

www.informatix-sol.com			Target Audience			
Workshop and Training Modules			Presenter	Network Arch/Eng	Svr /OS Arch/Eng	Software Devs/Arch
Length (mins)	Title	Description				
60	E-Trading 101 for Technologists	An introduction to e-Trading for technologists. Explains the principles, terms and why low latency is important. Helps them understand the language the business uses and share their values. Target audience are the technology specialists in both User side and in product companies selling horizontal technologies into e-Trading.	R C	✓	✓	✓
60	Low Latency Framework	A framework approach to low latency for eTrading. Identify where to invest for best return. Define the terminology and how to measure success.	R C	✓	✓	✓
45	Lowest latency over distance	An approach to determine and select venues and carriers based on predicted latency. This process can be used to determine the impact of split deployments and can be used to help select carriers over required routes. It describes the parameters and typical	R C	✓		
60	End to End network troubleshooting and design	Traditional network monitoring focuses on L2/L3, whilst L4 protocols such as TCP use end-to-end flow control and recovery. Even the behaviour of different implementations vary depending on the Use Cases they have been optimised for. We explore some of the challenges seen in eTrading, including publishing Quotes and making orders across WAN links and also discuss how bursty traffic can severely impact behaviour.	R C	✓	✓	
45	Time synchronization	The ability to synchronize clocks is vital for log file and packet capture correlation from multiple sources. This looks at the range of time synchronization protocols including NTP and PTP (IEEE 1588), how they are distributed and the absolute time sources to create stratum 0 references. It looks at the options for accurate application timestamping to enable correlation across multiple sources.	R C	✓	✓	
60	InfiniBand v. Ethernet	We make an independent comparison of the two technologies, based on our extensive experience with both covering the Good, Bad and Ugly aspects of both. We finish with some comparative performance results.	R C	✓	✓	
45	Managing without TCP/IP	What happens when we remove TCP/IP. How do we manage layer 2 mesh networks and the new generation of data fabrics, including FCoE which no longer utilize TCP/IP	R C	✓		
45	Multicast Networking	Brief overview of multicast networking, some of the problems seen in market data systems and strategies for improving reliability and latency	R C	✓	✓	
30	Low latency monitoring and reporting	Describes the problems that can occur in eTrading environments and reviews the network tools available to monitor and report on these conditions.	R C	✓		
30	TCP bypass and InfiniBand	TCP stacks and L3 routing are the cause for much of delay and jitter. We look at the options for minimising or bypassing completely these stacks			✓	
45	Bypassing TCP - the options	We look at host TCP/IP implementations and the causes of delay and the options for removing them including User level TCP stacks and the Open Fabric Alliance networking stack.	R C		✓	
45	OFED overview	An overview of the Open Fabric Alliance (OFED) protocol stack with a focus on eTrading requirements	R C		✓	✓
45	Diagnosis and trouble shooting with OFED	A look at the various OFED commands to diagnose and troubleshoot problems with the OFED network stack. This is based on our practical experience supporting critical	R C	✓	✓	
60	Low latency tuning for Linux and Solaris Environments	Standard builds are tuned for throughput. We describe the configuration changes necessary for low latency and describe some of the differences we have seen between different distributions	R C		✓	
30	Low latency tuning for Windows server environments	Low latency tuning is more difficult to accomplish in a Windows environment, never less the application choice often forces this option. We discuss the options available and how best to minimize latency and jitter.	R C		✓	
90	Programming with OFED and RDMA	The Open Fabric Alliance have developed the OFED RDMA stack for both Linux and Windows which can bypass TCP and its incumbent latency. OFED is the only standard RDMA implementation for Linux and supports both InfiniBand and RDMA Ethernet cards. We describe the different API's and the trade-offs in selecting them. We look at the many options for RDMA and VERBs with a focus on how to achieve lowest latency. We also have a collection of working program examples we highlight and provide to the attendees	R C		✓	✓
45	Reducing jitter for Java and .NET applications	Java and .NET both suffer from Garbage Collection induced jitter. We describe strategies for minimizing this and also look at how to access RDMA from Java	R C		✓	✓
60	Network Design without TCP/IP	Historically we've relied on TCP/IP to correct for poor networks. With reliable networks the need for this has diminished. However, there becomes a need to manage congestion and ensure the applications receive the quality of service they need. We look at the protocols and approaches to do this from a network management and	R C	✓		
45	Low Latency Messaging Solutions	We describe a range of middleware solutions available designed to minimise latency in eTrading environments	R C		✓	✓
45	Persisting data	Disks have latencies measured in milliseconds. We look at how to optimize the latency and alternate strategies for persisting data while retaining durability and reliability.	R C		✓	✓
30	InfiniBand	InfiniBand is increasingly being deployed to achieve lowest latency				
45	InfiniBand Overview	An overview of InfiniBand with a focus on eTrading requirements	R C	✓	✓	
50	InfiniBand Network Design	We look at the different topologies and particularly how to prevent congestion using QoS and avoiding packet loop for non-Clos topologies.	R C	✓		
45	InfiniBand vendors and product overview	Positions the major InfiniBand vendors and overviews their portfolio of products	R C	✓		
40	Management and Observability	InfiniBand includes extensive management and diagnosability capabilities, we describe these and some of the vendor specific tools to enhance this.	R C	✓		
60	Diagnosability and Troubleshooting	We review common problems and how to detect them using both vendor and OFED tools. We also look at packet capture and analysis. This section is drawn on our practical experience supporting critical Financial trading systems.	R C	✓		
35	InfiniBand gateways	Ethernet gateways can be used to attach market feeds directly into the InfiniBand fabric or as a means to connect to Ethernet attached devices. This provides the lowest latency approach to handling these feeds other than direct InfiniBand connectivity which is now only becoming available. We also discuss SAN connectivity through gateways for very high performance storage access.	R C	✓		
40	Cabling and Long haul InfiniBand	InfiniBand is has generally been considered for local clusters. We describe the cabling options and review the long haul switches now available to extend distance over 1000's of km's. We illustrate this with performance results collected on actual installations	R C	✓		
30	InfiniBand Storage	Direct access storage options with InfiniBand	R C	✓		
90	Low latency Design Workshop	Now we know all about low latency we look at some case studies and jointly see how to solve some of the specific challenges facing class members	R C	✓	✓	
	Additional Workshops					
60	FCoE	Overviews this new technology, it's advantages and how to deploy in a vendor neutral way	R C	✓	✓	
60	I/O Virtualization	Operating System virtualization has delivered major advantages to the Enterprise. As servers have improved to add more CPU and memory, I/O has now become the bottleneck. Learn how I/O virtualization can overcome these constraints, enabling all but the low latency applications to now be virtualized.	R C	✓	✓	
60	Product Selection Process	Modern technologies are very complex and the cost of making the wrong choice can be enormous. We have developed a successful methodology to both speed this process up and to increase the likelihood of making the best decision. This process is particularly useful in large organizations where there are many stakeholders to these decisions and an auditable and inclusive process is required.	R C	✓	✓	✓
					ver 1.8	