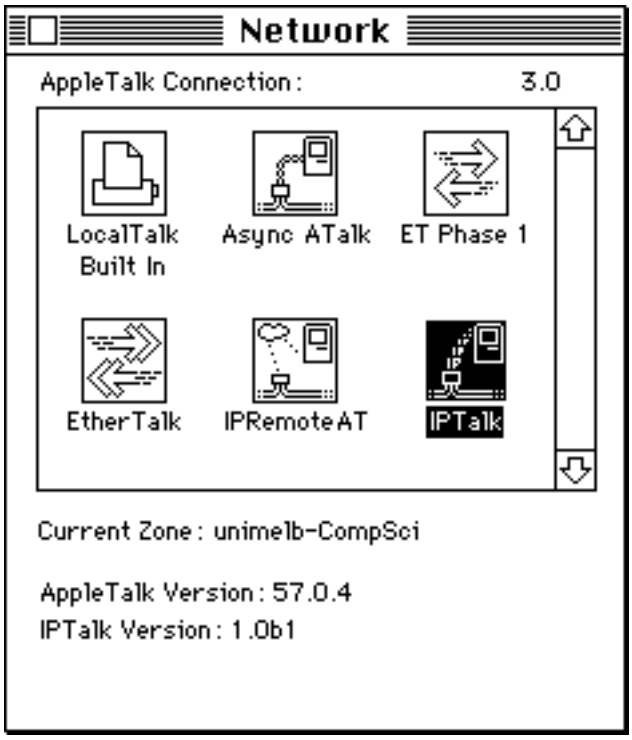
AppleTalk over IP adev

The *IPTalk* adev allows a Macintosh with MacTCP 2.0.2 (or later), an external IP connection (via Ethernet, SL/IP or PPP) and a compatible gateway to access AppleTalk services using the AppleTalk encapsulation system known as **IPTalk**. IPTalk is the default delivery mechanism for the Columbia AppleTalk Package (CAP). Compatible gateways are the Shiva FastPath, Cayman GatorBox, Webster MultiPort Gateway or Cisco Router.

The *IPTalk* adev should normally be used to provide a semi-permanent AppleTalk connection to Macintoshes on IP-only subnets, that is, where an EtherTalk connection is not available. It is not designed for casual connections; for this purpose you should use the *IPRemoteAT* adev and UNIX™ server from the *ARNS* package (see below).

IPTalk is a client of the *Network* Control Panel. If your Macintosh does not have it already, ***Network*** must be installed from the 'Network Software Installer' disk. The latest version of the disk is available via anonymous FTP from `ftp.apple.com` in the directory `dts/mac/sys.soft/netcomm` as the file `net-soft-install-1-4-2.hqx`. You will also need a version of ***DiskCopy*** to create an 800k disk from this image file. The use of system software version 6.0.5 or later is highly recommended, but System 7 is preferred because of the amount of system heap memory required.

The *Network* Control Panel lists the available alternate AppleTalk connections. In this example, the *IPTalk* adev icon is highlighted indicating that it is the currently selected connection:



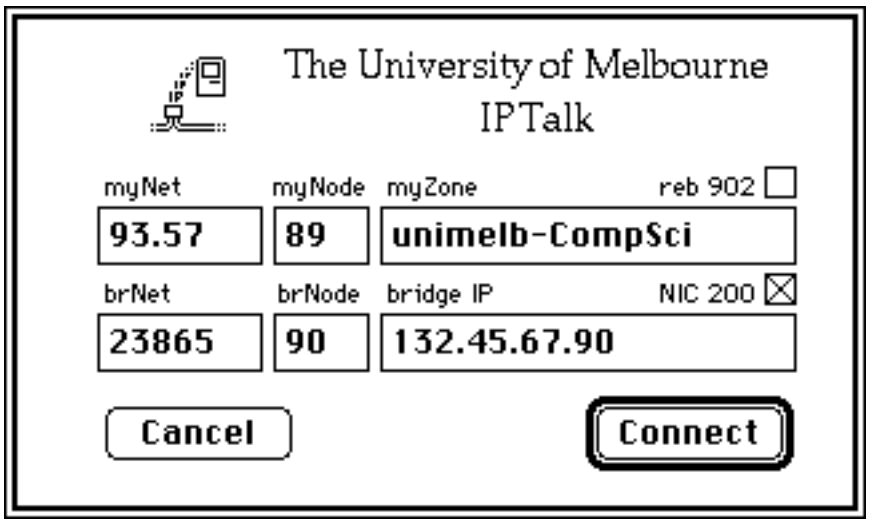
To change the network connection, click on the icon that represents the service to be used. An alert box will appear requesting confirmation of the change ...

> Changing your AppleTalk connection will interrupt current network services and they will have to be reestablished.
>
> Are you sure you want to change the Appletalk connection ?

Since there is no **Obviously** button, click on **OK**.

Configuration

Selecting the *IPTalk* adev icon in the *Network* Control Panel allows the link details to be configured. Note: after the initial configuration, selecting the icon does not display the dialog box unless the SHIFT key is simultaneously depressed.



The layout of the dialog box follows the format of the `/etc/atalk.local` file used to configure CAP with IPTalk. The following steps indicate the method used to determine the correct configuration information.

1. Find out the IP address of the Macintosh, say `132.45.67.89`. This is a 32-bit number represented as four 8-bit quantities each written as decimal numbers. It could also be represented as a hexadecimal number, `0x842d4359`. The `myNode` field is always the bottom eight bits of the IP address, written as a decimal number, in this case `89`.

2. Find out the IP address of the IPTalk-compatible-gateway (FastPath, GatorBox or MultiPort Gateway), say `132.45.67.90`. The `brNode` number is always the bottom eight bits of the IP address, in this case `90`.

3. Check that the top 24-bits of the two IP addresses are identical, in this case `132.45.67`. For simplicity I'll call this the IP subnet number. If they do not match you have to investigate the *atalkad* administration dæmon package (see below). Each IPTalk network number is associated with exactly one IP subnet number, thus there must be a **unique** IPTalk network number for each cable where the 24-bit IP subnets differ. The *atalkad* dæmon is the central registry for IPTalk network number/IP subnet mappings.

4. Find out the IPTalk network number being used by the gateway. This is a 16-bit number represented as two 8-bit quantities separated by periods or as a single decimal number. For example `93.57` is `93*256+57`, or `23865`. If a separate network number is required for `myNet`, find, or create a new `H` or `N` entry, in the *atalkad* atalkatab file, ie:

```
93.58    H    132.45.68.91 unimelb-CompSci # net for node 91, subnet
132.45.68
```

5. (optional) Check all the other network numbers in use on your network, make sure that the IPTalk network numbers are not being used for LocalTalk, EtherTalk (Phase 1 or Phase 2) or on any other IPTalk network where the IP subnet numbers differ.

6. Find out the zone name associated with the `myNet` network number. This may be the same as other zone names on the network but must be identical to the zone name programmed into the IPTalk gateway or used in atalkatab. eg: `unimelb-CompSci`

7. Enter the information into the appropriate fields of the dialog box. The `myNode` value should be provided for you already (since the IP address of the Mac is already known).

8. Find out what UDP ports are being used on the IP network. These are also called the "NIC Assigned" ports. These ports map to AppleTalk socket numbers and are used to deliver packets to the correct socket listener. By default, *IPTalk* will use the ports starting at 768 so that the RTMP socket number 1 maps to UDP port 769 and the ECHO socket 4 maps to 772. The official port range starts at 200, so RTMP becomes 201 and ECHO becomes 204. To ensure that *IPTalk* uses the official ports, check the box marked `NIC 200`.

9. The box marked `reb 902` indicates that *IPTalk* should also listen on the IPTalk UDP rebroadcast port number 902. This port is normally monitored by a UNIX™ host running the *atalkrd* dæmon which then resends broadcast packets to nominated hosts via the normal UDP port range listed above. You need to check this box only if atalkatab contains a `H` entry pointing **at** the *IPTalk* Macintosh and *atalkrd* is **not** used.

MacTCP

IPTalk requires MacTCP version 2.0.2 or later (the support in version 1.1 is broken). For reasons that should hopefully be obvious, MacTCP should be configured to send IP packets over Ethernet, SL/IP or PPP rather than via LocalTalk or EtherTalk.

See Also

The *ARNS* and *atalkad* packages and the *IPTalk* adev are available via anonymous FTP from `munnari.OZ.AU` as the files

```
mac/arns.tar.Z
mac/atalkad.1.25.shar.Z
mac/iptalkadev.1.0.sit.hqx.Z
```

Notice

Tech Note

The *IPTalk* adev believes that it is communicating with a pseudo AppleTalk router at node number 254 on the 'myNet' network. If this node number conflicts with the only IPTalk compatible gateway that is available to you, use ResEdit to change the pseudo router node number to another value. The resource type 'FAKE' with resource ID 0 contains a word, the lower byte of which is used as the pseudo router node number.