SOA Healthcheck: *Infrastructure*

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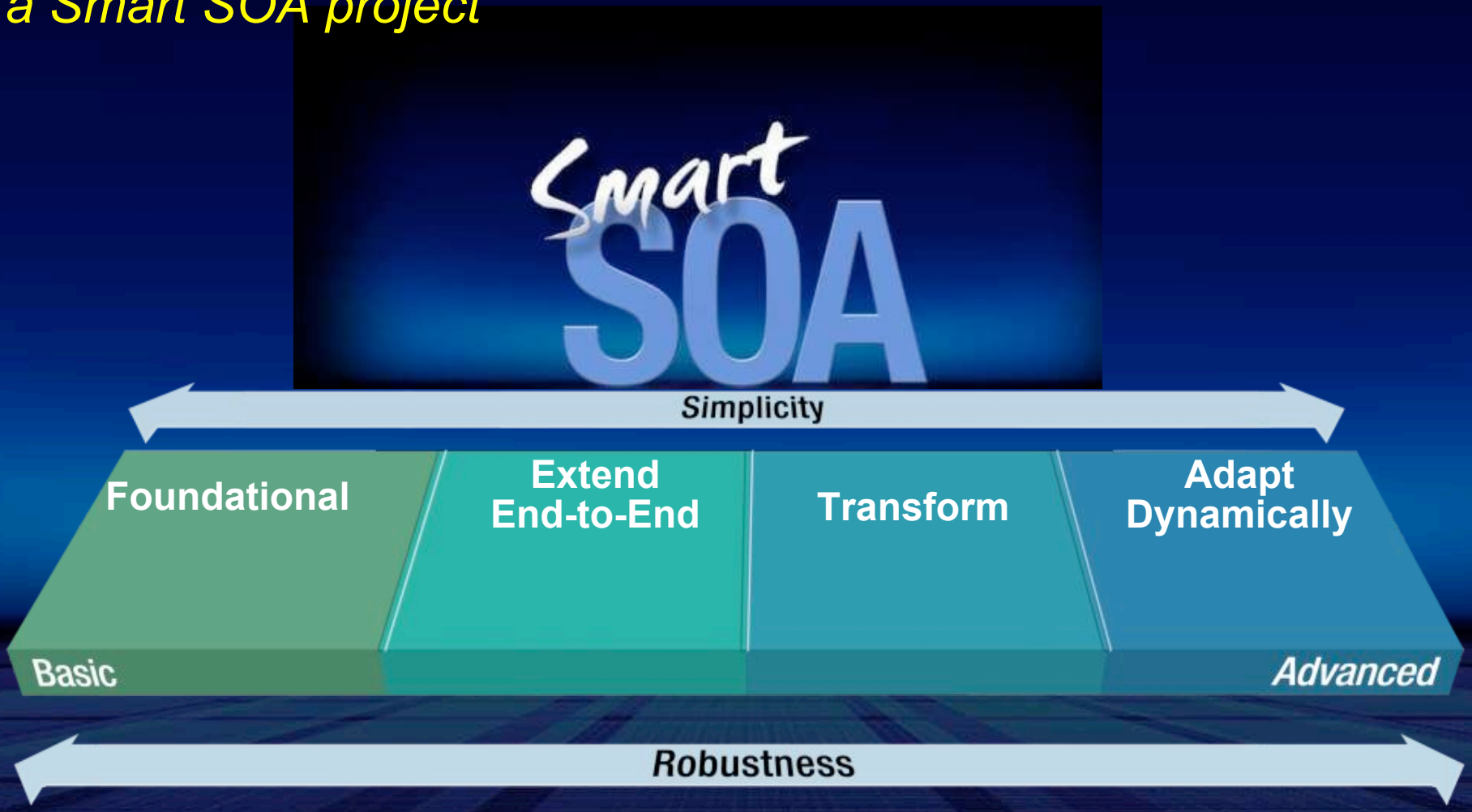
Objective

- Highlight key IBM SOA Infrastructure Healthcheck services help:
  - Identify opportunities and strategies to reduce infrastructure complexity and optimize operational costs
  - Improve service reliability by identifying the root cause of problems and defining remedial actions
  - Determine optimal infrastructure architecture to meet the performance, capacity, scalability, and virtualization demands of dynamic services

SmartSOA™ requires IT Fitness and Checkups

SOA Health is Important for all SOA Maturity Model phases in a Smart SOA project



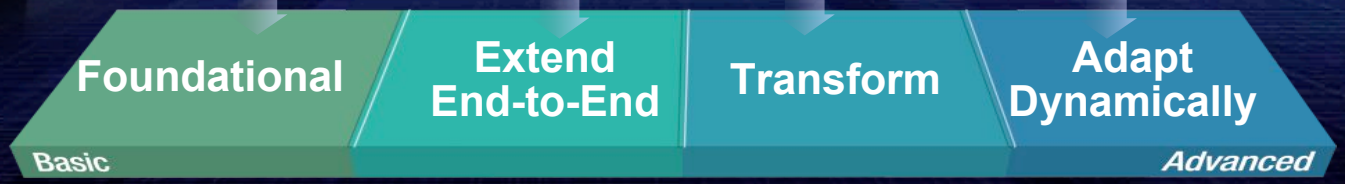
IBM SOA Healthchecks

Capabilities within the IBM SOA Diagnostic Services portfolio

OR

Whether you are…

… here or here or here or here



Triage Workshops

Quick Assessment to Identify Opportunities and Strategies for Smart SOA

Applications and Services Healthcheck Workshop for SOA

Treatment Areas

- Application Reuse
- Service Use & Governance
- Service Security

Infrastructure Healthcheck Workshop for SOA

Treatment Areas

- Infrastructure Flexibility
- Middleware
- Service Management

Key Specialized Infrastructure Diagnostics

Targeted Assessment to Deliver a Prescription for SOA Operational Fitness

- **Infrastructure Architecture Healthcheck for SOA**
- **Infrastructure Readiness for SOA**
- **Service Management Assessment**
- **Security Management Assessment**
- **Healthcheck Services for WebSphere Application Server**
- **Healthcheck Services for WebSphere Portal Server**

Remediation

Focused Engagements to Fix Known Problems

- **SOA Integration Services**
- **Application Infrastructure Services**
- **Service Management Services**
- **High Availability Services**
- **Identity and Access Management Services**
- **Server and Storage Services**

Some Hardware and Software "Prescriptions" Available

Infrastructure Flexibility	Middleware	Service Management
▪ *WebSphere XD*	▪ *WebSphere Application Server*	▪ *TADDM*
▪ *Tivoli Dynamic Workload Broker*	▪ *WebSphere Portal*	▪ *TFIM*
▪ *WebSphere DataPower*	▪ *WebSphere ESB*	▪ *ITCAM*
▪ *STG pServer w/virtualization*	▪ *WebSphere Message Broker*	▪ *Tivoli Maximo*
▪ *STG system Z virtualization*	▪ *WebSphere MQ*	▪ *Tivoli CCMDB*
		▪ *WebSphere Registry & Repository*
		▪ *Tivoli Access Manager for Operating Systems*

Today's focus

Do you have…

New SOA Project?

No

Known Problem Area?

No

Infrastructure Healthcheck Workshop for SOA

Yes

Yes

Infrastructure Architecture Healthcheck for SOA

SOA Specialized Diagnostics

SOA Treatment Plans

Is your IT fit enough to handle your SOA needs?

Check your SOA infrastructure health …

- Is everything working as well on the inside as it appears to be on the outside?
- Is your SOA infrastructure ready to scale for enterprise-wide demands?
- Are you experiencing chronic, nagging issues?
- Are you uncertain about your preparedness to start an SOA project?

… and avoid SOA rescue missions

Infrastructure Healthcheck Workshop for SOA

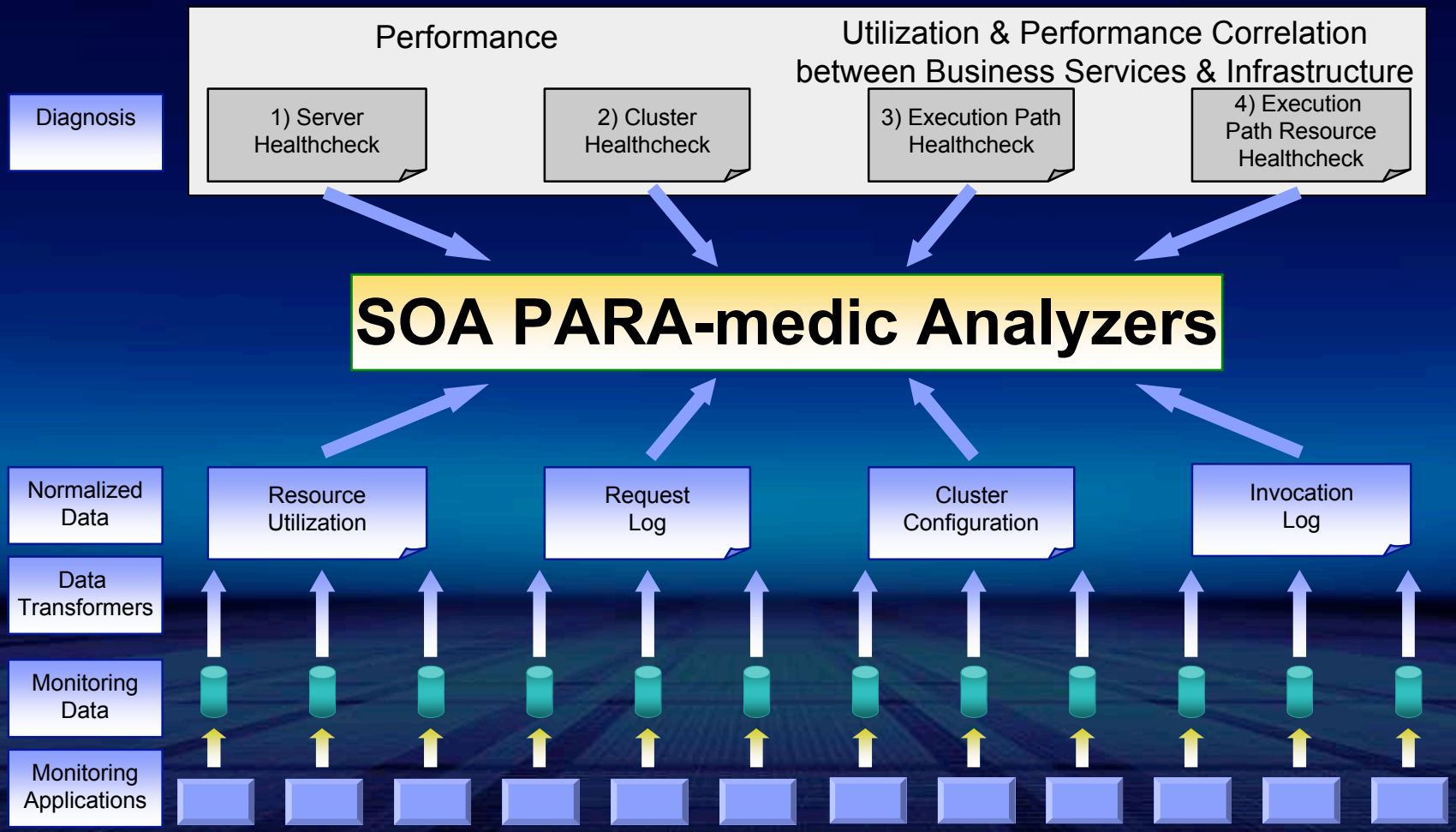
Each engagement includes 4 phases:

Starting point:

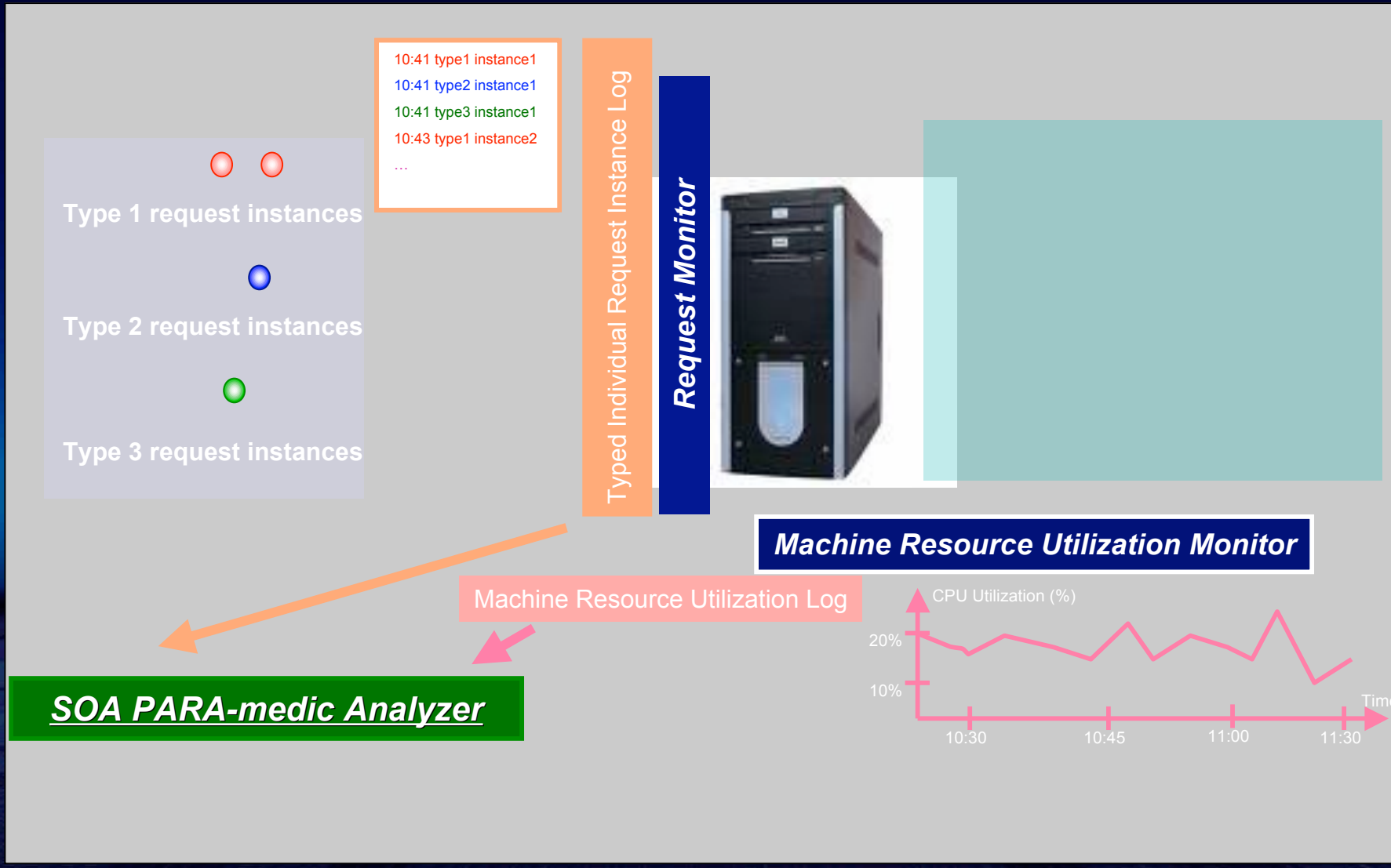
Existing SOA environment:

- Offers a three-four week engagement
- Analyze IT infrastructure monitoring data
- Delivers an infrastructure Healthcheck for workshop SOA report

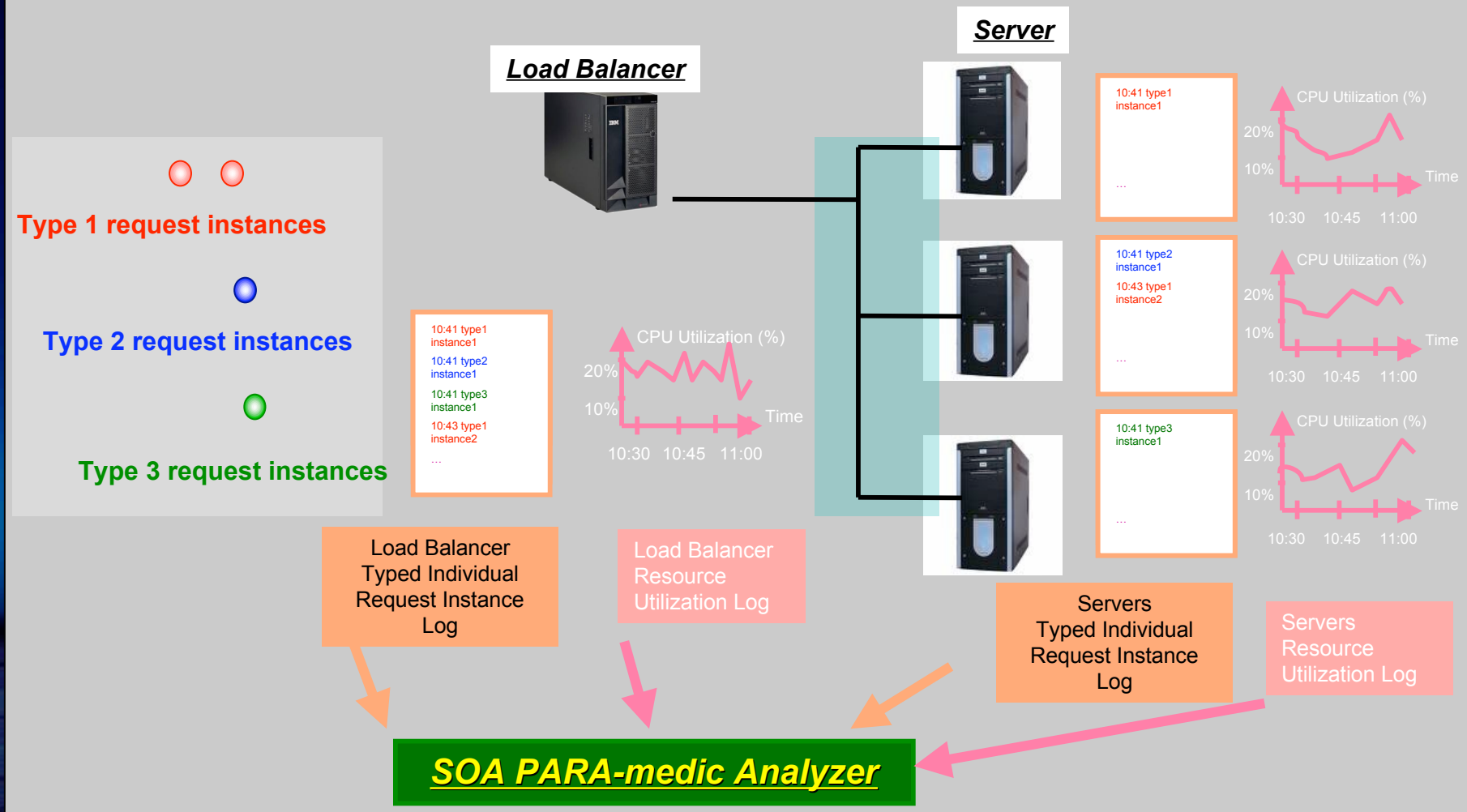
Exclusive, non intrusive, technology-vendor-product agnostic tool from IBM Research (patent-pending assets)



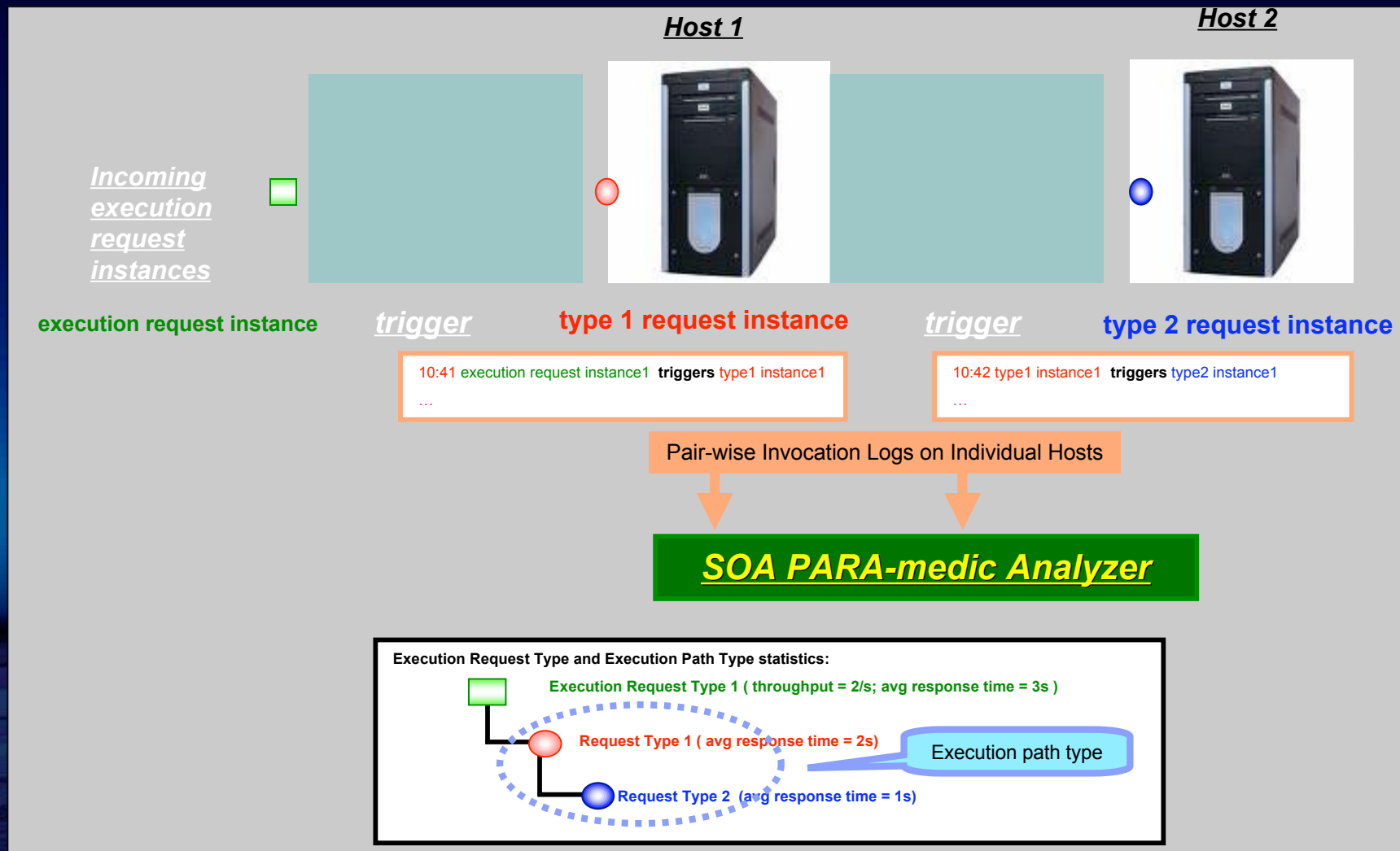
Scenario 1: Server Healthcheck
Performance Analysis of Selected Servers



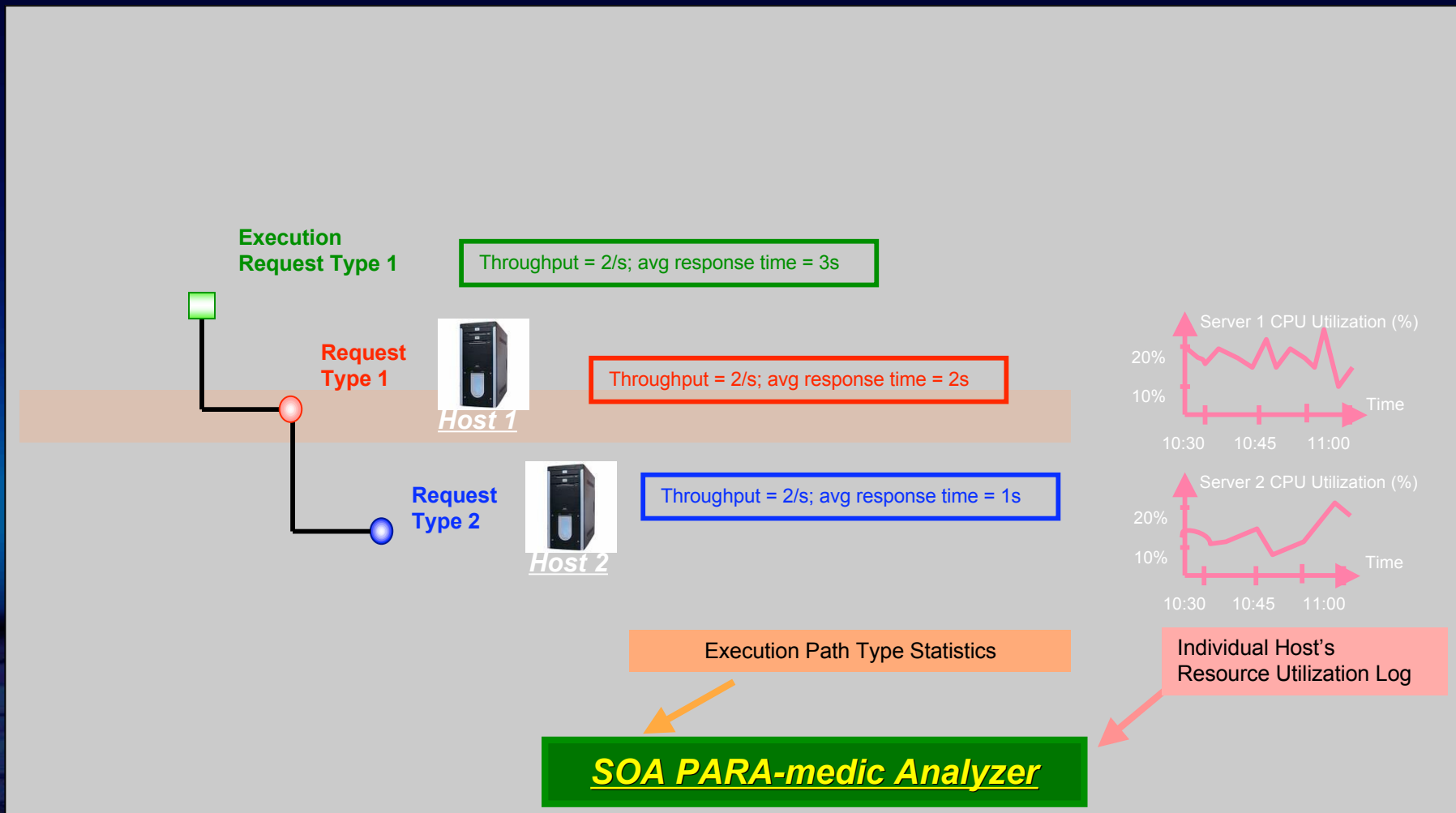
Scenario 2: Cluster Healthcheck
Performance Analysis of Selected Server Clusters



Scenario 3: Execution Path Healthcheck
Cross-Host, Cross-Application Relationship Analysis



Scenario 4: Execution Path Resource Healthcheck
Cross-Host, Cross-Application Performance Analysis



Identify the cause of your SOA performance problems

Gain the clarity you need to realize numerous benefits

By choosing the infrastructure Healthcheck workshop for SOA, you can learn how to identify the root cause of problems and define remedial actions which can help you to:

- Improve SOA performance
- Enhance infrastructure utilization and workload management
- Support SOA availability objectives
- Improve infrastructure architecture and design
- Identify opportunities and strategies to reduce infrastructure complexity and optimize operational costs

Is your infrastructure architecture responsive enough to meet your IT and business requirements for SOA?

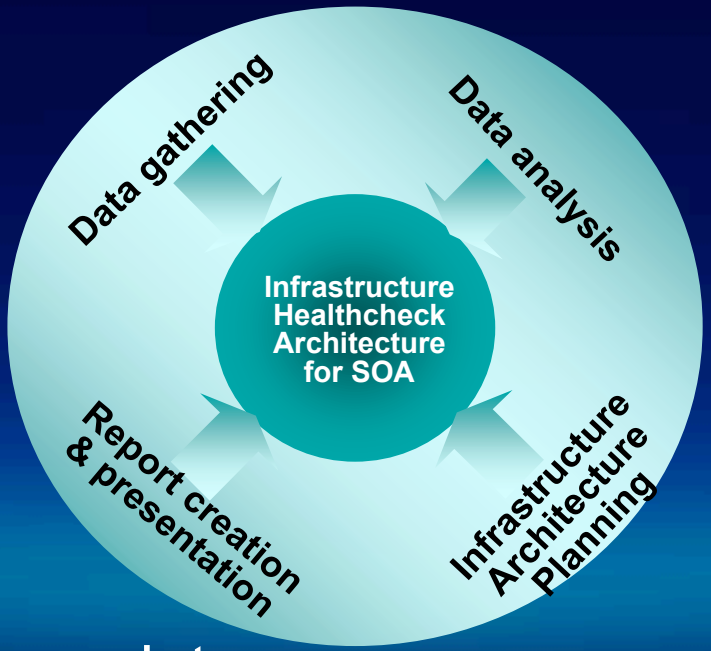
Adopt an SOA infrastructure architecture planning …

- Are you over engineering your infrastructure to meet your SOA delivery objectives?
- Is your SOA infrastructure ready to scale for enterprise-wide demands?
- Are you validating your SOA infrastructure performance before cut-over?
- Are you uncertain about an accurate budget for SOA infrastructure upgrades?

… and avoid SOA rescue missions

Infrastructure Architecture Healthcheck for SOA

Each engagement includes 4 phases:



But with two starting points:

New SOA environment:

- Offers a three-week engagement fixed price/fixed scope
- Assesses two “What If Scenarios”
- Delivers an infrastructure architecture Healthcheck for SOA report

Extending SOA:

- Offers a five-week engagement fixed price/fixed scope
- Analyzes infrastructure monitoring data
- Assesses two “What If Scenarios”
- Delivers an infrastructure architecture Healthcheck for SOA report

Typical pain points

- **"We have a web application with certain performance objectives"**
  - **Throughput** of at least ***n*** users/s.
  - Average **response time** ≤ ***t*** seconds
  - CPU **utilization** ≤ ***p***%
- **"What do we need to achieve these objectives?"**
  - What **brand** and **model** of machines?
  - **How many** machines?
  - Which **software**?

- Customers over-provisioning or under-provisioning
- Complex problem due to multi-tier heterogeneous topologies
- In best case, guessing # of servers to be deployed
- Dynamically changing workloads, priorities, and SLAs
- Trying to find balance between cost and capacity

IBM SONOMA capacity planning tool ecosystem

Workload models and measurement data

WebSphere.

- WebSphere Process Server SOA
- WebSphere Message Broker
- WebSphere Enterprise Service Bus
- WebSphere Application Server

Tivoli.

- Tivoli Identity Manager
- Tivoli Access Manager
- Tivoli Monitoring

Lotus.

- Workplace Services Express
- Workplace Collaboration Services

DB2.

Custom, user-defined workload

System Performance Data

pSeries

xSeries

zSeries

Sun

HP

Technology

- Mathematical Queuing Models
- Workload Library
- Optimization & Search Algorithms
- Server Performance Library

Current built-in workload library

charles SCHWAB | ebay | WebSphere | macy's | bharti

Online Shopping
Online Trading
Online Banking
Business to Business

Inventory Management
Online Brokerage
Online Auction
Trade6
SOA for Insurance

Process Server
Enterprise Services Bus
Message Broker
Business Monitor

Tivoli.

Identity Manager
Access Manager
Tivoli Monitoring

DB2.

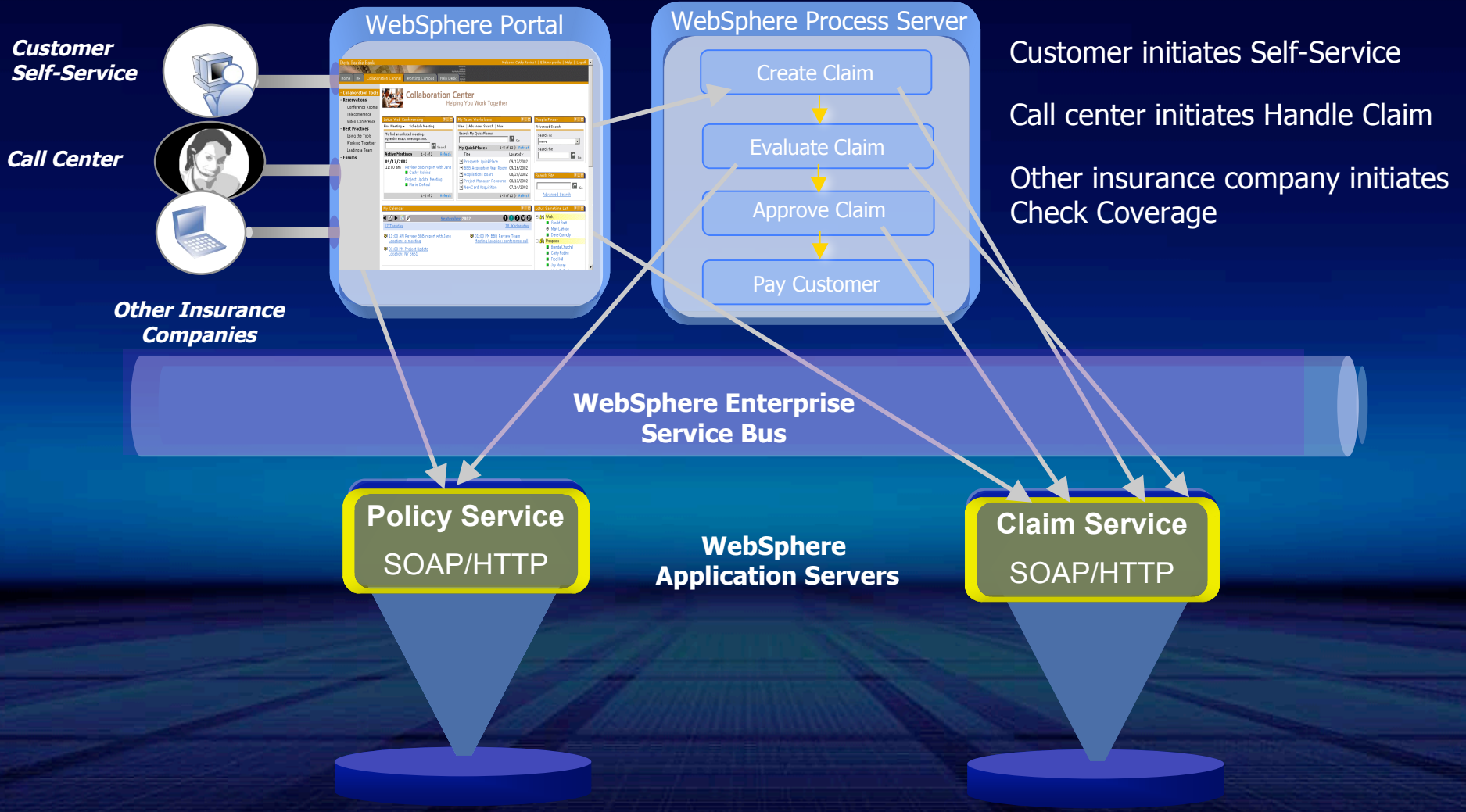
OLTP – Heavy Update

Lotus.

Workplace
Workplace Services Express
Portal

Custom, user-defined Workloads
Parallel Computing Workload
Time-Varying Workload

SOA for Insurance example



The tool at work

1. SELECT WORKLOAD
- Measured data
  - Response times
  - Transaction rates
  - Resource utilization

Workload Library

4. LOOKUP SERVERS
- p/x/zSeries, Sun, HP

Server Library

5. OBTAIN SOLUTION
- Analytic queuing models
- Search algorithms
- 12 patents

Workload

2. DEFINE OBJECTIVES

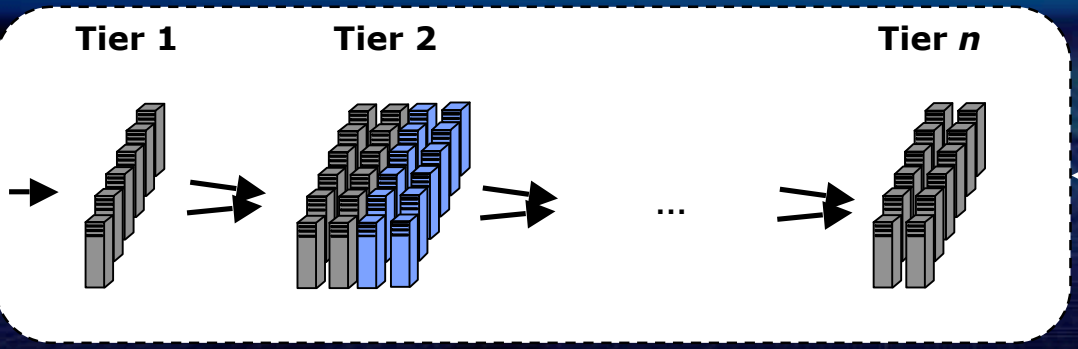
Performance Objectives

3. SELECT SERVERS

System Configuration

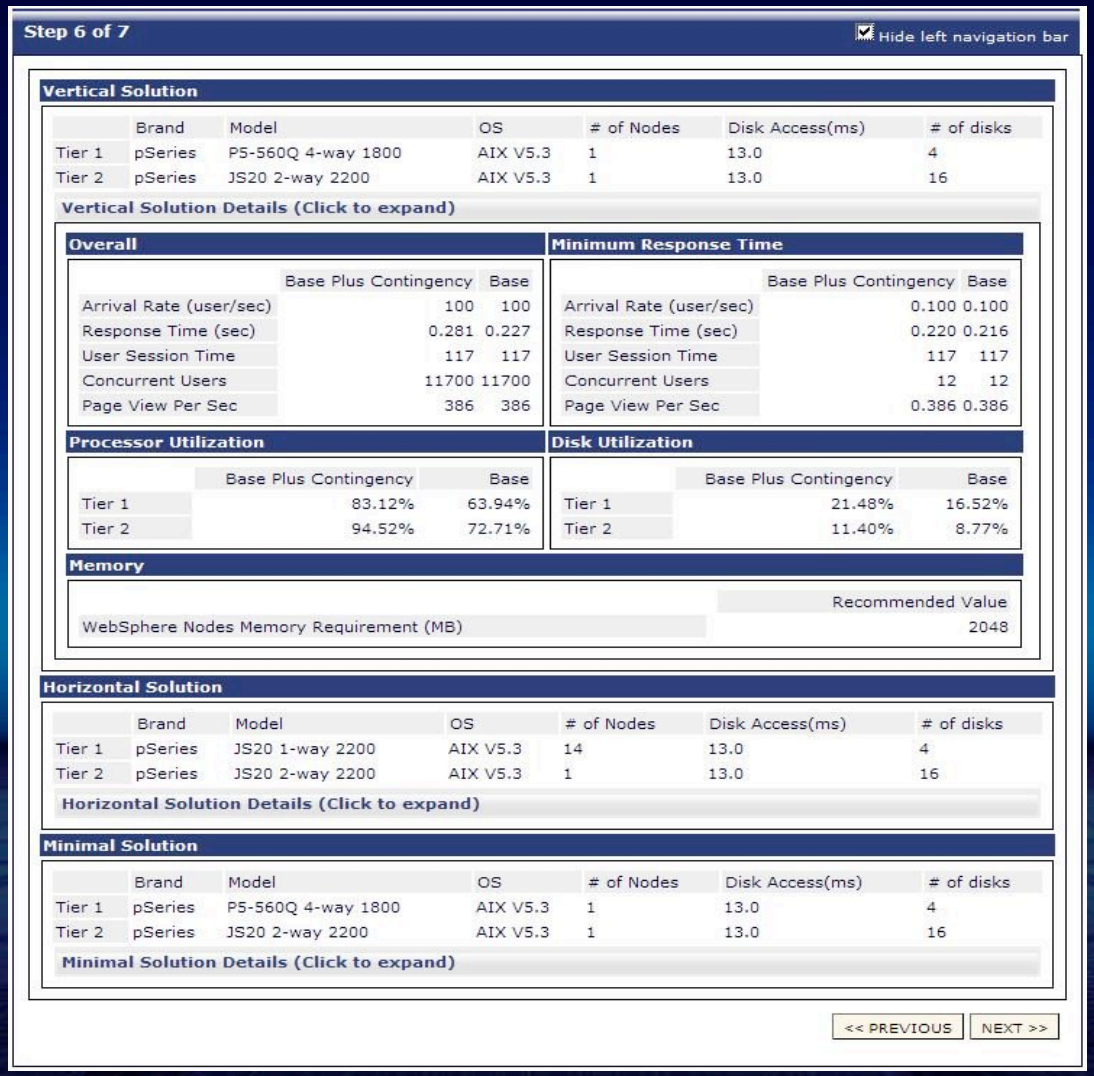
Compute Engine

Estimated Performance



6. OPTIMIZE CONFIGURATION
- Run multiple times

Configuration example



Step 6 of 7 — Hide left navigation bar

Vertical Solution

	Brand	Model	OS	# of Nodes	Disk Access(ms)	# of disks
Tier 1	pSeries	P5-560Q 4-way 1800	AIX V5.3	1	13.0	4
Tier 2	pSeries	JS20 2-way 2200	AIX V5.3	1	13.0	16

Vertical Solution Details (Click to expand)

Overall

	Base Plus Contingency	Base
Arrival Rate (user/sec)	100	100
Response Time (sec)	0.281	0.227
User Session Time	117	117
Concurrent Users	11700	11700
Page View Per Sec	386	386

Minimum Response Time

	Base Plus Contingency	Base
Arrival Rate (user/sec)	0.100	0.100
Response Time (sec)	0.220	0.216
User Session Time	117	117
Concurrent Users	12	12
Page View Per Sec	0.386	0.386

Processor Utilization

	Base Plus Contingency	Base
Tier 1	83.12%	63.94%
Tier 2	94.52%	72.71%

Disk Utilization

	Base Plus Contingency	Base
Tier 1	21.48%	16.52%
Tier 2	11.40%	8.77%

Memory

	Recommended Value
WebSphere Nodes Memory Requirement (MB)	2048

Horizontal Solution

	Brand	Model	OS	# of Nodes	Disk Access(ms)	# of disks
Tier 1	pSeries	JS20 1-way 2200	AIX V5.3	14	13.0	4
Tier 2	pSeries	JS20 2-way 2200	AIX V5.3	1	13.0	16

Horizontal Solution Details (Click to expand)

Minimal Solution

	Brand	Model	OS	# of Nodes	Disk Access(ms)	# of disks
Tier 1	pSeries	P5-560Q 4-way 1800	AIX V5.3	1	13.0	4
Tier 2	pSeries	JS20 2-way 2200	AIX V5.3	1	13.0	16

Minimal Solution Details (Click to expand)

<< PREVIOUS NEXT >>

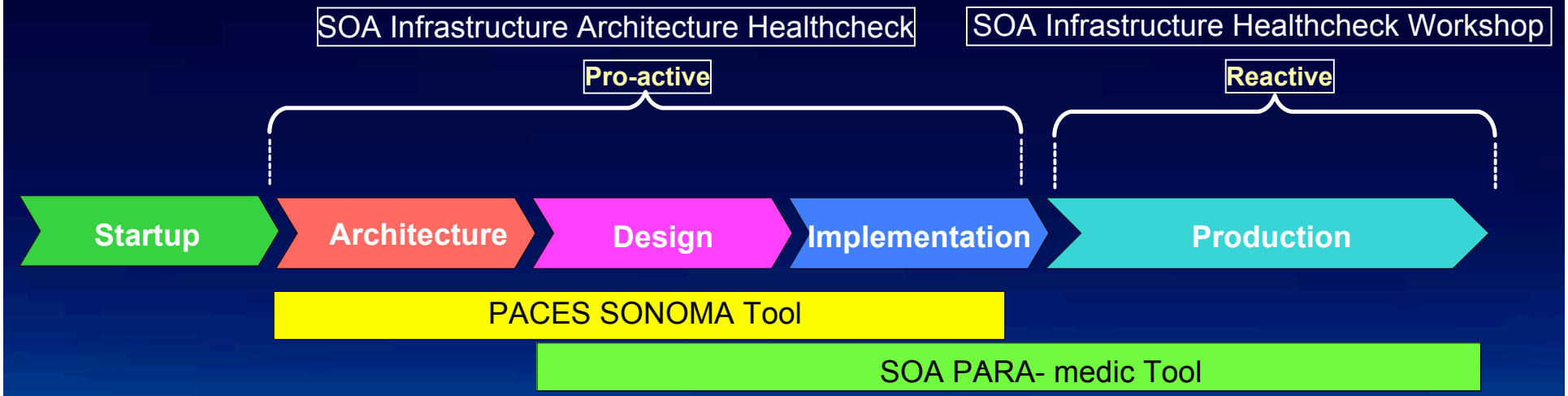
Achieve SOA infrastructure architecture objectives

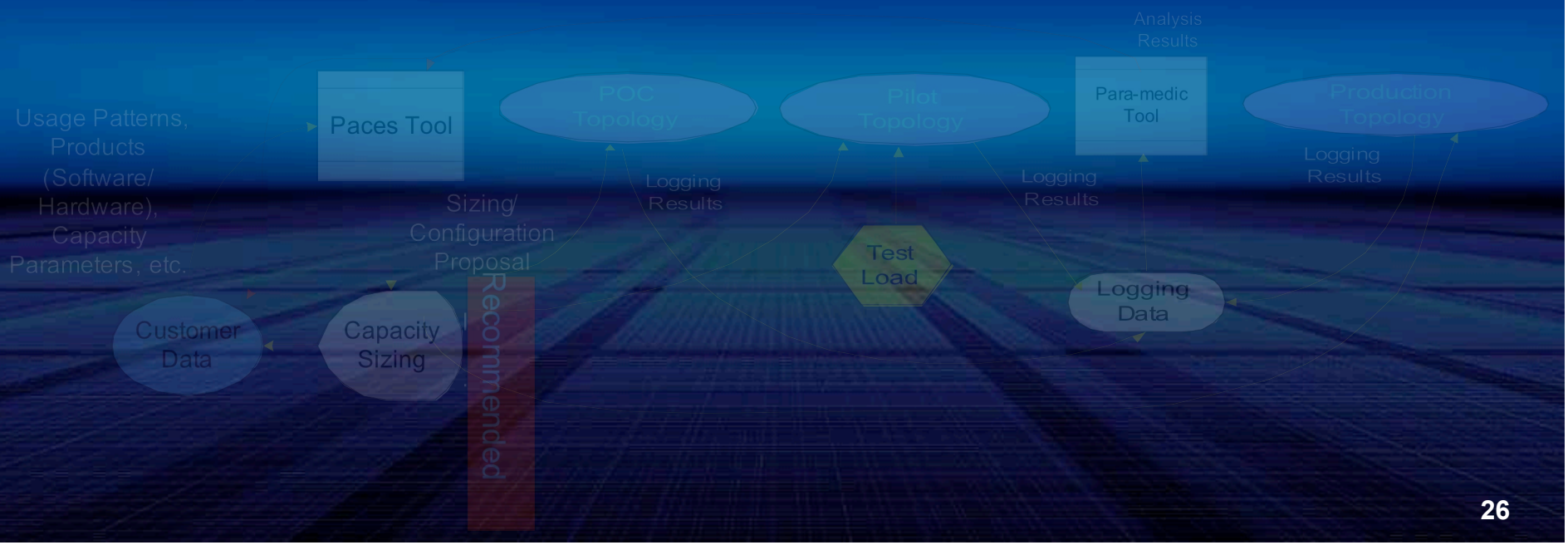
Optimize your infrastructure

By choosing the infrastructure architecture Healthcheck for SOA, you can learn how to define preventive actions which can help you to:

- Improve SOA infrastructure fitness
- Enable an infrastructure architecture planning
- Ease SOA adoption via PoC, PoT or Pilot
- Quick achieve higher SOA infrastructure maturity/agility levels
- Get optimum configurations for selected infrastructure architecture scenarios
- Define performance policies as part of an SOA Governance framework
- Predict overall performance before cut-over
- Reduce operational costs

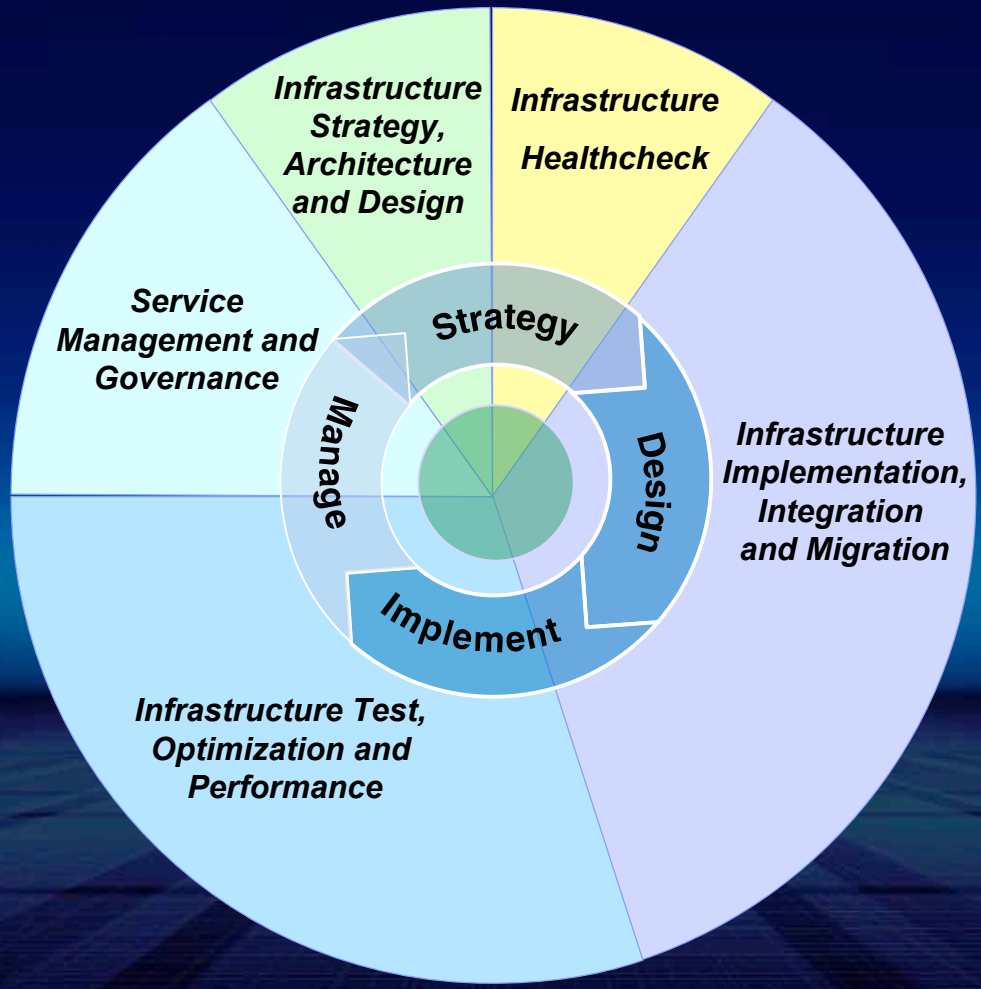
SOA Infrastructure Healthcheck @ work



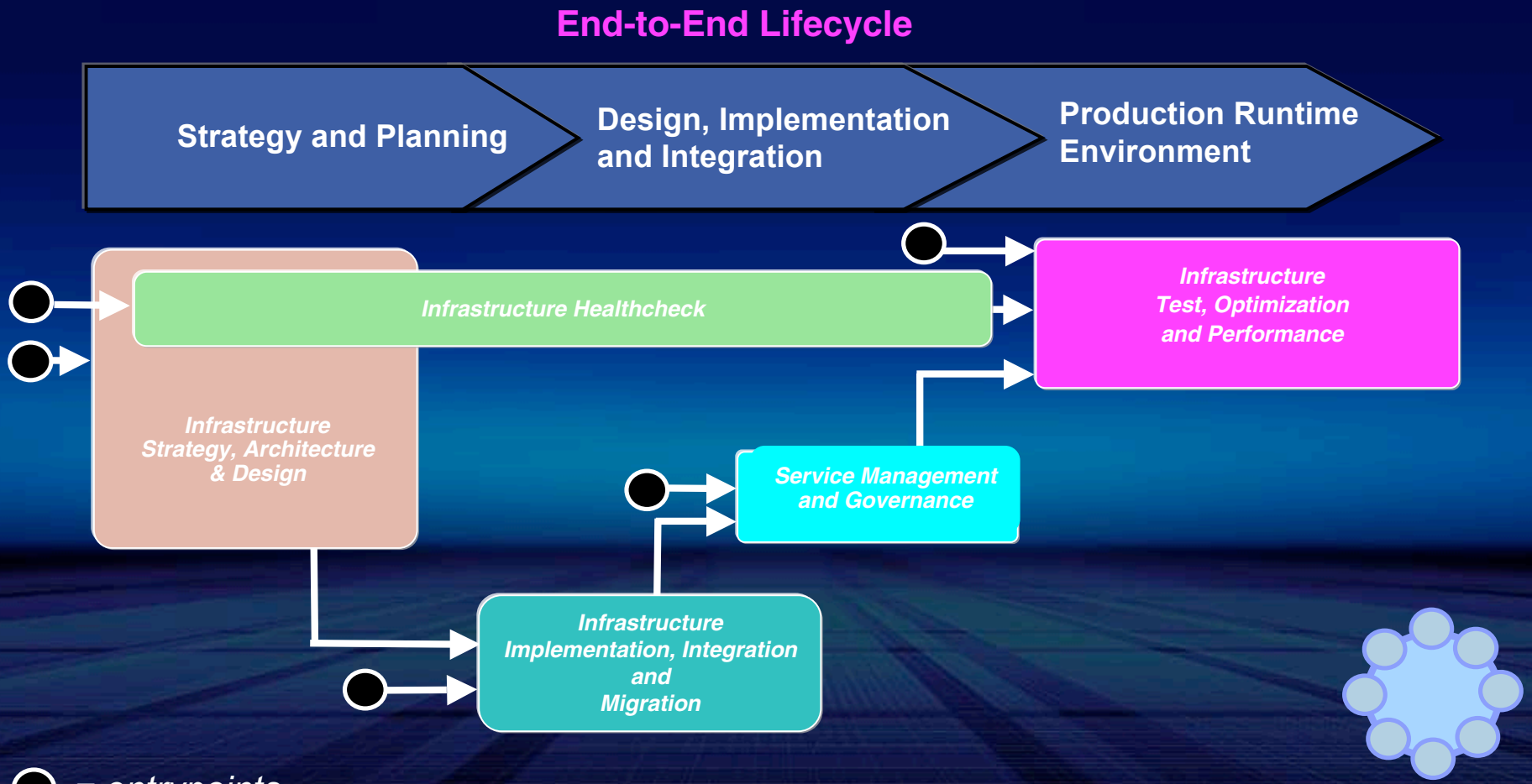


IBM Infrastructure Services supporting SOA

Meeting customers requirements, throughout the SOA lifecycle



GTS SOA Professional Services offer end-to-end support of your SOA based IT Infrastructure



Building SOA Fitness With IBM –

Why IBM Services?

Vast internal and external engagement experience

IBM Intellectual Capital

Best Practices IT Principles

Architecture & Standards

Patterns

Innovative Products

Integrated Solutions

Clients

Implementing the "A" in SOA

- Improve SOA infrastructure fitness
- Optimize architectural decisions
- Improve performance
- Reduce operational costs

Questions?

Merci

Plus d'information: ibm.com/soa/healthcheck

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