



NetView for z/OS: IP Management Topics and Solutions Session 17739

Pam McLean (pamm@us.ibm.com) NetView for z/OS - IBM z Systems Service Management





#SHAREorg

SHARE is an independent volunteer-run information technology association that provides education, professional networking and industry influence.

Copyright (c) 2015 by SHARE Inc. C (i) (S) (i) C (i) C

Acknowledgements, Disclaimers and Trademarks



© Copyright IBM Corporation 2015. All rights reserved.

The information contained in this publication is provided for informational purposes only. While efforts were made to verify the completeness and accuracy of the information contained in this publication, it is provided AS IS without warranty of any kind, express or implied. In addition, this information is based on IBM's current product plans and strategy, which are subject to change by IBM without notice. IBM shall not be responsible for any damages arising out of the use of, or otherwise related to, this publication or any other materials. Nothing contained in this publication is intended to, nor shall have the effect of, creating any warranties or representations from IBM or its suppliers or licensors, or altering the terms and conditions of the applicable license agreement governing the use of IBM software.

References in this publication to IBM products, programs or services do not imply that they will be made available in all countries in which IBM operates. Product release dates and/or capabilities referenced in this presentation may change at any time at IBM's sole discretion based on market opportunities or other factors, and are not intended to be a commitment to future product or feature availability in any way. Nothing contained in these materials is intended to, nor shall have the effect of, stating or implying that any activities undertaken by you will result in any specific sales, revenue growth, savings or other results. All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Information concerning non-IBM products and services was obtained from a supplier of those products and services. IBM has not tested these products or services and cannot confirm the accuracy of performance, compatibility, or any other claims related to non-IBM products and services. Questions on the capabilities of non-IBM products and services should be addressed to the supplier of those products and services.

All customer examples cited or described are presented as illustrations of the manner in which some customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics may vary by customer and will vary depending on individual customer configurations and conditions. Nothing contained in these materials is intended to, nor shall have the effect of, stating or implying that any activities undertaken by you will result in any specific sales, revenue growth or other results.

Prices are suggested U.S. list prices and are subject to change without notice. Starting price may not include a hard drive, operating system or other features. Contact your IBM representative or Business Partner for the most current pricing in your geography.

IBM, the IBM logo, ibm.com, Tivoli, the Tivoli logo, Tivoli Enterprise Console, Tivoli Storage Manager FastBack, and other IBM products and services are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol ((m, or TM)), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at <u>ibm.com/legal/copytrade.shtml</u>

Complete your session evaluations online at www.SHARE.org/Orlando-Eval



August 2015

Agenda

- IP Commands
- TCP Connection Management
- Intrusion Detection
- Sysplex Management
 - Discovery Manager
 - DVIPA
- Scenarios:
 - Packet Trace
 - DVIPA
 - Sysplex Distributor Favoring a System
 - Sysplex Distributor Performance
- Backup
 - Answers to questions from the session
- Additional scenarios
 Complete your session evaluations online at www.SHARE.org/Orlando-Eval
 August 2015







IP Commands

Complete your session evaluations online at www.SHARE.org/Orlando-Eval August 2015



NetView Main Menu: IP Management Option





IP Management Menu





IP Management Menu: Sysplex Management



 \sim

7

Session B - [24 x 80]	
Eile Edit View Communication Actions Window Help	
Host: TIVMVS7.TIVLAB.RAL Port: 2023 LU Name: Disconnect	
CNM4NVSP NetView Sysplex Management Functions Menu	
Type the number or move the cursor to a function and press Ent	er
 Stack configuration and status (CNMSSTAC) IP stack interfaces (CNMSIFST) NetView configuration and status (CNMSNVST) OSA channel and ports (CNMSOSAP) HiperSockets adapters (CNMSHIPR) Telnet servers (CNMSTNST) Telnet server ports (CNMSTPST) 	
Command ===> F1=Help F3=Return	F6=Roll F12=Cancel
	22/015
Connected to remote server/host TIVMVS7.TIVLAB.RALEIGH.IBM.COM using Tu/pool NTC02005 and	
August 2015	

IP Management Menu: DVIPA



Ession B - [24 x 80]	
<u>File Edit View Communication Actions Window H</u> elp	
Host: TIVMVS7.TIVLAB.RAL Port: 2023 LU Name: Disconnect	
CNM4NVDV NetView DVIPA Management Functions Menu	
Type the number or move the cursor to a function and press Enter	
1. DVIPA definition and status (CNMSDVIP)	
2. DVIPA sysplex distributors (CNMSPLEX)	
3. DVIPA server health (CNMSDVPH)	
4. DVIPA distributed targets (CNMSTARG) 5. DVIPA composition route status (CNMSVPPT)	
6. DVIPA connection routing (CNMSDDCR)	
7. DVIPA connections (CNMSDVPC)	
8. DVIPA status (CNMSDVST)	
Command ===>	
F1=Help F3=Return	F6=Roll
	FIZ=Lancel
Connected to remote server/host TIVMVS7.TIVLAB.RALFIGH.IBM.COM using Ju/pool NTC02005 and	22/015
in Orlando	7015 @
August 2015	

151 2013

IP Commands



- **IPLOG**
- Ping
- Remote Ping
- Tracerte •
- TN3270 •
- REXEC •
- RSH
- SOCKET •
- RMTCMD over IP •
- Any UNIX System Services command
- IPXLATE (REXX, PL/I, C)
- EZLEMAIL (send email via SMTP)

- SNMP commands (including SNMPv3)
 - get
 - getnext
 - set
 - walk
 - trap
 - getbulk (SNMPv2c and SNMPv3)
 - bulkwalk (SNMPv2c and SNMPv3)
 - inform (SNMPv2c and SNMPv3)
 - the NVSNMP command enables panel-driven SNMP requests





TCP Connection Management

Complete your session evaluations online at www.SHARE.org/Orlando-Eval August 2015



TCP/IP Connection Management



NetView for z/OS can help manage TCP/IP connections, especially when combined with OMEGAMON XE for Mainframe Networks.

- Uses z/OS Communications Server network management interface (NMI) to retrieve connection data for TCP/IP connections
- Active connection data kept in NetView (and Comm Server) storage
- Inactive connection data written to VSAM
- Data can be filtered using CNMSTYLE definitions
- NetView cross-domain capabilities enable the viewing of connection data at remote z/OS hosts
- Supports IPv4 and IPv6

August 2015

Complete your session evaluations online at www.SHARE.org/Orlando-Eval



Connection Data

- Active Connections
 - Local IP address and port
 - Remote IP address and port
 - TCP/IP stack name
 - Start date and time
 - Last activity date/time
 - Connection ID
 - Bytes sent/received
 - Byte rate
 - Segments retransmitted
 - Percent segments retransmitted
 - And more



- Inactive Connections
 - Local IP address and port
 - Remote IP address and port
 - TCP/IP stack name
 - Start date and time
 - End date and time
 - Bytes sent and received
 - Send window size
 - Logical unit (LU) name
 - Target application identifier (APPLID)
 - Termination code
 - And more

Issue HELP BNH772 (inactive) or BNH775 (active) for complete details.





Displaying Connection Data



Connection data can be viewed from the following places:

- NetView 3270 console
 - TCPCONN
 - Raw data
 - Unformatted
 - Intended for programmatic use
 - CNMSTCPC
 - Formatted
 - Customizable
 - Intended for human user
 - IPSTAT
 - Panel-based connection control
- Tivoli Enterprise Portal





Intrusion Detection

Complete your session evaluations online at www.SHARE.org/Orlando-Eval August 2015



TCP/IP Intrusions



Enhance network security by combining NetView automation facilities with the Intrusion Detection Service (IDS) of the z/OS Communications Server.

- What is an intrusion?
 - Information gathering (scan)
 - Network and system information
 - Data locations
 - Map target of an attack
 - Eavesdropping, impersonation, or theft
 - On the network, on the host
 - Base for further attacks on others
 - Denial of Service
 - Attack on availability
- Intrusions can occur from Internet or Intranet
 - Firewall can provide some level of protection from Internet
 - Perimeter security strategy alone may not be enough
 - Within a firewall, systems can be vulnerable to attack or misuse, whether accidental or malicious.

Complete your session evaluations online at www.SHARE.org/Orlando-Eval



August 2015

TCP/IP Intrusions



- z/OS Communications Server Intrusion Detection Service (IDS) detects:
 - Scans
 - Fast
 - Slow
 - ICMP, TCP UDP
 - Attacks
 - Malformed packets
 - IP option restrictions
 - ICMP redirect restrictions
 - Outbound raw socket restrictions
 - And more ...
 - Floods



Automated Actions (Intrusion Detection)



- Notify
 - NetView alert (default)
 - Message to designated NetView operators (default)
 - email to designated recipient (for example, security administrator)
 - Using INFORM policy
- Issue UNIX, z/OS, or NetView commands
 - Gather more data
 - Take action, such as close the port
- Update statistics kept on basis of probe ID
- Collect additional statistics, email to security administrators





Sysplex Management

Complete your session evaluations online at www.SHARE.org/Orlando-Eval August 2015



Dynamic IP Stack Discovery (Discovery Manager)



- IP stacks are detected automatically
 - When the NetView program initializes
 - When a stack starts after the NetView program
- Supports running multiple IP stacks
- Supports IPv6
- No need to define stacks unless you need to:
 - Manage a stack on a remote system that is not part of the same sysplex





Discovery Manager – Resources Discovered

- Information collected:
 - Central processor complex (CPC)
 - Channel subsystem identifier
 - -Logical partition (LPAR)
 - -Sysplex
 - -Coupling facility
 - -z/OS image
 - -TCP/IP stack
 - -TCP/IP subplex
 - -IP interfaces
 - -NetView applications
 - Telnet servers and ports
 - Open Systems Adapter (OSA) channels and ports
 - -HiperSockets adapter
- Data available in Tivoli Enterprise Portal, NMC, and 3270
 commands



Complete your session evaluations online at www.SHARE.org/Orlando-Eval

August 2015

DVIPA Management Capabilities



- NetView provides a lot of DVIPA information for use in managing and diagnosing problems in your sysplex:
 - Sampled, real-time, and historical monitoring capabilities
 - DVIPA events
 - Distributed DVIPA statistics
- DVIPA information can be viewed at the:
 - Local NetView domain
 - Sysplex master NetView domain
 - Displays DVIPA information available from all NetView domains in the sysplex
 - DVIPA connection information is not forwarded to the sysplex master NetView for performance reasons
- DVIPA information is displayed in the:
 - Tivoli Enterprise Portal (TEP) using the NetView for z/OS Enterprise Management Agent
 - NetView 3270 console



August 2015

DVIPA Monitoring



- NetView provides the following DVIPA information:
 - DVIPA Definition and StatusSysplex Distributors
 - Distributed DVIPA (DDVIPA) Targets
 - DDVIPA Server Health, including a view for:
 - DVIPA Connections
 - VIPA Routing
 - DDVIPA Connection Routing
- TEP displays sampled (updated by events) and historical data
 - Historical data collection must be enabled
 - Long term history requires Tivoli Data Warehouse.
- NetView 3270 commands and samples display real-time DVIPA information

DVIPA Events



- DVIPA Events can be used to provide a better "real time" view of DVIPA information. NetView has automation for three types of DVIPA Events:
 - Real-time DVIPA changes
 - DVIPA status change and DVIPA removed
 - DVIPA target added and removed
 - DVIPA target server started and ended
 - DVIPA Configuration Changes
 - Sysplex Autonomics messages
- When a DVIPA event is received:
 - NetView will bundle the events using configurable delays
 - Notify the master that this system needs rediscovering
 - The master NetView also has a delay to bundle the event messages
 - Send rediscovery commands to all systems in the sysplex impacted by the event



Complete your session evaluations online at www.SHARE.org/Orlando-Eval August 2015



Packet Trace with NetView v6.1

- Start / stop a single ("global") trace
- Display unformatted packets
- View formatted packets and analysis of trace records
- Save traces into NetView data sets
- Control multiple systems from a single point







- Support for multiple, concurrent packet traces ("instance" traces)
 - Multiple users can trace multiple problems from a given stack at the same time, each using different trace criteria.
 - Operators can define filters for specific issues
 - Avoids creation of unneeded trace records
 - Requires z/OS Communications Server V2.1
- Save traces in IPCS format
 - Traces can be analyzed in IPCS using the IPCS formatter tool
 - Traces can be converted to Sniffer format for use in other tools
 - Traces from different systems can be merged into a single trace
 - Traces can be sent to Comm Server Support for diagnosis
- Navigation / Filter enhancements



Scenario: Packet Trace Connectivity



- Scenario:
 - Users report an intermittent problem where it takes "a long time" to connect to an application. Occasionally, the connection attempt fails. They have noticed the problem occurs almost every day, at somewhat predictable times.
- Resolution Steps:
 - Use packet trace to help determine if there is a network problem.
 - Tracing the entire network should encompass the problem, but would result in a lot of packets to review.
 - By determining individual users' IP addresses, we can limit the data that has to be reviewed.
 - Multiple traces can help to compare a working connection attempt to a failing one.
 - Further analysis may be desired. The traces are saved in IPCS format, allowing them to be read by IPCS, where they can be merged or analyzed in more depth.





 $\langle \langle \rangle$

27

📲 Session A - [24 x 80]		-			
File Edit View Communication Action	s Window Help				
o 66 75 88 8 8 5	💩 💩 🗶				
Host: ralvmr.raleigh.ibm.co	Port: 23	LU Name:		Disconnect	
FKXK2A01	IPTrace	Control	Center		NTVE1
Service Point: NMP217	Stack:	TCPIP		Domain	: LOCAL
	Status/Owner	Start		For	Writer
		NO		NO	*NONE*
	NONE/ NIT				SHORE S
S_ PKTTRACE SYSTCPDA	NONE/NA	NA		NA	*NONE*
HCTIVE	RHCE SESSIONS				
_ C 9CE SYSTCPOT	NONE/NA	NA		NA	*NONE*
	- ·				
Select PKTTRACE and	press Enter.				
			Issue IPT	RACE to	o start
Command ===> F1=Help	nu E3=Return		E5=Be	fresh	E6=Bo11
ri-netp rz-main me	na ro-Recarn		10-Re	in ear	F12=Cancel
MA A					11/004
Connected to remote server/host ralvm	nr.raleigh.ibm.com using po	rt 23			11.
plete your session evaluations online at	www.SHARE.org/Orlando	o-Eval			201
nust 2015				in O	



28



August 2015



₽¶ Session A - [24 x 80]		
File Edit View Communication Actions Window H	Help	
Host: ralvmr.raleigh.ibm.co Port: 23	LU Name:	Disconnect
FKXK2C02 Pac	ket Trace Details	LOCAL
Stack: TCPIP	Enter a description of th	ne problem to be traced.
Start Time: NA		Status: NA
Description: connectivity proble	em working case	
Interface Name: <u>*</u>	Port: <u>*</u>	
IP Hddress: <u>9.27.132.252</u>		
Pauload: *	Protocol	L: S A11
·		_ TCP
Entor the IP address of	a working client	_ UDP
which is used as a filter	a working client,	_ ICMP
which is used as a litter	to limit the data collected.	Number
Actions: 1=START		
To start the ti	race, type "1", and press Ente	er.
Command ===> 1		
F1=Help F2=Main Menu F3=Retur	n	F6=Roll F12=Capacil
		F12-Cancel
Connected to remote server/host ralymr raleigh ibm of	com using port 23	
plete your session evaluations online at www.SHARF.	org/Orlando-Eval	
prete your session evaluations on the at www.Share.		in Orlando 20 1
JUST 2015		

29



File Edit View Communication	Actions Window	Help	
a 🗈 🔁 👧 🛼 📾 📾 🛋	🏂 📾 😹 🚅		
Host: ralvmr.raleigh.ibm	n.co Port: 23	LU Name:	Disconnect
FKXK2C01	Pa	cket Trace Control	LOCAL
Owner/Autotask	Status	Start Date/Time	Description
_ GLOBAL	NONE	NA	
_ OPER1/AUTTRA1	ACTIVE	10/31/13 09:24:5	9 instance trace traffic pro
_ OPER1/AUTTRA2	ACTIVE	10/31/13 10:14:0	16 slow response time ticket#
_ OPER1/AUTTRA3	ACTIVE	10/31/13 10:17:2	24 connectivity problem working
The DSI6331 messag	ge indicates tr	hat the trace started	
successfully. Next, s	te indicates tr start a trace fo Press F9.	hat the trace started or the failing attempt.	
DSI633I 'PKTS START	be indicates tr start a trace fo Press F9.	or the failing attempt.	TED
DSI633I 'PKTS START Command ===> F1=Help	De Indicates tr start a trace fo Press F9. COMMAND S F3=Re	or the failing attempt.	TED F6=Roll
DSI633I 'PKTS START Command ===> F1=Help F7=Backward F8=For	pe indicates tr start a trace fo Press F9. COMMAND S F3=Re ward F9=Cr	Dat the trace started or the failing attempt. SUCCESSFULLY COMPLE Sturn Seate Instance	TED F6=Roll F12=Cance
DSI633I 'PKTS START Command ===> F1=Help F7=Backward F8=For	ge indicates tr start a trace fo Press F9. COMMAND S F3=Re ward F9=Cr	Dat the trace started or the failing attempt.	TED F6=Roll F12=Cance 04/00
DSI633I 'PKTS START Command ===> F1=Help F7=Backward F8=For A Connected to remote server/ho	pe indicates tr start a trace fo Press F9. COMMAND S F3=Re Ward F9=Cr	Dat the trace started or the failing attempt.	TED F6=Roll F12=Cance 04/00
DSI633I 'PKTS START Command ===> F1=Help F7=Backward F8=For A Connected to remote server/ho lete your session evaluations of	ge indicates tr start a trace fo Press F9. COMMAND S F3=Re ward F9=Cr ost ralvmr.raleigh.ibn	Dat the trace started or the failing attempt.	TED F6=Roll F12=Cance 04/00



31

Ession A - [24 x 80]					
File Edit View Communication Acti	ons Window Help				
	b 💩 🐟 🐟				
Host: ralvmr.raleigh.ibm.co	Port: 23	LU Name:	Dis	connect	
FKXK2C02	Packet Trace	Details		l	OCAL
	Enter a differen	t description for thi	s trace		
STACK: IUPIP	Descriptions an	o ontional	0 11000	· ·	
Start Time: NA	Descriptions an			Status: 1	
Description: connectiv	ity problem failing	d case			
Interface Name: <u>*</u>	Port:	*			
IP Address: <u>9.27.142.1</u>	09				
Pauload: *		Protocol	• S	A11	
				TCP	
Enter the IP	address of the user ex	xperiencing the		UDP	
failing conne	ection attempt.	· · · · ·		ICMP	
				Nur	nber
Actions: 1=START					
То	start the trace type "1	" and proce Enter			
Command ===> 1	Start the trace, type T				
F1=Help F2=Main Menu	F3=Return				6=Roll
					-12=Cancel
Connected to remote server (best rel	um ralaigh ibm com using port 22				22/015
lo remote server/nost fai	at www.SHARE.org/Orlando-Ev		_	_	
	at www.JIIANL.UIS/ Undidu-EV	at		in Orl	ando 20 1
JUST 2015					











34

23 Session A - [24 x 80]				
File Edit View Communication Action	s Window Help			
0 66 25 80 0 10 5	🚵 🛃 🌰 🥔			
Host: ralvmr.raleigh.ibm.co	Port: 23 LL	J Name:	Disconnect	
FKXK2A24	Display Packet Con	trol		LOCAL
Trace Instance Autotas	k: AUTTRA3			NMP217
Stack: TCPIP		Infc Na	ame: <u>ALL</u>	
LAddr: <u>*</u>				-
RAddr: <u>9.27.132.252</u>				-
Portnum: <u>*</u> LPo	rt: <u>*</u> RPort:	<u>*</u> Protoco	ol:_ All (d	default)
Inc	rease the MaxRecs v	alue to 1000 to e	nsure	
Start Time: <u>*</u> SC End Time: <u>*</u>	eing all of the records	that are needed.	P	
				(Number)
MaxRecs: 1 1-Last <u>1</u> 2-First	000 Truncate:	<u>65535</u>		
Data Set Name:	Press F10 to analyz are any issues to be	e the trace and to concerned abou	o determine if t ıt.	here _
Command ===>				
F1=Help	F3=Return F4=Vie	w Packets F5=Sa	ave Packets	F6=Roll
F8=Extended	Opts	F10=6	Analyze	F12=Cancel
M <u>A</u> A				02/071
Connected to remote server/host raive	nr.raleigh.ibm.com using port 23			11.
plete your session evaluations online at	www.SHARE.org/Orlando-Eva	ıl		
gust 2015			in C	rando 20



📲 Session A - [24 x 80]		-			×
File Edit View Communication Actions	Window Help				
• • • • • • • • • • • • • • • • • •	S 🛃 🌰 🔗				
Host: ralvmr.raleigh.ibm.co Por	t: 23	LU Name:	Disco	onnect	
FKXK2B10	Packet Trace An	nalysis		LOCA	L
				NMP2	17
Trace Instance Autotask	C AUTTRA3				
TCP Sessions 20	UDP Session	= 0	ICMP Sess	ions 0	
			10111 00000		
_ TCP Sessions with err	or flags 20				
	0	Ularday, Dashara	0		
Unacknowledged Syns	U	WINDOW Probes	U		
Retransmissions	0	Reset Flags	0		
_ Duplicate Acks	20 _	Delayed Acks	19		
Zana Uinday Sina	0				
	U				
I here are several duplic	ate and delayed a	icknowledgement	ts that could	d	
be investigated. This is	the working trace	, so keep this in n	nind when		
comparing the failing tra	ce. Press F3 to re	eturn to the previo	ous screen.		
Command ===>	2-Detune 1	1-8		Ee-Del	,
гі-негр г	S-Return r	-4-Sessions		F0-R01 F12=Ca	ncel
мА А				05	/002
Connected to remote server/host ralvmr.r.	aleigh.ibm.com using port	23		00	
ete your session evaluations online at www	w.SHARE.org/Orlando-E	val			
r 1915	0.			in Orlando 🥻	201
ete your session evaluations online at ww st 2015	w.SHARE.org/Orlando-Ev	val		in Orlando	20

35

 \sim



File Edit View Communication Actions Window Help Host: Telvmcraleigh.ibm.co Host: Telvmcraleigh.ibm.co Port: 23 Host: Telvmcraleigh.ibm.co Port: 23 B: A:	22 Session A - [24 x 80]			
Image: Second	File Edit View Communication Actions Window Help			
Host: raivmicraleigh.ibm.co Port: 23 LU Name: Disconnect FKXK2A24 Display Packet Control LOCAL Trace Instance Rutotask: AUTTRA3 MMP217 Stack: TCPIP Infc Name: ALL LAddr: # RAddr: 9.27.132.252 Portnum: # LPort: # Protocol: All (default)	o toto <i>a</i> s in toto i			
FKXX2R24 Display Packet Control LOCAL Trace Instance Autotask: AUTTRA3 MMP217 Stack: TCPIP Infc Name: ALL LAddr: # RAddr: 9.27.132.252 Portnum: # LPort: # RPort: # Protocol:All (default)	Host: ralvmr.raleigh.ibm.co Port: 23	LU Name:	Disconnect	
Trace Instance Autotask: AUTTRA3 MMP217 Stack: TCPIP Infc Name: ALL LAddr: * RAddr: 9.27.132.252 Portnum: * LPort: * RPort: * Protocol:All (default)	FKXK2A24 Display Pack	et Control		LOCAL
Stack: TCPIP Infc Name: ALL LAddr: * RAddr: 9.27.132.252 Portnum: * LPort: * RPort: * Protocol:All (default)TCPUDP	Trace Instance Autotask: AUTTRA3			<u>NMP217</u>
LAddr: * RAddr: 9.27.132.252 Portnum: * LPort: * RPort: * Protocol: _ All (default) TCP UOP Start Time: * End Time: * Bata Set Name: Command ===> F1=Help F3=Return F4=View Packets F5=Save Packets F6=Roll F1=Help F3=Return F4=View Packets F5=Save Packets F6=Roll F1=Help F3=Return F4=View Packets Connected to remote server/host ralvmr.raleigh.ibm.com using port 23 It Orlando 2015	Stack: TCPIP	Infc Name	e: <u>ALL</u>	
RAddr: 9.27.132.252 Portnum: * LPort: * Protocol: All (default) TCP UDP Start Time: * ICMP End Time: * 0SPF MaxRecs: 1 1-Last 1000 MaxRecs: 1 1-Last 1000 Data Set Name: To learn more about the successful scenario, press F4 to view the packets. Command ===> F3=Return F4=View Packets F5=Save Packets F6=Roll F1=Help F3=Return F4=View Packets F5=Save Packets F6=Roll G A 02/071 Gonected to remote server/host ralvmr.raleigh.ibm.com using port 23 In Orlando 2015	LAddr: <u>*</u>			
Portnum: * LPort: * RPort: * Protocol:All (default)TCPUDP	RAddr: <u>9.27.132.252</u>			-
Start Time: * UDP End Time: * OSPF MaxRecs: 1 1-Last 1000 MaxRecs: 1 1-Last 1000 Data Set Name: To learn more about the successful scenario, press F4 to view the packets. Command ===> F3=Return F4=View Packets F5=Save Packets F6=Roll F1=Help F3=Return F4=View Packets F5=Save Packets F6=Roll F8=Extended Opts F10=Analyze F12=Cancel MaxRected to remote server/host ralvmr.raleigh.ibm.com using port 23 In Orlando 2015	Portnum: <u>*</u> LPort: <u>*</u>	RPort: <u>*</u> Protocol	: _ All (0 _ TCP	default)
Start Time: *			_ UDP	
End Time: * OSPF MaxRecs: 1 1-Last 1000 Truncate: 65535 2-First To learn more about the successful scenario, press F4 to view the packets. Data Set Name: To learn more about the successful scenario, press F4 to view the packets. Command ===> F3=Return F4=View Packets F5=Save Packets F6=Roll F10=Analyze F1=Help F3=Return F4=View Packets F5=Save Packets F6=Roll F12=Cancel F3 Connected to remote server/host ralvmr.raleigh.ibm.com using port 23 02/071 Connected to remote server/host ralvmr.raleigh.ibm.com using port 23 in Orlando 2015	Start Time: *		_ ICMP	
MaxRecs: 1 1-Last 1000 Truncate: 65535 2-First To learn more about the successful scenario, press F4 to view the packets. Data Set Name: To learn more about the successful scenario, press F4 to view the packets. Command ===>> F3=Return F4=View Packets F5=Save Packets F6=Roll F10=Analyze F1=Help F3=Return F4=View Packets F5=Save Packets F6=Roll F10=Analyze F8=Extended Opts F10=Analyze F10=Analyze F12=Cancel Connected to remote server/host ralvmr.raleigh.ibm.com using port 23 02/071 etee your session evaluations online at www.SHAKE.org/Urlando-Eval in Orlando 2015	End Time: <u>*</u>		_ OSPF	(Number)
Data Set Name: To learn more about the successful scenario, press F4 to view the packets. Command ===> F3=Return F4=View Packets F5=Save Packets F6=Roll F1=Help F3=Return F4=View Packets F5=Save Packets F6=Roll F8=Extended Opts F10=Analyze F12=Cancel Connected to remote server/host ralvmr.raleigh.ibm.com using port 23 02/071 ete your session evaluations online at www.SHARE.org/Orlando-Eval in Orlando 2015	MaxRecs: 1 1-Last <u>1000</u> Tru 2-First	ncate: <u>65535</u>		(Number)
Command ===> F3=Return F4=View Packets F5=Save Packets F6=Roll F1=Help F3=Return F4=View Packets F5=Save Packets F6=Roll F8=Extended Opts F10=Analyze F12=Cancel Image: Connected to remote server/host ralvmr.raleigh.ibm.com using port 23 02/071 In Orlando 2015 In Orlando 2015	Data Set Name:	To learn more about th	e successfu	
Command ===> F3=Return F4=View Packets F5=Save Packets F6=Roll F1=Help F3=Return F4=View Packets F5=Save Packets F6=Roll F8=Extended Opts F10=Analyze F12=Cancel F1 A 02/071 F1 Connected to remote server/host ralvmr.raleigh.ibm.com using port 23 02/071 Fete your session evaluations online at www.SHARE.org/Orlando-Eval in Orlando 2015		scenario, press F4 to v	view the pack	kets.
F1=Help F3=Return F4=View Packets F5=Save Packets F6=Roll F8=Extended Opts F10=Analyze F12=Cancel F1 A 02/071 F1 Connected to remote server/host ralvmr.raleigh.ibm.com using port 23 02/071 ete your session evaluations online at www.SHARE.org/Urlando-Eval in Orlando 2015	Command ===>			
F8=Extended Opts F10=Analyze F12=Cancel A 02/071 T Connected to remote server/host ralvmr.raleigh.ibm.com using port 23 02/071 Tete your session evaluations online at www.SHARE.org/Orlando-Eval in Orlando 2015	F1=Help F3=Return	F4=View Packets F5=Save	e Packets	F6=Roll
Connected to remote server/host ralvmr.raleigh.ibm.com using port 23 There your session evaluations online at www.SHARE.org/Urlando-Eval in Orlando 2015	F8=Extended Opts	F10=Ana	alyze	F12=Cancel
Connected to remote server/host ralvmr.raleigh.ibm.com using port 23 in Orlando 2015 in Orlando 2015	1 <u>B</u> A			02/071
in Orlando 2015	Connected to remote server/host ralvmr.raleigh.ibm.com usi	ng port 23		
	Lete your session evaluations online at www.SHARE.Org/Offa	IUU-LVal	in Orla	ando 2015 🤇








38





39



Session A - [24 x 80]	
File Edit View Communication Actions Window Help	
Host: ralvmr.raleigh.ibm.co Port: 23 LU Name:	Disconnect
FKXK2A24 Display Packet Control	LOCAL
Trace Instance Autotask: AUTTRA4	NMP217
Stack: TCPIP Infc Name: <u>f</u>	ALL
LAddr: *	
RAddr: <u>9.27.142.109</u>	
Portnum: <u>*</u> LPort: <u>*</u> RPort: <u>*</u> Protocol:	All (default) TCP
Start Time: * Increase the MaxRecs value to 1000 to ensure	DP CMP
End Time: seeing all of the records that are needed.	SPF
MaxRecs: 1 1-Last <u>1000</u> Truncate: <u>65535</u> 2-First	(Number)
Data Set Name: Press F10 for a summary analysis of the tradetermine if there are any issues to be con	ace and to cerned about.
Command ===>	
F1=Help F3=Return F4=View ts F5=Save Pa	ackets F6=Roll
F8=Extended Opts F10=Analyz	ze F12=Cancel
M <u>B</u> A	16/028
Connected to remote server/host ralvmr.raleigh.ibm.com using port 23	
plete your session evaluations online at www.SHARE.org/Orlando-Eval	
aust 2015	in Orlando 2015

 \sim







Ession A - [24 x 80]	-			
File Edit View Communication Actions Windo	w Help			
Host: ralvmr.raleigh.ibm.co Port: 23	LU Name:		Disconnect	
FKXK2A24 Displa	ay Packet Control			LOCAL
Trace Instance Autotask: AU	TTRA4			NMP217
Stack: TCPIP		Infc Name:	ALL	
LAddr: <u>*</u>				-
RAddr: <u>9.27.142.109</u>				-
Portnum: <u>*</u> LPort: <u>*</u> _	RPort: <u>*</u>	Protocol:	_ All (c _ TCP	default)
Start Time: *			ICMP	
End Time: *			OSPF	
				(Number)
MaxRecs: 1 1-Last <u>1000</u> 2-First	Truncate: <u>65535</u>)		
Data Set Name:Prose	E1 to view the packets			
11635		5.		
Command ===>				
F1=Help F3=Re	turn F4=View Packe	ets F5=Save	Packets	F6=Roll
F8=Extended Opts		F10=Anal	yze	F12=Cancel
M <u>A</u> A				16/028
Connected to remote server/host ralvmr.raleigh.	ibm.com using port 23			11.
plete your session evaluations online at www.SH/	ARE.org/Orlando-Eval		in O	rlando 20 1
gust 2015				



Š

43

File Ec	dit View Commun	ication Actions	s Windo	w Help					
<u>•</u>) 🛋 ங ы	60 60	@ <i>@</i>					
	Host: ralvmr.rale	igh.ibm.co P	ort: 23		LU Name:		Disconne	ect	
FKXK	K2A26			PKTTRACE	Summary			NTVE1	
Trac	ce Instance	Autotask:	AUTT					More:+ -	
DP	Nr hh:mm:s	s.mmmmmm	IpId	Seq_num	Ack_num	Wndw	Flags		
<u>1</u> T	48 09:58:4	0.617674	0F41	4023935469	0	8192	SYN		
IT	47 09:58:3	4.621910	0F3F	4023935469	0	8192	SYN		
IT	46 09:58:3	1.614974	0F3E	4023935469	0	8192	SYN		
IT	45 09:58:1	9.604512	0F39	3382946599	0	8192	SYN		
IT	4 As the s	ummory	analy	rcic indicator	d traces of	tha in	dividual	connection	
IT IT IT	⁴ As the s ⁴ attempts ₄ more pa	ummary s show u ckets.	analy nackr	vsis indicate nowledged S	d, traces of SYNs. You o	the in can so	dividual (croll dowr	connection n to view	
IT IT IT IT	 ⁴ As the s ⁴ attempts ⁴ more pa ⁴ 09:57:5 	summary s show u ackets. 2.603882 CONN.TRA	analy nackr 0F27 CEB	vsis indicated nowledged S 2300453671	d, traces of SYNs. You o To save name a	the inc can so the tr and pre	dividual o croll dowr cace, spec ess F2. P	connection n to view cify a trace da Press F3 twice	ta set to ret
IT IT IT IT Data	 ⁴ As the s ⁴ attempts ⁴ more pa ⁴ 09:57:5 ⁴ Set Name: 	summary s show ui ackets. 2.603882 CONN.TRA	analy nackr 0F27 CEB	vsis indicate nowledged S 2300453671	d, traces of SYNs. You of To save name a to the F	the in can sc the tr nd pre Packet	dividual o croll dowr cace, spec ess F2. P Trace De	connection n to view cify a trace da Press F3 twice etails pane <u>l.</u>	ta set to ret Dr fron
IT IT IT Data Comm	 4 As the s 4 attempts 4 more pa 4 09:57:5 a Set Name: 	summary s show u ackets. 2.603882 CONN.TRA	analy nackr 0F27 CEB	vsis indicated nowledged S 2300453671	d, traces of SYNs. You of To save name a to the F here we	the in can so the tr nd pre Packet e can t	dividual o croll dowr cace, spec ess F2. P Trace De cake <u>any o</u>	connection n to view cify a trace da Press F3 twice etails panel. C of seve <u>ral acti</u>	ta set to ret Dr fron
IT IT IT Data F1=H	 ⁴ As the s ⁴ attempts ⁴ more pa ⁴ 09:57:5 ⁴ Set Name: ¹ nand ===> ¹ F2= 	summary s show ui ackets. 2.603882 CONN.TRA Save Pack	analy nackr 0F27 .CEB	vsis indicate nowledged S 2300453671	d, traces of YNs. You of To save name a to the F here we	the inc can so the tr and pre Packet e can t	dividual o croll dowr cace, spec ess F2. P Trace De cake any o	connection n to view cify a trace da Press F3 twice etails panel. C of several acti	ta set to ret Or fron ons:
IT IT IT Data Comm F1=H F7=B	 ⁴ As the s ⁴ attempts ⁴ more pa ⁴ 09:57:5 ⁴ Set Name: ¹ and ===> ¹ alp F2= ³ ackward F8= 	summary s show un ackets. 2.603882 CONN.TRA Save Pack Forward	analy nackr 0F27 CEB	vsis indicate nowledged S 2300453671 53=Return 59=Commands	d, traces of SYNs. You of To save name a to the F here we	the in can so the tr nd pre Packet e can t	dividual o croll dowr cace, spec ess F2. P Trace De cake any o L=Right	connection n to view cify a trace da Press F3 twice etails panel. C of several acti F12=Canc	ta set to ret Or fron ons:
IT IT IT Data Comm F1=H F7=B	 As the s attempts attempts more pa 41 09:57:5 a Set Name: nand ===> Help F2= Backward F8= A 	summary s show un ackets. 2.603882 CONN.TRA Save Pack Forward	analy nackr oF27 CEB < <ets f<="" td=""><td>vsis indicate nowledged S 2300453671 3=Return 59=Commands</td><td>d, traces of SYNs. You of To save name a to the F here we</td><td>the inc can so the tr ind pre Packet e can t</td><td>dividual o croll dowr cace, spec ess F2. P Trace De cake any o</td><td>connection n to view cify a trace da Press F3 twice etails panel. C of several acti F12=Canc 04/0</td><td>ta set to ret Dr fron ons:</td></ets>	vsis indicate nowledged S 2300453671 3=Return 59=Commands	d, traces of SYNs. You of To save name a to the F here we	the inc can so the tr ind pre Packet e can t	dividual o croll dowr cace, spec ess F2. P Trace De cake any o	connection n to view cify a trace da Press F3 twice etails panel. C of several acti F12=Canc 04/0	ta set to ret Dr fron ons:



44

■ Session A - [24 x 80]	-	
File Edit View Communication Actions Window He	elp	
• • • • • • • • • • • • • • • • • • •	»	
Host: ralvmr.raleigh.ibm.co Port: 23	LU Name:	Disconnect
FKXK2C02 Pack	et Trace Details	LOCAL
Stack: TCPIP	Task: AUTTRA4	
Start Time: 10/31/13 10:17:48 Description: connectivity proble	Owner: OPER1 m failing case	Status: ACTIVE
Interface Name: Any	Port: Any	
IP Address: Any		
Payload: 65535	Protocol:	S All _ TCP _ UDP _ ICMP
Total Size: 50M		_ Number
Records: 1693	In Use: 0000000000K	
Actions: 2=STOP 3=DIS	PLAY 4=END	
Command ===> 2 F1=Help F2=Main Mer the trace and	ace, type "2" and press Enter. frees the trace records – be si	Specifying "4" ends ure you're done.
MA A		22/015
Connected to remote server/host raivmr.raleigh.ibm.co	om using port 23	
plete your session evaluations online at www.SHARE.o	rg/Orlando-Eval	in Orlando 201
just 2015		





45



46



Monitoring Sysplex Distributor – Sample Scenarios



- Sysplex Distributor seems to be favoring one z/OS System significantly more than others for new TCP connections? Why is that?
- Help desk is receiving calls indicating performance issues using an application that is distributed via Sysplex Distributor. You want to understand how TCP connections have been distributed for given Distributed DVIPA over the past 30 minutes.

Complete your session evaluations online at www.SHARE.org/Orlando-Eval August 2015



DVIPA and DDVIPA





Complete your session evaluations online at www.SHARE.org/Orlando-Eval

in Orlando 2015

Scenario 2: Sysplex Distributor Favoring a System



- The NetView DDVIPA Server Health workspace displays the WLM weight for DDVIPA targets. WLM weight is a key metric for DDVIPA connection distribution.
- Scenario information:
 - DVIPA 9.42.46.85 on port 2023



Scenario 2: WLM Weight and DDVIPA Server Health SHARE.

🕖 Distributed DVIPA Server Health		🟠 💌 🗟 💌 🖃 🖶 💌 Page 🕶 Safety 🕶 Tools 💌 👰 💌 🎽
Tivoli Enterprise Portal Welcome SYSADMIN		Log out IBM .
File Edit View Help		
☆ 🖬 🖩 🗷 😤 🖉 🕹 🛡 🛱 🔏 🛛 🕪 📽 🐠 🗐 🎱 🖗 🎬 🛞	2 🗉 🔁 🔍 🖉 🧖 🛋 🖬 🖬 🖬	ت ا
କଳ୍ପି Navigator 🏦 🛽	8 🛄 WLM Weight	
View: Physical		
CNM01 DDVIPA Application-Instance DVIPA Application-Instance DVIPA Application-Instance DVIPA Definition and Status DVIPA Stack-Defined DVIPA Stack-Defined DVIPA Stysplex Distributors HiperSockets NetView Audit Log NetView Health NetView Health NetView Log Session Data Stack Configuration and Status TCPIP Connection Data TcPIP Connection Data Teinet Server Configuration and Status	1 1	2000 201 207 / 1:1 12 2023 2000 201 207 / 1:1 12 2023 2000 201 207 / 1:1 12 2023 2000 201 207 / 1:1 12 203 2000 201 207 / 1:1 12 203 2000 201 207 / 1:1 12 203 201 207 / 1:1 2 203 201 207 / 1:1 2 203 201 207 / 1:1 2 203
Distributed DVIPA Server Health Summary		
Update Application Server DVIPA Port XCF IP Name Per Address Name Per	h Avonormal Target Server Target Connectivity Server Accept Connection Raw Raw Raw Raw Pr Transaction Responsiveness Success Efficiency Establishment Composite CP zAAP ZIP Percent Rate Rate Fraction Rate Composite CP zAAP ZIP	oportional Proportional Proportional DESTIP TCPIP CP zAAP ZIIP Weight Job Name
08/08/13 13:46:02 TN3270 9.42:46.85 2023 192.9.235.1 TIVLP35	0 7 0 100 100 100 100 30 30 0 0 30	0 0 1 TCPIP
Ø8/08/13 13:46:02 TN3270 9.42.46.85 2023 192.9.234.1 TIVLP34	10 7 0 100 100 100 100 31 31 0 0 30	0 0 1 TCPIP
Ø8/08/13 13:46:02 TN3270 9.42.46.85 2023 192.9.207.1 TIVMVS7	0 16 0 100 100 100 95 64 64 0 0 64	0 0 1 TCPIP
Ø 08/08/13 13:46:02 INETD4 201:207.1.11 623 192:9:207.1 TIVMVS7	0 8 0 100 100 100 100 34 34 0 0 34	
201.207.1.11 623 192.9.234.1 TIVLP34		
201207.1.11 623 192.9.235.1 TIVLP35		
Ø 08/08/13 13:46:02 INETD4 201.207.1.12 623 192.9.207.1 TIVMVS7		
20 08/08/13 13:46:02 INETD4 201.207.1.12 623 192.9.234.1 TIVLP34		
20100/03/13/13/40:02 INFTD4 20120/11/12 623/192.9.235.1 TVLP35		
08/08/13 13:40:02 INETD4 201:207:1.14 623 192:9:207.1 IVMVS7		
United to the time the united to the united to the time the uni		Health - nc058026.tivlab.raleigh.ibm.com - SYSADMIN
August 2015		● Internet Protected Mode: Off



Scenario 2: WLM Weight Bar Chart

First 3 bars show WLM weight for DVIPA 9.42.45.84 and Port 2023.





Complete your session evaluations online August 2015



Scenario 2: WLM Weight and DDVIPA Server Health

Application Server Name	DVIPA	DVIPA Port	Dynamic XCF IP Address	zOS Image Name	Port Health Percent	⚠ WLM Weight	Abnormal Transaction Percent	Target Server Responsiveness Rate	Target Connectivity Success Rate
TN3270	9.42.46.85	2023	192.9.235.1	TIVLP35	100	7	0	100	100
TN3270	9.42.46.85	2023	192.9.234.1	TIVLP34	100	7	0	100	100
TN3270	9.42.46.85	2023	192.9.207.1	TIVMVS7	100	16	0	100	100

Server Accept Efficiency	Connection Establishment	Raw Composite	Raw CP	Raw zAAP	Raw zliP	Proportional CP
Fraction	Rate	Weight	Weight	Weight	Weight	Weight
100	100	30	30	0	0	30
100	100	31	31	0	0	30
100	95	64	64	0	0	64

WLM Weight for TIVMVS7 (z13) is > double that of TIVLP34 (z10) and TIVLP35 (z10).

Complete your session evaluations online at www.SHARE.org/Orlando-Eval



Monitoring Sysplex Distributor – Sample Scenarios



- Sysplex Distributor seems to be favoring one z/OS System significantly more than others for new TCP connections? Why is that?
- Help desk is receiving calls indicating performance issues using an application that is distributed via Sysplex Distributor. You want to understand how TCP connections have been distributed for given Distributed DVIPA over the past 30 minutes.

Complete your session evaluations online at www.SHARE.org/Orlando-Eval August 2015



Scenario 3: Application Performance Issues



- Distributed DVIPA Statistics will show you how your DDVIPA connections have been distributed for the application with performance issues for DDVIPA 197.11.211.1 on port 52002.
- Scenario information
 - Your DDVIPA sampling interval is 5 minutes (DVIPA.DVTAD tower)
 - DDVIPA Statistics is enabled and started across all systems in your sysplex
 - If not started, start it dynamically with the DVIPALOG command and filters, as desired
 - Once the next sampling interval passes, issue NetView sample command: CNMSDVST

or

wait for 30 minutes and issue:

CNMSDVST DVIPA=197.11.211.1 PORT=52002 and scroll through the output.



Complete your session evaluations online at www.SHARE.org/Orlando-Eval August 2015

Scenario 3: CNMSDVST output



2	Session B - [24 x 80]				X						X
Fil	Edit View Communication Actions Wir	ndow Help			on /	Actions Window Help					
		5 .			al 1	There are a	approximately				
	Host cstn3270.rtp.raleiphil Port	23 111N	ame	Disconnect	leigh	20,000 row	s of data! Use		Disconnect		
0			dilic. j		leigh	filters with	CNMSDVST.		LINE 270	0E 1	0017
R	NH867I NUMBER OF DISTRIBUT	TED DVIPA STATIST	ICAL RECORDS: 19	815					LINE 319	UF 1	9011
ľ	# Date Time Lo	calSus LclStack	DDVIPA	Port TargSus	TargStak	DistribMethod	TotalConns D	eltaConns	WLMweight	SD%	WLM2
	377 08/11/13 14:59:44 IT	ALY TCPSVT	197.11.211.1	52002 SPAIN	TCPSVT	BaseWLM	1786	1746	4	7	7
	378 08/11/13 14:59:44 IT	ALY TCPSVT	197.11.211.1	52002 RUSSIA	TCPSVT2	BaseWLM	2192	2180	5	8	8
	379 08/11/13 14:59:44 IT	ALY TCPSVT	197.11.211.1	52002 RUSSIA	TCPSVT	BaseWLM	2267	2227	5	8	8
	380 08/11/13 14:59:44 IT	ALY TCPSVT	197.11.211.1	52002 ITALY	TCPSVT	BaseWLM	510	490	1	2	2
	381 08/11/13 14:59:44 IT	ALY TCPSVT	197.11.211.1	52002 RUSSIA	TCPSVT1	BaseWLM	2239	2230	5	8	8
	382 08/11/13 14:59:44 IT	ALY TCPSVT	197.11.211.1	52002 BOTSWANA	TCPSVT	BaseWLM	918	899	2	3	3
	383 08/11/13 14:59:44 IT	ALY TCPSVT	197.11.211.1	52002 FRANCE	TCPSVT	BaseWLM	3040	2986	7	11	11
	384 08/11/13 14:59:44 IT	ALY TCPSVT	197.11.211.1	52002 ZORRO	TCPSVT	BaseWLM	3573	3501	8	13	13
	385 08/11/13 14:59:44 IT	ALY TCPSVT	197.11.211.1	52002 ITALY	TCPSVT2	BaseWLM	509	491	1	2	2
	386 08/11/13 14:59:44 IT	ALY TOPSVT	197.11.211.1	52002 BOTSWANA	TCPSVI1	BaseWLM	867	2036	2	3	3
1	387 08/11/13 14:59:44 11	ALY ICPSVI	197.11.211.1	52002 FRANCE	TCPSVII	BaseWLM	2848	2000		11	11
	388 08/11/13 14:59:44 11	ALY ICPSVI	197.11.211.1	52002 GERMANY	TCPSVI	BasewLM	0335	0209	14	23	23
	389 08/11/13 14:59:44 11	HLY IUPSVI	197.11.211.2	623 SPHIN	TCPSVI TCPCUT2	DdSewlli Bacolil M	0	0	10	0	00
	390 08/11/13 14:39:44 11 201 09/11/12 14:50:44 11	HLT ICPOVI	197.11.211.2	022 DUCCIO	TCDCUT	Racolli M	0	0 A	0	0	0 A
	302 08/11/13 14:59:44 IT		197.11.21)	025 K0551H	TCDSUT	BaseWIM	0	ů N	2	A	11
	392 00/11/13 14:59:44 11 303 08/11/13 14:59:44 11	First interva	I data for DDVIP		TCPSVI1	BaseWLM	õ	Õ	0	õ	0
	394 08/11/13 14:59:44 IT	197.11.211.	1 and port 52002	23 BOTSWANA	TCPSVI	BaseWLM	0	0	0	0	0
	395 08/11/13 14:59:44 IT	ALY	197.11.711.7	023 FRANCE	TCPSVT	BaseWLM	0	0	1	0	5
T) SEE YOUR KEY SETTINGS. E	NTER 'DISPFK'		020 1111102							
С	10==>										
MĤ	В				24/009					24	1/009
۲. ال	Connected to remote server/host cstn3270.rtr	p.raleigh.ibm.com using lu/po	ol Z40LU105		/host	t cstn3270.rtp.raleigh.ibm.cor	m using lu/pool Z40LU105				
۱uy	นธิเ 2010	,		and the second sec				-	Canada - Sa -		55

Scenario 3: DDVIPA Sysplex Distribution Percentage



Using the data from DDVIPA Statistics, you can track DDVIPA connection distribution. The graph below maps the Sysplex Distributor Connection Information provided by DDVIPA Statistics over 30 minutes.

• NetView for z/OS does not provide this function.

For our scenario, the connections are being distributed consistently across all target stacks. However, there is a wide disparity in the number of connections per stack.



Summary



- NetView for z/OS provides:
 - An extensive set of tools for managing complex networks and systems from a single point of control
 - Advanced automation facilities for network events
 - A set of user interfaces to meet your needs and management functions that work with other products to provide a complete picture of your networks and systems







Complete your session evaluations online at www.SHARE.org/Orlando-Eval August 2015





Questions and Answers

Complete your session evaluations online at www.SHARE.org/Orlando-Eval August 2015



Questions and Answers



- TCP Connections
 - **Q**: What needs to be enabled for this function?
 - A: TCPIPCOLLECT tower and TOWER.TCPIPCOLLECT = TCPCONN subtower
 - Enabled by default





- Intrusion Detection (IDS)
 - Q: What does NetView do differently than z/OS MF related to this function?
 - A: Confirmed with z/OS Communications Server team that their IDS policy can be configured using the z/OS MF Configuration Assistant. There is no monitoring/automation done by z/OS MF. NetView provides automation support.
 - To enable NetView Intrusion Detection Automation Services, configure the following CNMSTYLE user statements:

TOWER = AON TOWER.AON = TCP TOWER.AON.TCP = IDS





- Packet Trace (including scenario)
 - **Q1**: What was the root cause of the problem with the "unacknowledged SYNs"?
 - A1: The application at the specified IP address had a limited number of connections it could accept, and that limit had been reached.
 - Q2: What's the maximum size of a concurrent trace instance (used in the scenario)?
 Where is the trace information stored? Does the stored trace data wrap?
 - A2: Each concurrent trace instance is backed by a data space.
 - The default size is 50M min is 16M max is 2047M
 - The default is to wrap (specify a negative amount to not wrap, such as: -50M)
 - To change the size and wrap specification, see the STORAGE keyword with the PKTS command or the CNMSTYLE statement:
 PKTS.STORAGE.&CNMTCPN = 50M
 - Note: If you plan to save one or more traces, ensure that you have adequate space to do this. NetView dynamically allocates a data set to save the trace data.
 - Q3: Is an "external writer" required?
 - **A3**: No.
 - Q4: What needs to be enabled for this function?
 - A4: TCPIPCOLLECT tower and TOWER.TCPIPCOLLECT = PKTS subtower (both enabled by default) in CNMSTYLE user member



Complete your session evaluations online at www.SHARE.org/Orlando-Eval



- Discovery Manager
 - Q1: What needs to be enabled for this function?
 - A1: DISCOVERY tower and any subtowers in CNMSTYLE user member: TOWER.DISCOVERY = INTERFACES TELNET TOWER.DISCOVERY.INTERFACES = OSA HIPERSOCKETS
 - Q2: How can I get this data programmatically without issuing commands that write lots of information to the TCPIP job log?
 - A2: Use the following NetView commands (samples are in parentheses) and issue OVERRIDE SLOGCMDR=NO command for pertinent autotasks to not log MVS command output to SYSLOG :
 - STACSTAT (CNMSTAC): Configuration and status information about TCP/IP stacks
 - IFSTAT (CNMSIFST): TCP/IP stack interfaces
 - TELNSTAT (CNMSTNST): Configuration and status information about Telnet servers
 - TNPTSTAT (CNMSTPST): Configuration and status information about Telnet server ports
 - NVSTAT (CNMSNVST): Configuration and status information about the NetView domains
 - OSAPORT (CNMSOSAP): OSA channel and port information
 - HIPERSOC (CNMSHIPR): View HiperSockets adapter informations

Complete your session evaluations online at www.SHARE.org/Orlando-Eval





- DVIPA
 - Q1: What needs to be enabled for this function?
 - A1: DVIPA tower and any subtowers in CNMSTYLE user member: TOWER.DVIPA = DVTAD DVCONN DVROUT
 - Q2: How can I get this data programmatically without issuing commands that write lots of information to the TCPIP job log?
 - A2: Use the following NetView commands (samples are in parentheses) and issue OVERRIDE SLOGCMDR=NO command for pertinent autotasks to not log MVS command output to SYSLOG :
 - DVIPSTAT (CNMSDVIP): Definition and status information about DVIPAs
 - DVIPPLEX (CNMSPLEX): Information about DVIPA sysplex distributors
 - DVIPCONN (CNMSDVPC): DVIPA connections
 - DVIPTARG (CNMSTARG): DVIPA distributed targets
 - DVIPHLTH (CNMSDVPH): Distributed DVIPA server health information
 - DVIPDDCR (CNMSDDCR): Distributed DVIPA connection routing information
 - VIPAROUT (CNMSVPRT): Status information about VIPA routes





- DVIPA Q&A cont.
 - Q3: Are there additional metrics to help with DDVIPA problems?
 - **A3**: Yes.
 - See the NetView DDVIPA Servers workspace (TEP) or the output of the DVIPHLTH (sample CNMSDVPH) command (message BNH814I)
 - Also see Scenario 6 in this section.
 - The root cause for this scenario is that the server's ability to accept connections is very low.





Additional Scenarios

Complete your session evaluations online at www.SHARE.org/Orlando-Eval August 2015



Scenario 4: Diagnosing Telnet Server Outage



- A user reports that they can no longer establish Telnet connections to Telnet server TN3270B
- The operator looks at the Telnet Server Configuration and Status workspace and notices that TN3270B is inactive
- The operator restarts the server and monitors that connections are once again being established



Scenario 4: Telnet Server Inactive







Scenario 4: Telnet server now active







Scenario 5: DDVIPA Configuration Changes

- Scenario:
 - All 3 systems in PLEX1 need to add a Sysplex Distributor. The changes are all scheduled to occur at the same time, but 2 of the new Sysplex Distributor IP addresses are not working.
- Resolution steps:
 - Using the Canzlog remote browse GROUP function from an enterprise master NetView, see why the DDVIPA configuration changes did not work on all 3 systems in the sysplex.
 - Also, take advantage of the CZFORMAT option (ORIGIN) and the new relative time filter.





Consolidated Log Browse with NetView V6.2



CANZLOG = Consolidated Audit, NetView and z/OS LOG

Complete your session evaluations online at www.SHARE.org/Orlando-Eval





Canzlog GROUP browse

- The Canzlog BR command can be used to browse a Canzlog from multiple domains
 - The messages from all the domains are consolidated into one log
 - The messages in the log are sorted by time
 - Use the new DEFAULTS/OVERRIDE CZFORMAT command to specify ORIGIN in front of each message
 - Additional filter options can be specified
 - A filter name, if used, is resolved on the local side before making the remote request


Scenario 5: GROUP information



NetView stylesheet:

RMTSYN.IP.NTV7A =	NMPIPL12.TIVLAB.RALEIGH.IBM.COM/4022 ON USIBMNT
RMTALIAS.NTV7ATST	= IP.NTV7A
RMTSYN.IP.NTV74 =	NMP190.TIVLAB.RALEIGH.IBM.COM/4022 ON USIBMNT
RMTALIAS.NTV74TST	= IP.NTV74
RMTSYN.IP.NTV70 =	NMPIPL10.TIVLAB.RALEIGH.IBM.COM/4022 ON USIBMNT
RMTALIAS.NTV70TST	= IP.NTV70
RMTSYN.IP.NTVE6 =	NMPIPL30.TIVLAB.RALEIGH.IBM.COM/4022 ON USIBMNT
RMTALIAS.NTVE6TST	= IP.NTVE6
ENT.GROUP.PLEX1 =	NTV7ATST NTV74TST NTV70TST Issue RESTYLE ENT to

Issue RESTYLE ENT to dynamically add a GROUP.

QRYGROUP Output

NetView V6R2 - NM Tivoli NetView NTVAF NETOP1	Е
* NTVAF QRYGROUP	g
C NTVAF	ir
CNM100I The list of groups stored in COMMON	d
PLEX1	ir
* NTVAF QRYGROUP PLEX1	a
C NTVAF	9 to
CNM100I The list of members stored in PLEX1	ir
NTV7ATST	ir
NTV70TST	
NTV74TST	S

ENT.GROUP.groupname defines a group of local or remote NetView nstances. You can use a group to define a logical cluster of NetView nstances; you can then use the group with the BROWSE command to see data from all NetView nstances in the cluster. A group can nclude specific NetView domains, sysplexes, and other groups.



August 2015

Complete your session



Scenario 5: Relative Time

CNMKCZLG	Specify	Canzlog Filters		
From:		To:	'03/11/14 23:16:00'	
For:	0D 0H 1M			
Tag:		MSGID:		
Jobname:		Jobid:	Timer for OBEYFILES to add ne	W
ASID:		ASType:	Sysplex distributors was set to re	un at
Console:		Route Code	23.15.00 on 03/11/14 Immediat	Þ
Domain:		System ID:	regulte are the desired display	
AutoTok:		Desc Code:	results are the desired display,	
AuthUser:		AuthGroup:	1 minute from 23:15:00 is specif	ied.
Opid:		UCHARS :		
CHKey:		WTOKey:		
Text - case	insensitive; slower	The group we just defined		
Name:	Remark:			
TO SEE YOUR For on this pa field if you wa the start and	KEY SETTINGS, ENTER anel specifies the durati ant to specify the timesp end times.	'DISPFK' ion of the timespan t pan in terms of durat	o be included. Use the <i>For</i> ion, rather than specifying the	
ugust 2015				74



 \sim°

75

Scenario 5: Filtered Results

Canzlog Target:	=PLEX1 TO='03/11/14 2	3:16:00' 03/11/14 23:1	5:00 23:15:09					
NMPIPL10 TCPIP	23:15:00 EZZ0060I	PROCESSING COMMAND: VARY TO	PIP, TCPIP, OBEYFILE, USER. PARMLIB (DDVIP	PADD)				
NMPIPL10 TCPIP	23:15:00 EZZ0300I	OPENED OBEYFILE FILE 'USER.	PARMLIB(DDVIPADD)'					
NMP190 T620E	ENV 23:15:00 IEA630I	OPERATOR NETO2NM NOW ACTIV	E, SYSTEM=NMP190 , LU=NT74L701					
NMPIPL10 TCPIP	23:15:00 EZZ0309I	PROFILE PROCESSING BEGINNIN	G FOR 'USER.PARMLIB(DDVIPADD)'					
NMP190 T620E	ENV 23:15:00 V TCPIP,	TCPIP, OBEYFILE, USER. PARMLIB(DDVIPADD)					
NMPIPL10 TCPIP	23:15:00 EZZ0316I	PROFILE PROCESSING COMPLETE	FOR FILE 'USER.PARMLIB(DDVIPADD)'					
NMPIPL18 TCPIP	23:15:00 E2200531	COMMAND VARY OBEY COMPLETED	SUCCESSFULLY					
NMPIPL10 TCPIP	23:15:00 EZZ8312I	VIPA 201.2.10.10 MAY NOT BE	CHANGED WITH VIPADEFINE					
NMP190 TCPIP	23:15:00 EZZ0060I	PROCESSING COMMAND: WORY TO	PIP, TCPIP, OBEYFILE, USER. PARMLIB (DDVIP	PADD)				
NMP190 TCPIP	23:15:00 EZZ0300I	OPENED OBEYFILE FILE 'USEN	CORMLIB(DDVIPADD)'					
NMP190 TCPIP	23:15:00 EZZ0309I	PROFILE PROCESSING BEGINNIN	G . CSER.PARMLIB(DDVIPADD)'					
NMP190 TCPIP	23:15:00 EZZ0316I	PROFILE PROCESSING COMPLETE						
NMP190 TCPIP	23:15:00 EZZ0331I	NO HOME ADDRESS ASSIGNED TO	Indicates the DVIPA					
NMP190 TCPIP	23:15:00 EZZ0331I	NO HOME ADDRESS ASSIGNED TO	address is already					
NMP190 TCPIP	23:15:00 EZZ0053I	COMMAND VARY OBEY COMPLETED	defined on the current					
NMPIPL12 T620E	ENV 23:15:00 IEA630I	OPERATOR NETO1NM1 NOW ACTIV						
NMPIPL12 T620E	ENV 23:15:00 V TCPIP,	TCPIP, OBEYFILE, USER. PARMLIB(Stacks.					
NMPIPL12 TCPIP	23:15:00 EZZ0060I	PROCESSING COMMAND: VARY TO		PADD)				
NMPIPL12 TCPIP	23:15:00 EZZ0300I	OPENED OBEYFILE FILE 'USER.	PAR' VIPADD)'					
NMPIPL12 TCPIP	23:15:00 EZZ0309I	PROFILE PROCESSING BEGINNIN	'USER.PARMLIB(DDVIPADD)'					
NMPIPL12 TCPIP	23:15:00 EZZ0316I	PROFILE PROCESSING COMPLE	FOR FILE 'USER.PARMLIB(DDVIPADD)'					
NMPTPL12 TCPTP	23:15:00 E770053T	COMMAND VARY OBEY COMPLETED	SUCCESSEULLY					
NMPIPL12 TCPIP	23:15:00 EZZ8312I	VIPA 201.2.10.203 MAY NOT B	E CHANGED WITH VIPADEFINE					
NTV74 RUTUT	CPS 23:15:09 CNM493I	CNMSDVCG : #0000030 : CNME82	65 AUTU					
TO SEE YOUR KEY	Y SETTINGS, ENTER 'DI	(SPFK'						
CMD==>								
Complete your session evaluations online at www.SHARE.org/Orlando-Eval								
August 2015		August 2015						

Scenario 6: Sysplex Distributor Health Notifications



- NetView provides situations with the NetView Agent.
 - Disabled by default
 - "Shipped" situations can be customized
 - New situations can be created
- Scenario information:
 - Operator has 3 open situations on the TEP for Distributed DVIPAs for domain CNMZO related to DDVIPA Server Health
 - Server Accept Efficiency Fraction (SEF) < 70%
 - Created for this scenario
 - Target Server Responsiveness Rate (TSR) < 80%
 - WLM Weight = 0
 - Looking at the Navigator Tree, LPAR ZOR, shows the situation icon, so we'll start there.
 - We also have a DDVIPA Unhealthy Servers workspace
 - Let's look at that

Complete your session evaluations online at www.SHARE.org/Orlando-Eval



Sysplex Distributor built-in awareness of abnormal conditions



- TSR Target Server Responsiveness ٠
 - How healthy is the target system and application from an SD perspective? A percentage, 0-100%
 - Comprised of several individual health metrics:
 - TCSR Target Connectivity Success Rate
 - Are connections being sent to the Target System making it there?
 - A Percentage: 100 is good, 0 is bad



- CER Connectivity Establishment Rate •
- Is connectivity between the target system and the client ok?
- By monitoring TCP Connection Establishment state (requires 3 way handshake between client and server) we can detect whether a connectivity issue exists
- A percentage: 100 is good, 0 is bad
- Note: CER no longer part of TSR directly but is included in SEF and continues to be calcu

Separately Complete your session evaluations online at www.SHARE.org/Orlando-Eval



Sysplex Distributor built-in awareness of abnormal conditions



- TSR Target Server Responsiveness (cont)
 - SEF Server Efficiency Fraction
 - Is the target server application server keeping up with new connections in its backlog queue?
 - » Is the new connection arrival rate higher than the application accept rate? (i.e. is backlog growing over time)
 - » How many connections in the TCP backlog queue? How close to maximum backlog queue depth? Did we have to drop any new connections because the backlog queue max was exceeded?
 - » Is the server application hung? (i.e. not accepting any connections)
 - » Are the number of half-open connections on the backlog queue growing? (Similar to CER One such scenario is when the target system does not have network connectivity to the client)





Scenario 6: Enterprise Status View

🟠 🔹 🔝 👻 🖃 븕 💌 Page 🕶 Safety 👻 Tools 🕶 🕢 💌

Tivoli Enterprise Portal Welcome SYSADMIN					Log out IBM .
File Edit View Help					
🖓 🖬 🖩 🗷 🍣 🗷 🛔 🗩 😽 🔏 🕕 🥥 🧇 🏶 🐠 🔗 🔛 🖱 📴 🖱	1 1 V V 🔗 🖳 🚠 🖬 🖬 🖬				5
😪 Navigator 🌲 🗉 🖯	Situation Event Console				/ \$ [] 8 [] ×
View Physical		(Active) Total Events: 4 Item Filter, Fi	ntorprico		
		(Acuve) Total Events. 4 Item Piter. El	interprise		
	Severity Status Owner Na	ime Display Item Sou	urce Impact	Global Timestamp	Age Local Timestamp
	Warning Open NAS_DVIPA_larget Magning Open NAS_DVIPA_larget	LServ_Resp_Rate CNMZO	DDVIPA Server Health	▼ 08/08/13 09:26:18	5 Minutes 08/08/13 09:26:18 8
SVTPLEX:MVS:SYSPLEX	Warning Open NAS_DVIPA_WEM_	rent Efricy Erac CNMZO	DDVIPA Server Health	▼ 08/08/13 09:20:18	5 Minutes 08/08/13 09:20:18 5
🕑 🧾 LP34	Warning Open KM5 No Sysplex E	DASD Filter Warn SVTPLEX:MV	S:SYSPLEX Shared DASD Groups Da	ata For Sysplex	18 Hours. 22 Minutes 08/02/13 18:26:40 \$
🔁 🛄 LP35					
E 🖉 ZOR					
			(Markanaga Nam	
LPAR ZOR has a	Open Events.			workspace ham	e.
situation icon.	If event resolves it	self, it			
	dicappoars from th				
	Uisappears Iron ti				
og Physical	4				Þ
🗓 Open Situation Counts - Last 24 Hours 🖉 🖈 💷 🖶 🗖	× My Acknowledged Events				/ ¥ 🛛 🖯 🛪
5	Severity Status Owner Name DisplayItem Source In	mpact Opened Local Timestamp Type UUID	Node Reference ID		
NAS DVIPA WLM Weight					
	Open Situations over last 2	4 hours.			
NAS_DVIPA_I arget_Serv_Resp_Rate					
NAS_DVIPA_SrrAccept_Efncy_Fract					
MS_Offline	📜 Message Log				/ ¥ 🛛 🖯 🛪
KSY_TEPS_Connectivity_Fail	t Status Name D	isplay Item Origin Node	Global Timestamp Local Timestamp	Node Type	ID
KSY DB Connectivity Faile	Open NAS_DVIPA_Target_Serv_Resp_Rate	CNMZO	08/08/13 09:26:18 08/08/13 09:26:18	HUB_NC058026 Sampled NAS_D	/IPA_Larget_Serv_Resp_Rate
	Open NAS_DVIPA_WLM_Weight Open NAS_DVIPA_Strategy Error	CNMZO	08/08/13 09:26:18 08/08/13 09:26:18	HUB_NC058026 Sampled NAS_DV	/IPA_WLM_Weight /IPA_Splacent_Efncy_Erac
KM5_No_Sysplex_DASD_Filter_Warn+	Open MS Offine	V511N31 P07:KN3AGENT	08/07/13 15:20:00 08/07/13 15:20:00 F	HUB NC058026 Sampled MS Offli	ine
KHD_DB_Connectivity	Open MS Offline	TCPIPB:LP07	08/07/13 15:20:00 08/07/13 15:20:00 H	HUB NC058026 Sampled MS Offli	ne
	Open MS_Offline	TCPIP:LP07	08/07/13 15:20:00 08/07/13 15:20:00 H	HUB_NC058026 Sampled MS_Offli	ine
и о ю о 4 и о	Open MS_Offline	SVTPLEX:LP07:V511N3:KOBDRA	08/07/13 15:20:00 08/07/13 15:20:00 H	HUB_NC058026 Sampled MS_Offli	ne
O Last 24 Hours.			00/07/12 15:00:00 00/07/12 15:00:00	UIE NO050026 Sampled NS Offi	no 🗡
Hub Time: Thu, 08/08/2013 09:31 AM	Server Available		Enterprise Status - nc058026.tivlab	p.raleigh.ibm.com - SYSADMIN	
Done			😜 Ir	nternet Protected Mode: Off	🔩 💌 🔍 120% 💌 🖉



Scenario 6: Situation Event Console

	Situation Event Console									
8	🔕 🛦 🐴 🗹 🕻	i 🔅	E Z) 🥥 🔝 🕘 🔍 🛛 🚺 (Active) 🛛 Tot	tal Events: 4	Item Filter: Enterprise				
	Severity	Status	Owner	Name	Display Item	Source	Impact	Global Timestamp	Age	L
Ø	A Warning	Open		NAS_DVIPA_Target_Serv_Resp_Rate		CNMZO	💂 DDVIPA Server Health 🔹 🔻	08/08/13 09:26:18	5 Minutes	08
Ø	A Warning	Open		NAS_DVIPA_WLM_Weight		CNMZO	🖳 DDVIPA Server Health 🔹 🔻	08/08/13 09:26:18	5 Minutes	08
Ø	🚯 Warning	Open		NAS_DVIPA_SrvAccept_Efncy_Frac		CNMZO	🖳 DDVIPA Server Health 🔹 🔻	08/08/13 09:26:18	5 Minutes	08
Ø	A Warning	Open		KM5_No_Sysplex_DASD_Filter_Warn		SVTPLEX:MVS:SYSPLEX	🖳 Shared DASD Groups Data For Sysplex 🔻	08/07/13 15:09:39	18 Hours, 22 Minutes	08
Open Evente Workspace Name										

Open Events. If event resolves itself, it disappears from this view.

vvonspace ivanie.



Complete your session evaluations online at www.SHARE.org/Orlando-Eval



Scenario 6: Enterprise Status View





Scenario 6: WLM Weight = 0 Suggested Actions

0 Expert Advice		X							
🏫 🗇 🗇 🛞 🍪 🖶 🔍 Location: 💽 http://pammykins5:15200/classes/candle/kna/resources/advice/en_US/NAS_DVIPA_WLM_Weight.htm									
Expert Advice		œM							
NAS_DVIPA_WLM	_Weight								
Situation Description	Situation Description								
Suggested Actions	The Workload Manager (WLM) weight indicates the value for either the z/OS image on which the target TCP/IP stack is located or specific server on the target stack based on the BASEWLM or SERVERWLM group flag.	r the							
	This value is in the range 0 to 64. The WLM weight is the composite weight; it is the sum of the displayed proportional CP, zAAP, zIIP weights for this member.	, and							
	Suggested Actions								
	The WLM weight value indicates the available processor capacity of the target system. When the weight value is lower, the capac also lower. This value is normalized so that the lowest value is 1.	ity is							
	If SERVERWLM is being used as the distribution method and a server has a WLM weight of 0, verify that the server is using the appropriate WLM Policy and that the system is not too overloaded to enable the server to meet its policy goals.								
	Copyright IBM Corp. 2009 All Rights Reserved US Government Users Restricted Rights - Use, duplication or disclosure restricted by GSA ADP Schedule Contract IBM Corp. Contact IBM	ct with							

Complete your session evaluations online at www.SHARE.org/Orlando-Eval





Scenario 6: Open Situation Counts Last 24 Hours





Educate · Network · Influence

Scenario 6: DDVIPA Server Health Navigation



Done



Scenario 6: Select DDVIPA Unhealthy Servers



Scenario 6: DDVIPA Unhealthy Servers







Scenario 6: DDVIPA Unhealthy Servers

zOS Image Name	Proportional CP Weight	▲ WLM Weight	Abnormal Transaction Percent	Target Server A Responsiveness Rate	Target Connectivity Success Rate	Server Accept Efficiency Fraction
GERMANY	15	0	0	4	100	4
GERMANY	11	0	0	4	100	4
GERMANY	0	0	0	4	100	4
GERMANY	15	0	0	4	100	4
GERMANY	15	0	0	4	100	4
GERMANY	11	0	0	4	100	4
GERMANY	0	0	0	4	100	4
GERMANY	15	0	0	4	100	4
GERMANY	0	0	0	4	100	4
GERMANY	15	0	0	4	100	4
GERMANY	15	0	0	4	100	4
GERMANY	11	0	0	4	100	4
1. Proportional CP Weight indicates that GERMANY is healthy. Comprete your session evaluations online at 4. Adjusted WLM weight is 0 due to SEF and TSR values. o-Eval						

More Information





https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Tivoli System z Monitoring and Application Management/page/IBM NetView for zOS

- Service Management Suite for z/OS
 <u>https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Wfb861</u>
 <u>0d29f30_4f81_802f_2b8d115202ec</u>
- IP management with NetView for z/OS
 <u>https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/Tivoli+System+z+Monitoring+and+Application+Management/page/Tivoli+NetView+for+zOS</u>
- NetView customer forum
 <u>http://tech.groups.yahoo.com/group/NetView/</u>
- NetView documentation

http://www-01.ibm.com/support/knowledgecenter/SSZJDU 6.2.1/com.ibm.itnetviewforzos.doc 6.2.1/netv621 welcome kc.htm?cp=SSZJDU 6.2.1%2F0



Complete your session evaluations online at www.SHARE.org/Orlando-Eval

August 2015

Please fill out your session evaluation



- NetView for z/OS: New Directions
- Session # 17886
- QR Code:



Complete your session evaluations online at www.SHARE.org/Orlando-Eval



August 2015





Complete your session evaluations online at www.SHARE.org/Orlando-Eval August 2015

