# BONJOUR

## SO WHAT IS BONJOUR ?

**If you have ever used an Apple product in the last 10 years you have participated in Apple's Bonjour network. Apple, being Apple, wanted to magically connect their devices.**

**"Bonjour, also known as zero-configuration networking, enables automatic discovery of computers, devices, and services on IP networks. Bonjour uses industry standard IP protocols to allow devices to automatically discover each other without the need to enter IP addresses or configure DNS servers."**

### Bonjour

Bonjour makes it easy to discover, publish, and resolve network services with a sophisticated, yet easy-to-use, programming interface that is accessible from Cocoa, Ruby, Python, and other languages.

### Bonjour is really two protocols

mDNS or multicast domain name system and DNS-SD or Domain Name System Service Discovery. Apple uses these two standard protocols to discover and advertise their services, like AppleTV or iTunes libraries, SSH, SAMBA, wireless routers etc.

### What is discovering a service?

Well, in real terms, if you turn on your Apple product you may want to connect to some service over the network – say a file share or an Airplay device like a remote speaker or display. But how do you find these devices if you don't know where they are on the network?
Simple, you shout over the network and ask for them! OK, that is oversimplifying the issue, but it's not far off from what really happens.

When your Apple product gets on a network it starts up the multicast DNS process (mdnsresponder) and sends a multicast join request to the address 224.0.0.251.

# SO WHAT IS BONJOUR CONTINUED

## What is multicast?

Think of it as shouting with style. Your device then sends out a register or a hello announcing its intention to have a name on this network. It uses the name given by you, like John's iPhone. Because all of these devices need a domain and this is all local, it uses the domain .local as in "John's iPhone.local", escaping all the illegal characters so they display all pretty to the user. The other devices do this greeting as well.

Each device participating in the mDNS group maintains a DNS server and a DNS cache. It serves out only its own services and computer name to IP mapping and caches the results of the queries it makes. Bonjour can also use a real DNS server to register itself and the services it has to offer but your DNS system must be set up for dynamic DNS and service discovery. It does this by attempting to register itself with the domain presented to it by the DHCP server.

OK, so now you are on your network and have an IP address but now you want to print or share something local. When you open your add printer wizard your device sends a new request to its fellow mDNS neighbours. It says, "Hey are there any printers on this network?" If there are printers shared on the network they respond and send their names to your computer. Once you attach to the printer, your computer sends print commands like it would had you known the IP address. However, since you discovered it by name, you save the name and not the IP address. In technical details, this means that your device made a DNS service discovery request.

Apple has some good documents on Bonjour [here](#) but here is a image that shows this happening: All of this happens very nicely on your home network where there is only one network with one subnet.