CA APM - Topics for Discussion (Focus Area – CEM)

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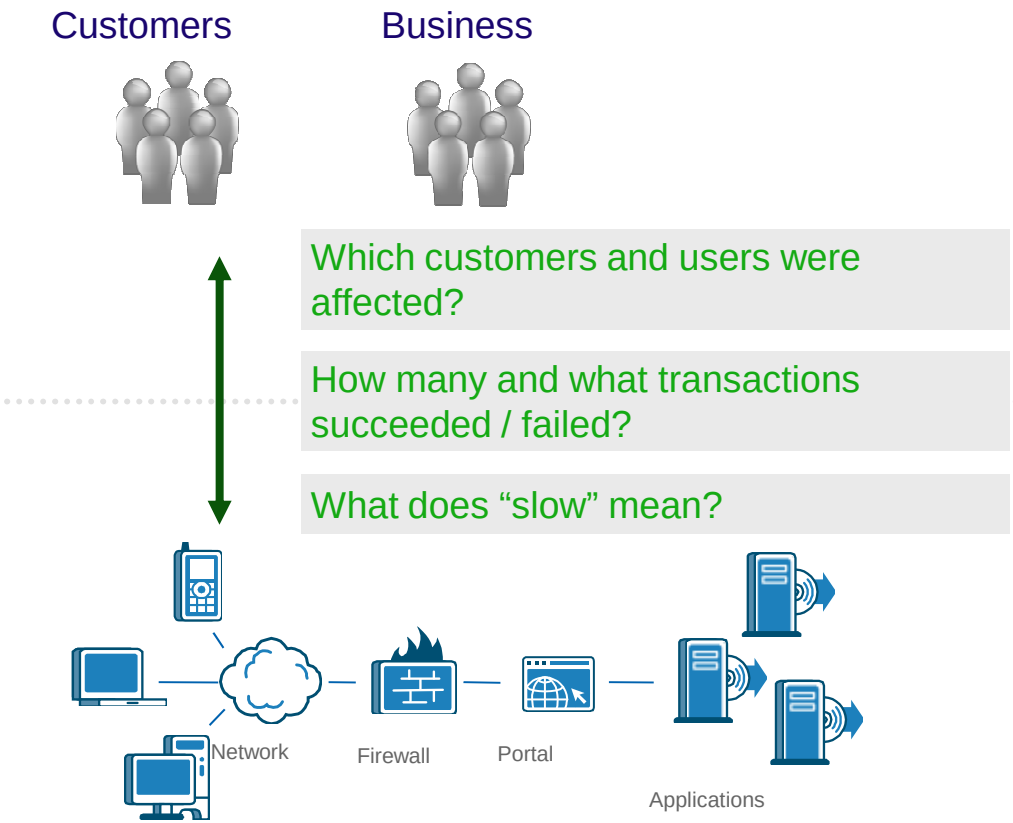
July 2011

agenda

- CEM Deep-Dive and its value to business in context of APM
- Business Dashboards using RTTM
- Enterprise Deployment Best Practices
  - Sizing and HA
  - Networking
  - System Specifications
  - Advanced Business Transaction Definitions
  - Understanding of Impact levels and advanced Incident creation techniques
- Integrations
  - HTTP Plug-ins and extensions
  - Understanding the CEM-Introscope integration and linkage
  - Integration with various management systems
- Ensuring integrity of CEM data and statistics
  - Packet loss problems
    - Overload scenarios and NIC issues
  - Missing/Partial Response problems

application performance management - the challenge

When there's a problem, the Business needs to know which customers, users and applications are being impacted



How much is this incident costing the business?

How long has this been happening?

Are premium customers being served well?

How many customers are active or have stopped using services?

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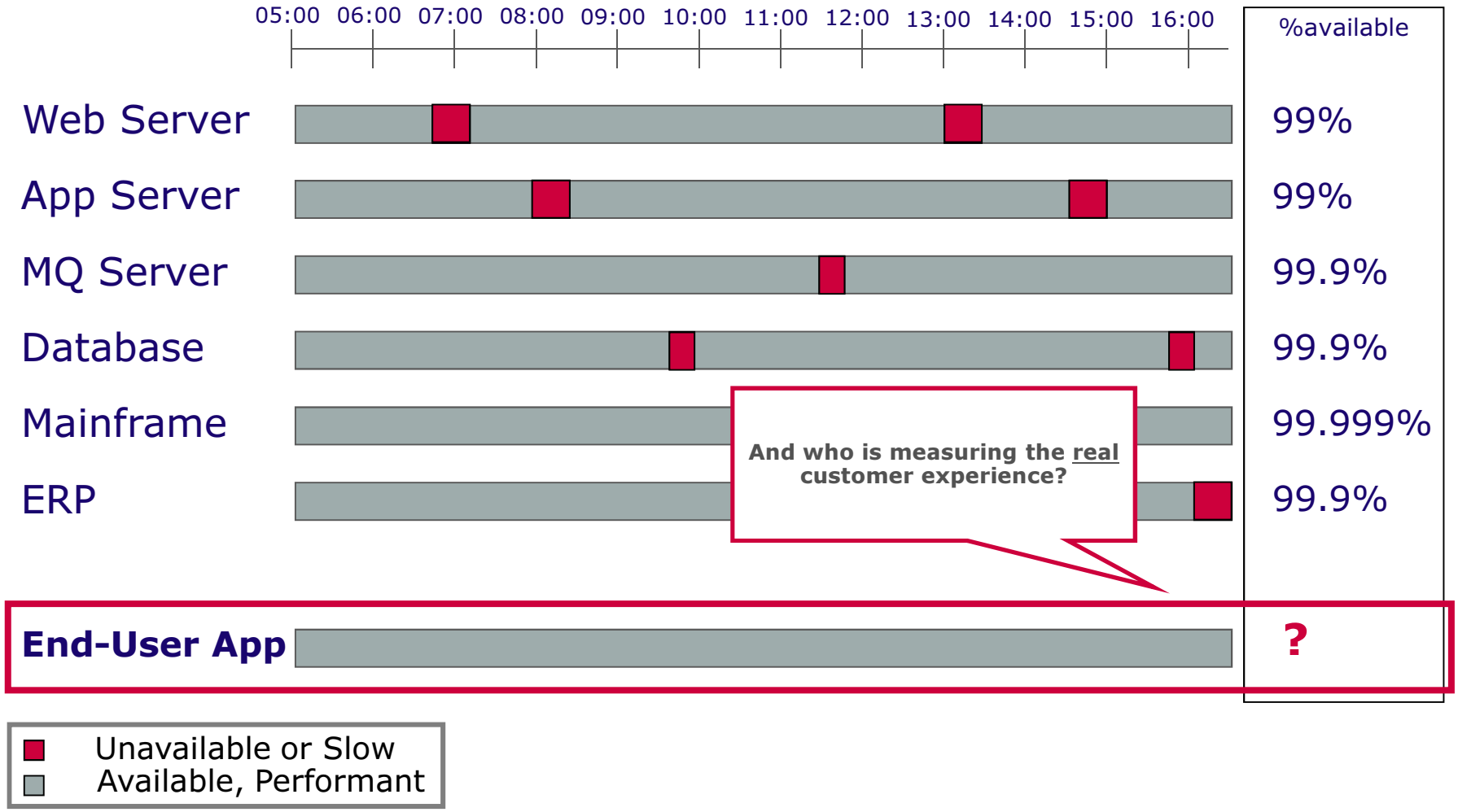
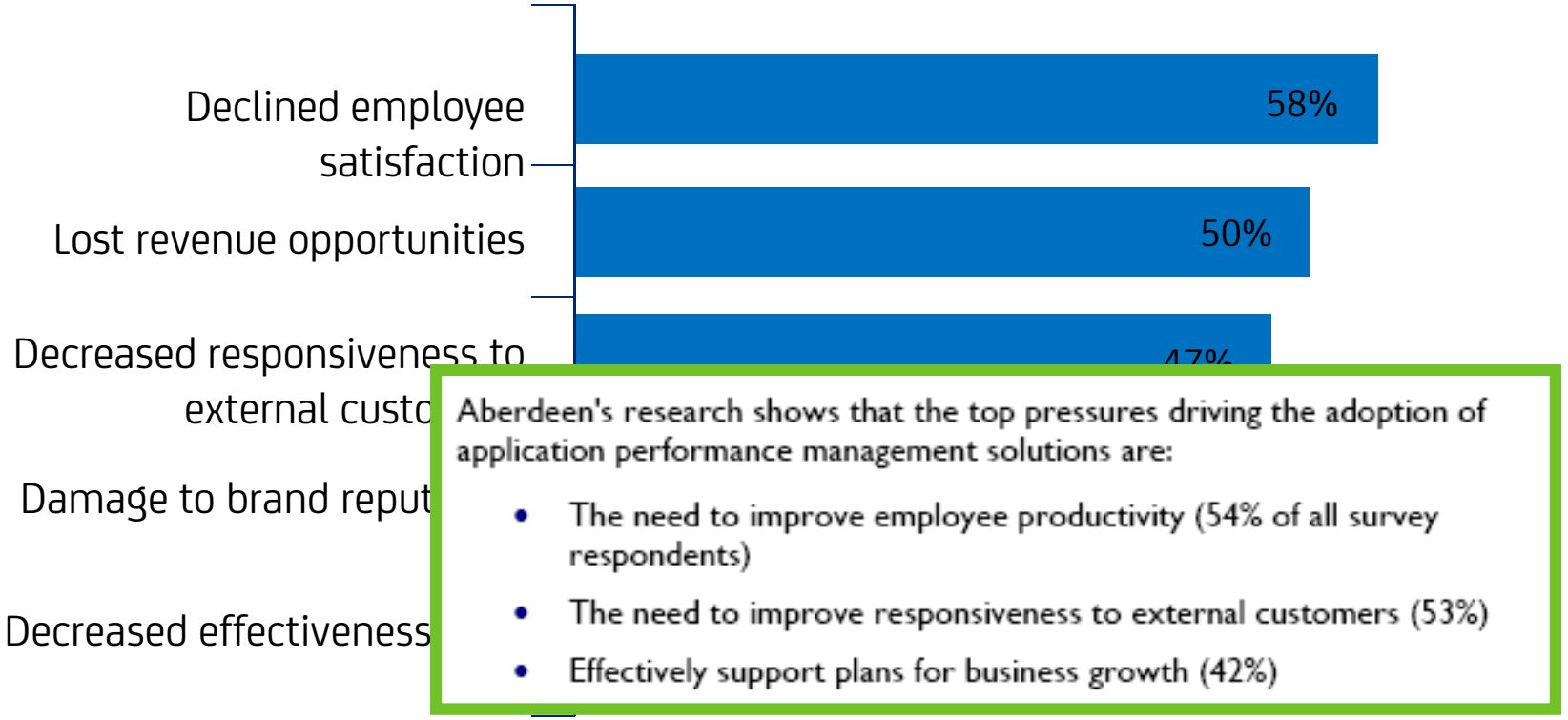
complex heterogeneous environments
little issues add up



why worry about application and transaction performance?

Aberdeen Group Survey: Business Impact of Issues with Application Performance



Source: Network World, "Poor Application Performance Translates to Lost Revenue," August 2008. Recap story from Aberdeen Research Survey of 200 companies, June 2008.

information to support all stakeholders

LOB Manager

- I need visibility into the customer experience
- What's the number of orders that are processed daily?

Development

- I need to see exactly what the problem is
- I want to find problems in Dev & QA before they hit Production

QA

- I need to be confident the application will perform well in production
- I need data to reproduce problems and identify the likely cause

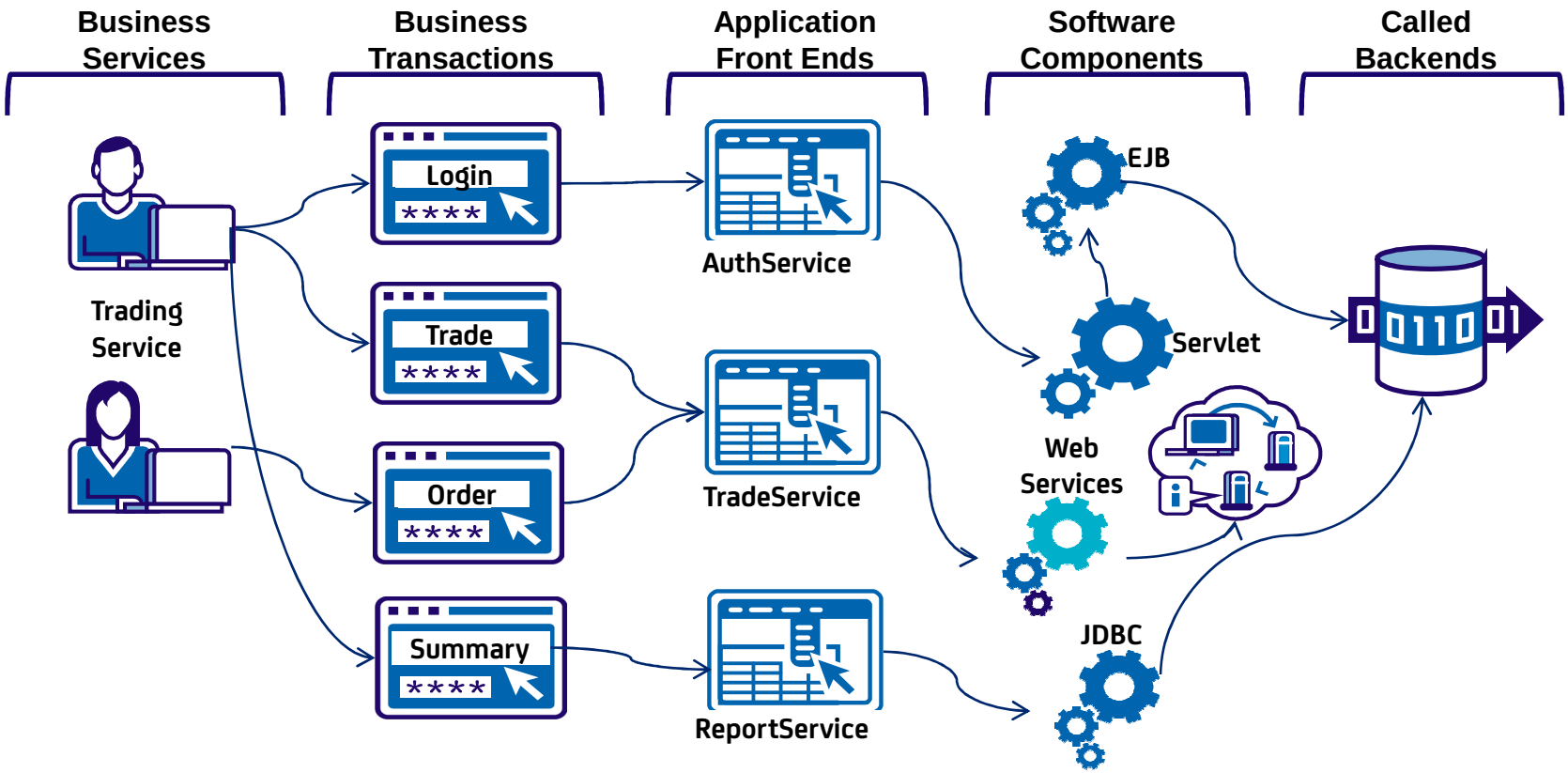
VP Operations

- I must ensure SLAs are acceptable
- Is my team is working efficiently and are costs are under control

Operations

- I want to see problems before customers do
- I want a constant pulse on customer success rate
- I need to know who to contact when alerted

transaction model
capture end-to-end execution path



- Unified and simple Transaction Model serves as the foundation for application performance management
- Component relationships are updated dynamically as transaction paths change

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Business Dashboards using RTTM

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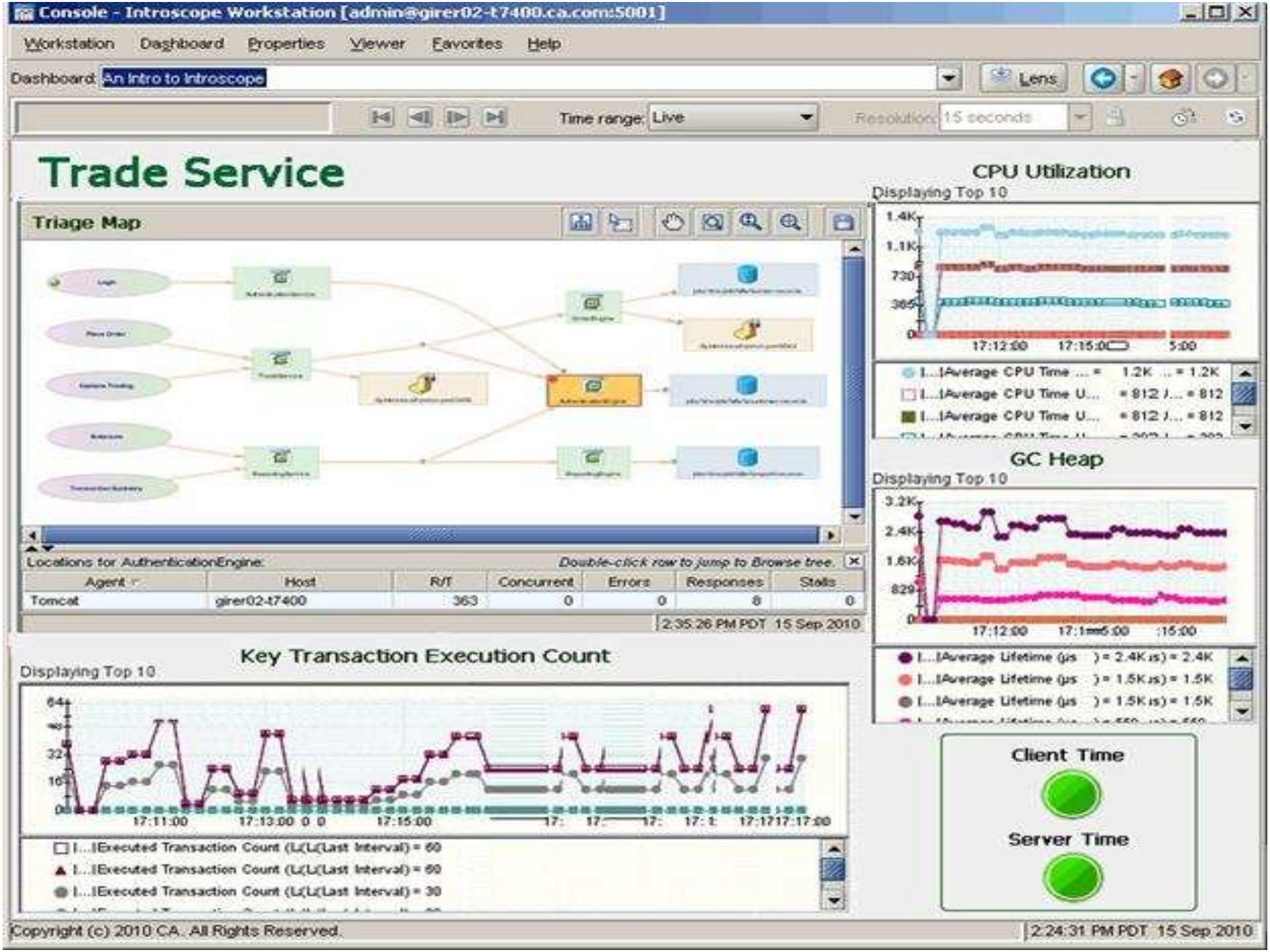
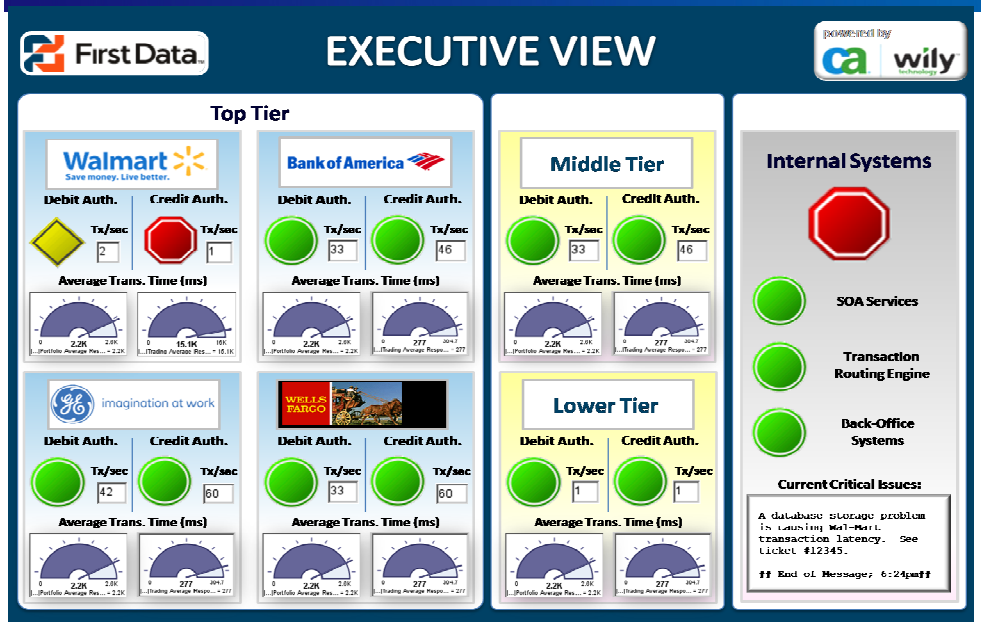
What is RTTM ?

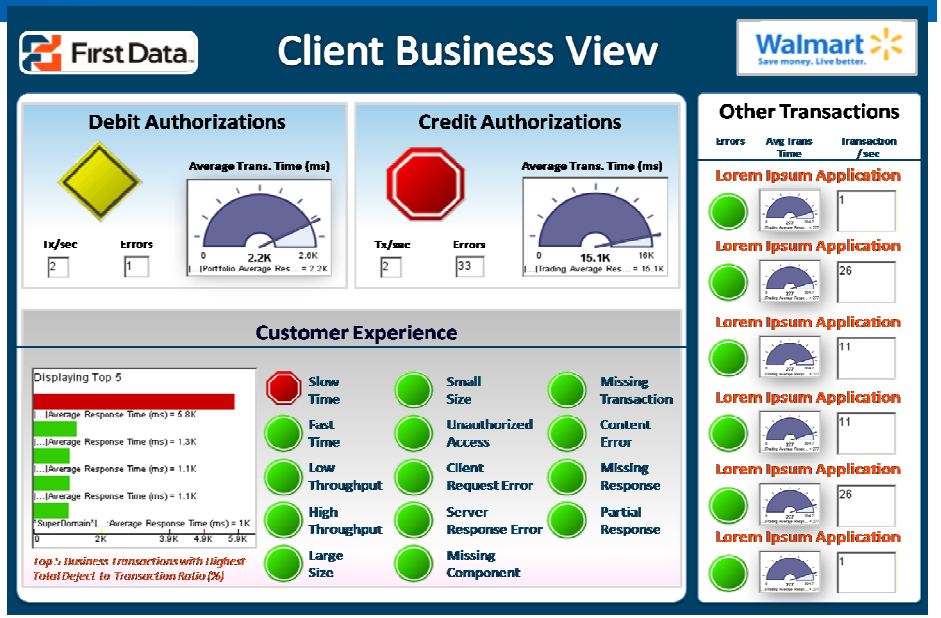
Real Time Transaction Metrics

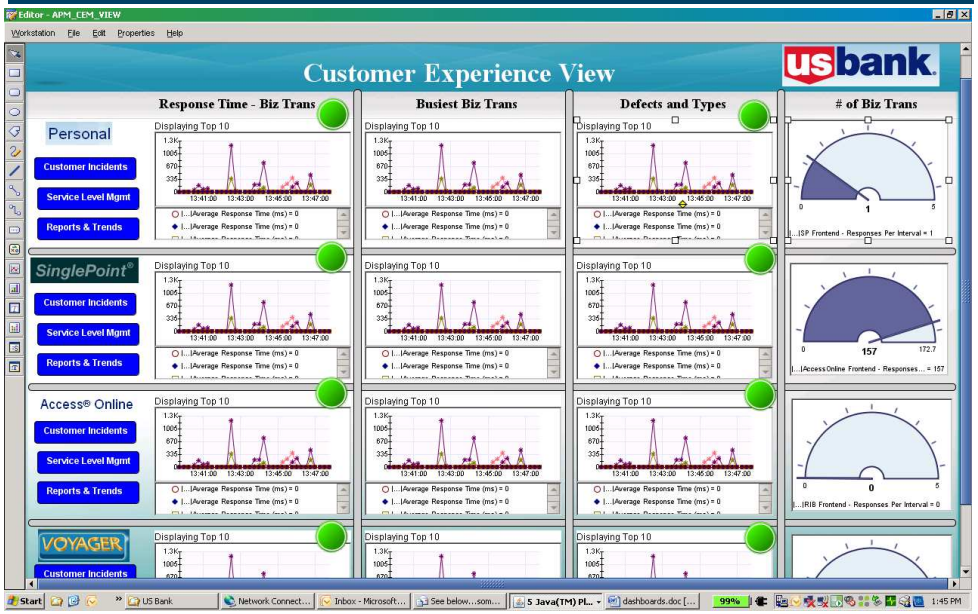
- Developed as “btstats” on CEM 4.2
  - Direct metrics from TIMs to EM
  - Converted “hourly” transactional statistics to “15 seconds”
- Productized as “RTTM” on CEM 4.5.x
  - TESS aggregated real time metrics from TIM and sent them to EM
  - Added “defect rate”
  - Switch/LB time (CEM Agent) vs. Application server times (from “Customer Experience Node” under each agent)
- Fully integrated as core component on CEM 5.x/APM 9
  - Available for Dashboarding
  - Switch/LB time (CEM Agent) vs. Application server times (from Triage Map)


Console - Introscope Workstation [admin@girer02-t7400.ca.com:5001]
Workstation Dashboard Properties Viewer Favorites Help
Dashboard: An Intro to Introscope
Lens
Time range: Live
Resolution: 15 seconds
Trade Service
Triage Map
Locations for AuthenticationEngine:
Double-click row to jump to Browse tree.
Agent
Host
R/T
Concurrent
Errors
Responses
Stalls
Tomcat
girer02-t7400
363
0
0
8
0
2:35:26 PM PDT 15 Sep 2010
CPU Utilization
Displaying Top 10
1.4K
1.1K
730
365
0
17:12:00
17:15:00
5:00
I...|Average CPU Time ... = 1.2K ... = 1.2K
I...|Average CPU Time U... = 812 /... = 812
I...|Average CPU Time U... = 812 /... = 812
GC Heap
Displaying Top 10
3.2K
2.4K
1.6K
829
0
17:12:00
17:15:00
I...|Average Lifetime (µs) = 2.4K µs) = 2.4K
I...|Average Lifetime (µs) = 1.5K µs) = 1.5K
I...|Average Lifetime (µs) = 1.5K µs) = 1.5K
Key Transaction Execution Count
Displaying Top 10
64
32
16
0
17:11:00
17:13:00
17:15:00
I...|Executed Transaction Count (L(L(Last Interval) = 60
I...|Executed Transaction Count (L(L(Last Interval) = 60
I...|Executed Transaction Count (L(L(Last Interval) = 30
Client Time
Server Time
Copyright (c) 2010 CA. All Rights Reserved.
2:24:31 PM PDT 15 Sep 2010

Business Dashboards leveraging CEM RTTM Metrics







Enterprise Deployment Best Practices

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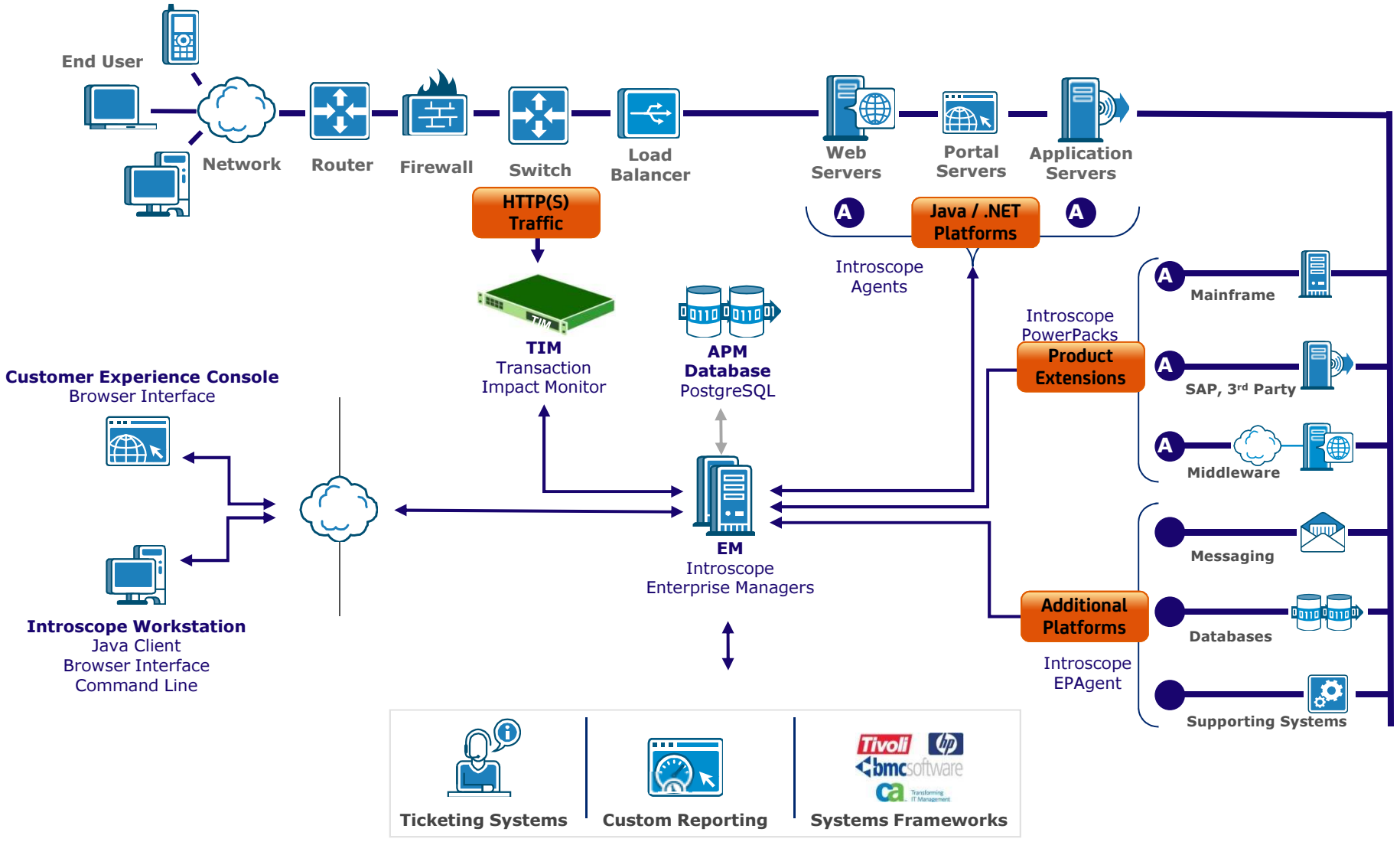
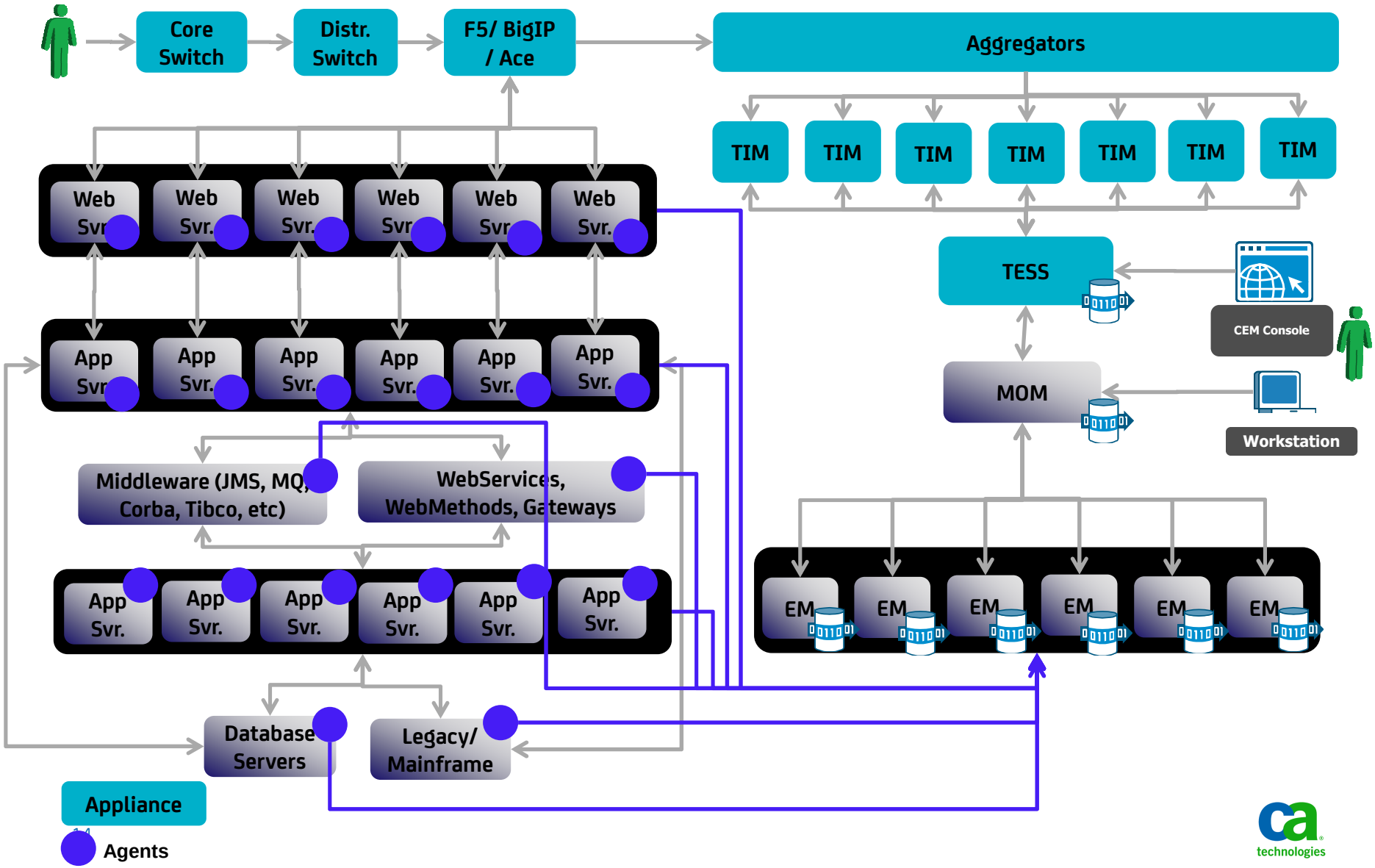
the CA APM solution architecture – how we do it



APM Cluster Architecture – Introscope 8.x, CEM 4.5.x



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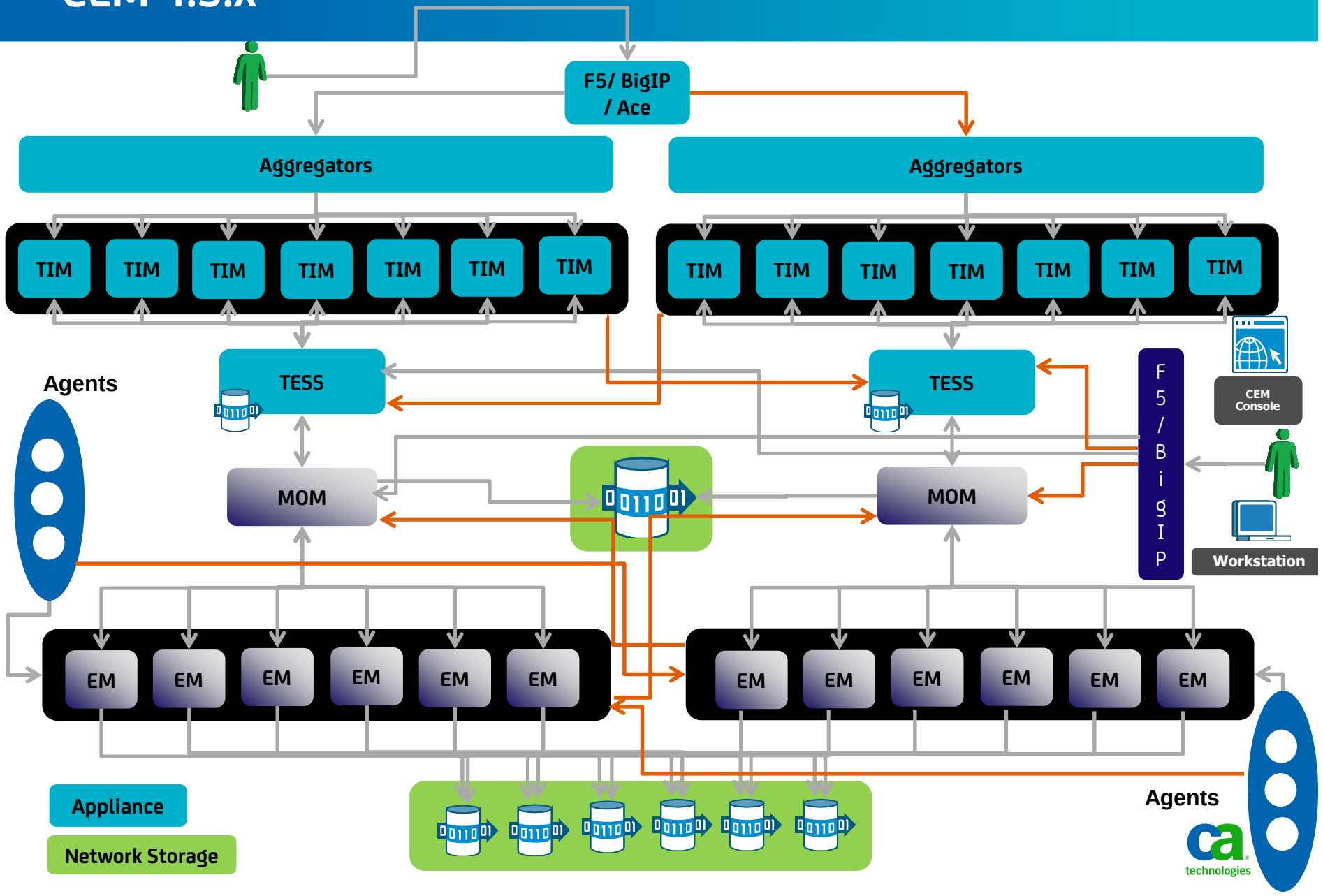
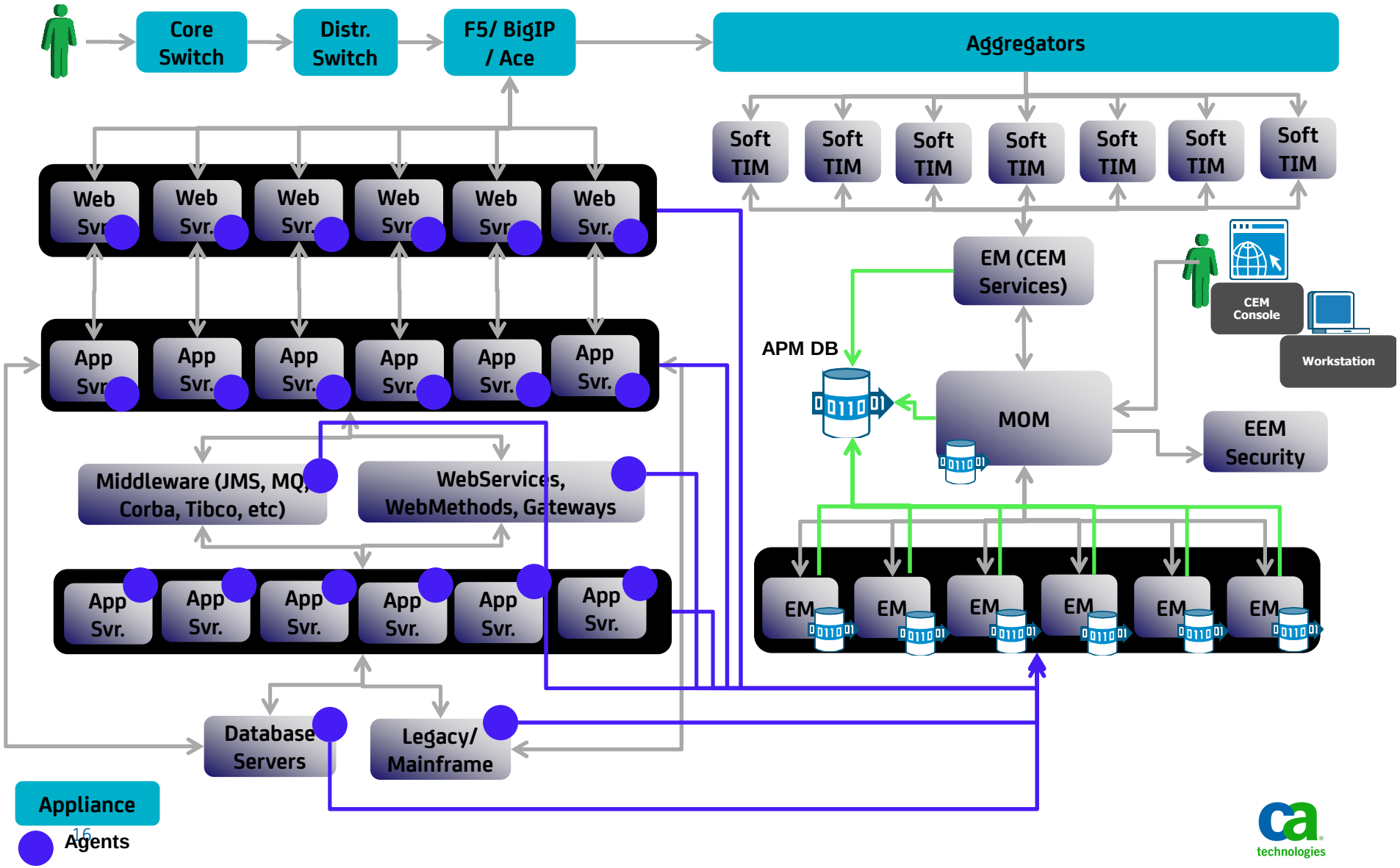
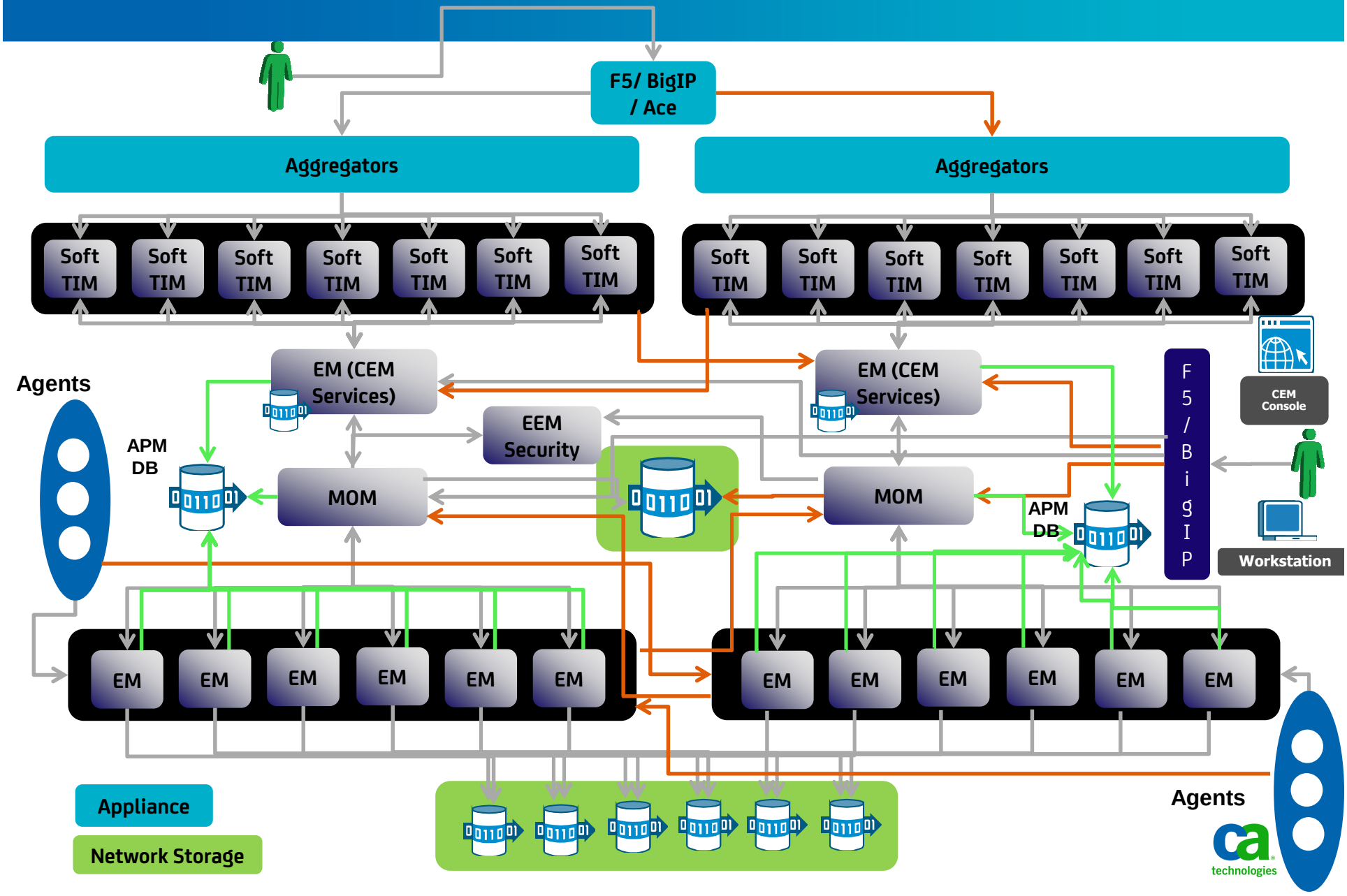
High Availability APM Cluster Architecture – Introscope 8.x, CEM 4.5.x



APM Cluster Architecture – APM 9.x



High Availability APM Cluster Architecture – APM 9.x



Cluster Sizing Guidelines

See the Sizing Calculator for explicit number of TIMs, TESS, Agents, EM, MOM and Storage

Active - Active (No DR)																		
Complexity	Total # of JVM / App instances	Metrics / Agent	# of Agents including EPA	Total Metrics	# of EM	EM Failover	Storage / EM	CPU / EM	Heap / EM	# of MOM	MOM Failover	Storage / MOM	CPU / MOM	Heap / MOM	Total HTTP Traffic	# of Biz Txns	# of TIMs	# of TESS
Simple	40-50		60	< 300K	1	No		4 to 6	6G - 8 G	NA	NA	NA	NA	NA	250 Mbps -350 Mbps	< = 80	2 to 3	1
Medium	65-250		80 - 300	> 400K and < 1.5M	2 to 5	Yes		4		1	No	150 G	8+	12G - 14G	350 Mbps -700 Mbps	< = 120	3 to 5	1
Complex	250-500	3K-5K	300 - 600	> 1.5M and < 3 M	6 to 10	Yes	150G	4	4 G	1	1	200 G	8+	16G - 20G	700 Mbps - 1.5 Gbps	< = 150	6 to 12	1 to 2

Active - Passive (No DR)																		
Complexity	Total # of JVM / App instances	Metrics / Agent	# of Agents including EPA	Total Metrics	# of EM	EM Failover	Storage / EM	CPU / EM	Heap / EM	# of MOM	MOM Failover	Storage / MOM	CPU / MOM	Heap / MOM	Total HTTP Traffic	# of Biz Txns	# of TIMs	# of TESS
Simple	60-70		90	< 450K	1	No		4	6 G - 8 G	NA	NA	NA	NA	NA	250 Mbps -350 Mbps	< = 80	2 to 3	1
Medium	80-350		100 - 400	> 450K and < 2.25M	2 to 5	Yes		4		1	No	150 G	8+	12G - 14G	350 Mbps -700 Mbps	< = 120	3 to 5	1
Complex	350-800	3K-5K	400 - 900	> 2.25M and < 4.5M	6 to 10	Yes	150G	4	4 G	1	1	200 G	8+	16G - 20G	700 Mbps - 1.5 Gbps	< = 150	6 to 12	1 to 2

Virtualization Sizing Guidelines (Introscope 8.x)						
Complexity	Total # of JVM/App instances	Metrics / Agent	# of Agents including EPA	Total Metrics	# of EM	# of MOM
Simple	30 - 40	2k -3k	50	<250K	1	1
Medium	40 - 200	2k -3k	50-200	>250K and < 1M	2 to 5	1
Complex	200 - 400	2k -3k	200-450	>1M and < 2M	6 to 10	2

System Specifications – Introscope 8.x, CEM 4.5.x

VMWare							
Introscope H/W Requirements							
	OS	**Hardware**	**RAM**	**JVM**	**Heap Size**	**Reservations**	**Storage**
Collector / EM	64-bit RHEL 4/5	4 VCPU / Dual Core Xeon / Opteron @ 4 GHz	8 GB	64 bit	4 GB per Collector	Memory: 8 GB VCPU: 8 CPU Frequency: 4GHz Disk R/W: 350/seconds	See sizing calculator
	OS	**Hardware**	**RAM**	**JVM**	**Heap**	**Reservations**	**Storage**
MOM	64-bit RHEL 4/5	4 VCPU / Dual Core Xeon / Opteron @ 4 GHz	14Gb	64 bit	12 Gb	Memory: 14 GB VCPU: 8 CPU Frequency: 4GHz Disk R/W: 250/seconds	See sizing calculator

Physical Hardware						
Introscope H/W Requirements						
	OS	**Hardware**	**RAM**	**JVM**	**Heap Size**	**Storage**
Collector / EM	64-bit RHEL 4/5	4 CPU / Dual Core Xeon / Opteron @ 4 GHz	8 GB	64 bit	4 GB per Collector	See sizing calculator
	OS	**Hardware**	**RAM**	**JVM**	**Heap**	**Storage**
MOM	64-bit RHEL 4/5	4 CPU / Dual Core Xeon / Opteron @ 4 GHz	14Gb	64 bit	12 Gb	See sizing calculator

System Specifications– APM 9.x

VMWare

APM 9.x H/W Requirements

	OS	Hardware	RAM	JVM	Heap Size	Reservations	Storage
Collector / EM	64-bit RHEL 4/5	4 VCPU / Dual Core Xeon / Opteron @ 4 GHz	8 GB	64 bit	4 GB per Collector	Memory: 8 GB VCPU: 8 CPU Frequency: 4GHz Disk R/W: 350/seconds	See sizing calculator
	OS	**Hardware**	**RAM**	**JVM**	**Heap**	**Reservations**	**Storage**
MOM	64-bit RHEL 4/5	4 VCPU / Dual Core Xeon / Opteron @ 4 GHz	24G	64 bit	20G	Memory: 24 GB VCPU: 8 CPU Frequency: 4GHz Disk R/W: 250/seconds	See sizing calculator
	OS	**Hardware**	**RAM**	**JVM**	**Heap**	**Reservations**	**Storage**
TIM	32-bit RHEL 4, Nihant 8 (CA shipped)	4 VCPU / Dual Core Xeon / Opteron @ 4 GHz	8G	32 bit	6G	Memory: 8 GB VCPU: 8 CPU Frequency: 4GHz Disk R/W: 250/seconds disk size : 146 GB	See sizing calculator or 146 G
	OS	**Hardware**	**RAM**	**JVM**	**Heap**	**Reservations**	**Storage**
APM DB	64-bit RHEL 4/5	4 VCPU / Dual Core Xeon / Opteron @ 4 GHz	8G	64 bit	6G	Memory: 8 GB VCPU: 8 CPU Frequency: 4GHz Disk R/W: 350/seconds	See sizing calculator or 200 G

Physical

APM 9.x H/W Requirements

	OS	Hardware	RAM	JVM	Heap Size	Storage
Collector / EM	64-bit RHEL 4/5	4 CPU / Dual Core Xeon / Opteron @ 4 GHz	8 GB	64 bit	4 GB per Collector	See sizing calculator
	OS	**Hardware**	**RAM**	**JVM**	**Heap**	**Storage**
MOM	64-bit RHEL 4/5	4 CPU / Dual Core Xeon / Opteron @ 4 GHz	14Gb	64 bit	12 Gb	See sizing calculator
	OS	**Hardware**	**RAM**	**JVM**	**Heap**	**Storage**
TIM	32-bit RHEL 4, Nihant 8 (CA shipped)	4 CPU / Dual Core Xeon / Opteron @ 4 GHz	8G	32 bit	6G	See sizing calculator or 146 G
	OS	**Hardware**	**RAM**	**JVM**	**Heap**	**Storage**
APM DB	64-bit RHEL 4/5	4 CPU / Dual Core Xeon / Opteron @ 4 GHz	8G	64 bit	6G	See sizing calculator or 200 G

Virtualization Considerations

See the System Specifications for explicit reservation numbers

- **Networking Reservations**
  - Dedicated NIC card and physical/virtual NIC binding for TIM monitoring interface
- **System Reservations**
  - CPU
  - Memory / RAM and Heap Size
  - Dedicated Disk or I/O Controllers
  - CPU clock speed
- **Storage Reservations**
  - IIOPs / Disk read/writes
  - Dedicated LUNs if using SAN
  - High speed SAN/NAS

Advanced Business Transaction Definitions

- Web-Services based
- Flex based
- Plug-in based

Integrations

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HTTP Analyzer Plug-ins

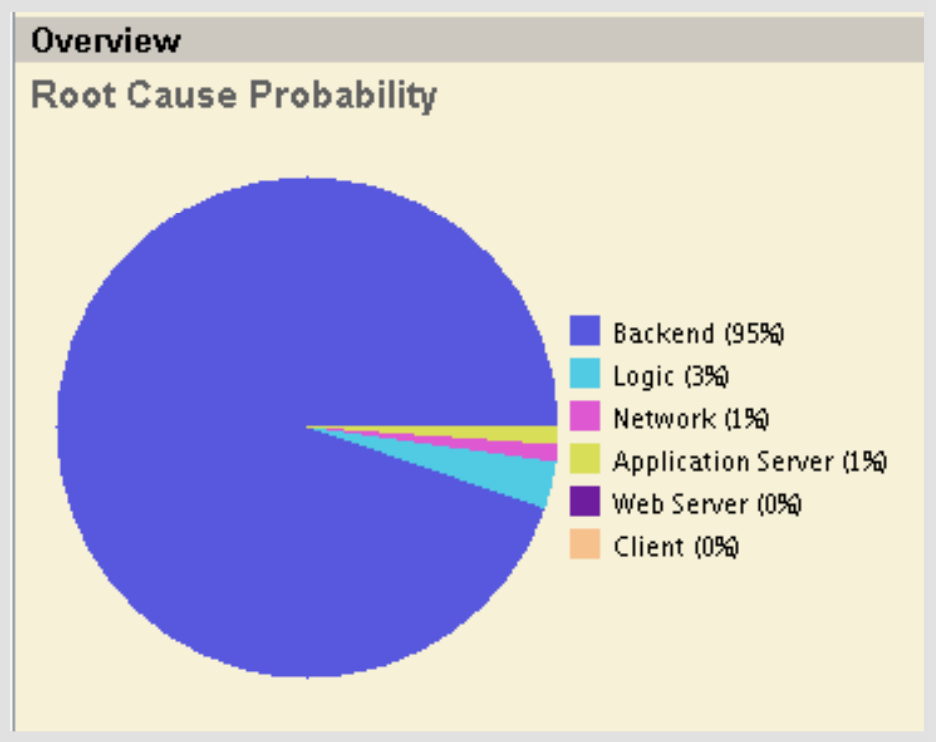
- Used to process custom http request/header/query/post data which :
  - Is not processed by the TIM (example: AMF in pre 9.1)
  - We want the TIM to process in a special way (example: extract a certain parameter from an XML body)
- Based on TIM SDK
- Written as simple java class
- Uploaded from and maintained on the CEM console
- Deployed to the TIM
- Case Study

CEM – Introscope : Understanding the linkage

Typical process

- ☑ Check Network
- ☑ Check Web Server
- ☑ Check App Server
- ☑ Check Database
- ☑ Check Application Code

APM does the work for you



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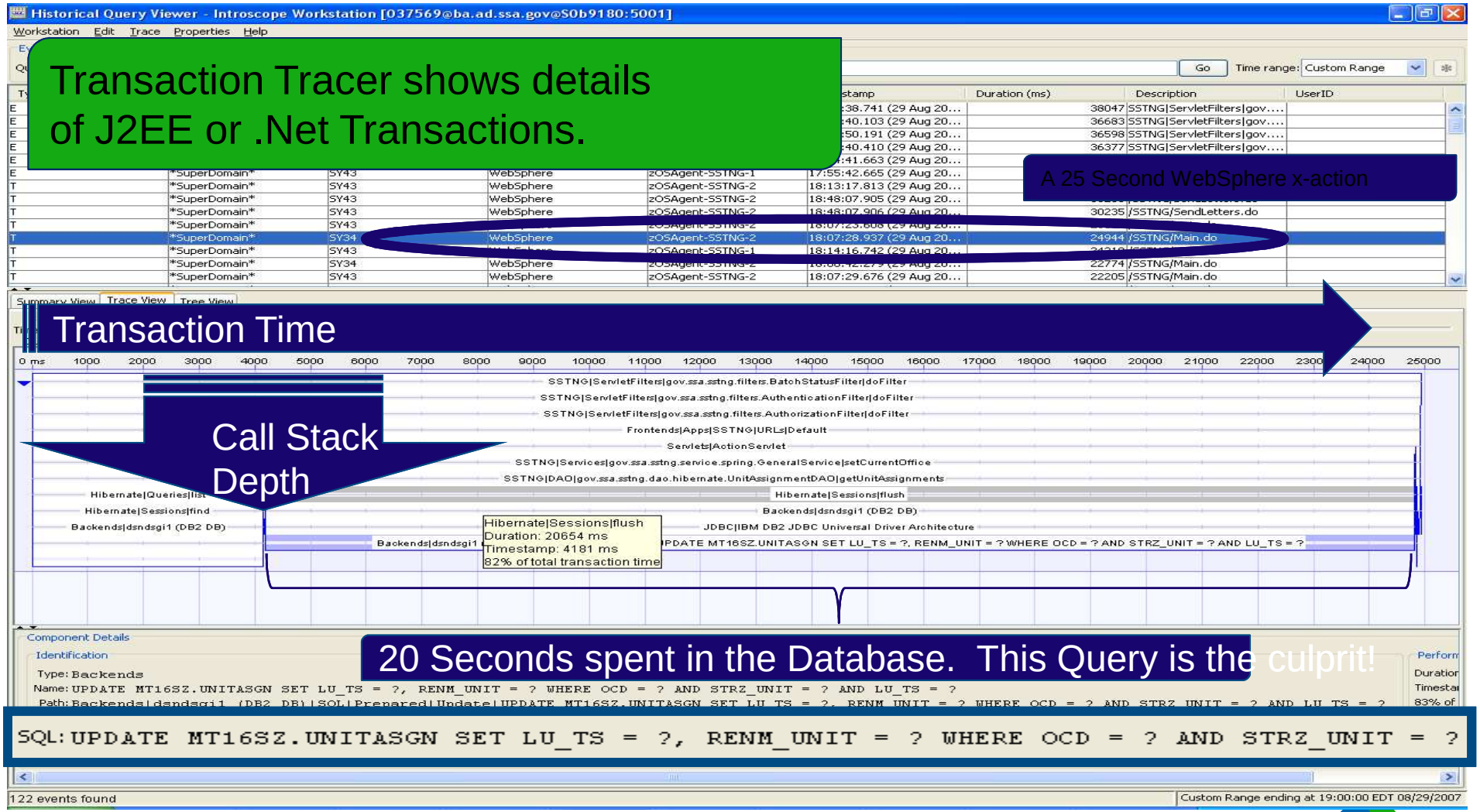
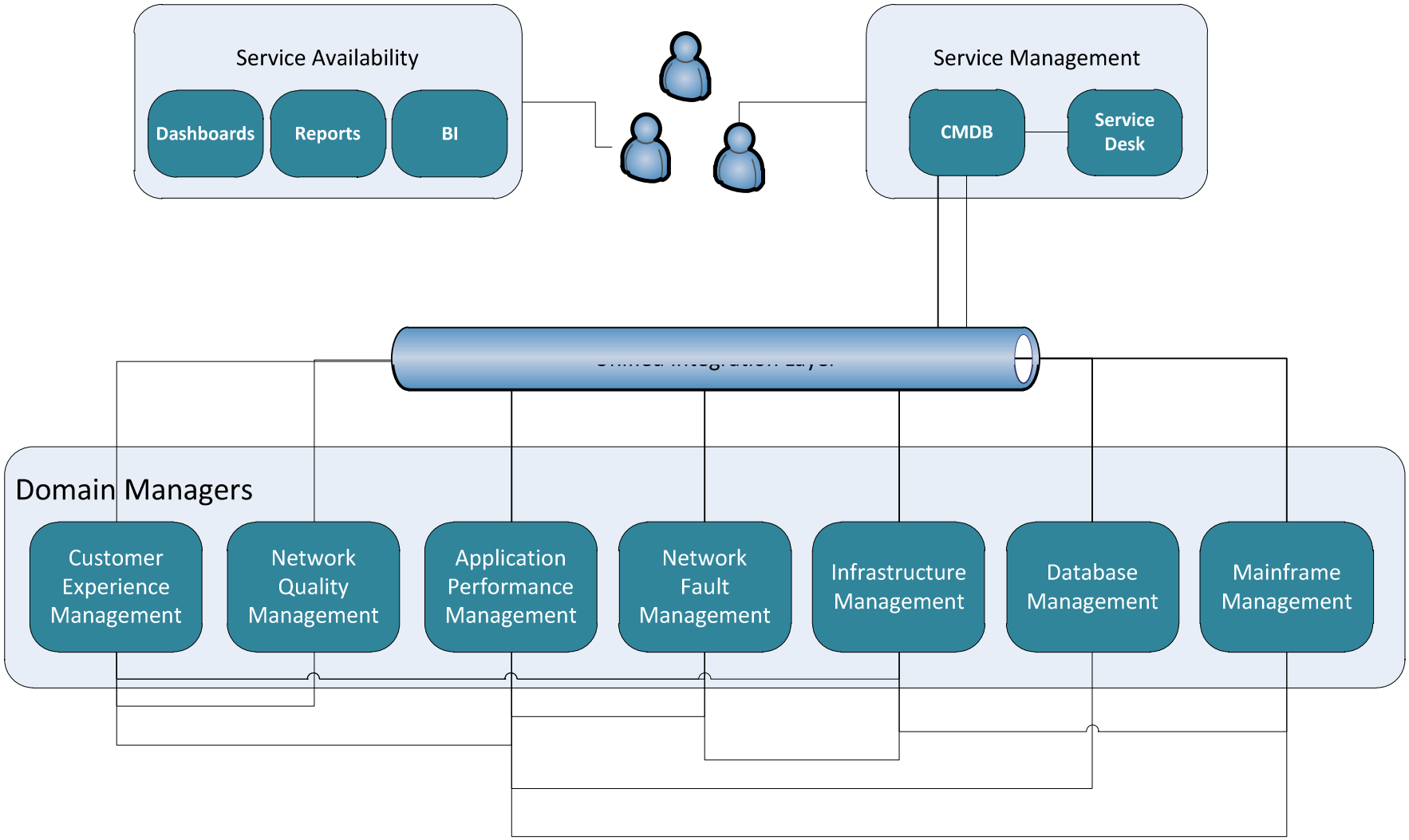
diagnosis example #1:
slow DB query



CA Service Operations Integrations



Ensuring integrity of CEM data and statistics

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Packet Loss and Overload problems

Symptoms

- Defect storms of Missing/Partial responses defects
- CEM almost unusable

Causes

- TIM CPU Overload
- TIM faulty NICs
- TIM NIC overload

Solution

- Capacity Planning
- Triaging Discards/Errors source

Missing or Partial Response false positives

- See Case Study


Questions ?
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