

<http://www.investopedia.com/university/electronictrading/>

Thanks very much for downloading the printable version of this tutorial.

As always, we welcome any feedback or suggestions.

<http://www.investopedia.com/contact.aspx>

## Table of Contents

- 1) Electronic Trading: Introduction
- 2) Electronic Trading: The Nasdaq Versus the NYSE
- 3) Electronic Trading: The Role of a Specialist
- 4) Electronic Trading: The Role of a Market Maker
- 5) Electronic Trading: The SuperDOT System
- 6) Electronic Trading: Electronic Communication Networks (ECN)
- 7) Electronic Trading: Small Order Execution System (SOES)
- 8) Electronic Trading: Level I, II, and III Access
- 9) Electronic Trading: Conclusion and Resources

## Introduction

When it comes to electronic trading, for most individual investors, taking a long-term [buy-and-hold](#) approach is probably the best strategy. Most of us simply don't have the time or the expertise to trade for a living. But for some investors, trading can be an extremely lucrative profession.

There have always been professionals who made their living off of trading. It wasn't until recently, however, that technology enabled individuals who weren't working for a brokerage to directly access the markets. This tutorial will delve into the workings of the electronic systems that allow this direct access. We'll also talk about the differences between the [New York Stock Exchange](#) (NYSE) and the [Nasdaq](#) and learn how market trades are executed, both by [market makers](#) and by [specialists](#).

Whether you are an aspiring trader or a seasoned investor looking to find out how it all works, this tutorial explains all the nitty-gritty electronic trading systems in layman's terms. Is electronic trading a new way for you to build your own portfolio? Read on to find out!

## The Nasdaq Vs. The NYSE

From a glance, the difference between the [New York Stock Exchange](#) (NYSE) and [Nasdaq](#) may not be marked. The NYSE lists household names like Coca-Cola, Wal-Mart, Citicorp, and General Electric, whereas the Nasdaq is home to many of the tech giants such as Microsoft, Cisco, Intel, Oracle and Sun Microsystems. Besides the heavy tech weighting, the fundamental difference between the two exchanges is in the way securities are traded.

### NYSE

The NYSE is an [auction market](#) that uses [floor traders](#) to make most of its trades. Each stock on the NYSE has a [specialist](#); this is a person who oversees and facilitates all of the trades for a particular stock. If you wish to buy a stock that trades on the NYSE, your broker will either call your order to a [floor broker](#), or enter it into the [DOT](#) system (which we will discuss later on).

### Nasdaq

The Nasdaq, on the other hand, is not a physical entity. The Nasdaq might be known for its fancy MarketSite Tower and broadcast studio in Times Square, but very little is done there. The Nasdaq is an [over-the-counter \(OTC\) market](#) and it relies on [market makers](#) rather than specialists to facilitate trading and [liquidity](#) in stocks. For each stock, there is at least one market maker, (large stocks such as Microsoft have several), whose duties we will discuss later on.

Rather than being an auction market, the Nasdaq is a communications network between thousands of computers. Instead of brokers calling out orders, market makers place their names on a list of buyers and sellers, which is then distributed by the Nasdaq in a split second to thousands of other computers. If you wish to buy a stock that trades on the Nasdaq, your broker will either call up a market maker with the information of your trade or enter your order into a Nasdaq-sponsored online execution system.

## The Role of a Specialist

The [NYSE](#) facilitates trading through a human being who is known as the [specialist](#). Each stock listed on the NYSE is allocated to a specialist and all the buying and selling of a stock occurs at the location of this person, known as "the trading post." Buyers and sellers represented by a [floor trader](#) will meet at the trading post to learn about the best current [bid](#) and [ask](#) price for a security. These bid and ask offers are called out loud and indicate the current prices to any interested party. A trade will be executed when the bid and ask orders meet.

The specialist doesn't only match up buyers and sellers. Many specialists are forced to hold an inventory of shares themselves to minimize the imbalance of buy and sell orders. The specialist does this until an equilibrium price is reached, which is when [demand](#) and [supply](#) are very close. Buying an inventory of stocks is not a common occurrence. In fact, it is estimated that a specialist will be in on only on out of every 10-15 trades.

Another duty that a specialist attends to occurs if a customer's order is priced at a level higher than the lowest ask, or lower than the best [bid price](#) (known as a [stop order](#)). The specialist will then hold the order and execute it if and when the price of the stock reaches the level specified by the customer.

A final responsibility of the specialist is to find a fair price for each of the stocks that he or she is responsible for at the beginning of every trading day. This fair price is based on the current supply and demand of the stock. The NYSE opens for trading at 9:30am, but if the specialist can't find a fair price, he or she may delay the opening of trading on a stock until that fair price is found.

It is the specialist's job to act in a way that benefits the public. Because specialists are responsible for keeping the market in [equilibrium](#), they are required to execute all customer orders ahead of their own.

## The Role of a Market Maker

[Market makers](#) compete for customer order flows by displaying buy and sell quotations for a guaranteed number of shares. The difference between the price at which a market maker is willing to buy a security and the price at which the firm is willing to sell it is called the [market maker spread](#). Because each market maker can either buy or sell a stock at any given time, the spread represents the market maker's profit on each trade. Once an order is received, the market maker immediately sells from its own inventory or seeks an [offsetting](#) order. There can be anywhere from four to 40 (or more) market makers for a particular stock depending on the [average daily volume](#). The market makers play an important role in the [secondary market](#) as catalysts, particularly for enhancing stock [liquidity](#) and, therefore, for promoting long-term growth in the market.

Market makers must maintain continuous two-sided quotes (bid and ask) within a predefined spread. A market is created when the designated market maker quotes bids and offers over a period of time. They ensure there is a buyer for every sell order and a seller for every buy order at any time.

Once the market maker has entered a price, he or she is obligated to either buy or sell at least 1,000 securities at that advertised price. Once the market maker has either bought or sold these shares, he or she may then "leave the market"

and enter a new bid or ask price to make a profit on the previous trade.

For example, let's say that a market maker has entered a sell order for Microsoft (MSFT) and the [bid/ask](#) is \$65.25/\$65.30. The market maker can try to sell shares of MSFT at \$65.30. If this is what the market maker chooses to do, he or she can then turn around and enter a bid order to buy shares in MSFT. The market maker can bid higher or lower than the current bid of \$65.25. If he or she enters a bid at \$65.26 then a new market is created (referred to as [making a market](#)) because that bid price is now the best bid. If the market maker attracts a seller at the new bid price of \$65.26 then he or she has successfully "made the spread." The market maker sold 1,000 shares at \$65.30 and bought these shares back at \$65.26. As a result, the market maker made \$40 (1,000 shares x \$0.04) on the difference between the two transactions. This might not seem like much, but doing this repeatedly with larger order sizes can provide lucrative profits. All day long market makers do this, providing liquidity to individual and institutional investors. The major risk for the market maker is the time lapse between the two transactions; the faster he or she can make the spread the more money the market maker has the potential to make.

However, making money from the differences in bid and ask prices is not the only function of market makers. Their first priority is to provide liquidity to their own firm's clients, for which they will receive a [commission](#). They may also facilitate trading for other brokerage firms, which is very similar to the duties of a [specialist](#).

It should also be noted that market makers are required by law to give customers the best bid or ask price for each market order transaction. This ensures a fair and reasonable [two-sided market](#). If these regulations were not in place, customers' profits would be gouged and share prices would be much more [volatile](#) than they already are.

## SuperDOT

Initially introduced as [DOT](#), the SuperDOT system (Super Designated Order Turnaround System) is an electronic system used to place orders for stocks that are listed, which usually refers to those trading on the [New York Stock Exchange](#) (NYSE). Keep in mind that SuperDOT is not to be confused with an [electronic communication network](#) (ECN), which we will discuss next.

The SuperDOT order-routing system facilitates the transmission of both [market](#) and [limit orders](#) directly to the trading post (and [specialist](#)) where the particular security is traded. This allows for a more efficient transaction because the order can be delivered directly to the specialist rather than phoned down to a floor trader and done manually. SuperDOT can be used for trades under 100,000

shares with priority given to orders of 2,100 shares or less. More than three-quarters of the orders executed through the NYSE are done through the assistance of the SuperDOT system.

After the order has been executed, the report of the transaction is sent back to the broker through the SuperDOT system. This means faster execution of the order and faster reporting of the trade. While most individual investors cannot have access to SuperDOT directly, there are complimentary systems offered by many brokers that replicate similar order executions provided by SuperDOT.

Originally, the SuperDOT system was designed for small order entry, but increasingly, SuperDOT has played a big role in portfolio or [basket trading](#).

## Electronic Communications Networks (ECNs)

An [electronic communication network](#) (ECN) is an electronic system that attempts to facilitate (for [market makers](#)) or eliminate (for individual investors) third party orders entered by a client's brokerage to be executed in whole or in part. ECNs network major brokerages and traders so that they can trade between themselves without having to go through a middleman. The advantage of an ECN is that it displays orders in real time, whereas on the [NYSE](#), most investors are limited to only viewing the best bid and ask prices.

There are several variations of ECNs in the market, each of which are slightly different. Here are some of the more popular ones and a summary of their basic characteristics:

### Instinet

[Instinet](#) was the first ever ECN, founded in 1969. It was originally a way for brokerages to display bid and ask prices for practically every stock in North America and abroad and was first used by institutions to transact with each other. Today it also includes a select group of smaller brokerages. Instinet is used to execute a large proportion of orders on [Nasdaq](#) and is primarily entered by market makers. Because of this exclusive access many of the large block orders on Nasdaq stocks are traded through Instinet. More recently, Instinet has tried to level the playing field by lowering access fees and allowing individual investors and small firms to access its orders.

### SelectNet

This electronic system is primarily used for trading between market makers. SelectNet is known as a negotiable system, which means that market makers may or may not execute your order immediately, as on other ECNs, although they are required to execute immediately if the order is at the advertised price and it appears on the market maker's screen. SelectNet is popular among traders

because orders can be preferenced, which allows a trader to isolate and trade with a particular market maker. This is advantageous because traders can target market makers who are active in the stock he/she wants to trade. This way the trader will get immediate attention, which usually results in a faster execution.

There are a few networks that are used to facilitate trading on Nasdaq stocks. One, the [small order execution system](#) (SOES), we will discuss next, but there are also other ECNs offered by Bloomberg, Terra Nova and others.

## Small Order Execution System (SOES)

The lack of liquidity after the [1987 market crash](#) led the [Nasdaq](#) to implement a mandatory system to provide automatic order execution for individual traders with orders less than or equal to 1,000 shares. (For stocks with low volume, it may be less than 200 shares). Market makers must accept [small order execution system](#) (SOES) orders and so this provides excellent liquidity for smaller investors and traders.

There are several restrictions for those who are using SOES, rather than a traditional ECN, to place their orders.

- 1) Trades may not be in excess of 1,000 shares for a particular stock.
- 2) SOES doesn't not allow trades in stocks that are trading at prices greater than \$250 per share.
- 3) Once a trader places an order through SOES, he or she must wait at least five minutes to place a trade through SOES on the same stock.
- 4) Short selling through SOES must comply with [SEC](#) rules and be on a [zero plus tick](#) basis only.
- 5) Institutions and brokers are not allowed to place orders for their own accounts through SOES, but they can for a client's account.
- 6) Market makers must honor their advertised bid/ask prices to SOES orders, provided that they are for the amount that the market maker is looking for.

Initially, when SOES was mandatory, it was met with heavy pessimism from Nasdaq member firms because it forced them to execute all SOES trades that met the market maker's advertised price. There were significant limitations implemented to prevent day traders from exploiting the system and taking advantage of old prices quoted by market makers.

SOES has revamped the trading market for individual investors. It has given small investors and traders the opportunity to compete on a level playing field for access to orders and execution.

## **Level I, II, and III Access**

There are a variety of ways in which [Nasdaq](#) quotes security prices to the public. These levels vary on the amount of information and access they provide to investors.

### **Level I**

This type of quote is most often published on the net as a "real-time quote." Level I consists of real-time bid/ask quotes for securities trading on the Nasdaq stock market. This type of access does not disclose who is bidding or asking for the stock, and it does not show how many shares the market maker is looking for. Real-time quotes show the current quote, but it may be from a different [lot](#) than what you are trading. [Market makers](#) love clients with this type of access because it doesn't show you the order sizes, and therefore your order may be passed around or held until market makers can profit from your order.

### **Level II**

This type of quotation system is a step up from the Level I. Level II access provides real-time access to the quotations of individual market makers registered in every Nasdaq-listed security as well as the offering or bidding lots that they are looking for. This level of access also gives the name of the market maker looking to trade the stock. It allows traders to see what market makers are showing the most interest in a stock and to identify the patterns for each market maker. Level II access is available over the internet - but at a cost. This can range in the hundreds of dollars per month depending on the company. For clients placing a large number of trades, the firm may waive the access fee because they will make up the costs on your commissions.

### **Level III**

This is a trading service consisting of everything in Level II plus the ability to enter quotes, execute orders and send information. This service is restricted to NASD member firms that function as registered market makers. Level III allows you to enter bid/ask quotes as the trades are being executed right in front of you. It is the fastest way to execute a trade and is typically found only on the trading floors of brokerage firms and market makers.

## **Conclusion**

If you are a long-term investor, you can take this tutorial with a grain of salt. At least now you have some insight into how electronic systems give direct access to the market. We hope this has enlightened your outlook and helped you

achieve a greater understanding of how the execution of stock orders is done. For those who are looking to become a trader, this is the tip of the iceberg and we'd advise you to do a lot more research in this area before jumping in.

Let's recap what we have learned:

- The NYSE is an [auction market](#) and uses specialists to trade securities.
- The Nasdaq is an [OTC](#) market where trading is facilitated through market makers.
- Each stock listed on the NYSE is allocated to a [specialist](#) who matches up buyers and sellers, provides liquidity and finds the fair price at the beginning of each trading day.
- A [market maker](#) provides continuous bid and offer prices within a prescribed percentage spread for shares in which they are designated to make a market.
- [SuperDOT](#) system is an electronic system used to place orders for stocks on the NYSE.
- [ECNs](#) network major brokerages and traders, so that they can trade between themselves without involving a middleman.
- [SOES](#) is an automatic order execution for individual traders with orders less than or equal to 1,000 shares.
- There are three levels on the Nasdaq that vary on the amount of information and access they provide to investors.