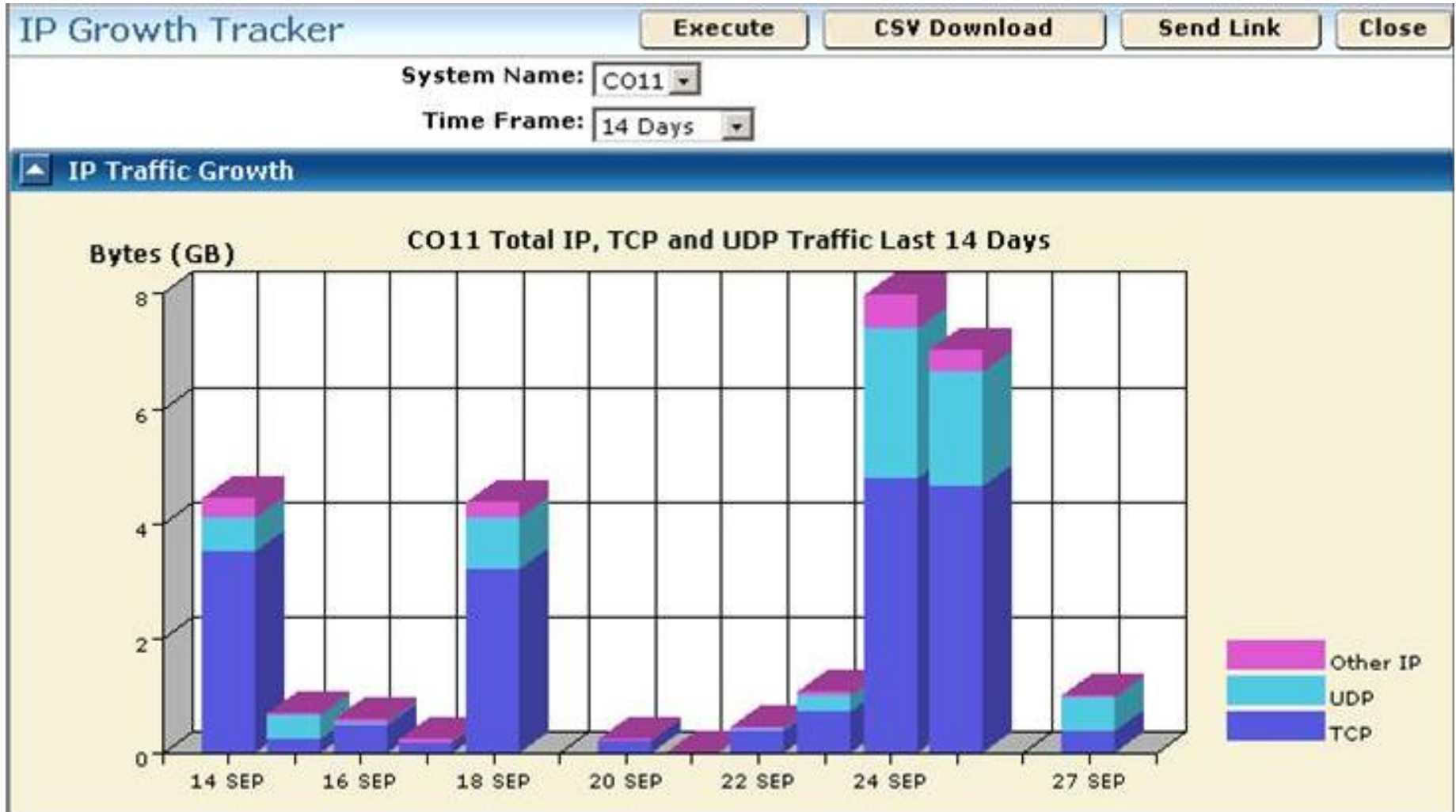
# looking to the future



# talk to the business



# know the past too



# make automation work for you



ca NetMaster® - CSNM30

Welcome: Steve Beerman

## WebCenter Menu

[Expand All](#) | [Collapse All](#)

- ◆ Diagnostics
  - ◆ IP Diagnostics
    - IP Summary
    - IP Nodes
    - SNA Nodes
    - Telnet Connections
    - IP Connections
    - IP Stacks
    - VIPAs
    - CSM
    - Cisco Channel Cards
    - OSA Cards
    - Enterprise Extender
    - Address Spaces
    - Line Printers (LPD)
    - SmartTrace
  - File Transfer Diagnostics
- ◆ Monitoring
  - Alerts
  - Resources
  - IP Resources
  - IP Nodes
  - FT Resources
- ◆ Performance Center
- ◆ History
- ◆ Utilities

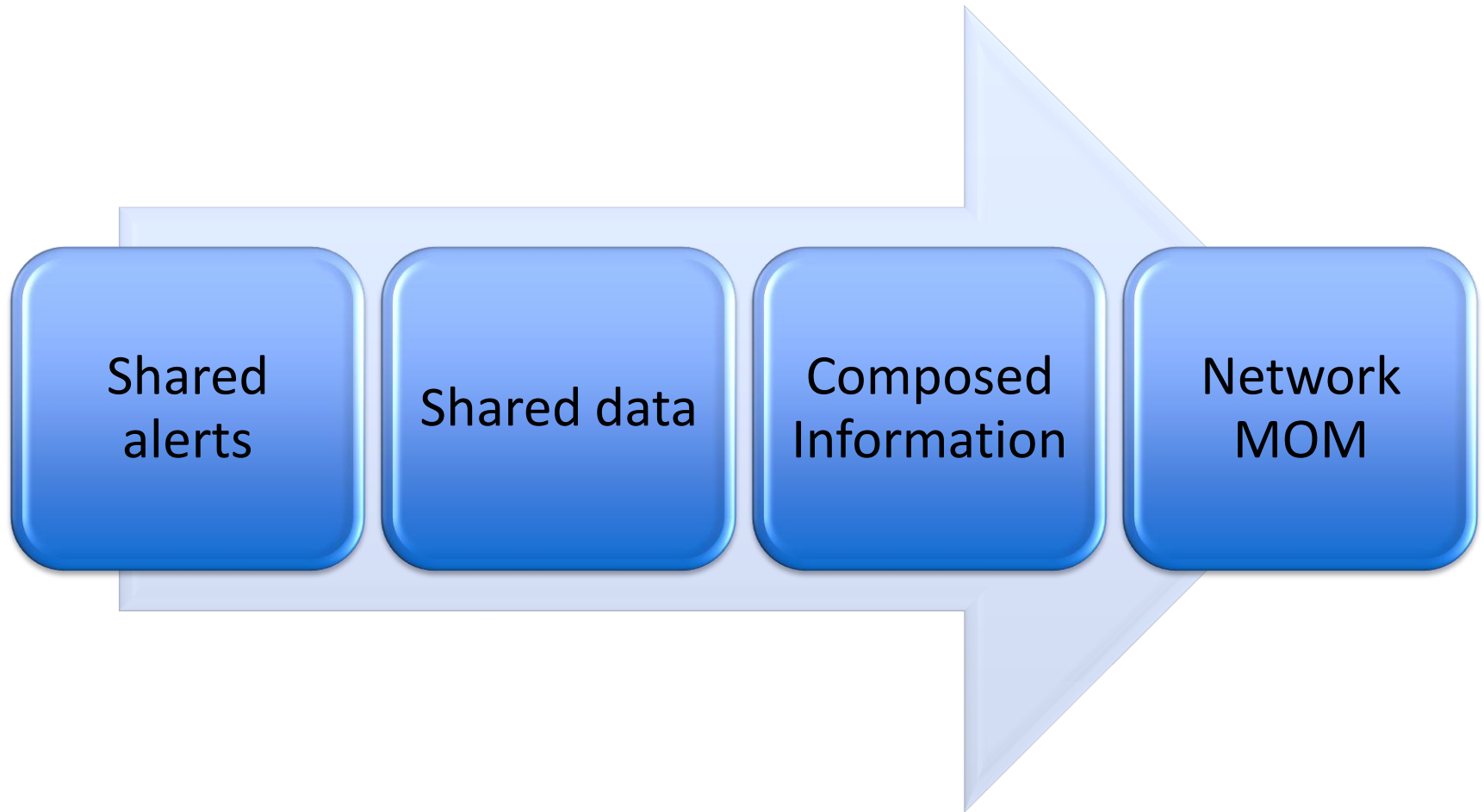
## Resource Monitor

### Resource List

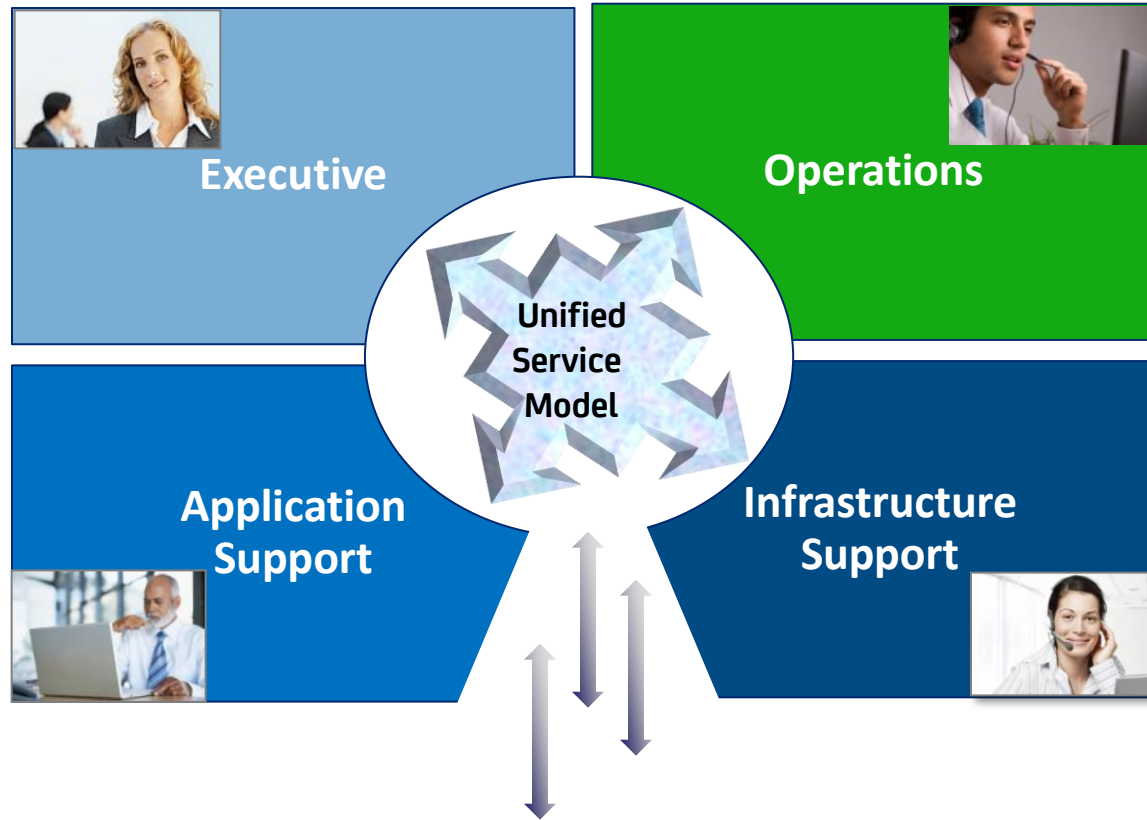
Select Resource(s) and:

| System | Class   | Name             | Description              | Desired  | Actual   | Mode   | Logical   | Over                                   |
|--------|---------|------------------|--------------------------|----------|----------|--------|-----------|--|
| CA31   | APPNHR  | USLDA01.A31X...  | APPN High Performan...   | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | ASMON   | CSNM30           | test                     | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | ASMON   | D91ADIST         | DB2 DDF Started Task     | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | CSM     | CSM              | Communications Stor...   | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | EE      | EE               | Enterprise Extender      | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | FTPMGR  | FTPD311          | FTPD31                   | ACTIVE   | ACTIVE   | MANUAL | OK        | G                                      |
| CA31   | FTPMON  | FTPD311.FTPCON   | FTP TCP/IP Connectio...  | ACTIVE   | ACTIVE   | MANUAL | OK        | G                                      |
| CA31   | FTPMON  | FTPD311.FTPDL... | FTP Listener Port Mon... | ACTIVE   | ACTIVE   | MANUAL | OK        | G                                      |
| CA31   | FTPMON  | FTPD311.FTPDR... | FTP Remote Node Mo...    | ACTIVE   | ACTIVE   | MANUAL | OK        | G                                      |
| CA31   | FTSCHED | STEVEDEMO        | STEVEDEMO                | INACTIVE | FAILED   | MANUAL | ATTENTION | END: 11:06 REQ:0001 COMP:0000 FAL:0000 |
| CA31   | FTSCHED | STEVEDEMO2       | STEVEDEMO2               | INACTIVE | FAILED   | MANUAL | ATTENTION | END: 11:53 REQ:0001 COMP:0000 FAL:0000 |
| CA31   | FTSCHED | STEVEDEMO3       | STEVEDEMO3               | INACTIVE | FAILED   | MANUAL | ATTENTION | END: 13:53 REQ:0001 COMP:0000 FAL:0000 |
| CA31   | IPNODE  | 141.202.85.11    | SNMPv3 agent versio...   | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | IPNODE  | NMDCIP3          | Cisco Internetwork O...  | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | IPNODE  | NMDSVH5          | Cisco IOS Software, ...  | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | IPNODE  | PIGLET           | Sun SNMP Agent, Ultr...  | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | IPNODE  | RABBIT           | Sun SNMP Agent, Ultr...  | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | OSA     | OSA-01           | OSA Direct Express       | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | OSA     | OSA-02           | OSA Direct Express       | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | OSA     | OSA-13           | OSA Direct Express       | ACTIVE   | INACTIVE | MANUAL | ATTENTION |  |
| CA31   | OSA     | OSA-16           | OSA Direct Express       | ACTIVE   | INACTIVE | MANUAL | ATTENTION |  |
| CA31   | OSA     | OSA-0A           | OSA Direct Express       | ACTIVE   | DEGRADED | MANUAL | MONFAILED |  |
| CA31   | STACK   | TCPIP311         | tcpip31                  | ACTIVE   | ACTIVE   | MANUAL | OK        |  |
| CA31   | STACK   | TCPIP311         | vipa                     | ACTIVE   | INACTIVE | MANUAL | ATTENTION |  |
| CA31   | STACK   | TCPIP00F         | tcpip00f                 | ACTIVE   | INACTIVE | MANUAL | ATTENTION |  |

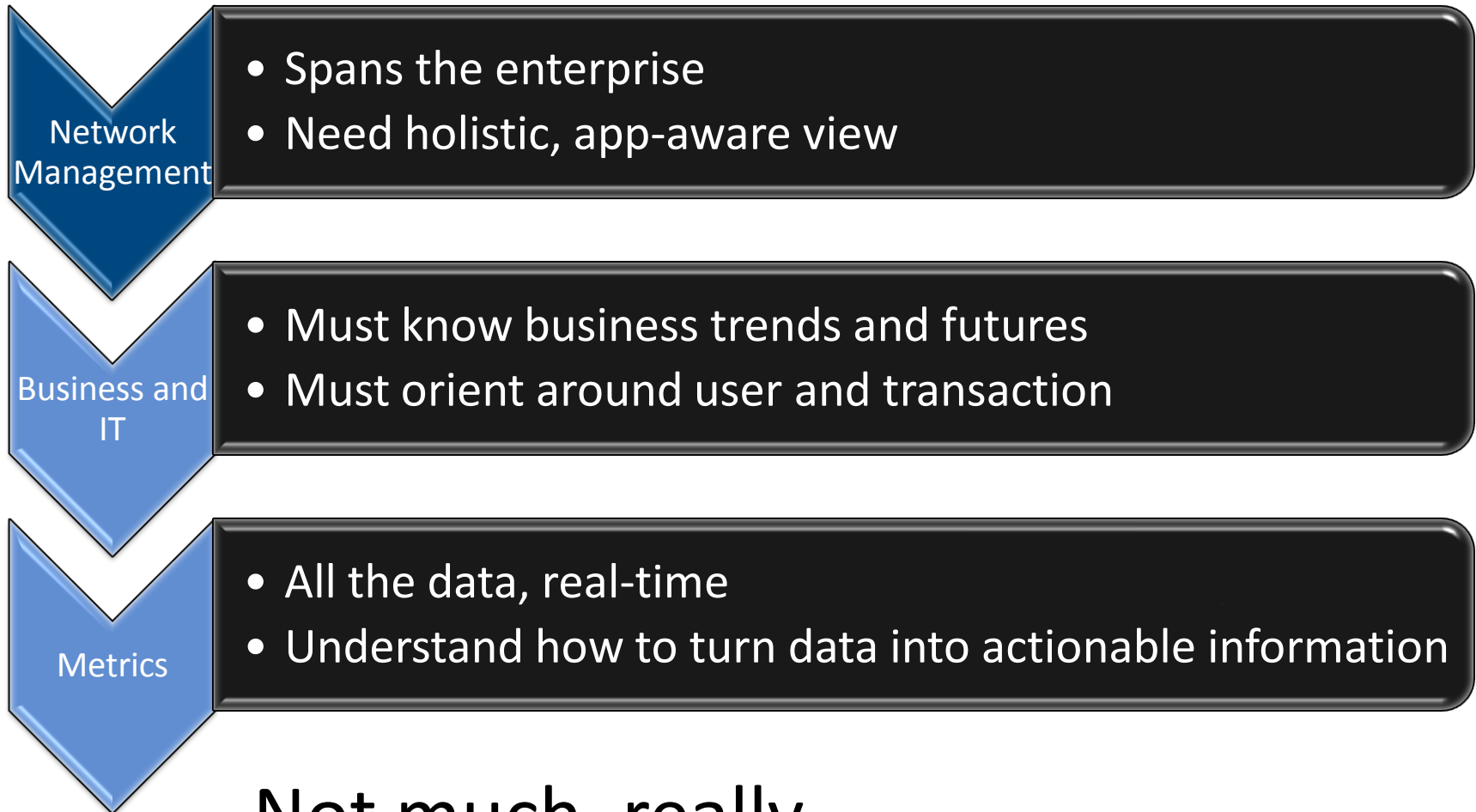
# what are the options?



# solutions designed to serve four key consumers of service delivery information



# what's different about cloud?



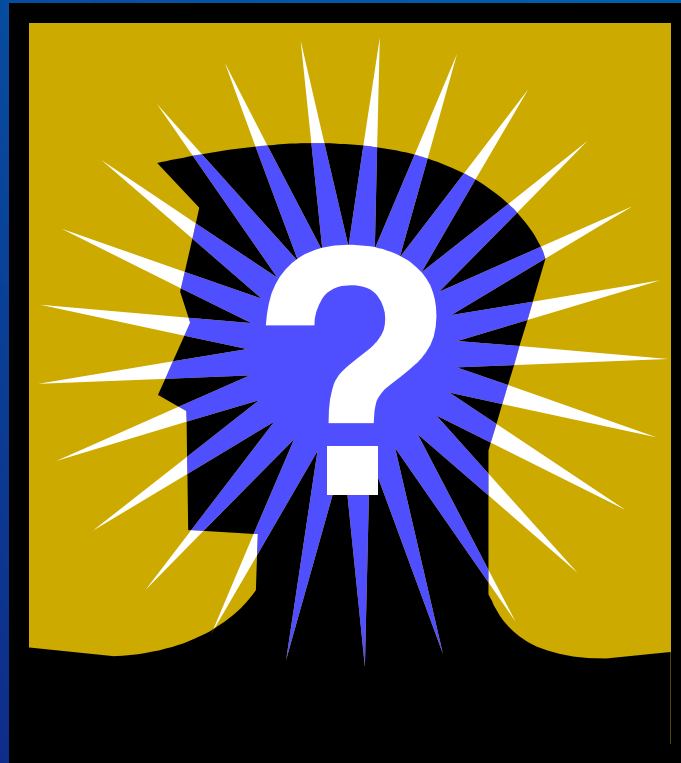
Not much, really...



# you are in a unique position

- As network engineers, you are uniquely positioned to be the “glue” in your company’s IT structure
  - Everything flows through the network
- You can be the catalyst for positive change in customer experience management
- Cloud is just another tool in the arsenal to stage work from
  - There are advantages and disadvantages
- Be in a position to provide “supply chain engineering” and discipline to your company

questions?

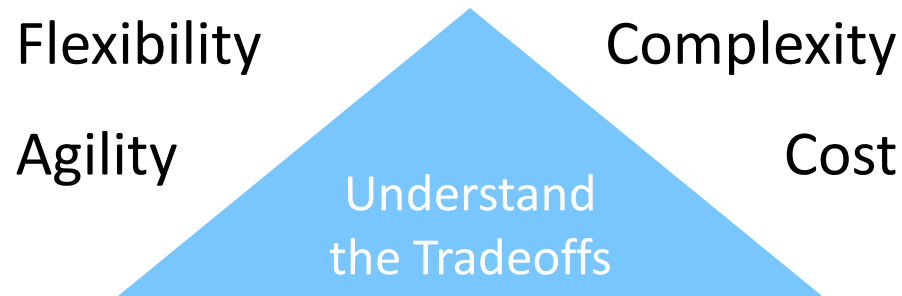


# summary

1. Break down the silos and provide the business a service oriented view across all domains (e.g. processor, storage, network)
2. Understand and manage compliance regulations, know what kind of data are flowing where (internally and externally)
3. Work with cloud vendors to obtain necessary data for monitoring performance and qualities of service
4. Use a monitoring tool set that enables the service oriented view, gathering metrics from across all elements delivering those services
5. Build capacity models based on past information and work with the business to understand future requirements

Work across IT to shift your organization from being a set of discrete platform providers to becoming an IT service chain

Understand what's important to your business



“Plus ça change, plus c'est la même chose.”

(The more things change, the more they stay the same)

Cloud computing requires enhanced focus on doing IT right

Scott Fagen  
Scott.Fagen@ca.com