

# Intraday Support and Resistance – Using Volume-Weighted Average Price (VWAP)

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*Subscription Link:*

<https://tradestation.tradingappstore.com/products/IntradayVWAPwithRadarScreen>

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## Summary

This custom intraday Volume-Weighted Average Price (VWAP) indicator provides estimated current and historical intraday VWAP values. The indicator plots as many as the last four daily VWAPs, as well as the real-time VWAP of the analyzed security in the current session. The historical VWAPs can serve as support and resistance lines as the current session's price action unfolds and can offer valuable information for traders. The intraday VWAP is reset at the beginning of each new trading session and the historical VWAP lines are color-coded for visual differentiation of the age of each VWAP line.

Update:

This new version includes a RadarScreen® indicator/study that monitors for real-time alerts whenever the current price crosses the current VWAP value or any of the historical VWAP values (see below).

## Introduction

VWAP is a widely used ratio in trading. It is based on a security's price and volume over a specified time period (usually one day). The numerator is the sum of the security's price over the specified time period multiplied by the corresponding volume; the denominator is the total shares/contracts traded for the time period. The formula for the VWAP is as follows:

$$P_{VWAP} = \frac{\sum_j P_j \cdot Q_j}{\sum_j Q_j}$$

where:

$P_{VWAP}$  = Volume-Weighted Average Price

$P_j$  = price of trade j

$Q_j$  = quantity of trade j

j = each individual trade that takes place over the defined period of time

Source: <http://en.wikipedia.org/wiki/VWAP>

## Background

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VWAP has numerous applications in the trading world. It is often used in algorithmic trading, and more specifically in volume-participation algorithms. For example, a broker may guarantee the execution of a trade at the VWAP price (known as a guaranteed VWAP execution). A broker may also offer a VWAP target execution where the broker makes a best effort to execute near the VWAP.

VWAP is also used as a trading benchmark by investors who are not worried about the timing of the trade but are concerned about the adverse impact of their trades on the security's price. The goal is to execute orders in line with the market's volume. Many pension funds and some mutual funds fall into this category.

The performance of passive traders is sometimes measured according to the VWAP. Long entry prices that are lower than the VWAP are considered favorable, while entries above the VWAP are considered unfavorable. These non-discretionary trades take place with a general disregard for timing. In this case, VWAP is used to calculate trading costs, since the average entry price would be compared to the VWAP benchmark price. This is the main reason why some argue that using the VWAP as a target reduces transaction costs.

In practice, the VWAP calculation can take numerous other forms. In addition to the standard definition above, traders may use VWAP excluding their own transactions, non-block VWAP, VWAP proxies when tick data is unavailable and value-weighted average for volatile markets in which prices weighted by the dollar value of the trade are used instead of share/contract volume.

## Indicator Construction

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The current intraday VWAP is approximated using a 1-minute to 5-minute intraday chart and the formula listed in the beginning of this paper. The intraday VWAP is displayed using a yellow(default) line (TodaysVWAPColor input). Depending on how much data is loaded into the chart (10 days of historical data is suggested), the maximum number of VWAPs that can be seen at any one time is five (the current VWAP plus the previous four daily closing VWAPs). The last four historical daily VWAPs are color-coded using user-defined input colors (see below) to identify how old each VWAP is regardless of where on the chart you are looking. The legend for the plot colors can also be seen in the status line of the chart.

The indicator recognizes whether pre- and/or post-market data is used for equities, and the VWAP values are not reset after the post-market session or pre-market session ends. A 1-minute to 5-minute intraday interval is recommended to better estimate the VWAPs; however, depending on your willingness to accept a margin of error, you may want to experiment with lower intervals (e.g., 10 minutes).

## Current Application

VWAP can also be a useful tool for short-term discretionary traders, and many different strategies can employ this measurement. One simple well-known strategy is to wait for the price to pierce through the VWAP to the upside when a long position is sought and when the trader is looking for buyers to regain control, since a breakout above VWAP may show upside momentum. The core idea is that the current VWAP and past VWAPs can act as potential support and resistance levels.

Most trading applications only show the current day's VWAP. This is mainly because historical VWAPs require enormous amounts of data, since all the tick and volume data for the different sessions would need to be referenced. One solution is to approximate the historical VWAPs using 1-minute to 5-minute intraday bars/data, which dramatically reduces the amount of historical data needed. The resulting VWAPs are not exact but are very close to the actual values.



## Charting Indicator Inputs:

Name	Value	Description
TodaysVWAPColor	YELLOW	Color used for the current intraday VWAP
PlotOneDayAgo	TRUE	Show the 1-day ago VWAP plot
OneDayAgoVWAPColor	CYAN	Color used for yesterday's closing VWAP value
PlotTwoDaysAgo	TRUE	Show the 2-days ago VWAP plot
TwoDaysAgoVWAPColor	GREEN	Color used for the VWAP closing value of 2 days ago
PlotThreeDaysAgo	TRUE	Show the 3-days ago VWAP plot
ThreeDaysAgoVWAPColor	MAGENTA	Color used for the VWAP closing value of 3 days ago
PlotFourDaysAgo	TRUE	Show the 4-days ago VWAP plot
FourDaysAgoVWAPColor	WHITE	Color used for the VWAP closing value of 4 days ago

## Chart Setup

In order for window linking to operate correctly - it is important to set the default number of historical days to at least 10 days for both 3-min and 1-min bar intervals.

Format Symbol - AMZN 3 min [NASDAQ] Amazon.com Inc

Settings Style Scaling Properties

Symbol: AMZN Lookup...

Select Interval: ——— Interval Settings: ———

Tick  
Volume  
Second  
Minute  
Daily  
Weekly  
Monthly

Kagi  
Kase  
Line Break  
Momentum  
Point & Figure  
Range  
Renko(+)

3 Minute Bar

For volume, For bar building,  
Trade Vol Session Hours

Range: ———

Last Date: 11/27/2018

☒ 10 Days Back  
☐ Years Back 800

☐ First Date 11/27/2018

☒ Apply time-based Range setting to all data series

Display: ———

Time Zone: Local

☒ Set as Default

OK Cancel Help

From Format Symbol in 9.5 or Edit Symbol in 10.0 - be sure to set the bar interval to 3 minutes, add 10 days back of historical data, and then check the 'Set as Default' button at the bottom of the dialog.

Click OK

Then to be safe - do the same thing for 1-minute interval.

The VWAP indicator can also be used in RadarScreen® to scan for real-time crossing alerts, so that whenever the last real-time price crosses over any of the five VWAP lines, an alert message will appear. The indicator also shows whether the last cross was a bullish or bearish cross and can be used with both stock and futures symbols.

TradeStation RadarScreen - Stocks					
	Symbol	Interval	Last	Net %C...	Intraday VWAP RS
					AlertTxt LastCross
1	XLB	3 Min	54.20	0.44%	Bullish
2	XLE	3 Min	68.83	1.88%	Bullish
3	XLFX	3 Min	26.85	1.78%	Bullish
4	XLI	3 Min	71.51	0.73%	Bullish
5	XLK	3 Min	68.77	0.04%	Bullish
6	XLP	3 Min	55.77	1.21%	Bullish
7	XLU	3 Min	53.81	1.25%	Bullish
8	XLV	3 Min	90.42	1.29%	Bullish
9	XLV	3 Min	108.26	0.27%	Bullish
10					
11	AAL	3 Min	35.76	-1.58%	Bullish
12	AAPL	3 Min	201.24	-3.01%	Bullish
13	AMD	3 Min	19.87	-1.78%	Bullish
14	AMZN	3 Min	1,632.90	-1.96%	Bullish
15	CSCO	3 Min	46.40	2.02%	Bullish
16	FB	3 Min	149.20	-0.76%	Bullish
17	GE	3 Min	9.39	1.11%	Bullish
18	GOOG	3 Min	1,038.57	-1.82%	Bullish
19	INTC	3 Min	48.19	2.29%	Bullish
20	MSFT	3 Min	107.63	1.38%	Bullish
21	NFLX	3 Min	316.24	2.31%	Bullish
22	NVDA	3 Min	211.74	-1.48%	Bullish
23	SQ	3 Min	75.17	-3.33%	Bull X 2-Day
24	SWKS	3 Min	83.19	-2.44%	Bullish
25	TSLA	3 Min	342.97	-0.99%	
26	WMT	3 Min	102.88	1.52%	Bullish
27	XOM	3 Min	81.86	-0.11%	Bearish
28					
29	DIA	3 Min	254.79	0.92%	Bullish
30	QQQ	3 Min	169.25	-0.08%	Bullish
31	SPY	3 Min	273.90	0.74%	Bullish
32					

Just like in charting, the bar interval in RadarScreen® should be set between 1-minute and 5-minute. I have found that 3-minute bars provide the best efficiency with a close VWAP approximation.

The “AlertTxt” column displays real-time alerts whenever the last price crosses above of below a VWAP level. A cross above is considered bullish and a cross below is considered bearish.

The “LastCross” column displays the last market mode for the last VWAP cross.

You can change the background colors with the indicator inputs.

## Analysis

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Viewing this custom VWAP indicator on an intraday chart reveals that the different VWAP lines often act as support and resistance lines. A VWAP line that was acting as resistance often becomes support once penetrated, while a VWAP line acting as support often becomes resistance once penetrated. The different VWAP lines can also serve as target lines intraday when the price action is caught between lines.

As with any other technical analysis tool, the VWAP lines can work well at times and not so well at other times. A VWAP on stronger-than-average daily volume and/or different VWAPs near the same price may provide a higher probability of acting as potential support or resistance. It is a good practice to use other technical analysis tools in conjunction with the VWAP lines to better discern trend and which line might be providing a stronger support or resistance level.

As described in the Indicator Construction section above, the indicator works with or without pre- and/or post-market equity data. The indicator can be applied to any security where volume is accessible. For example, the indicator works with futures, such as the S&P E-mini futures contract. In that case, the indicator is able to recognize that 17:00 U.S. Central Time on Sunday is the opening time for Monday's session and the VWAP is then reset on the first bar after 15:30 U.S. Central Time.

## Conclusion

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This custom intraday VWAP indicator can provide additional analysis that is often obscured by the inaccessibility of the needed data. Using intraday data of a short interval provides active traders with VWAP values accurate enough to be of practical use. The different VWAP lines often act as support and resistance lines for the considered security and can offer valuable information for traders.

Remember, once broken, support can become resistance and resistance can become support.

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