



| z/TPF V1.1

2013 TPF Users Group

Title: Monitoring z/TPF

Subtitle: Continuous Data Collection & Tivoli Enterprise Monitoring

Gerry Strait
Operations

AIM Enterprise Platform Software
IBM z/Transaction Processing Facility Enterprise Edition 1.1

Any reference to future plans are for planning purposes only. IBM reserves the right to change those plans at its discretion. Any reliance on such a disclosure is solely at your own risk. IBM makes no commitment to provide additional information in the future.

Opening Statement



NO CHARGE

- **IBM provides a no charge z/TPF monitoring solution to licensed z/TPF customers**

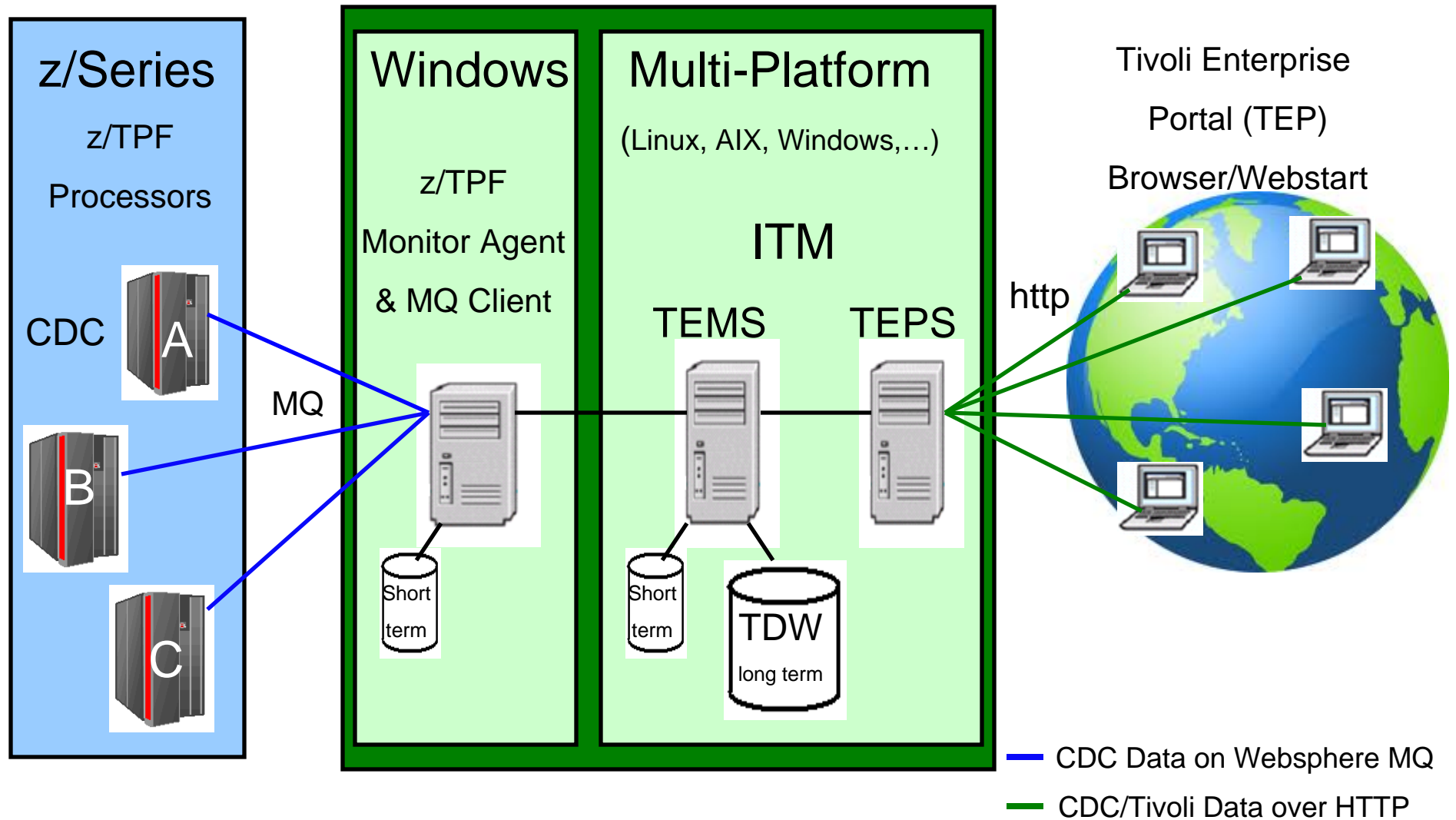
Monitoring Solution Highlights

- **Real-Time display of z/TPF Continuous Data Collection Data**
 - Situations/Alerts
 - Flexible Data Displays
- **Historical Storage and Retrieval of Continuous Data Collection Data**
 - Trend Analysis
 - Monitor Baselines
- **Problem Determination and Prevention**
- **Enterprise Monitoring**

z/TPF Monitoring Components

- **1) Continuous Data Collection (ZCDCO)**
 - Base z/TPF component
- **2) IBM Tivoli Monitor Agent for z/TPF**
 - No charge: Available from z/TPF tools page
 - Requires Websphere MQ Client
 - No charge: Available from Websphere MQ support Page
- **3) IBM Tivoli Enterprise Monitoring (ITM)**
 - No charge: Available from Passport Advantage and ShopZ
 - Tivoli Enterprise Monitoring Server (TEMS)
 - Tivoli Enterprise Portal Server (TEPS)
 - Short Term Historical Data (24 hours) in a File System
 - Long Term Historical Data in a Relational Database
 - Tivoli Data Warehouse (TDW)
 - Warehouse Proxy Agent, Summarization and Pruning Agent
 - Relational database product is not included
 - Supported Products: db2, db2 for z/os, oracle, ms sql

z/TPF Monitoring Components – simplified high level



Continuous Data Collection Initial Setup

- **1) Define format-2 global for your complex**
 - ICDCCNTL
 - Processor unique
 - Stores CDC runtime settings
- **2) Configure Websphere MQ**
 - Three Options:
 - Local Queue Manager
 - Local Queue Manager with Remote MQ Server
 - Remote Queue Manager (Target: Put 10)
 - Automatic Expiry of all Messages
- **3) Initialize and Start CDC**
 - ZCDCO INIT and ZCDCO START
 - Per processor
- **See “Getting Start with CDC” in the z/TPF info center for full instructions**

Continuous Data Collection Metrics

- **SYSTEM_MESSAGE**
- **SYSTEM_LIST**
- **SYSTEM_BLOCK**
- **DASD_DEVICE**
- **DASD_SERVICE_TIME**
- **POOL**
- **TCPIP**
- **MPIF**
- **MQ_SUMMARY**
- **MQ_QUEUE**
- **MQ_CHANNEL**
- **ISTREAM**
- **SUBSYSTEM**
- **TAPE**
- **VFA**
- **LPAR_UTILIZATION**
- **CHANNEL_UTILIZATION**
- **LODIC**
- **LODIC_UTILIZATION_CLASS**
- **PREDEFINED_USER_DATA**

ITM Features – Customizable Displays

Tivoli Enterprise Portal (TEP)

- A selection of customizable charting, graphing and table options
- Simple GUI Interface
- Create, save and share your own data views (workspaces)
- Visual Aids: Thresholds, Filters, Alerts
- Any Combination:
 - Monitor multiple CDC metrics in a single workspace
 - Monitor multiple TPF processors in a single workspace
 - Monitor disparate systems data in a single workspace
 - For Example: z/TPF & z/OS

Sample View

Tables,
Line plots,
Bar charts,
Visual aids

The screenshot displays the IBM TPF monitoring interface. On the left is a Navigator tree showing the system hierarchy. The main area is divided into three panels:

- LPAR Utilization Table:** A table listing various LPARs with their CPU counts and utilization percentages. The value 99.97 for CF2 is highlighted in yellow.
- TFPF1 Utilization Line Chart:** A line graph showing the utilization percentage of TFPF1 over time, with a vertical red line indicating a specific point in time.
- Utilization Percentage Bar Chart:** A horizontal bar chart comparing the utilization percentages of several TFPF instances.

| Name | Num | CPUs | Util Percent | Capped Util Percent | CEC Util Percent |
|---------|-----|------|--------------|---------------------|------------------|
| TPFP1 | 5 | 4 | 0.76 | 0.00 | 0.16 |
| CF1 | 1 | 1 | 1.91 | 0.00 | 0.10 |
| CF2 | 2 | 1 | 99.97 | 0.00 | 5.55 |
| CF3 | 3 | 1 | 0.10 | 0.00 | 0.00 |
| MVSESA2 | 4 | 5 | 5.18 | 0.00 | 1.43 |
| TPFP2 | 6 | 16 | 1.14 | 0.00 | 1.02 |
| TPFP3 | 7 | 16 | 2.09 | 0.00 | 1.86 |
| TPFP7 | 8 | 0 | 0.00 | 0.00 | 0.00 |
| TPFP8 | 9 | 5 | 0.20 | 0.00 | 0.05 |
| TPFP9 | 10 | 4 | 0.20 | 0.00 | 0.04 |
| TPFT4 | 11 | 8 | 0.00 | 0.00 | 0.00 |
| TPFT5 | 12 | 1 | 0.74 | 0.00 | 0.03 |
| TPFT6 | 13 | 0 | 0.00 | 0.00 | 0.00 |
| VM1 | 14 | 5 | 5.84 | 0.00 | 1.61 |

Sample View

Multiple Processors in Single View

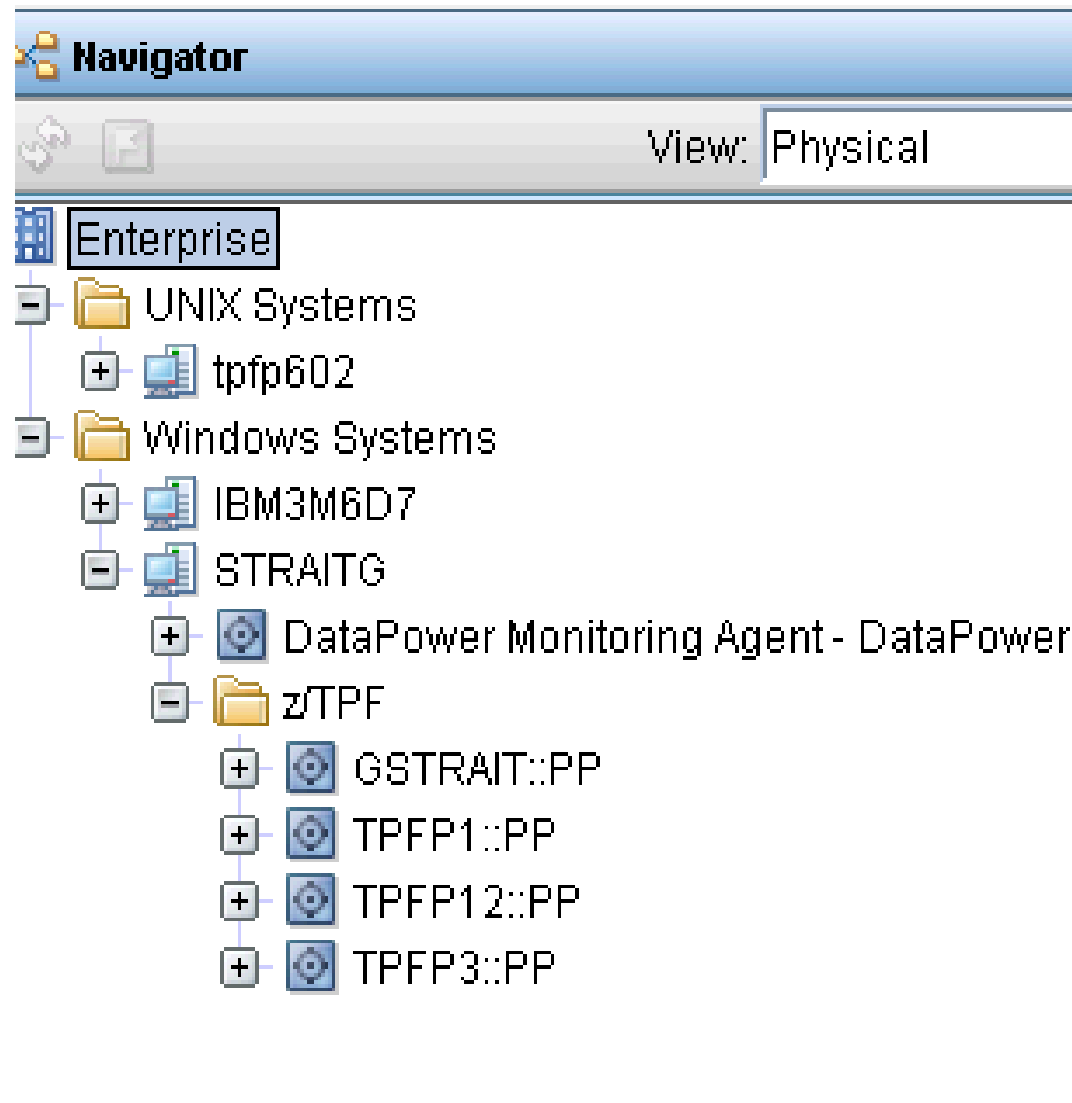
The screenshot shows the IBM TPF monitoring interface. On the left, a tree view under 'z/TPF' lists several processors: GSTRAIT::PP, TPF1::PP, TPF12::PP, and TPF3::PP. A red box highlights this list, with a red line pointing to the 'Processor Totals' table on the right. The 'Processor Totals' table shows performance metrics for three nodes: GSTRAIT:STRAITG:PP, TFP3:STRAITG:PP, and TFP1:STRAITG:PP. Below this is the 'DASD IO Subsystem: BSS' table, which details IO activity for each node across different devices (DEVA, DEVB).

| Node | Messages per Sec | DASD IO per Sec | Average Processor Utilization |
|--------------------|------------------|-----------------|-------------------------------|
| GSTRAIT:STRAITG:PP | 0.00 | 24.87 | 0.80 |
| TFP3:STRAITG:PP | 0.00 | 9891.35 | 1.56 |
| TFP1:STRAITG:PP | 0.46 | 438.28 | 0.42 |

| Node | SS Name | Device | IO per Sec | Read per Sec |
|--------------------|---------|--------|------------|--------------|
| GSTRAIT:STRAITG:PP | BSS | DEVA | 13.66 | 9.29 |
| GSTRAIT:STRAITG:PP | BSS | DEVB | 11.21 | 4.71 |
| TFP3:STRAITG:PP | BSS | DEVA | 4466.... | 902.3: |
| TFP3:STRAITG:PP | BSS | DEVB | 1393.... | 941.5: |
| TFP1:STRAITG:PP | BSS | DEVA | 19.50 | 13.26 |
| TFP1:STRAITG:PP | BSS | DEVB | 217.44 | 115.8: |

Sample View

Navigator



ITM Features – Situations and Alerts

- User defined situations (samples included)
- Alerts generate Tivoli Events
- Alerts can run an application
 - An application for sending email notifications
 - An application for sending a text message to a mobile phone
 - A TPF Operations Server API application for sending commands into a TPF processor
- A history of alerts and acknowledgements

Situations and Alerts

Formula

multiple attributes

combined situations

can also use time range

Situation Editor

Formula Distribution Expert Advice Action Until

Name
KPP_LPAR_Util_High_Sample

Description
This situation is provided by IBM as a sample. Do not edit.

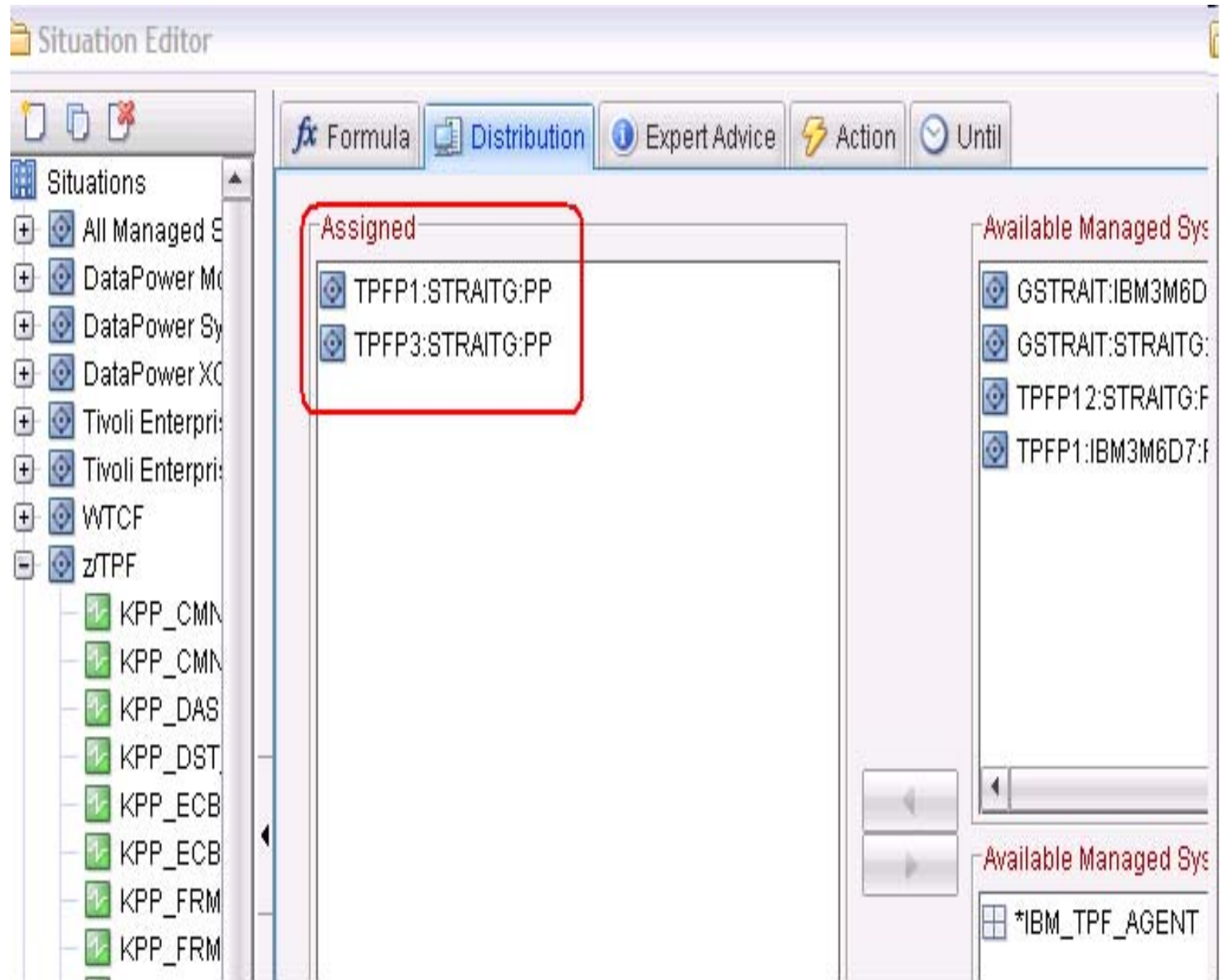
Formula

| | Util Percent | CEC Util Percent | KPP_DASD_Queue_High |
|---|--------------|------------------|---------------------|
| 1 | > 95.00 | > 20.00 | True |
| 2 | | | |
| 3 | | | |

Situations and Alerts

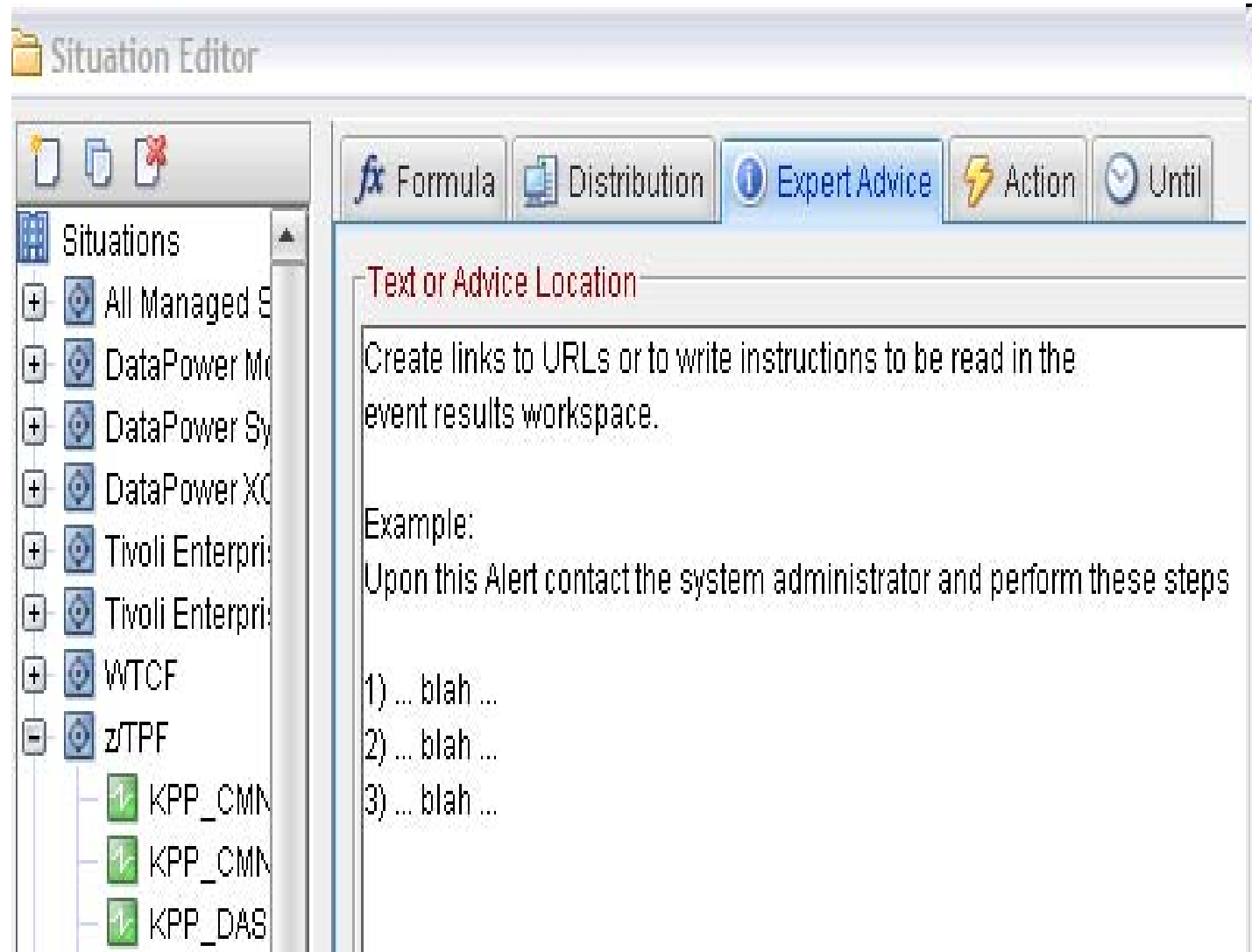
Distribution

select applicable processors



Situations and Alerts

Expert Advice



Situations and Alerts

Action

The screenshot shows the 'Situation Editor' window. On the left is a tree view of 'Situations' with various categories like 'All Managed S...', 'DataPower Mo...', 'DataPower Sy...', 'DataPower XC...', 'Tivoli Enterpris...', 'Tivoli Enterpris...', 'WTCF', and 'z/TPF'. Under 'z/TPF', several sub-items are listed with green arrows, including 'KPP_CMN', 'KPP_CMN', 'KPP_DAS', 'KPP_DST', 'KPP_ECB', and 'KPP_ECB'.

The main area of the editor has a toolbar with four tabs: 'Formula', 'Distribution', 'Expert Advice', and 'Action'. The 'Action' tab is selected. Below the toolbar, there are several configuration sections:

- Action Selection:** Contains two radio buttons: System Command and Universal Message.
- System Command:** A text box containing the command `cmd /c Send_Util_High_email.bat`. This section is highlighted with a red rectangle.
- If the condition is true for more than one monitored item:** Contains two radio buttons: Only take action on first item and Take action on each item.
- Where should the Action be executed (performed):** This section is partially visible at the bottom.

Situations and Alerts

Event Console

cascade in navigator

link to detail page

active alerts

right-click to acknowledge

The screenshot displays the IBM TPF Enterprise Edition interface. On the left is the 'Navigator' pane showing a tree view of system components under 'Enterprise', including 'UNIX Systems', 'Windows Systems', and 'STRAITG'. The 'View' is set to 'Physical'. On the right is the 'Situation Event Console' showing a table of active alerts:

| Severity | Status | Owner | Situation Name |
|----------|--------|-------|-------------------------|
| Warning | Open | | KPP_LPAR_Util_High_Samp |
| Warning | Open | | KPP_LPAR_Util_High_Samp |

A detail popup window is open for the selected alert, showing:

Warning
 KPP_LPAR_Util_High_Sample TPF1:STRAITG:PP 03/13/13 10:37:37


Below the popup, a yellow bar contains the message: 'KFWITM101I Select workspace link button to view situation event results.' At the bottom, a 'Message Log' pane is visible.

Situations and Alerts

Acknowledge

Acknowledgement - Create

Event Information



Event: KPP_LPAR_Util_High_Sample - TFP1:STRAITG:PP

Event time: Wed, 03/13/2013 10:37 AM

Reference ID:

Expiration

Expire at end of interval

Never ▼

0

/

0

:

0

▲
▼

ddd hh mm

Expire at specific time

03/13/2013 10:46 AM

Use Server time

Notes

03/13/13 10:46 - SYSADMIN:
 Event acknowledged, ownership assigned. Gerry saw this Alert at 11PM and resolved the issue by ... blah ...

Add Notes

Situations and Alerts

Acknowledged

| Severity | Status |
|----------|--------------|
| Warning | Open |
| Warning | Acknowledged |

| My Acknowledged Events | | | | | | | |
|------------------------|--------------|----------|----------------------------|--------------|------------------|-----|--|
| Severity | Status | Owner | Name | Display Item | Source | | |
| Warning | Acknowledged | SYSADMIN | KPP_LPAR_Util_High__Sample | | TFPF1:STRAITG:PP | LPA | |

| Message Log | | | | | | |
|--------------|----------------------------|--------------|------------------|-------------------|------------|--|
| Status | Name | Display Item | Origin Node | Global Timestamp | Local Tim | |
| Acknowledged | KPP_LPAR_Util_High__Sample | | TFPF1:STRAITG:PP | 03/13/13 10:46:52 | 03/13/13 1 | |
| Open | KPP_LPAR_Util_High__Sample | | TFPF3:STRAITG:PP | 03/13/13 10:37:37 | 03/13/13 1 | |

ITM Features – Historical Data

- **Short term data (24 hours) is stored in a file system**
 - This does not need the TDW
 - Can export to comma separated files to open in a spreadsheet
 - Collection Interval: 1, 5, 15, 30 minutes, 1 hour, 1 day
 - Collection Location: At Agent or TEMS
 - Distribution: Control what processor collects data
- **Long term data is stored in a relational database.**
 - Warehouse Intervals: 15, 30 minutes, 1, 12 hours, 1 day or None
 - Write your own SQL queries of relational data
 - Trend Analysis
 - Problem Determination
 - Ability to look back at a system at the time of a problem
 - Problem Prevention
 - Understand system usage before a problem happens
- **IBM Provides a Tool to Calculate Database Size Requirements**
 - Warehouse Projections Spreadsheet



History Configuration

History Collection Configuration

Basic | Distribution | Filter

Attribute Group
KPP DASD IO

Name
Historical_DASD_IO

Description
For LPARs TFP1 and TFP2

Configuration

Collection Interval: 15 minutes

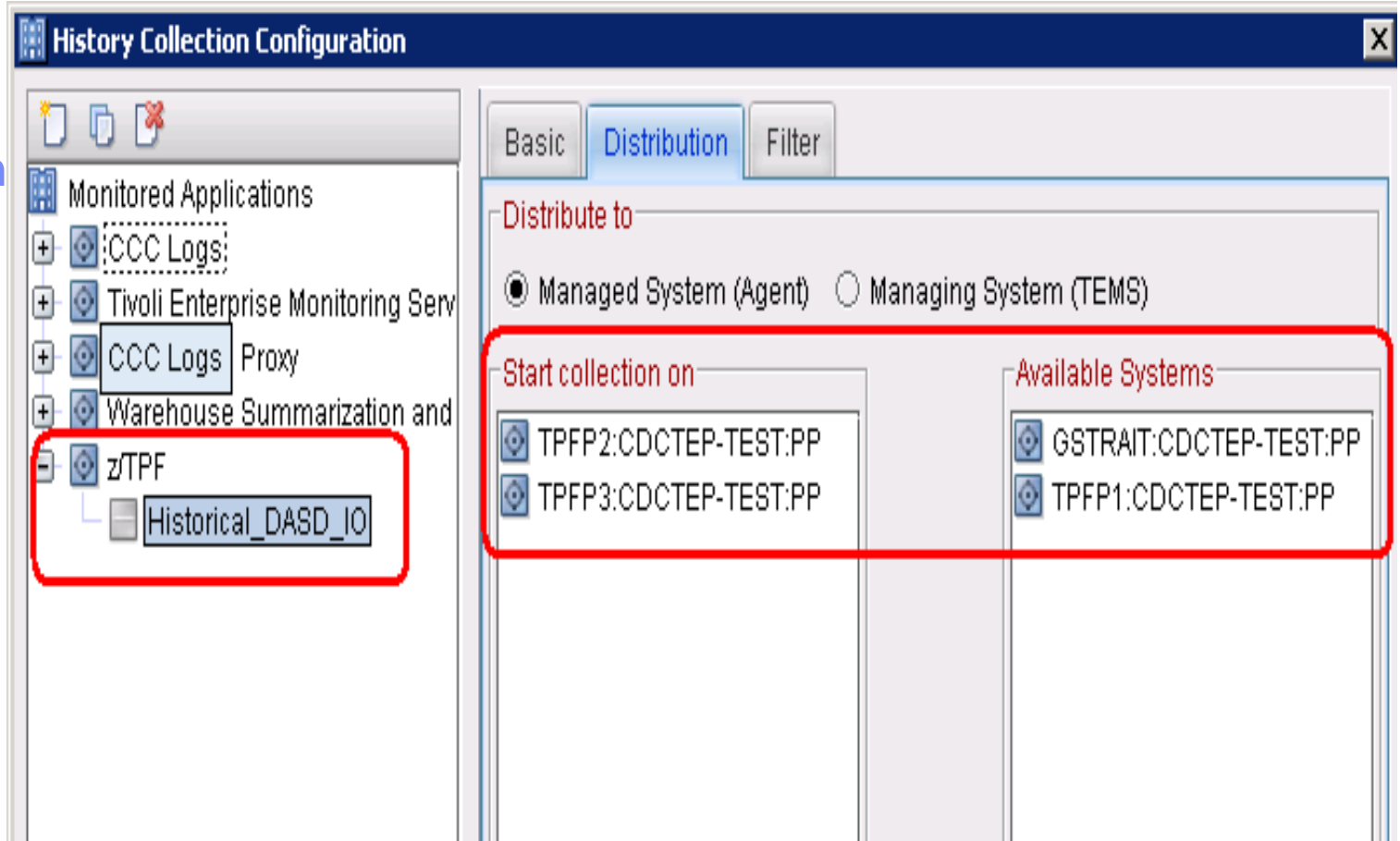
Collection Location: TEMA

Warehouse Interval: 1 day

Monitored Applications:

- CCC Logs
- Tivoli Enterprise Monitoring Serv
- Warehouse Proxy
- Warehouse Summarization and
- z/TPF
 - Historical_DASD_IO

History Configuration
Distribution



History Time Span

Select the data range to display in a line plot

Select the Time Span

Real time
 Real time plus Last Hours
 Last Hours

Last parameters

Use detailed data
 Time Column
 Use summarized data
 Shift
 Days

Custom

Custom parameters

Use detailed data
 Time Column
 Use summarized data
 Interval
 Shift
 Days

Start Time End Time

Apply to all views associated with this view's query Lock time span for Historical Navigation
 Use Hub time

History
Time Span

Select the
data range
to display
in a line
plot



Predefined User Data

Collected in CDC User Exit

display uses any TEP option

set situations

Helper

To include data in the Predefined User Data view:

- 1) Update the cdcc.c user exit on z/TPF. Example code is provided.
- 2) Modify the frequency setting on z/TPF: ZCDCO MODIFY FREQUENCY-x DATA-CDC_PREDEFINED_USER_DATA

Tip1: The Group column can be used to filter data. This might be a name which represents a data structure to monitor. The Description column can be used for the name of the elements within the data structure.

Tip2: This view can be used to display whole numbers and decimal values.

Your Data...

| Group | Description | Value |
|--------|---------------|-------|
| sample | integer value | 6.0 |
| sample | decimal value | 3.5 |

Bar Chart of Your Data

Your Data...

| Group | Description | Value |
|---------|-------------|-------|
| another | thing1 | 55.0 |
| another | thing2 | 4.0 |

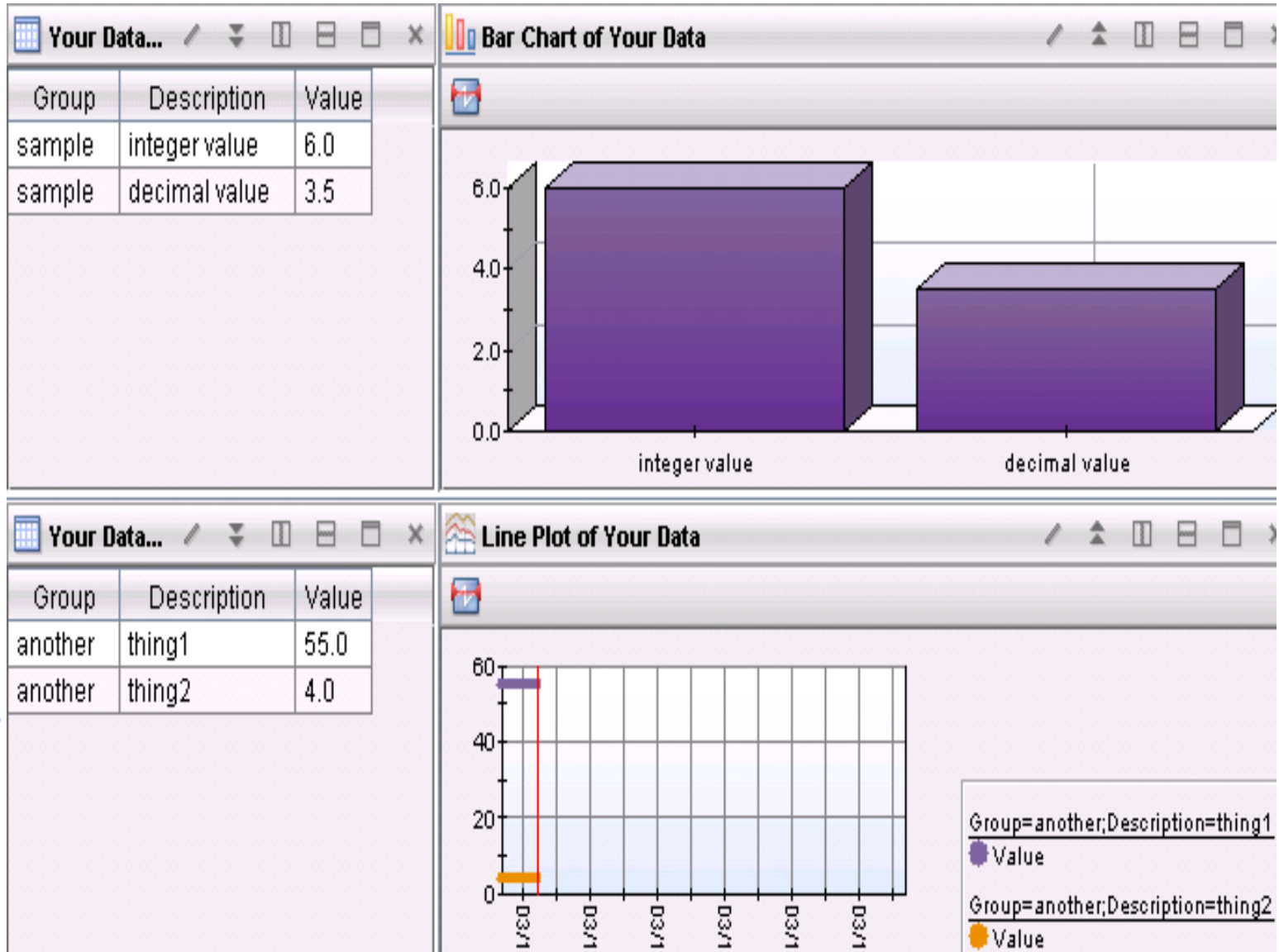
Line Plot of Your Data

Predefined
User Data

Collected in
CDC User
Exit

display uses
any TEP
option

set situations



Online Education – IBM Education Assistant

- <http://publib.boulder.ibm.com/infocenter/ieduasst/stgv1r0/index.jsp>

- 📖 Fault Analyzer for z/OS
- 📖 File Manager for z/OS
- 📖 Session Manager for z/OS
- 📖 Multi-site Workload Lifeline
- 📖 IBM PureSystems
- 📖 TPF Toolkit
- 📖 Tivoli Performance Modeler
- 📖 z/OS Management Facility
- 📖 z/OS Operating System
- 📖 z/Transaction Processing Facility 📄
 - 📄 V1.1.0
 - 📄 Migration
 - 📄 **System monitoring**
 - 📄 Additional resources

System monitoring

- [Introduction to the Monitoring Agent for z/TPF](#)
- [Demonstration of the Monitoring Agent for z/TPF](#)

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Your E-mail address

* Education produced in 2009. Contains some out-of-date information.

Downloads

- **IBM Tivoli Enterprise Monitoring**
 - Passport Advantage
 - <http://www-01.ibm.com/software/lotus/passportadvantage/>
 - ShopZ
 - <https://www14.software.ibm.com/webapp/ShopzSeries/ShopzSeries.jsp>

- **IBM Tivoli Monitoring Agent for z/TPF**
 - z/TPF Tools Page
 - <http://www.ibm.com/software/http/tpf/maint/toolsztpf.html>

- **Websphere MQ Client**
 - Websphere MQ support Page
 - <http://www.ibm.com/software/integration/wmq/support/>

Links

- **IBM Tivoli Monitoring Documentation**
 - http://pic.dhe.ibm.com/infocenter/tivihelp/v15r1/index.jsp?topic=%2Fcom.ibm.itm.doc_6.2.3%2Fwelcome.htm
- **IBM Tivoli Monitoring Wiki**
 - <https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/Tivoli%20Monitoring>

Live Demos

- **Live demonstrations via web meeting**
- **Normally lasts about an hour**
- **Contact your CSR to set up one up**



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Notes

- Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.
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