Options Strategies Theory & Application

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Option Strategies Overview

Options strategies are applicable to various asset classes and for OTC as well as traded Options. The main motives to use options are

1. **Take a directional** view of the market

   - Reduce exposure to to risk (partial or full),
   - Increase exposure to risk.

2. **Enhance your income** by writing your income and collecting the premium for instance.

3. **Take of view on the volatility** of the underlying

4. **Arbitrage** i.e take advantage on mispriced of options or between the option and the underlying.

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Focus for today

There are 3 main style of Options strategies:

- ◆ Strategies involving one stock and one Option
- ◆ Spreads strategies
- ◆ Combinations

We will fellow this structure for the seminar

I. Strategies involving one stock and one Option

There are various type of strategies that can be undertaken, for instance covered calls.
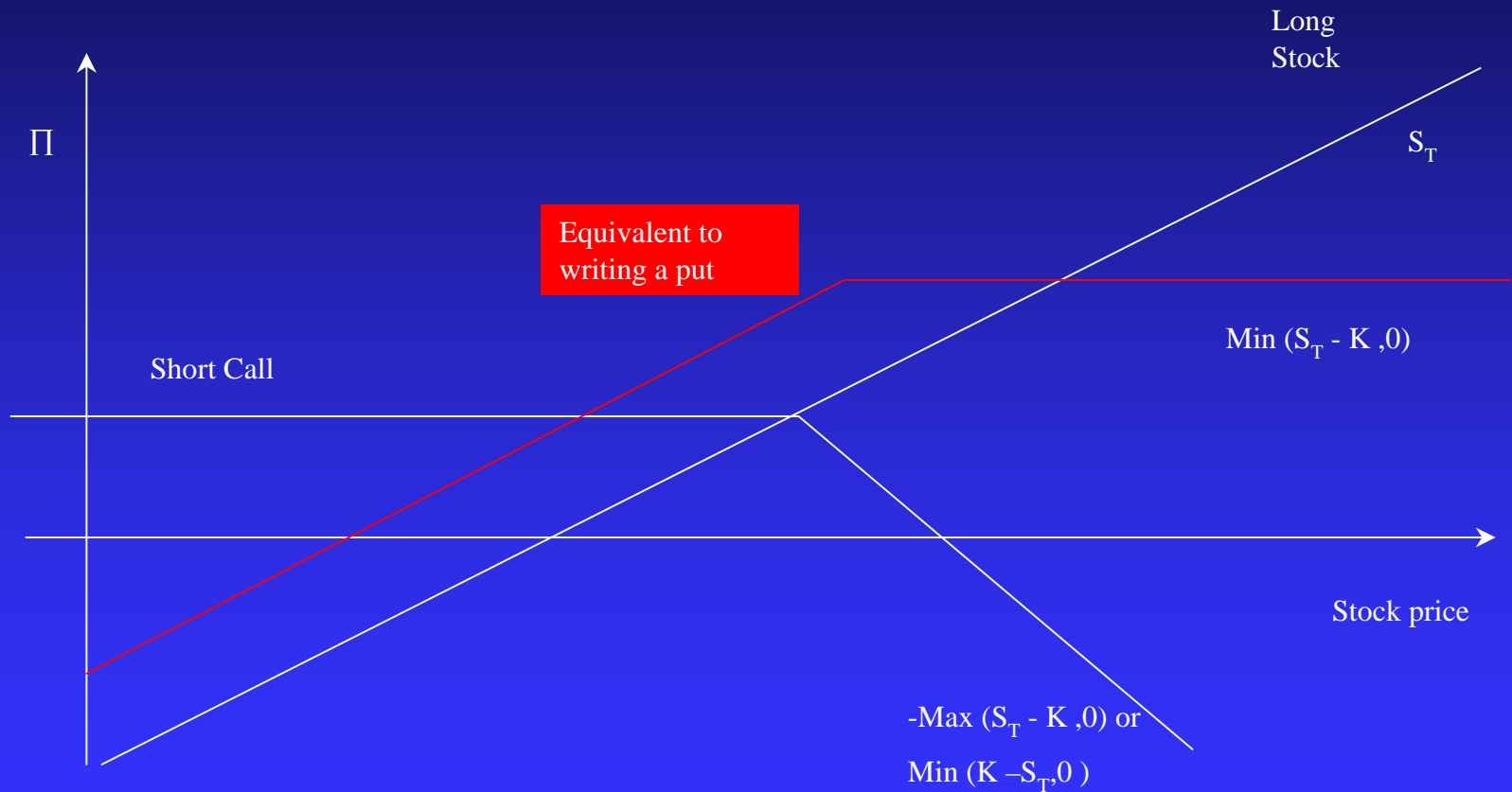
Covered Call

A covered call

The long position will cover the investor against a sharp rise in the stock price.

A covered call is composed of :

- 1 long position in the stock
- 1 short position in a call

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Pay off for a covered call

Long
Stock

Π

S_T

Equivalent to
writing a put

Short Call

Min $(S_T - K ,0)$

Stock price

-Max $(S_T - K ,0)$ or

Min $(K - S_T,0)$

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II. Spreads

Spreads are strategies involving taking two or more options of the same types

i.e at least 2 calls or 2 puts to build up your strategy.

The most popular strategies are
Bull spread   Bear spread
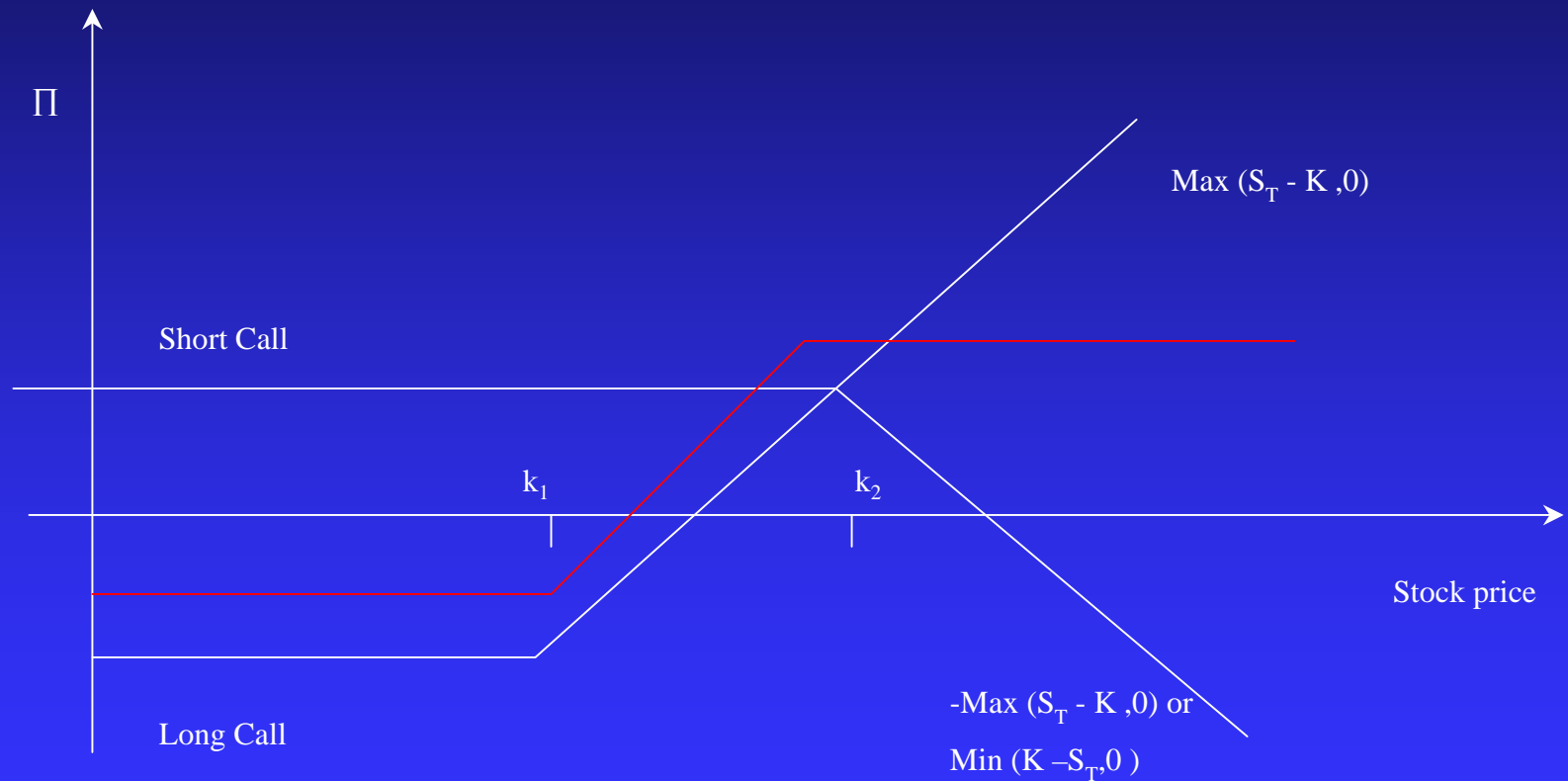Butterfly   Calendar

Call Bull spread

Vertical spreads are used in a moderately **bullish market** to lower your premium and maximise your upside potential, which would be equal to the difference between the two strikes as long as the underlying is superior to the higher strike.

Maximum loss would be the debit when your underlying is lower the lower strike. This **strategy is composed of** :

➢ Buy 1 call Option with a strike K_1

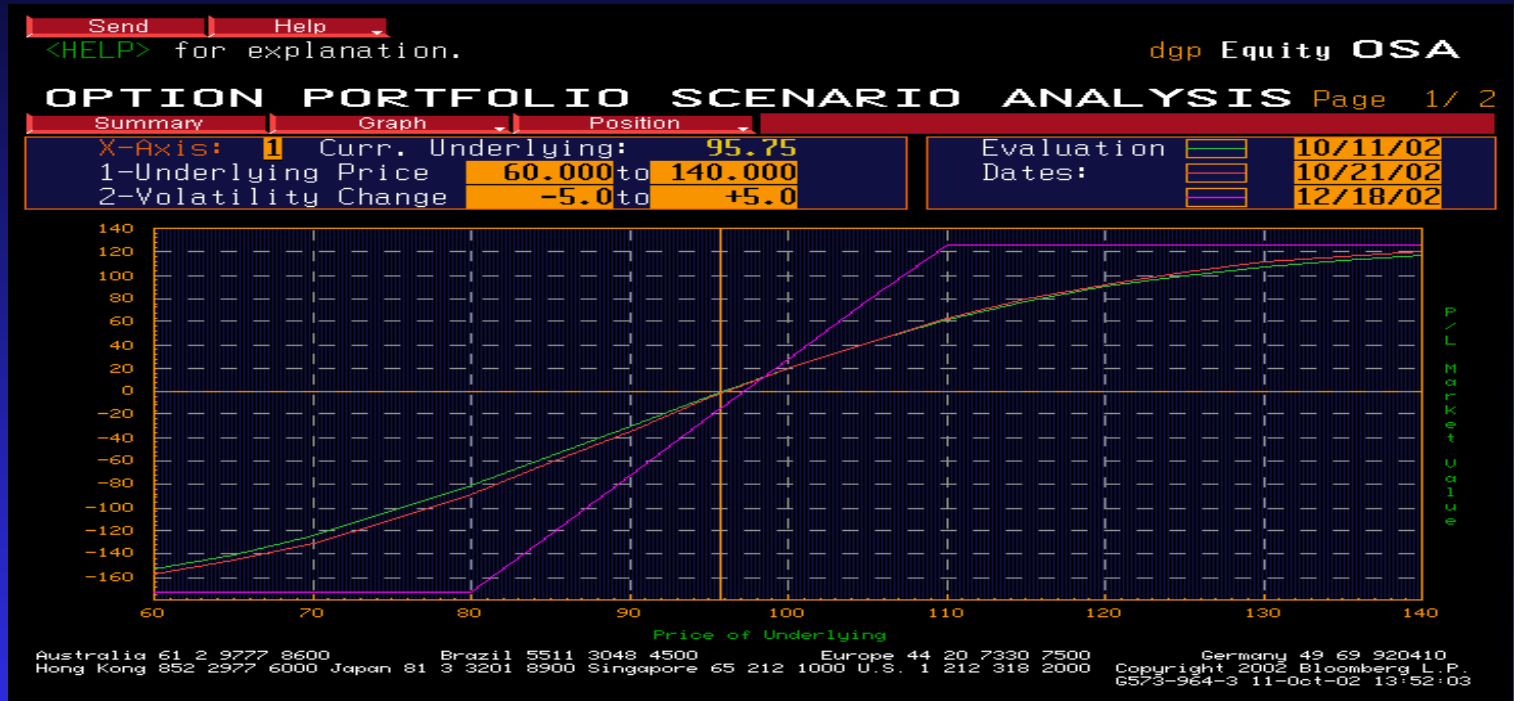➢ Sell 1 call Option with strike K_2 where $K_2 > K_1$

Pay off for a Call Bull Spread

Π

Max $(S_T - K, 0)$

Short Call

k_1

k_2

Stock price

Long Call

-Max $(S_T - K, 0)$ or

Min $(K - S_T, 0)$

Explanation of Pay off

Price	PO from Long call	PO from Short Call	Total Pay off
$S_T > k_2$	$S_T - k_1$	$K_2 - S_T$	$K_2 - K_1$
$K_1 < S_T < k_2$	$S_T - k_1$	0	$S_T - k_1$
$S_T < k_1$	0	0	0

Call Bull spread on Bloomberg

Underlying	Vodafone underlying at 95.75
Options	■Long VOD LN 12 C80 ■Short VOD LN 12 C110
Premium	(20.25 –3) * 1000 = 17250
Max Profit	Limited between a underlying of 80 and 110
Max Loss	The premium so 17250

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Bear Spread

By contrast a Bull spread is where the investor is hoping that the stock price will go up, in a **bear spread** the investor is hoping that the **stock price will go done**.

A Bear Spread is composed of 2 options on we buy and one we sold where the one we buy as a strike superior to the one we sell so we have an initial cash flow

Pay off for a Bear call spread

Short Call

Long Call

Π

Stock price
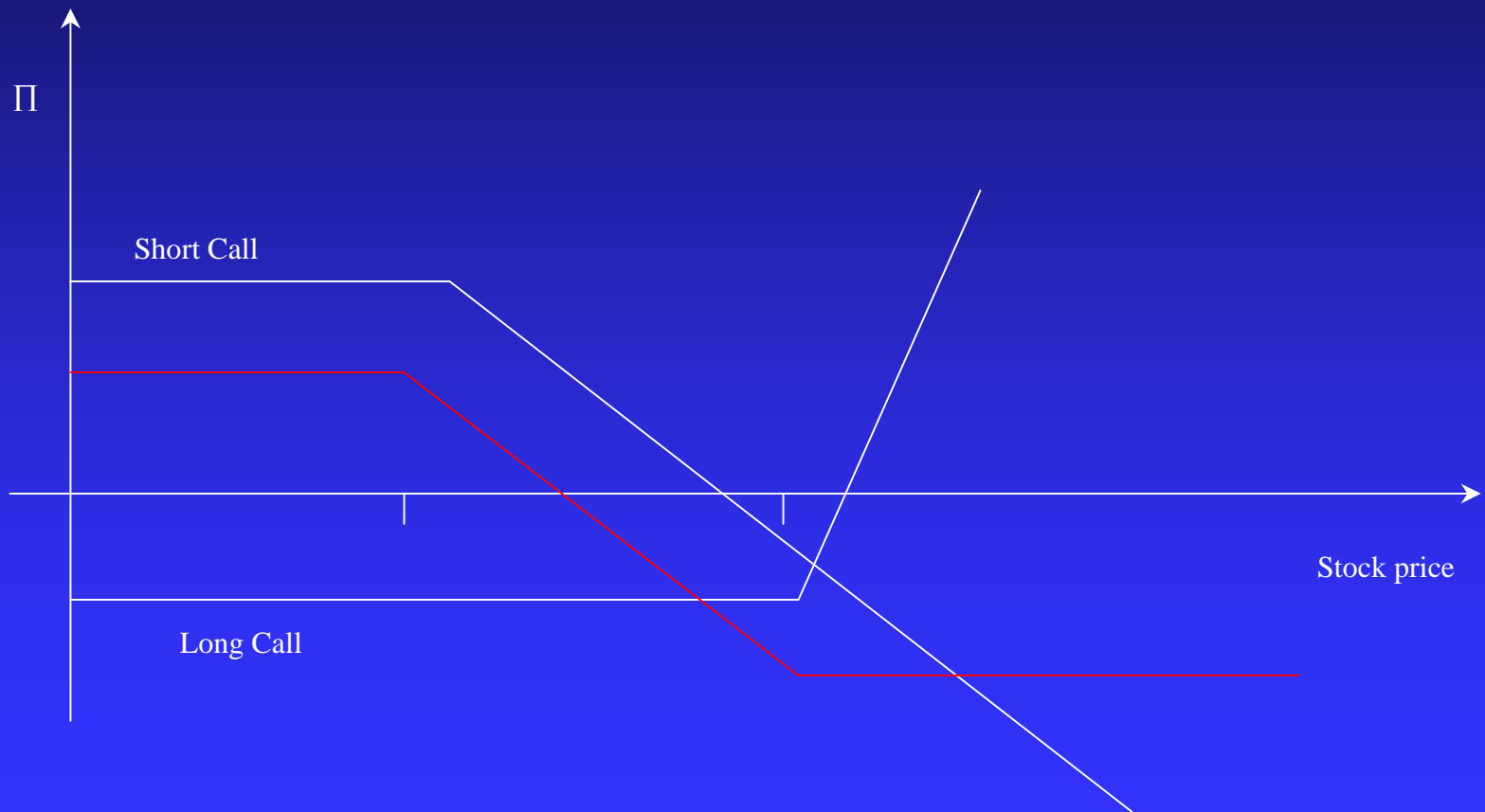
Pay off for a Bear Call spread

Price	PO from Long call	PO from Short Call	Total Pay off
$S_T > k_2$	$S_T - k_2$	$K_1 - S_T$	$K_1 - K_2$
$K_1 < S_T < k_2$	0	$K_1 - S_T$	$-(S_T - k_1)$
$S_T < k_1$	0	0	0

# Call Bear spread using Bloomberg

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Butterfly Spread

A butterfly spread involve taking 3 different strikes prices.

If you buy a call at K_1 which is low compared to K_3. Then you sell 2 calls at in between the 2 previous strikes, K_2.

This strategy would lead to a **profit if your underlying stay close to the medium strike**, K_2 and then to a **small loss** if it moves in any of the two over directions.
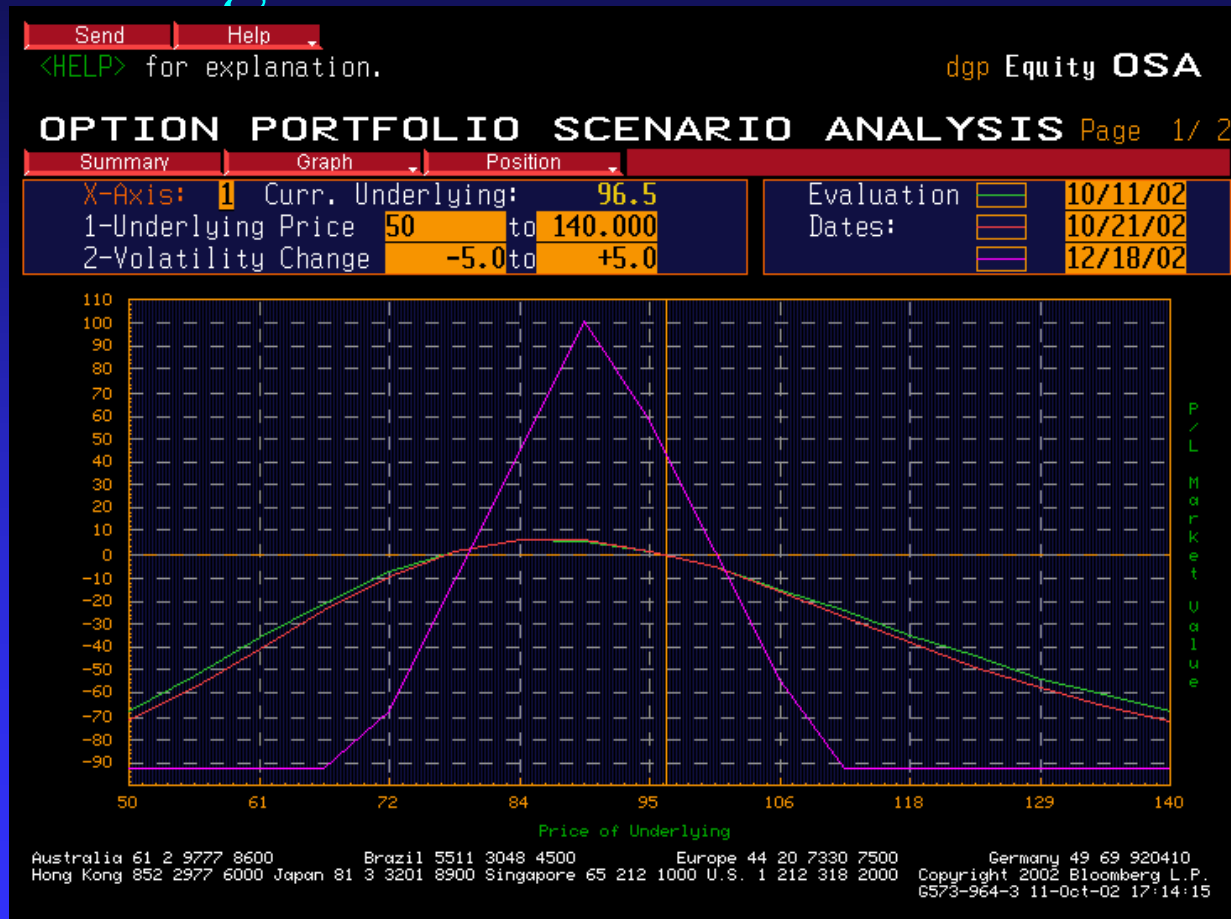
Graphical Pay off for Butterfly

Π

2 Short Calls

Stock price

-Max $(S_T - K, 0)$ or

Min $(K - S_T, 0)$

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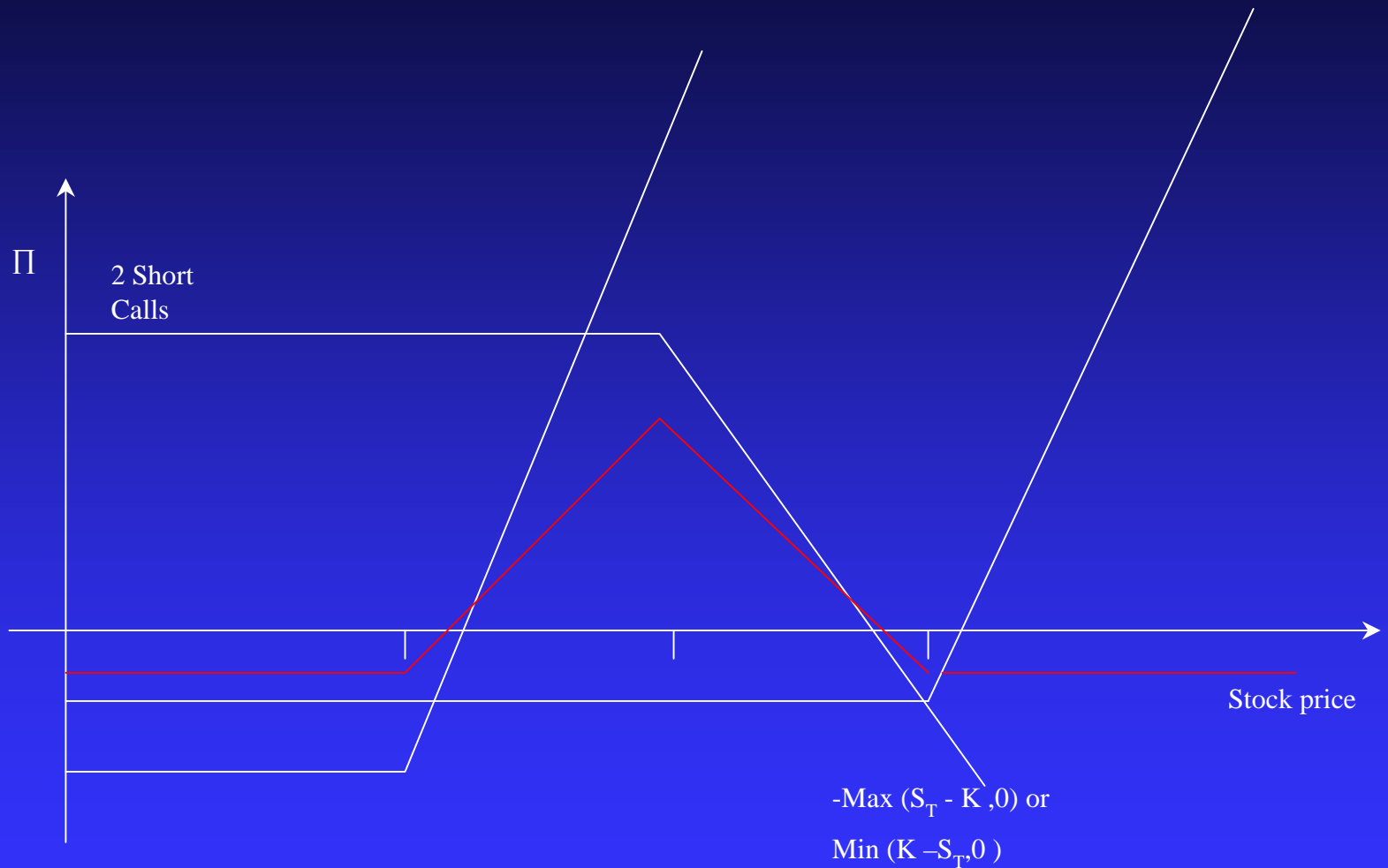
Pay off Butterfly

Price	PO from Long call 1	PO from Short Call 2	PO from Short Call 2 Pay off	Total Pay off
$S_T < k_1$	0	0	0	0
$K_1 < S_T < k_2$	$S_T - k_1$	0	0	$S_T - k_1$
$K_2 < S_T < k_3$	$S_T - k_1$	0	$-2(S_T - k_2)$	$K_3 - S_T$ Where $k_2 = 0.5(k_1 + K_3)$
$S_T > k_3$	$S_T - k_1$	$S_T - k_3$	$-2(S_T - k_2)$	0

Graphical Pay off for Butterfly using Bloomberg

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III. Combinations

This type of option strategy involves taking a position in both call and put side of the market at the same time.

The most commonly traded are Straddles and strangles which are strategies where investors are betting on volatility of the underlying to recover there premium.
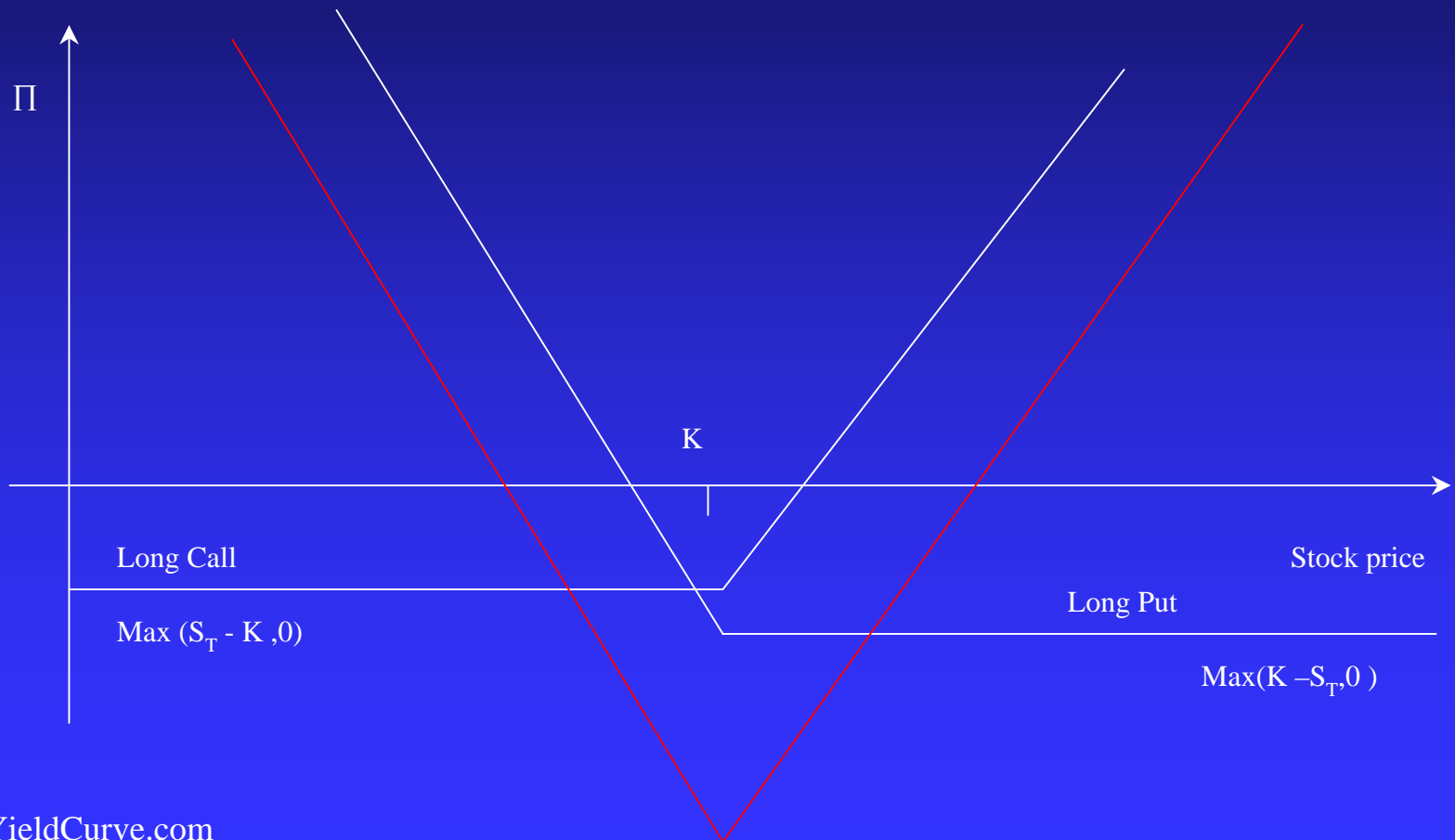
Straddle

Popular type of strategy it involves buying a call and a put with the same strike and expiry date.

At expiry, If the stock stays close to the strike price the pay off would be a loss. Meanwhile if there is a large move of the stock price positive or negative a profit would be made.

This type of strategy tends to work if large volatility moves are expected on the stock price.
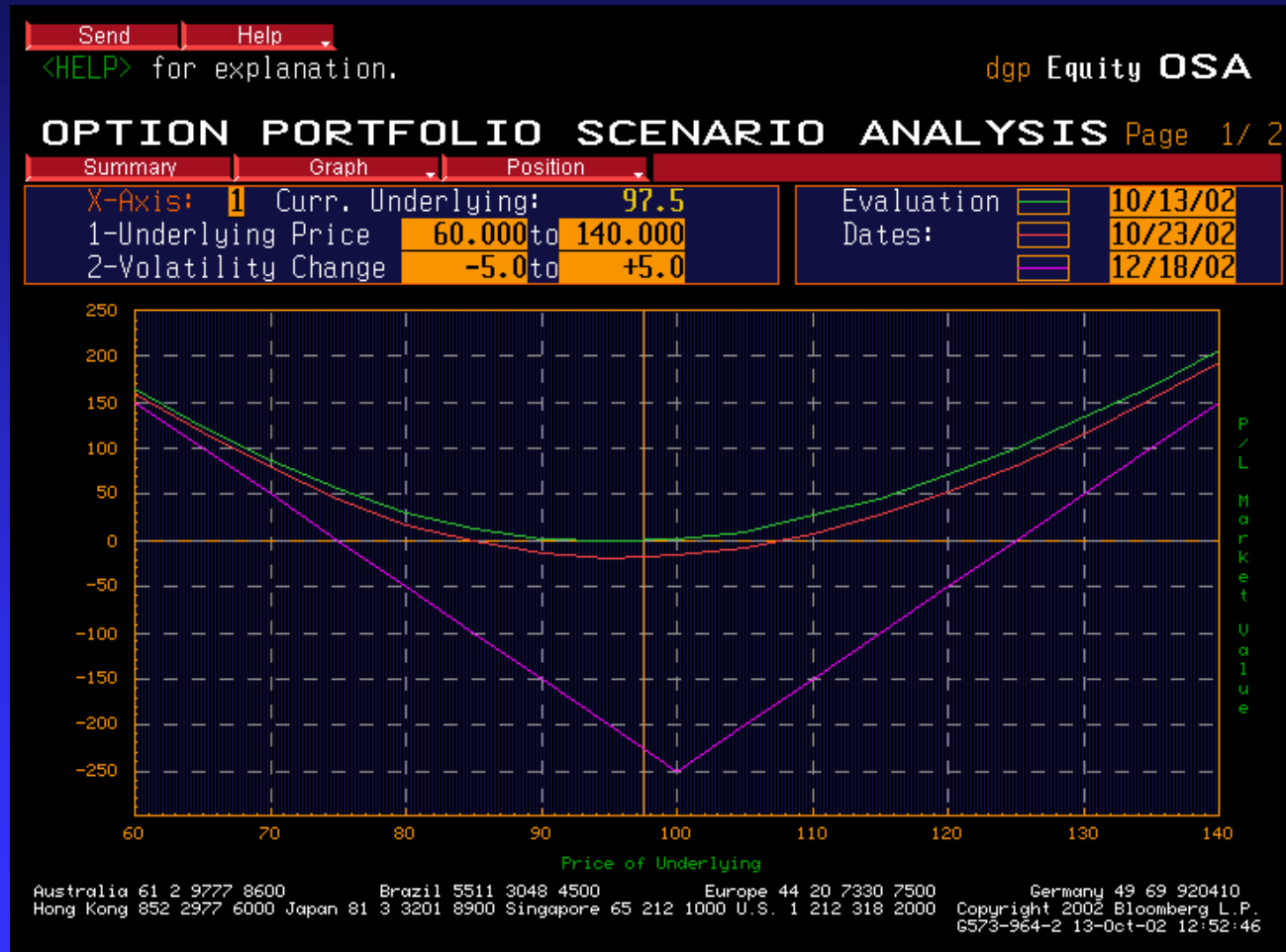
Straddle Pay off

Π

K

Long Call

Max (S_T - K ,0)

Stock price

Long Put

Max(K –S_T,0)

Pay of Straddle

Price	PO from Long Call	PO from Long Put	Total Pay off
$S_T < k$	0	$K - S_T$	$K - S_T$
$S_T > k_2$	$S_T - k$	0	$S_T - k$

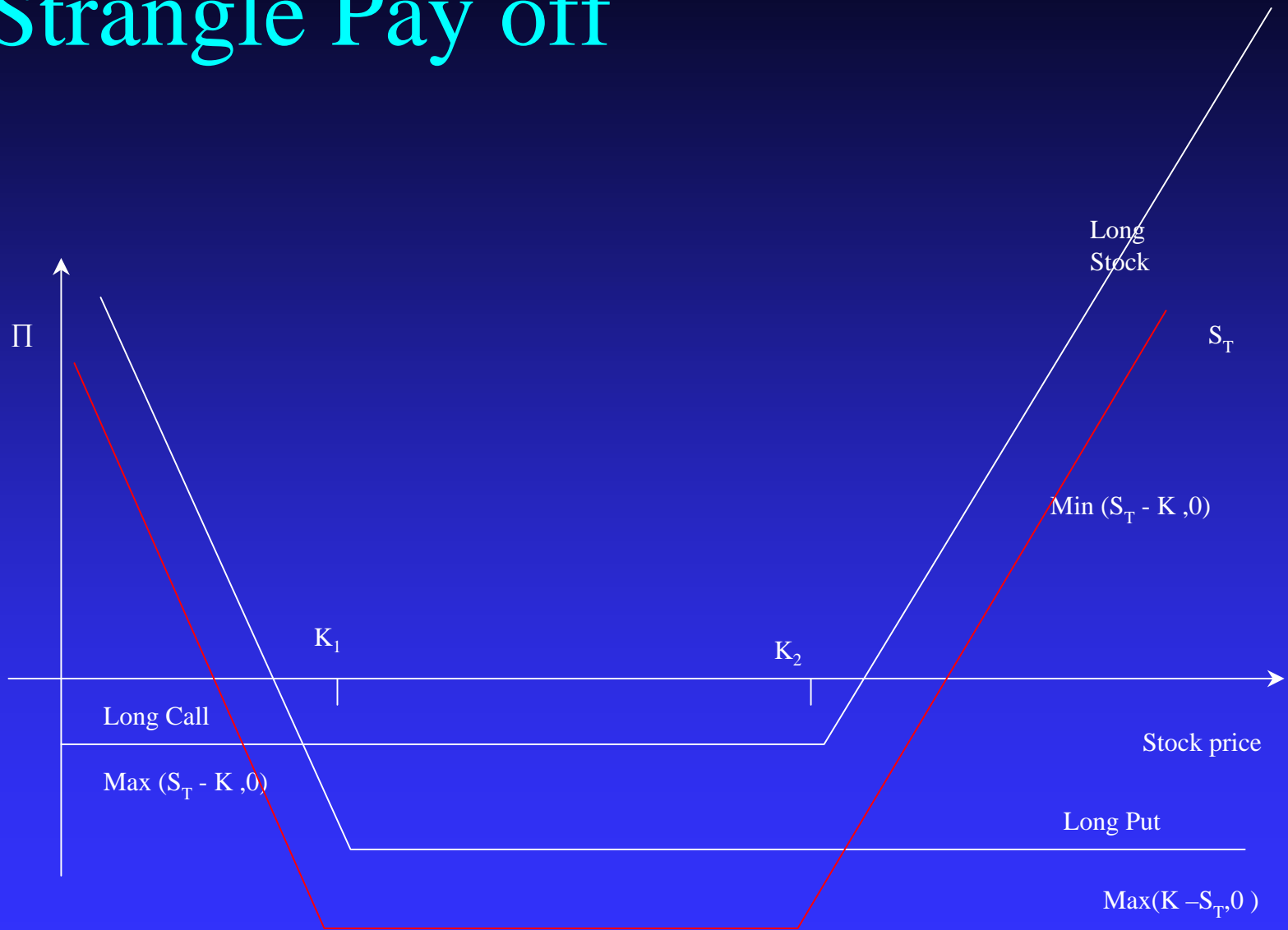# Straddle using Bloomberg

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Strangle

A strangle is composed of a call and a put position with the same expiry but on different strikes.
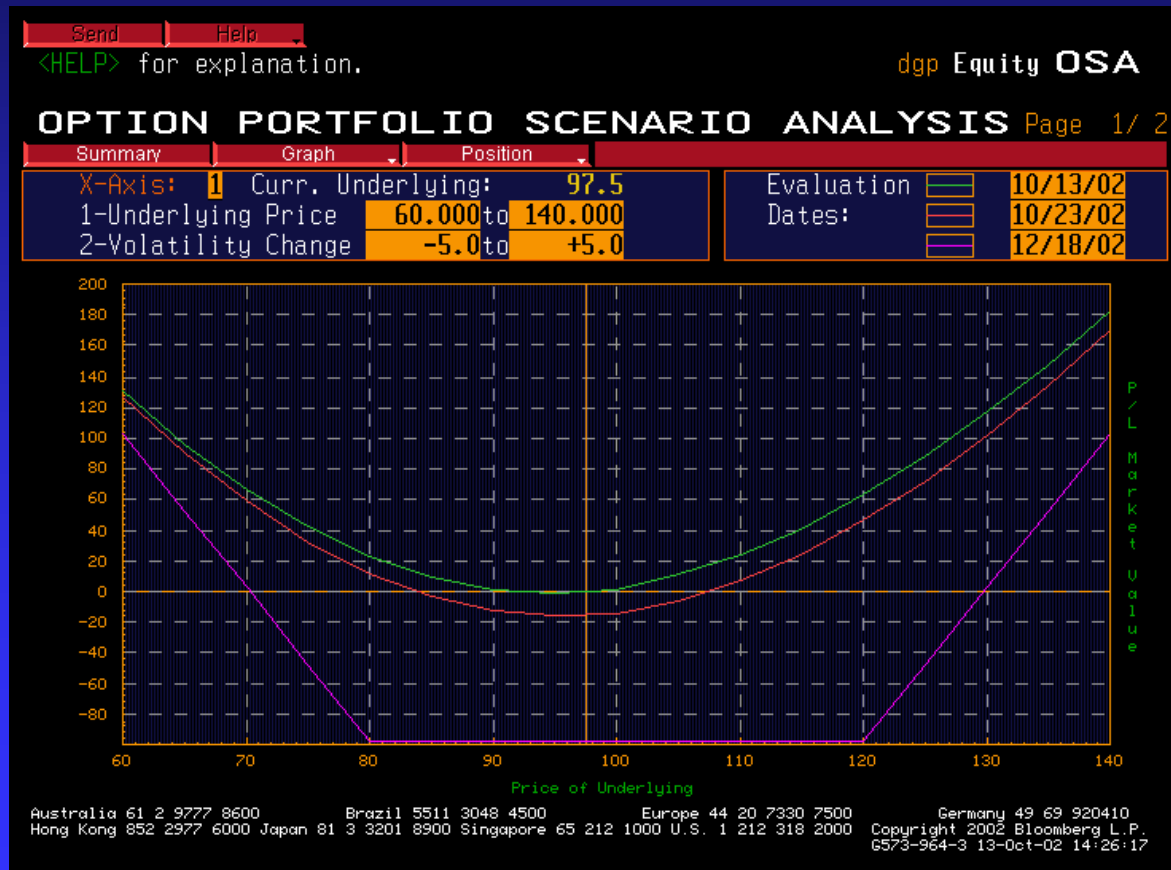Usually Call strike $K_2 > K_1$
Put strike $K_2 > K_1$

Strangle Pay off

Π

Long
Stock

S_T

Min $(S_T - K, 0)$

K_1

K_2

Long Call

Stock price

Max $(S_T - K, 0)$

Long Put

Max$(K - S_T, 0)$

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Pay off representation

Price	PO from Long call	PO from Short Call	Total Pay off
$S_T < k_1$	0	$K_1 - S_T$	$K_1 - S_T$
$K_1 < S_T < k_2$	0	0	0
$S_T > k_2$	$S_T - k_2$	0	$S_T - k_2$

Graphical representation in Bloomberg

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