# Managing and Monitoring Web Applications with HP OpenView
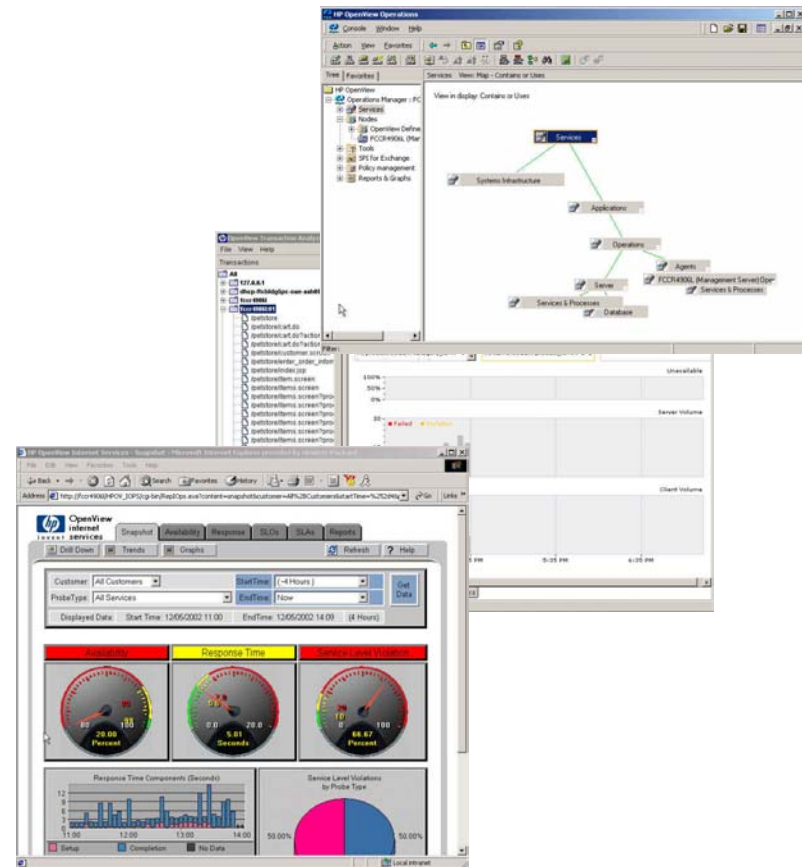
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Software Engineering Consultant

Hewlett Packard

# Objectives

- Understand how to apply OpenView tools to solve a specific problem
    - look at a common problem
        - simple scenario
        - players: software developer, IT Staff, QA developer
    - recommend a solution
        - OpenView products: OVTA, OVIS, and OVO
        - highlight capabilities of tools
- Start thinking of designing for manageability
    - technologies
    - benefits

# Sample Scenario

# Setting the Stage

- LendItToMe.com is a lending firm

- Allows customers to apply for loans online

- Past 5 years LendItToMe has provided a service to over a million customers.

- Customers register and log on this site to apply for a loan (mortgage, car, personal).

- Problem: diagnosing problems in Web application is getting out of hand

# Identifying the players

- Software developer
  - develops business applications
  - uses high level language to produce software
- Quality Assurance (testers)
  - tests applications before being deployed
  - uses testing tools and scripts
- IT Staff (System admin, Operations)
  - monitors networks, applications and so on
  - writes scripts

# Call comes in from customer

**Customer Call**

**Customer Support enters ticket.**
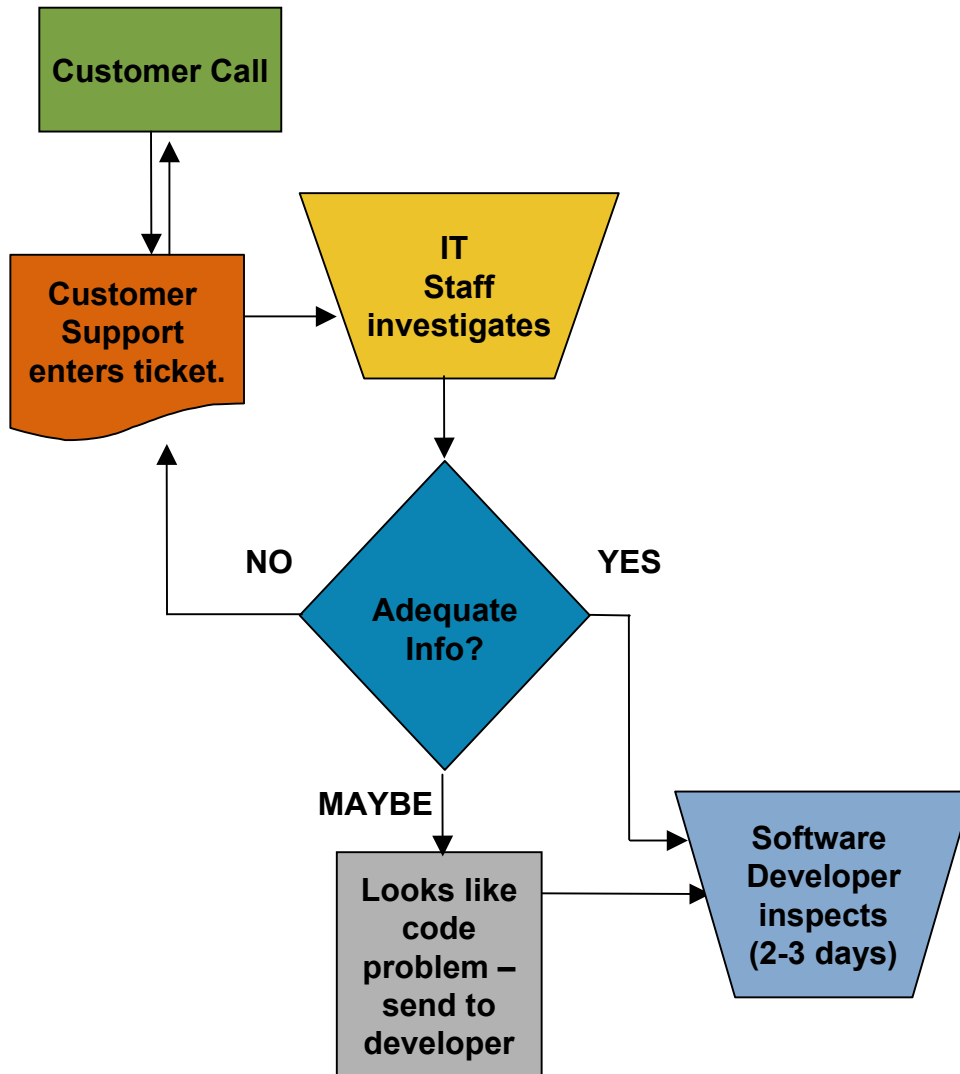
**IT Staff investigates**
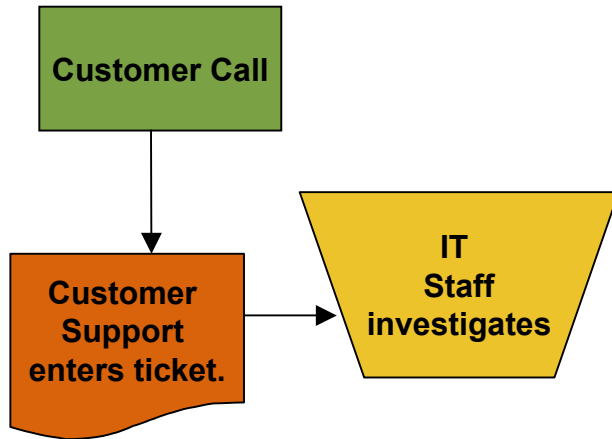
**Customer: "Hi, John. This is Mary at Dillan's Toyota. I have been trying to use your site all day to apply for loans for my customers and cannot get the loan processed.."**

**Support: "Ok, tell me what you are seeing?"**
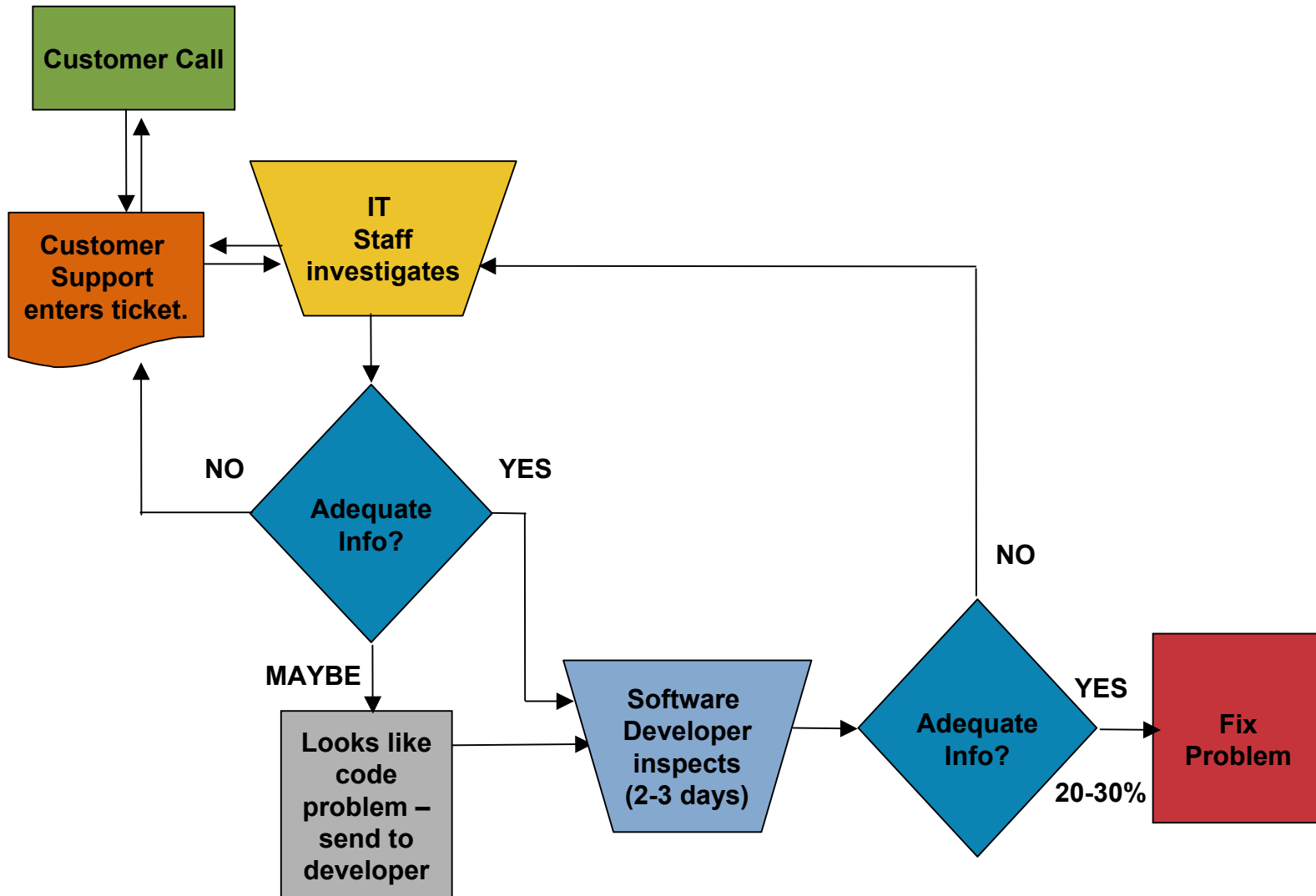
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# IT sends to Software Developer

Customer Call

Customer Support enters ticket.

IT Staff investigates

Adequate Info?

NO

YES

MAYBE

Looks like code problem – send to developer

Software Developer inspects (2-3 days)

# Software developer fixes problem or sends back

Customer Call

Customer Support enters ticket.

IT Staff investigates

Adequate Info?

NO

YES

MAYBE

Looks like code problem – send to developer

Software Developer inspects (2-3 days)

Adequate Info?

NO

YES

20-30%

Fix Problem

# Process gets overwhelming

**Customer Call**

**Customer Support enters ticket**

**IT Staff investigates**

Legend
→ 1st time through
- - ► many times through

**Adequate Info?**

NO

YES

MAYBE

20% - network connection
20% - ISP connection
20% - over loaded server
10% - other

NO

**Looks like code problem – send to developer**

**Software Developer inspects (2-3 days)**

**Adequate Info?**

YES

20-30%

**Fix Problem**
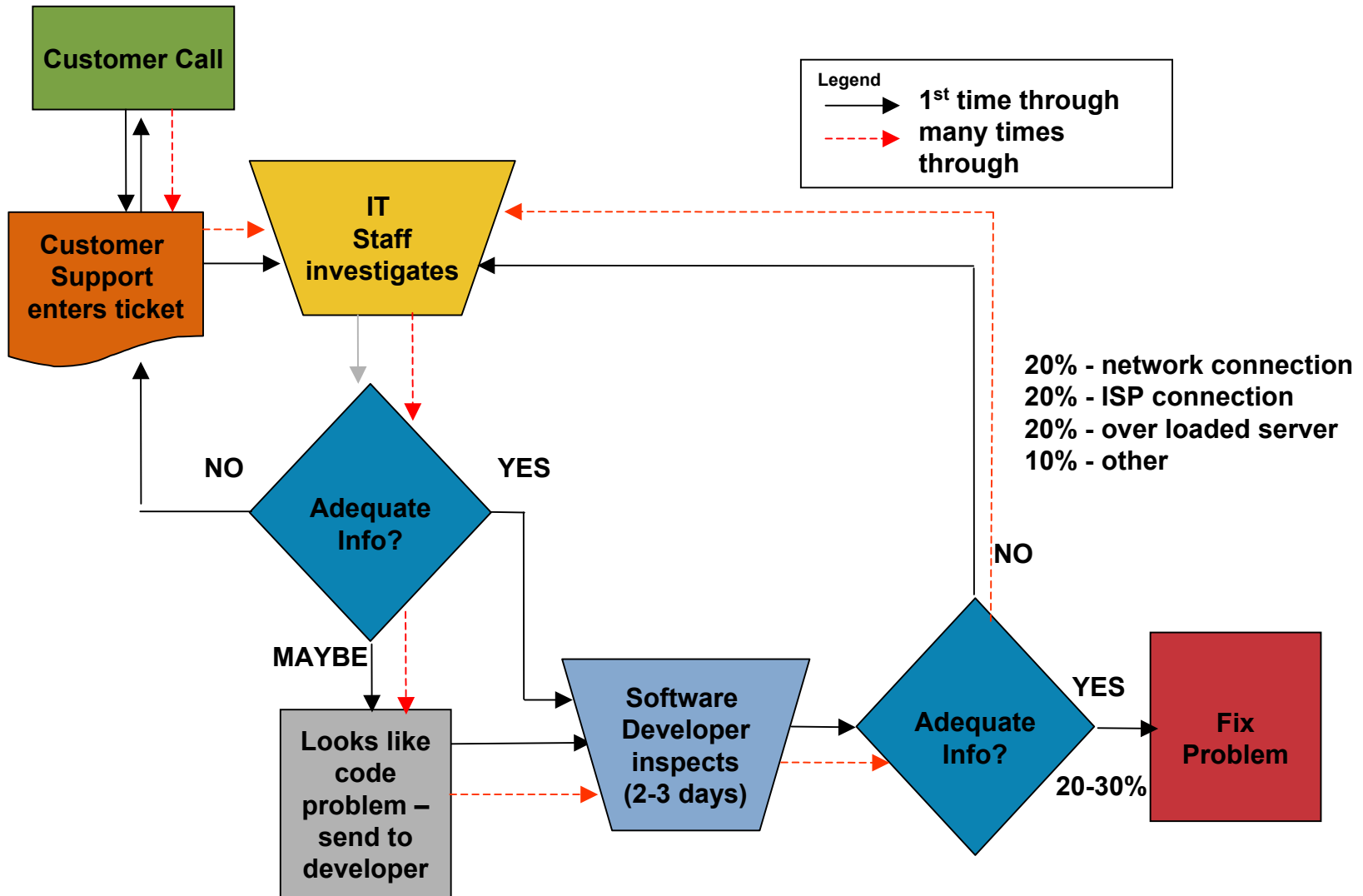
# Solution

# Let's solve the problem a bit at a time

**Customer Call**

**Customer Support enters ticket**

**IT Staff investigates**

Legend
— 1st time through
--- → many times through

**Adequate Info?**

NO

YES

MAYBE

**Looks like code problem – send to developer**

**Software Developer inspects (2-3 days)**

**Adequate Info?**

NO

YES

20-30%

**Fix Problem**
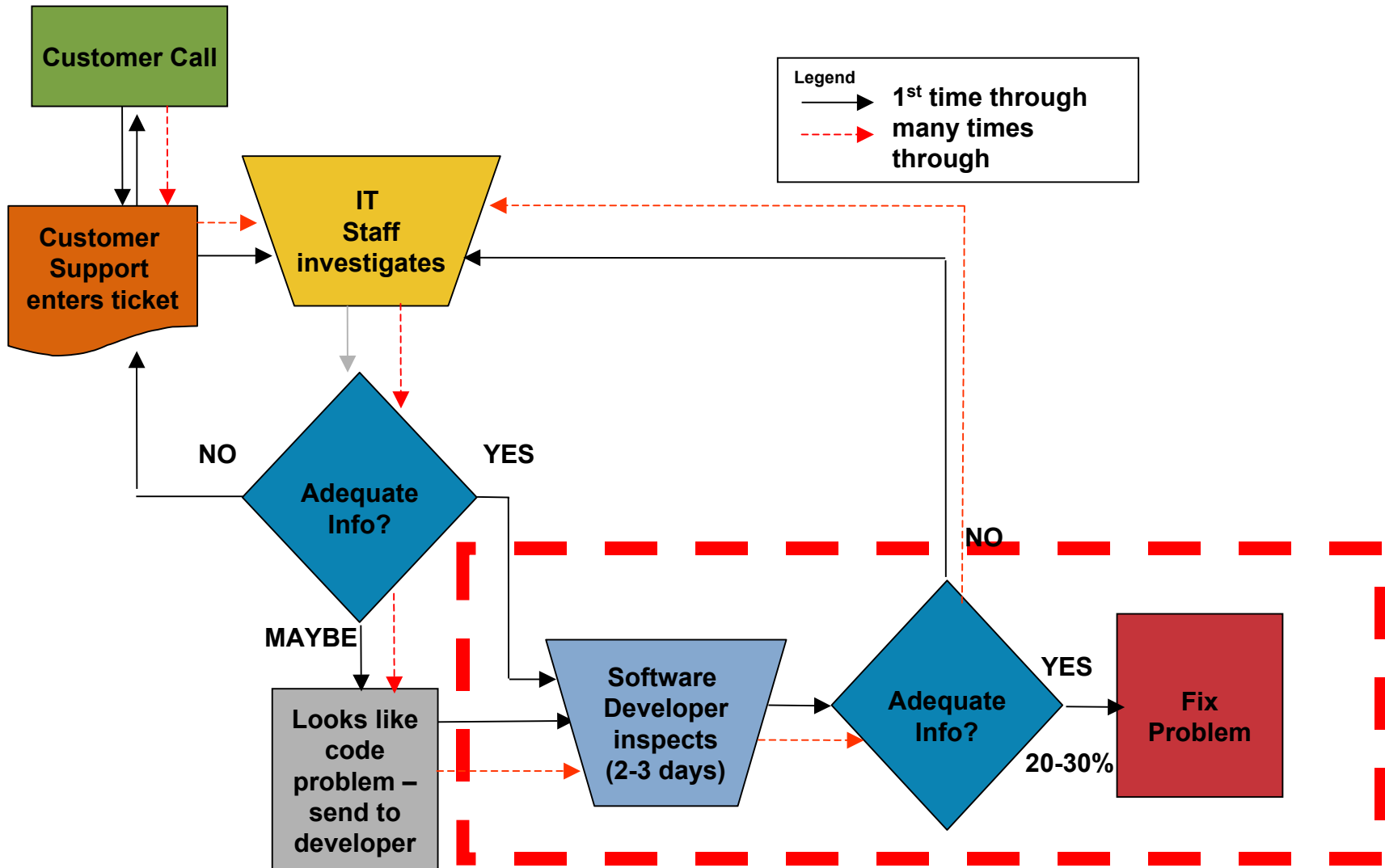
# What does Ms. Software Developer need?

test application code

pinpoint bottlenecks

prove that it is not a code problem

set thresholds on web pages

# OpenView Transaction Analyzer (OVTA)



- Provides diagnostics
  - leverages ARM
  - measures transaction volume and response times
- Classifies transactions by J2EE/COM components
- Distinguishes the time spent processing the transactions
  - Internet
  - back-end IT infrastructure
  - communication between back-end component

# How does OVTA work?

BEA WebLogic, IBM WebSphere

IIS, IPlanet, Apache

Solid DB

Windows NT, Window 2000, HP-UX, Solaris

# How will it help Ms. Developer?

- Can configure OVTA to capture transaction information from application
  - non-intrusive
  - no changes made to application
  - turn on tracing
  - provides developer with end-to-end transaction information
  - in this case, the main.screen is causing a performance problem
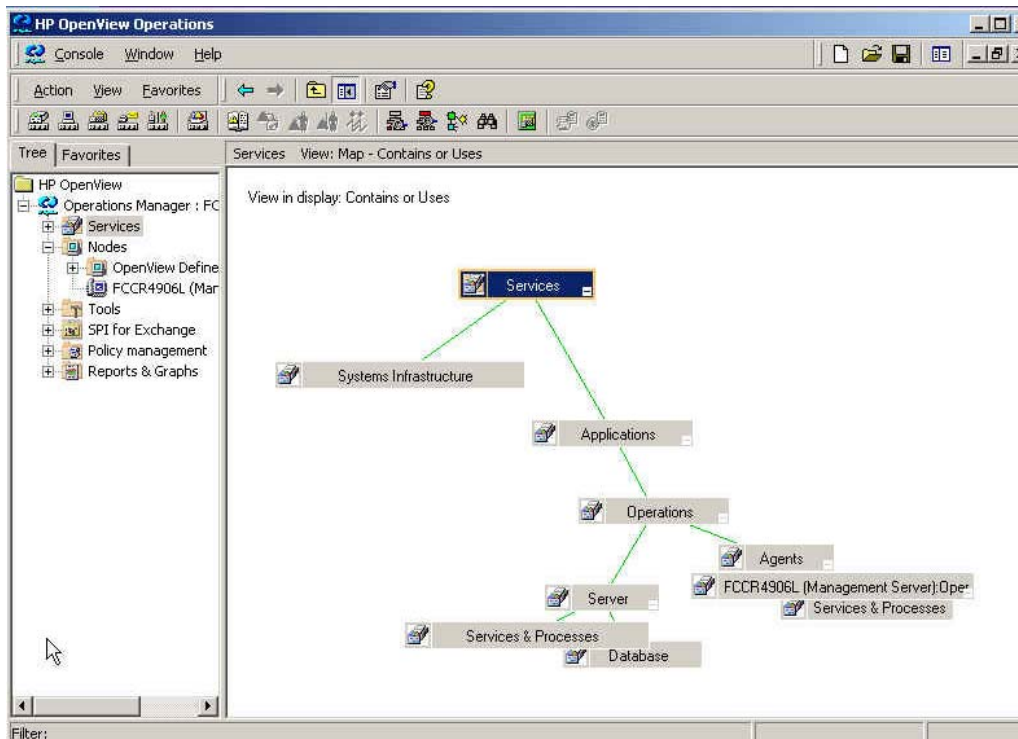    - finger pointer to begin diagnosing problem
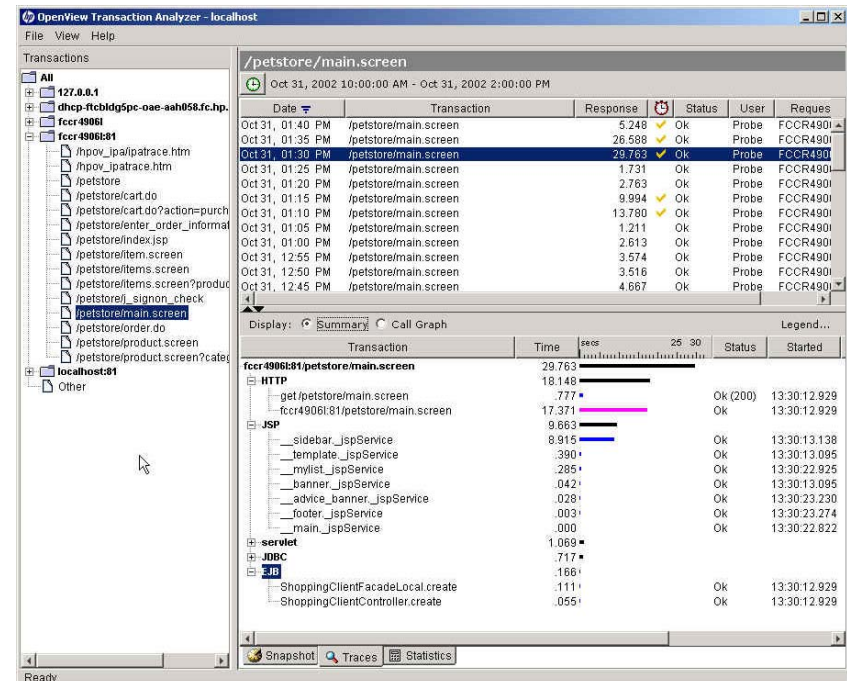
# Now let's look at the IT's problem



Managing and Monitoring Web Applications with OpenView

# What does Mr. IT need?

provide developer starting point

send alarms to an event monitoring system

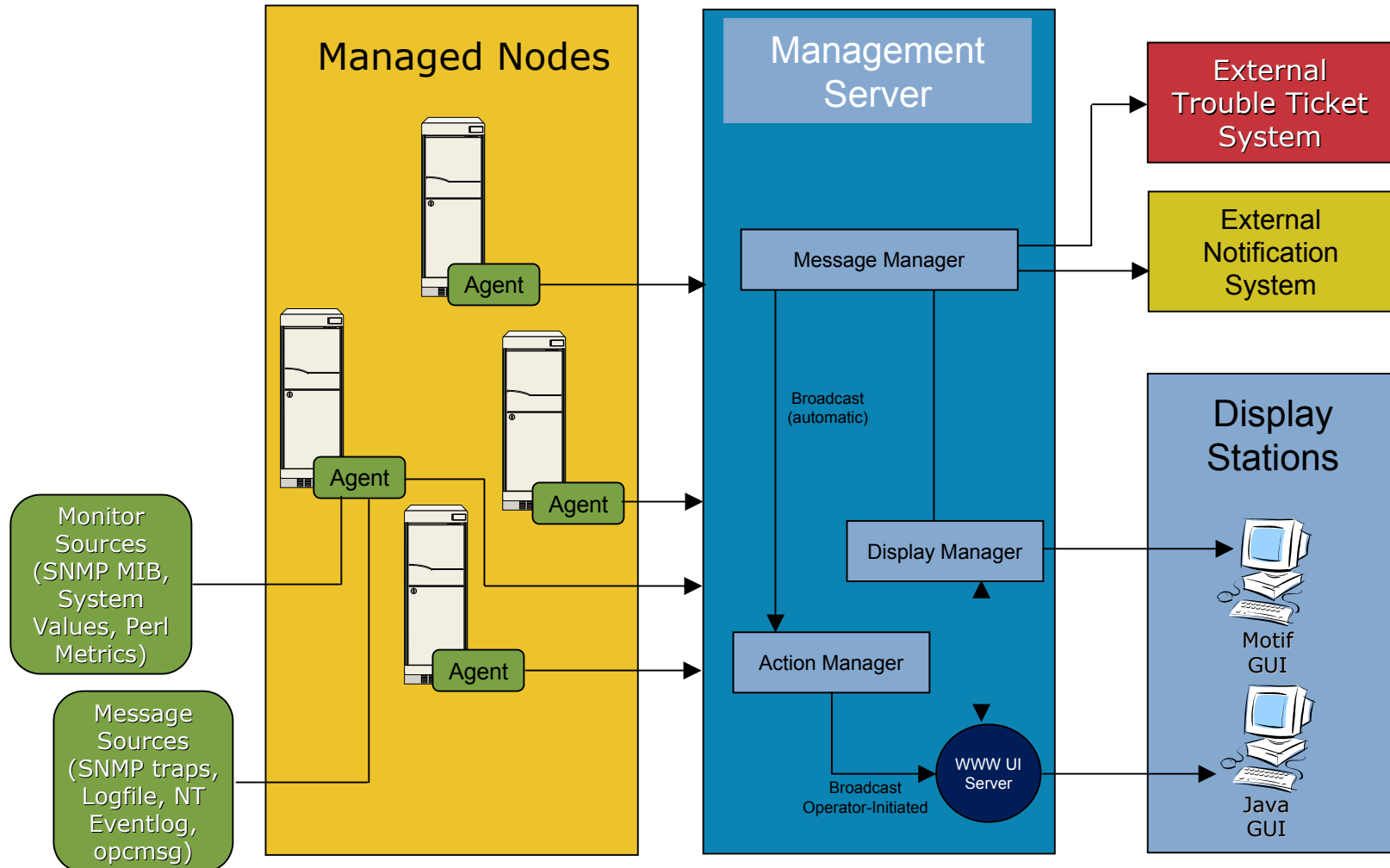monitor services

manage heterogeneous environment
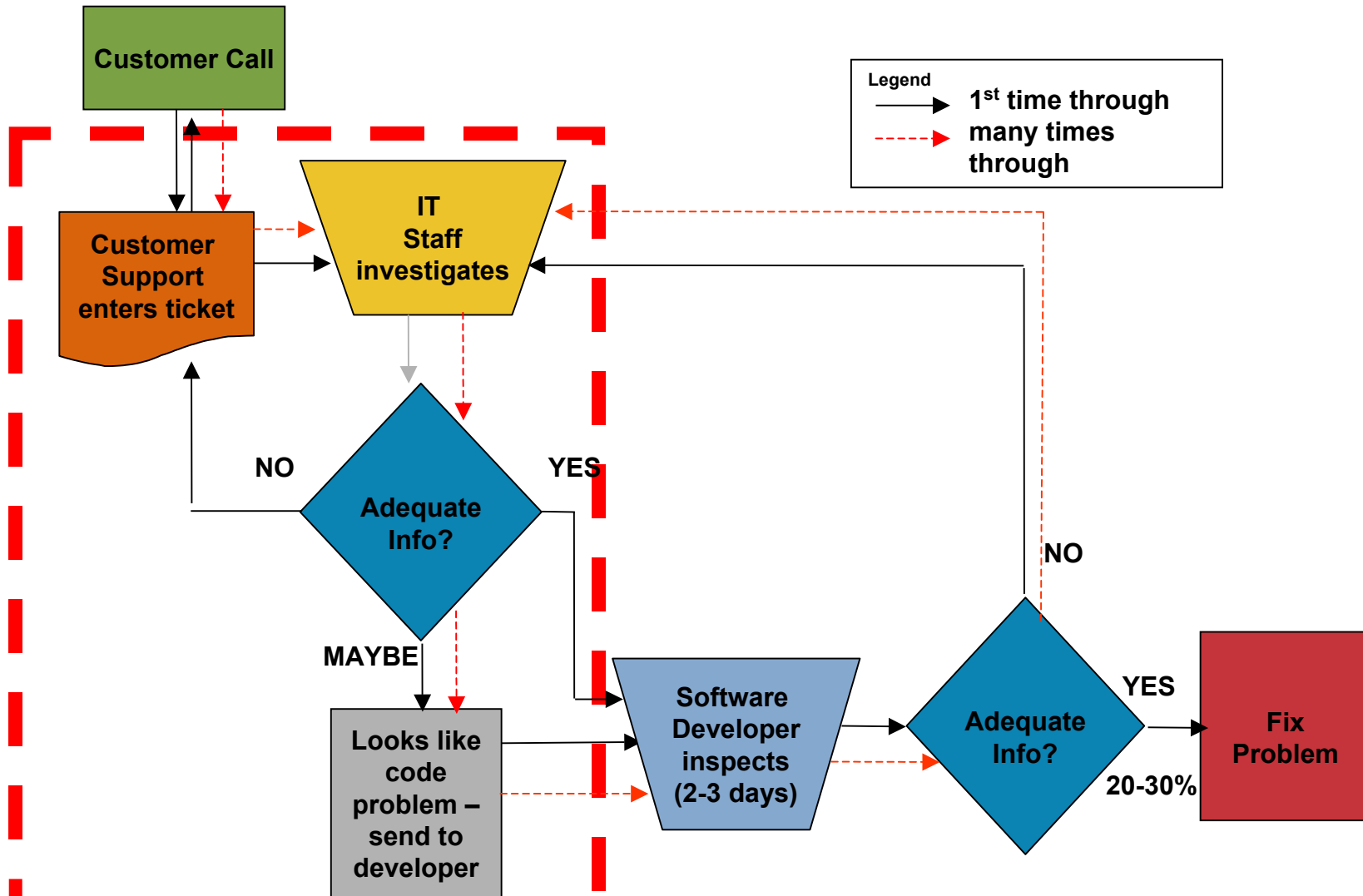
# OpenView Operations (OVO)



- **Provides an overall view of the IT infrastructure**
  - availability and performance

- **Auto-discovers the managed environment**

- **Collect and automatically respond to events**

- **View and handle messages**

- **Generate graphs and reports**

# How does OVO work?

# How will OVO help?

- Can see an overall health of the network

- Can identify availability and performance of service components
  - application server
  - database server

- Can determine what is causing performance problems
  - root cause view

- Gives both a business and an IT view of services
  - can receive alarms generated from OVIS when a service does not meet SLA
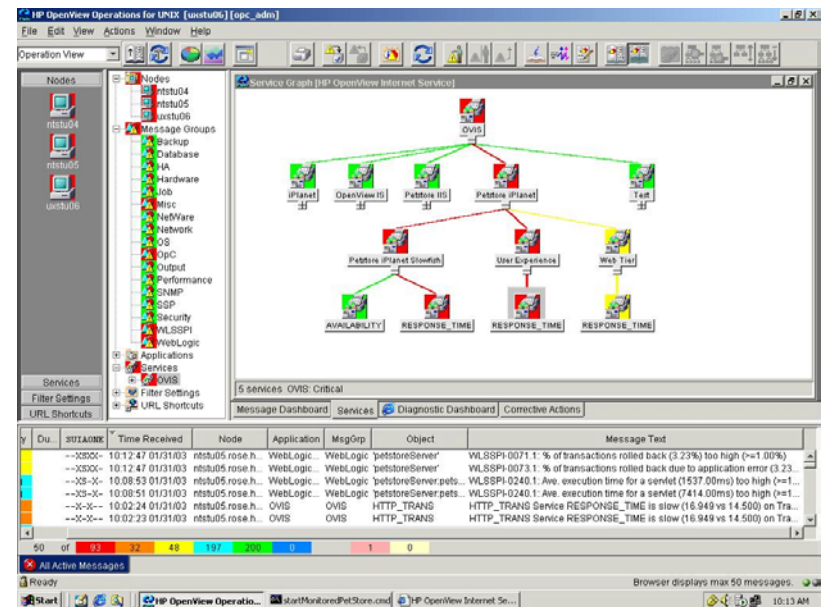
# OpenView Internet Services (OVIS)
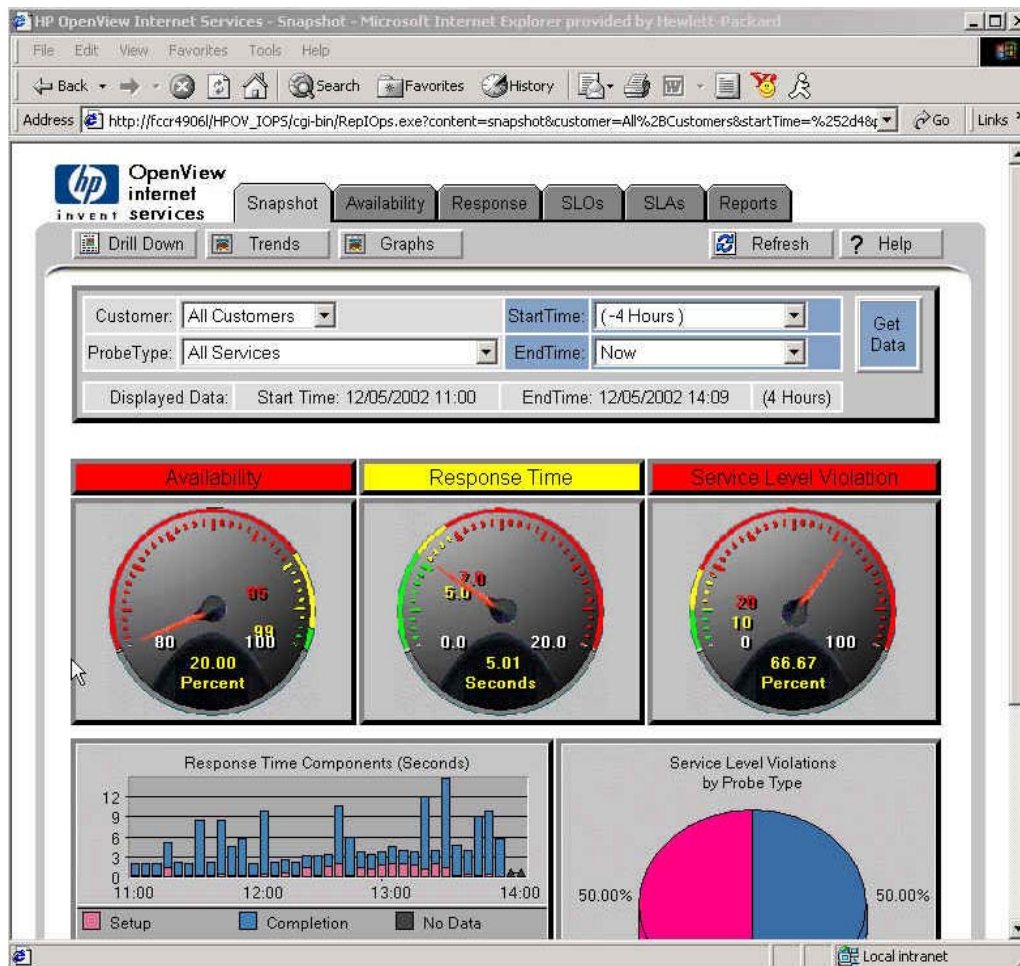


- Monitors Internet services (HTTP, FTP, DHCP and so on…)
  - measures the availability, response time, service level conformance
- Uses software probes to replicate customer experience
- Integrates with other OpenView products
  - OVTA
  - OVO
  - NNM
  - any event manager capable of receiving SNMP traps

# How does OVIS work?



OVTA
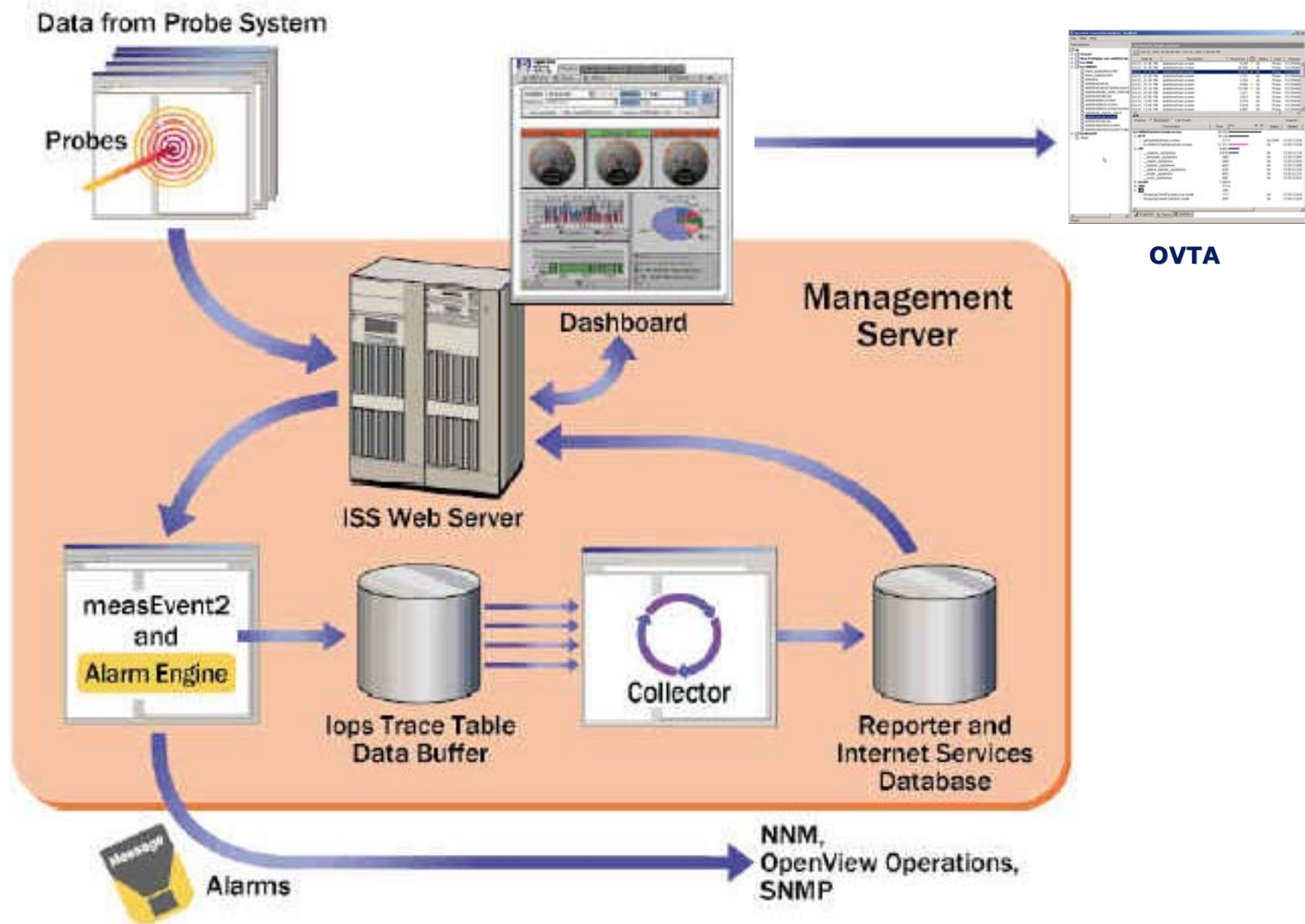
# How will OVIS help?

- Can use Web Transaction Recorder to duplicate the customer experience and capture information

- Allows you to baseline with synthetic transactions

- Look at the transactions report to identify if the problem was caused by the code

- Drill further using OVTA, if code problem he can send to developer
  - identify what service might have caused the problem
  - identify who to notify

# Putting it all together



Managing and Monitoring Web Applications with OpenView
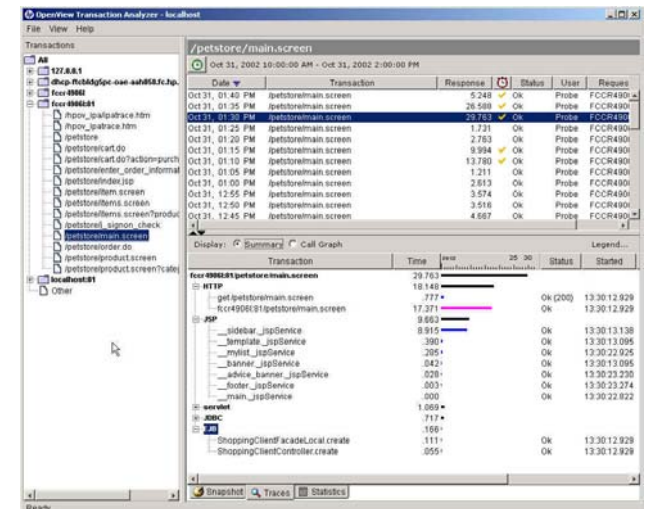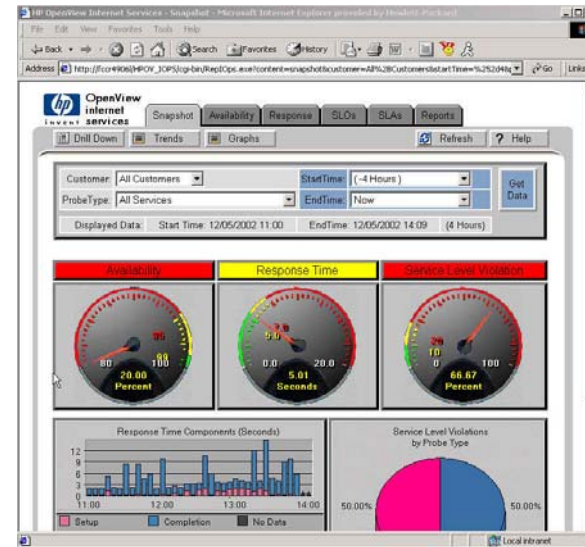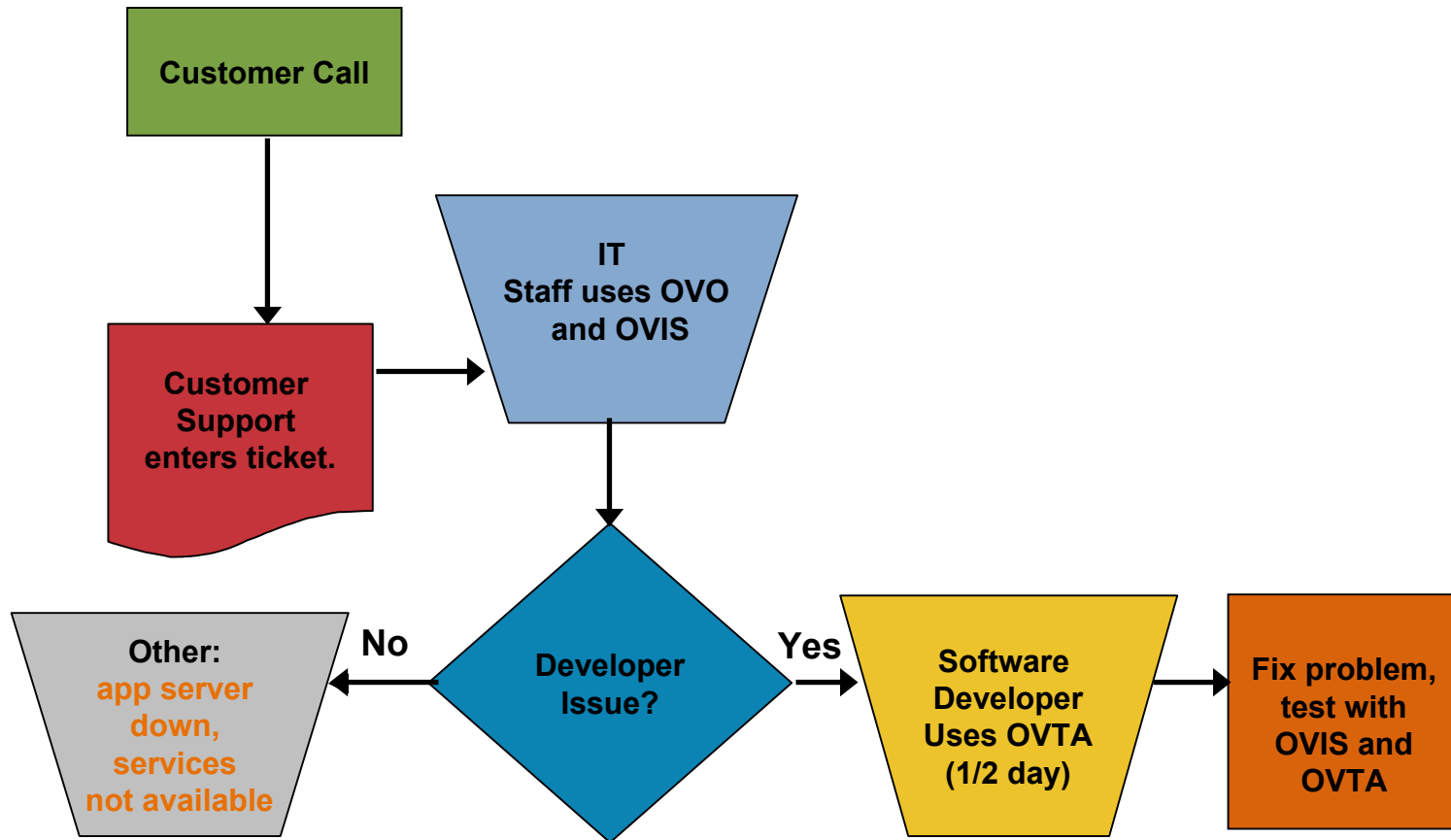
# Which would you rather have?
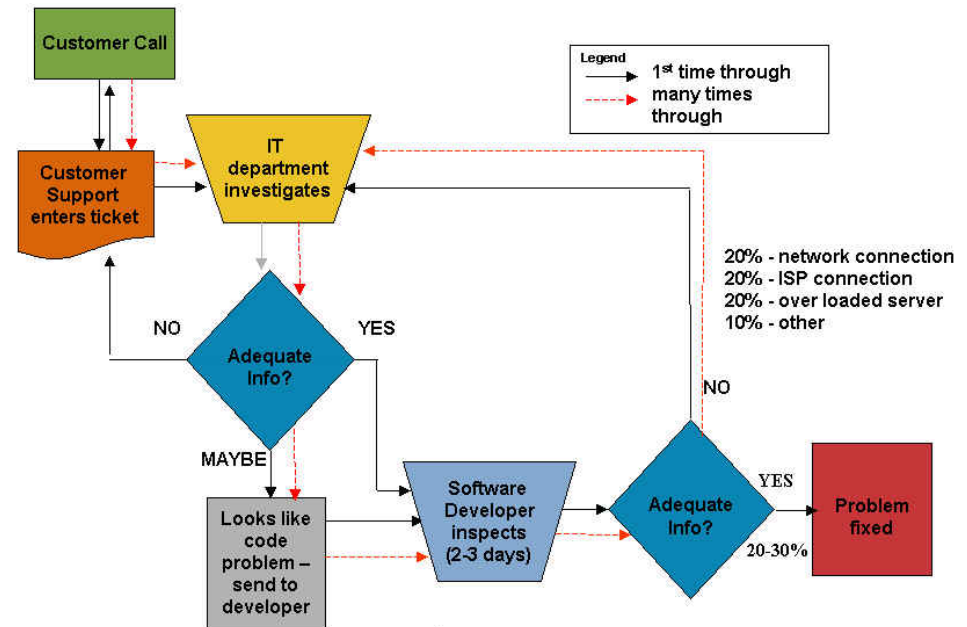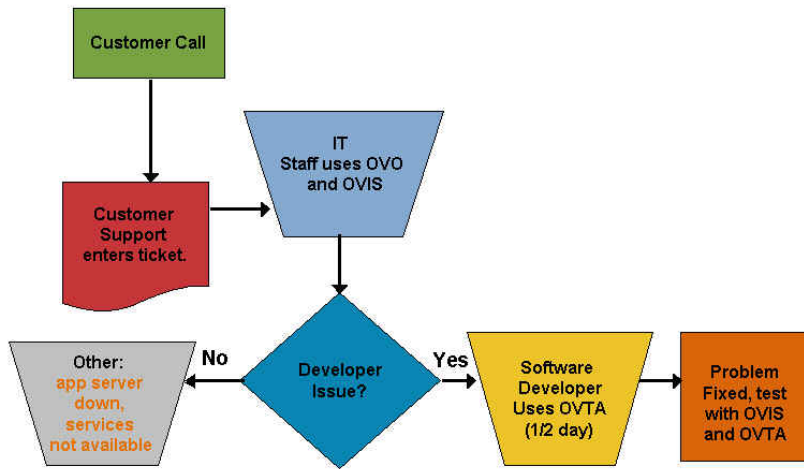
# Designing for Manageability

# building manageability into your applications

- **What is it?**
  - from non-intrusive to intrusive
  - beyond: is it alive?
  - ability to implement administrative and supervisory tasks
    - monitoring
    - tracking
    - control

- **Why?**
  - cut down costs
  - predict problems before they happen
  - application availability affects business profitability
  - enable management console control of an application for speedy problem resolution

- **How?**
  - open communications channel between developers and ops
    - what level of information is most useful to operators
    - what actions can be taken
    - what technologies to use
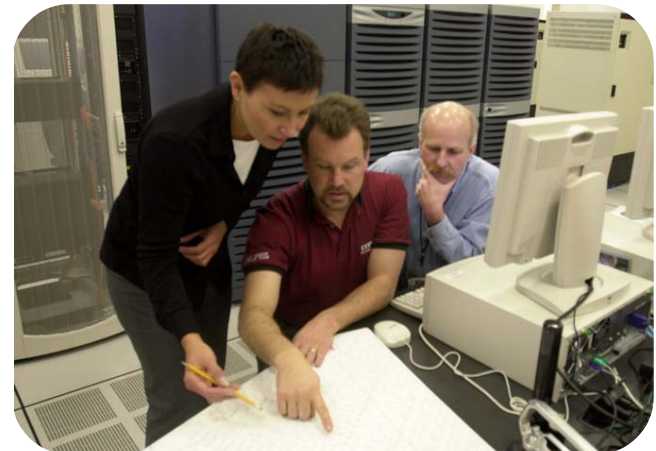
# Logging

- Simplest and most used
  - Apache Log4J

- Best practices
  - understandable messages
  - instructions to go along with error messages
  - information to help operations personnel identify problem

Error 4201: database error
            to
Error 4201: database error – increase # of db connections

- Simple application deployment
  - no application control
  - more design attention needed when 2 or more instances are run

# opcmsg command

- Operation message console API enables another level of sophistication

- Enables developers to embed monitoring API calls
  - provides low level access to OVO library API (C and Java)

- Enables scripts or applications to send OV messages
  - provides fine-grain details to application behavior
  - requires more work by developer
  - determine what type messages to send
  - put in place some filtering
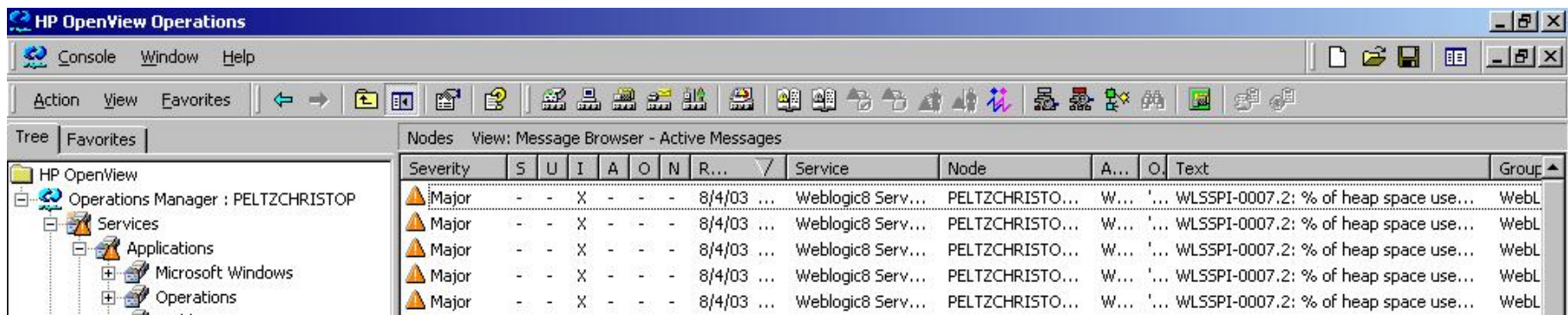
# Smart Plug-In

- Add-on product that manages applications through OVO

- Management
  - threshold monitoring
  - fault alarming
  - data collection
  - logging
  - graphing
  - reporting

SPI Events and Collected Metrics

**OVO Server**
- Events
- SPI Policies & Configuration
- SPI Tools
- SPI Reports & Graphs

**OVO Agent**

SPI Policies and tools

**Application**

SPI Tools and actions, SPI policies and configurations

- Templates used to analyze data and send messages

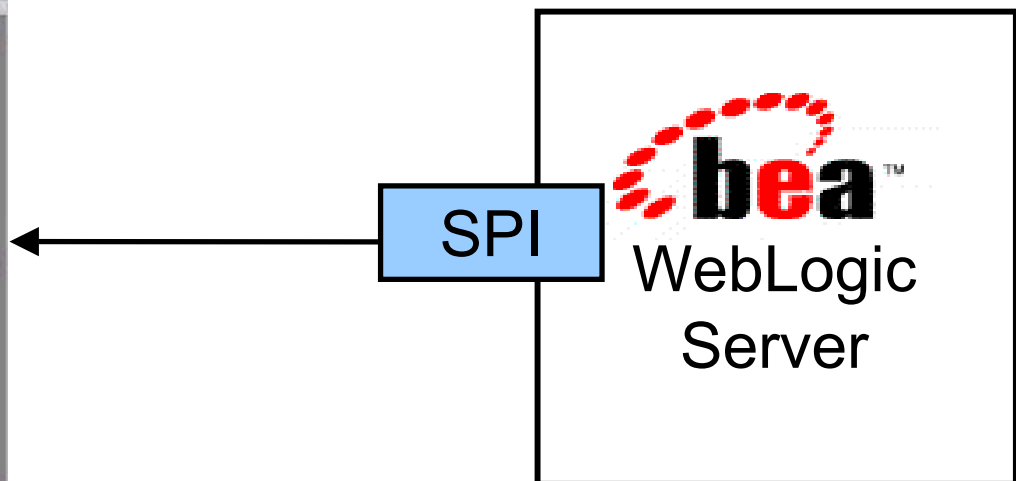- Available for DB, app servers, web servers, networks, etc.
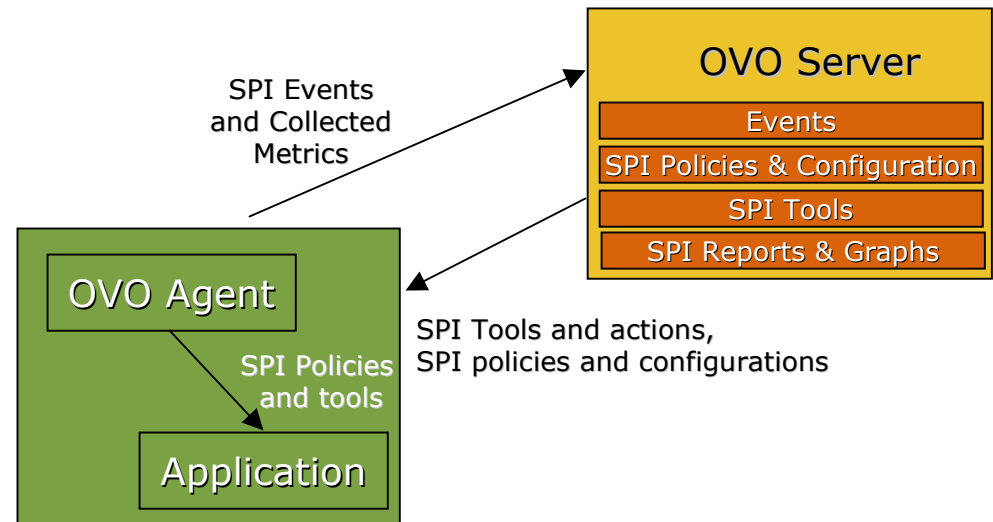
# BEA WebLogic Server SPI

- Adds monitoring, eases WebLogic administration
- Out of the box : 55 metrics
  - pre-defined actions, reports
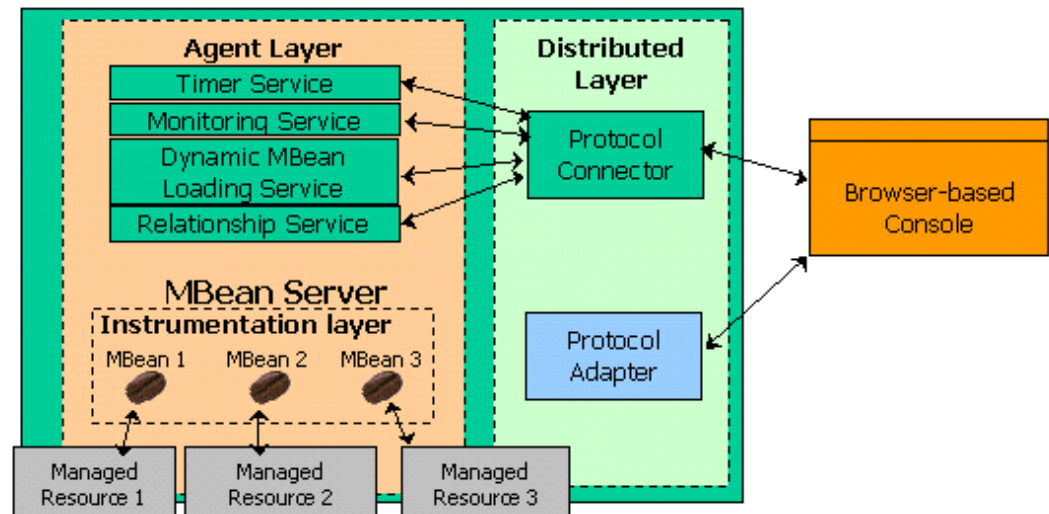  - server availability, server performance, memory usage, transaction rates, etc – all configurable



**OVO**

SPI

**bea**™

WebLogic
Server
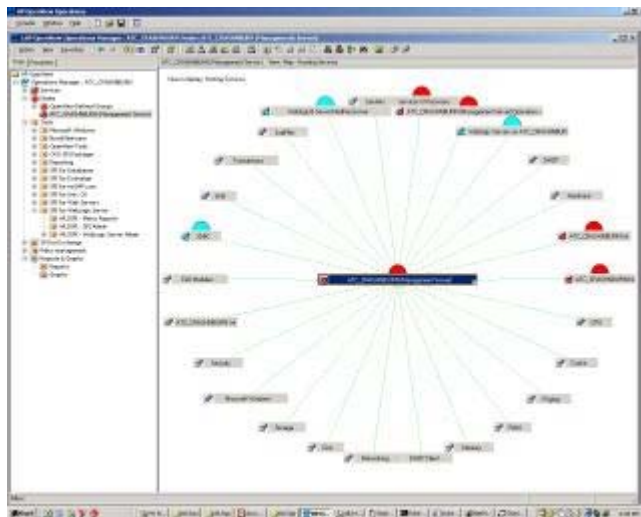
# Customize the SPI

- User Defined Metrics (UDM)
  - custom queries to retrieve specific data
  - perform custom calculations
- Leverage JMX to create managed objects
  - specification that allows integration with existing network architectures
  - made up of 3 layers
  - defines a standard for developing managed beans
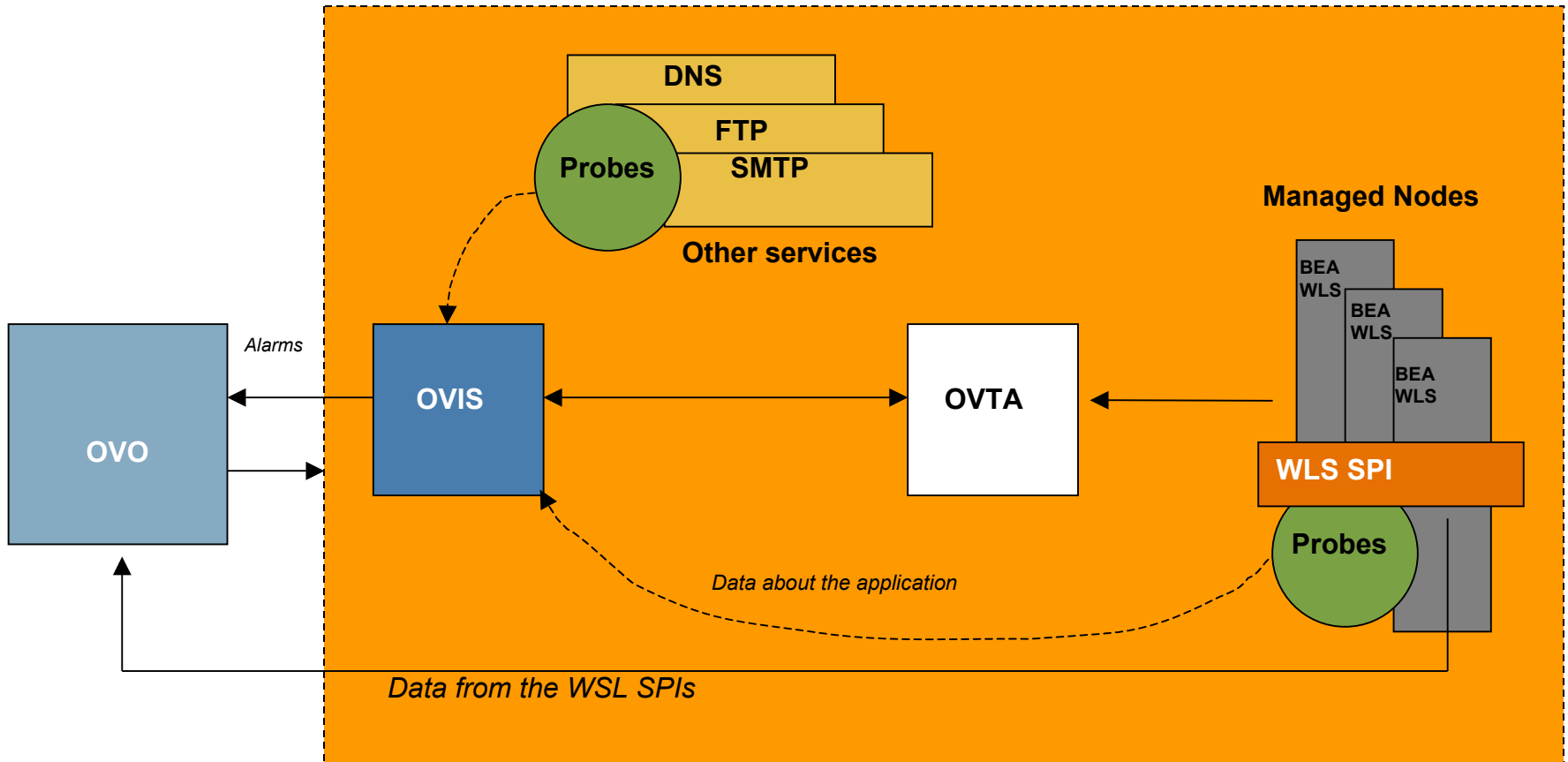    - wrappers for Java applications

# Conclusion

# Get results with OpenView!



**Internet Infrastructure**

DNS

FTP

SMTP

**Probes**

**Other services**

**Managed Nodes**

BEA WLS

BEA WLS

BEA WLS

*Alarms*

OVO

OVIS

OVTA

**WLS SPI**

**Probes**

*Data about the application*

*Data from the WSL SPIs*

# Summary

- By adding OpenView, you get web application management
  - non-intrusive
  - powerful
- For added manageability, get your developers involved
  - technologies are available
  - benefits are obvious

HP OpenView knows
Application Management!!!

# For more information

- For OVTA information
  - www.openview.hp.com/products/tran/

- For OVIS information
  - www.openview.hp.com/products/ovis/

- For OVO information
  - www.openview.hp.com/products/ovowin/

- For white papers, tips and tricks
  - devresource.hp.com

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