

VECTOR

Versatile Engine for **C**entralised **T**rading and **O**nline **R**eporting

Introduction

VECTOR is CMC's online equity trading system. Earlier, VECTOR was running at twelve regional stock exchanges in India; after the merger of regional stock exchanges with NSE, currently VECTOR is at UP Stock Exchange, Kanpur, and Chittagong Stock Exchange, Bangladesh. The system is running on HP's PA – RISC based system and recently it has been ported on HP – Itanium machines as well. Currently, VECTOR handles a load of around 50 – 55,000 orders per day and about 25 – 30,000 trades per day.

Overview

This system is built around a central computer, which is called the Central Trading System (CTS) placed at the Stock Exchange. The brokers interact with the CTS through the Broker Work Station (BWS). Other users of the system i.e. the Market Operations (MOPS) and Surveillance are also connected to CTS through their own workstations. All the workstations of VECTOR, BWS, MOPS & Surveillance have user-friendly GUI developed using state of the art technology.

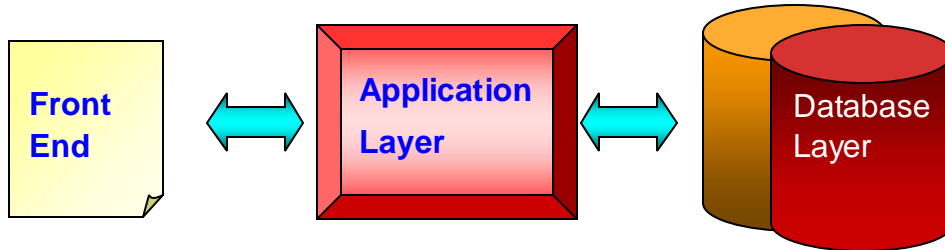
In the computerised scenario, the brokers / traders sit within their own offices and sends their orders, in-house deals, or auction orders as the case may be, to the Central Trading Engine (CTS) using the Broker Work Station. The Best Bid and Offer (BBO) of all the scrips in the market are available to all the BWS through a mechanism called the broadcast of the market information.

The buy and sell orders placed by the broker / trader is matched at the best available price in the market for that scrip at that time. Subsequent to matching, trade confirmations are sent to the respective workstations, which can be printed, on-line.

Similarly, prices of the various scrips in the Stock Exchange can be made available using the VECTOR software in the form of news feeds to be passed on to the respective agency. Besides information like queries and reports, opening positions, Deal / Order / Quote Information, the Market Index, Market Volume, News, Market Announcements, Net Position, etc., are also available to the BWS.

Various parameters can be set up by the market operations to control the market. Any violations to these set parameters are notified by the VECTOR system and displayed in the Surveillance Work Station. Besides this, various alerts can be set up by the Surveillance Users to watch particular scrips / brokers etc. during the time the market is in operation. These functions are provided for online surveillance.

Technical Architecture, Hardware & Software Platforms



Hardware installed – Server	HP – PA RISC based system / HP Itanium
Operating system – Server	HP Unix
RDBMS used –Server	Sybase 15.0.n

Hardware – Client	Pentium Dual Core machines
Operating system – Client	Windows XP
RDBMS used – Client	Sybase 15.0.n

Application software	VECTOR
Programming languages	Visual C++ Version 6.0 & Power Builder

Strengths of VECTOR

- Reduces and eliminates operational inefficiencies inherent in manual systems
- Increases trading capacity in the Stock Exchange
- Improves market transparency, eliminates unmatched trades and delayed reporting
- Promotes fairness and speedy matching
- Provides for on-line and off-line monitoring, control and surveillance of the market
- Sets various limits, rules and controls centrally
- Consolidates the trades data and interface with Clearing, Settlement and Depository systems (where these computerised systems exist)
- Provides brokers with their trades data on electronic media to interface with the Broker’s Back Office system
- Provides a sophisticated, easy to use, graphical user interface (GUI) to all the users of the system

Recent Developments:

Besides on-going AMC business, recently, Chittagong Stock Exchange placed an order so as to incorporate fifty and odd functional enhancements. CMC completed most of these enhancements and VECTOR went live with upgraded software during July 2009. Currently, VECTOR group is engaged in overall performance tuning activity.