Leveraging Tivoli Enterprise Portal & Advanced Learning Concepts

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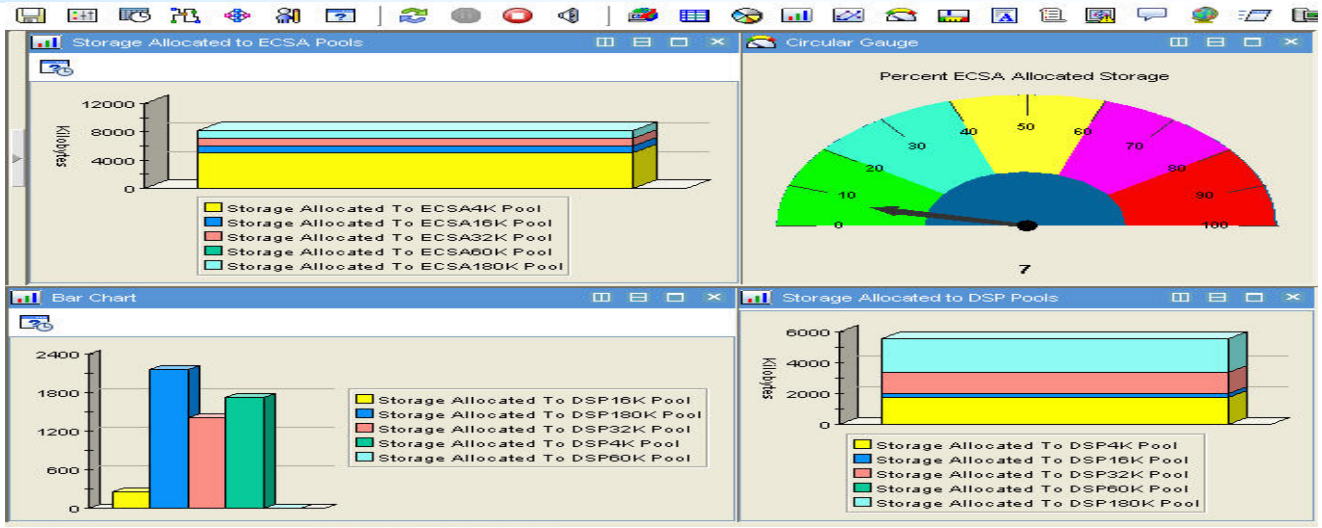
What is the TEP?

Tivoli Enterprise Portal (TEP)

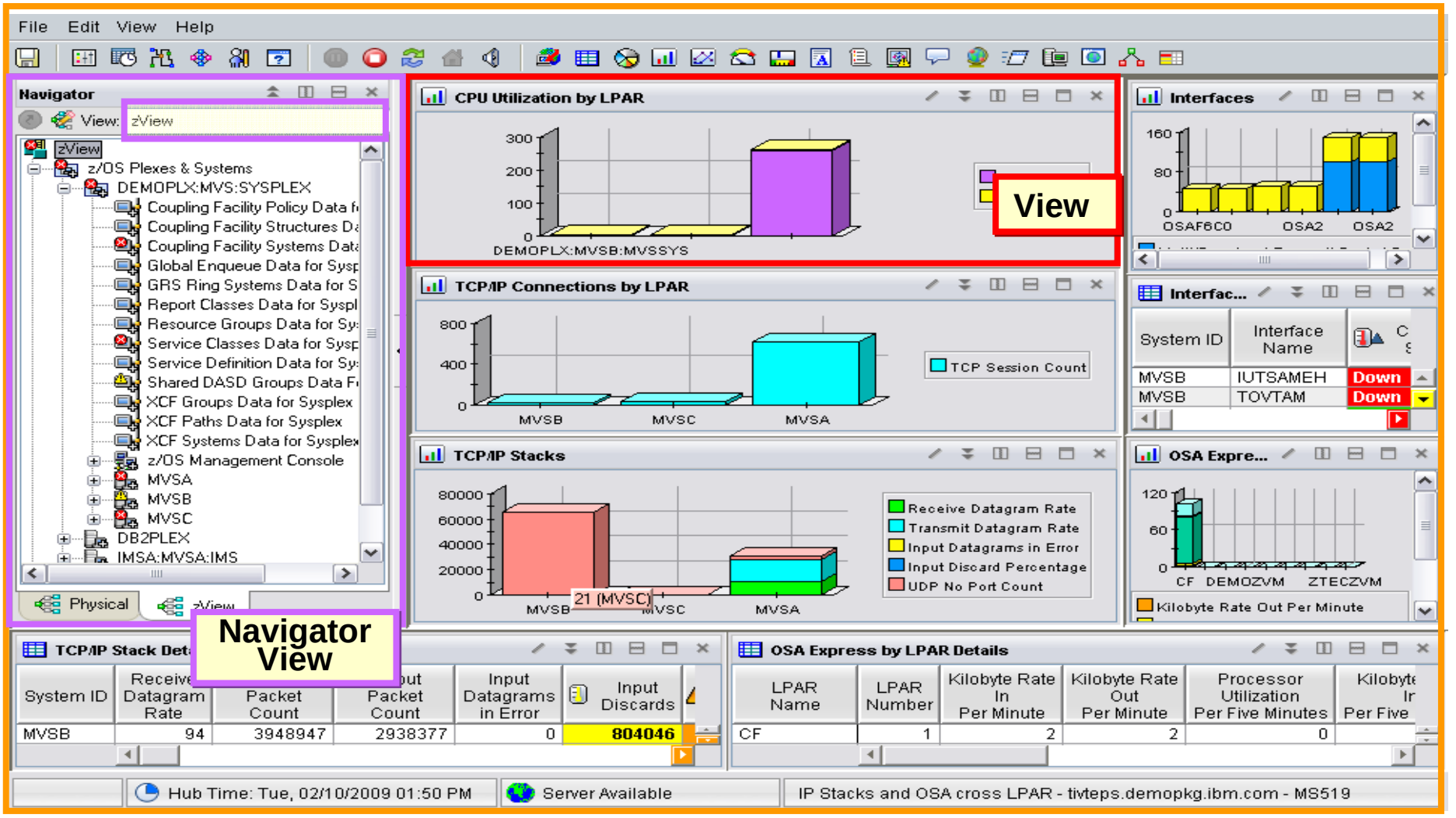
Common user interface

- Manage z/OS and distributed resources from a single browser interface.
- Displays data in graphs, charts and table formats
- View real time and historical data, at the same time

- Easy to configure, right from the TEP
- Out of the box Best Practices
- Workspaces, Situations, and Expert Advice



TEP - Terminology

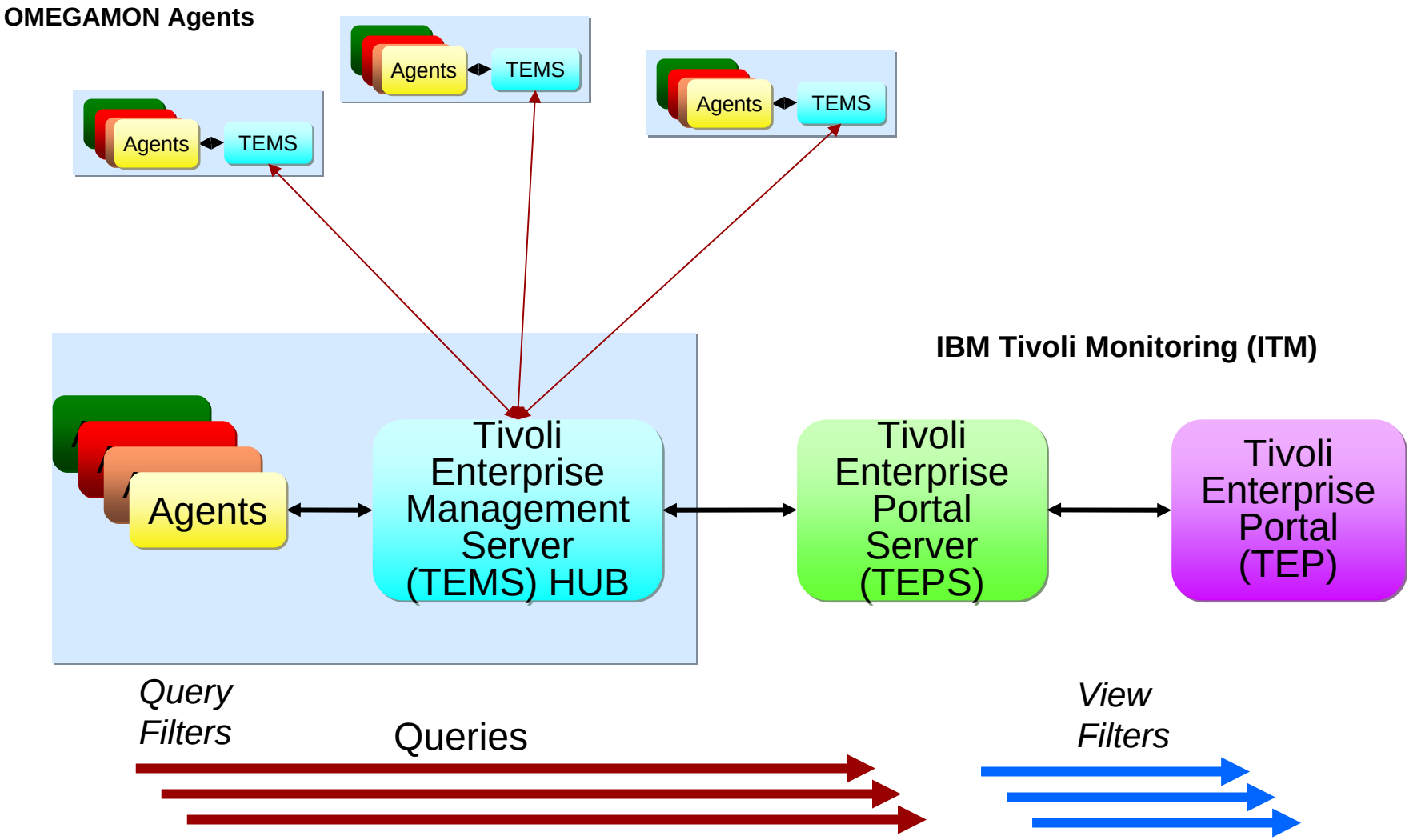


Integrated with the TEP

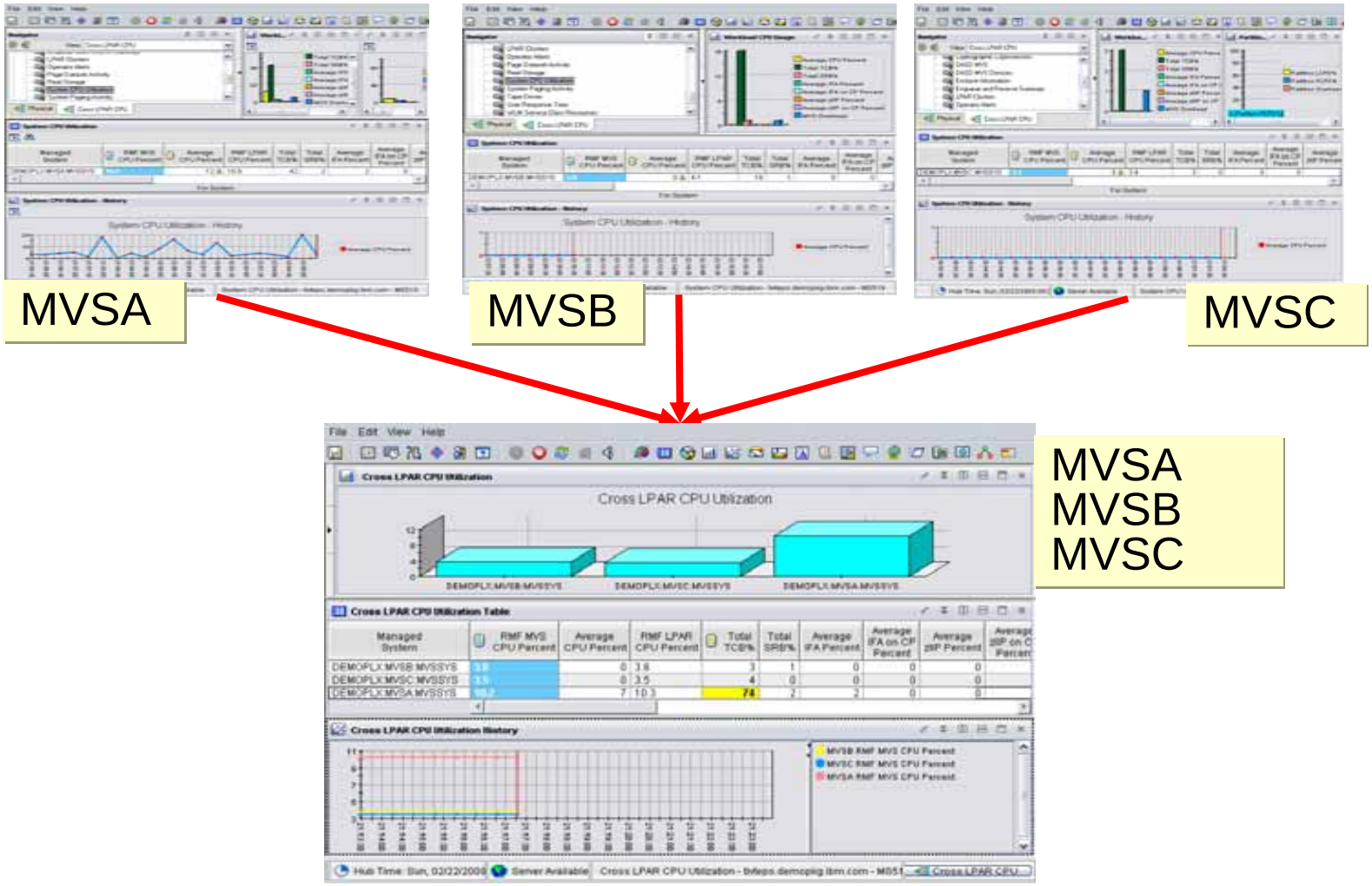
z/OS Health check	*z/OS Management Console (included with z/OS)*
z/OS & USS	*OMEGAMON XE on z/OS*
NetView for z/OS	*IBM Tivoli NetView for z/OS V5.3*
Network	*OMEGAMON XE for Mainframe Networks*
DB2	*OMEGAMON XE for DB2 PE/PM*
CICS	*OMEGAMON XE for CICS*
IMS	*OMEGAMON XE for IMS*
Storage	*OMEGAMON XE for Storage*
WebSphere MQ	*OMEGAMON XE for Messaging*
WebSphere Appl Server	*ITCAM for WAS*
z/VM & Linux on z	*OMEGAMON XE on z/VM and Linux*
Distributed Monitoring	*IBM Tivoli Monitoring (ITM) & ITCAM*
Automation	*SA for z/OS*
DFSMS Audit	*Advanced Audit for DFSMShsm*
Catalog Management	*Advanced Catalog Management for z/OS*
SMF trend analysis Reports	*Tivoli Decision Support for z/OS*

TEP

OMEGAMON XE/ITM Infrastructure



Cross LPAR View - Example



Example: OMEGAMON XE on z/OS Default Physical drill down to see one LPAR at a time

Cross LPAR View – Example

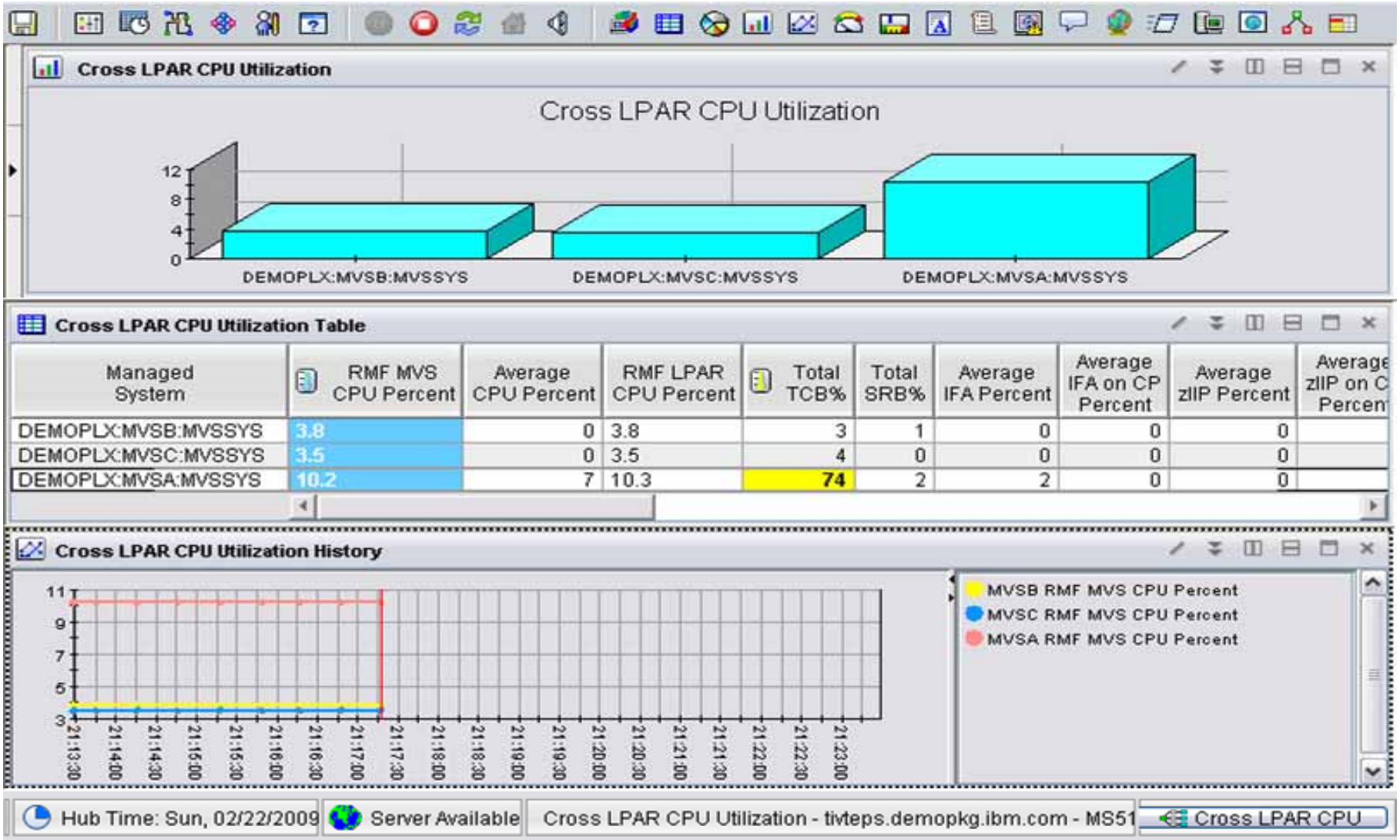
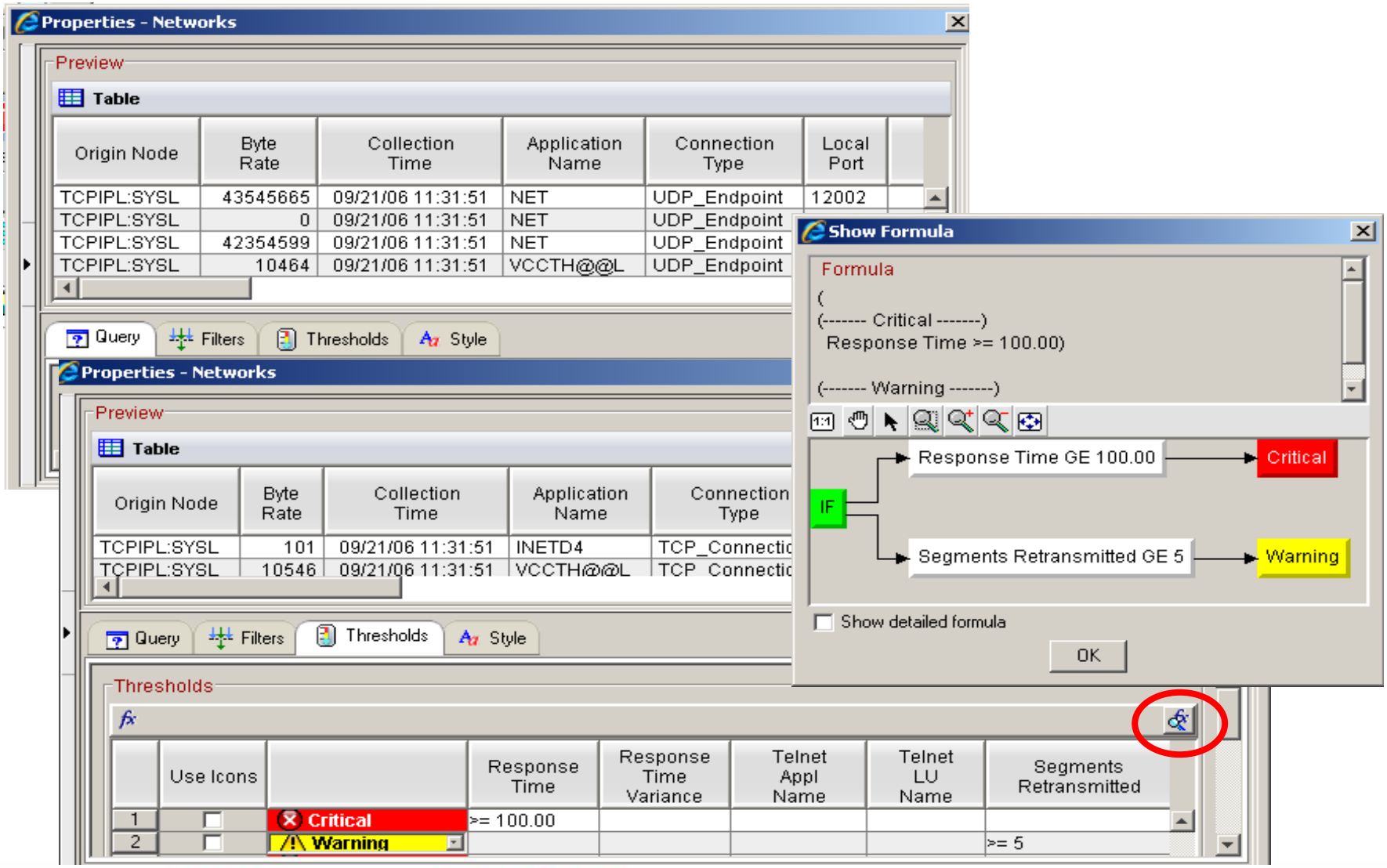
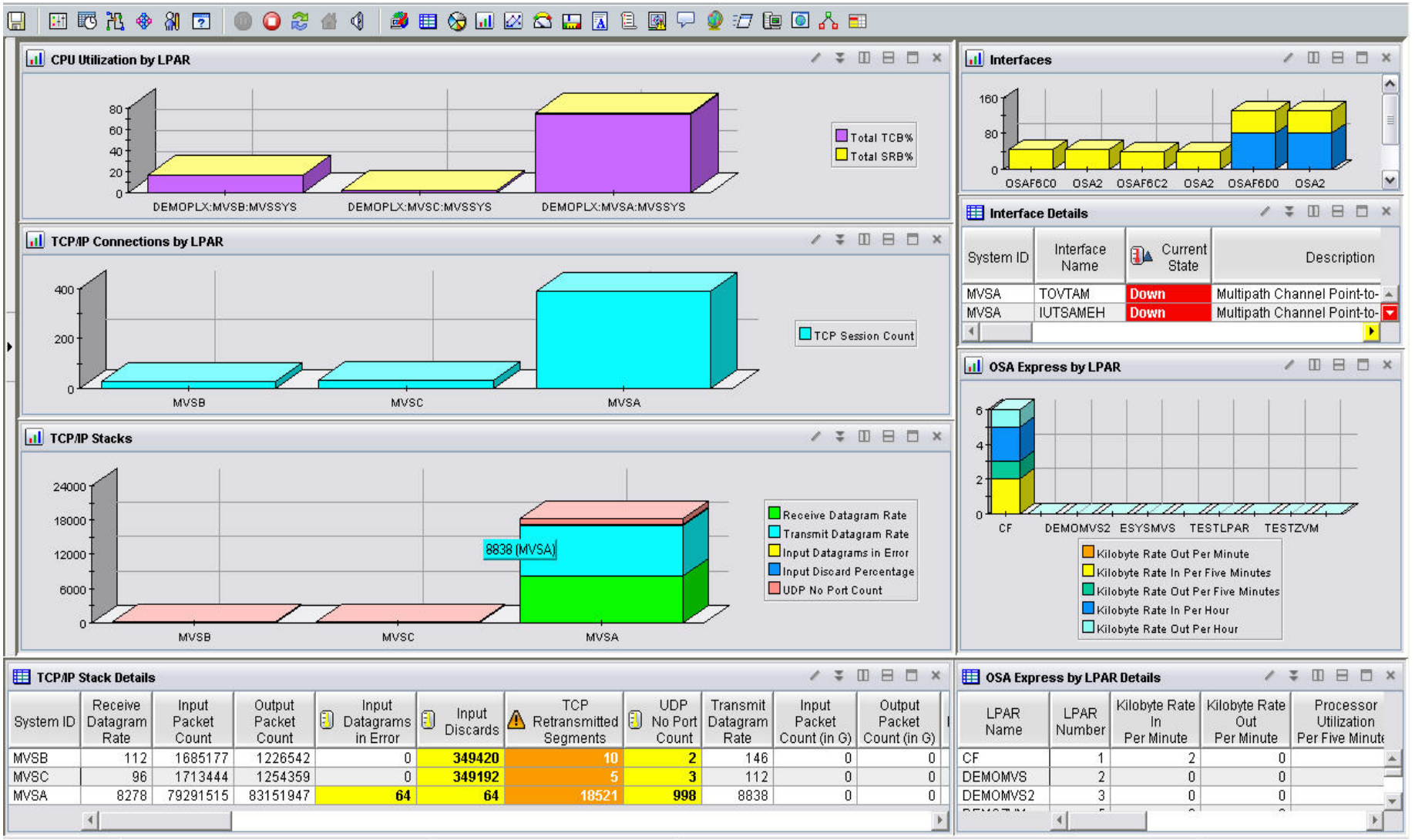


Table Customization – Thresholds



Cross Application Example



Advanced Learning Concepts – Situation Overhead

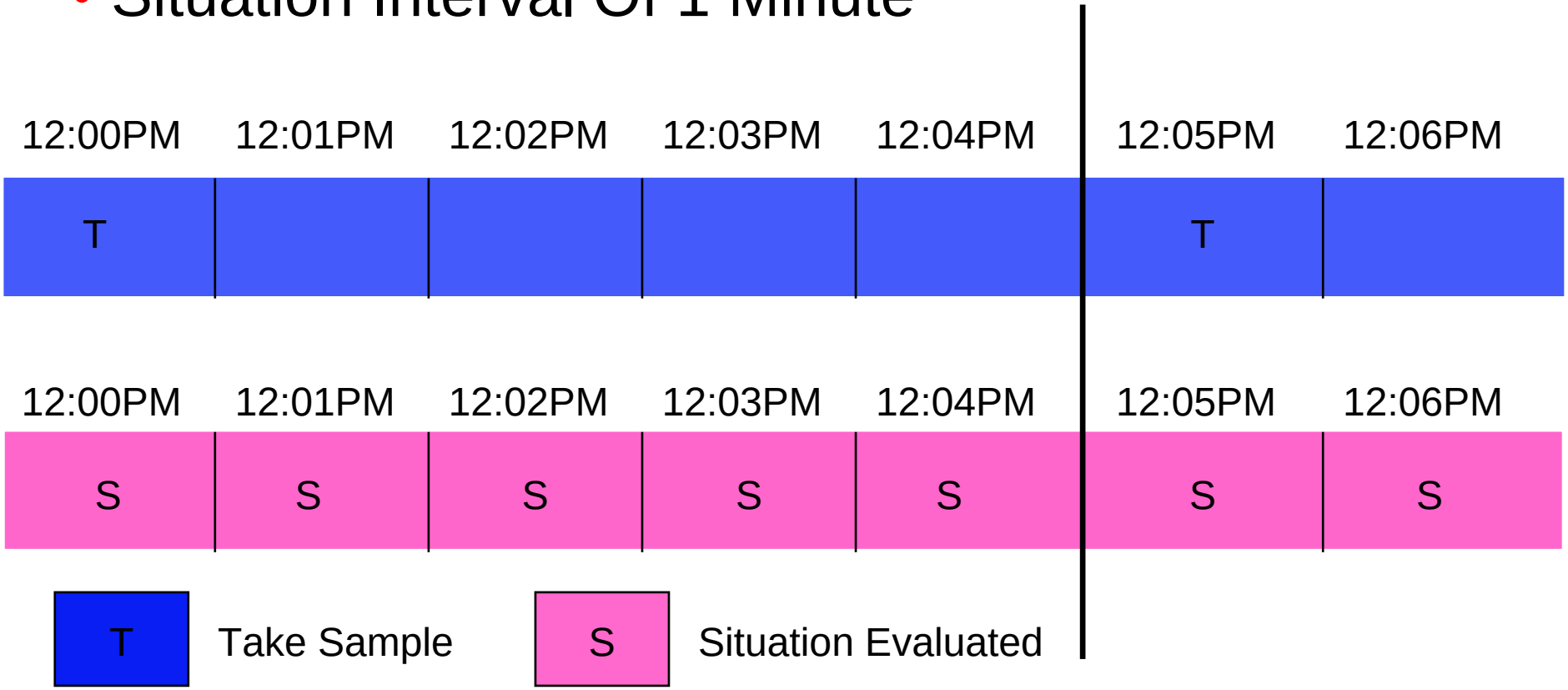
- Situation Monitor (SITMON) Overhead
  - Driven By Number Of Situations & Intervals
  - If A Situation References Any Attribute In A Table, All The Fields Of That Table Are Collected By The Agent
    - Some Tables Are More Expensive To Collect Than Others
      - R&D Rearranges Atributes/Tables For Efficiency
  - Each 'Take Sample' Has An Impact On Performance
    - Performance Impact Varies Depending On Data Collector Type
      - Background Based - OMEGAMON MQ, MFN, Storage
      - Foreground Based - CICS, IMS
      - Mix (Mostly Foreground) - z/OS (WLM), DB2

Advanced Learning Concepts – Situation Overhead

- Background Based Collectors Collect Based On Sampling Interval
  - Sampling Interval Can Be User Defined
    - XE MQ = 60 Seconds
    - XE MFN = 5 Minutes
  - Situations Evaluate Data From The Last 'Take Sample'
  - Situation Intervals Need To Consider Collector Sampling Interval
  - There Is No Sync. Between Collector Start Time And Sit. Eval. Time
  - Same Data Could Be Evaluated More Than Once
  - Situation Impact On Performance Normally Is Less Than A Foreground Based Collector
    - But Products Like XE WBI (i.e. MQ) Can Still Degrade Performance

Advanced Learning Concepts – Background Based Collector

- Assume A 5 Min. Collector Interval
- Situation Interval Of 1 Minute



Advanced Learning Concepts – Situation Overhead

- Foreground Based Collectors Are Driven
  - Based On Situation Intervals
  - Based On Requests From TEP Users
    - It Can Be A Bad Idea To Have Frequent TEP Refresh Intervals
      - Or A User Pressing F5 Constantly
      - Or Reports Which Return Many Rows Refreshed Constantly
  - By UADVISOR (Historical) Data Collection
  - By CUA User Pressing F5 Or Auto Refresh
- 'Take Sample' Can Have A Bigger Impact On Performance
  - Each Take Sample Drives Data Collection From The Managed System

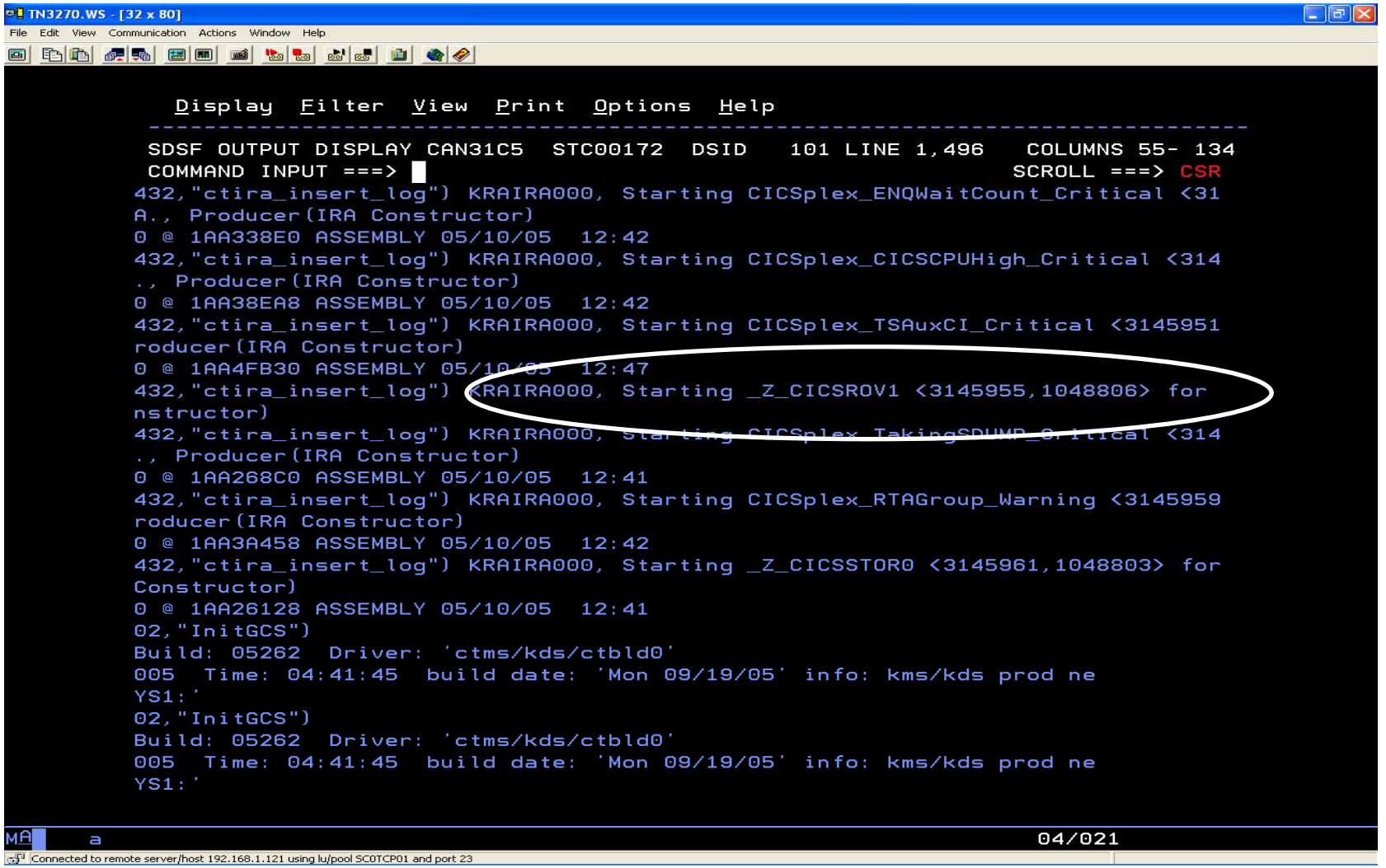
Advanced Learning Concepts – Situation Efficiency

- Situation Efficiency & Synchronization (a.k.a. DUPERIZATION)
  - Process By Which Multiple Situations Use The Same 'Take Sample'
    - One Take Sample Will Gather Data For Multiple Situations
  - Objective Is To Reduce The Number Of 'Take Samples'
  - DUPERIZED Situations Are Identified By Name Of _Z_ …
    - For Example _Z_CICSROV1
    - KRAIRA000 Message In IRA's (Or TEMS) RKLVLOG
  - Number Of Predicates In A Single DUPERIZED Situation Is About 7 to 10
    - If You Create A Situation With Many Predicates It will Most Likely Not Be DUPERIZED
  - For A Situation To Be DUPERIZED There Are Several Conditions

Advanced Learning Concepts – DUPER Eligibility

Same Attribute Group Required	**Y**
Same Interval Required	**Y**
Can Be Restarted	**Y**
Must Be AUTOSTARTED Exception : UADVISOR	**Y**
Combine Situations With Different Distribution Lists	**Y**
Maximum 10 Predicates	**Y**
New/Update Situation (Requires TEMS Restart)	**N**
UNTIL Clause Allowed	**N**
Display Item Allowed	**N**
Take Action Allowed	**N**
MISSING Function Allowed	**N**
STR/SUBSTR And SCAN Allowed (ITM6.2 Removes Restriction)	**N**
Group Functions (MIN, MAX, SUM, AVG, COUNT) Allowed	**N**
Event Persistent Situations Allowed	**N**

Advanced Learning Concepts – Situation Efficiency



Advanced Learning Concepts – Predicate Order

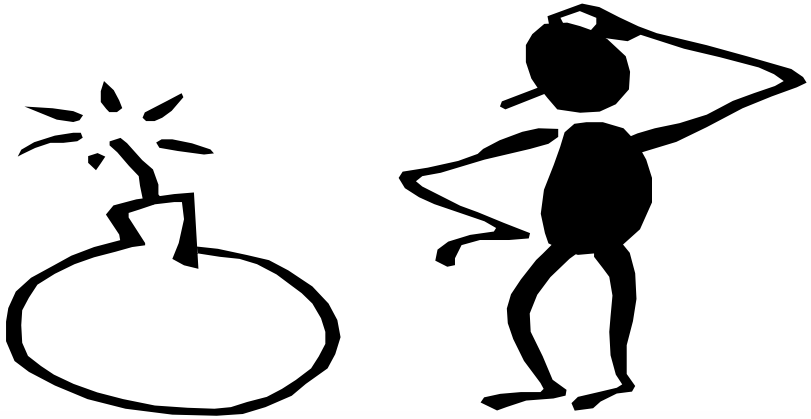
- Predicates Are Evaluated From Left To Right
- Numeric Attributes Are Processed Much Faster Than Text Attributes
- It Is Good Practice To List The Most Restrictive Predicate FIRST

  – IF QDEPTH EQ 0 AND QNAME EQ “TEAM2.APPL.QUEUE”

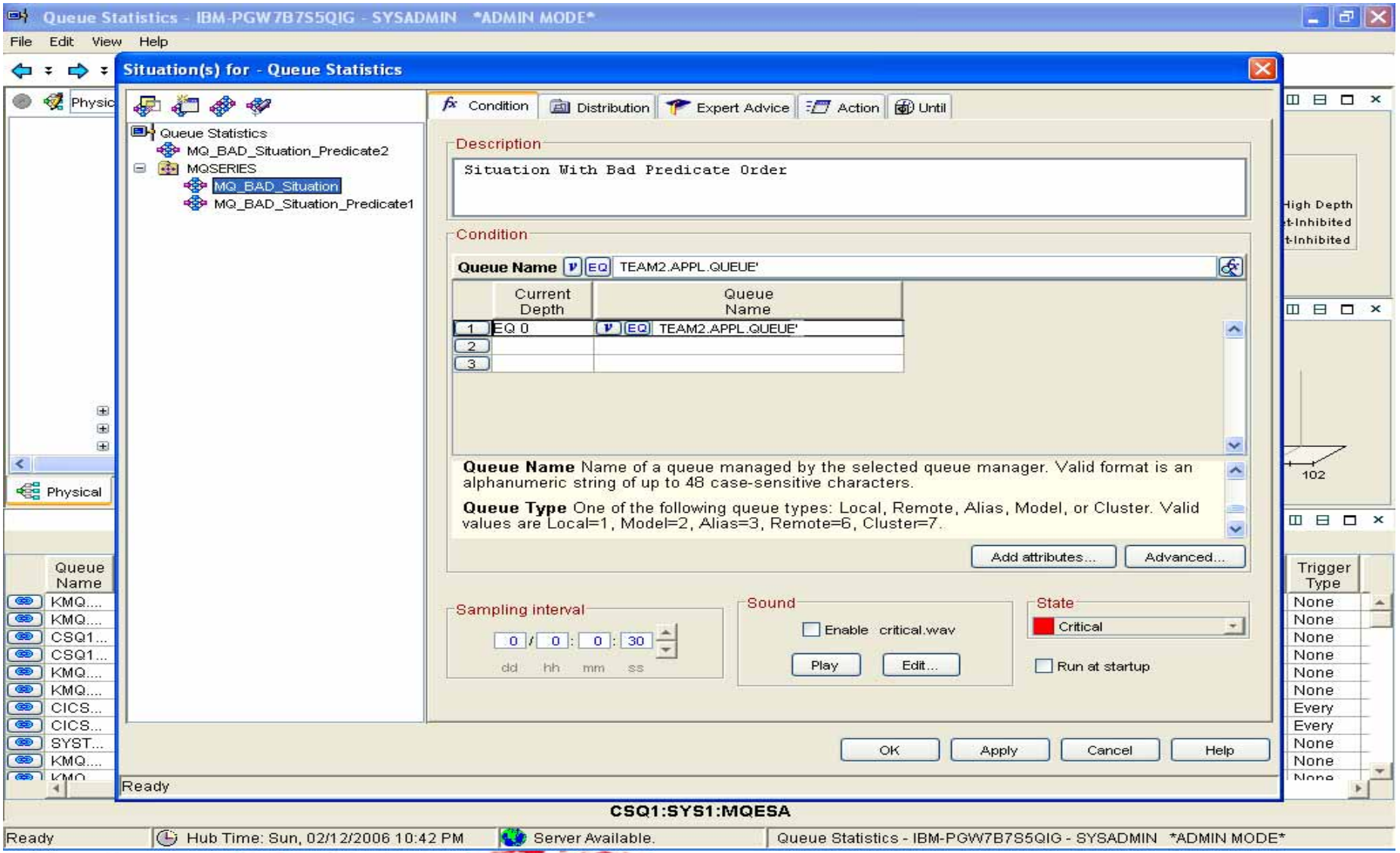
  Can Be Re-written As

  – IF QNAME EQ “TEAM2.APPL.QUEUE” AND QDEPTH EQ 0

- The First Situation Will Return Many More Rows To Be Evaluated For The Second Predicate



Advanced Learning Concepts – Predicate Order



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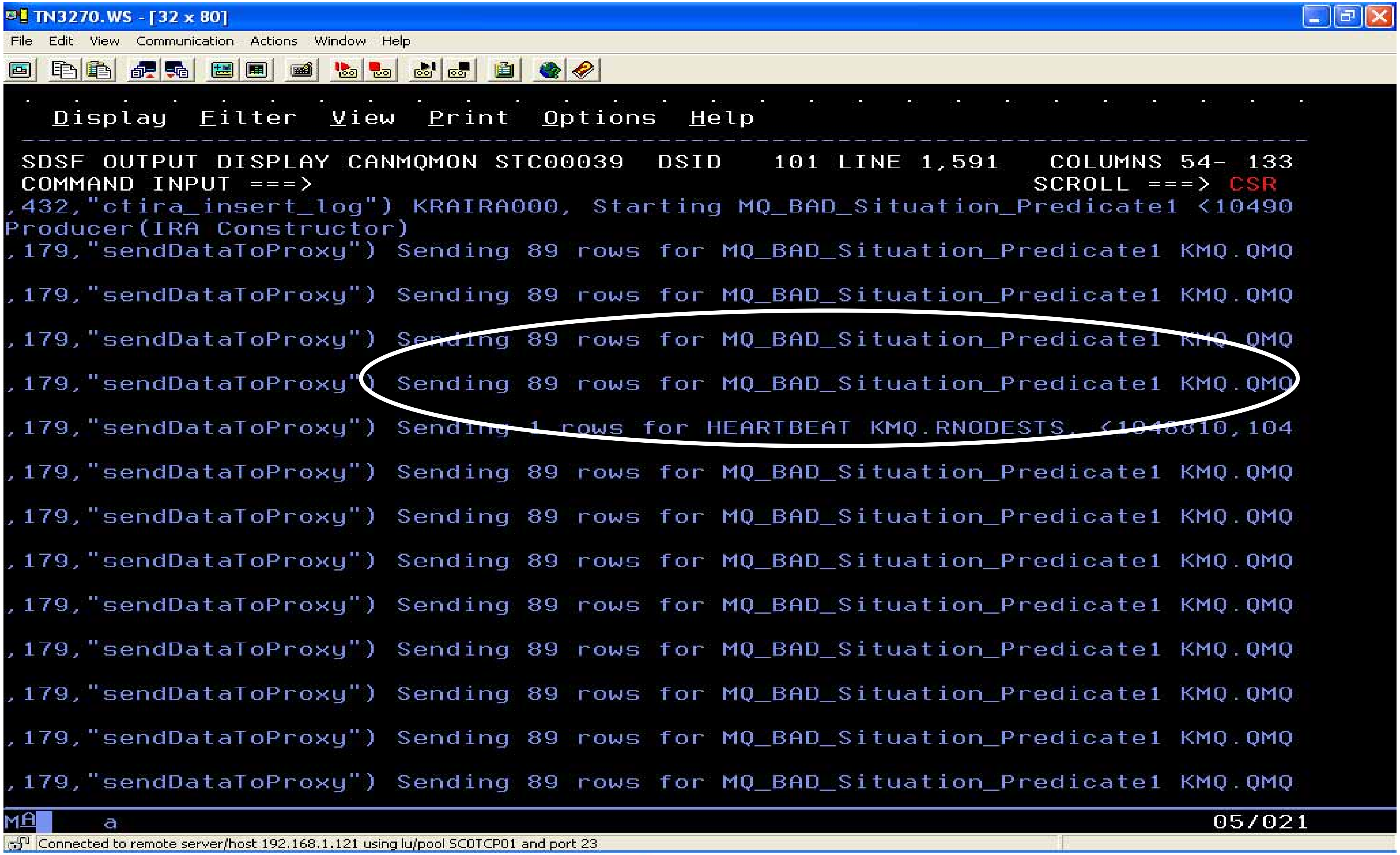
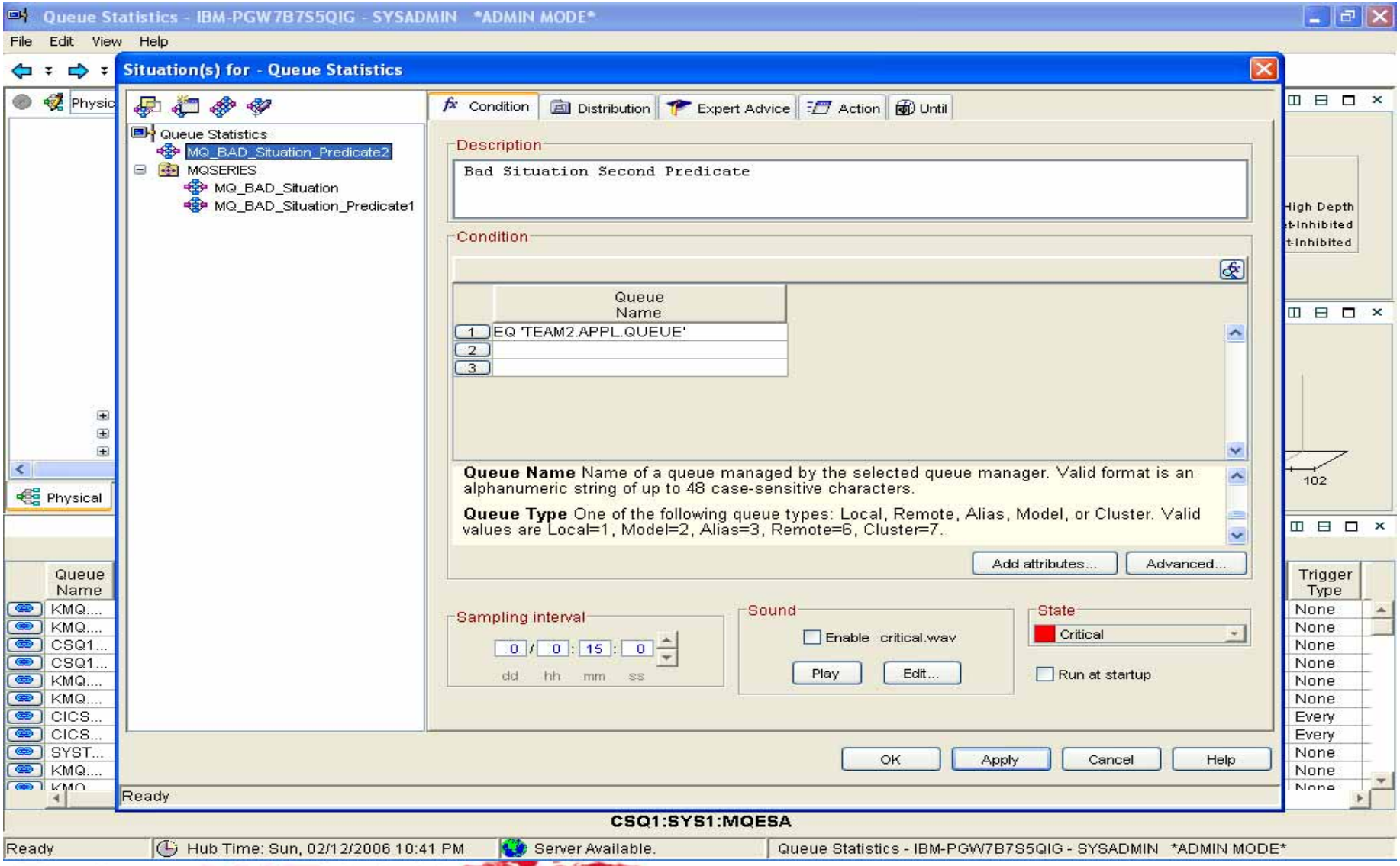


Advanced Learning Concepts – Predicate Order



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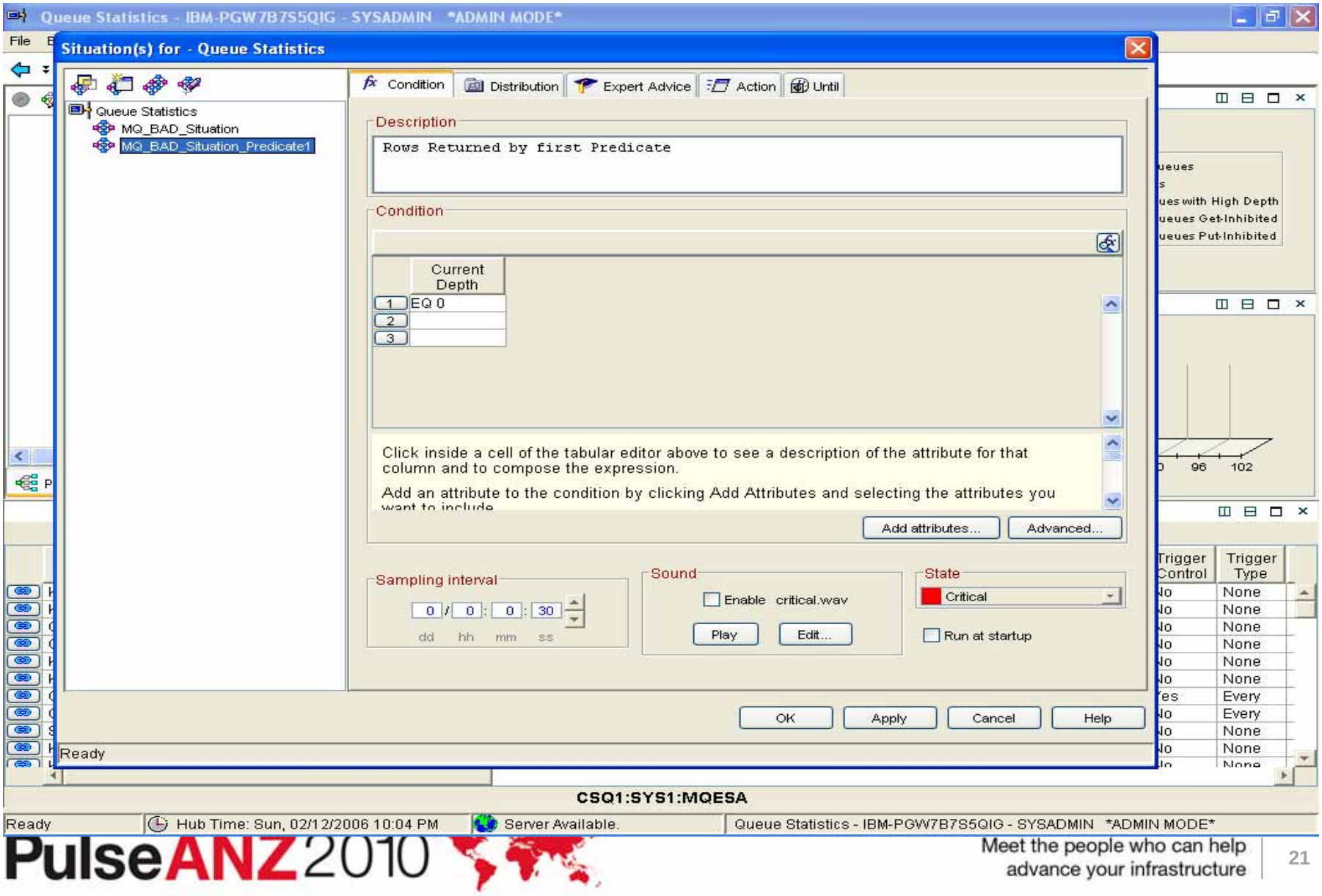
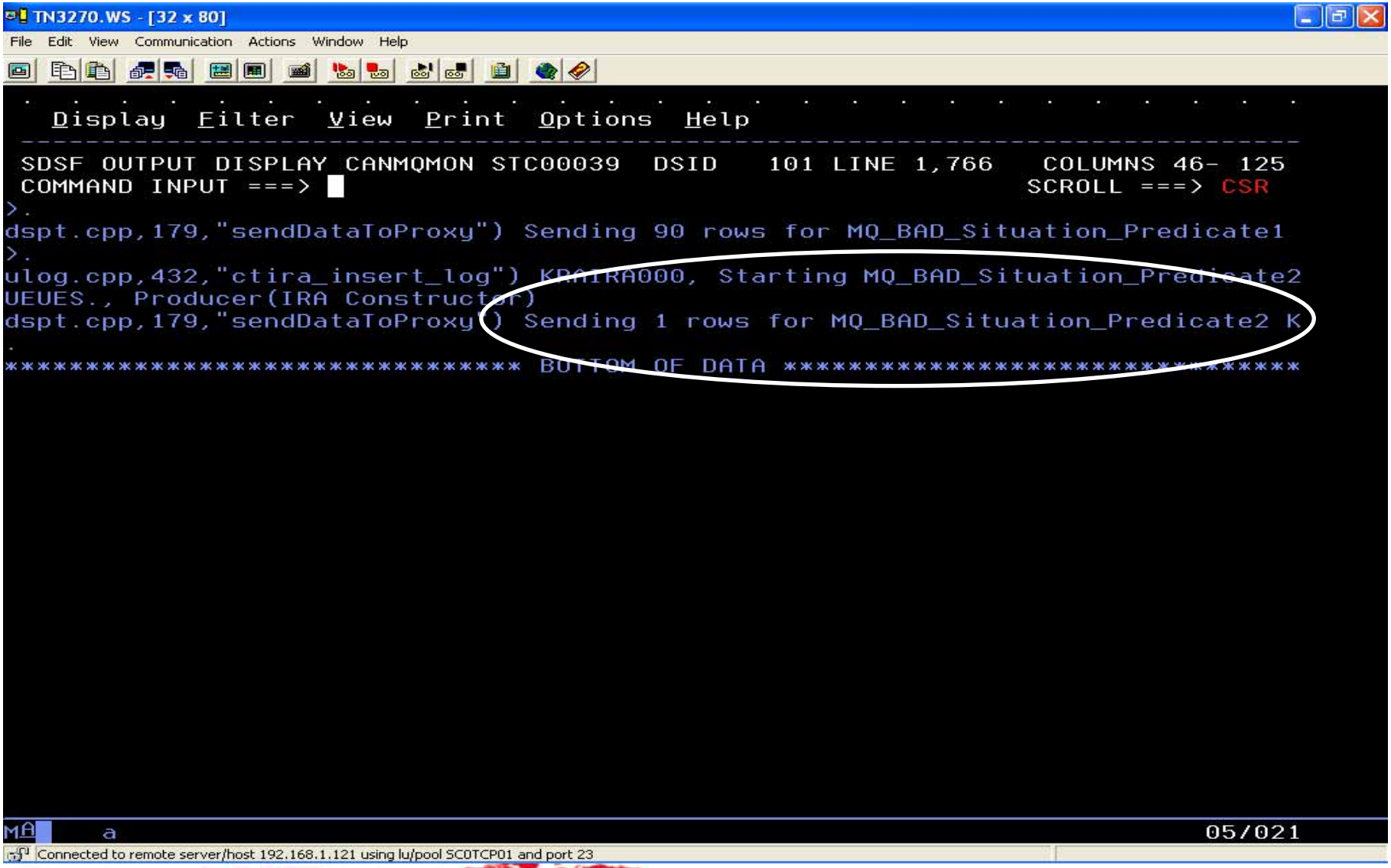


Advanced Learning Concepts – Predicate Order



Advanced Learning Concepts – Predicate Order

- It Is Good Practice To List The Most “Expensive” Test Predicate Last

  – IF QNAME EQ “1,PROD.” AND QDEPTH GT 0

  Can Be Re-written As

  – IF QDEPTH GT 0 AND QNAME EQ “1,PROD.”

- In This Situation We Obviously Don’t Care For PROD* Queues Where QDEPTH = 0, But The First Sit. Will Still Gather Them Up.

- STR/SUBSTR Predicate Listed Last For Max. Efficiency

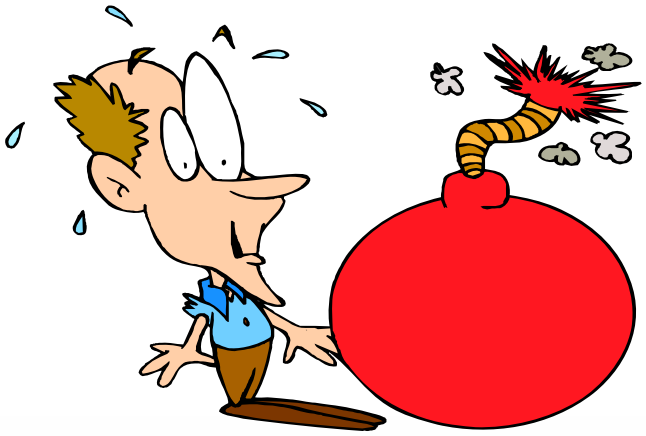
In Summary, What Are Inefficient Situations?

- Situations That Are Not DUPER Eligible
- Situations The CMS Has To Evaluate Regardless Of Predicate Order
  - Functions Also Make Them DUPER Ineligible
  - MISSING
  - COUNT
  - MIN, MAX
  - AVERAGE
  - SUM

- And Functions That Cause Excessive IRA Overhead
  - STR (SUBSTR) – Much More Efficient Than SCAN
  - SCAN – STR/SCAN Still Duper Ineligible CMVC Opened
- Situations That Use Bad Predicate Order
- …This Is NOT A Complete List

Advanced Learning Concepts – Situation Distribution

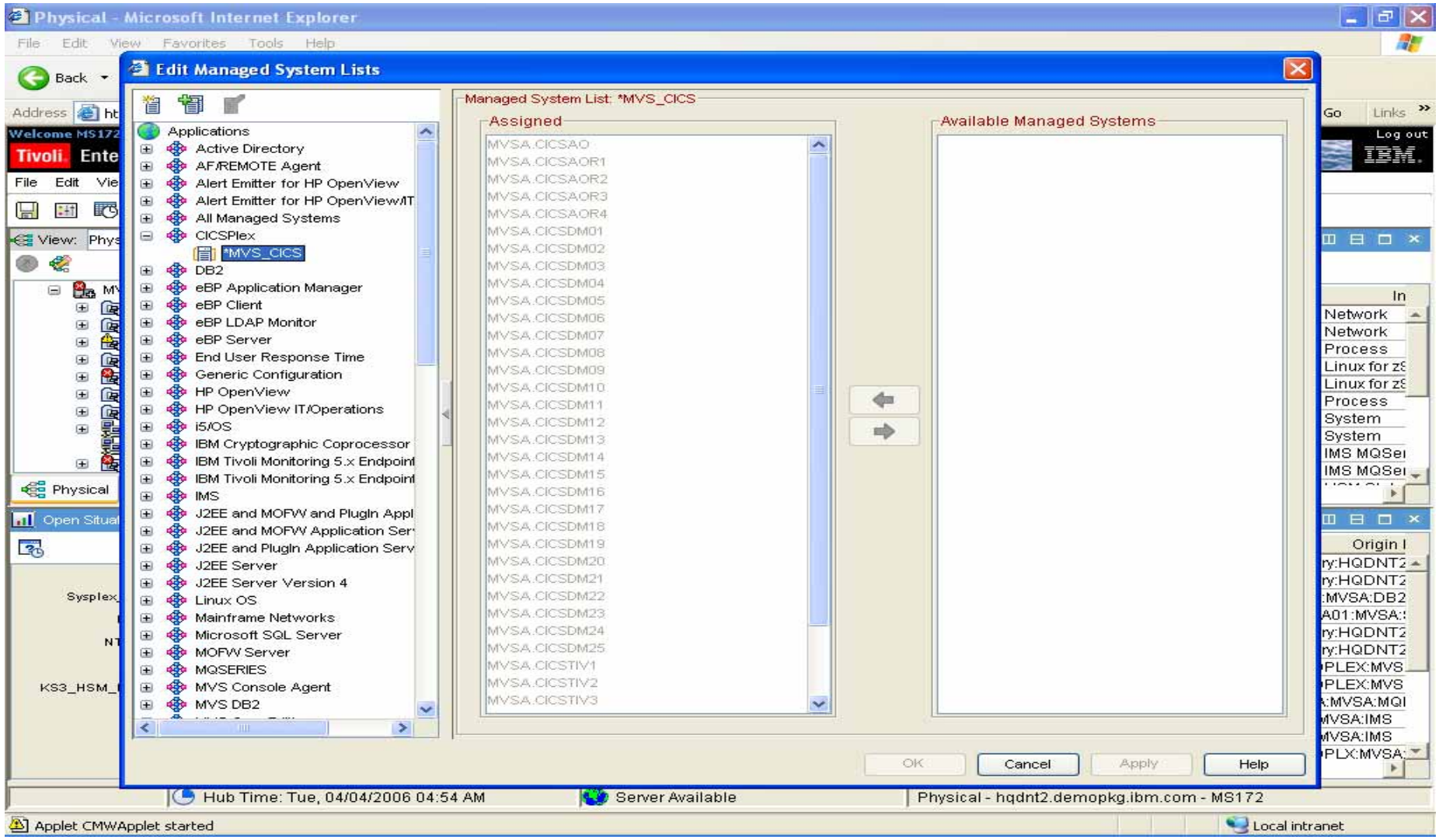
- Managed System Lists – TEMS Startup Overhead
  - Some OMEGAMON Agents Have Sub-Nodes (MQ On z/OS, CICS & DB2)
    - One Agent Monitors Multiple Instances Of A Subsystem
  - OMEGAMON XE CICS Automatically Discovers All CICS Regions
    - Unless Configured Otherwise
  - All Discovered Regions Added To The *CICS Managed System List
  - *CICS Is In The Distribution List For All Product Provided Situations
  - XE CICS Has Over 200 Product Provided Situations



Advanced Learning Concepts – Situation Distribution

- Managed System Lists – TEMS Startup Overhead
  - At Startup TEMS Must Distribute All *CICS Situations To Each IRA
    - Regardless If They Are Auto Started Or Not
  - Situations Are Distributed So They Appear On The TEP Navigator view
    - Associated With The Correct Leaf
  - This Increases HUB TEMS Startup Time & Consumes Additional CPU

Advanced Learning Concepts – Situation Distribution



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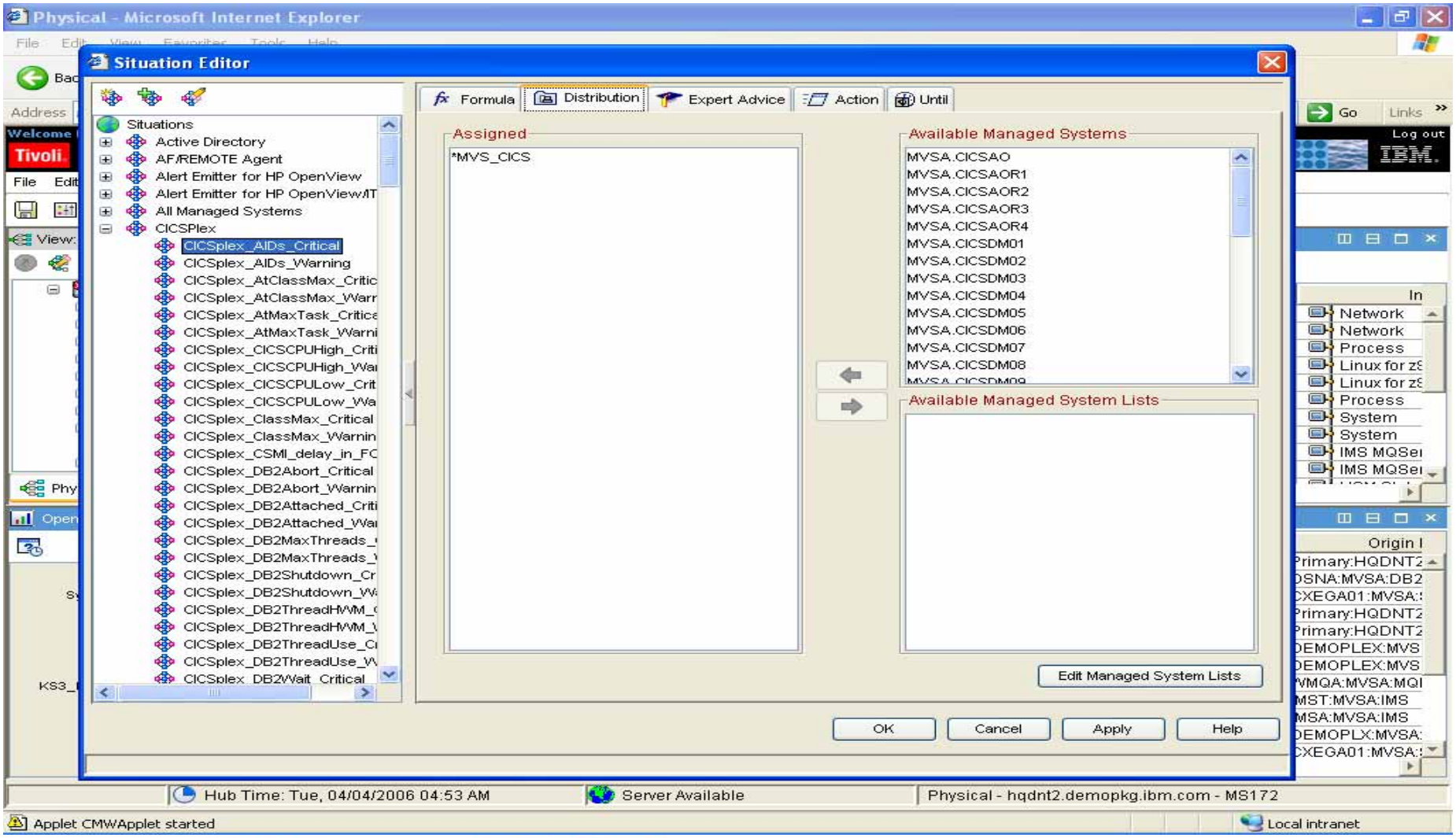
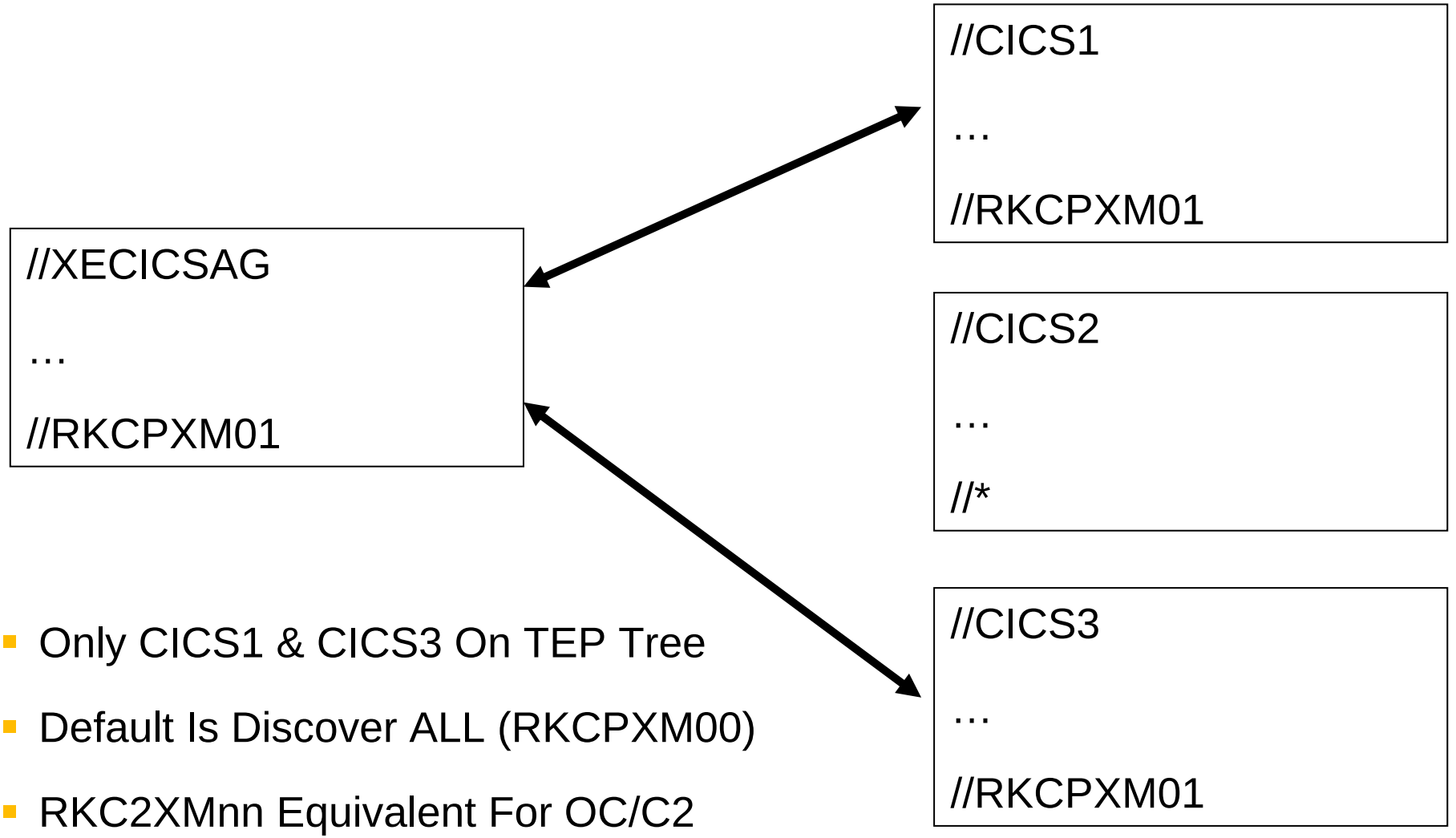


Advanced Learning Concepts – Situation Distribution

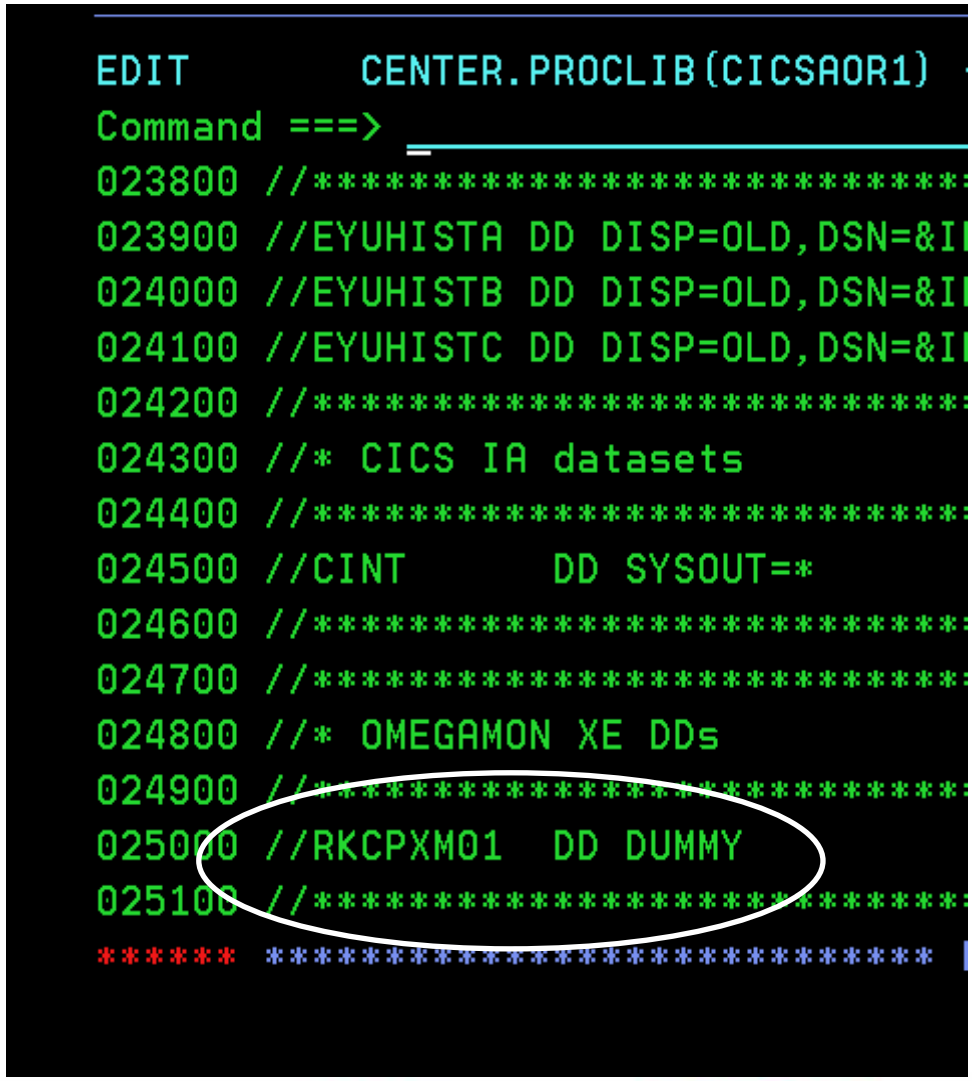
- How To Avoid This Overhead ?
  - Limit The Regions The IRA Discovers
    - RKCPXMxx DD DUMMY
  - Create A Different Managed System List For Monitored Nodes
    - For Example *CICS_Prod
  - Remove *CICS List From Situations You Don't Want To Start
    - Auto Start Or Dynamically Start
  - Review All Situations And Decide Which Ones Customer Really Needs
    - Auto Started Or Dynamically Started
- Concept Applies To Any XE Product

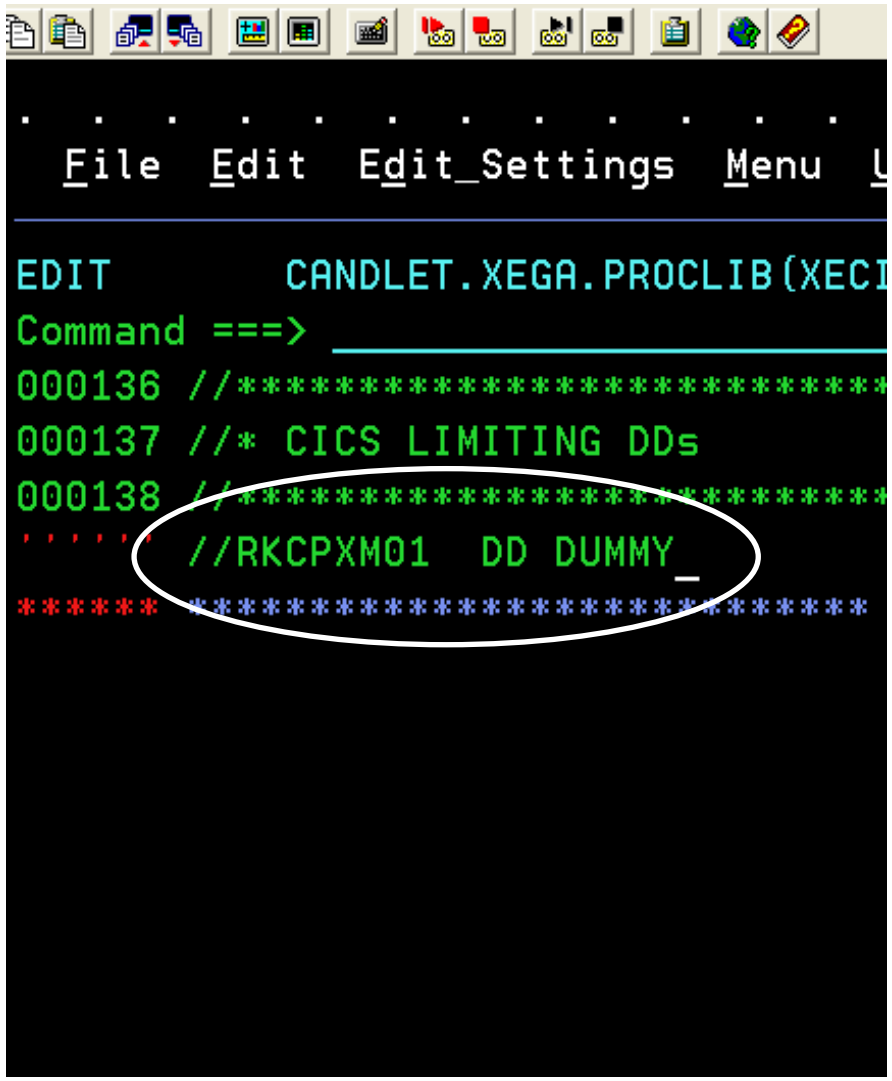
Advanced Learning Concepts – RKCPXMnn DD



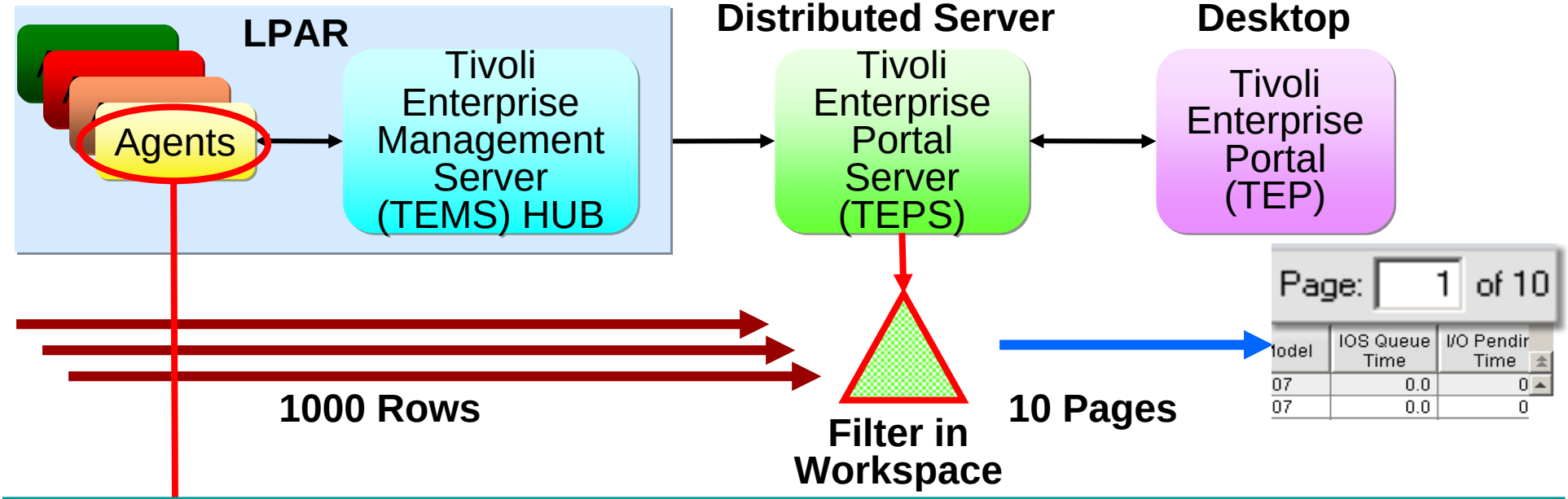
- Only CICS1 & CICS3 On TEP Tree
- Default Is Discover ALL (RKCPXM00)
- RKC2XMnn Equivalent For OC/C2

Advanced Learning Concepts – RKCPXMnn DD

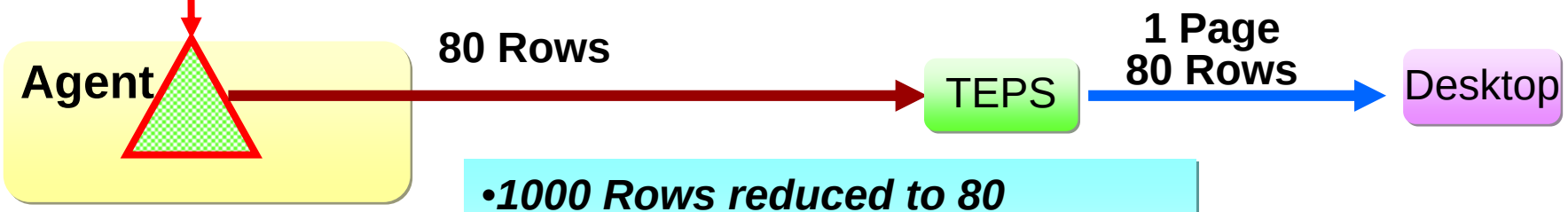




Apply Filter at TEPS in Workspace Properties

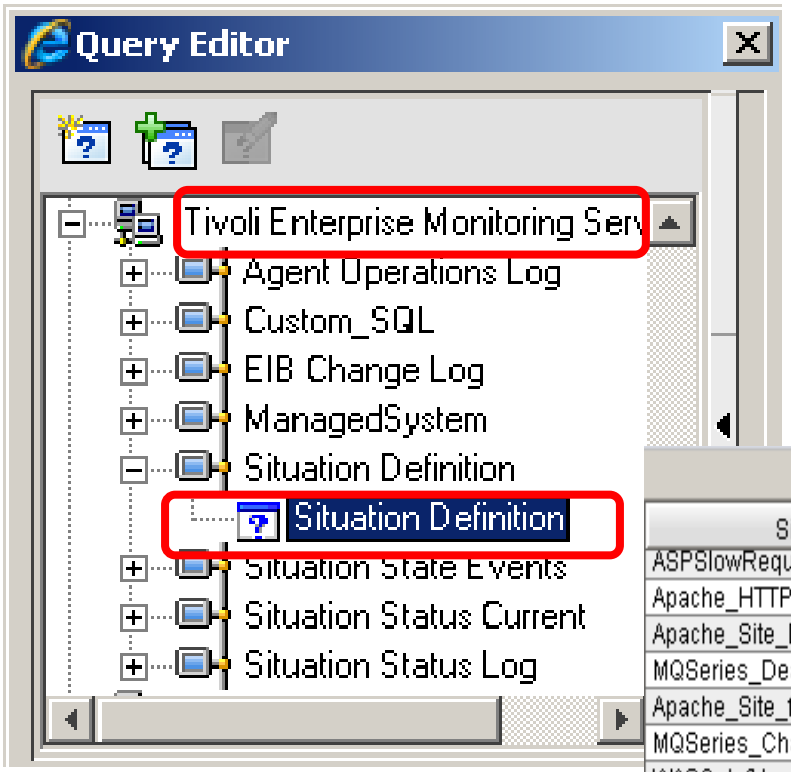


Or Apply Filter at Agent with Custom Query



- *1000 Rows reduced to 80*
- *Reduced overhead*
- *Faster Response Time*

List ALL Active Situations



- To View all situations in Enterprise:
- Create new workspace
  - Situation Definition query
    - Under **Tivoli Enterprise Monitoring Server**

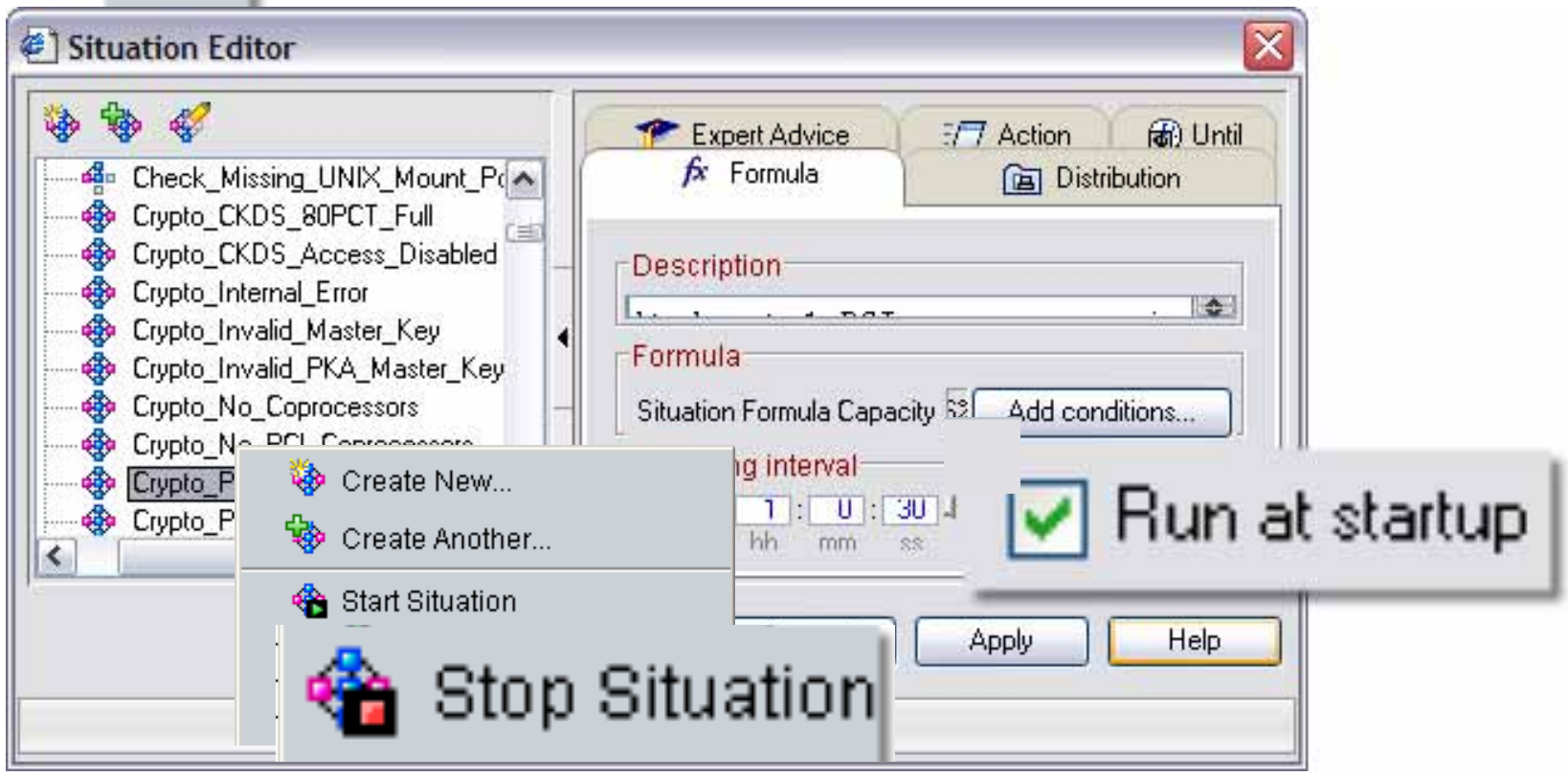
All Defined Situations

Situation Name	Auto Start	Interval Seconds	Description
ASPSlowRequests	*YES	000060	ASP requests are dispatched too slow.
Apache_HTTP_Stopped	*YES	000030	The Apache HTTP server is stopped.
Apache_Site_Down	*YES	000030	The Web site is down.
MQSeries_Dead_Letter	*YES	000500	Dead Letter Queue is not empty
Apache_Site_failed	*YES	000030	Server failures per second violation.
MQSeries_Channels_Indoubt	*YES	000500	At least one channel is In Doubt
WASOutofHeapSpace	*YES	000500	WebSphere Application Server out of Heap Space.
WASNotConnected	*YES	000500	WebSphere Application Server is Not Connected.

- See Autostarted Situations
- Identify unnecessary Situations
- Highlight situations with short intervals
  - Can impact performance

Turn off unnecessary Situations

List all Situations defined



1. Stop situation
2. Uncheck **Run at startup**

References

Narrated demos how to Create a cross LPAR workspace::

http://www-01.ibm.com/software/os/systemz/telecon/oct29/prz/

NOTE: Everyone should bookmark this page! Search on:
Recommended Maintenance Service Levels for OMEGAMON XE products on ITM V6.x

CCR2 OMEGAMON Tuning:
www.ibm.com/software/tivoli/features/ccr2/info.html

- *2004 Issue 2 Part 1: Common data collection overhead reduction tips*
- *2004 Issue 3 Part 2: Reducing on-demand CNPS client overhead*
- *2004 Issue 4 Part 3: OMEGAMON XE for CICS V100 and CICSplex V220*
- *2004 Issue 5 Workload Manager— Sysplex Tuning*
- *2004 Issue 6 Part 4: OS/390 and Sysplex from*
- *2004 Issue 7 The DB2 trace facility and OMEGAMON II for DB2 historical collection considerations*
- *2004 Issue 10 How to maintain time-dependent thresholds without the overhead of embedded situations*
- *2005 Issue 6 Sysplex Best Practices – Part 1*
- *2005 Issue 7 Sysplex Best Practices – Part 2*
- *2006 Issue 2 Part 5: OMEGAMON XE for IMS(plex)*
- *2008 Issue 3 Resource impact and optimization for Tivoli situation event processing*

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