

# Mark Rayman

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## Summary

IT & Project Manager with over 20 years' experience in managing, engineering and/or programming, including:

- Building, boot-strapping and managing off-shore IT site
- Managing IT support
- Market Data feed and server management (Wombat, RMDS)
- UNIX and NT application development
- Market Data vendor and service delivery management

With in-depth knowledge of

- Market Data Delivery Platforms and APIs (Wombat, Triarch, Tibco,proprietary)
- TCP/IP, inter-process communications, IP multicast
- Messaging Middleware
- Market Data feeds
- API and Application development
- Multi-threaded programming
- UNIX/Linux Windows
- C/C++, Java, Perl, Visual Basic, CORBA, COM, ActiveX, Workstation to Mainframe Connectivity, XML, WWW

## Experience

### Barclays (6 Years)

#### **Manager of Israel Development and Engineering Center at Barclays**

July 2011 - Present (3 years 6 months)

I currently manage the newly formed Israel Development and Engineering Center at Barclay Capital. This is an offshore application development and engineering facility for Barclays, located in the Kiryat Atidim Park in Tel Aviv.

#### **Engineering and IT Support Manager, Israel at Barclays**

January 2011 - July 2011 (7 months)

Built and managed an Engineering team in Israel for Barcap comprising UNIX, Network, Windows, Storage and Database engineers, working in conjunction with the UK and US based engineering teams. Also was responsible for IT support for the Israel office, managing a team of four.

#### **Market Data Engineering and New Technology Integration at Barclays Capital**

November 2008 - January 2011 (2 years 3 months)

Delivered low latency market data solutions (mostly using NYSE Technologies (Wombat) on Infiniband networks). Managed the merger of legacy Lehman and "heritage" Barcap systems post Lehman takeover.

## **Head of Market Data Production at Barclays Capital**

November 2007 - November 2008 (1 year 1 month)

Managed team of 8 supporting all market data infrastructure in the Americas, including Wombat, Reuters, Bloomberg and numerous stand-alone systems.

## **Lehman Brothers (2 Years)**

### **VP Market Data Engineering at Lehman Brothers**

2005 - 2007 (2 years)

Manage and maintain Wombat based Direct Exchange Infrastructure (DEI). Infrastructure includes over 20 feeds (CTA, UTP, OPRA, ITCH, Arcabook, Arcabook for options, BATS, Direct Edge, NSX, Btrade, NYSE Openbook, NYSE Quotes, NYSE LRP, NOIVIEW, NYSE Alerts, Bpipe, CME, Eurex, Euronext, CBOT, RMDS Gateway); over 100 feed handler servers, and client APIs, providing live market data to Market Making, Algorithmic Trading, Program Trading applications. Specific responsibilities include:

- Manage deployment of new feeds from circuit provisioning, software (feed handler) provisioning, configuration, testing, etc.
- Manage “exchange driven changes”, from receipt of notifications, hardware/software upgrades, testing, notification of end user community, support of end user testing.
- Manage performance/capacity upgrades
- Troubleshoot infrastructure issues (latency, rvd retransmissions, feed handler bugs)
- Market Data Engineering for new business requirements & technologies (e.g. exchange collocation, infinband)
- Assist client application developers with proper application design.

## **Merrill Lynch (5 Years)**

### **VP Market Data Engineering at Merrill Lynch**

2004 - 2005 (1 year)

Market Data Engineering. Project Manager for various market data infrastructure projects, including implementation of proprietary rvd monitoring system, deployment of TeamQuest monitoring platform to all market data servers, integration of market data specific monitoring into TeamQuest.

### **Vice President, Global Market Data Operations at Merrill Lynch**

2002 - 2004 (2 years)

Manage the Global Market Data Operations team (8 people). Responsible for all market data feeds, circuits, services and infrastructure supporting GMI (institutional business) in the Americas. Services include, RMDS, Bloomberg, NASDAQ, IDBs, ILX, NewsEdge, Bridge, Track Data, Reuters Dealing 3000, EBS, Reuters+, Mightier, MDM, MLGES, and Hawk. Team responsibilities include, maintenance and operations of above services and related hardware and software, optimization of above services, installation of new services, and second level help desk. Team operates under the Microsoft Operations Framework (MOF). Specific projects include regular capacity review, Hawk Deployment, Teleport data center build-out, consolidation of regional infrastructure into central locations, BCP planning.

### **Vice President, Global Market Data Applications at Merrill Lynch**

July 2000 - 2002 (2 years)

- Manage the Global Market Data Applications team (5 people) Responsibilities include, Development and maintenance of proprietary Market Data applications, research and development of emerging Market Data technologies. Applications include: # MDPS (Market Data Pricing Service), which manages the definition, execution, formatting and delivery of market batch extracts. Built with C++ and Perl on Solaris, fully redundant, with automatic failover where appropriate. System maintains real-time specific definitions and other metadata about the particular instruments in a feed, to allow very specific job definitions. Jobs include both snapshots and transaction logs. Output formats include standard ASCII as well as fixed length record mainframe data sets. Currently in production. # RTP, a shared memory based cache to facilitate fast synchronous price queries. RTP handles all complex event driven APIs and error handling, facilitating rapid application development and deployment. Platforms supported are Triarch, TIB/RV. Used mostly by equity applications. Other applications include a variety of feed handlers, mainframe Market Data interfaces, market data entitlement systems, gateways between MDM (inventory) and entitlement systems
- Served on the MDDL (Market Data Definition Language, an FISD/SIAA XML for market data) technical committee.

## **Lehman Brothers (6 Years)**

### **VP Market Data Development at Lehman Brothers**

1994 - 2000 (6 years)

- Manage the development, and/or design, implement, deploy and maintain components of the Finesse system. Finesse is a proprietary Market Data distribution platform with over 1000 workstations, 60 servers, and dozens of applications, and served as the primary Market Data distribution platform for Lehman Brothers in the Americas. Components include vendor feed handlers, central servers, workstation daemons, client API's (C/C++, Java, Corba IDL), Corba Server, ActiveX components, DDE server, DLL/XLL, Client front-end applications. All components support load-balancing and failover where appropriate. Feed handlers are written in C/C++ and run on Solaris and NT platforms. Feed handlers include Reuters/Triarch, Tib, Open Bloomberg, Bridge/Knight Ridder, RMJ, GARBAN, Cantor et. al. Clients API's are available for Solaris, SunOS and NT in C/C++, Java, and Corba IDL. Also designed and implemented protocols for the transfer of page-based data, self-describing records, historical data and news headlines. Also introduced IP multicast based distribution of updates, and thread-safe market data APIs.
- Provide design/development support for application groups developing market data applications that interface with the Finesse system. This includes (but is not limited to) API usage support, proper application design to ensure robustness, integrity and reliability of data, failover and load balancing strategies, integration of Finesse applications with other non-finesse systems, development and delivery of training classes, composition of detailed documentation and sample code.

## **Track Data Corporation (1 Year)**

### **Programmer at Track Data Corp**

1993 - 1994 (1 year)

Designed, developed, and implemented various components and enhancements to all UNIX versions of the MX market data application. Technologies used include TCP/IP sockets, UNIX

IPC (shared memory), memory mapped files, proprietary messaging protocol, MOTIF, XLIB. Components developed and or enhanced include front end application (MX), workstation daemon, client API's. MX ran on SUN workstations, IBM RS6000, Data General Aviion. All code written in C/C++. Also designed and implemented an early version of the current messaging protocol used in subsequent versions of Track Data software.

## **Bell Communications Research (2 Years)**

### **Member of Technical Staff at Bellcore**

1990 - 1992 (2 years)

- Designed and implemented software for statistical analysis of seasonal “spikes “ of SS7 network usage related to 800 number resolution. Composed formal report to owners/clients (Baby Bells) detailing our analysis and conclusions. Coordinated data collection and storage for the project. Software was developed in C and S (a statistical package).
- Tested various components of FACS (Facility Assignment and Control System). This system would designate various “loop” (outside the central office) facilities (phone lines et. al.) for the fulfillment of service orders. Specific components tested included proprietary C libraries for transaction processing in UNISYS and mainframe environments, as well as full system test with strait through processing of transactions.

## **Languages**

**English** (Native or bilingual proficiency)

**Hebrew** (Professional working proficiency)

## **Education**

**Yeshiva University**

BA, Computer Science, 1986 - 1989