

QSocket: Interfaces

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38

IMPORTANT If you haven't yet read [Calling BSD Sockets from Swift](#), do that first.

Sometimes you need to get information about the local network interfaces on the device. All Apple platforms support the `getifaddrs` routine, which returns the list of network interfaces and their addresses. However, it works in terms of `struct sockaddr` values, which are hard to use from Swift. Here's an example of how you might use the `QSocketAddr` primitives to return strings instead:

```
extension QSocketAddr {

    /// Returns a list of interfaces that have an associated IPv4 or IPv6
    /// address.
    ///
    /// Equivalent to the `getifaddrs` BSD Sockets call.
    ///
    /// The list is in the same order as that returned by `getifaddrs`.
    /// ```

    public static func interfaceNamesAndAddresses() -> [(name: String, address: String)] {
        var addrList: UnsafeMutablePointer<ifaddrs>? = nil
        let err = getifaddrs(&addrList)
        // In theory we could check `errno` here but, honestly, what are gonna
        // do with that info?
        guard
            err >= 0,
            let first = addrList
        else { return [] }
        defer { freeifaddrs(addrList) }
        return sequence(first: first, next: { $0.pointee.ifa_next })
            .compactMap { addr in
                guard
                    let name = addr.pointee.ifa_name,
                    let sa = addr.pointee.ifa_addr,
                    [AF_INET, AF_INET6].contains(CInt(sa.pointee.sa_family)),
                    let (address, _) = try? QSocketAddr.fromSocketAddr(sa: sa, saLen: socklen_t(sa.pointee.sa_len))
                else { return nil }
                return (String(cString: name), address)
            }
    }
}
```

And once you have this primitive, you can add wrappers to get just the names, just the addresses, or the addresses grouped by the interface:

```
extension QSocketAddr {

    public static func interfaceNames() -> [String] {
        interfaceNamesAndAddresses()
            .map { $0.name }
    }

    public static func interfaceAddresses() -> [String] {
        interfaceNamesAndAddresses()
            .map { $0.address }
    }

    public static func addressesByInterface() -> [String: [String]] {
        interfaceNamesAndAddresses()
            .reduce(into: [:]) { soFar, i in
                soFar[i.name, default: []].append(i.address)
            }
    }
}
```

Note If you're targeting macOS you have a lot more options in this space. Most notably, [System Configuration framework](#) has a dynamic store API that returns detailed information about the Mac's network state.

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