TCP/IP

Connecting the World

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Thinking Inside the Box

Nalini Elkins'
TCP/IP Performance Management, Security, Tuning, and Troubleshooting on z/OS

Do you have the responsibility for TCP/IP performance management? Are you unsure of where to start? Or do you want to brush up on your monitoring, analysis, and tuning skills? Does your TCP/IP network need a performance check-up? Do you need to know how to establish a practical performance management program for your TCP/IP stack and socket applications?

For many problems in the TCP/IP network, the only symptom is poor response time. In this class you will learn the many factors which may be responsible for response time and throughput issues.

Do you understand how hacks work in the TCP/IP environment? How do security violations such as TCP SYN Flood, Naptha, or UDP packet storm really work? Which part of the protocol is exploited? Are you at risk? In this class, you will learn about such security violations and how to prevent them.

Nalini Elkins, an experienced TCP/IP network performance expert, with many years in network management and working with IBM, will teach you practical TCP/IP performance management and tuning skills. You will learn how to identify performance problems, whether originating from TCP/IP system setup or excessive resource consumption. You will receive detailed explanations on how to interpret performance reports and how to remedy bad performance situations.

Consider this weeklong class as being dedicated to analyzing your system performance with input and recommendations from your own performance expert.

Audience

This 4-1/2-day seminar is designed for systems programmers who are responsible for performance measurement, security, analysis, and tuning of their installation's TCP/IP network, socket applications and TCP/IP stack. You will leave class knowing how to do a performance review of your TCP/IP stack, network and socket applications. Most importantly, you will have an understanding of the underlying relationships and how to find and eliminate potential trouble spots.

This class is for you…

- If you want to perform a performance tune up on your TCP/IP stack, socket applications or network
- If you want to know how your TCP stack can be attacked
- If you are an experienced performance analyst, but want the latest performance information and advice
- If you are a novice performance analyst, or new to the field of TCP/IP networking and need to learn how to effectively manage the performance of your TCP/IP stack and socket applications

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- If you are already an OS/390 or z/OS generalist and are looking to learn about TCP/IP networking, performance measurement, monitoring, analysis, and tuning skills.

Class Overview

This intensive seminar is designed to provide the attendee with an understanding of the performance management of their TCP/IP network, socket applications, and TCP/IP stack. It is designed to guide you in learning the basic concepts of TCP/IP network performance management by teaching you a step-by-step approach to performance tuning. You will learn how to analyze SMF reports and various TCP/IP profile and setup parameters. You will learn performance management of your TCP/IP stack, how socket application performance may be improved, and basic workload measurement. You will learn where the security vulnerabilities are of the core Internet protocols and how to protect your installation.

The strength of this seminar not only comes from the information learned, but from the performance analysis you can perform on your own data during the seminar week.

Class Participation

During this class you will analyze your own data and installation setup.

Each student is strongly encouraged to bring Netstat measurement data and TCP profile examples from their installation. Shortly after you enroll in the seminar you will be provided data collection instructions for the data you will be examining in class. Analysis and class exercises will make use of this data.

During the class week Nalini Elkins will be available to help review the data, to answer questions, and provide expert feedback. You can think of this as a week that you've scheduled specifically to perform a performance, security and capacity tune up of your TCP/IP stack, network and socket applications.

Seminar Highlights

Detailed explanations on how to interpret performance reports and how to remedy bad performance situations are provided.

1. Optionally, your individual system performance reports can be evaluated which includes a written recommendation report. This service is the equivalent of an expert reviewing your installation data and providing a detailed explanation.
2. You will learn to identify performance problems, whether originating from the TCP/IP network system setup parameters or from excessive resource consumption.
3. You will learn if you have security holes in your TCP/IP stack as we have found in many systems

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Prerequisite

A basic understanding of z/OS, SMF, TCP/IP, and networks is assumed.

Seminar Dates and Location and Prices

For dates and locations and prices, please call our office at 831-659-8360. Seminars are regularly offered in the USA, Europe, and Australia.

For More Information…

For more information on this or other seminars, including prices and locations, please contact:
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Phone: 831-659-8360
Fax: 831-659-8360

Email: training@inside-products.com

Please do not hesitate to call if you would like more information or details on this seminar. We would be happy to talk with you.

In-house

All seminars are available for in-house instruction.

Instructor

Nalini Elkins, of Inside Products, Inc., (www.inside-products.com), is a recognized leader in the field of computer performance measurement and analysis. In addition to being an experienced software product designer, developer, and planner, she is a formidable businesswoman. She has been the founder and co-founder of two start-ups in the high-tech arena.

During her career Nalini served in groups responsible for network performance design, analysis, troubleshooting, and systems programming. The classes Nalini produces and instructs, and the products she develops are designed with the needs of systems programmers as a key requirement. Nalini has an excellent understanding for the needs of system programmers because she was in their shoes for many years.

Nalini has also developed an expert system for diagnosing network hardware problems. The marketing rights for this product were sold to Boole & Babbage (which was later taken over by BMC). Nalini then joined Boole to further develop and support this product. After some time at

Boole, Nalini joined some other Boole employees in co-founding a new company - Applied Expert Systems.

As Technical Co-founder, Nalini helped to design and develop a number of products in the SNA and TCP/IP network management area. These products included expert systems for SNA diagnostics, web performance diagnostics, TCP/IP routing diagnosis and TCP/IP network management. She was the Chief Developer of the first product IBM marketed as NetView Performance Monitor for TCP/IP.

Nalini now has her own company, Inside Products, Inc. (www.inside-products.com), which designs, develops and markets network management and Linux management software. The products are Inside the Stack TCP/IP monitor, TCP Problem Finder, and TCP Response Time Monitor. Inside Products also provides consulting to resolve network problems such as FTP throughput, socket application performance and TCP/IP tuning. Inside Products has international distributors in Australia, Germany, Switzerland, the United Kingdom, Belgium, Netherlands, Luxembourg and Brazil.

Nalini has published numerous articles in publications such as zJournal, Technical Support, Xephon's TCP/IP Update, and Enterprise Systems Journal. Nalini is also a regular speaker at SHARE, both national and regional Computer Measurement Groups (CMGs), and variety of international conferences.

Nalini can be contacted directly at Nalini_Elkins@Inside-Products.com

Seminar Outline

The following is a high level outline for this seminar. Since the seminar is constantly being updated, actual seminar content and flow may vary slightly from this outline.

TCP/IP Network Performance Introduction

1. TCP/IP network fundamentals
2. Core Internet protocols (TCP, IP, UDP, ICMP)
3. Common RFC's
4. Mainframe TCP architecture (USS, socket applications, TCP/IP Profile, BPX parms)
5. Socket applications, well-known ports (Telnet, FTP, SMTP, Web server)
6. Objectives of performance monitoring
7. What does response time mean in a TCP/IP network?
8. Understanding resource consumption

How to Measure TCP/IP Performance

1. SNMP
2. What is SNMP?
3. Public vs. private MIBs
4. How to use the z/OS private MIB to solve performance problems

5. SMF
6. OS/390 SMF record type 118 - TCP/IP
7. z/OS SMF record type 119 - TCP/IP
8. SMF record type 30 - MVS address space information
9. Integration of TCP/IP and MVS SMF data
10. FTP CPU time
11. CPU and paging analysis of socket applications
12. Commands
13. Netstat
14. VTAM commands (buffer pool and CSM monitoring, Enterprise Extender)
15. USS (Unix System Services) Commands

TCP/IP Profile parameters

1. What are they?
2. How do they impact performance?
3. What can go wrong?
4. Case studies to illustrate settings

TCP Hacks and Security Violations

1. What they are: TCP SYN Flood, Naptha, UDP Packet Storm, etc
2. What part of the protocol is exploited
3. How to prevent and detect

Workload characterization

1. Benchmark and trend application usage
2. How to analyze response time and degradation for sections of the network
3. Case studies and troubleshooting techniques

Analyzing CPU, Paging, DASD for Sockets and TCP/IP

1. MVS components of TCP/IP
2. TCB / SRB time
3. EXCP's, DASD pending time
4. Storage and Paging usage
5. Queue times (Initiator, Job preparation)
6. Look at an FTP
7. What happens in MVS when you do an FTP
8. Break out an FTP into host and network components
9. Use charge back to enforce performance goals
10. What should be charged in TCP/IP?
11. Sample charge back scenario

Analyzing Buffer Pools

1. Communications Storage Manager (CSM) Buffer Pools
2. VTAM Buffer Pools

Analyzing Socket Application Problems

1. TCP sockets
2. FTP
3. Web server applications
4. TN3270
5. Response time,
6. Parameters to manage sessions (timemark, etc.)

Analyzing Channel Attachments

1. OSA Express - how to measure and benchmark
2. Cisco CIP - how to measure and benchmark
3. Enterprise Extender - how to measure and benchmark

Analyzing TCP/IP Flow

1. Looping and flapping routes
2. Round trip time and variance
3. Retransmissions and duplicate acknowledgments

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