



Omnesys Technologies



NEST Strategy Script
Single Strike Bidding Strategy

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Single Strike Bidding Strategy (BFO)

This strategy allows the user to do Single Strike with multiple options to place the order (various order type) in BFO Segment and hedge accordingly in future based on delta specified.

Nest Strategy Client:

Portfolio Tree: Each portfolio comprises of 2 tokens (one option token and the future for same symbol).

Input Parameters:

Following user parameters need to be populated:

Portfolio Name: The name of the portfolio that user needs to enter.

Exchange Seg: User needs to select relevant exchange segment. For this strategy, its BFO.

Symbol: User needs to select relevant symbol for that particular exchange.

Instrument Type: User has to selected relevant instrument type.

Expiry: User needs to select the relevant expiry date for the selected option symbol

Option Type: User needs to either select Call or Put option for the given portfolio.

Strike Price: User needs to select the relevant strike for the selected option.

Hedging Expiry: User needs to select the hedging expiry date for the future on which the hedging will be done after the option is traded (in case of Best Bid/Ask and Stand/Sweep option).

Pro/CLI : It gives user an option to do in PRO or in CLI. When cli is selected will give an option to select Account id and Participant id.

Delta: Hedging Qty is placed based on the delta provided by the user. **If user enter delta as 1 then system will calculate the real time delta and hedge accordingly. If user enters delta as zero, then the system will not hedge at all.**

It should be noted that at every trade, the hedging is done at portfolio level.

For example, User wants to buy a Sensex Call Option with strike price 15000 of January Expiry (BSXA1C15000). The user wants to hedge it with current month expiry (BSXJAN2012) at market delta. Current market delta is 0.6. User has entered Delta threshold as 100%. Let's say order lot was 5, out of which 3 got traded, so now partial hedge would be: $3 \times 0.6 = 1.8$ or $1.8 \times 15 = 27$. Since delta threshold is 100%, it will hedge 1 lot or 15 qty in future.

Now let's say 1 more lot of option got traded, so total lots traded 4, market delta still is 0.6, so future to be hedged now is: $0.6 \times 4 = 2.4$ lots $= 2.4 \times 15 = 36$ qty. Since delta threshold remains 100%, it should hedge 2 lots (30 qty) at this point of time at portfolio level.

However, out of 2 lots (30 qty), 1 lot (15 qty) of future is already traded, hence, only 1 lot (15 qty) needs to be traded in future for hedging.

Delta threshold: This is to decide the hedging quantity. For instance, let's say, User wants to buy a Sensex Call Option with strike price 15000 of January Expiry. The user wants to hedge it with current month expiry (BSXJAN2012) at market delta. Current market delta is 0.6. User has entered Delta threshold as 100%. Assume 7 lots of BSXA1C15000 got traded. Since Market delta is 0.6, number of lots in future to be hedged depends on delta and delta threshold, which in our case is 0.6 and 100% respectively. So the quantity to be hedged is:

Delta * Order lots traded * lot size of future hedge

$$0.6 * 7 * 15 = 63.$$

Now because my delta threshold is 100%, unless 100% of the lot is not available it will not do any extra lots. In other words, in our current example, it comes out to be 4.2 (63 qty) lots, so it will only hedge 4 lots (60 qty).

Now let's say user had entered, delta threshold (%) as 20%, this comes out to be $15 * 20\% = 0.2$ lots or 3 qty, hence any decimal after total lots comes out to be 0.2 or greater, it would hedge one more extra lot. In our current example, the lot to be hedged comes out to be 4.2 lots (63 qty), so it will hedge, in all 5 lots (75 qty), as delta threshold is 20%.

Order Type: There are two categories in the order type: Best Bid/Ask, and Sweep/Stand Price

- a. **Best Bid/Ask:** If user selects Best Bid/Ask, then the strategy will place a single day order with Option token, after the trade confirmation of first leg, second leg future hedge order is placed according to the Second leg type option selected. For placing first leg, our system will calculate the option price and place the order in the market. If the user is buying the first leg and the calculated option price is greater than the market option price, it will modify the current bid rate by modify factor to become best buyer (bid rate + modify factor). If calculated option price is less than the market option price, it will stand at that price and will not bid to become best buyer. Similarly, if the user is selling first leg and calculated option price is less than the market option price, it will modify the current option price by modify factor to become best seller (ask rate - modify factor). If calculated option price is more than the market option price, it will stand at that price and will not bid to become best seller.

It should be noted that bidding to become best buyer and best seller till the calculated option price. So calculated option price becomes a floor/ceiling for bidding.

- b. **Sweep/Stand Price:** If user selects Sweep/Stand Price, then the strategy will place a single day order with Option token, after the trade confirmation of first leg, second leg future hedge order is placed according to the Second leg Type selected. For placing first leg, our system will calculate the option price and place the order in the market at the calculated price but **will not** become best buyer or seller.

Buy/Sell (buysell): To decide whether to buy or sell a particular option token

Modify Factor: This parameter is only used when the order type selected is Best Buy/Best Sell. By default, this factor will have value of one tick, however user can modify it according to his prerogative.

Market Protection (%): is useful to prevent user from manual/typing errors. For example, let's say user is buying an option, and based on its IV, the price comes out to be 160, user has entered the market protection of 30%, and current ask price is Rs. 100, it will not allow order to enter for anything more than Rs. 130. Similarly, if user was selling an option, based on its IV, the price came out to be Rs. 60, however with current market protection of 30%, and current bid rate is 100Rs, it will not put orders for anything less than Rs. 70.

Second Leg Type: This parameter is exclusively for the hedging leg. Once the first leg gets completed, how should the hedging leg be placed depends on this parameter along with delta and delta threshold. It has two options to place the hedging leg and are mentioned below:

1. **Market:** Once the first leg is completed, depending on the delta and delta threshold specified, the hedging leg is placed in market (with price protection).
2. **LTP Based MPP%:** Once the first leg is completed, hedging future leg is placed based on the LTP +/- MPP%. In other words, let say, user is selling first leg (option), and hedging leg is the buy order, it will take the LTP of that scrip add x% specified in the MPP% parameter and then place the order. If for any reason it is not completed, and there is a change in LTP, it will modify the order price accordingly. Similarly, let say, user is buying first leg (option), and hedging leg is the sell order, it will take the LTP of that scrip subtract x% specified in the MPP% parameter and then place the order. If for any reason it is not completed, and there is a change in LTP, it will modify the order price for that leg accordingly. For any reason, if this option is selected, and user stops the strategy, the pending hedging future leg order will be canceled.

MPP%: This parameter is enabled only when Second leg type selected is **LTP Based MPP%**.

For Hedging Future Leg **Buy** Orders:

$$\text{Placed Second (Hedging) Leg Buy Price} = \text{LTP} + (\text{LTP} * \text{MPP}\%)$$

For Hedging Future Leg **Sell** Orders:

$$\text{Placed Second (Hedging) Leg Sell Price} = \text{LTP} - (\text{LTP} * \text{MPP}\%)$$

The range that can be entered in this field is **0.01%** to **3%**.

Order Lots: This is the quantity in lots to be placed per opportunity and can be multiple lots but it has to be a multiple of total order lots.

Total Lots: This is the total trade quantity in lots that the user intends to trade.

Order IV: Used to calculate the option price. It is the IV that is to be entered by the user using which option price will be calculated.

Time to Maturity (timetomaturity) type: It will have three options:

- a. **Static:** TTM will be calculated on days basis.
- b. **Dynamic:** TTM will be calculated on seconds basis. For example:

Today at the beginning of the day, number of days to maturity for 28, now its 27 days. It should be calculated as follows:

Suppose, at 1 pm, today, time to maturity should change from $28 - (4/6.5) = 27.39$ days.

6.5 hours (9:00 am to 3:30 pm i.e. 6.5 hours)

So at 2pm today, time to maturity will change to $28 - (5/6.5) = 27.23$ days .

- c. **User-Defined:** User will manually add Time to Maturity for option price calculation. If user-defined TTM is selected, then a box for TTM will be enabled for user to enter the same.

For Static and Dynamic option, System will calculate the time to maturity automatically.

Time To Maturity: this parameter will only be enabled if the TTM type selected is user-defined.

Interest Rate: This parameter is used to calculate the Option Price.

The above parameters need to be updated from the front-end. Once the parameters are updated, the user needs to start the Nest Strategy from the front end so that the Nest Strategy engine starts running at backend.

Nest Strategy Engine:

The execution of the script happens in the Nest Strategy engine running at backend.

Execution:

Option price is calculated by considering the orderiv and other relevant parameters. The way the order will be placed for either leg (first leg or hedged second leg) or both legs together depends on the order type selected by the user.

Hedge qty = Option traded qty * option delta – future traded qty (if any in previous round).

Hedging of future will be based on following conditions:

1. Buy Call – Sell Underlying
2. Sell Call – Buy Underlying
3. Buy Put – Buy Underlying
4. Sell Put – Sell Underlying

Example:

Let's say user has selected BSXA1C15000 i.e he wants to buy January Sensex Index Call option with strike rate 15000 and wants to hedge with current month Sensex Future January

Expiry (BSXJAN2012). Delta Threshold is 100%, Delta entered by user is 'Market' Delta i.e. Delta =1. Order lot is 1, Total lot is 20. Order type is Best Bid/Ask, and user is buying a Call Option. Since user is buying the call option, strategy will sell the future accordingly. Assuming user enters iv's as 6.5% with dynamic TTM and modify factor as 0.05 Rs. Additionally, the calculated option price is greater than the ask rate for that option price, it will be start bidding. It will modify the current bid rate by 5 paise to become best buyer (bid rate + 0.05), otherwise, it will stand at that price. Once the order is hit for the first leg (option), it will hedge the future accordingly based on the parameters specified and the foresaid hedging option conditions as well as the second leg type selected.

Below is another illustration of how hedging is done.

Sr. No	Option Qty Traded	Current Market Delta	Cumulative Qty Traded previously	Qty to be hedged	Total qty to be hedged currently	Delta Threshold %
1	4	0.6	0	$4 \times 0.6 = 2.4$	2	100%
2	6	0.5	$= 4 + 6 = 10$	$10 \times 0.5 = 5$	$5 - 2 = 3$	100%
3	3	0.2	$= 10 + 3 = 13$	$13 \times 0.2 = 2.6$	$2 - 5 = -3$ so 0*	100%
4	5	0.8	$= 13 + 5 = 18$	$18 \times 0.8 = 14.4$	$14 - 5 = 9$	100%
5	2	0.9	$= 18 + 2 = 20$	$20 \times 0.9 = 18$	$18 - 14 = 4$	100%

* No Hedge

Portfolio and Parameters

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Portfolio Name	Exchange	Symbol	Expiry	Option Type	Strike Price	Hedging Expiry	Buy/Sell			
							BUY			
Order IV	HedgeType	Delta	DeltaThr(%)	Order Lot	Total Lot	Order Type	Modify Factor	S.Leg.Type	MPP(%)	
1	Market		50	1	1	Best Bid/Offer	0.05	LtpBasedMpp	0.05	
Pro/CLI	Account Id	Participant Id	Mrkt.Prot.Type	Mrkt.Prot	Interest Rt	TTM Type	TTM	Traded Lot	Rem Lot	TickSize
CLI	0000		Percentage	30	0	Static			1	0.05

Save Cancel

Risk Management

Risk Management System can be configured to have following checks before the orders are released to the exchange. The checks which are defined by exchange with respect to Algorithms are in place in the system. Below mention rules can be configured in the system to control the risk parameter which is defined by exchange.

Sr.No.	Checks	Rules to set	Remarks
1	Price Check	Check Price Range Based on LTP Check Circuit Limit	This rules will create a price range on the basis of Last Traded Priced as per the percentage set in the category window.
2	Quantity Check	Order Quantity including Square off Order Board Lot Quantity including Square off Order	This rules will restrict per order the number of quantity to be placed in market which is defined the category window. The user can define the number of quantity in Weights and in lots for Futures.
3	Order Value Check	Order Value including Square off Order	This rule will restrict per order the order value which can be placed in the market which is defined in category window
4	Trade Price Protection Check	Check Circuit Limit including square off order	This rule does not allow to place the order which has been placed above the Higher Circuit Limit or Lower circuit limit which id defined for contract/scrip by exchange
5	Market Price Protection	Check Price Range Based on LTP	This rule will create a price range on the basis of Last Traded Priced as per the percentage set in the category window.
6	Cumulative Open Order Value check	Pending order value	This rule will restrict the Open Order with the Value set in the category
7	Automated Execution Check	Turnover Order Level and Turnover Order Level Limit	This rule will calculate the value of all executed/ Unexecuted and un confirm orders and if breach the value set in category then further order will get rejected
8	Automatic stoppage in event of Algo execution leading to a loop or a runaway situation.	Order Throttle	If there number of order per seconds breaches the value which is set in Throttle then further order gets rejected by the system.
9	Net Position Vs. available margin	Gross Exposure, Gross Exposure Derivative, Var Margin Order Level, Span Margin Order Level	User can set the risk parameter based on Exposure and Margin based on which the margin used will be calculated on the basis of position taken. If the Margin used is equal to Cash margin then further order will be rejected by the system
10	RBI Violation checks for	Restricted Basket	User need to create a Restricted basket

	FII Restricted stocks.	or RMS Blocking	for the scrip and assign to the category of the user / client. Also RMS blocking can be used.
11	MWPL violation check	RMS Ban Symbol or RMS Blocking	The scrip for which market wide position limit is breach then scrip can be blocked or it needs to be in Ban.
12	Position Limit Checks	Scrip Group / Scrip Margin	User can define the quantity scrip wise in which the position can be taken in scrip group and then it needs to be assign to category at client level
13	Trading Limit Checks	Scrip Group / Scrip Margin	User can define the quantity scrip wise in which the position can be taken in scrip group and then it needs to be assign to category at branch level
14	Exposure Limit check at individual client level and at overall level	Gross Exposure and Gross Exposure Limit	User can define the Exposure at Branch Level as well as Broker Level
15	Number of orders for the logic	NA	Depends on the user parameter (i.e order qty) set. This can vary from a minimum of a single lot to a maximum of total qty set.
16	Maximum number of scrips / contracts in which the logic will work at a time	NA	At a time, maximum number of scrips/contracts in which logic will work at a time is 2
17	Number of legs		One or Two