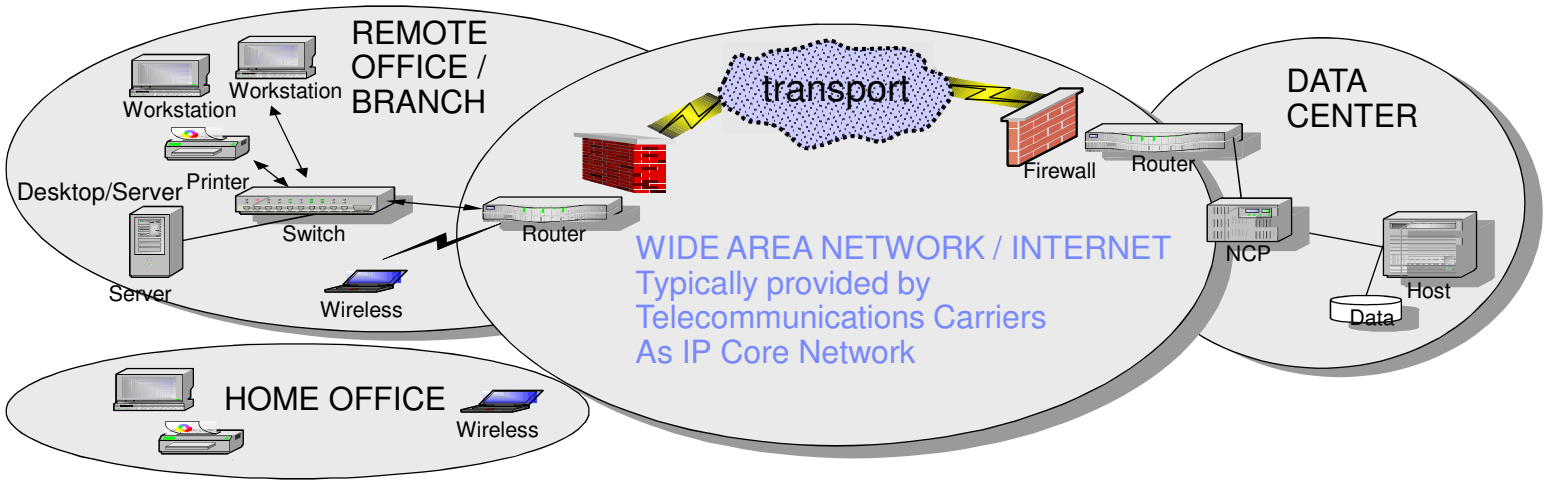
IBM Inter-University Programming Contest 2012 Training

Chapter 2:Tivoli Netcool/OMNIbus

IBM Inter-University
Programming Contest 2012

February 11, 2012 (Saturday)
Cliftons, Hong Kong

What is Event Management? – Extended into Complex Networked Environments



- Large complex infrastructures, increasingly interconnected by variety of providers
- Ever increasing dependency on higher bandwidth / broadband for new "triple play" services (e.g., Voice, Video, and Data)
- Maintaining high Quality of Service (QoS) is key for multiple services sharing the same network
- Increased range and reach of networks leads to reliance on skilled operators when solving problems
- Determining the actual cause of certain problems requires understanding events across IT and Network disciplines

The goal of End-to-End Event Management is to consolidate events, to focus on "root causes" (and identify related "symptoms"), and – where possible – to automate the resolution in response to any problem in the entire environment reducing MTTR (Mean time to Repair) and maintaining QoS within the network.

Tivoli Netcool/OMNIbus

Market Leading
Event Consolidation, Correlation & Automation

Meeting the challenges of
Dynamic Infrastructure Management

More smart assets
Greater complexity
Escalating event volumes

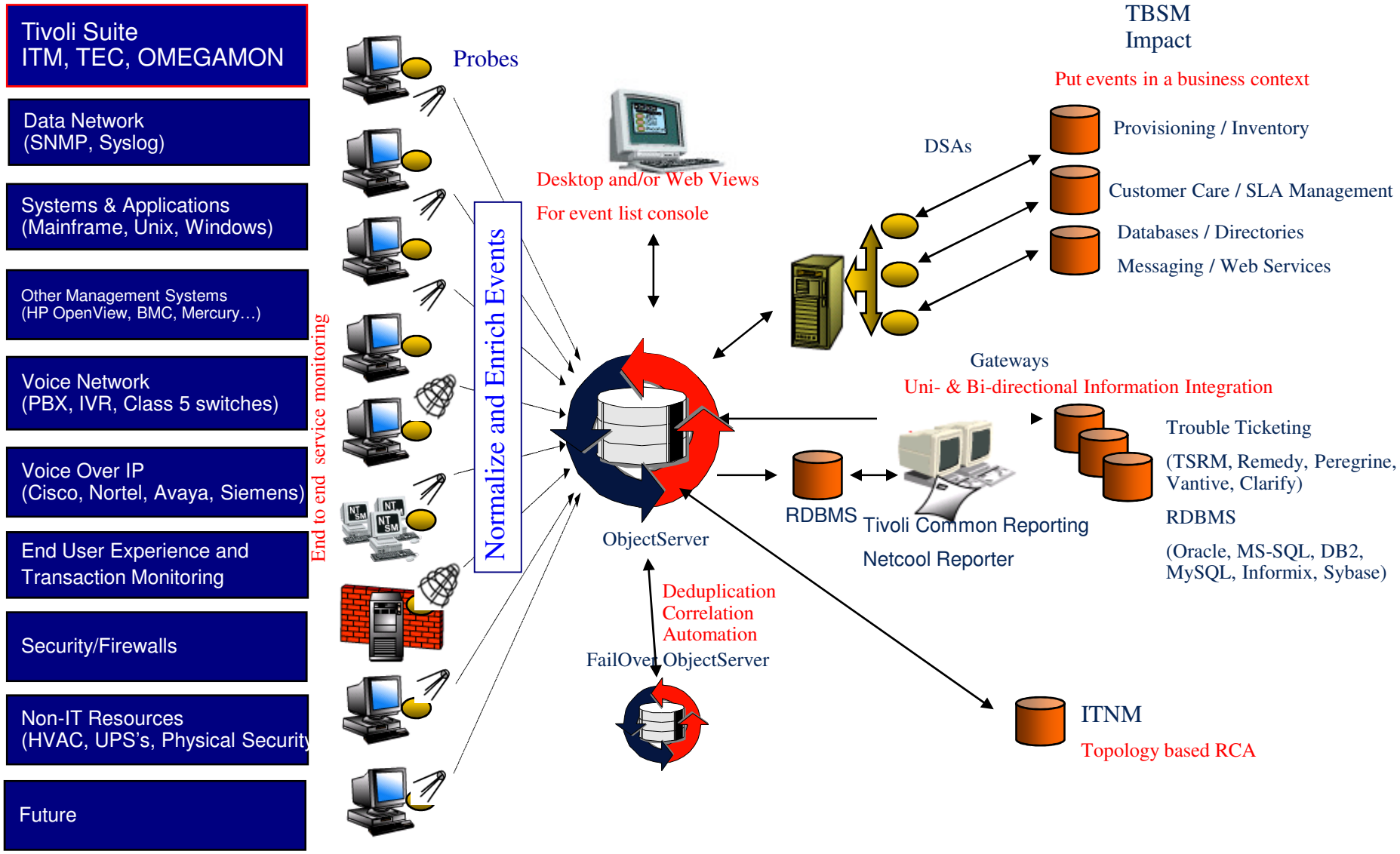
- Maximize Service Availability. Leverage hundreds of out-of-the-box integrations, with included domain intelligent event reduction rules, to monitor end-to-end infrastructure status and health.
- Reduce Operational Costs. Consolidate NOCs, tools and management sources into a single pane-of-glass and integrated management infrastructure.
- Improve Staff Productivity. Utilize normalization, de-duplication, aggregation, correlation capabilities, as well as time, device, and service based event reductions.

  Seamless UI navigation based on common Tivoli GUI architecture delivers task-based workflows that represent common operations used to perform operations and service management actions
- Minimize human intervention. Exchange information between peer systems and automate maintenance actions and procedures.
- Increase Confidence. Leverage proven availability and reliability, with huge event throughput capability, trusted system redundancy, failover and security.

IBM Tivoli Netcool OMNIbus

Tivoli software

Tivoli Netcool/OMNIbus Solution



Netcool/OMNIbus Integrations (250+)

Netcool Knowledge Library SNMP support (>175 MIBs), including:

- Bridge MIB RFC 1493
- MIB-II RFC 1213/2096
- RMON MIBs
- OSPF MIB
- BGP MIB
- ifStack MIB
- VRRP MIB
- ATM Forum MIB RFC 1695 for ATM switches
- ATM Forum PNNI (Single Pier) MIB
- ATM Forum ILMI MIB
- ATM Forum LANE Client MIB
- Frame Relay MIB RFC 1315
- FDDI MIB RFC 1512
- 31 different Cisco MIBs (including MPLS VPNs)
- 21 Nortel MIBs
- 6 different Extreme Networks MIBs (inc VLANs)
- Juniper MPLS VPN support

Alcatel OMC-R Probe
Alcatel OMC-S Probe
Alcatel OSOS TSM
Alcatel S12 Probe
Alcatel SMC 1360 S12 Q3 Probe
AMS Probe
Aprisma Spectrum Probe
ARCOM Probe
Ascom PANMAN Probe
Ascom TimePlex TimeView Probe
Avaya Definity G3 Probe
BMC Patrol Probe
CA Unicenter TNG Probe
Castlerock SNMPC Probe
CEMF Probe
CFS Probe
Ciena Oncenter Probe
CLOG Probe
CMS400 Probe
Comverse Probe
Dantel Pointmaster Probe
Datawatt Probe
Dawcom Probe
DEC VAX OpCom Probe
DFMS Probe
Eagle STP Probe
ECI LightSoft probe
ECI eNM, EMS-XDM and EMS-Syncom probe
EIF Probe
Email Probe
Ericsson ACP1000 Probe
Ericsson AXE10 TSM
Ericsson BNSI Probe

Gateway for MS SQL
Gateway for MySQL (ODBC)
Gateway for ODBC
Gateway for Oracle
Gateway for Peoplesoft Vantive
Gateway for Peregrine Service Center
Gateway for Remedy ARS
Gateway for Reporter
Gateway for Siebel 6 eCommunications
Gateway for Siebel 6 Field Service Desk
Gateway for SNMP
Gateway for Sockets
Gateway for Sybase
Generic Logfile Probe
Glenayr VMS Probe
Heartbeat Probe
HP IT/Operations Probe
HP NNM Probe
HTTP Common Log Format Probe
HTTP Server Error Log Probe
Huawei T2000 MML Probe
Hughes Probe
IBM Netview Probe
IBM/Tivoli TEC Oracle Probe
IBM/Tivoli TEC Sybase Probe
IBM/Tivoli TME 10 TEC Adapter Probe
IDNX Probe
INET Geoprobe Probe
Informix Probe
IOC Probe
Ion Networks Sentinel 2000 Probe
KBU Probe

Mototola OMC-R 3GPP Probe
NET 5000 Probe
NET Promina Probe
Netlabs Probe
NewNet SMS Probe
Nokia Netact for Broadband Probe
Nokia Netact for Wireless Probe
Nokia NMS100 Probe
Nokia NMS2000 Probe
Nokia SBT Probe
Nortel BSSM Probe
Nortel DMS TSM
Nortel DMS10 Probe
Nortel EAI Probe
Nortel EC1 Probe
Nortel EVDO Probe
Nortel FMBB Probe
Nortel Magellan NMS Probe
Nortel MDM Probe
Nortel Meridian Probe
Nortel MG9000 Probe
Nortel OMC-R Q3 Probe
Nortel OSSI Probe
Nortel PTM Probe
Nortel PWI 3GPP Probe
Nortel STP Probe
Nortel USP Probe
NT Event Log Probe
Octel Probe
ODBC Probe
Okeford Probe
Open Nervecenter Probe

Vendor Alliances (~25) on OPAL:

- Alcatel
- Motorola
- Siemens
- Ericsson
- Tellabs
- Marconi
- Lucent
- Nokia
- Huawei
- Fujitsu
- Ciena
- Cisco
- Juniper
- Checkpoint
- Cramer
- Metasolv
- SAP
- Xtera
- Voyence

New and updated versions are developed and deployed on a quarterly basis.

IBM Tivoli Netcool OMNIbus Probe

Tivoli software

What are Probes?

- **Probes are software components used to collect event information and send it to the ObjectServer.**
- **Probes enable the ObjectServer to be independent of the systems or devices being monitored.**
  - Over 300 types of probe
  - Both generic and vendor-specific probes exist
- **Probes can modify and enrich event information**
  - Use additional information from lookup tables
  - Perform arithmetic functions
- **Probes are resilient**
  - Reliable TCP connection
  - Store and forward functionality (SAF)
  - Automatic fail-over to alternate ObjectServer

What are Probes? (continued)

- **The ObjectServer obtains most of its event data via the probes**
  - Event data may be also obtained via Automations, Tools, Gateways or SQL
- **Every probe comprises a binary, a rules file and a properties file:**
  - *Probe binary* retrieves and tokenises event streams, and sends the event to the ObjectServer.
  - Interpreted *rules file* used to populate the field values within alerts.status
  - *Properties files* determine the run-time settings of the probe.

Netcool Omnibus Probes

- Collection
  - Source-specific code for integrating with 3rd party systems and event synchronisation
    - Standard protocols: SNMP, Syslog, ODBC, 3GPP…
    - Custom message formats: Socket, Logfile
- Proprietary/API: Many Vendors
- Normalisation
  - Common code for rules-based event processing:
    - Normalisation
    - Enrichment
    - Human Readability
    - Pre-classification for ObjectServer Correlation and Netcool processing

Types of Probes

- Device
- Log file
- Database
- API
- CORBA
- Miscellaneous
- Security

Netcool Omnibus Probes – Rules File Example

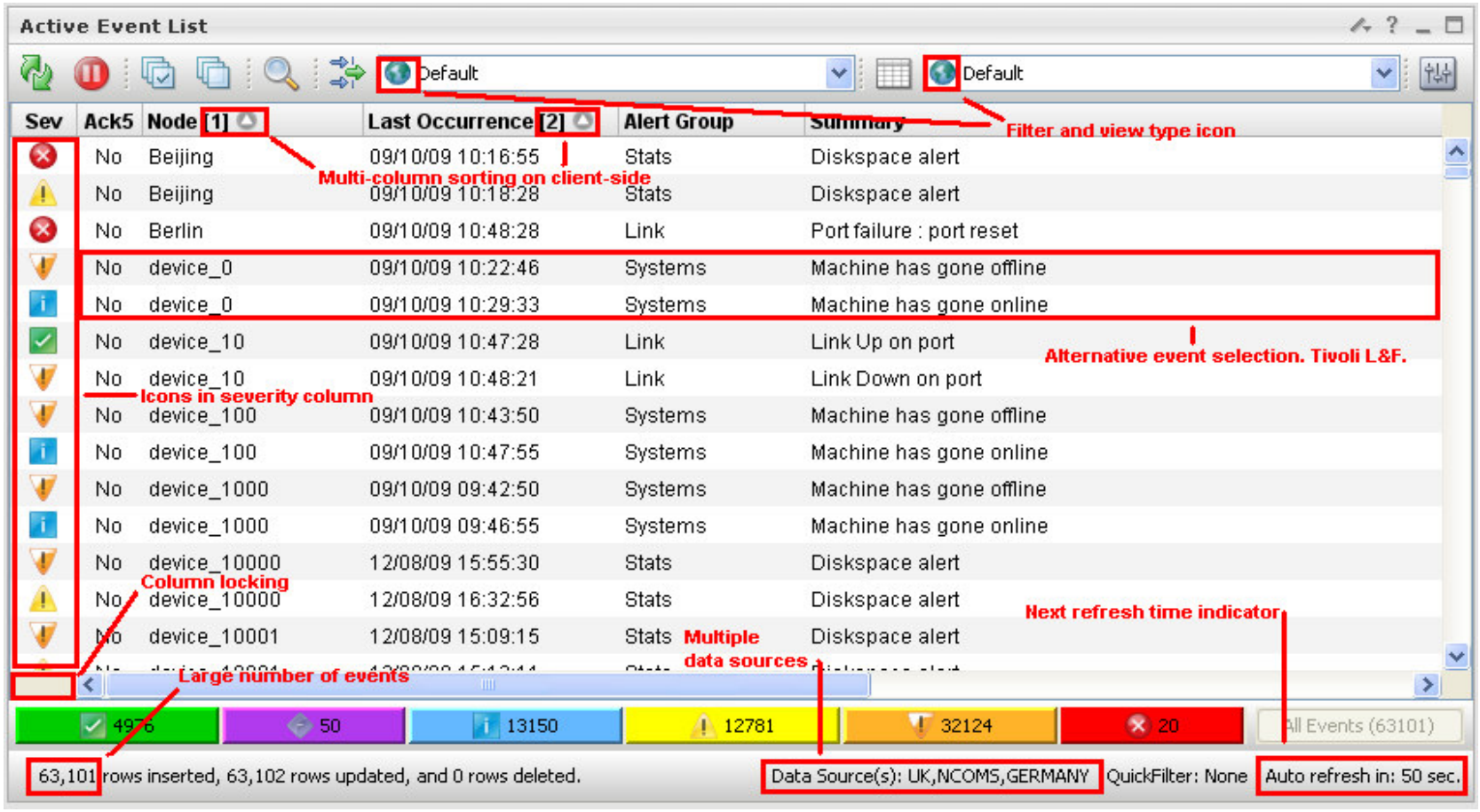
```
if( match( @Manager, "ProbeWatch" ) )
{
        switch(@Summary)
        {
        case "Running ...":
                @Severity = 1
                @AlertGroup = "probestat"
                @Type = 2
        case "Going Down ...":
                @Severity = 5
                @AlertGroup = "probestat"
                @Type = 1
        default:
                @Severity = 1
        }
        @AlertKey = @Agent
        @Summary = @Agent + " probe on " + @Node + ": " + @Summary
}
else
{
                        @Manager        = "Simnet Probe"
                        @Class                          = 3300
                        @Node                           = $Node
                        @Agent                          = $Agent
                        @AlertGroup     = $Group
                        @Summary        = $Summary
                        @Severity       = $Severity
                        @Identifier     = $Node + $Agent + $Severity + $Group

                        if (nmatch($Summary, "Port failure"))
                        {
                                        @AlertKey = $PortNumber
                        }
                        else if (nmatch($Summary, "Diskspace"))
                        {
                                        @AlertKey = $PercentFull + "% full"
                        }

                        if(regmatch($Summary, ".*Down.*")){
                                        @Identifier = "Down" + @Identifier
                                        @Type = 1
                        }
                        if(regmatch($Summary, ".*Up.*")){
                                        @Type = 2
                        }
}
```

- Base Fields
  - Identifier
  - Severity
  - Node
  - AlertGroup
  - AlertKey
  - Summary
  - Agent
  - Type

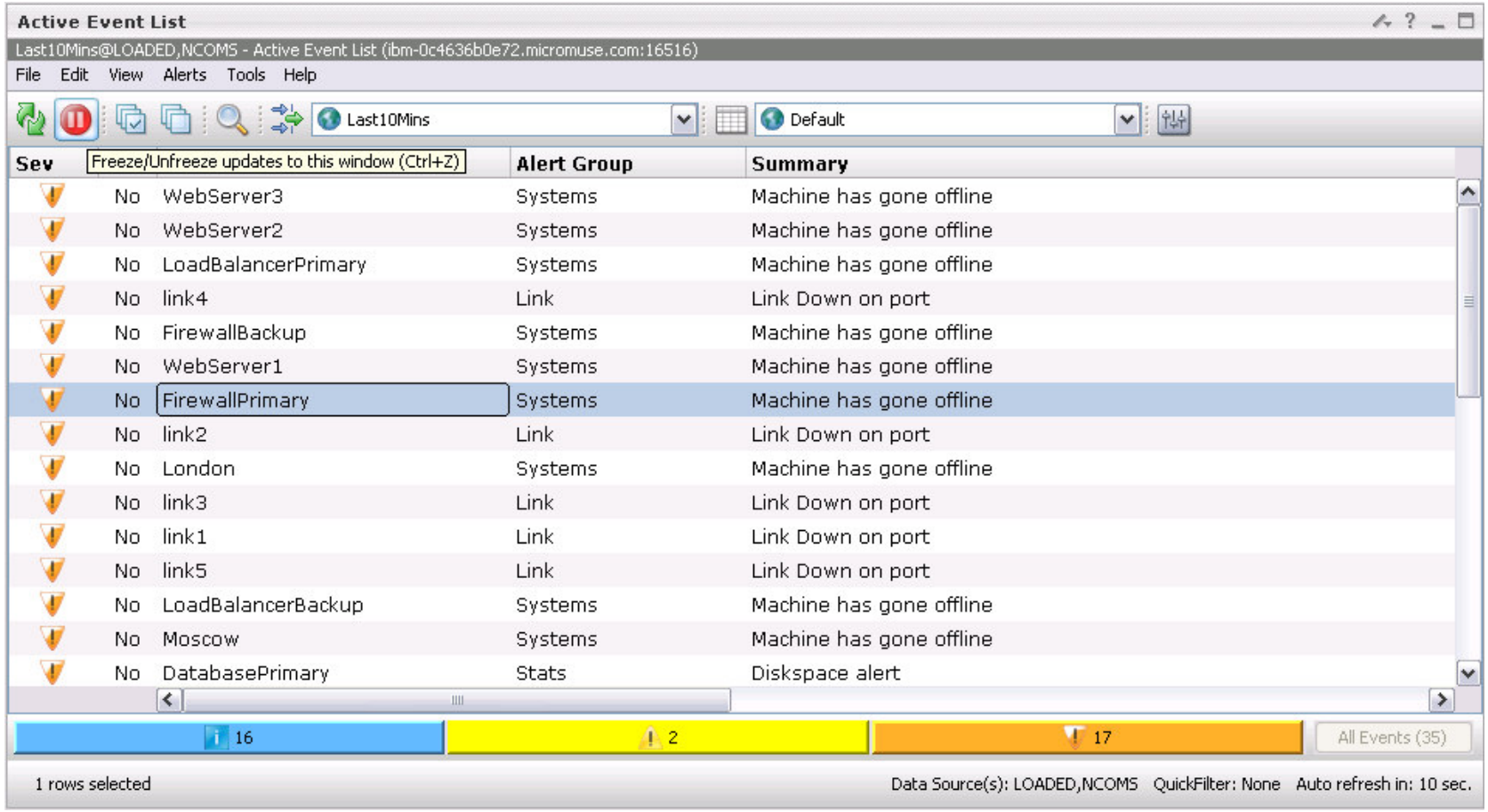
IBM Tivoli Netcool/OMNIbus Web GUI

Tivoli software

AEL Features

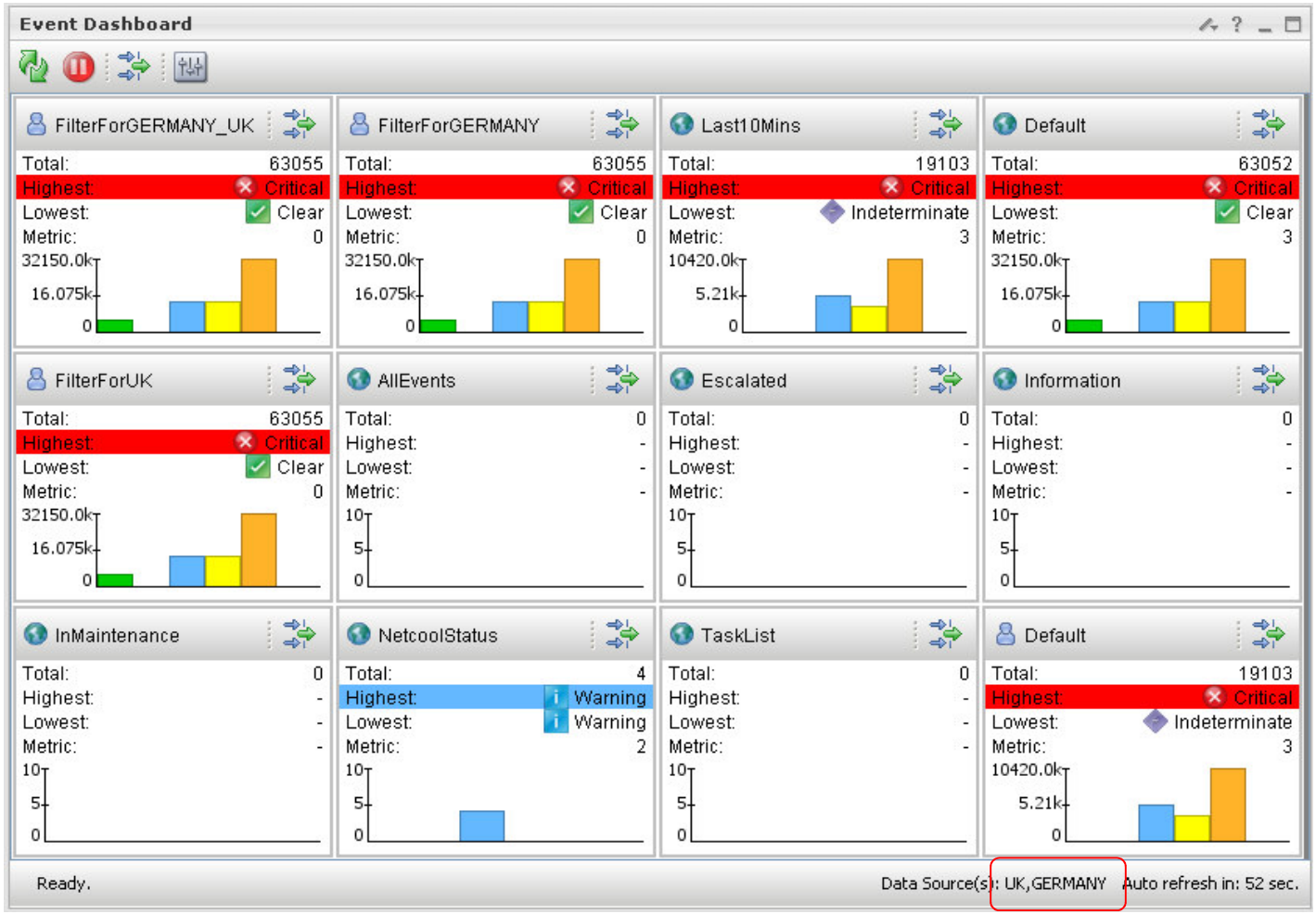


Active Event List – ‘Tivoli Enterprise Console’ Style Look and Feel

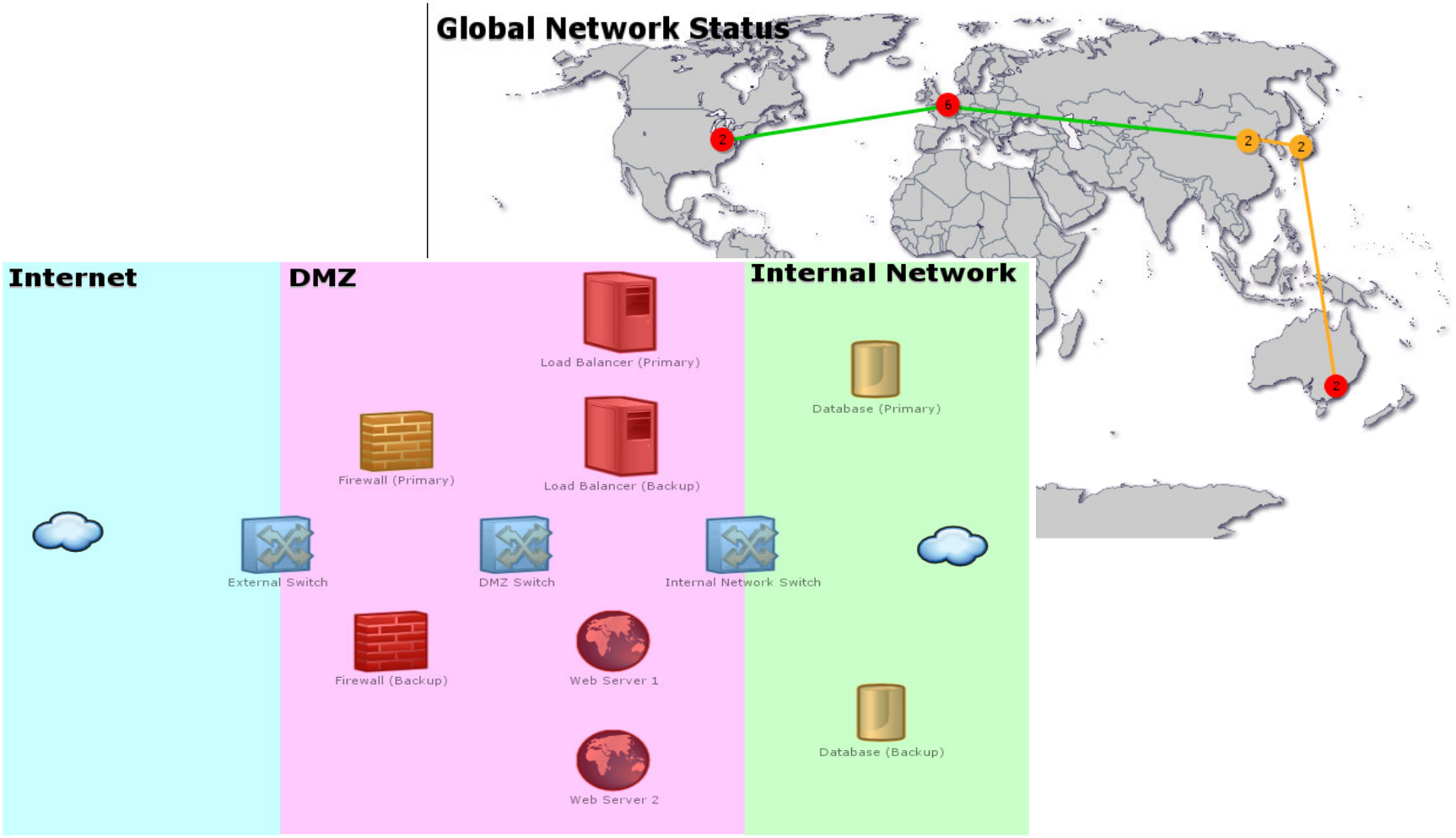


Event Dashboard

Event Dashboard



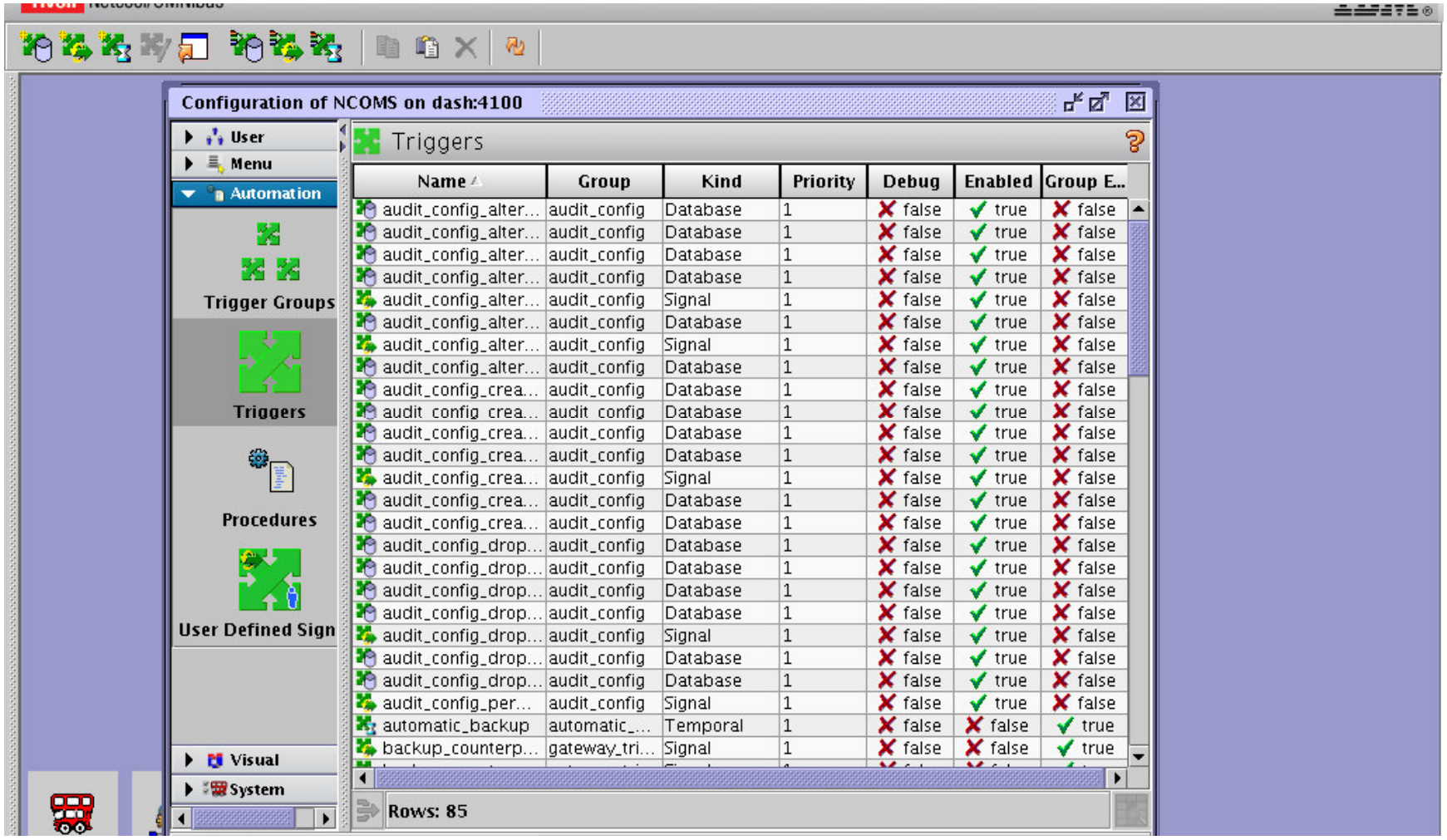
Map Refresh



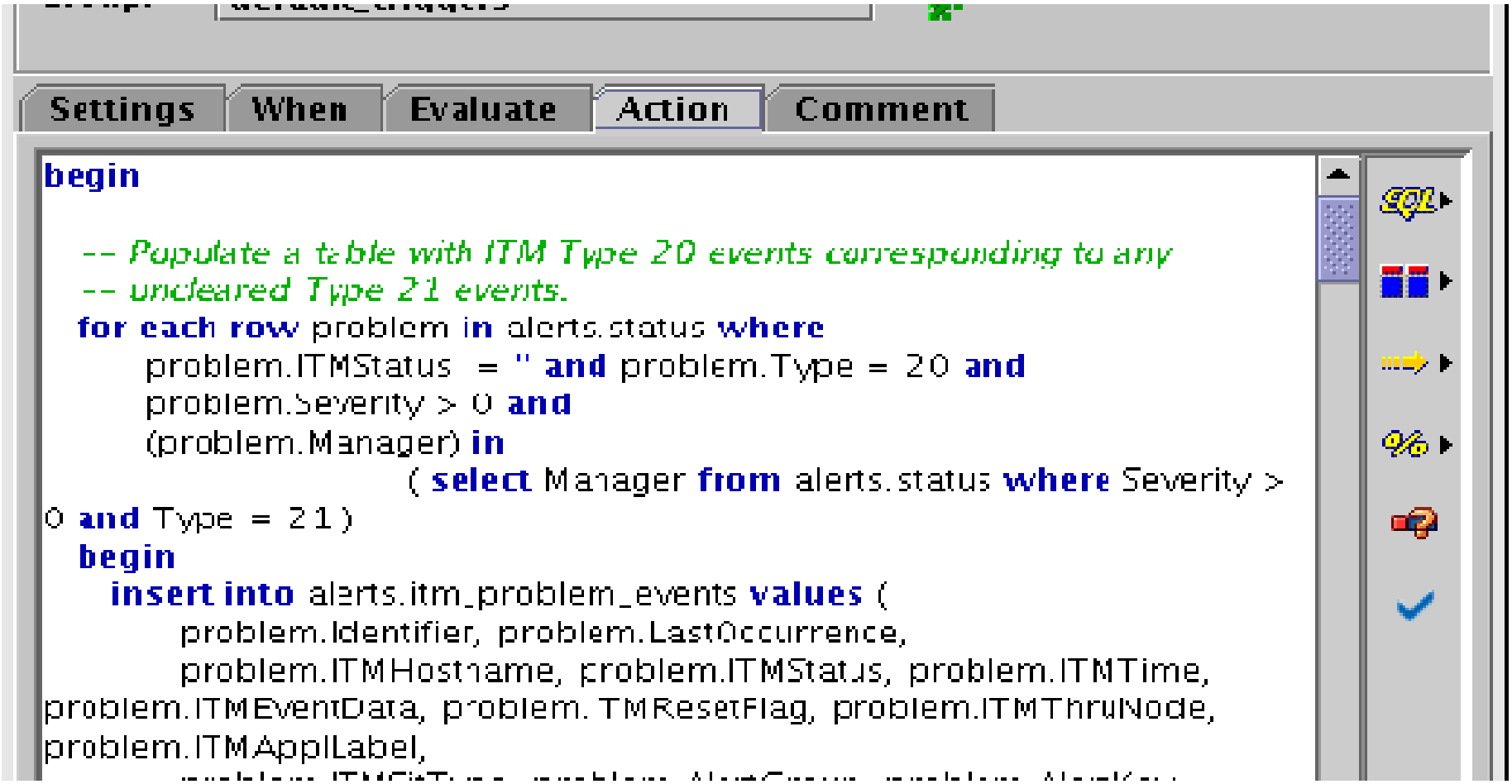
Event Triggers for Automation

Tivoli software

Clear Event Trigger



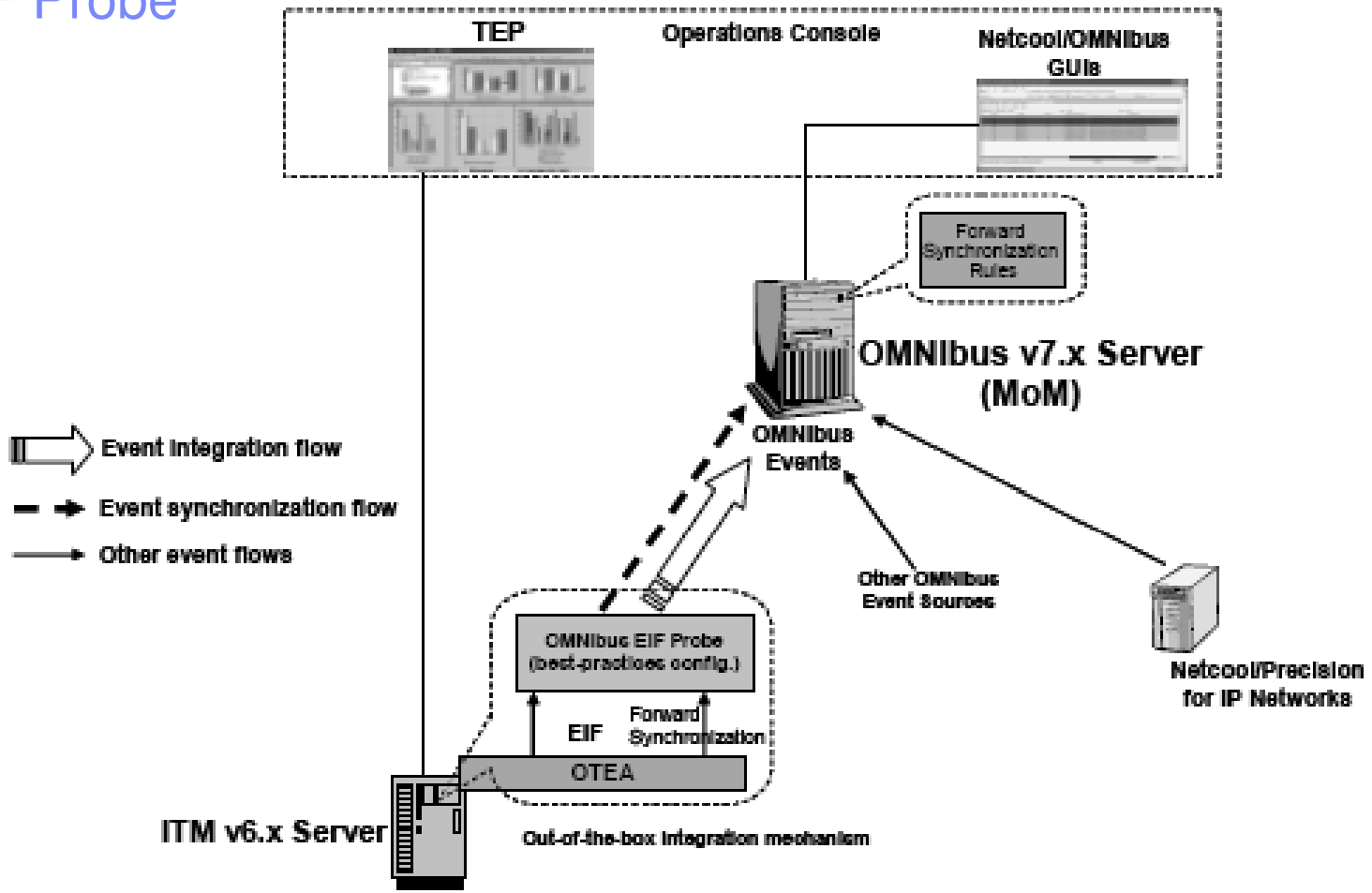
Trigger Language



Event Clear Trigger and Dashboard Status Update Demonstration

Tivoli software

Tivoli EIF Probe



- Sends Event Integration Facility (EIF) events (Tivoli Enterprise Console Events) to OMNIbus.
- Maps TEC event fields to OMNIbus fields.

What we need for sending EIF events

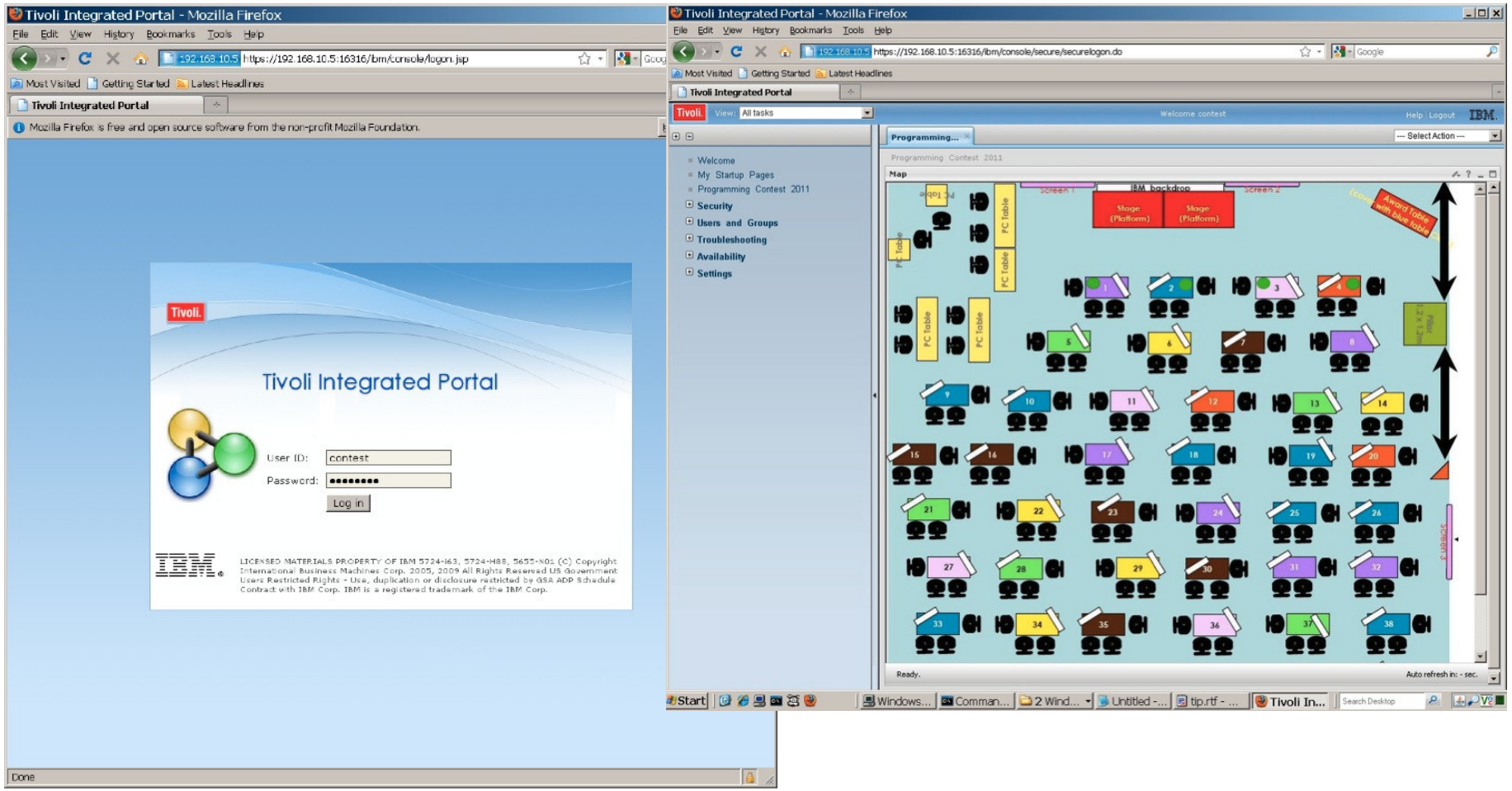
- Postzmsg
- Omnibus IP and receive ports and put it into a config file with the below contents:

```
#
#==========================================================================
# Licensed Materials - Property of IBM
# "Restricted Materials of IBM"
#
# Sample program file showing updates for OMNIbus to allow error
#    events to be sent to EIF probe
#
# (C) Copyright IBM Corp. 2007 All Rights Reserved.
#==========================================================================
#
#
ServerLocation=192.168.10.5
ServerPort=9998
#BufferEvents=NO
BufEvtPath=/tmp/itm_sync_error.cache
#BufEvtMaxSize=4096
```

Syntax for postzmsg

- Create a RED color event:
  - postzmsg.exe –f my.conf –r CRITICAL –m contest EventID=101 situation_name="team1" satuation_status="Y" integration_type="U" situation_origin=team1 situation_displayitem='team1' team1 ITM
- Create a GREEN color for clear event:
  - postzmsg.exe –f my.conf –r CRITICAL –m contest EventID=101 situation_name="team1" satuation_status="N" integration_type="U" situation_origin=team1 situation_displayitem='team1' team1 ITM

Access to Omnibus Web GUI



Lab Guide

- Click -> Start -> Command Prompt
- cd “Desktop\Poly Training\Dashboard Lab”
- sendevent team<your team no.>
  - E.g.: sendevent team1


Questions
&
Answers