



# Java: your free ticket to IPv6

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# Introduction

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Sun Microsystems

`java.net` & `sun.net` packages

- APIs
- Protocols Implementations

# How does Java support IPv6?

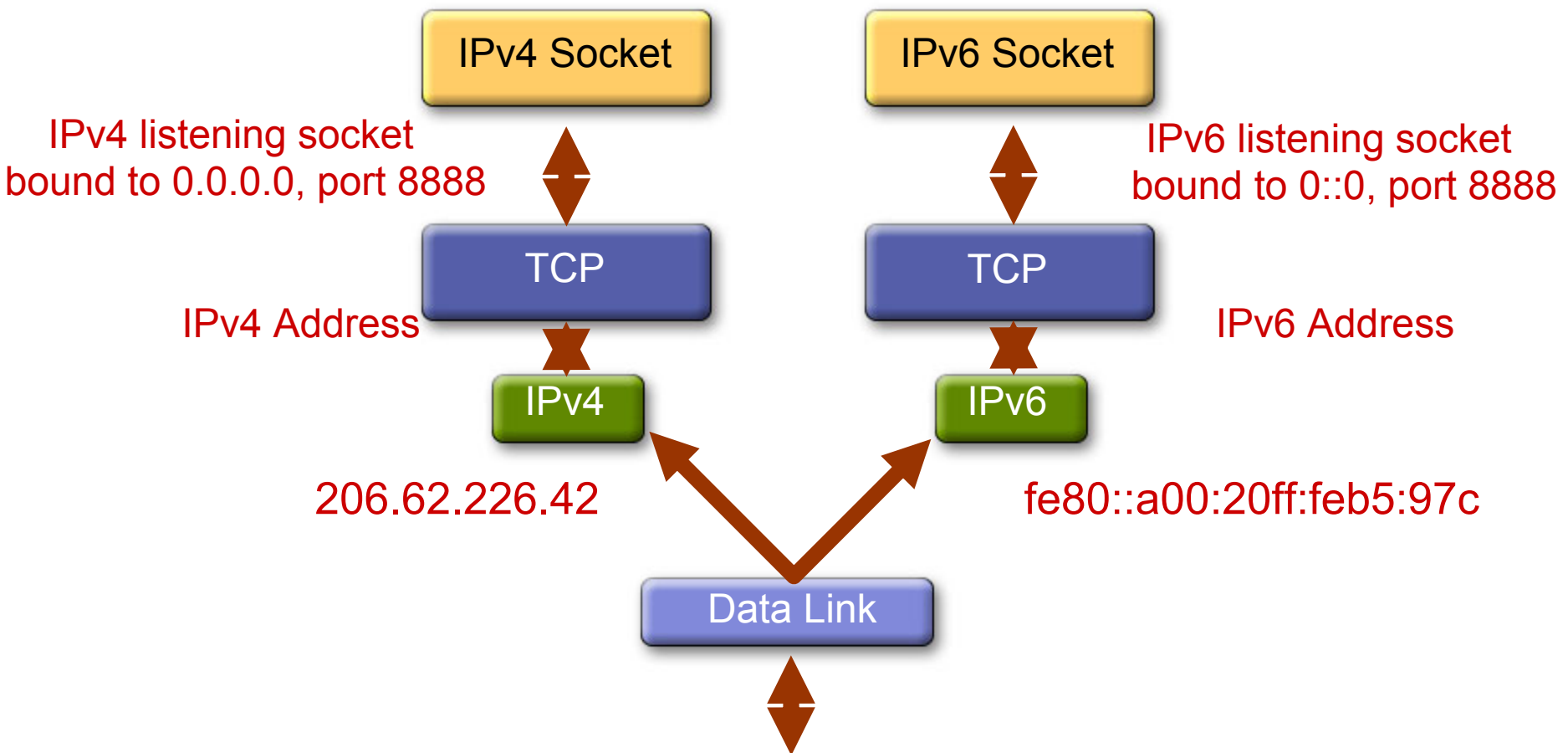
It just does!

# Q&A

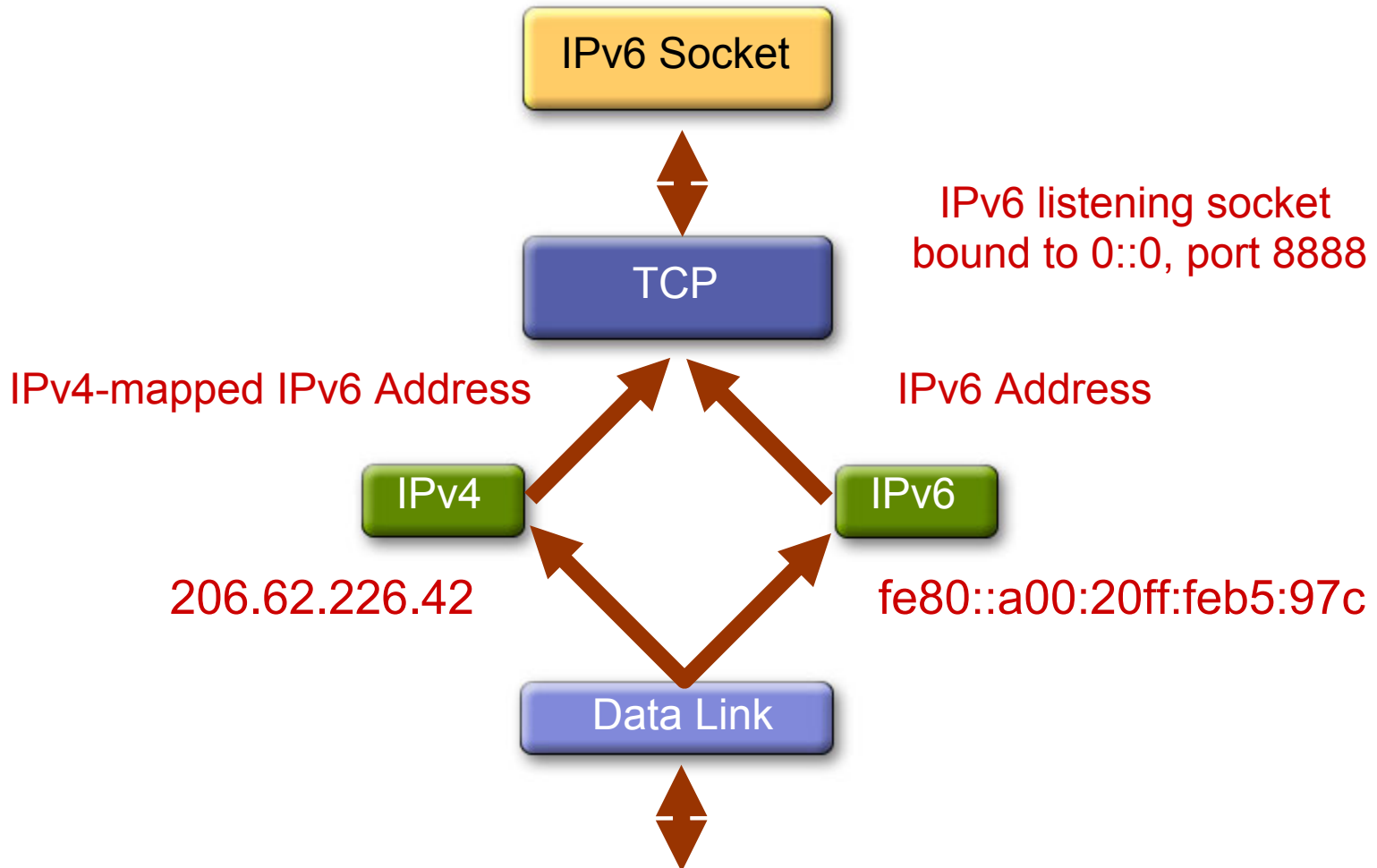
# Details

- IPv6 support in java.net:
  - Since 1.4.0 for Solaris 8+ and Linux
  - In 1.5.0 for Windows XP SP1 and Windows 2003
- Transparent
- Automatic

# Separate Stacks



# Dual Stack



# Separate stacks: C code

```
SOCKET ServSock[FD_SETSIZE];
ADDRINFO AI0, AI1;
ServSock[0] = socket(AF_INET6, SOCK_STREAM, PF_INET6);
ServSock[1] = socket(AF_INET, SOCK_STREAM, PF_INET);
...
bind(ServSock[0], AI0->ai_addr, AI0->ai_addrlen);
bind(ServSock[1], AI1->ai_addr, AI1->ai_addrlen);
...
select(2, &SockSet, 0, 0, 0);
if (FD_ISSET(ServSocket[0], &SockSet)) {
    // IPv6 connection
    csock = accept(ServSocket[0], (LPSOCKADDR)&From,
                  FromLen);
    ...
}
if (FD_ISSET(ServSocket[1], &SockSet)) {
    // IPv4 connection
    csock = accept(ServSocket[1], (LPSOCKADDR)&From,
                  FromLen);
    ...
}
```

# Dual Stack: C Code

```
int ServSock, csock;
struct sockaddr addr, from;
...
ServSock = socket(AF_INET6, SOCK_STREAM,
                  PF_INET6);
bind(ServSock, &addr, sizeof(addr));
do {
    csock = accept(ServSocket, &from,
                  sizeof(from));
    doClientStuff(csock);
} while (!finished);
```

# Java code (anywhere)

```
ServerSocket server =  
    new ServerSocket(port);  
Socket s;  
while (true) {  
    s = server.accept();  
    doClientStuff(s);  
}
```

# Java code (IPv4)

```
ServerSocket server =  
    new ServerSocket(port);  
Socket s;  
while (true) {  
    s = server.accept();  
    doClientStuff(s);  
}
```

# Differences?

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# More details

- InetAddress class (almost) abstract.
  - Inet4Address subclass
  - Inet6Address subclass
- A few IPv6 specific methods
- But most developers won't, and shouldn't, care

# Summary

- IPv6 support in Java
  - Automatic
  - Transparent
- No source change
- No bytecode change
- Every Java application is already IPv6 enabled

# Q&A



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