IBM Software Group

OMEGAMON XE For z/OS and CICS Situation Usage And Best Practices

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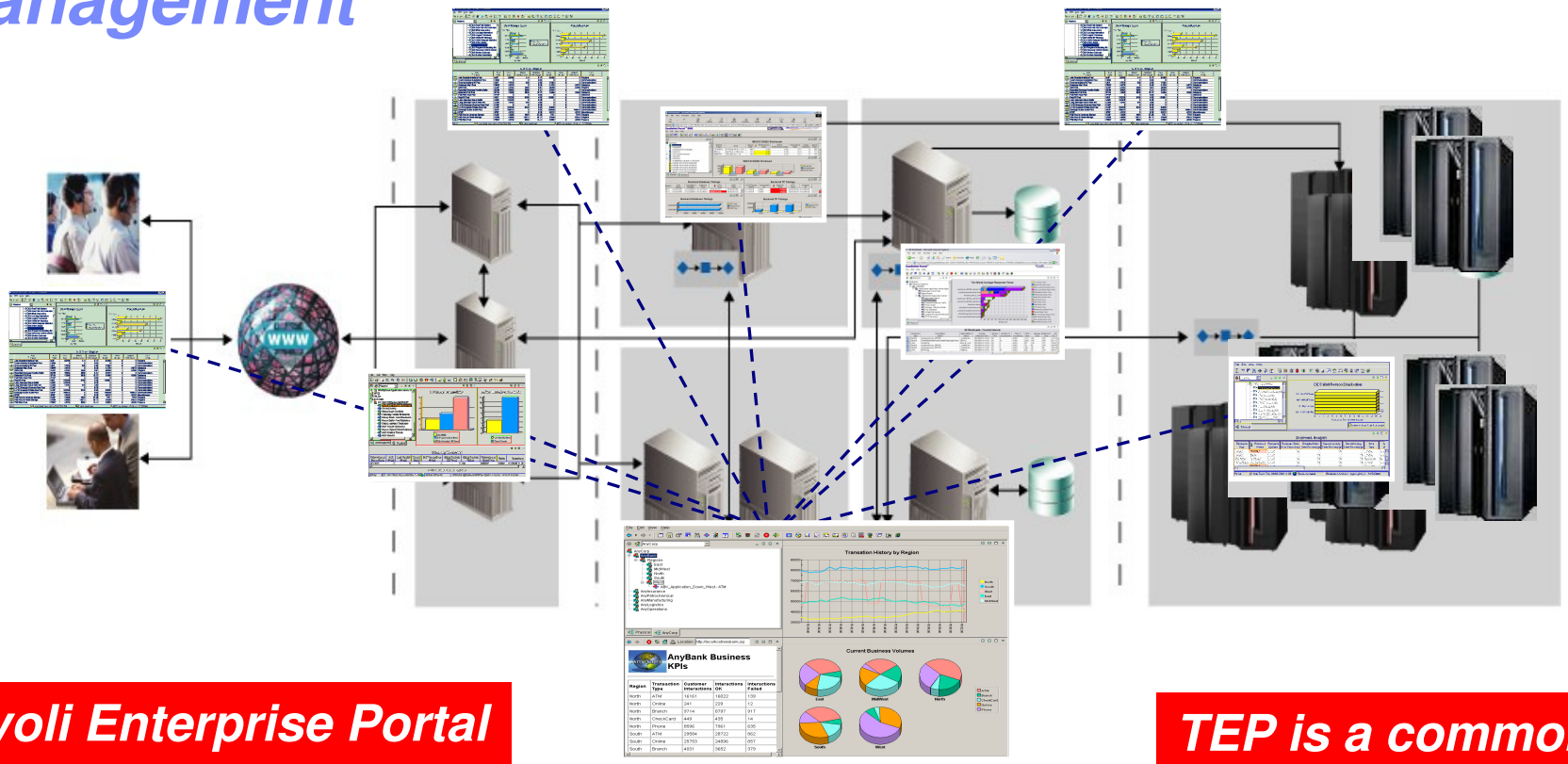
Tivoli software

e business on demand.

Agenda

- About the Tivoli Enterprise Portal (TEP)
- Situations and situation benefits
- Recommendations on situation creation and usage
- Product-provided situations
- Types of alerts
- Examples of useful z/OS And CICS situations
- Summary and questions

Tivoli Enterprise Portal (The TEP) Integrated Performance, Availability, And Systems Management

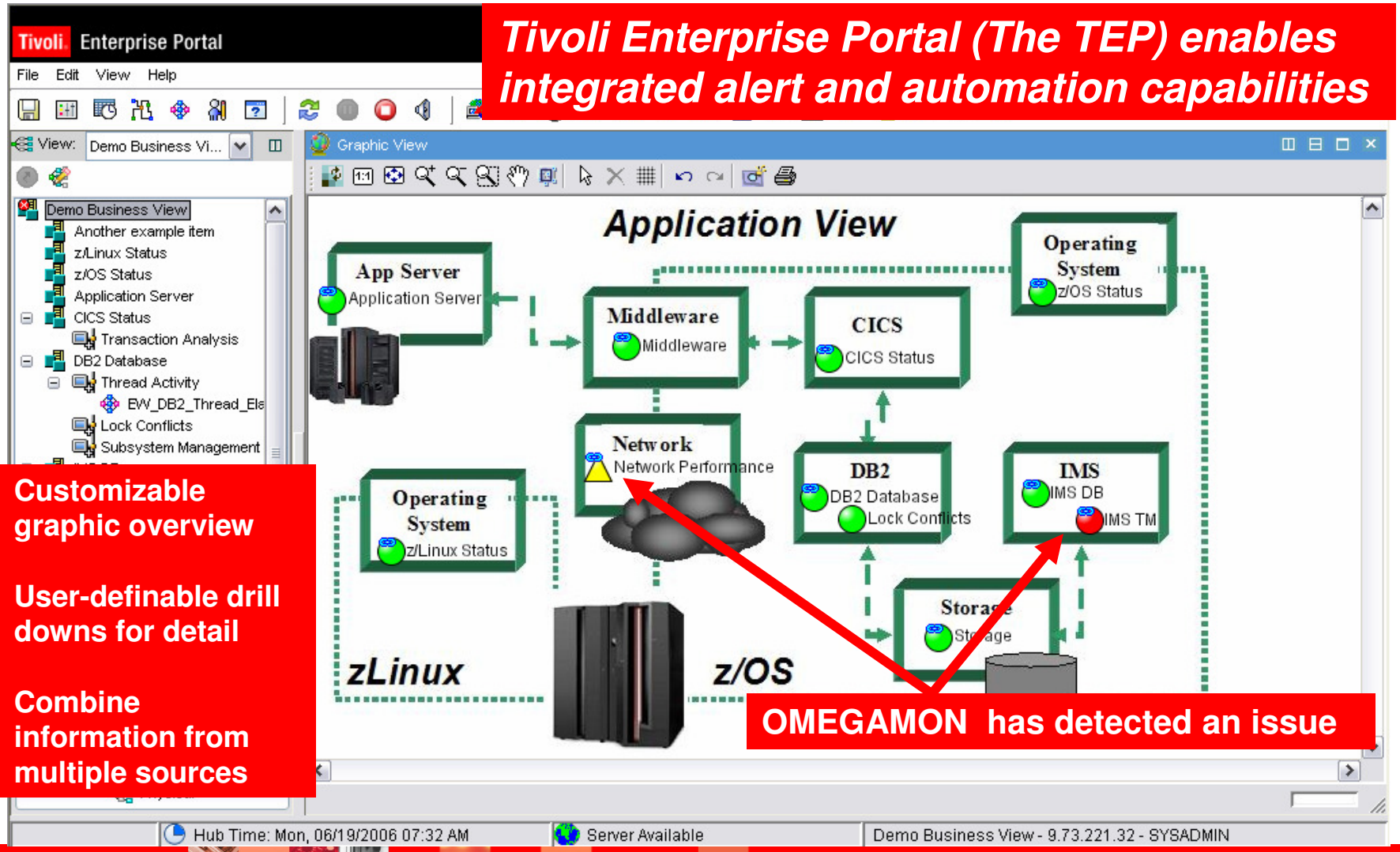


Tivoli Enterprise Portal (TEP)

Tivoli Enterprise Portal enables integrated alert and automation capabilities

TEP is a common user interface for a variety of Tivoli solutions

Most Business Applications Are Complex In Nature And Incorporate A Variety Of Technologies



Tivoli Enterprise Portal (The TEP) enables integrated alert and automation capabilities

Customizable graphic overview

User-definable drill downs for detail

Combine information from multiple sources

OMEGAMON has detected an issue

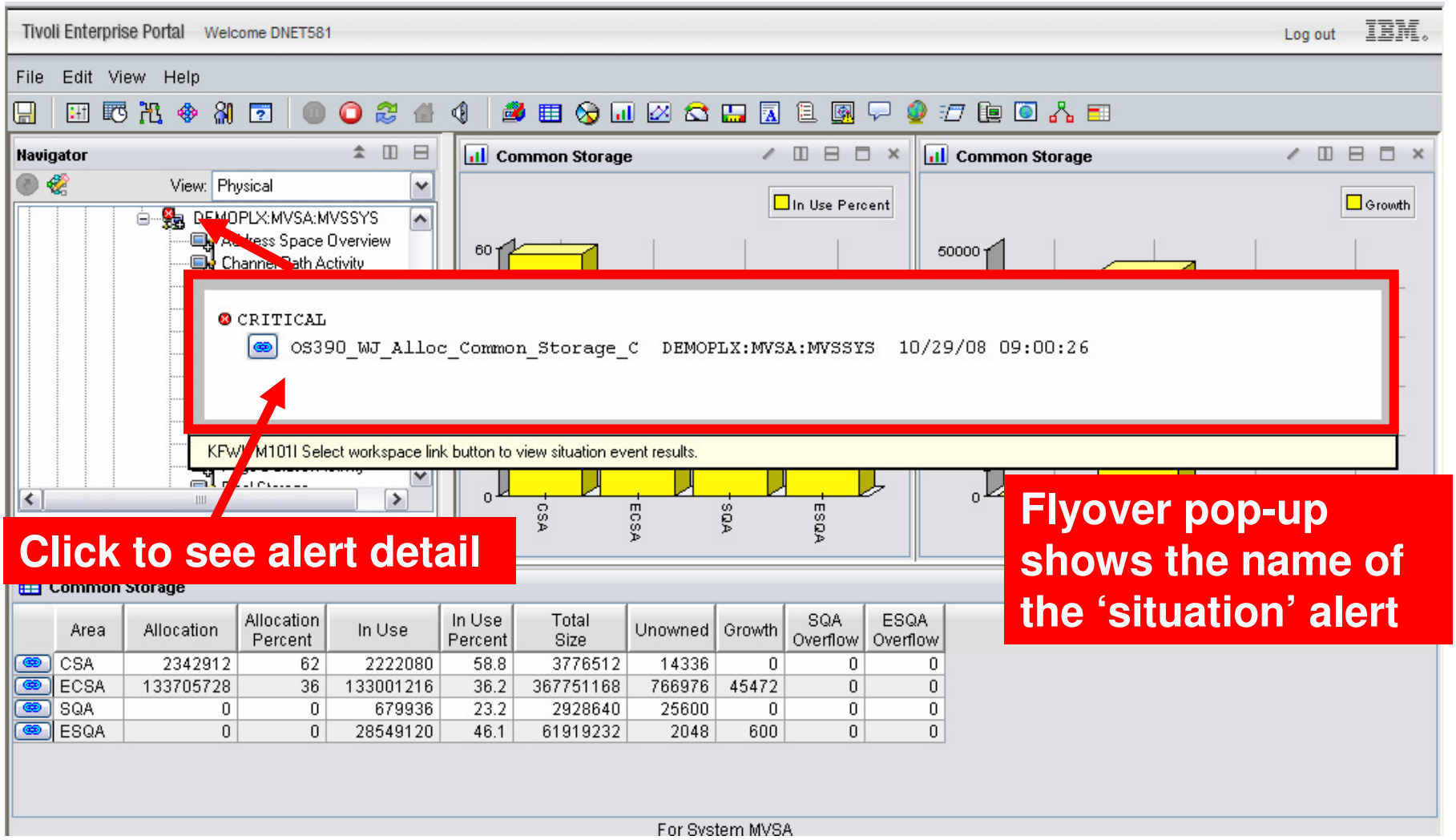
About Situations

- Situations are the building blocks of systems management logic in the Tivoli Enterprise Portal (TEP)
- Situations may be used to highlight performance problems within key CICS and z/OS resources
  - Monitor z/OS resource usage (CPU, Storage, I/O)
  - Monitor CICS performance (response time, CPU, storage, I/O)
- Situations may be used to identify z/OS and CICS problems that impact availability
  - Monitor application availability
  - Monitor CICS subsystem availability

Situations Allow For Powerful And Flexible Alerts

- OMEGAMON XE situation capabilities allow for more intelligent alerts that integrate and correlate status and information
- Situations may incorporate Boolean logic
- Situations may be correlated with other situations
- Situations may in turn drive automated corrections

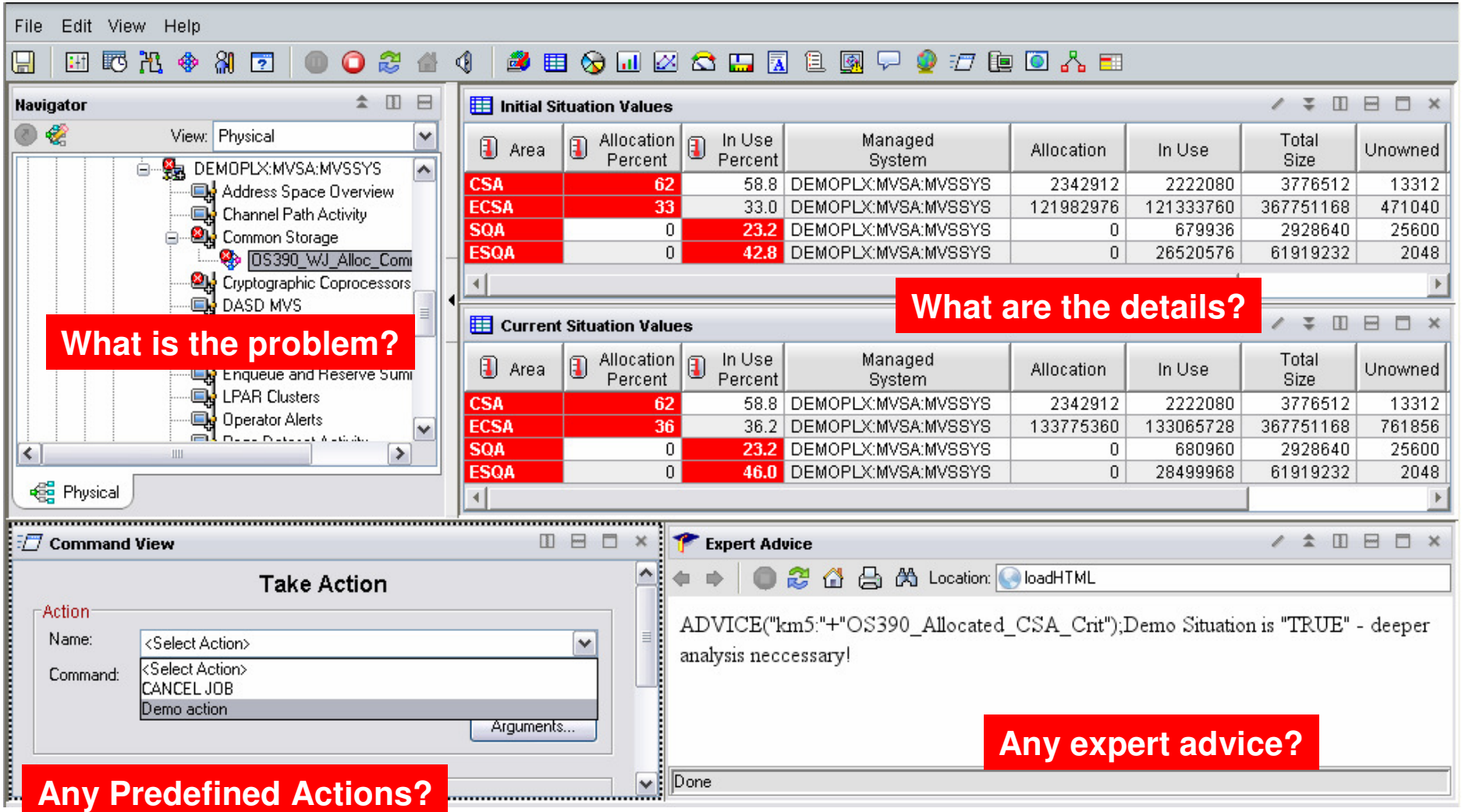
Situations – Usage And Benefits
Highlight Performance And Availability Issues



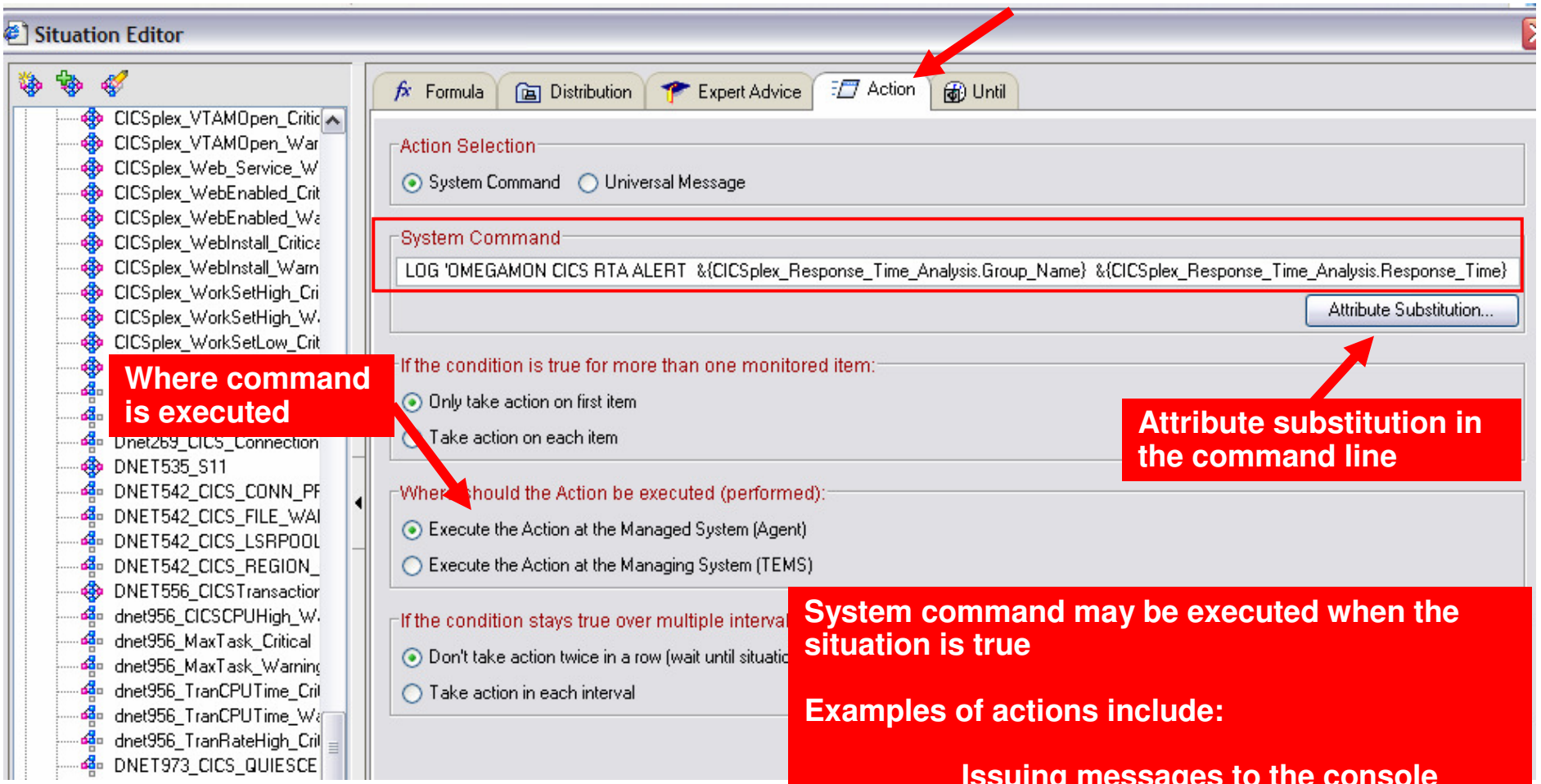
Click to see alert detail

Flyover pop-up shows the name of the 'situation' alert

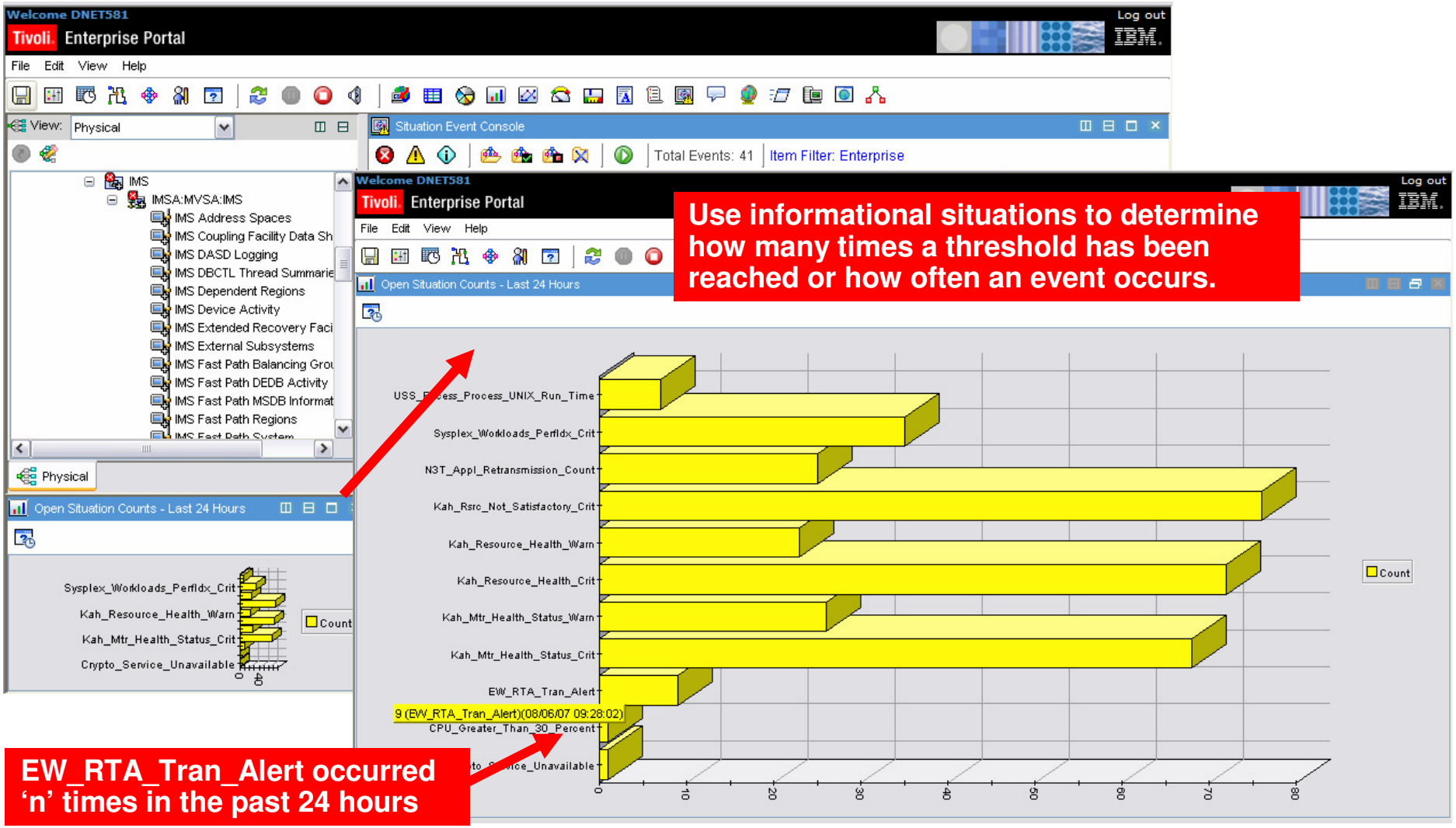
Situation Detail For The CSA Alert



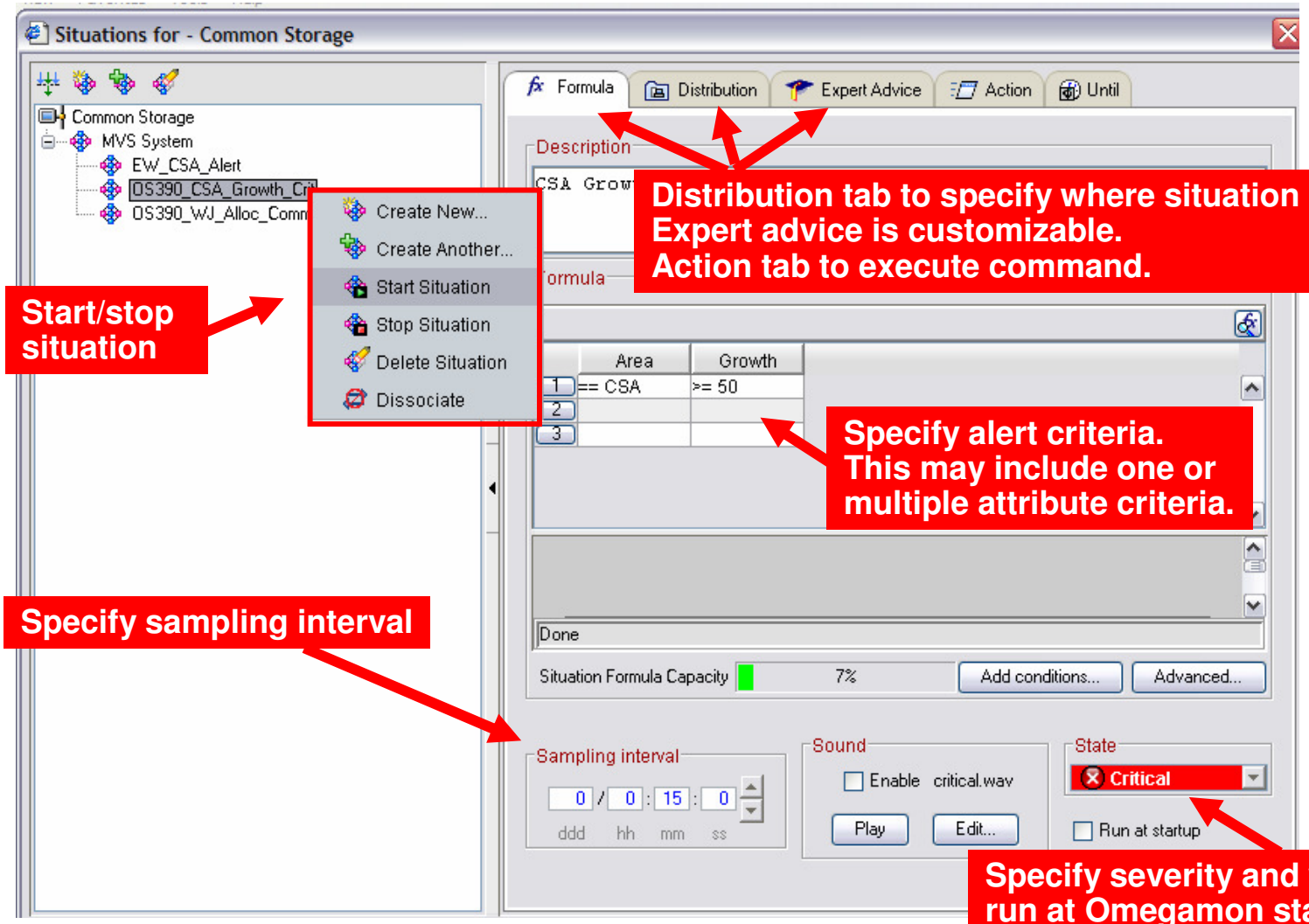
Situations – Usage And Benefits
'Action' To Perform Commands And Corrections



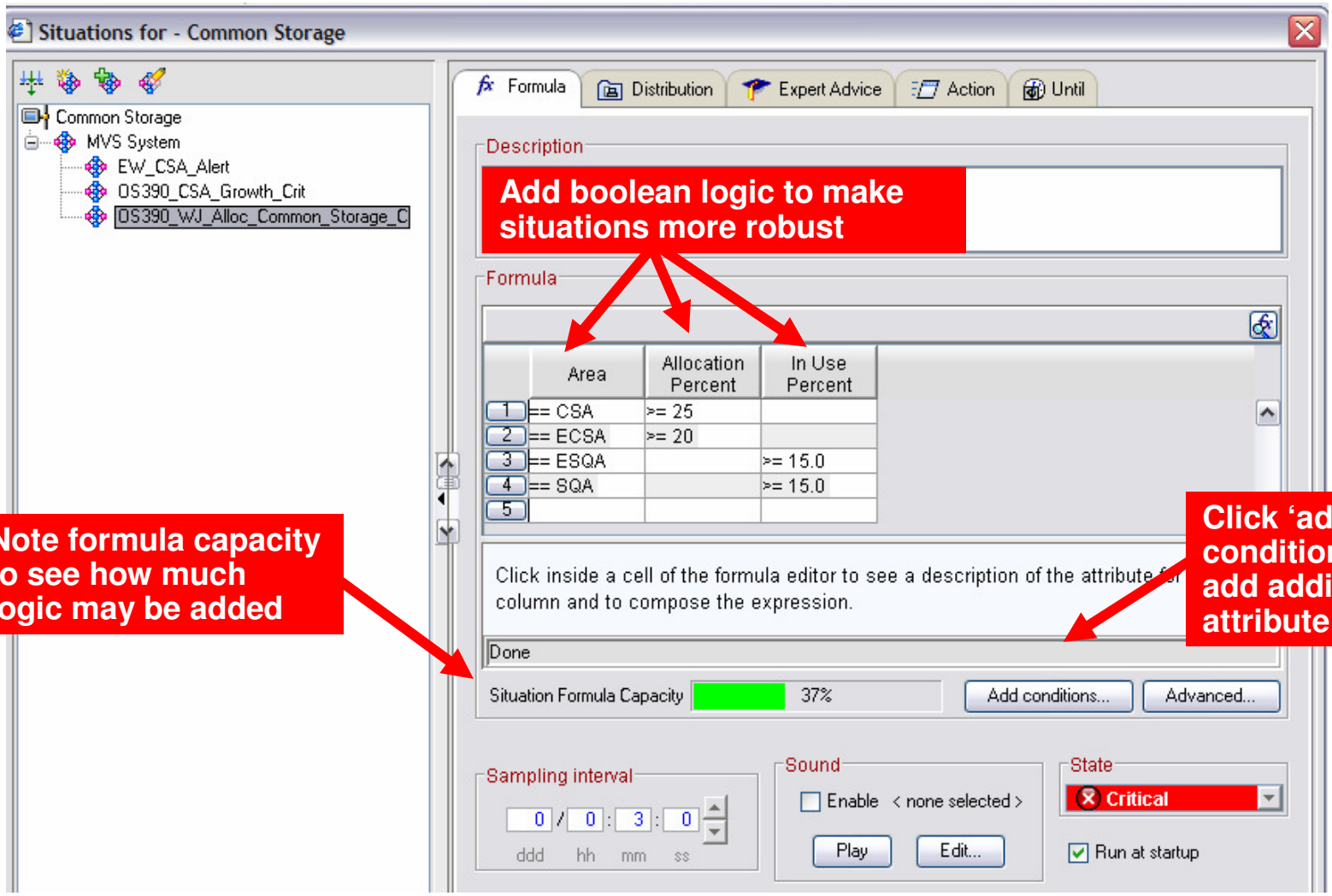
Situations – Usage And Benefits
Use Situations For Informational Event Analysis



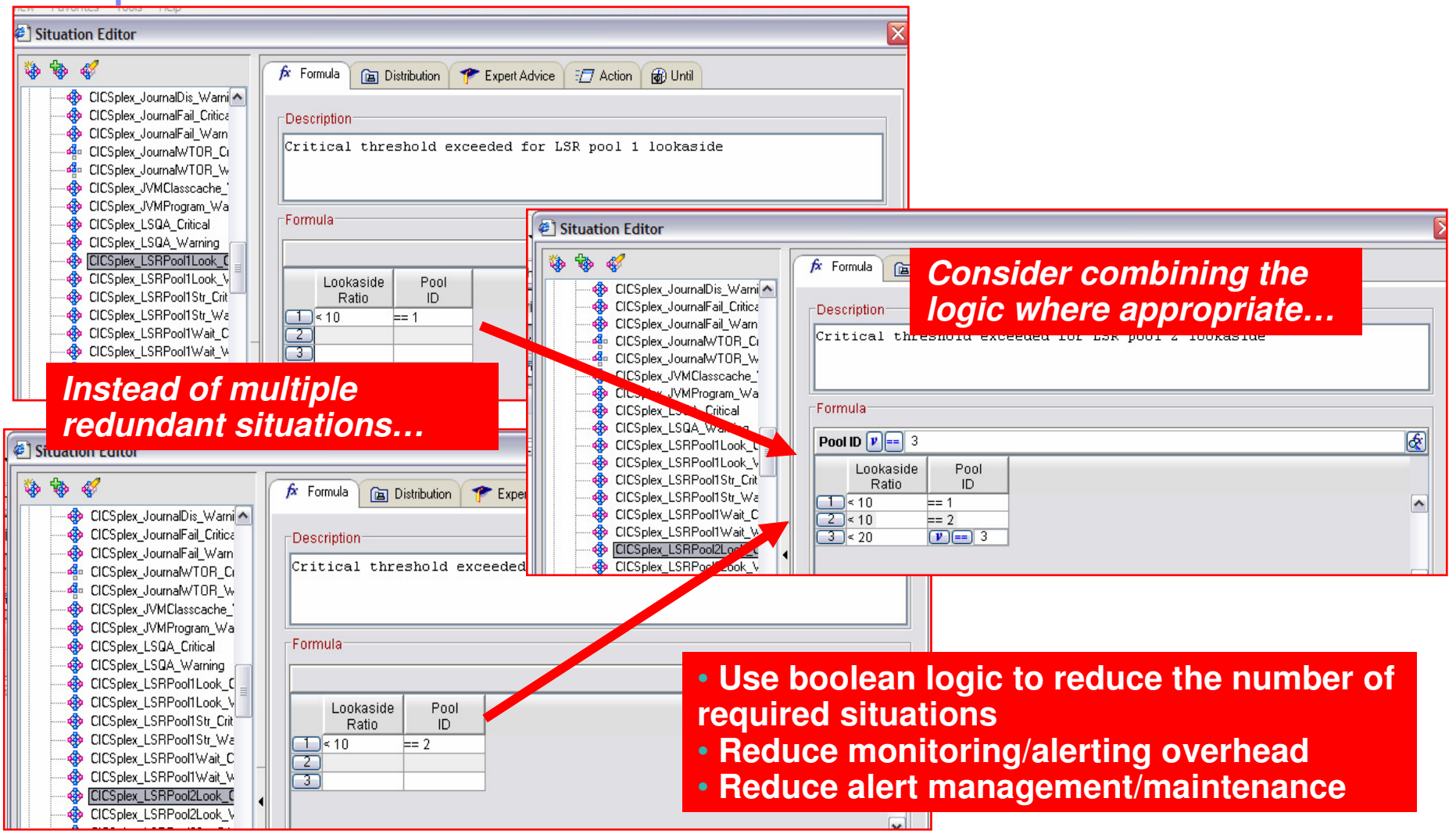
A Basic Example Situation
Alert On z/OS CSA Utilization Growth



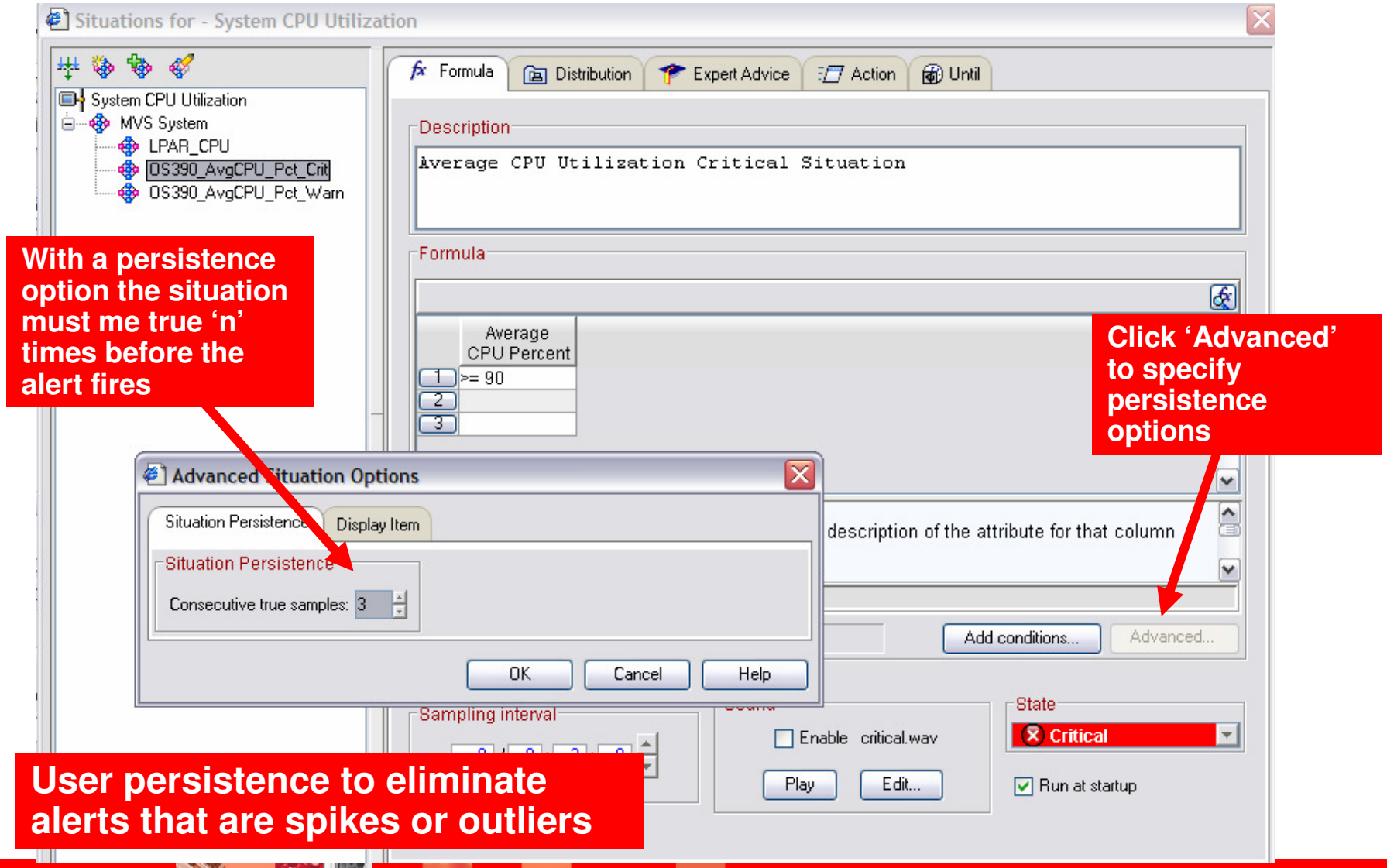
Take Advantage Of Boolean Logic
Make Situations More Meaningful And Useful



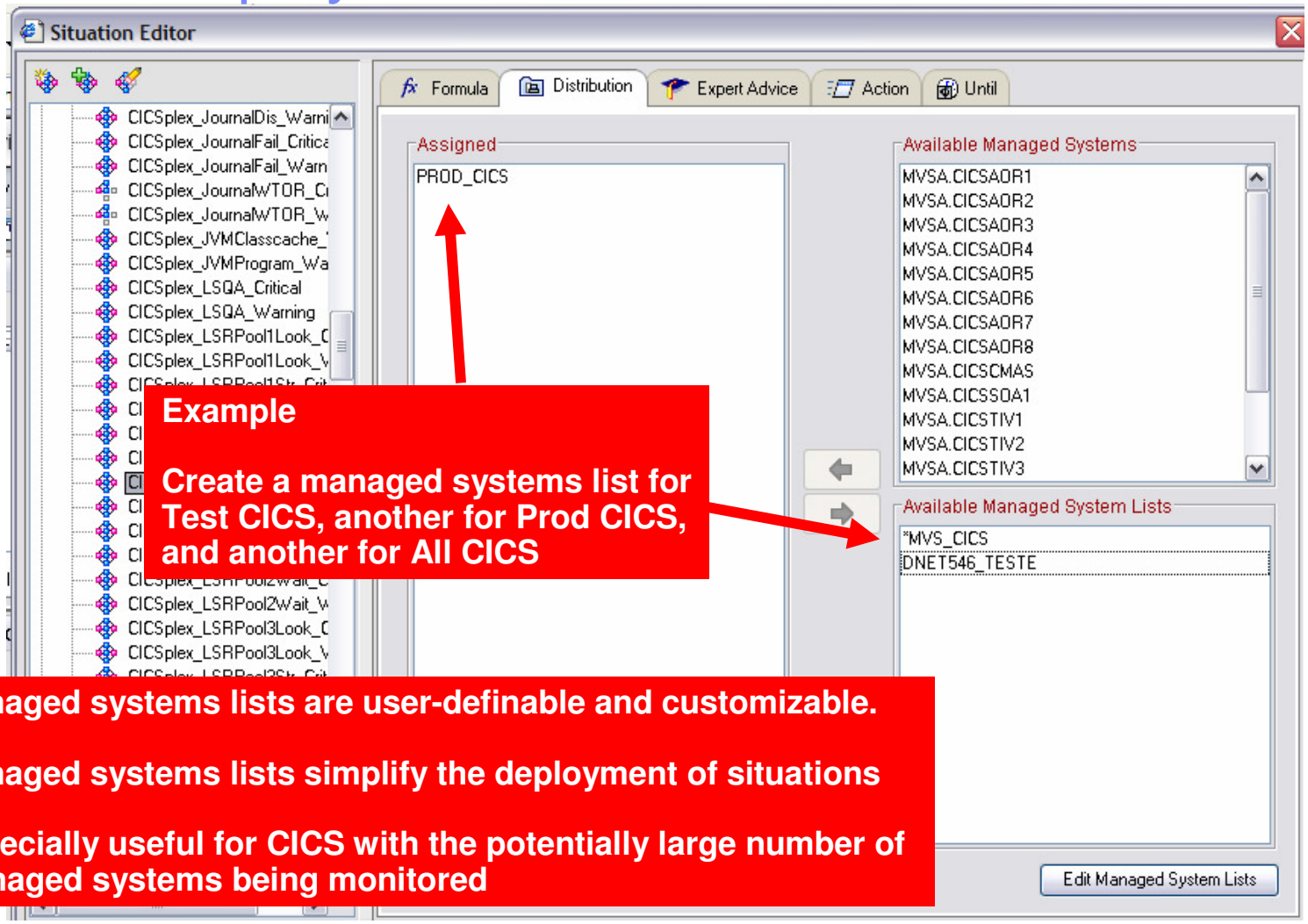
Use Boolean Logic To Reduce The Number Of Required Situations



Use Persistence Option To Smooth Alert Spikes



Exploit Managed Systems Lists To Simplify Situation Deployment



Example

Create a managed systems list for Test CICS, another for Prod CICS, and another for All CICS

Managed systems lists are user-definable and customizable.

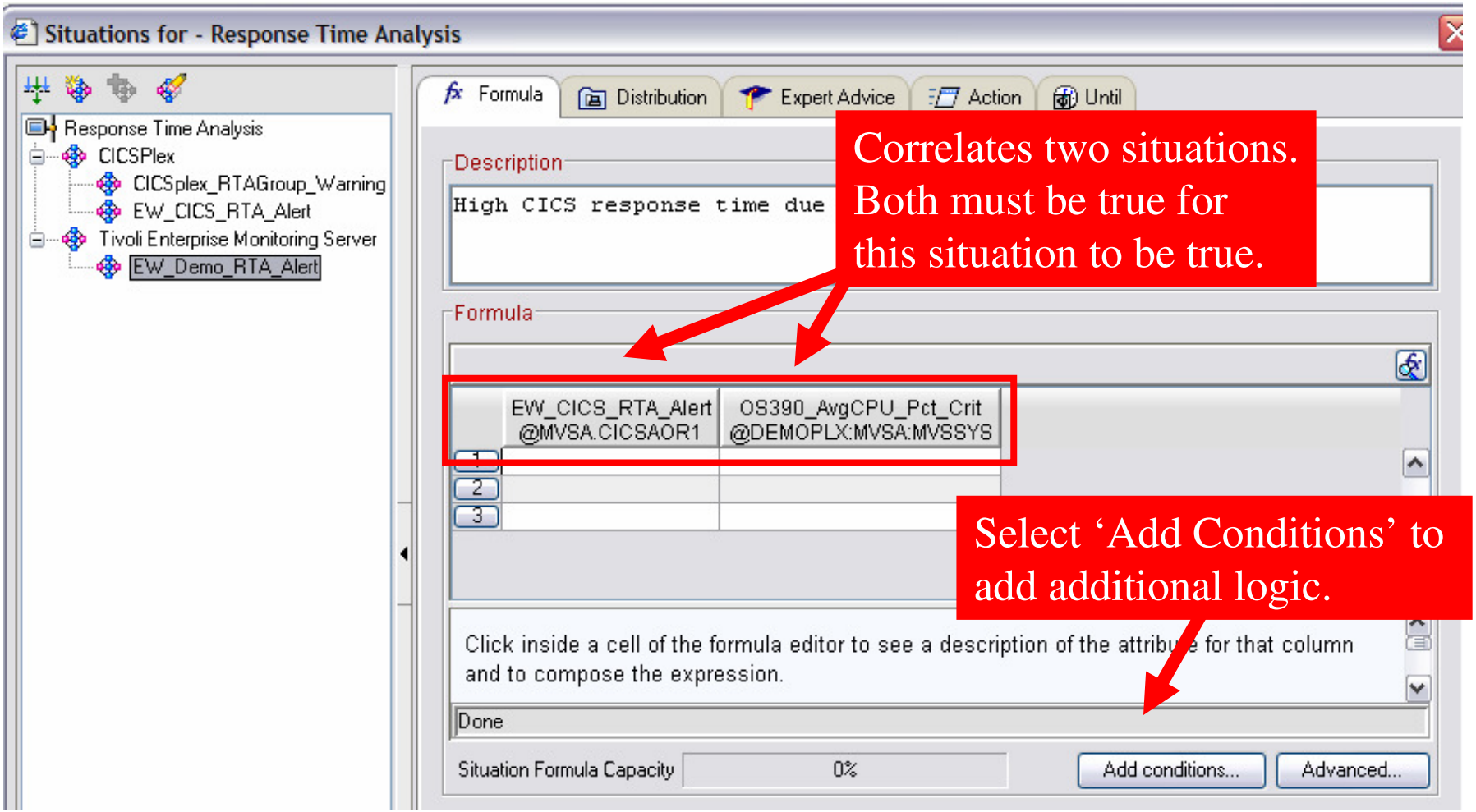
Managed systems lists simplify the deployment of situations

Especially useful for CICS with the potentially large number of managed systems being monitored

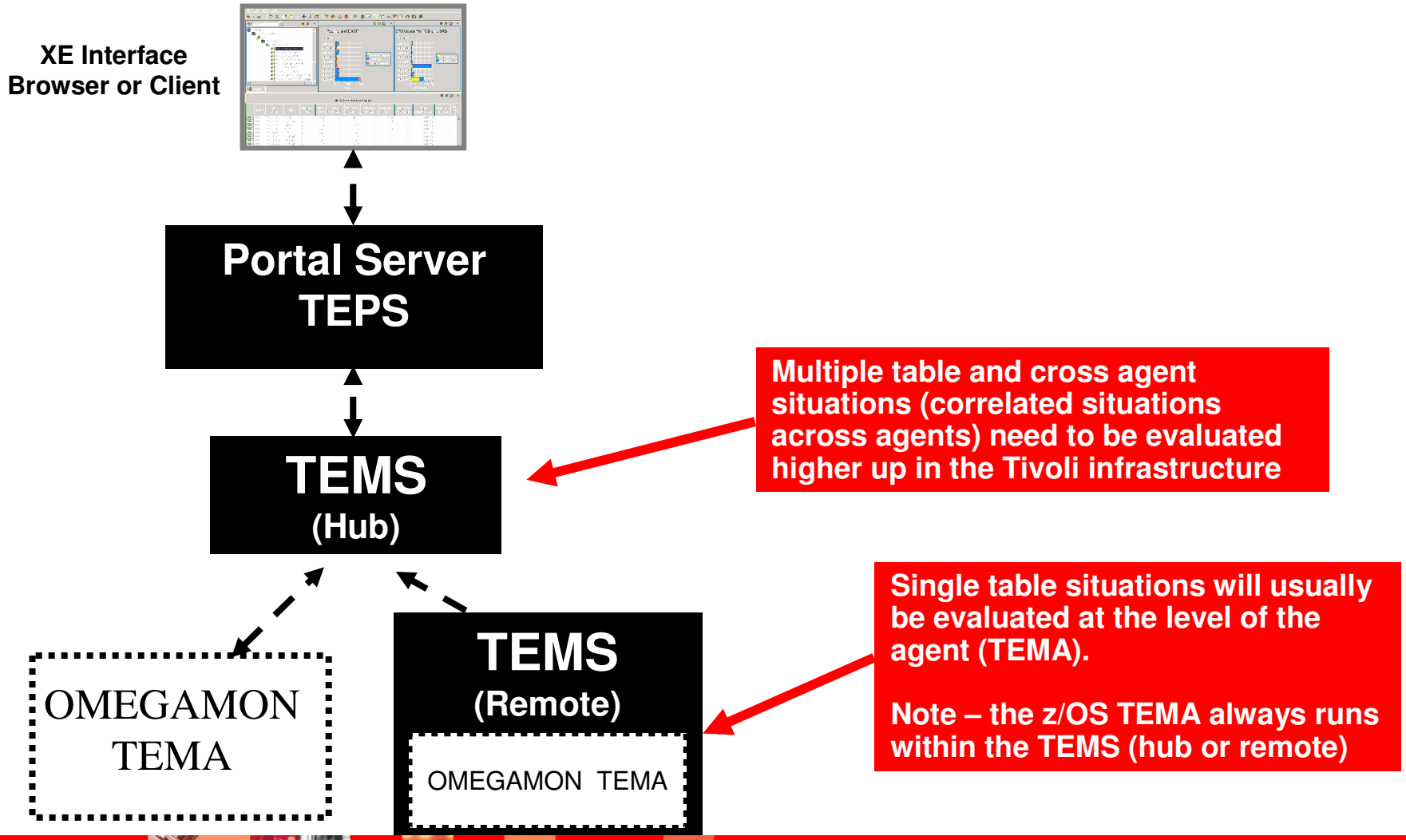
Situations
General Recommendations And Rules Of Thumb

- Make situations Meaningful, Actionable, and Useful
- Meaningful situations
  - Situation naming is flexible – make the names understandable
  - Adopt a situation naming convention
    - Makes it easier to identify customer created versus product provided situations
- Actionable situations
  - Have appropriate notification
    - A workspace with an alert icon, command/message notification
  - As a standard have expert advice
  - Have pre-defined take actions where appropriate
- Useful situations
  - Eliminate phony alert indicators – tune out the noise
  - If an alert situation fires it should indicate an actual issue
    - An alert, an owner, and a consequence

Situations May Be Correlated With Other Situations Correlated Alert Example



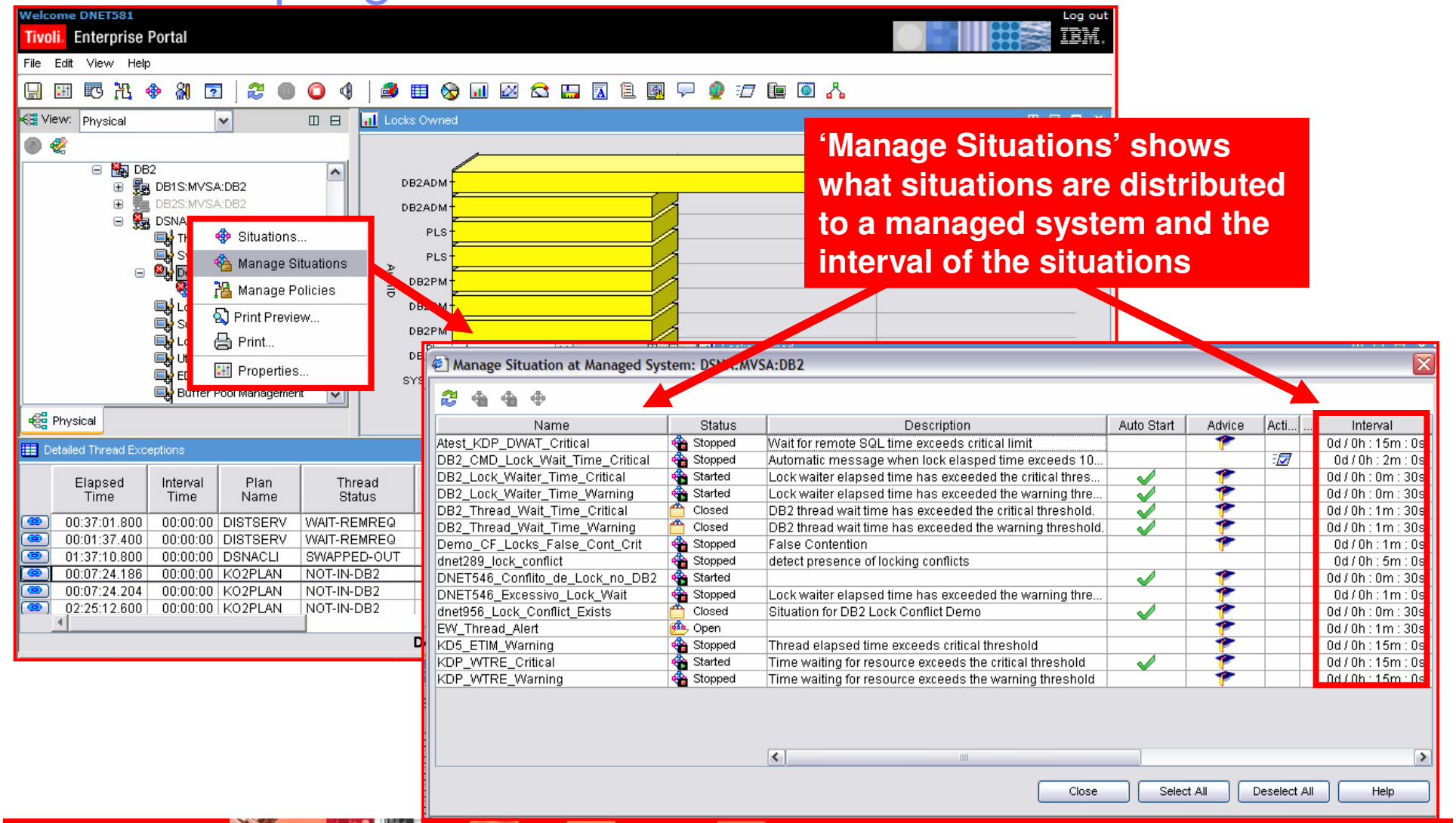
Considerations For More Complex Situations



Additional Situation Considerations And Recommendations

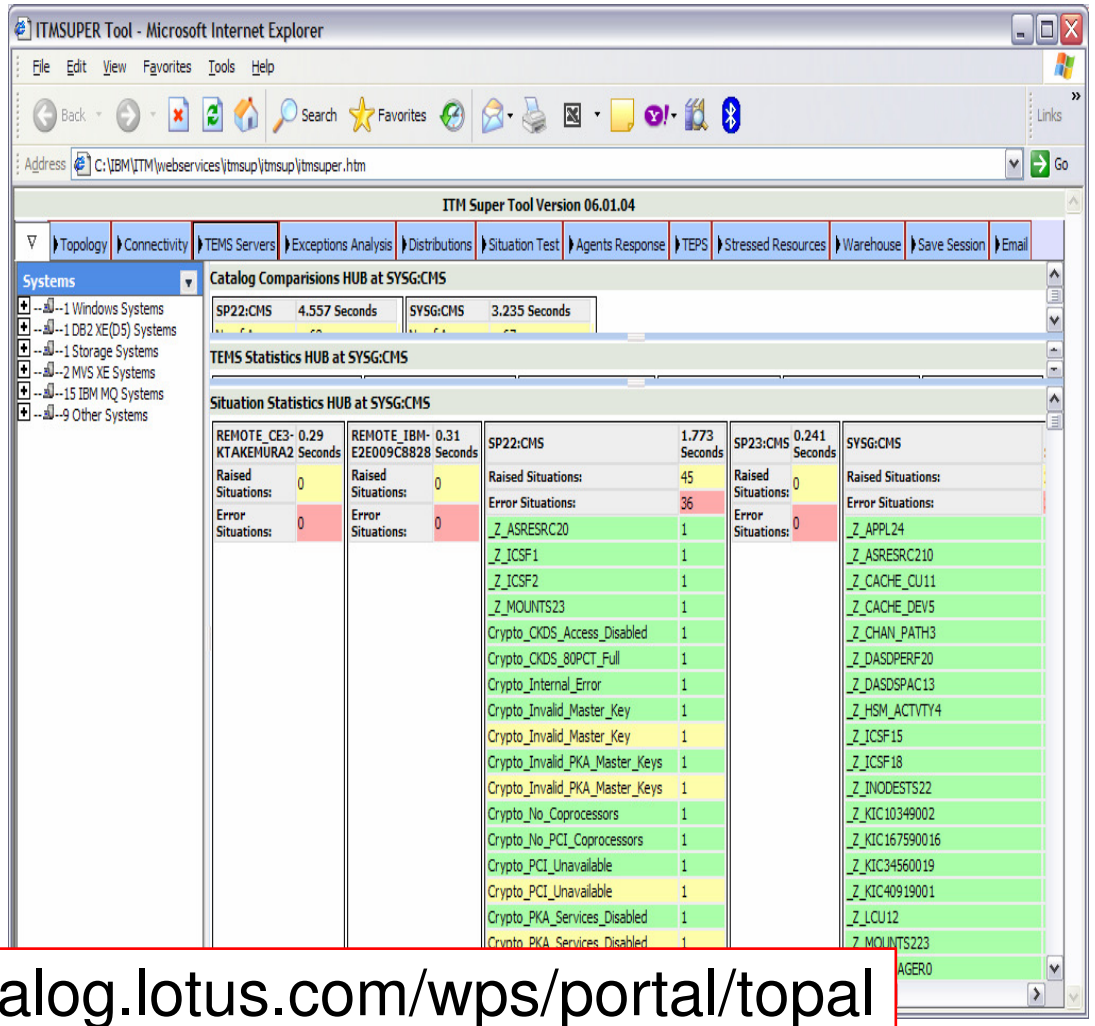
- When creating and deploying a set of situations consider
  - The number of situations being deployed
  - The number of managed systems (i.e. z/OS LPARs and CICS tasks)
  - Refresh frequency of the situations
- Consider carefully the number of required situations
  - Use boolean logic to reduce the number of needed situations
  - Do not automatically make a warning alert to go with each critical alert
    - Create a warning if it will allow time to address an issue before going critical
  - Use managed system lists to send the right situations to the right managed systems
- Be aware of the situation refresh rates
  - Multiple situations on the same table with the same refresh rate may be optimized by the infrastructure
  - Potential to reduce monitoring overhead if done appropriately

Use 'Manage Situations' To Check Situation Status And Sampling Interval



ITMSUPER Provides Insight On Situation Usage

- Go to the Tivoli OPAL web site and download the ITMSUPER utility
- ITMSUPER provides details on what is happening in the ITM infrastructure
  - Details on what situations are started (how many situations and managed systems)
  - What situations are firing (and how often)
  - What situations are deployed but not firing

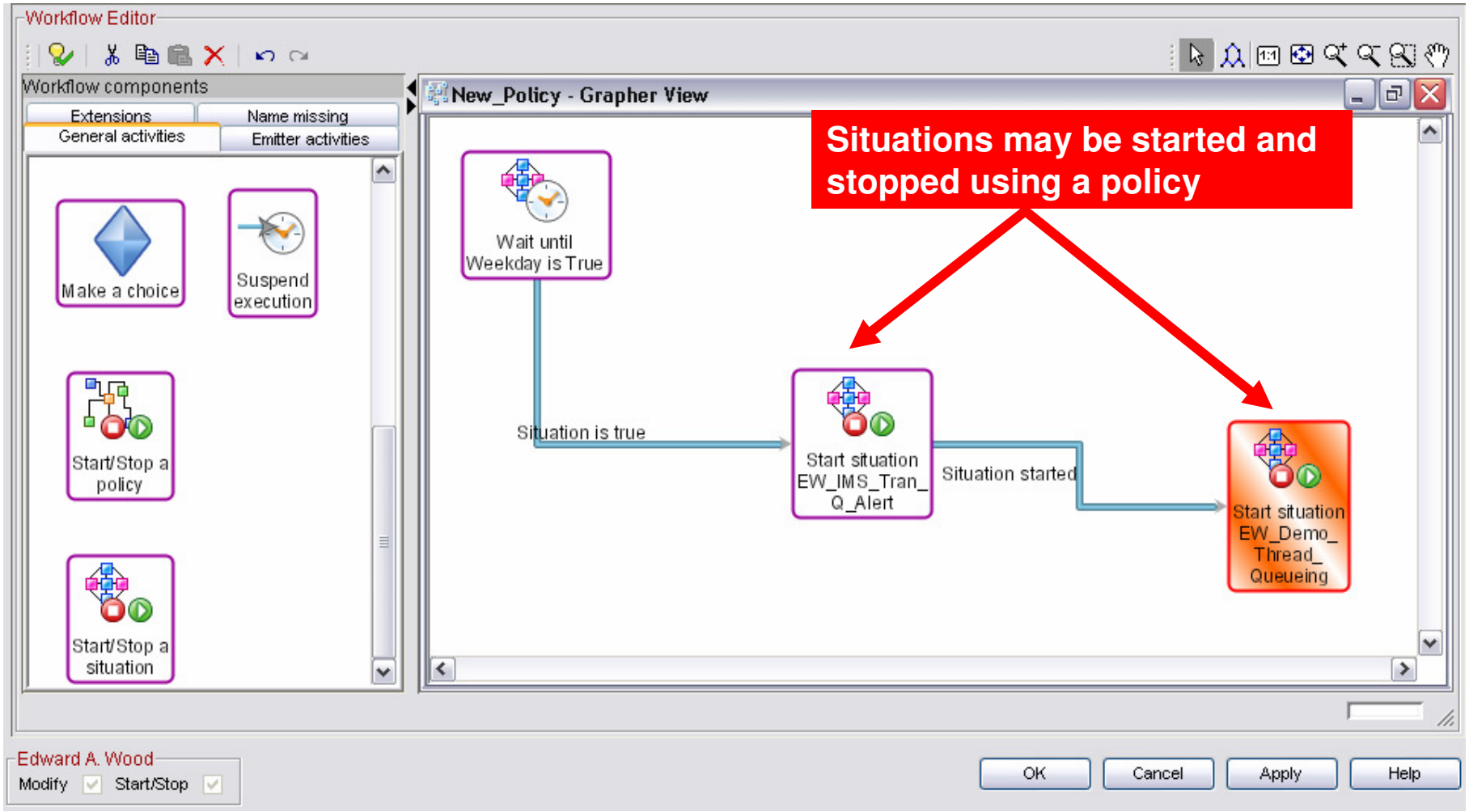


http://catalog.lotus.com/wps/portal/topal

Eliminating The Noise
Time Of Day And Day Of Week Considerations

- Some alerts are sensitive to certain times of day or day of week considerations
  - This may be due to operational or off-hours processing concerns
  - Workloads will often vary during the day and during the week
  - Some issues are critical during prime time and not as critical off-hours
- Options for time of day/processing window challenges
  - Situations may be coded with time of day information built into the situation logic
    - This may work for a limited number of situations, but may add maintenance and limit the flexibility of the situations
  - Policies may be used to start/stop situations as needed based upon specified logic
    - Does not require coding in the underlying situations

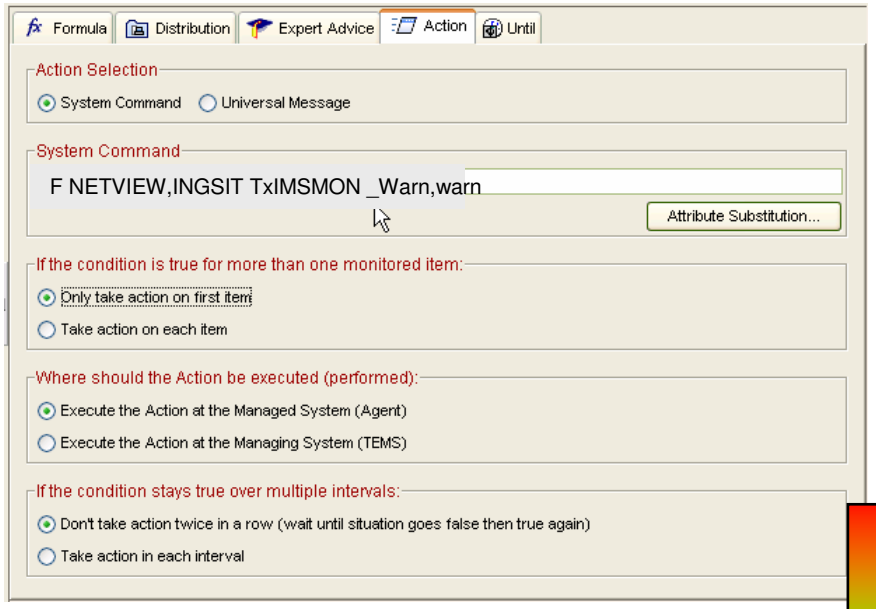
Using A Policy To Manage Situations

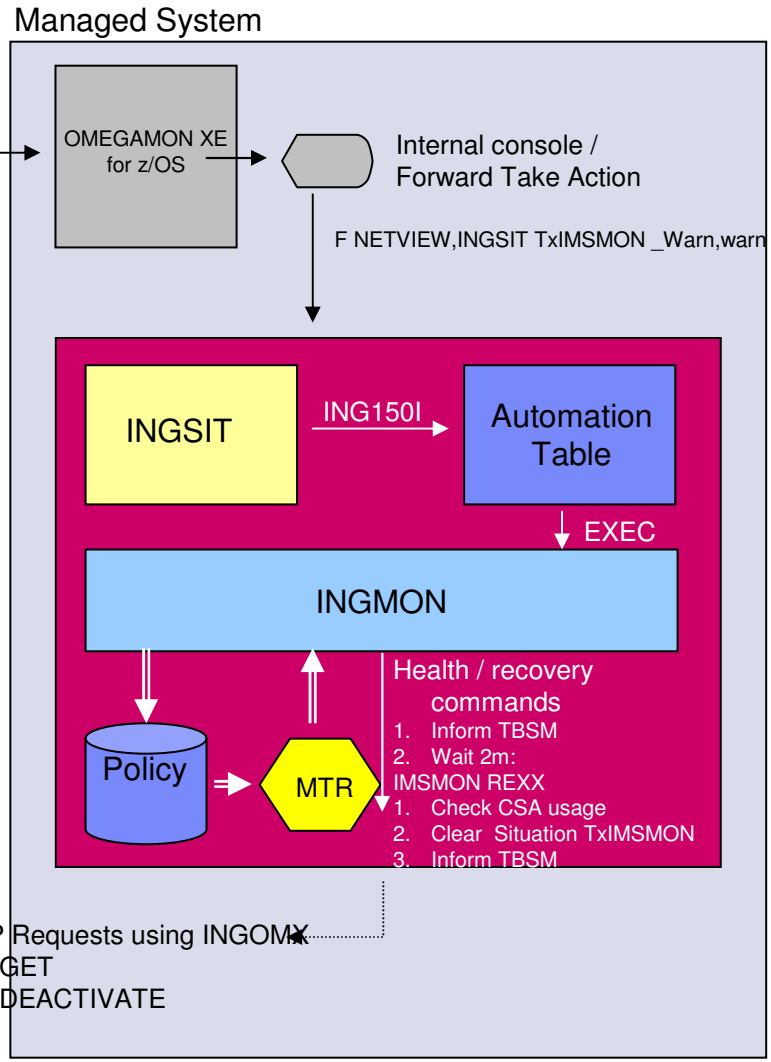


Integrated Automation With SA for z/OS

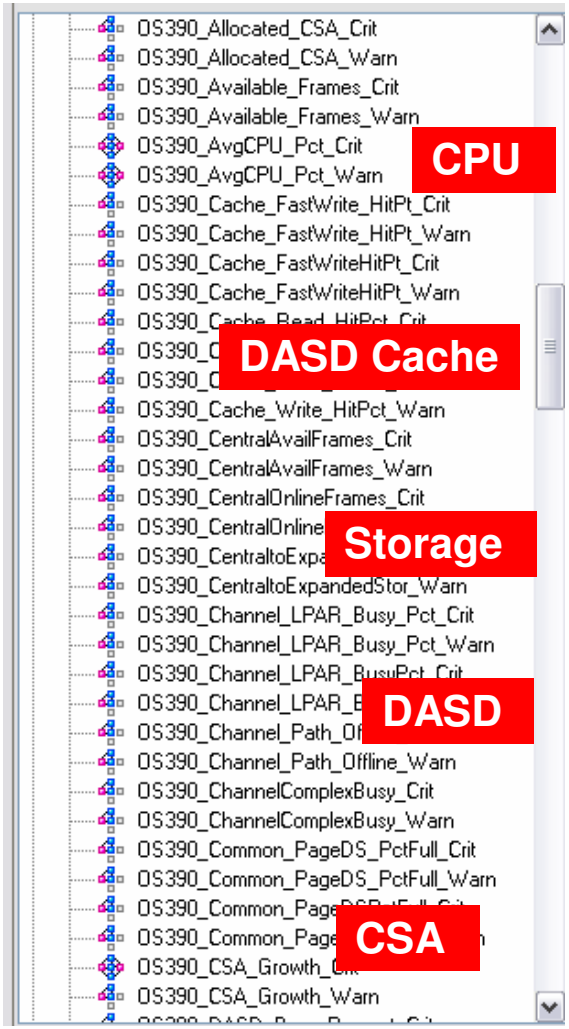
Situation: TxIMSMON

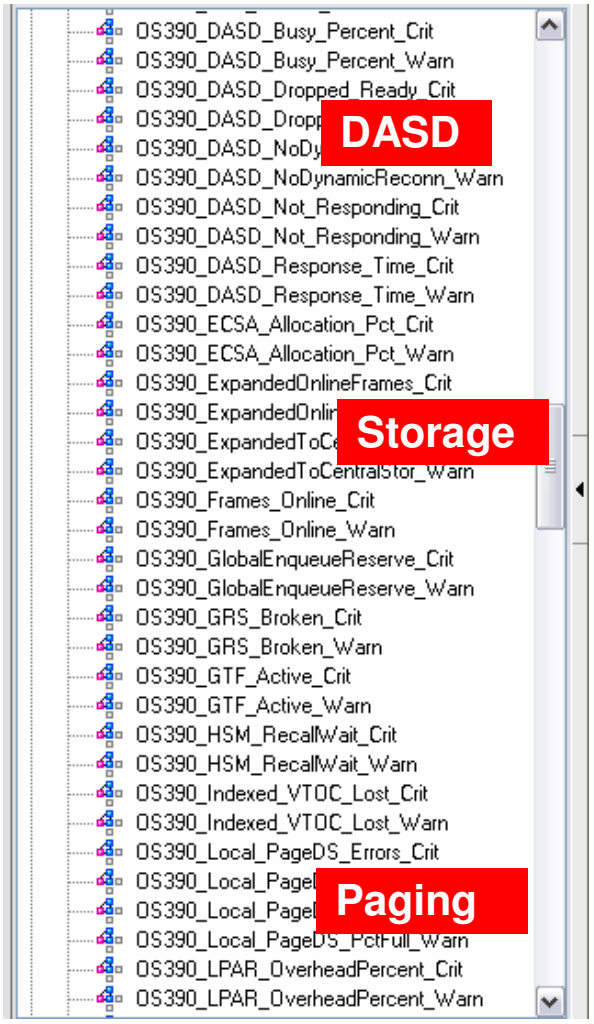
```
OMEGAMON XE for z/OS:
If growth  of "CSA Usage of IMS"  exceeds threshold
THEN
  Tell SA z/OS about this via the INGSIT command
```

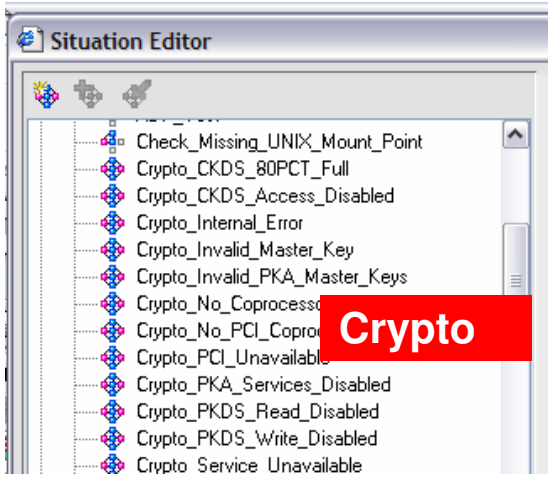




OMEGAMON XE For z/OS V4.1 Product Provided Situations







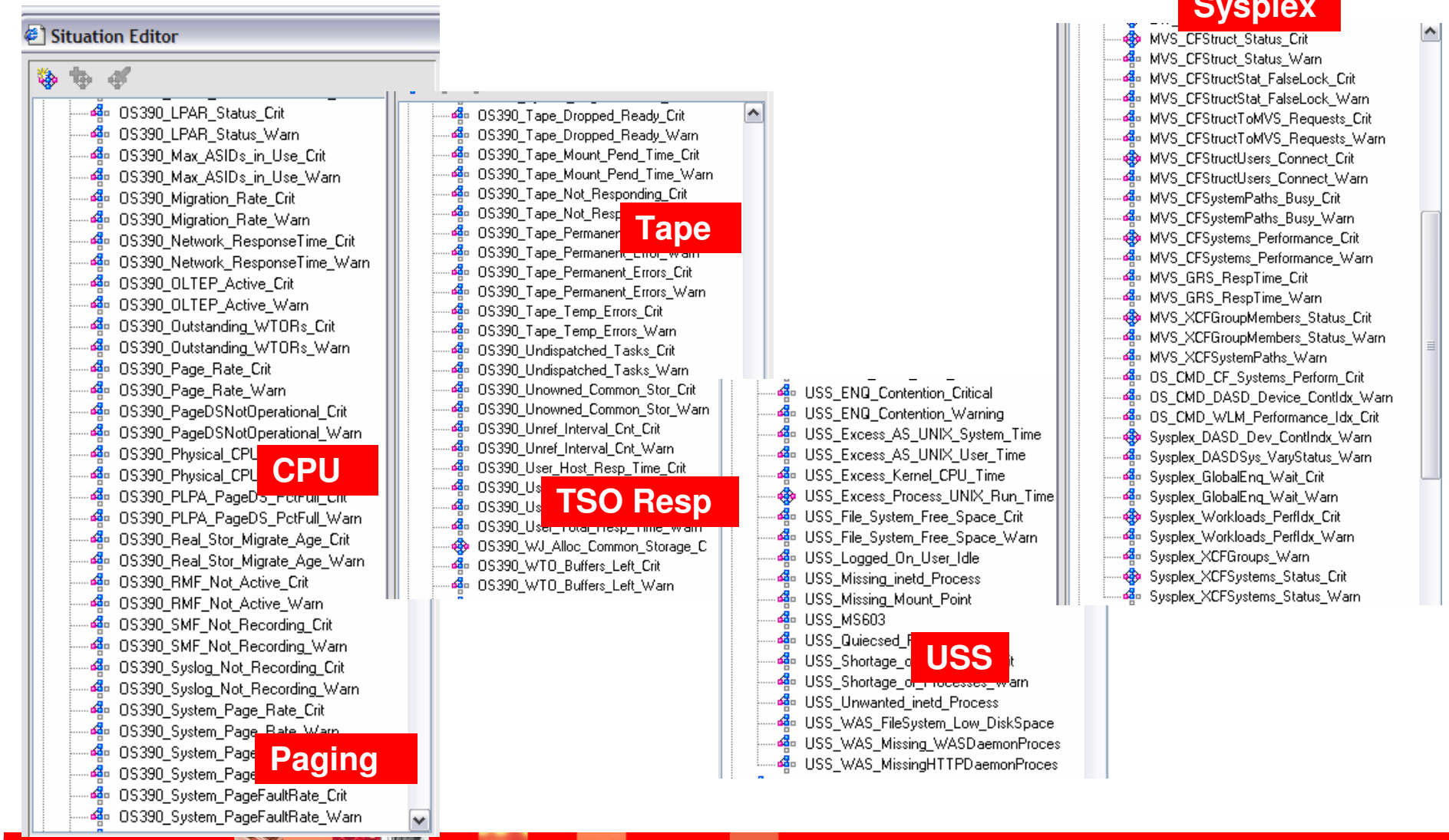
Product provided situations provide a starting point and a means of migrating alerts from Omegamon Classic/CUA 3270 interface to the Tivoli Enterprise Portal

Recommendations

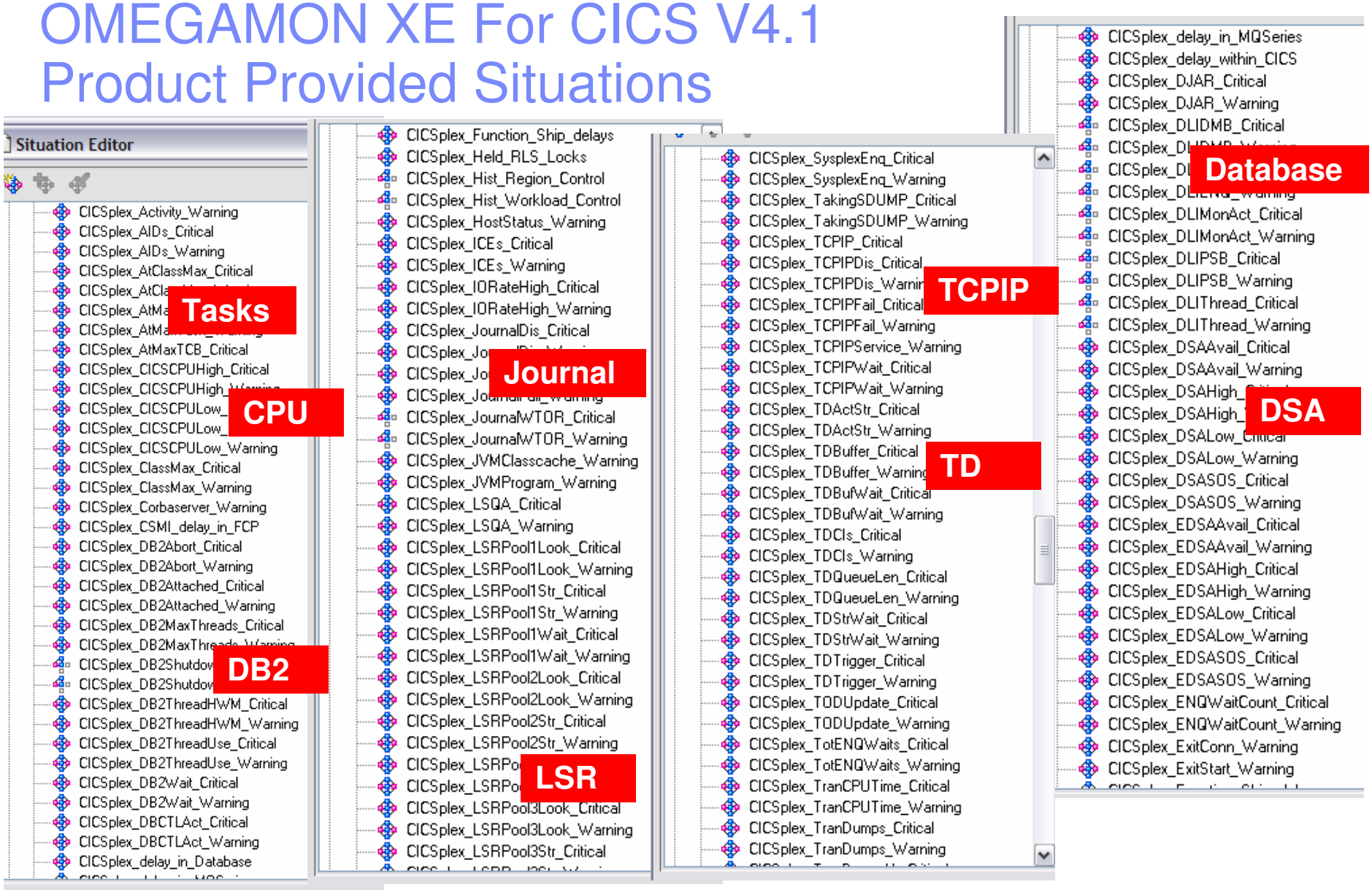
Use product provided situations as examples and a starting point

For large deployments create more meaningful situations

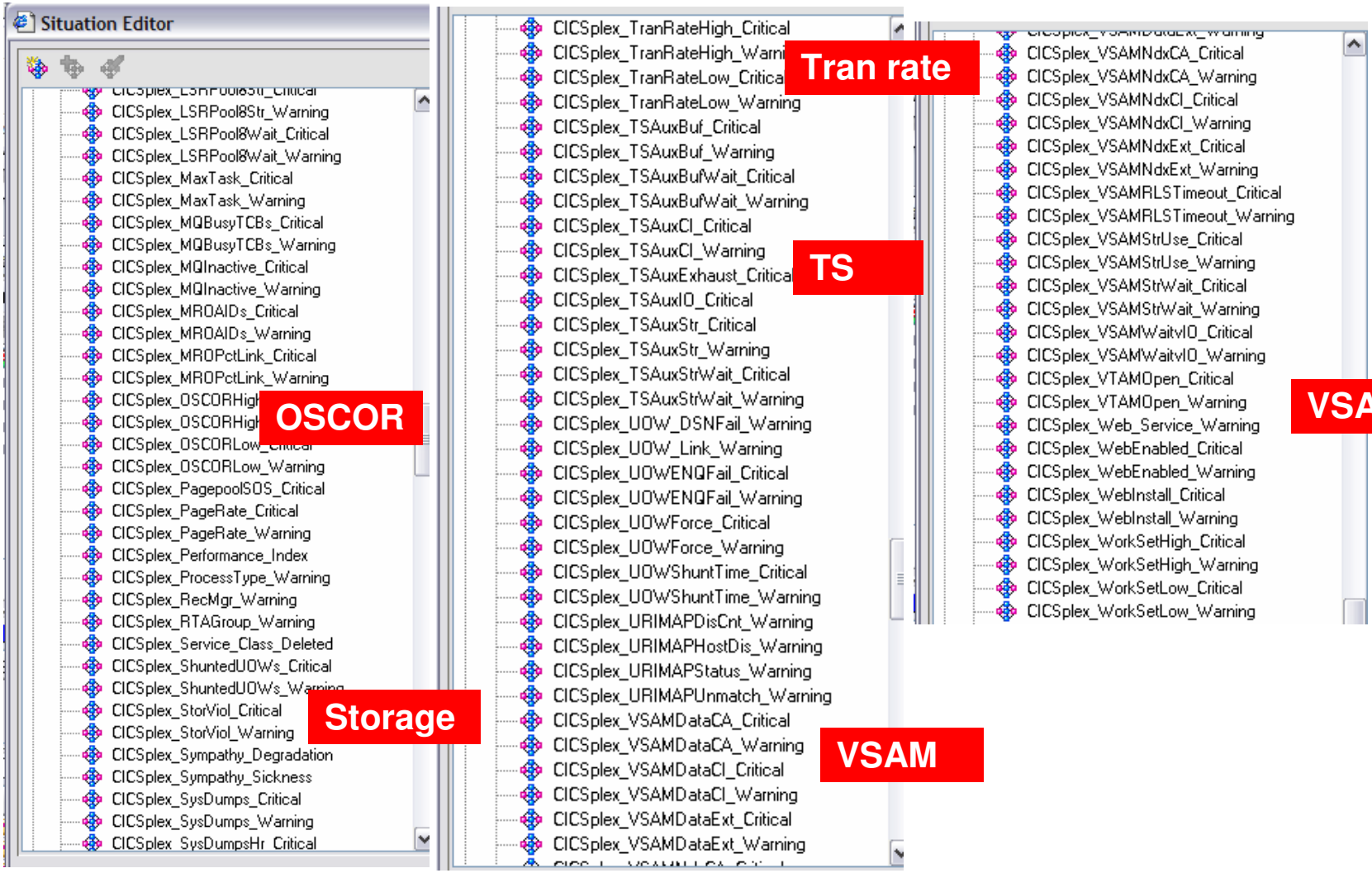
OMEGAMON XE For z/OS V4.1
Product Provided Situations - continued



OMEGAMON XE For CICS V4.1 Product Provided Situations



OMEGAMON XE For CICS V4.1
Product Provided Situations - continued

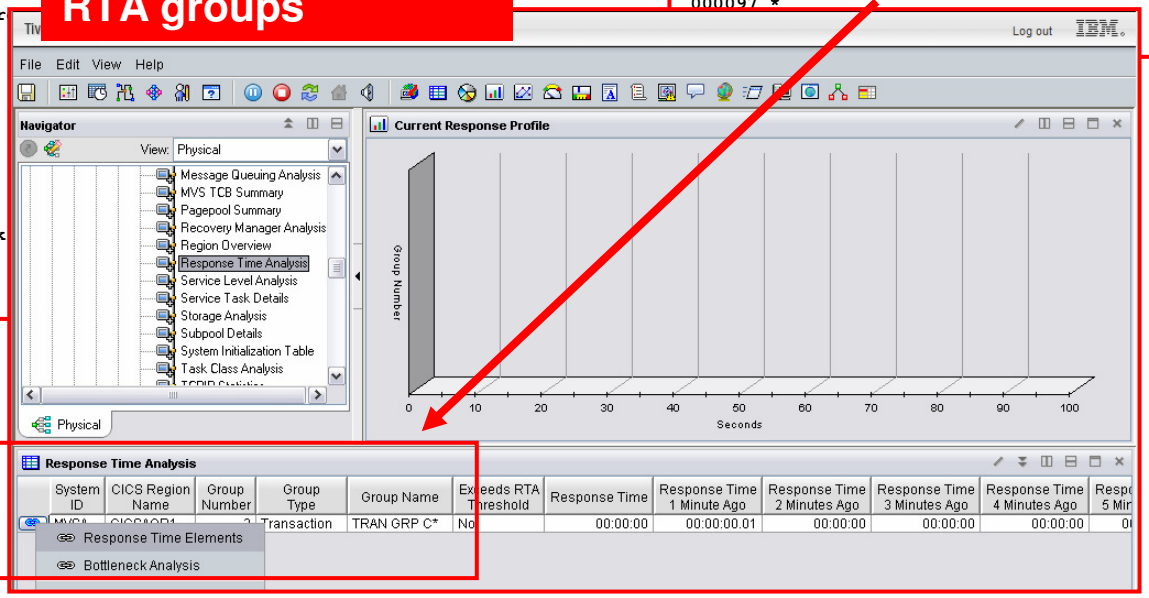


OMEGAMON XE For CICS
Recommendation - Customize KC2GLB Macro

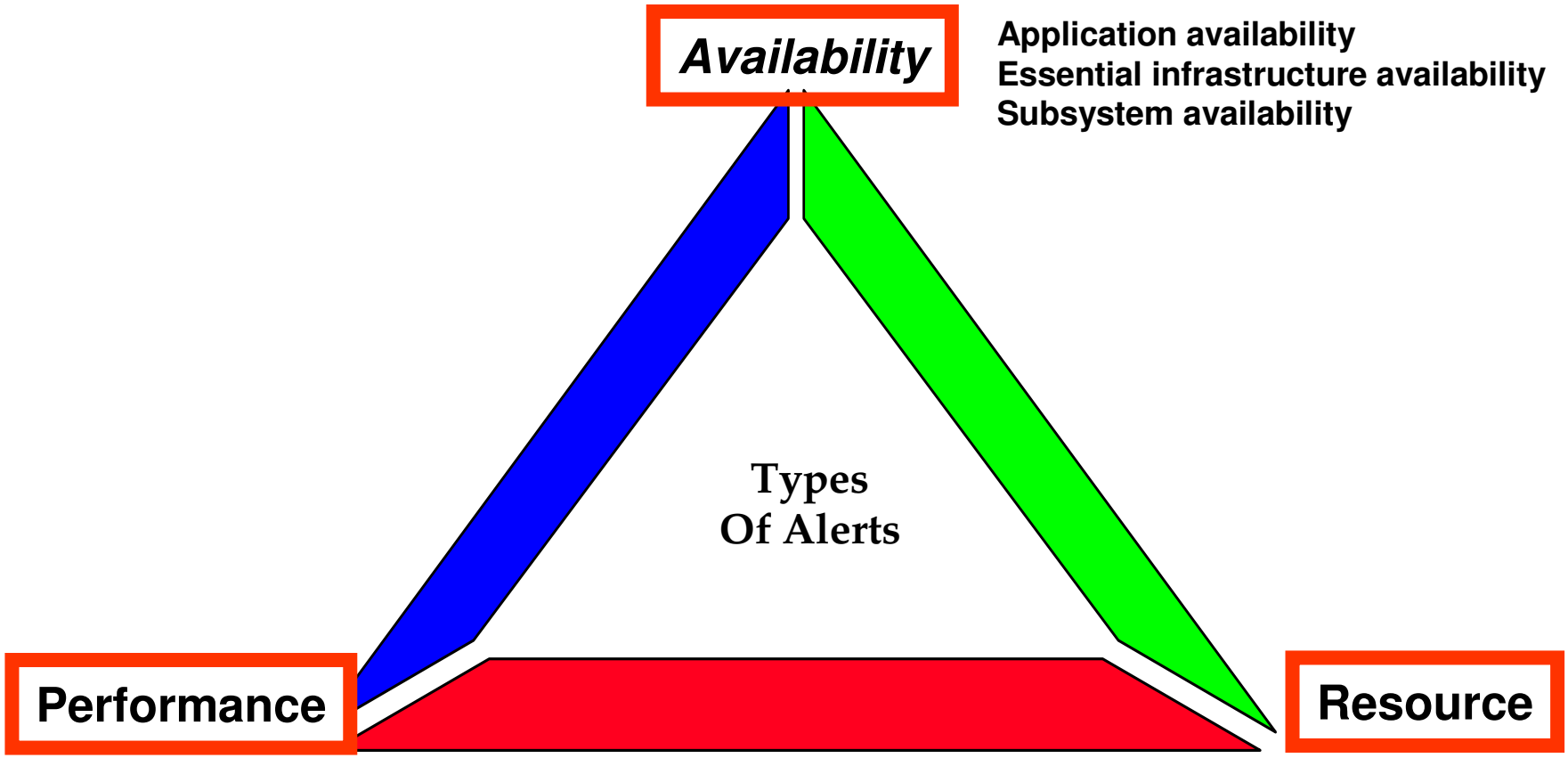
```
------------------ MANAGE CICS GLOBAL DATA AREA(s) (ADCD) -----------------


  1  Create/Update a GLB
        For option 1 only: Suffix ==>

  2  Update existing GLB definitions
  3  Copy GLB definitions to RKANPARU

  4  Migrate global data area(s)
  5  Display/Print GLB HELP documentation


  Global Data Ar


F1=Help   F3=Back


OPTION ===>
```

```
 EDIT ----- CANDLET.XEGA.INSTDATA(KC2GLB) - 01.00---------- COLUMNS 00001 00072
   For in-context HELP:  Place cursor on selected line then press F1
000077 *
000078    <GROUP_DEFINITIONS>
000086    <<GROUP>>
000087    GROUP_NUMBER=02
000088    GROUP_NAME=(TRAN GRP B* )
000089    GROUP_TYPE=TRAN
000090    RESPONSE_TIME_THRESHOLD=20
000091 *
000092    <<GROUP>>
000093    GROUP_NUMBER=03
000094    GROUP_NAME=(TRAN GRP C* )
000095    GROUP_TYPE=TRAN
000096    RESPONSE_TIME_THRESHOLD=20
000097 *
                                                          SCROLL ===> PAGE
```

Use ICAT to manage RTA groups



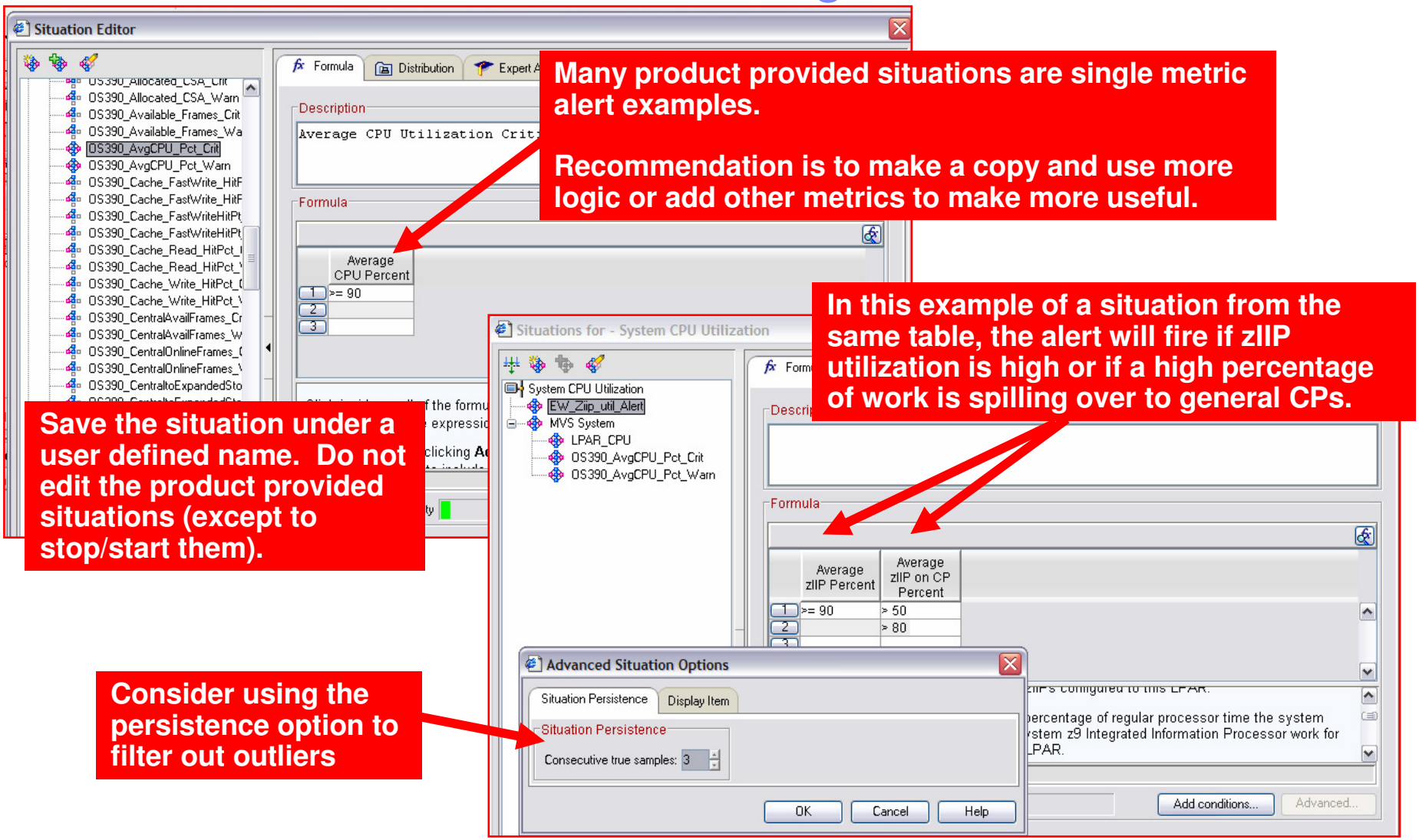
Categories Of Typical Situation Alerts



z/OS Examples - What Are The Resources? Key z/OS Resources That Need To Monitored

- z/OS CPU, zIIP/zAAP Processor, Storage
  - General CP utilization, zIIP and zAAP utilization
  - Storage, Paging, CSA utilization, ECSA utilization, SQA utilization
- z/OS Workload Manager (WLM)
  - WLM service classes, goals, performance index (PI)
- DASD and control unit performance and availability
  - DASD performance (MSR time)
- Sysplex level resources
  - CF processor utilization and availability
  - CF storage and structure utilization
  - CF link performance, utilization, and availability
- Key Subsystem and address spaces
  - Address space availability, Address space CPU utilization and paging activity

CPU Monitoring Example Using The Product Provided Situation As A Starting Point



Many product provided situations are single metric alert examples.

Recommendation is to make a copy and use more logic or add other metrics to make more useful.

In this example of a situation from the same table, the alert will fire if zIIP utilization is high or if a high percentage of work is spilling over to general CPs.

Save the situation under a user defined name. Do not edit the product provided situations (except to stop/start them).

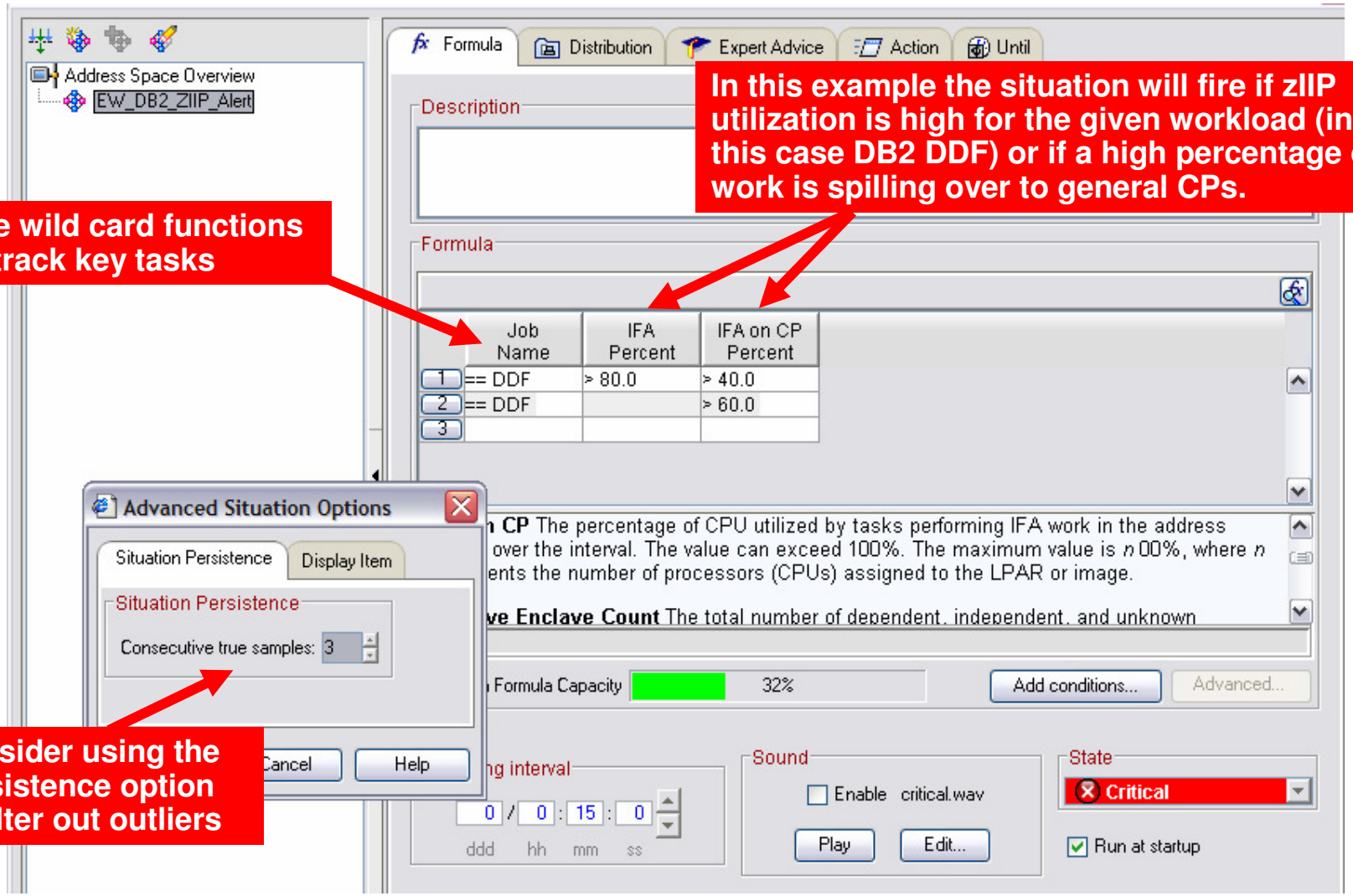
Consider using the persistence option to filter out outliers

General Suggestions On Product Provided Situations

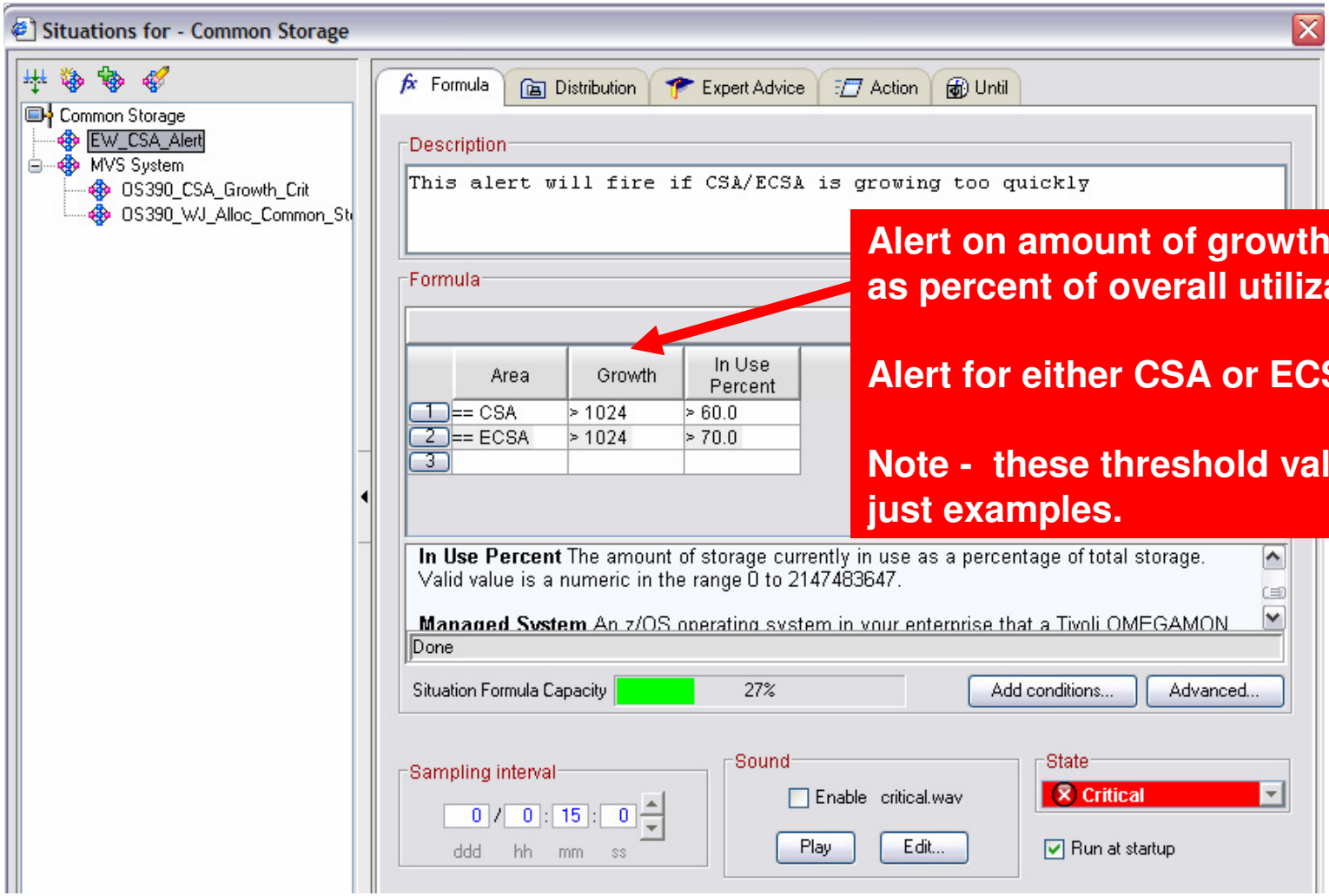
- OMEGAMON XE For z/OS and OMEGAMON XE For CICS provide quite a few product provided hundreds of product provided situations
- Product provided situations provide simple examples and a starting point for the most common types of alerts required
  - For z/OS - z/OS CPU, zIIP/zAAP Processor, Storage, z/OS Workload Manager (WLM), DASD, Sysplex level resources, Key Subsystem and address spaces, Address space utilization
  - For CICS - CICS response time, transaction rate, File and Database activity, Temp storage and Transient Data Queues, CICS storage utilization, CICS availability, Java status, Network connectivity
- In general consider a “turn off/turn on” approach
  - Turn off PPS’s out of the box (example all the Crypto alerts)
  - Enable those PPS’s deemed useful
  - For other alerts use PPS’s as an example, make a copy and craft to the installation needs

zIIP Processor CPU Resource Utilization Alert

Alert When zIIP Utilization Is High For zIIP Dependent Workload

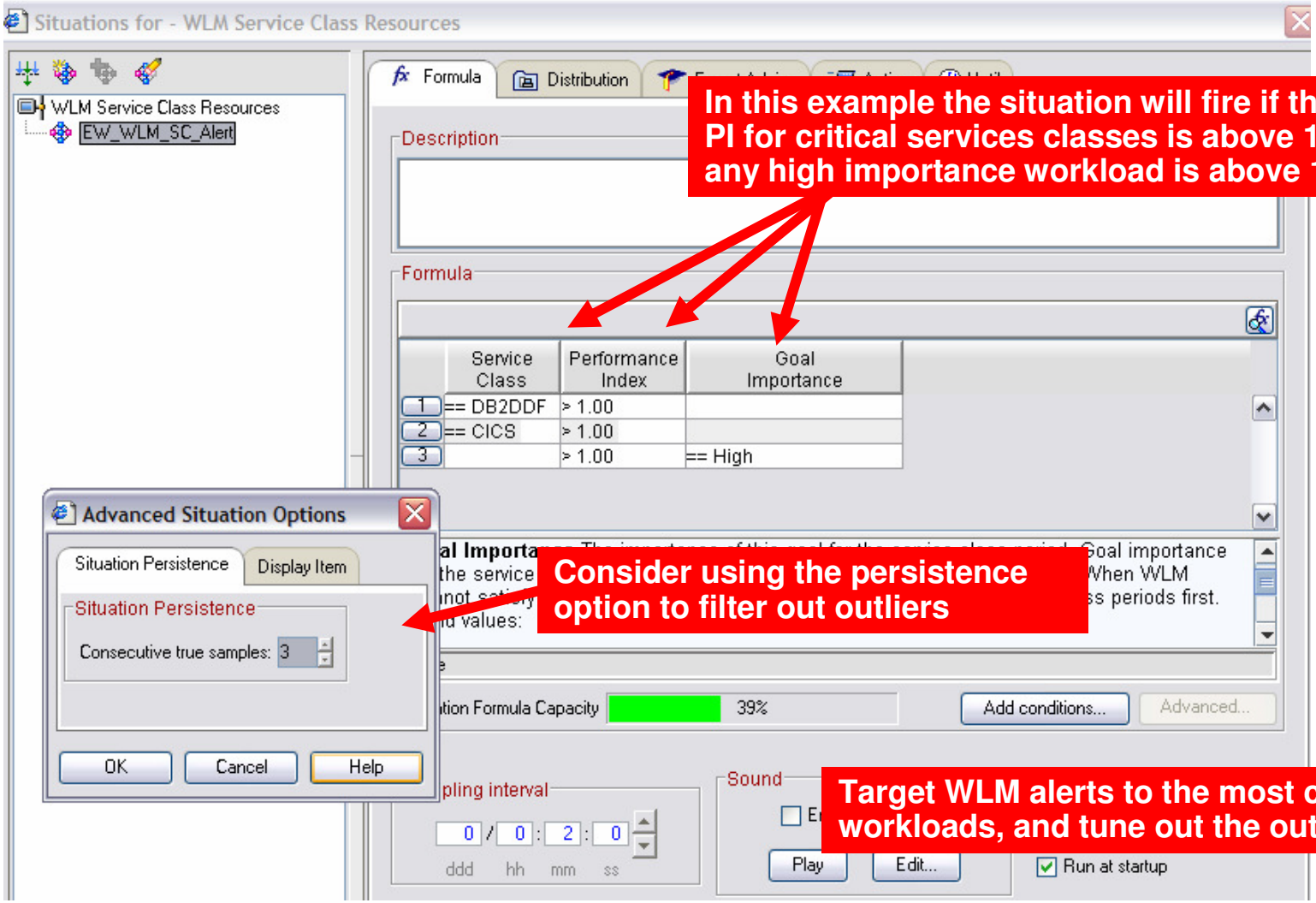


Another Resource Utilization Alert
Alert When CSA/ECSA Utilization Grows Rapidly



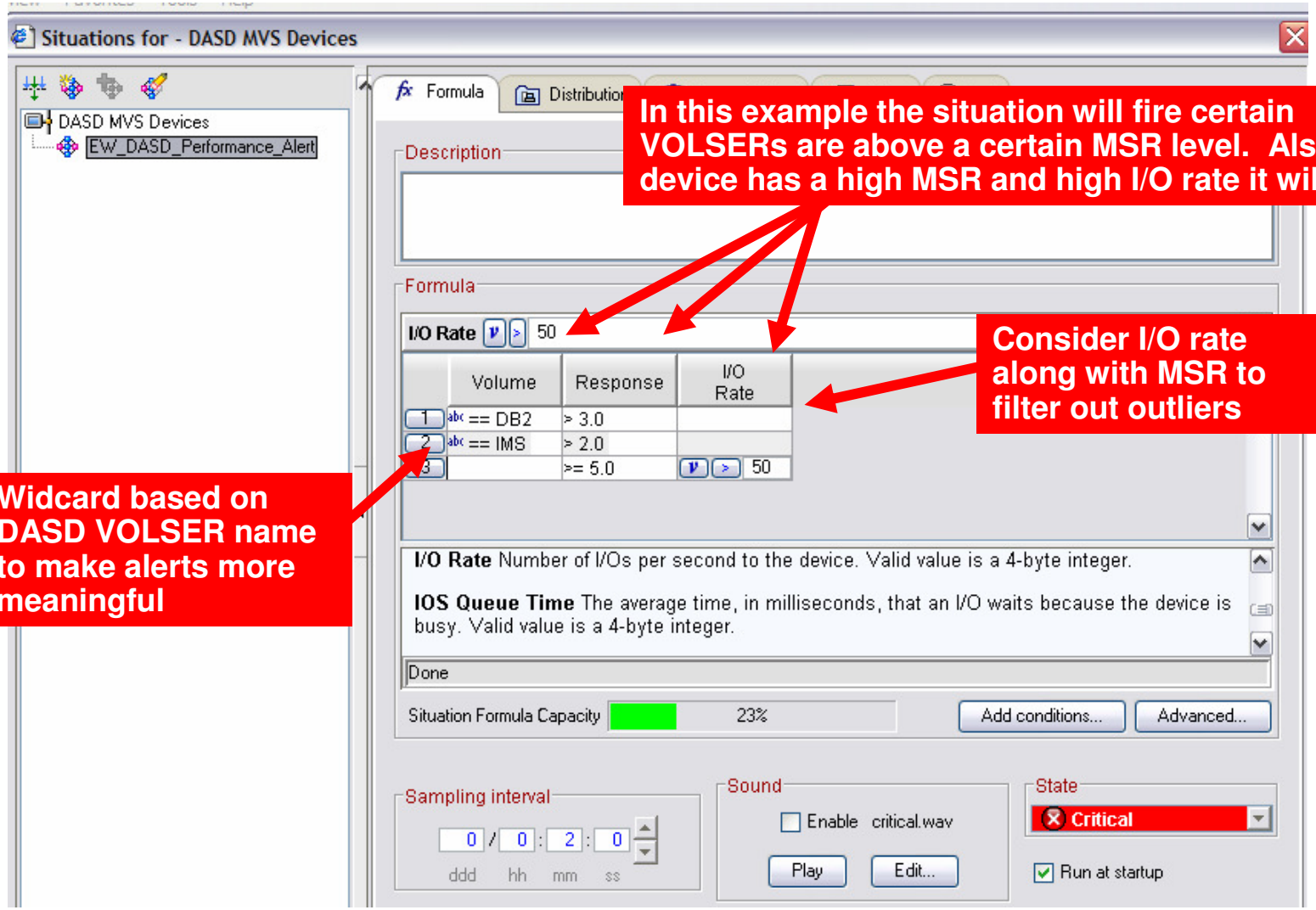
Workload Performance Alert

Alert When Workload Manager Managed Workloads Not Meeting Goals



DASD Performance Alert

Alert When Critical DASD Devices Not Meeting Performance Goals

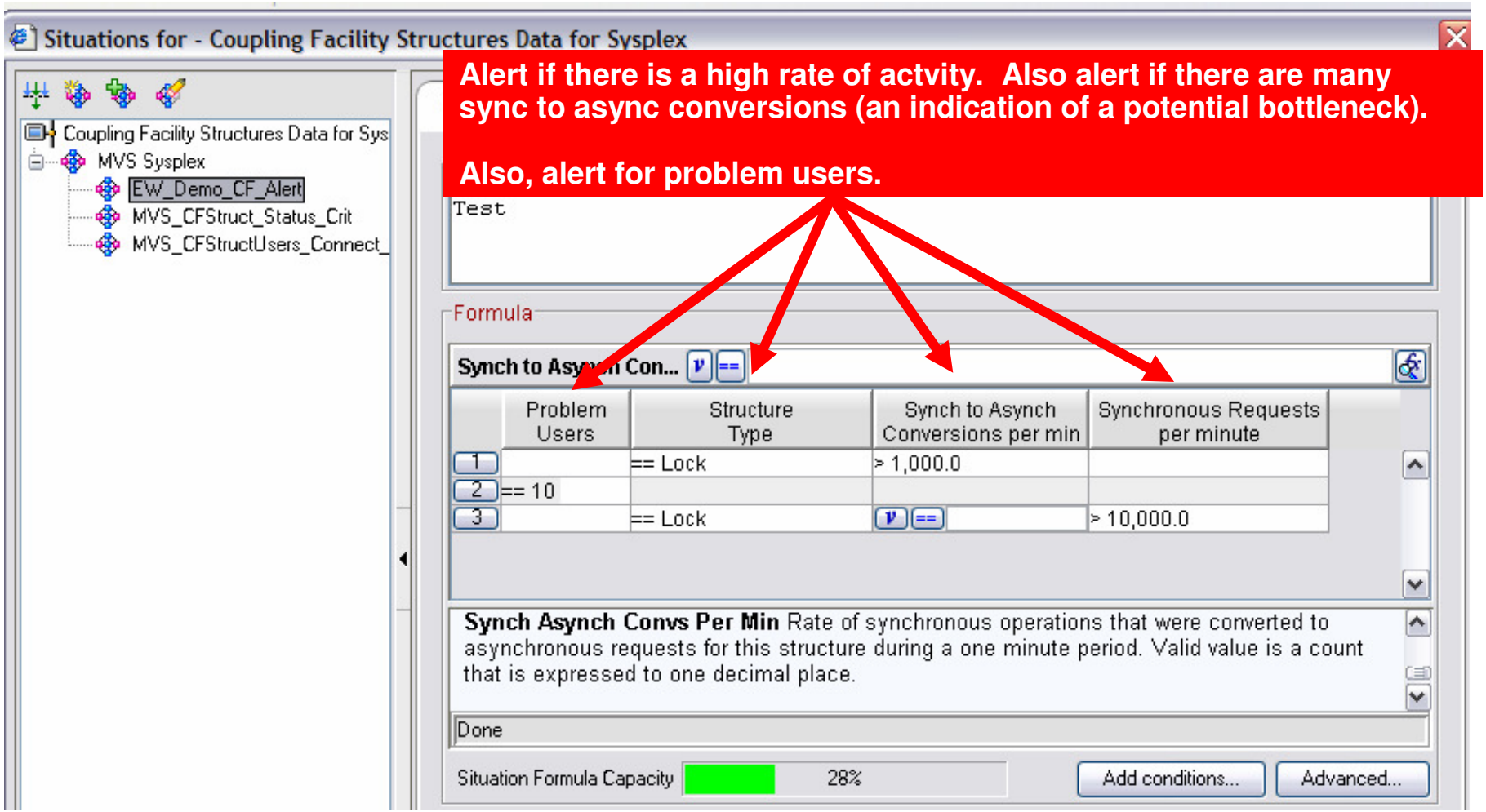


In this example the situation will fire certain VOLSERs are above a certain MSR level. Also, if a device has a high MSR and high I/O rate it will fire.

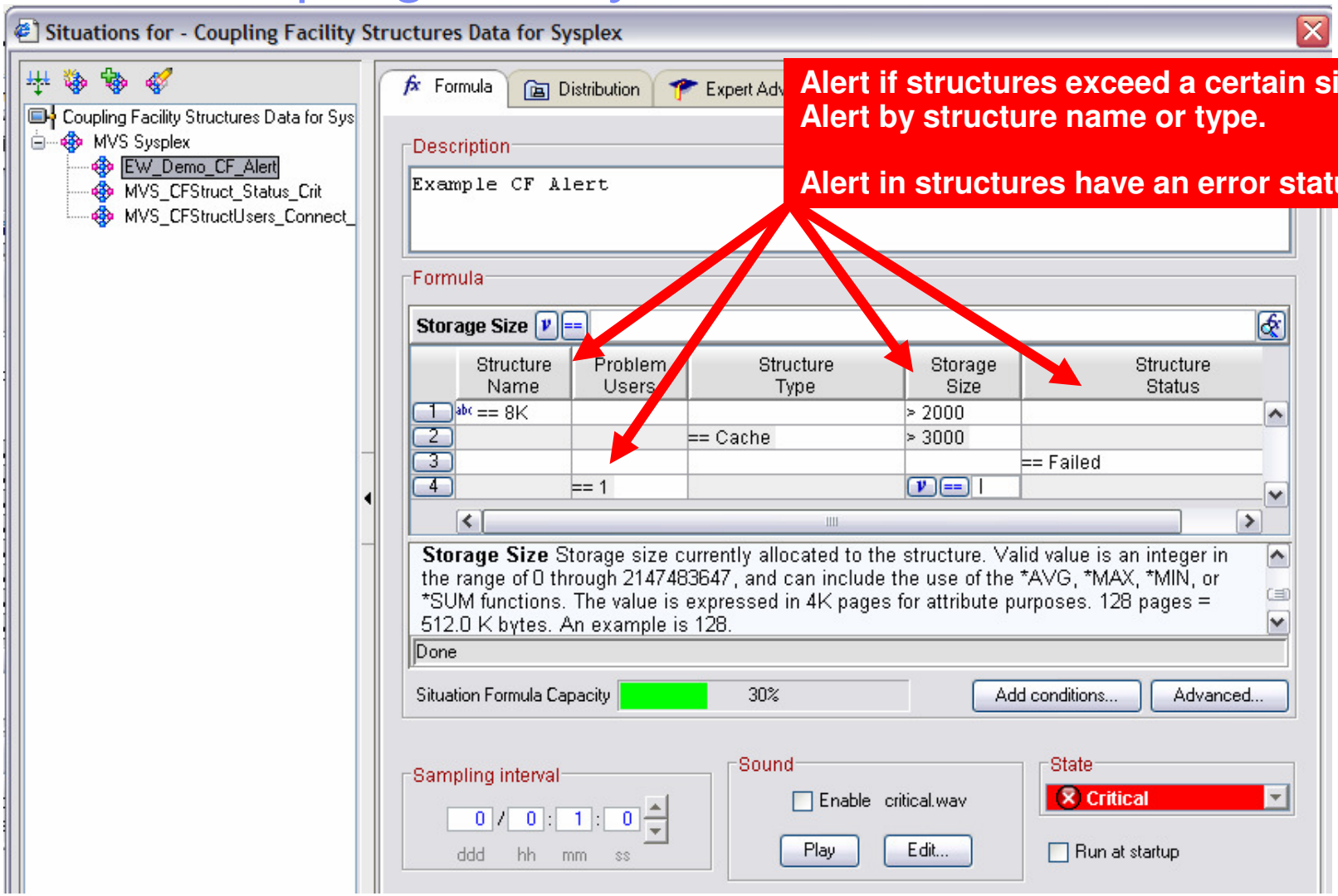
Consider I/O rate along with MSR to filter out outliers

Widcard based on DASD VOLSER name to make alerts more meaningful

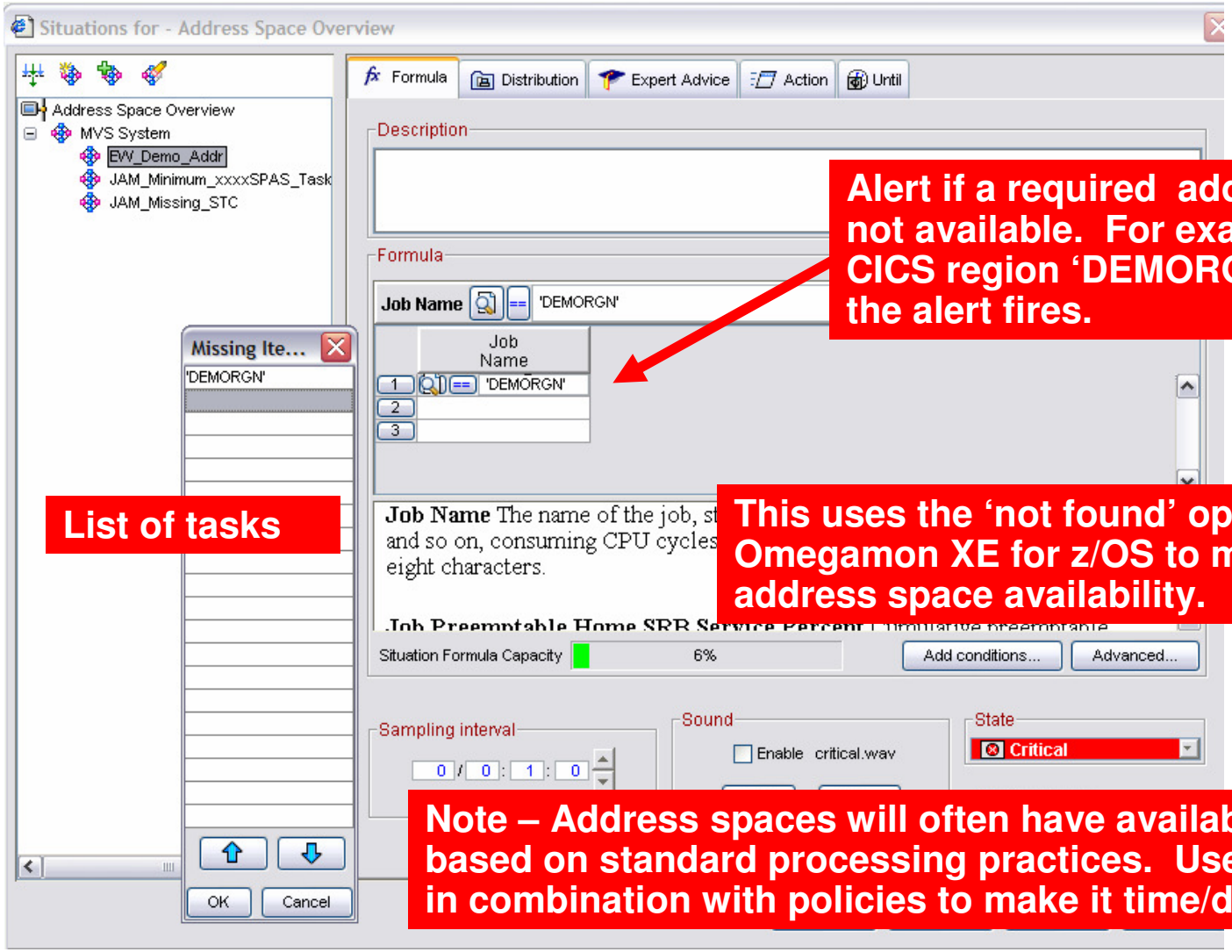
System Resource Performance Example
Monitor Key Coupling Facility Structure Performance



System Resource Availability Example
Monitor Coupling Facility Structures



Essential Infrastructure Availability Example
Monitor Key Address Space Availability



Alert if a required address space is not available. For example if essential CICS region 'DEMORGN' is not found the alert fires.

List of tasks

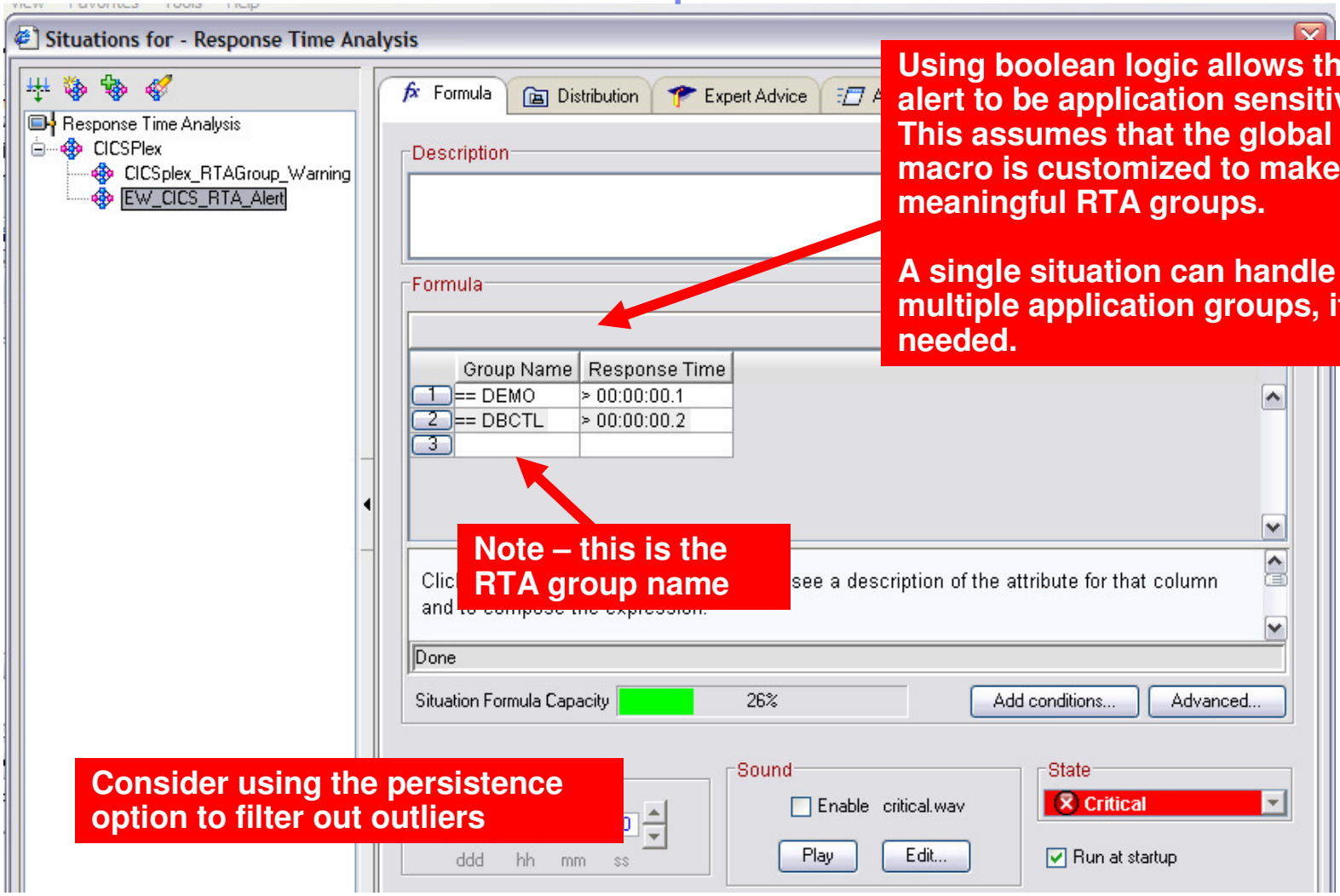
This uses the 'not found' option and Omegamon XE for z/OS to monitor address space availability.

Note – Address spaces will often have availability windows based on standard processing practices. Use this type of alert in combination with policies to make it time/day sensitive.

CICS Examples - What Are The Resources? Key CICS Resources That Need To Monitored

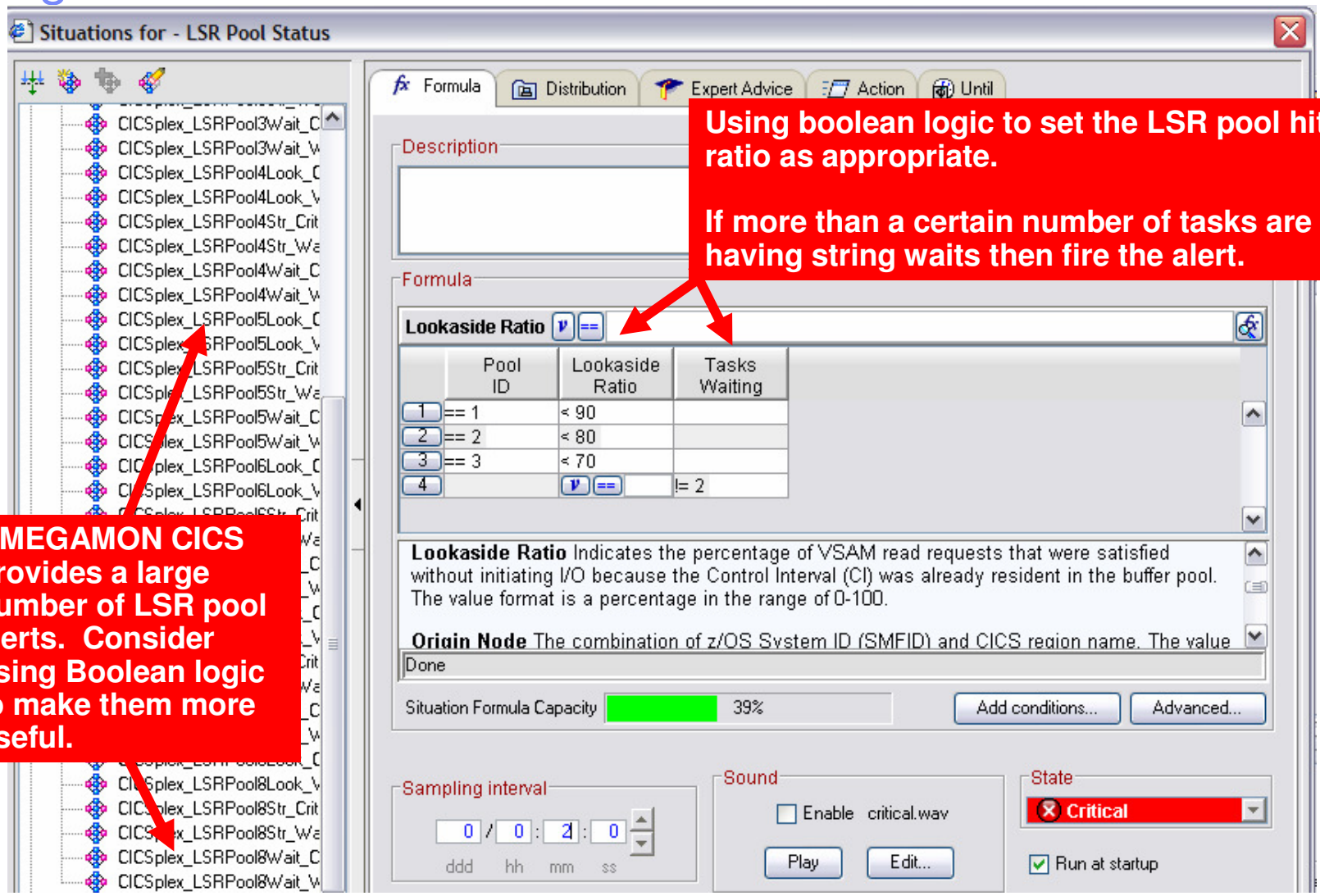
- CICS response time and transaction rate
  - Monitor CICS application response time by RTA group
  - Monitor transaction rate and throughput (high rate and low rate)
- CICS file and Database activity
  - VSAM file activity, string waits, LSR buffer pool performance, IMS DBCTL activity
- CICS Temp storage and Transient Data Queues
  - Monitor utilization and activity
- CICS storage utilization
  - DSA, EDSA, OSCOR utilization
- CICS availability
  - Java status, Network connectivity
- CICS address spaces
  - Address status and availability, address space CPU utilization, paging activity

Application Performance Example Situations To Monitor Response Time



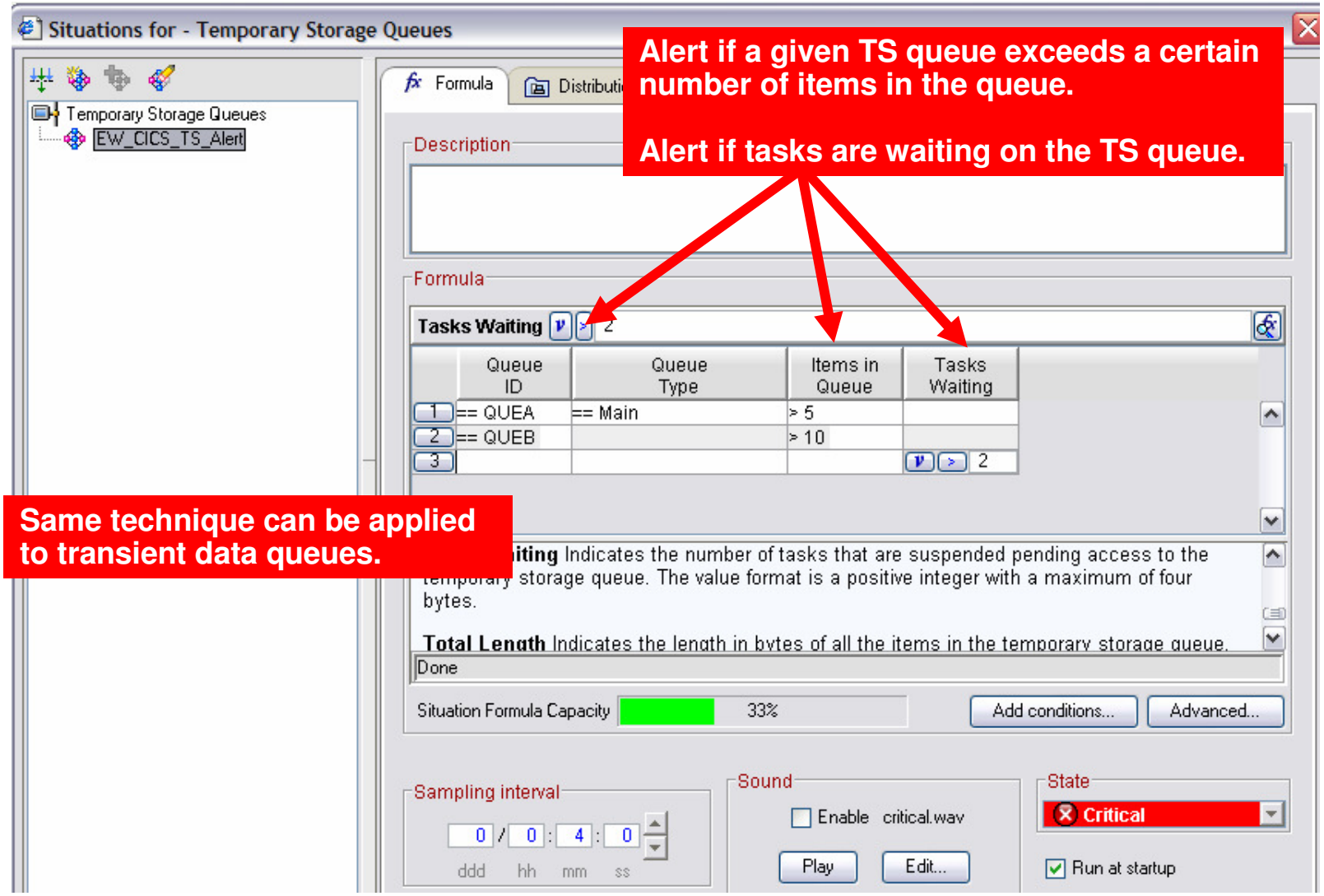
CICS Resource Utilization

String Waits And LSR Buffer Pool Performance

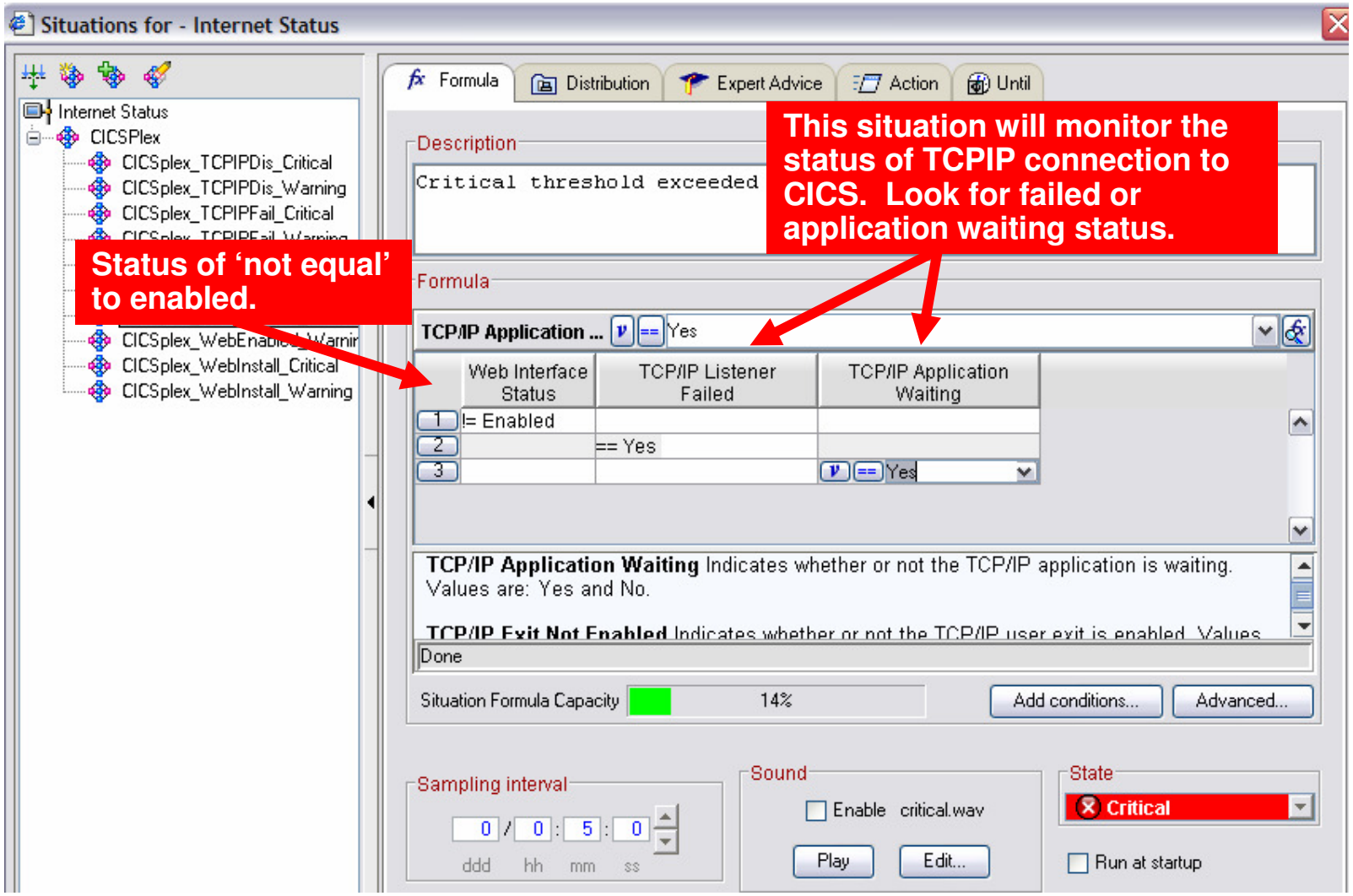


CICS Resource Utilization

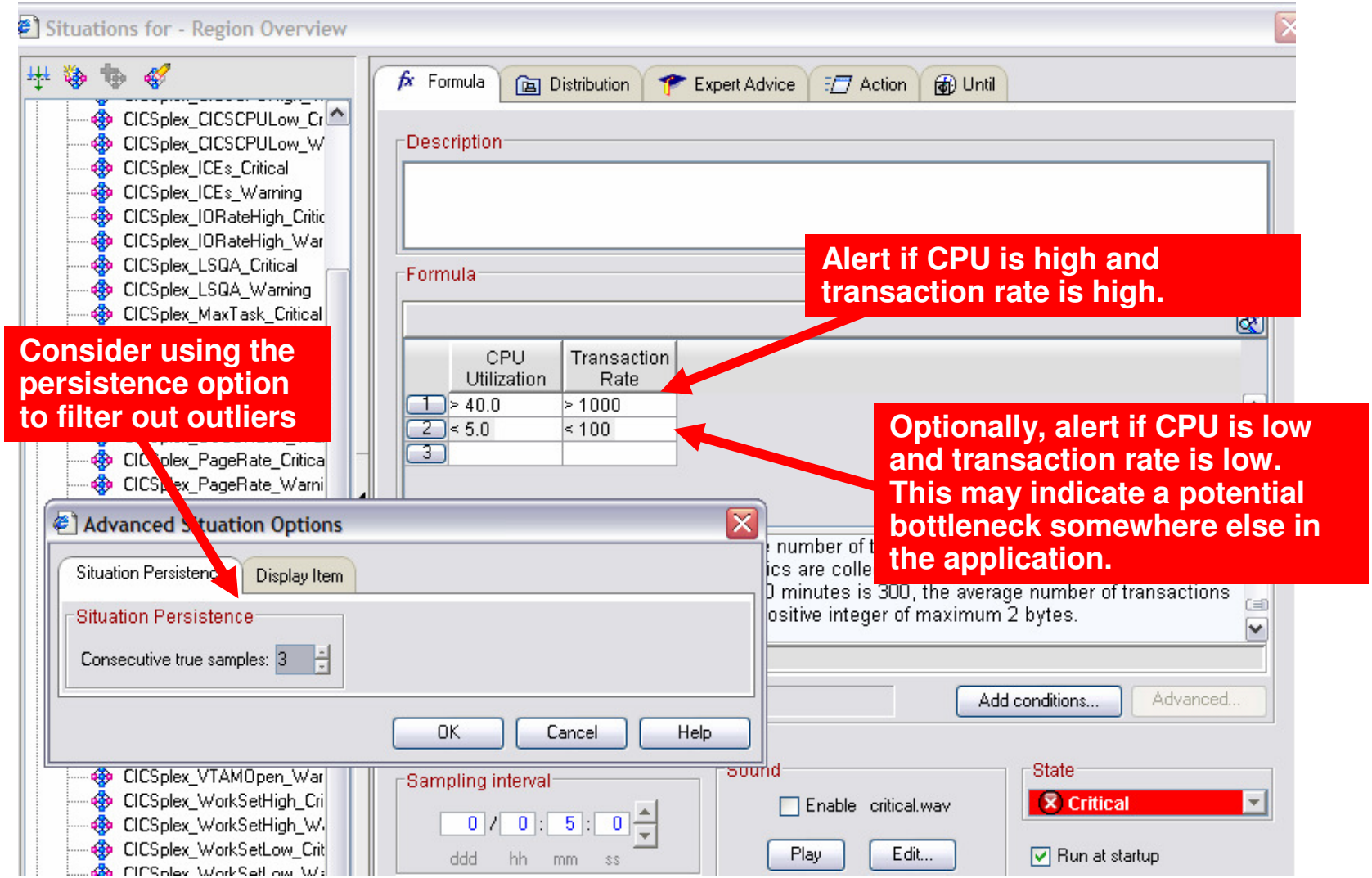
Temp storage and Transient Data Queues utilization



CICS Connection Availability Example
Monitor CICS Address Space TCP/IP Connectivity

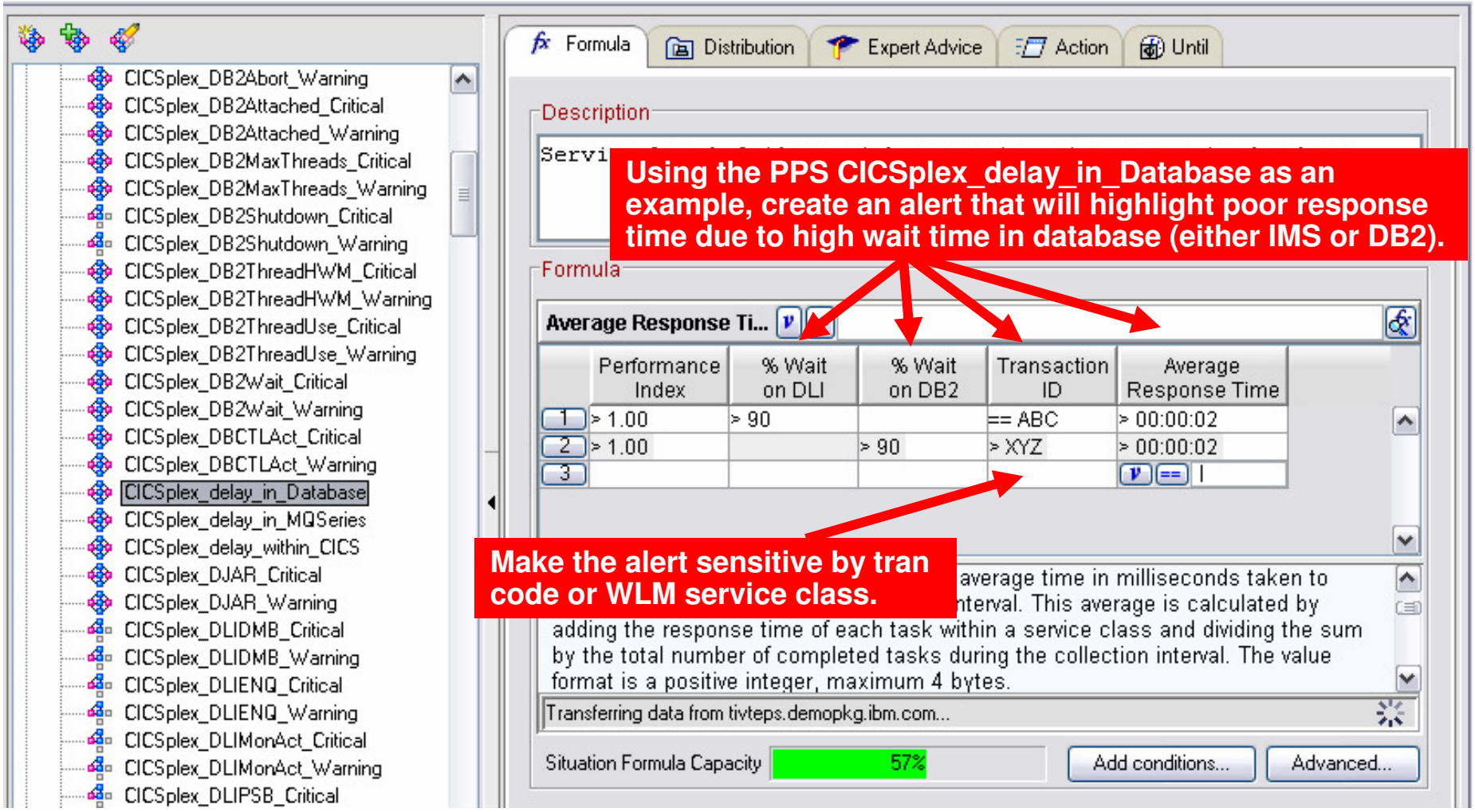


CICS Address Space Performance Monitor CICS Address Performance And Utilization



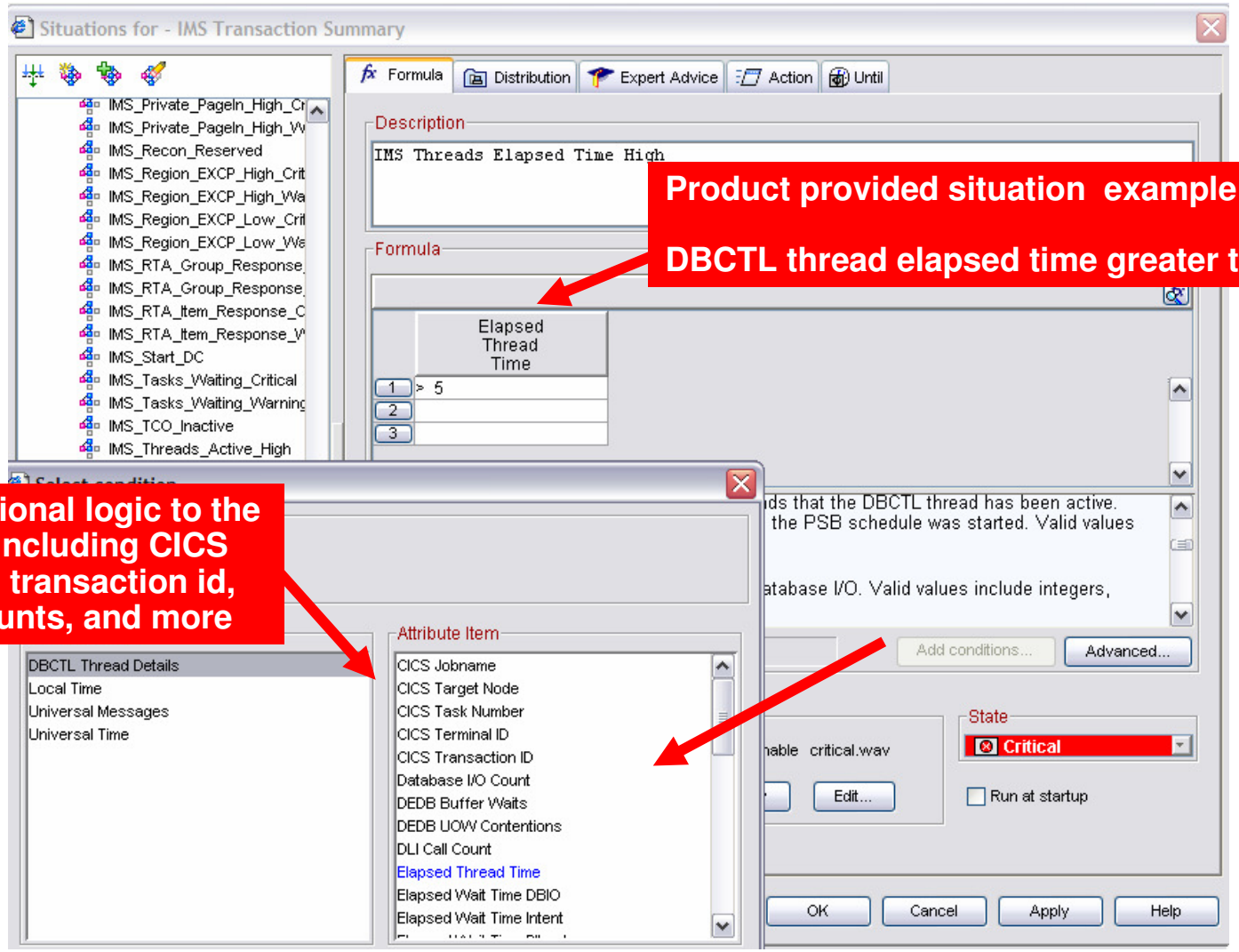
CICS Application Performance

Monitor CICS Transaction Response And Highlight High DB Wait



Application Performance Example

Monitor IMS DBCTL Thread Performance With OMEGAMON XE For IMS



Summary

- Situations are an essential building block of the Tivoli Enterprise Portal
- Situations may be used to highlight performance and availability problems within z/OS or CICS
- Understanding the dynamics of how situations may be effectively built and deployed drives the relative benefits
- It is recommended to have a situation deployment strategy and methodology

Thank You!!