

Surveillance and Administration Terminal

The surveillance engine connects independently to the ORE/RMS component through a set of APIs. The surveillance engine is managed and controlled through the Surveillance Terminal. This terminal is a desktop application that the owner can use to program the business, order routing and the risk management rules of the system. The broad functionalities of this terminal are as follows:

1. User Administration and Account Management

The surveillance provides a user-friendly interface for creating, modifying and deleting users. This terminal is also equipped to create various trading accounts and assign the trading and the warning limits for a particular user

Creating Clients with pre-determined profiles determining access rights, permission and Risk Profile.

2. Access Administration

The surveillance terminal provides an easy to use interface for adding new exchange adapters to the system. With this, the owner can create the Exchange Groups and map them to the exchange groups as available for a particular exchange adapter. The terminal also provides an easy way to disable, suspend and activate exchange, group and scrip level access within the system.

3. Risk Monitoring

The terminal when connected to the system can provide real time positions of all users connected to the system. These monitoring windows can be configured to display violations, warnings and alerts based on filters set by the user of the terminal.

4. Rule Programming

This terminal provides an extremely easy to use interface for programming the business, order routing and the risk management rules of the system.

5. Report Generation

The terminal can also be deployed to access MIS across the entire system. These reports can be generated based on the top-level access or the user level access. The reports can also detail the exposures across the exchanges, groups and at a scrip level.

Surveillance Hierarchy

As mentioned in the previous section the TradeAnywhere system supports the concept of user ownership for effective delegation of surveillance across the system. In other words, the system supports a hierarchical structure for management of users. This hierarchy can span across multiple levels as definable by the owner of the system. Each sub-tree of users can be effectively managed by deploying the surveillance terminal to manage the same by the top most node of the sub-tree. The super administrator of the tree assigns the management of exposures and limits within the said sub-tree through a surveillance terminal and the top most node of the sub-tree

then has the freedom to operate in a similar fashion for all the users falling below it. Thus, the system can support n-levels of hierarchical management.

Programmed Surveillance

The surveillance engine is an independent module and the same works on the principles of triggers and actions. These triggers are conditional statements based on violation limits or warning levels set on various risk parameters. Any violation of these preset limit leads to activation of the associated action. These actions can be programmed through the surveillance terminal by selecting the same from a pre-defined list of actions such as Auto square off positions, suspend client, disable trading on a particular exchange, group or scrip for the user etc.

Surveillance Interface / features

Surveillance is an online risk management system, which monitors client activities and gives its users the ability to act on any alerts and violations occurring in the trading system. Surveillance also performs administration cum management task for the trading system which includes System Management, managing clients in the system, managing brokers hierarchy, trading accounts management, handling system errors etc. The key features in the Surveillance can be broadly classified as

- 1. Administrative**
- 2. Risk Management**
- 3. Reports**

Administration

1.2. Login, Log-Off, Access Authorization (Security) & Change Password

Security Aspect: The basic purpose of giving login, logoff, change password is to provide security in the system i.e. only valid users should be able to enter the system. This feature can be linked with Digital Certificates of each user to ensure that the issues related to non-repudiation are taken care by the system.

To use the trading system user has to login to the system. Every user has a user id and password for login. While logging in, system checks for the validity of user and only valid users can use the system.

Since in the system we have different user profiles, at the time of login system checks to which profile the user belongs and provides him system access accordingly, e.g. an administrator will be able to access everything in the system.

System restricts user to login multiple times. Any second attempt to login by the user results in a forced log off for the first connection. If the user does not log out properly the status in the system remains as logged in, a fresh attempt to log in to the system after a unsuccessful log off results in a forced log off for the earlier session.

Every user must change his password every 15 days. If the same is not done then the system forces a change in password on the 16th day. The number of days is configurable in the system by the administrator.

1.3. System Administration

System administration is related with the creating and maintaining the system. This part creates the framework for the entire system to work. All the system administration activities should be done very carefully and must be done by users with administrative profiles.

1.3.1. Creating Exchanges

The system should know on which exchanges you are going to trade, without which system will not work. This option provides the facility to add an exchange to the system and takes as input the necessary information. Once the exchanges are added to the trading system, it will be available for further use in the system.

1.3.2. Managing Currencies

Trading system enables you to trade on multiple exchanges and each exchange has its own currency for trading. The user has to update the various currencies deployed in the system via the Surveillance Terminal. This option provides facility to define multiple currencies for an exchange and the conversion factor for each currency.

1.3.3. Creating User Groups

The concept of user groups is introduced to create and maintain the hierarchy of the clients in the system. Hierarchy is necessary to propagate the rules and level of authorization to all the users, which is ultimately required for Risk Management. User can create user groups here and everyone in the system must belong to one and only one user group. To create the hierarchy, the group ownerships will be given, so a sub-broker or administrator can manage all the clients belonging to the groups on which he has ownership.

1.3.4. Creating Exchange Groups

Exchange groups are also user created groups on exchanges. Exchange groups are created to categorize the tradable instruments in the system. Each exchange group is mapped to the instrument groups actually available on exchange or specific set of instruments.

1.3.5. Allocation of Securities to Groups

Once the exchange groups are created there has to be some securities in that group. The user can add securities to this group selecting from the available securities on the exchange. A security can belong to only one group.

1.3.6. Maintenance

In the trading system lot of data is stored in the database every day by various activities and all this data is very important that is why every day back up is necessary. Constant updating of information can lead to an information overflow in the system and this in turn can lead to degradation in performance. Regular cleaning up and backing up of data from the data store can help in keeping the system agile. Maintenance of surveillance includes taking back up of database and cleaning up of database

1.4. Client Administration

1.4.1. Create / Modify Client

When a new client comes to broker he needs to be added into the system. The client is added and is assigned a unique profile. All the client details are taken here and the client is given a TPIN no, a user Id and password. TPIN no is used for IVR based interface which can be integrated to the order routing engine.

1.4.2. Managing User Details [Address]:

Apart from the essential details, system also keeps client's business, residential and other address details.

1.4.3. Sub Client Management:

A sub client is a person on behalf of whom client places an order. The client can place orders on behalf of a sub client. The sub client entries for the user can be made here.

1.5. Sub-Broker Management

Sub-Broker management is related with creating hierarchy in the system. A client can be made a sub-broker by assigning a sub-broker profile.

1.6. Trading Account Management

Once the client's profile is mapped, trading accounts on particular exchanges and a set of business rules will be applicable for the same. To modify/change the data pertaining to a particular trading account, user can use this option.

1.7. Dealers Mapping

Any client created in the system can be upgraded to the role of a dealer. If a client is upgraded as a dealer, he would be able to place orders on behalf of all the clients mapped to the dealer.

A client can be assigned to multiple dealers.

Risk Management

a) Monitoring Alerts, Violations and Errors occurred in the system.

A surveillance administrator can see all alerts, violations and any exceptions that occur in the system for clients assigned to the administrator. If any trading activity, price changes cause the client to reach alert or violation levels, as per the risk profile assigned to the client, the order routing engine pushes this information to the Surveillance sub-system. If there are any exceptions or errors in the system, the order routing engine has elaborate error trapping at every level of execution. The ORE pushes this information to the Surveillance sub-system for immediate assessment with a detailed error message and a error code pin-pointing the precise point of failure and probable cause of the same. This allows the Surveillance administrators to have a complete grasp of trading activity as well as the system functioning.

b) Message Filtering

The Risk Management Interface allows filtering of messages. Choosing a combination of one or more of the following options can filter messages.

- Alerts
- Violations
- Errors
- For the Day
- For a Period
- For a specific Client or Group of Clients over whom the administrator has ownership.

By choosing the above options, the administrators have better control on the inflow of messages over which they want to focus. Administrators can have multiple reports simultaneously, with critical messages such as Violations dedicated to one report and non-critical messages and events in other windows. Segregating inflow in this manner gives better visual adaptability to administrators who could be monitoring a large number of clients.

c) Customization of risk management window

The display grid can be customized to completely tune to the administrators preferences. Different colors can be set for messages depending on the message type / criticality. Columns can be added or removed and the display name of the columns can be changed. The visual appearance and layout gives better visual registry to administrators.

d) Actions

All incoming information is linked to a Client and this extends down the order level where the message may have triggered. Therefore, all alerts and violation messages triggered can be acted upon for corrective action. The Risk Management interface empowers the administrator to take various actions in response to alert and violations that occur. These actions are listed below:

Square Off: Administrators can square off the open positions of clients. The administrator has the option to square off the client's position for the following criteria

- Specific Order
- Specific Scrip or all Scrip's
- Buy /Sell/Both Orders
- Specific Exchange or all Exchanges
- Specific Exchange-Group
- Specific Trading Account or all accounts

For example the for a client the administrator could square not just a particular order but some sample square off criteria could be

- Square off All Orders on BSE
- Square off All Buy Positions on BSE and NSE
- Square of All Positions of a Client
- Square of All Buy Positions for a specific Trading Account
- Square off All Buy Positions on BSE-A Group shares.

Cancel Orders: The Administrator can cancel pending orders of a client. The possible criterion available for cancellation is the same as those highlighted in the Square-Off action.

Suspend client: Administrators can suspend clients from Trading. The administrator can suspend trading for a client right down to specifying the Trading Account, Exchange, Exchange Group, Scrip and even whether the users is suspended from buy / sell or both activity. Suspended clients can still login to the system and view their open positions and other reports. The interface also allows suspension to be reversed by the administrator.

Lock Client: If the administrator wished to block the client from completely accessing the system, the administrator can Lock the client. In doing so, the client will be denied any access to the system. The interface also allows reversal of such decisions.

Change Allocated Exposures/Margins: Administrators can credit or debit client margins and exposures. This is only if the administrative profile of the administrative has such rights.

Change Risk Profiles: Administrators can change the Risk Profile of clients by applying any of the Risk Profiles over which they have authority.

Panic Withdrawal: Panic withdrawal allows authorized administrators to cancel all pending orders and/or square off all open positions across clients and exchanges and to revert all the orders placed in the system.

e) **Audit Trails for all Surveillance Activities / Dealer or Sub-broker Activities**

The Surveillance sub-system has elaborate audit trails of all activity that flow from the sub-system to the order routing engine. All order's Squared-Off, Cancelled, Margin Credits/Debits, Exposure Credits/Debits, Changes to Risk Profiles, All administrative activity are logged. The Log contains the time-stamp, the activity details and administrator's ID.

Reports

Overview of Reports

Reports in *Surveillance* plays a major role in determining overall status of system as well as status of each client at any given point of time and helps administrator in taking fast and responsive decisions. Such spontaneity ultimately reflects in efficient risk management. The various reports available in the system provides a complete picture of the system at any required point of time may be during trading time or non trading time.

More than mere Reports

The objective of these reports is not only to display information but also to display timely and relevant information in a manner that is easily readable and understandable. Reports are not just information sources but also to act as trigger sources, which prompts users, administrators, sub-brokers and the likes to take corrective actions. To accomplish this task customization feature is added in reports, which allow each user to view reports in his/her own settings and this speeds up the readability.

3.1. Customization of Reports layout

- **Color Settings:** User can set background color, foreground color, font size, font color for each individual report and for all reports and can save these settings as default.
- **Font Settings:** User can set the size and type of font for displaying report data.
- **Report Fields:** Each report contains exhaustive information and this information is displayed in a grid where each column shows particular information. User can select the columns as desired by the user i.e. customizing the report data. The user can also change the sequence of columns that provides him facility to prioritize his viewing of data.

- ***User-friendly display names:*** Since the reports are available in grid format each column represents a particular type of information, user have facility to display the column name of his choice in all the reports to make reports more readable.

3.2. Export Facility

Each of the reports of this sub-system can be exported to popular storage formats such as HTML, Excel, and CSV etc.

3.3. Comparative Study:

Various instances of a report can be opened at a time e.g. multiple client activity reports can be opened at a time so that client activity report for a certain client for different filters can be compared likewise data for multiple clients can be compared. The basic purpose is to enable user to do comparative study.

3.4. Filter Mechanism:

Each report provides various filter mechanisms for narrowing the size of data. By this user can view only the required information thus facilitating him to concentrate and to analyze the data effectively.

3.5. Hierarchy chart:

Each report shows hierarchy tree of clients under the logged in user. All the reports can be viewed for a particular client or for all the clients under the selected client.

3.6. Sorting:

In each report user can sort the data on each column, which provides him quick search for particular record.

3.7. Quick Actions:

While viewing the particular report user should be able to take necessary actions like transferring of exposure from one account to other, suspend client, square off orders, cancel pending orders etc. All these actions can be taken directly from reports section.

3.8. No time delay:

The data in the database is stored in such a manner that the retrieval of desired information is very fast. The time delay between querying for a particular report and information display is negligible.

Key Reports Available

Client Activity Report

Client activity report displays all the information related to an order, placed by a particular client in the given period. It provides following information regarding an order.

Column Head	Description
Event Date Time	When the order is placed
Scrip	Scrip ID for which order is placed
Exchange	Exchange Name on which order is placed
Exchange Group	Exchange Group in which scrip lies
Series	Series in which scrip lies if any
Trading Account	Trading account from which order is placed
Order Placed by	Who has placed the order i.e. sub client name
Order Status	Present Status of the order
Order Qty	No of shares for which order is placed i.e. Quantity
Remaining Qty	No of shares not traded i.e. Remaining Quantity
Disclosed Qty	Disclosed Quantity
Price	Price at which order is placed
Buy/Sell type	Buy or Sell type of Order
Order type	Order type i.e. New order, cancel order, or modify order request
Order term	Order Term
Message	Reason for rejected orders
Message	Message if any error occurred while processing the order
Trade status	Whether the order has been traded or not up to point of getting the report data
Modify flag	Whether a modify order is placed or not against a order
Cancel flag	Whether a cancel order is placed or not against a order

The data in the report can be filtered out on various criteria like:

- Trading account wise
- Exchange wise
- Exchange group wise
- Scrip wise
- Order status wise i.e. orders rejected, orders accepted, orders in process etc
- Buy / Sell type

Pending Orders Report

Pending orders report, provides complete information of pending orders for a client or a group of clients for a given period of time i.e. day or settlement. It provides following information regarding a pending order

Column Head	Description
Event Date Time	When the order was placed
Scrip id	Scrip ID for which order is placed
Exchange	Exchange Name on which order is placed
Exchange group	Exchange Group in which scrip lies

Series	Series in which scrip lies if any
Trading account	Trading account from which order is placed
Order placed by	Who has placed the order i.e. sub client name
Order qty	No of shares for which order is placed i.e. Quantity
Remaining qty	No of shares not traded i.e. Remaining Quantity
Disclosed qty	Disclosed Quantity
Price	Price at which order was placed
Buy/sell type	Buy or Sell type of Order
Order type	Type of order i.e. new order, cancel order, modify order etc
Trigger price	Trigger price
Market segment	Market segment
Order term	Order Term
Term validity	Term validity
Market order	Whether the order is of market type or not
Delivery terms	Delivery Terms
Auction no	Auction No if any
Counter party order id	Counter Party order ID
Matched id	Matched Indicator

The data in the report can be filtered out on various criteria. For Example user can view report on

- Trading account wise
- Exchange wise
- Exchange group wise
- Scrip wise
- Order status wise i.e. orders rejected, orders accepted, orders in process etc
- Buy / Sell type

Trade Logs Report

Trade Logs report provides complete information of Traded orders for a client or a group of clients for a given period of time i.e. day or settlement. It provides following information regarding a Traded order

Column Head	Description
Event date time	When the order was placed
Scrip id	Scrip ID for which order is placed
Exchange	Exchange Name on which order is placed
Exchange group	Exchange Group in which scrip lies
Series	Series in which scrip lies if any
Trading account	Trading account from which order is placed
Order placed by	Who has placed the order i.e. sub client name
Order qty	No of shares for which order is placed i.e. Quantity
Remaining qty	No of shares not traded i.e. Remaining Quantity

Disclosed qty	Disclosed Quantity
Price	Price at which order was placed
Buy/sell type	Buy or Sell type of Order
Order type	Type of order i.e. new order, cancel order, modify order etc
Trigger price	Trigger price
Market segment	Market segment
Order term	Order Term
Term validity	Term validity
Market order	Whether the order is of market type or not
Delivery term	Delivery Terms
Auction no	Auction No if any
Counter party order id	Counter Party order ID
Matched id	Matched Indicator

The data in the report can be filtered out on various criteria. For Example, user can view report on

- Trading account wise
- Exchange wise
- Exchange group wise
- Scrip wise
- Buy / Sell type

Margin / Exposure Report

Margin/Exposure report shows status of margins and exposures of a client. This report shows the following information

Column Head	Description
Margin deposited	Margin deposited by the client
Margin used	Margin used by the client
Gross exp allocated	Gross Exposure allocated to client
Gross exp used	Gross Exposure used by client
Net exp allocated	Net Exposure allocated to client
Net exp used	Net Exposure used by client
Total exp allocated	Total Exposure allocated to client
Total exp used	Total Exposure used by client

The data in the report can be filtered out on various criteria. For Example, user can view margin/exposure on

- Trading account wise
- Exchange wise
- Exchange group wise
- Scrip wise

Net Position Report

Net Position report displays clients net position at any given point of time, i.e. the net buy or sell position of the client. This report shows following information

Column Head	Description
Buy qty	Buy quantity
Buy price	Buy price
Buy amount	Buy amount (buy price * buy quantity)
Sell qty	Sell quantity
Sell price	Sell price
Sell amount	Sell amount (sell price * sell quantity)
Net qty	Net quantity
Net price	Net price
Net amount	Net amount (net price * net quantity)

The data in the report can be filtered out on various criteria. For Example, user can view net position

- Trading account wise
- Exchange wise
- Exchange group wise
- Scrip wise

M2M / BPL Reports

This report shows client's M2M and BPL. The report shows M2M, BPL, open position, open quantity, open price, last traded price. The report can be filtered trading account wise, exchange wise, exchange group wise and scrip wise.

Top gainers/losers

The report shows list of top 10 gainers/losers under the selected client (if exist) based on their profit and loss. Report also shows their profit and loss, their net position etc.

Top traders

Shows list of top 10 traders. This list is prepared on basis of volume of trade. The top 10 clients who have committed maximum number of trades are listed along with the volume traded, maximum volume traded etc.

Top 10 Securities

Shows list of top 10 securities on which maximum trading has occurred during a day or a settlement period.

Most Active clients

Displays the list of top 10 most active clients. Most active clients are those who are regularly doing trade in the system i.e. based on frequency of trading.

Suspended Clients Reports

Suspended Clients report displays the clients in the system that is suspended from trading. The following information is provided in this report

Column Head	Description
Client code	Client Code of the client who has been suspended
Reason	Reason for suspension
Event date time	At what time he is suspended
Suspended by	Who has suspended the client
Type of suspension	Suspension type i.e. whether he has been suspended on particular trading account or exchange or group or suspended from the system

Locked Clients Report

Locked Clients are of two types one is those whose password has been locked due to some reasons, these clients will not be able to log in to the system. The other type is lock the client this means that client can login but he is restricted from doing trading and other activities, which affects exposures in the system. The report shows all the information for these clients.