Using NetView for z/OS for Enterprise-Wide Event Management and Automation

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IBM Advanced Technical Skills

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ABSTRACT

IBM Tivoli NetView for z/OS is more just than an SNA or TCP/IP network management tool. It integrates with a variety of event sources and event managers to support event consolidation and automation across the System z and distributed environment. This session will show how NetView on z/OS can exchange information, automate, and correlate events and information from sources such as:

- DB2 and other relational databases
- Event managers such as Netcool/OMNIbus
- J2EE applications
- SNMP traps
- Web services

Examples of integrating NetView with these sources, as well as general considerations for enterprise event management integration, will also be provided.
Agenda

• Tivoli NetView for z/OS Automation Overview
• Integration Interfaces
• Integration Examples
  • Native
  • Product
• General Event Management Integration Considerations

“Explore the Possibilities”
Why Does Event Integration/Automation Matter?

• Events indicate changes in the environment that might impact service delivery

• Technologies are creating events from more sources
  • From a “nice to have” to a “critical requirement”
  • From both infrastructure and business event sources

• Modern applications span technologies
  • No single resource can give a true picture of overall application status
  • Events must be gathered (and sometimes correlated) across multiple technologies

• Automation is necessary to support efficient management
  • Process efficiency
  • IT Service Management Visualization, Control, and Automation
NetView Perception vs. NetView Reality

“It is only a SNA Network Management product”

- It is that and much more
- Provides extensive system automation and TCP/IP management functions

“It takes a lot of overhead”

- Anything takes overhead… if it is not tuned
- Filter out events and turn off interfaces not needed
- Spread the functions across multiple address spaces
- Prioritize tasks within NetView manually or using WLM
- Use the NetView Tuning Guide – it contains a wealth of information

“It does not integrate with with other technologies”

- Direct integration with TCP/IP applications
- Provides web and web services access
- Programmable in various languages
- Access to DB2, Unix System Services, TSO, and cross-platform environments
NetView Integration Interfaces

- Messages
- Commands
- Exits
- Sysplex

Operating System

TCP/IP

- SNMP
- Sockets
- FTP
- Mail
- Remote Commands
- Web
- SOAP

NetView Functions

SNA (VTAM)

- Events
- Alerts
- Commands
- Applications

APPLICATIONS

- SNA
- Unix System Services
- DB2
- Netcool OMNIbus
- Tivoli Enterprise Console
- Tivoli Event Pump
- Systems Manager
- OMEGAMON
- IBM Tivoli Monitoring
- Info/Management
- Remote NetViews
- Remote Commands

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NetView Automation

Automation actions can be triggered by:

- Message contents
- SNA Message Service Unit (MSU) Contents
- SNMP Traps
- UNIX syslog protocol (RFC 5424)
- Event Integration Facility (EIF) events
- Time (specific or interval)
- Additional data obtained from

Additional data obtained from:

- Event contents
- NetView Global Variables

Actions invoked include:

- Commands (NetView, VTAM, z/OS, custom)
- CLIST and REXX procedures
- Correlation
- Activating/deactivating automation
SNA Automation Interface

- SNA Management Service Units (MSUs) captured from VTAM
- Alerts are the most common ones captured
- Automation can be driven based on MSU content
- Programmatic access to 3270 screen applications

```plaintext
* AUTOMATION TABLE STATEMENTS FOR GENERIC ALERTS
************
IF MSUSEG(0000) => ' ' THEN
BEGIN;
* REACT TO ALERT WITH 'CSAJOB' AT TOP OF HIERARCHY
* IF HIER(2) = 'CSAJOB' &
  MSUSEG(0000.31.30 3) = AMSG
  THEN EXEC(CMD('MSU2WTO ' AMSG) ROUTE(ONE AUTO2)) CONTINUE(Y);
* REACT TO ALERT FROM NETFINITY
* IF MSUSEG(0000.10) = '5642010'
  THEN EXEC(CMD('NETFIN01 ') ROUTE(ONE AUTO2)) CONTINUE(Y);
* SEND ALERT WITH 'BONETT' TO ALERT-TO-TRAP ADAPTER
* IF MSUSEG(0000.10) = '5699001'
  THEN EXEC(CMD('TECROUTE PIPE SAFE * | PPI (TRAPROUT) NYC4TEC'
  ROUTE(ONE AUTO1)) CONTINUE(Y);
```
Operating System Automation Interface

- Connection into z/OS to capture events and issue commands and messages
- NetView V6R1 – CANZLOG consolidates Subsystem interface (SSI), Multiple Console Support (MCS) and JES2 joblog messages for automation
- Message Processing Facility (MPF) command exit for commands
- Detects console and joblog messages from all OS components and subsystems
- Message Revision Table (MRT) and Command Revision table (CRT) for actions before message automation and issuing commands
- Invokes automated actions
SNMP Trap Interface

- Task that receives SNMP traps and converts to an SNMP CP-MSU for automation
- Supports SNMP v1, v2, v2c, and v3
- Supports TCP and UDP across IPV4 and IPV6
- Multiple tasks can run concurrently
- Defined via CNMSTYLE COMMON.CNMTRAP and TASK statements

```plaintext
z/OS
NetView
SNMP Trap
```

```
SNMP Trap Interface

• Task that receives SNMP traps and converts to an SNMP CP-MSU for automation
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• Multiple tasks can run concurrently
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```
UNIX syslog Message Interface

- DSIIPLOG task receives syslog (RFC 5424) messages and converts to a message for automation
  - BNH703I (multiline) if host is registered
  - BNH710I if host is not registered
- REGIP command maintains host registration list
- Coexists with z/OS Comm Server syslog

```
TASK.DSIIPLOG.INIT=Y
IPLOG.TCPANAME = &CNMTCPN.
IPLOG.PORT = 514
IPLOG.SOCKETS = 100
```

```
linux117:~ # logger -p local4.info "important message regarding application running on Linux"
/etc/syslog.conf: local4,local5.* @hasl125
```

```
BNH703I SYSLOGD MESSAGE RECEIVED. FACILITY= LOCAL4. PRIORITY= INFO. ORIGIN= 10.1.1.117 root: important message regarding application running on Linux*
```

NetView can also send syslog messages using the PIPE IPLOG stage
Program-to-Program Interface (PPI)

- Application Programming Interface (API) to integrate with applications running on same operating system image
  - Programmable in Assembler, PL/I, C, REXX
  - Applications register to be PPI receivers for exchanging information
    - Between NetView and other applications
    - Between 2 applications using NetView as the data transport
PPI - REXX Coding Example

• DSIPHONE is a REXX external subroutine that enables you to send and receive data across the NetView PPI.
• This function enables any application (capable of running TSO REXX) to open, close, send data to, or receive data from a PPI receiver

```rexx
/ *** START UP PPI RECEIVER *** /
x1 = dsiphone('OPENRECV','MYPPI')
say "DSIPHONE OPEN CALL RC:" x1

/* SEND DATA TO REXX TSO COMMAND SERVER PPI (DSICMDSV) */
/* RQUEST CONTAINS DATA TO SEND */
x2 = dsiphone('SEND', 'DSICMDSV', 'RQUEST', 'MYPPI')
say "SEND CALL RC:" x2

/* WAIT FOR RESULT TO BE RETURNED */
/* KEEP RECEIVING DATA UNTIL A X'37' IS RETURNED */
result. = ''
i = 0
i_save = 0
do while result.i <> '37'X
    x3 = dsiphone('RECEIVE', 'MYPPI', 'RESULT.', 'SENT_BY', 30)
end

/ *** CLOSE THE PPI RECEIVER *** /
x4 = dsiphone('CLOSE', 'MYPPI')
say "DSIPHONE CLOSE CALL RC:" x4
```
RMTCMD and RUNCMD

- **RMTCMD** sends a command to another NetView
  - Uses either SNA or IP transport
  - Recommended method of communication
  - Foundation for NetView Sysplex Management control
- **RUNCMD** sends a commands to another platform via SNA
  - Service Point application required to receive and execute command
  - Both methods capture the command response
  - Can drive automated actions
TCP/IP Services

- Socket applications
  - SOCKET command as client or server
- SNMP
  - Native SNMP commands
  - MIBs accessible via SNMP manager, 3270, or Web Interface
  - Generate SNMP traps
  - Act as a SNMP manager
- TCP/IP commands
  - Native
  - Indirect (via z/OS or USS)
  - Packet traces
TCP/IP Services - Socket Server Example

2:56:21 * TESTSKSV 9999 1
2:56:21 - BNH623I SOCKET INTERFACE HAS ALREADY BEEN INITIALIZED ON TCP/IP TCPI
2:56:21 C INIT: 8
2:56:21 C SOCKET: 0 BNH606I SOCKET REQUEST COMPLETED SUCCESSFULLY. SOCKET 3 H
2:56:21 C SOCKET ID 3
2:56:21 C BIND: 0 3 9.82.56.125 9999
2:56:21 - BNH614I BIND REQUEST ON SOCKET 3 COMPLETED SUCCESSFULLY
2:56:26 C LISTEN: 0
2:56:37 C ACCEPT RC: 0 LINES: 1
2:56:37 C j* BNH612I SOCKET 3 ACCEPTED CONNECTION FROM 9.54.139.58 PORT 1423.
2:56:37 C ==>INCOMING!  4  9.54.139.58  1423
2:56:37 C INSTRING: èÇÑË*Ï/Ë*ËÁ>È*ÃÊ?_*/*ÏÑ>À?ÏÉ*Ê?Ä,ÁÈ*Ä%ÑÁ>È
2:56:37 C EBSTRING 1: This was sent from a windows socket client
2:56:37 C SHUTDOWN CLIENT: 0
2:56:37 C CLOSE CLIENT: 0
2:57:04 C ACCEPT RC: 0 LINES: 1
2:57:04 C j* BNH612I SOCKET 3 ACCEPTED CONNECTION FROM 9.54.139.58 PORT 1424.
2:57:04 C ==>INCOMING!  4  9.54.139.58  1424
2:57:04 C INSTRING: ëçíèà|ï+
2:57:04 C EBSTRING 1: SHUTDOWN
2:57:04 C SHUTDOWN CLIENT: 0
2:57:04 C CLOSE CLIENT: 0
2:57:04 C ALL DONE!
2:57:04 C SHUTDOWN SERVER: 0
2:57:04 C CLOSE SERVER: 0
Unix System Services

- Exchange information between USS based applications and NetView
  - NetView can issue USS commands via the PIPE UNIX function
  - Responses can be captured for automation purposes
  - USS applications can issue NetView commands using the REXX DSIPHONE interface and the CMDSERV PPI command server

```
HCN53  PIPE UNIX df -k | wait 20 | separate | loc /WebSphere/ | console
```

/zOSV1R9/shared/WebSphere610 (IBM.WAS610.SBBOHFS) 113764/1684800 4294945687 Available
/zOSV1R9/shared/WebSphere510 (IBM.WAS510.SBBOHFS) 27188/504000 4294961409 Available
/zOSV1R9/shared/WebSphere (WAS35.WAS.SEJSHFS2.@010227) 10100/48000 4294965560 Available
/WebSphere390/V610/config (IBM.WAS610.CONFIG.HFS) 193612/300000 4294931936 Available
/WebSphere390/V510/config1 (WAS510.WAS.CONFIG1.HFS) 209280/468000 4294947865 Available
General Database Access via Java Database Connectivity (JDBC)

1. Using PPI and USS Interface
2. Using SOCKET command as a socket client to a server
DB2 for z/OS Interface

- NetView can directly access DB2 subsystems running on the same zO/S image
  - Built on the NetView PIPE function
  - Run DB2 BIND command using supplied packages for access
- NetView can indirectly access DB2 systems running on other systems
  - via Unix System Services
    - Invoking a Java JDBC program
  - via RMTCMD
    - Invoke a command on another NetView running on DB2 z/OS image
- Via SOCKET command
  - Connect to a server with access to the DB2 subsystem
DB2 coding example

`SQSELECT` is a supplied REXX procedure that calls PIPE SQL and formats the retrieved data for display.

<table>
<thead>
<tr>
<th>Time</th>
<th>Job</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>* SQSELECT * FROM BONETT.ETETABL1 WHERE DEPT &lt;&gt; 'DS5'</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td></td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; TASH                    CHARLES             11111</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; BRIDGES                 NASH                22222</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; FUDD                    ELMER               33333</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; TANNER                  DAN                 44444</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; GUNN                    PETER               55555</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; LONGSTREET              JAMES               66666</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; WISE                    STEVEN              39208</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; GONZALES                LEO                 93406</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; BROWN                   JAMES               08836</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; CLARK                   JAMES               94611</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; SMITH                   SARAH               10021</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; WILSON                  PATRICIA            92663</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; GARCIA                  JASON               11509</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; YOUNG                   MARIA               20854</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; GARCIA                  JAMES               90210</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; YOUNG                   MARIA               20854</td>
</tr>
<tr>
<td>12:21:04</td>
<td>HCBN4</td>
<td>&quot; MILLER                  SHARON              06903</td>
</tr>
</tbody>
</table>
Event/Automation Service (EAS)

• Integrates with Netcool/OMNibus, IBM Tivoli Monitoring, Tivoli Enterprise Console (TEC) and SNMP managers
  • Receives Event Integration Facility (EIF) events directly from the event source
    • Tivoli products (IBM Tivoli Monitoring, OMNibus, TEC…)
    • Third party products that generate EIF events
• Send messages or alerts to an EIF Receiver
• Receive SNMP traps and convert to alerts
• Send messages or alerts as SNMP traps
Event/Automation Service Details

Event Sources
- IBM Tivoli Monitoring
- Event Adapters
- EIF senders
- EIF postmsg/postzmsg

SNMP Agent
SNMP Manager
Event Receiver

z/OS
NetView on z/OS
Hardware Monitor (NPDA)
Alert Receiver
TRAPROUTE Filter
TECROUTE Filter
TECROUTE PPI
Automation Table
z/OS Messages

Event/Automation Service
Event Receiver
Trap-to-Alert Adapter
Alert-to-Trap Adapter
Alert Adapter
Message Adapter

NetView Alert
NetView Alert
z/OS Messages
NetView Alert
NetView Alert
NetView Alert
z/OS Messages
Send Event Results

EVENT: AppEvent; source="EIF Application"; prob=1; msg="Sample Event Message"; probevalue=100; sub_origin="J2EE Application"; hostname=test.com; origin="WebSphere"; probearg="testarg1"; sub_source="EIF servlet"; severity=HARMLESS; END

sendEvent worked! rc = 225

********************************************************************************

Event Receiver

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EAS – ITM Situation to NetView z/OS Alert

Tivoli Enterprise Monitoring Server (TEMS)

Event Receiver
EAS – z/OS Message to Netcool/OMNIbus

HCB$ " IEF450I CICS31B CICS31B - ABEND=S222 U0000 REASON=00000000 TIME=18.17.46
HCB$ C MESSAGE IEF450I CICS31B CICS31B - ABEND=S222 U0000 REASON=00000000 WI
HCB$ C PPI2EAS3: MESSAGE IS IEF450I CICS31B CICS31B - ABEND=S222 U0000 REASON=00000000
HCB$ C message sent: IEF450I CICS31B CICS31B - ABEND=S222 U0000 REASON=00000000

IF MSGID = 'IEF450I' & (TOKEN(2 1 4) = 'CICS') & (TEXT = MESSAGE)
THEN EXEC(CMD('PPI2EAS3 NVC5TEC ' MESSAGE)
ROUTE(ONE AUTO1 AUTO2))
CONTINUE(Y);

WHEN (word(msg,1)='IEF450I') & (left(word(msg,2),4)='CICS')
THEN do
  bsm_identity=word(msg,2)||':HCB$:CICSRegion'
  bsm_subsource='CICS'
  bsm_severity='CRITICAL'
  bsm_status='OPEN'
end

msg1 = msg 'BSM_ID='||bsm_identity 'BSM_SV='||bsm_severity
msg1 = msg1 'BSM_ST='||bsm_status 'BSM_SS='||bsm_subsource
msg1 = msg1 'BSM_HN='||bsm_hostname

SAY "PPI2EAS3: MESSAGE IS" msg1
"PIPE VAR MSG1 | PPI TECROUTE" ppiname
say "message sent:" msg1
exit
EAS – z/OS Message to OMNIBUS...

FORMAT EAS2TBSM41  FOLLOWS NV390MSG_Event
%s* BSM_ID=%s* BSM_SV=%s* BSM_ST=%s* BSM_SS=%s BSM_HN=%s*

[Event Processor] ClassName: EAS2TBSM41
[Event Processor] source: NVEAS
[Event Processor] jobname: ''
[Event Processor] msg: 'IEF450I CICS31B CICS31B - ABEND=S222 U0000 REASON=00000000'
[Event Processor] date: 'SEP 27 18:17:46'
[Event Processor] msg_id: IEF450I
[Event Processor] status: OPEN

Netcool/OMNibus Event List: Filter="All Events", View="Default"
EAS - NetView z/OS Alert to SNMP trap

Alert-to-Trap Adapter
EAS - SNMP trap to NetView z/OS Alert

Trap to Alert Adapter
NetView Tivoli Enterprise Management Agent

- Integrates NetView with the Tivoli Enterprise Portal Environment
  - DVIPA information
  - Hipersockets
  - OSA
  - Packet Trace
  - TCP/IP Stack and connections
  - SNA Sessions
  - NetView health and log information
- NetView commands can be issued from the TEP desktop
- Transfer in context to OMEGAMON XE for Mainframe Networks
- Replaces old NetView TEP Agent (V5R2)
# NetView TEMA – Portal View

## TCP/IP Connection Data Summary

<table>
<thead>
<tr>
<th>Collection Time</th>
<th>TCP/IP Job Name</th>
<th>Local IP Address</th>
<th>Remote IP Address</th>
<th>Remote Port</th>
<th>Connection Start Time</th>
<th>Last Activity Time Stamp</th>
<th>Resource Name</th>
<th>Connection ID</th>
<th>Total Bytes Received</th>
<th>Total Bytes Sent</th>
<th>Total Bytes Recvd</th>
<th>Total Bytes Sent</th>
<th>Bytes Sent</th>
<th>Bytes Received</th>
<th>Byte Rate</th>
<th>Total Segments Flown</th>
<th>Bytes Flown</th>
</tr>
</thead>
<tbody>
<tr>
<td>07/28/12 13:24:49</td>
<td>TCPIP</td>
<td>982.55.125</td>
<td>7573.91</td>
<td>982.38.23</td>
<td>07/28/12 13:24:47</td>
<td>07/28/12 13:24:47</td>
<td>CYTIPROC</td>
<td>0000143427</td>
<td>403080190</td>
<td>340930190</td>
<td>0</td>
<td>13637501900</td>
<td>5</td>
<td>403080190</td>
<td>340930190</td>
<td>190000000</td>
<td>0</td>
</tr>
</tbody>
</table>

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IBM Tivoli Monitoring Custom Integration

- NetView can send data to the ITM Environment either the IBM Tivoli Universal Agent or the Agent Builder Socket Data Source
  - NetView uses SOCKET functions as a socket client to send data
  - Universal Agent and Agent Builder agents can receive data via TCP/IP sockets
  - Any information NetView can detect or create can be sent
    - ITM functions can be applied to data (detecting threshold/content exceptions, situation and policy automation, etc.)
- Commands can be issued to NetView using Situations and Take Action Commands
NetView Socket Client to Universal Agent

```plaintext
IF MSGID = 'MWB777I' & TEXT=MESSAGE THEN
EXEC(CMD('TESTSKC2 ' MESSAGE) ROUTE(ONE AUTO1))
CONTINUE(Y) NETLOG(Y);
```

<table>
<thead>
<tr>
<th>Report</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>JOBNAME</td>
<td>MSGID</td>
</tr>
<tr>
<td>NETVIEW</td>
<td>MWB777I</td>
</tr>
<tr>
<td>NETVIEW</td>
<td>MWB777I</td>
</tr>
<tr>
<td>NETVIEW</td>
<td>MWB777I</td>
</tr>
</tbody>
</table>

**MSGTEXT** D 256

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Take Action Command to NetView

Take Action

- **Name:** alerttest
- **Command:** NVCB TESTALR2 OMXE_ALERT OMXEMFN,FTP1

Destination System(s):
- HIAVSYSL:HCB$:MVSSYS
- HIAVSYSL:HFD$:MVSSYS
Take Action Command to NetView...

```
/* Test generating generic alert */
parse arg text hier ;
"GENALERT G TYPE=PERM, ALID=3722641, DESC=2000, PSID=5699001 PC=1001",
"TEXT='"||text||"': HIER='"||hier||"' ACTS=1012"
say "GENALERT command successfully executed"
exit
```

```
NETVIEW SESSION DOMAIN: HCEN5 BONETT 06/27/06 10:17:36
NPDA-30A

DOMAIN RESNAME TYPE TIME ALERT DESCRIPTION: PROBABLE CAUSE
HCEN5 OMXEMFN FTP1 10:17 SW PROGRAM ABNORM TERM: APPLICATION PROGRAM
```

```
NETVIEW SESSION DOMAIN: HCEN5 BONETT 06/27/06 10:19:00
NPDA-43S

HCEN5 OMXEMFN

DOMAIN FTP1

DATE/TIME: RECORDED - 06/27 10:17
EVENT TYPE: PERMANENT
DESCRIPTION: SOFTWARE PROGRAM ABNORMALLY TERMINATED
PROBABLE CAUSES: APPLICATION PROGRAM
APPLICATION PROGRAM TEXT: OMXE_ALERT
```

Complete your sessions evaluation online at SHARE.org/AnaheimEval
Web Services: NetView SOAP Server

- Web Services Gateway to issue commands to NetView via SOAP over HTTP or HTTPS and receive response
- Provides Web Services Descriptor Language (WSDL) files
- Client requests can be made via
  - SOAP envelope and socket/http/https programming
  - WSDL generated proxy client
  - SOAP with Attachments API for Java (SAAJ)
  - Dynamic Invocation Interface (DII) API

```xml
<SOAP-ENV:Envelope ...>
 <SOAP-ENV:Header ...>
  <h:BasicAuth ...>
   <Name>myid</Name>
   <Password>mypassword</Password>
  </h:BasicAuth>
 </SOAP-ENV:Header>
 <SOAP-ENV:Body>
  <NVCMD><cmd>Usage</cmd></NVCMD>
 </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

```xml
<SOAP-ENV:Envelope ...>
 <SOAP-ENV:Body ...>
  <resp>
   <dl>resource</dl>
   <dl>DSI386I NETVIEW RESOURCE UTILIZATION 12:36:38</dl>
   <dl>TOTAL CPU % = 3.85</dl>
   <dl>NVCDAP61 CPU % = 0.00</dl>
   <dl>NVCDAP61 CPU TIME USED = 263.31 SEC.</dl>
   <dl>REAL STORAGE IN USE = 40092K</dl>
   <dl>PRIVATE ALLOCATED < 16M = 1120K</dl>
   <dl>PRIVATE ALLOCATED > 16M = 131588K</dl>
   <dl>PRIVATE REGION < 16M = 10216K</dl>
   <dl>PRIVATE REGION > 16M = 164000K</dl>
   <dl>END OF DISPLAY</dl>
  </resp>
 </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```
Web Services Integration: SOAP Client

- Use NetView SOCKET functions to create client for connecting to services via Simple Object Access Protocol
  - REXX programming required but is easily reusable
    - Build HTTP Header
    - Import or create SOAP XML envelope request
    - Send complete request to services port
  - Enables use of web services data within events and automation
- Example white paper on IBM Techdocs website
Common Event Infrastructure (CEI)

- IBM implementation of the WSDM Common Base Event standard
- Imbedded in many products as a key event integration technology (e.g. WebSphere, DB2), particularly for business events
- NetView creates events and passes them to the CEI and can receive from the CEI Infrastructure for automation purposes
Product Integration Examples

- **AF/Operator**
  - PPI and Command Interface for cross-product command execution and AF/Operator access to Alerts

- **Event Pump for z/OS**
  - Command Interface via Event Pump External Data Interface (EDI) to send events which can be escalated to Netcool/OMNibus and Tivoli Business Service Manager (TBSM)
  - EIF events can be sent directly to Netcool/OMNibus and mapped to TBSM events

- **Tivoli Application Dependency Discovery Manager (TADDAM)**
  - NetView Discovery Library Adapter (DLA) sends Resource Object Data Manager (RODM) data to TADDAM for inclusion in application relationship and dependency views and actions
Event Management Considerations

• What is the Event Management scope?
  • Technology (events from particular components)
  • Application (events from components supporting an application or business system)
• Where and how are the events produced?
  • Directly by the component
  • Indirectly for the component by a component management product
• Which event and event relationships are important?
  • Typically many more events are produced than are used
  • For every exception event, a clearing event must exist (or be created)
Event Management Considerations...

- What are the event sources?
  - Directly usable by NetView
    - z/OS Messages
    - SNA Alerts
    - EIF and Common Base Events
    - SNMP traps
  - Usable by invoking NetView monitoring/automation
  - Require integration with NetView
- What is the integration customization effort?
  - Product definitions and parameters
  - “Script level” code
  - Programming code
- What level of “event capacity” (events to process in an interval) can be supported?
Summary

- There are many ways to integrate with NetView
  - By directly using a NetView interface
  - By indirectly routing through another interface
- Use the power of NetView Automation
  - Standalone on System z
  - In conjunction with other mainframe/distributed automation
- It can be a powerful Enterprise Management Integration product
  - Extremely customizable
  - Platform for integration with other management products (System Automation for z/OS, TBSM, ITM, OMEGAMON, OMNIbus…)
- It can make monitoring for and reacting to situations more efficient – and adds to the efficiency of IT Service Management
For Further Information

  - Installation: Configuring Additional Components
  - Customization Guide
  - Customization: Using REXX and the NetView CLIST Language
  - Customization: Using PIPES
  - Application Programming Guide
  - Automation GUidE

- Redbooks (available at www.ibm.com/redbooks):
  - An Introduction to Tivoli NetView for OS/390 V1R2 (SG24-5224) – an oldie but goodie
For Further Information…

- White papers with integration examples (all available on www.ibm.com/support/techdocs, use “NetView” as search word):
  - Integrating IBM Tivoli NetView for z/OS with IBM Tivoli Monitoring
  - Options for Sending z/OS Events to Netcool/OMNibus and TBSM
  - Using Tivoli NetView for z/OS as a TCP/IP Socket Server
  - An IBM Tivoli NetView for z/OS SOAP Client
  - Sending Tivoli Enterprise Console/Event Integration Facility Events to the NetView for z/OS Event Receiver
  - IBM Tivoli NetView for z/OS and IBM Tivoli AF/Operator for z/OS Integration (Parts 1 & 2)
  - Accessing Databases from Tivoli NetView for z/OS using JDBC
  - How to Power Up Distributed Servers Using Tivoli NetView for z/OS and Wake-On-LAN
  - Integrating WebSphere Applications with Event Integration Facility Products
# Tivoli System z Session at SHARE

### Monday
- **11:00** 11207: Automating your IMSplex with System Automation for z/OS  Platinum 7
- **1:30** 11832: What’s New with Tivoli System Automation for z/OS  Elite 1
- **3:00** 11886: Improve Service Levels with Enhanced Data Analysis  Elite 1

### Tuesday
- **9:30** 11792: What’s New with System z Monitoring with OMEGAMON  Elite 1
- **11:00** 11791: Tuning Tips To Lower Costs with OMEGAMON Monitoring  Platinum 8
- **1:30** 11900: Understanding Impact of Network on z/OS Performance  Grand Salon A

### Wednesday
- **9:30** 11835: Automated Shutdowns using either SA for z/OS or GDPS  Elite 1
- **1:30** 11479: Predictive Analytics and IT Service Management  Grand Salon E/F
- **1:30** 11899: Top 10 Tips for Network Perf. Monitoring w/ OMEGAMON  Platinum 9
- **4:30** 11836: Save z/OS Software License Costs with TADz  Elite 1

### Thursday
- **9:30** 11905: Using NetView for z/OS for Enterprise-Wide Mgmt and Auto  Grand Salon A
- **11:00** 11909: Get up and running with NetView IP Management  Grand Salon A
- **11:00** 11887: Learn How To Implement Cloud on System z  Grand Salon E/F

### Friday
- **9:30** 11630: Getting Started with URM APIs for Monitoring & Discovery  Elite 1
System z Social Media

- System z official Twitter handle:
  - @ibm_system_z

- Top Facebook pages related to System z:
  - Systemz Mainframe
  - IBM System z on Campus
  - IBM Mainframe Professionals
  - Millennial Mainframer

- Top LinkedIn Groups related to System z:
  - Mainframe Experts Network
  - Mainframe
  - IBM Mainframe
  - System z Advocates
  - Cloud Mainframe Computing

- YouTube
  - IBM System z

- Leading Blogs related to System z:
  - Evangelizing Mainframe (Destination z blog)
  - Mainframe Performance Topics
  - Common Sense
  - Enterprise Class Innovation: System z perspectives
  - Mainframe
  - MainframeZone
  - Smarter Computing Blog
  - Millennial Mainframer