

# Technical Note NW565

## Name Binding Protocol Q&As

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This Technical Note contains a collection of archived Q&As relating to a specific topic--questions sent the Developer Support Center (DSC) along with answers from the DSC engineers. Current Q&A's can be found on the [Macintosh Technical Q&A's web site](#).

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## Macintosh NBPLookup badUnitErr conditions

Date Written: 11/14/90

Last reviewed: 2/8/91

Why am I getting a `badUnitErr` as a result code from `NBPLookup`? This error is not listed as a result code for `NBPLookup`, nor anywhere in the AppleTalk Manager.

You're probably getting the `badUnitErr` result because you don't have the AppleTalk drivers open. Since AppleTalk calls are made to a device driver (the AppleTalk driver), you can get back general operating system errors from the driver.

See the Macintosh Technical Note "Opening AppleTalk" for a description of how to open the AppleTalk drivers.

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## AppleTalk 56 NBP reply packet entity field checks

Date Written: 6/14/91

Last reviewed: 6/14/93

As stated in *Inside AppleTalk*, each entity field in an NBP reply packet can be a maximum of 32 characters. In previous versions of AppleTalk, no range checking was done on entity field lengths, and often names that were too long were used, which eventually caused a crash somewhere else in the protocol stack.

Likewise, a null character in the object field of an entity has never been OK; it just happened to work because no range checking was done. (The only place that a null can legally be used in an NBP tuple is in the zone name field of an NBP `LkUp`, `FwdReq`, or `BrRq` packet; see page 7-17 of *Inside Appletalk* for more information.)

Now, under Appletalk 56, a range check is done on each entity field to ensure that the length is legal ( $1 \leq \text{length} \leq 32$ ). When it finds a packet that contains a "corrupt" entity name, that packet is discarded.

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## Name Binding Protocol (NBP) interval and count fields

Date Written: 9/13/91

Last reviewed: 10/8/91

Is there a limit on the values set in the Name Binding Protocol (NBP) interval and count fields when used with `PLookupName` and `PConfirmName` calls? How do the interval and count work? If a device is not on the network and I send a `PLookupName` with interval = 20 and count = 20, will I wait 400 seconds before `PLookupName` returns?

Since the interval and count parameters for NBP calls are both 1-byte, the values used are limited to the range of 0-255 (\$00-\$FF). Here's what the values do:

- interval = retransmit interval in 8-tick units. This value is used to set up a VBL task. A value of 0 should not be used because that would mean the VBL task would never be executed and would be removed from the VBL queue.
- count = total number of transmit attempts. Each time the interval timer expires, this value is decremented by 1. When it reaches 0, the NBP call completes. So if a value of 0 is used, the packet will be retransmitted 255 times (or transmitted 256 times).

Three things can happen to make the `LookupName`, `RegisterName`, or `ConfirmName` calls complete:

- `PKillNBP` can be called to abort one of the calls (see *Inside Macintosh* Volume V, page 519).
- `maxToGet` matches are returned or the return buffer is filled. Here's how this works: Each time an NBP lookup reply (`LkUp-Reply`) packet is received, an attempt is made to add all the NBP tuples found in that `LkUp-Reply` packet to the return buffer. If all the tuples cannot be added to the buffer because there isn't enough room, the call completes with as many tuples as could fit and the `numGotten` field will contain the number of matches in the buffer. If all the tuples from the `LkUp-Reply` packet are added to the buffer, `numGotten` (the number of matches in the buffer) is compared to the value passed in the `maxToGet` field. If `numGotten` is greater than or equal to `maxToGet`, the call completes and the `numGotten` field will contain the number of matches in the buffer. Since the buffer can fill before `maxToGet` matches are received and since `LkUp-Reply` packets can return multiple tuples, you may get more or fewer matches than you asked for with `maxToGet`.
- The count is decremented to 0. You can use this equation to determine how long the call would take to complete this way:

```
IF count = 0 THEN count := 256;
```

The `RegisterName` and `ConfirmName` calls always complete after they receive the first `LkUp-Reply` packet to their request, so you could look at them as always having a `maxToGet` of 1 (`maxToGet` is not one of the parameters for those two calls).

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## AppleTalk PLookupName interval and retry values

Date Written: 1/6/92

Last reviewed: 1/27/92

What are recommended values for retry interval and retry count when using the AppleTalk NBP call `PLookupName` on a complicated internet?

You might want to start with the NBP retry interval and retry count values Apple uses for its Chooser PRER and RDEV device resource files. The Chooser grabs these values from the PRER's or RDEV's GNRL resource -4096:

| Device                | Interval | Count |
|-----------------------|----------|-------|
| LaserWriter           | \$0B     | \$05  |
| AppleTalk ImageWriter | \$07     | \$02  |
| AppleShare            | \$07     | \$05  |

Apple's engineering teams found these values to work well in most situations.

The count value should be based on how likely it is for the device to miss NBP lookup requests. For example, the AppleTalk ImageWriter has a dedicated processor on the LocalTalk option card just to handle AppleTalk, so its count value is low; most Macintosh models and LaserWriter printers depend on their 680x0 processor to handle AppleTalk along with everything else in the system (the Macintosh IIfx and Macintosh Quadra models are exceptions to this), so their count value is higher.

The interval value should be based on the speed of the network and how many devices of this type you expect there to be on the network. On a network with very slow connections (for example, one using a modem bridge), or in cases where there are so many devices of a particular type that lots of collisions occur during lookups, the interval value should be increased.

Apple puts these values in a resource because not all networks and devices are alike. You should do the same (put your interval and count in a resource so that it can be configured).

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## Don't access the MPW NBP EntityName field directly

Date Written: 1/1/91

Last reviewed: 6/14/93

When I fill in the fields of MPW's Name Binding Protocol (NBP) `EntityName` structure, AppleTalk doesn't recognize the entity, even though I know it's out there. What's going on?

The real definition of `EntityName` is 3 PACKED strings of any length (32 is an example). No offsets for Asm are specified since each string address must be calculated by adding the length byte to the last string pointer. In Pascal, `String(32)` will be 34 bytes long since fields never start on an odd byte unless they are only one byte long, so this will generate correct-looking interfaces for Pascal and C, but the interfaces will not be the same. This is OK since they are not used.

The point is that you should never try to access the fields of the `EntityName` field directly. The only reason the type is defined at all is so that you can allocate `EntityName` variables that will hold the largest possible `EntityName`. To fill in an `EntityName` record, you call the `NBPSetEntity` routine.

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