



**UNIVERSITÉ DU  
MAINFRAME**

# Solutions de monitoring de SOA

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## Agenda

- **SOA ?**
- **Composants techniques SOA**
- **Les Solutions ITCAM**
  - ITCAM ?
  - ITCAM for SOA
- **Les éléments de la solution ITCAM**
  - Architecture
  - Agents et métriques
  - Interface Expert Web Services Navigator
  - Interface IBM Tivoli Monitoring (ITM & Tivoli Enterprise Portal (TEP))<

## A Service Oriented Architecture (SOA) is an architectural style of building applications based on Services

- **Definition:** A Web service is a **software system** identified by a **URI**, whose **public interfaces** and bindings are defined and described using **XML**. Its definition can be **discovered** by other software systems. These systems may then **interact** with the Web service in a manner prescribed by its definition, using **XML based messages** conveyed by **internet protocols**.
- **Web Services Description Language(WSDL)** allows enterprise application services to be described in one standard form regardless of the hosting platform – WebSphere, CICS, .Net,....

- **Fournisseur de Services :**
  - WebSphere Application Server & XD
    - Associations : HATS, J2C connectors (CTG, IMS Connect) , JMS/MQ , JDBC
  - CICS
    - Associations : MQ Bridge, CICS SOAP Gateway
  - IMS/TM
    - IMS SOAP Gateway
  - DB2 UDB
- **Bus de Services:**
  - WebSphere MQ & Message Broker
- **Consommateur de Services :**
  - WebSphere Application Server & XD
  - WebSphere Portal
  - CICS, DB2 UDB, IMS (Prochâinement en callout)
- **Outils SOA**
  - Enterprise COBOL, PL/I – support XML
  - Websphere Studio Asset Analyzer
  - WebSphere Developer for z

## Superviser une architecture SOA

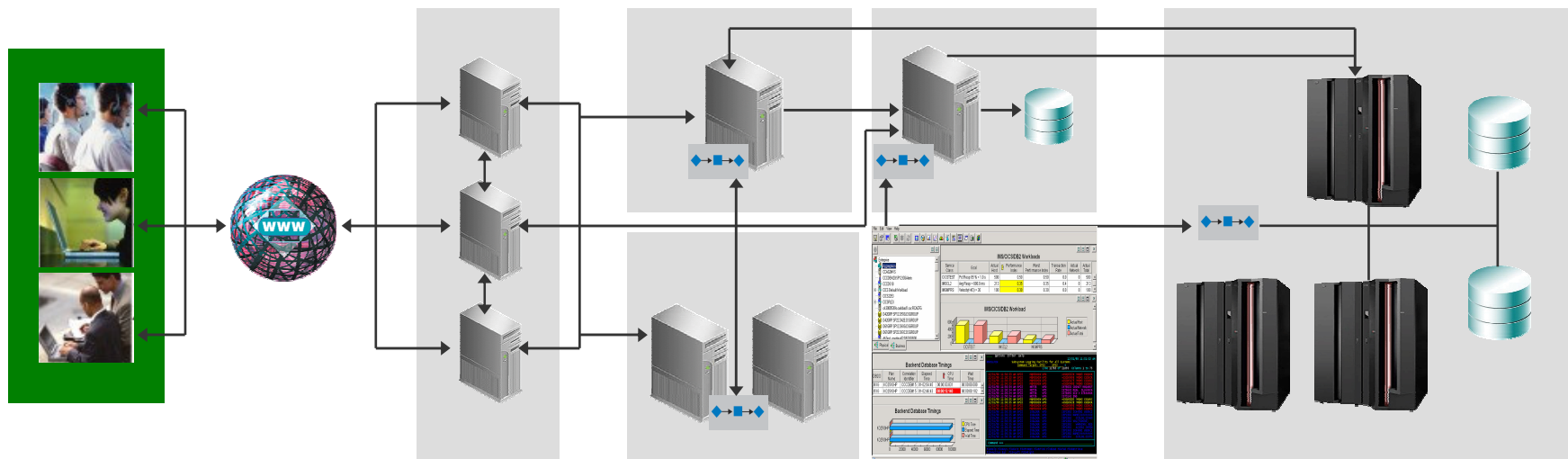
1. Détecter

2. Isoler

3. Diagnostiquer

4. Réagir

5. Vérifier

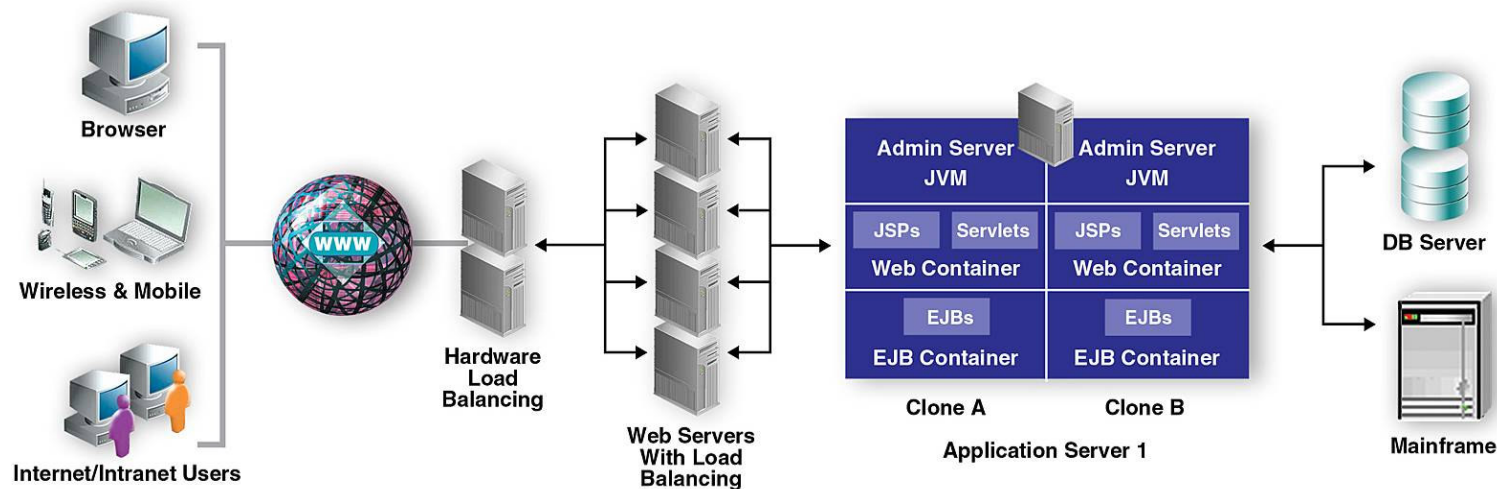


Superviser le comportement de bout en bout

## Superviser une architecture SOA

Superviser le comportement de bout en bout

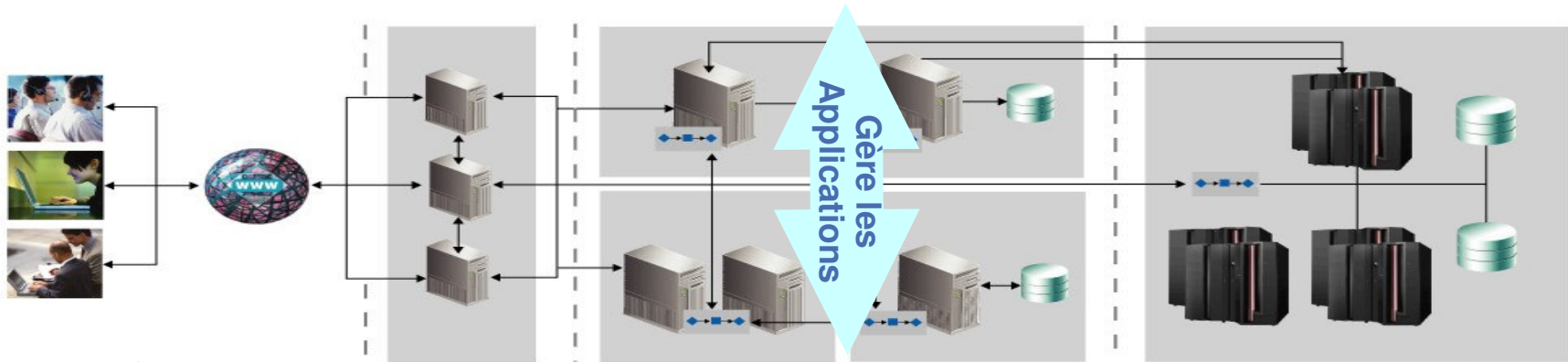
**Tivoli.** software



IBM Tivoli Composite Application Management (ITCAM)

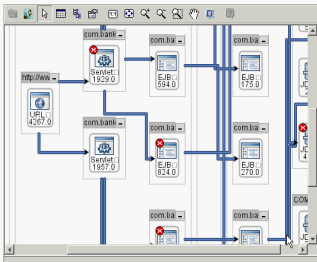
# Superviser une architecture SOA

← Analyse et mesure des services & transactions →

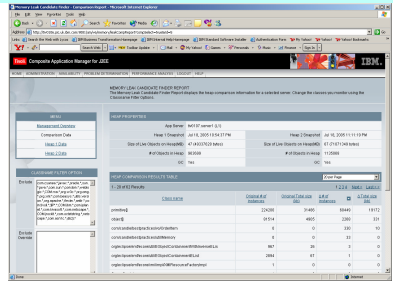


← Supervision de l'Infrastructure →

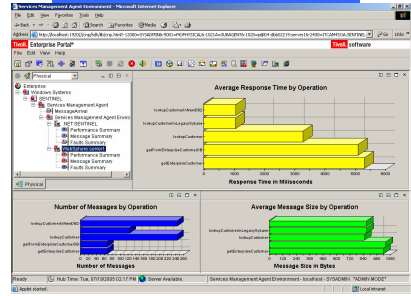
**ITCAM for RTT**



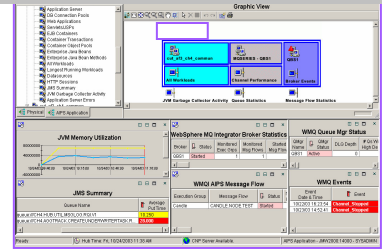
**ITCAM for Websphere**



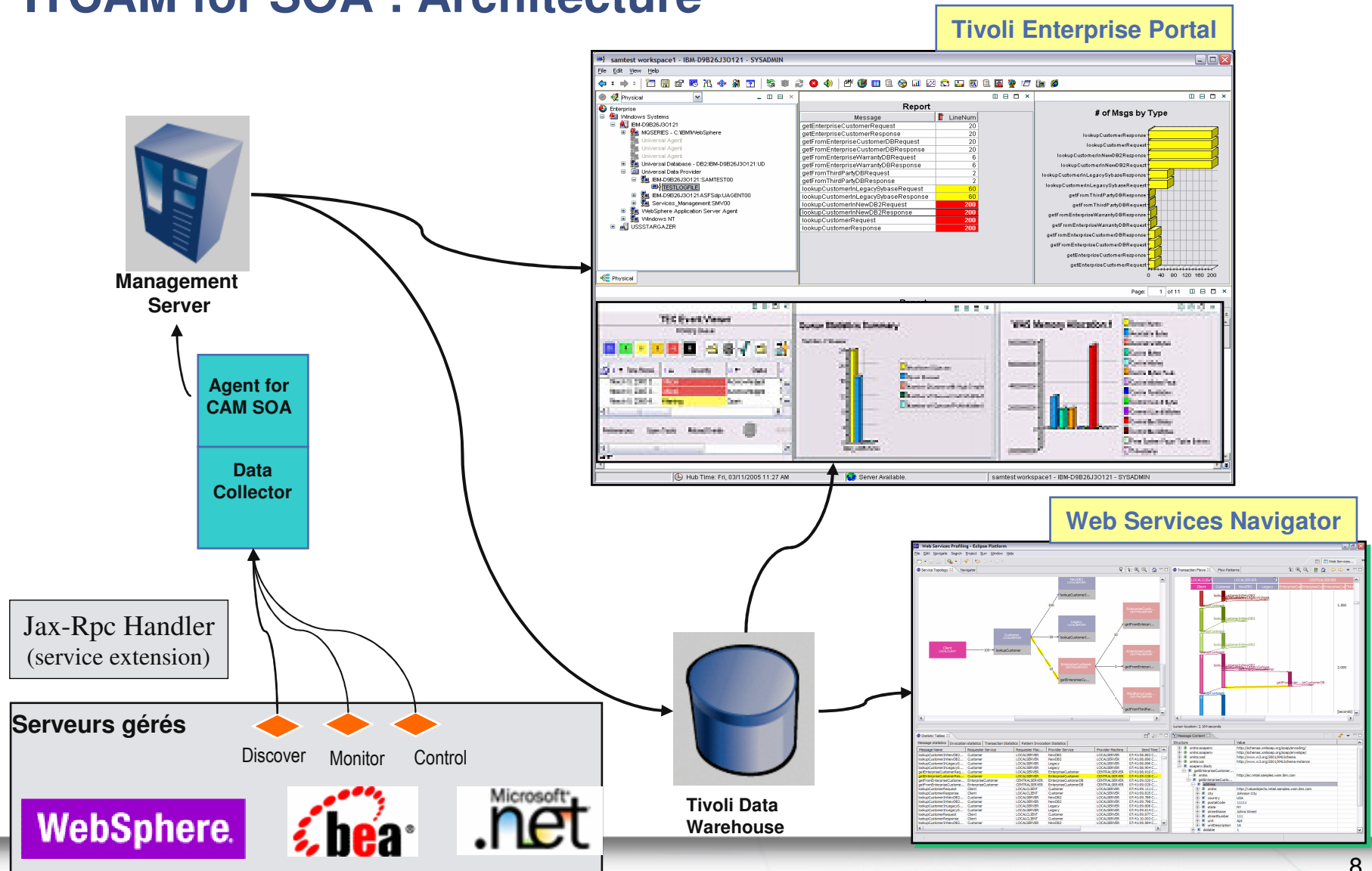
**ITCAM for SOA**



**Omegamon XE for Messaging (WBI)**



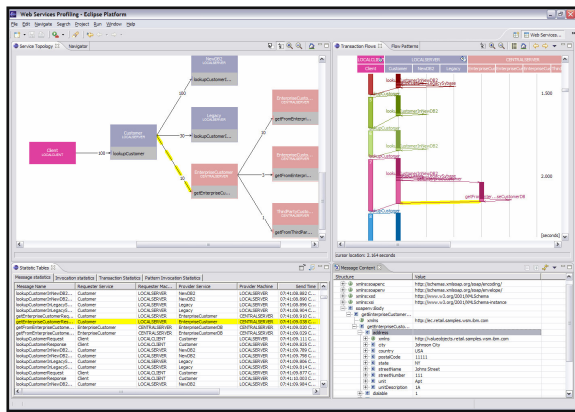
# ITCAM for SOA : Architecture





## ITCAM for SOA : *Web Services Navigator*

- Fournit une compréhension approfondie :
  - des flux,
  - de la topologie des services,
- A partir des données opérationnelles collectées dans l'entrepôt de données Tivoli.
- Permet de visualiser le contenu des messages SOAP/XML



Web Services Expert

←  
 ✓ destiné aux développeurs, architectes et experts WS pour diagnostiquer des problèmes, optimiser les flux et prioriser les améliorations en fonction des volumes répertoriés



# Eclipse-based Web Services Navigator

**Topology View:** aggregate interactions among services.

**Statistics View:** A table view of the raw data collected by the monitoring agent at each interception point

**Sequence Diagram:** Shows exact sequence of messages over time

**Content View:** Shows content of a SOAP message

Message Name	Requester Service	Requester Machine	Provider Service	Provider Machine	Send Time
lookupCustomerInNewDB2...	Customer	LOCALSERVER	NewDB2	LOCALSERVER	07:41:08.882 C...
lookupCustomerInNewDB2...	Customer	LOCALSERVER	NewDB2	LOCALSERVER	07:41:08.890 C...
lookupCustomerInLegacyS...	Customer	LOCALSERVER	Legacy	LOCALSERVER	07:41:08.896 C...
lookupCustomerInLegacyS...	Customer	LOCALSERVER	Legacy	LOCALSERVER	07:41:08.904 C...
getEnterpriseCustomerReq...	Customer	LOCALSERVER	EnterpriseCustomer	CENTRALSERVER	07:41:08.910 C...
getEnterpriseCustomerRes...	Customer	LOCALSERVER	EnterpriseCustomer	CENTRALSERVER	07:41:09.038 C...
getFromEnterpriseCusto...	EnterpriseCustomer	CENTRALSERVER	EnterpriseCustomerDB	CENTRALSERVER	07:41:09.020 C...
getFromEnterpriseCusto...	EnterpriseCustomer	CENTRALSERVER	EnterpriseCustomerDB	CENTRALSERVER	07:41:09.029 C...
lookupCustomerRequest	Client	LOCALCLIENT	Customer	LOCALSERVER	07:41:09.111 C...
lookupCustomerResponse	Client	LOCALCLIENT	Customer	LOCALSERVER	07:41:09.825 C...
lookupCustomerInNewDB2...	Customer	LOCALSERVER	NewDB2	LOCALSERVER	07:41:09.789 C...
lookupCustomerInNewDB2...	Customer	LOCALSERVER	NewDB2	LOCALSERVER	07:41:09.798 C...
lookupCustomerInLegacyS...	Customer	LOCALSERVER	Legacy	LOCALSERVER	07:41:09.806 C...
lookupCustomerInLegacyS...	Customer	LOCALSERVER	Legacy	LOCALSERVER	07:41:09.814 C...
lookupCustomerRequest	Client	LOCALCLIENT	Customer	LOCALSERVER	07:41:09.877 C...
lookupCustomerResponse	Client	LOCALCLIENT	Customer	LOCALSERVER	07:41:10.003 C...
lookupCustomerInNewDB2...	Customer	LOCALSERVER	NewDB2	LOCALSERVER	07:41:09.984 C...

Structure	Value
xmlns:soapenc	http://schemas.xmlsoap.org/soap/encoding/
xmlns:soapenv	http://schemas.xmlsoap.org/soap/envelope/
xmlns:xsd	http://www.w3.org/2001/XMLSchema
xmlns:xsi	http://www.w3.org/2001/XMLSchema-instance
soapenv:Body	
getEnterpriseCustomer...	http://ec.retail.samples.wsm.ibm.com
address	
xmlns	http://valueobjects.retail.samples.wsm.ibm.com
city	Johnson City
country	USA
postalCode	11111
state	NY
streetName	Johns Street
streetNumber	111
unit	Apt
unitDescription	1A
dialable	1

**Physical View:**  
aggregate agents  
among systems.

The screenshot displays the Tivoli Enterprise Portal interface. On the left is a tree view of the physical view, showing a hierarchy of systems and agents. The main area contains three configuration tables:

Application Server Environment	Application Server Name	Data Collector On/Off	Debug Log Level	Data Collector Tracing On/Off	Hostname
WebSphere_Application_Server	aasr011	On	Error	Off	BA01

Service Name	Operation Name	Message Logging Level	Application Server Name	Application Server Environment	Hostname	Monitoring Control Index
*	*	None	aasr011	WebSphere_Application_Server	BA01	1

Origin Node	Application Server Environment	Application Server Name	Filter Control
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**Serveurs gérés**

**Data Collector Informations**

- **Identification et résolution des incidents liés aux services**

- Des vues complètes et des liens entre workspaces pour naviguer du service vers les composants applicatifs et l'infrastructure sous jacents

- **Automatisation de la gestion des services**

- Des alertes prédéfinies ou extensibles, des actions par situations et par workflows

- **Support de plates-formes SOA hétérogènes**

- Famille IBM WebSphere y compris zSeries, Microsoft .NET et BEA WebLogic

- **Console globale pour les opérations**

- Des vues Services, alertes, automatisation et tableaux de bord : *Tivoli Enterprise Portal*

The screenshot displays the Tivoli Enterprise Portal interface. On the left is a 'Fenêtre de navigation' (Navigation Window) showing a tree structure of services and components. The main area is divided into three views:

- Vue Service Opérations** (Service Operations View): A 3D bar chart titled 'Average Response Time' showing response times for 'ship', 'pull', 'order', and 'checkPrice' operations. The x-axis is 'Response Time in Milliseconds' ranging from 0 to 500.
- Vue Inventaire des Services** (Service Inventory View): A table listing services and their operations.
- Vue Performances des services** (Service Performance View): A table showing elapsed message round trip times and message interception times.

Service Name	Operation Name	Application Server Cell Name	Application Server Node Name	Application Cluster Name
Catalog	checkPrice			
Catalog	order			
Inventory	pull			
Delivery	ship			

Service Name	Operation Name	Elapsed Message Round Trip Time	Message Interception Time	Message Interception Location
Catalog	order	651	07/11/05 20:28:49	Server_Leave
Inventory	pull	0	07/11/05 20:32:27	Server_Leave
Inventory	pull	621	07/11/05 20:32:27	Client_Respons
Delivery	ship	0	07/11/05 20:32:27	Server_Leave
Delivery	ship	130	07/11/05 20:32:27	Client_Respons
Catalog	order	1012	07/11/05 20:32:27	Server_Leave
Inventory	pull	10	07/11/05 21:03:07	Server_Leave

**Alerts:**  
Critical,  
warning,information

The screenshot displays the Tivoli Enterprise Portal interface. At the top, the window title is "Message Arrival - 9.212.128.31 - SYSADMIN". The main content area is divided into several sections:

- Message Arrival Details Table:** A table with columns: Situation Name, Service Name, Operation Name, Remote IP Address, Current Message Count, Threshold Comparison Operator, and Message Thres. The data rows are:
 

Situation Name	Service Name	Operation Name	Remote IP Address	Current Message Count	Threshold Comparison Operator	Message Thres
MessageArrivalCritical	*	*	*	0	Greater_Than	
MessageArrivalClearing	*	*	*	0	Less_Than	
- Alerts Panel:** Shows an "INFORMATIONAL" alert for "MessageArrivalClearing" with details: "ITCAM4SOA:#10.1.1.20:D4 04/24/06 14:11:34". Below it is a message: "KFVMTM101| Select workspace link button to view situation event results."
- Charts:** Two bar charts, both titled "Number of Messages", with axes ranging from 0 to 1. The right chart has a callout box pointing to it with the text "Data : Availiable attributs".
- Status Bar:** At the bottom, it shows "Hub Time: Wed, 04/26/2006 02:21 PM", "Server Available", and the window title "Message Arrival - 9.212.128.31 - SYSADMIN".

Available Queries

**Description**

Description: Performance Summary

Data Source: TEMS HUB:CMS ip.pipe:#10.1.1.29[2018]

**Last Modified**

Last Modified on: Tue, 03/21/2006 02:30 PM

Last Modified by: SYSADMIN

**Specification** Query Results Source

**Specification**

	Origin Node	Interval Status	Average Elapsed Message Round Trip Time	Operation Name
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	== \$NODE\$	== Complete	!= -1	
3				
4				

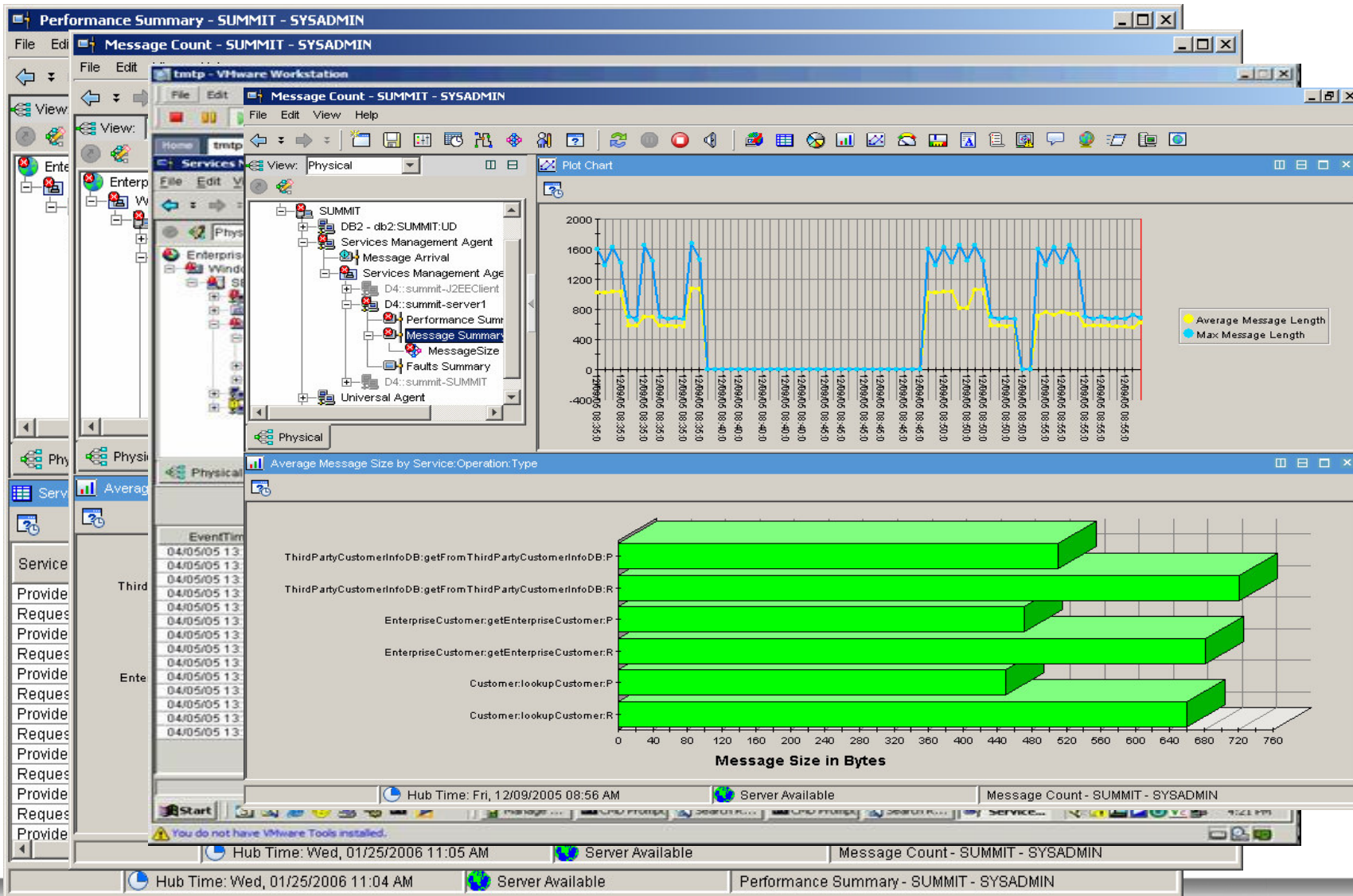
**Data : Available attributs**

Add attributes... Advanced...

OK Cancel Help

## Attributs & Visualisation

Workspace	Description
Performance Summary	<p>This Workspace provides the Inventory of currently active and monitored services, as well as the response time of the services:</p> <ul style="list-style-type: none"> <li>● Server Average Response Time by Service/Operation</li> <li>● Client Average Response Time by Service/Operation</li> <li>● Inventory of Service/Operation</li> <li>● Response Time of Service/Operation</li> </ul>
Messages Summary	<p>This Workspace provides the details on the number and size of messages received for services, and service/operation combinations:</p> <ul style="list-style-type: none"> <li>● Number of Messages by Service/Operation</li> <li>● Average size of Messages by Service/Operation</li> <li>● Number of Messages by Service</li> <li>● Average size of Messages by Service</li> </ul>
Faults Summary	<p>This Workspace provides a general faults summary:</p> <ul style="list-style-type: none"> <li>● Number of Faults by Service/Operation</li> <li>● Service/Operation Fault details</li> </ul>
Configuration	<p>This Workspace contains views displaying the current contents of the data collector configuration This Workspace contains the following views:</p> <ul style="list-style-type: none"> <li>● Data Collector Global Configuration</li> <li>● Data Collector Monitor Control</li> <li>● Data Collector Filter Control</li> </ul>





SOA Model - 9.212.128.31 - SYSADMIN

File Edit View Help

Process choreographer - 9.212.128.31 - SYSADMIN

File Edit View Help

Service

SOA - Program Mo

Develop Service

Neils view

- Smart Bank Enterprise View
  - ATM Channel
  - Branch channel
  - Internet channel
  - SOA Model
    - Processs choreogr
    - SOA Service Manag
    - WebSphere MQ
  - Operations

Physical Smart\_Bank

Business Process

```

graph TD
    TRFProcess --> TRFProcess_Receive[TRFProcess Receive]
    TRFProcess_Receive --> JavaSnippet1[JavaSnippet1]
    JavaSnippet1 --> TRFInput_Transform[TRFInput.Transform]
    TRFInput_Transform --> TRF[TRF]
    TRF --> JavaSnippet[JavaSnippet]
    JavaSnippet --> Transform1[Transform1]
    Transform1 --> TRFProcess_Reply[TRFProcess Reply]
    Transform1 --> selBDWUpdateRequest[selBDWUpdateRequest]
    Transform1 --> SetEPDUpdateRequest[SetEPDUpdateRequest]
    selBDWUpdateRequest --> BDW_Update[BDW_Update]
    SetEPDUpdateRequest --> EPD_Update[EPD_Update]
    BDW_Update --> AfterBDW_Update[AfterBDW_Update]
    EPD_Update --> AfterEPD_Update[AfterEPD_Update]
    
```

Partner Links

- TRFProcessPartner
- TRFPort
- TRFInput.Transform
- TRFOutput.Transform
- BDWCollector
- BPDCollector

Database Pool

J2EE Connectors (J2C)

EJB Container statistics

Hub Time: Wed, 04/26/2006 02:33 PM Server Available Process choreographer - 9.212.128.31 - SYSADMIN