

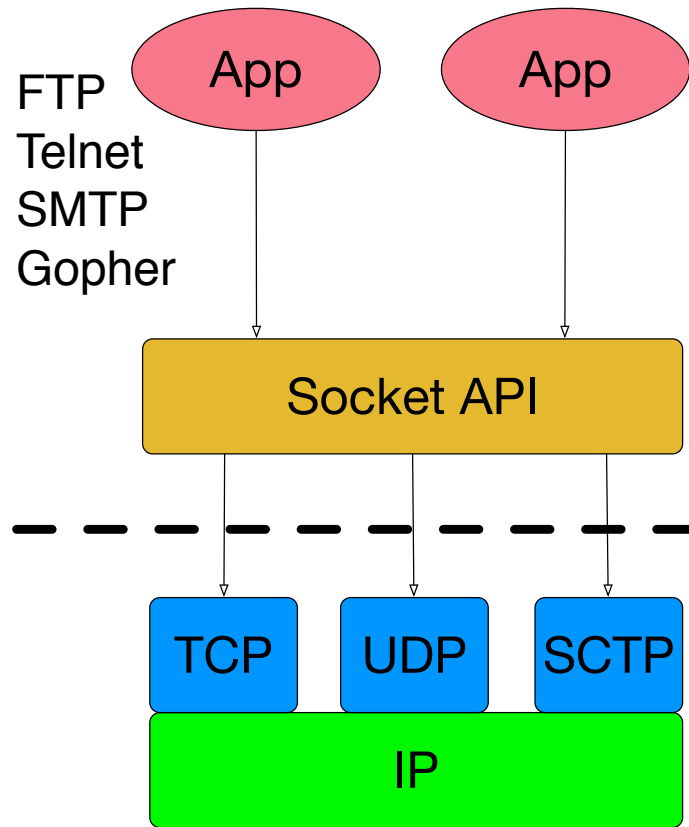
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Evolving Internet Transport

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API Built for the 1980s



```
hints.ai_family = AF_UNSPEC;  
hints.ai_socktype = SOCK_STREAM;  
getaddrinfo("vh.net", "80", &hints, &servinfo)
```

```
//Loop through results, connect to the first we can  
for(p = servinfo; p != NULL; p = p->ai_next) {  
    sockfd = socket(p->ai_family, p->ai_socktype,  
        p->ai_protocol);
```

```
    if(sockfd == -1)
```

```
        continue;
```

```
    if (connect(sockfd, p->ai_addr, p->ai_addrlen)
```

```
        == -1) {
```

```
        close(sockfd);
```

```
        continue;
```

```
    }
```

```
    break;
```

```
}
```

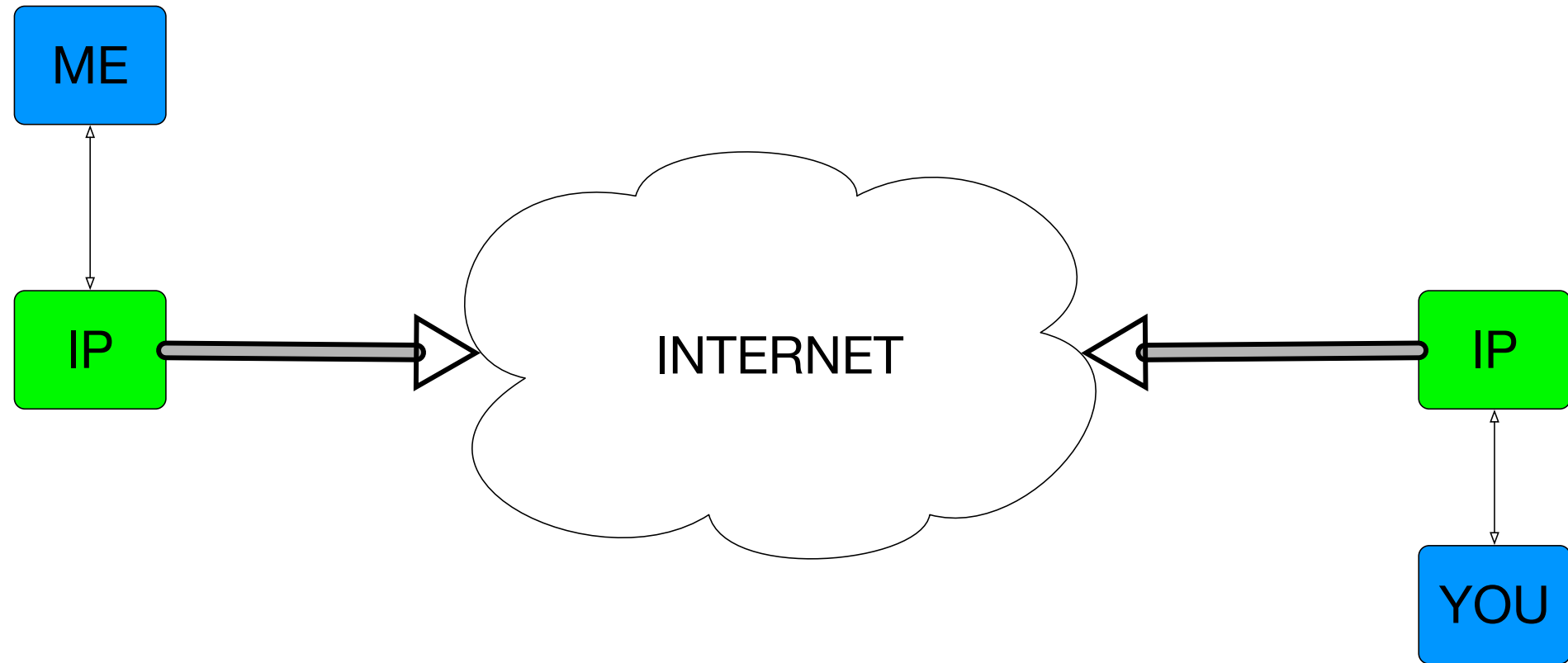
```
while(true) {
```

```
    send(sockfd, buf, SIZE, 0);
```

```
    recv(sockfd, buf, SIZE, 0);
```

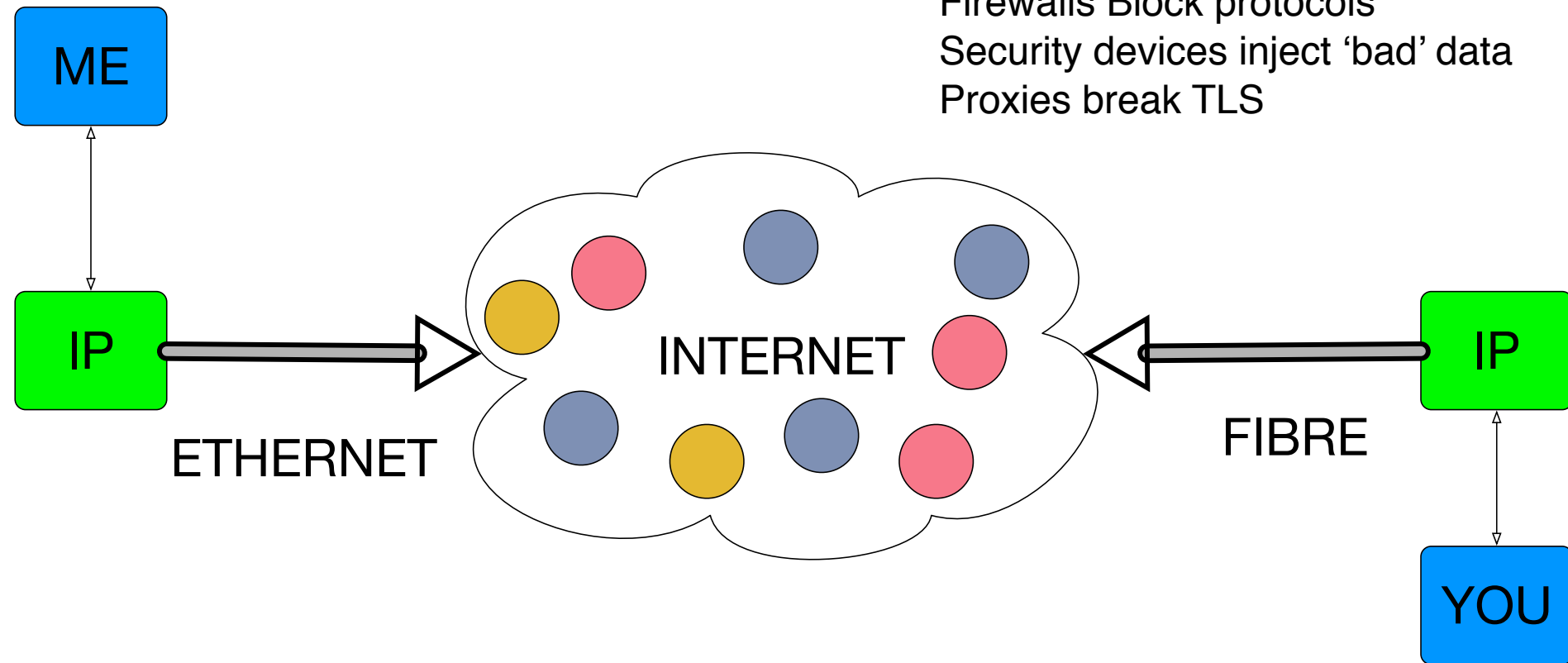
```
}
```

The Naive View of the Network



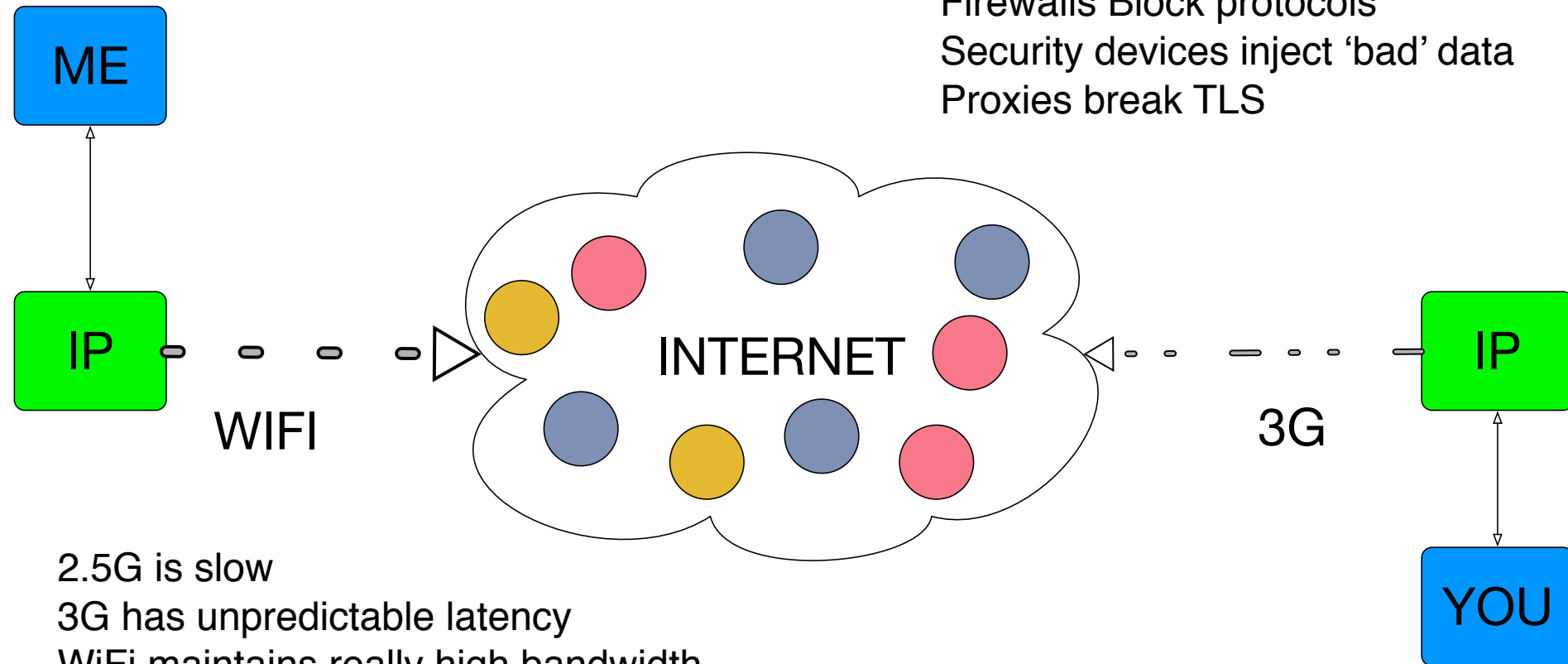
The Reality of the Network

Middleboxes drop non http traffic
Firewalls Block protocols
Security devices inject 'bad' data
Proxies break TLS



Networks vary a ton

Middleboxes drop non http traffic
Firewalls Block protocols
Security devices inject 'bad' data
Proxies break TLS

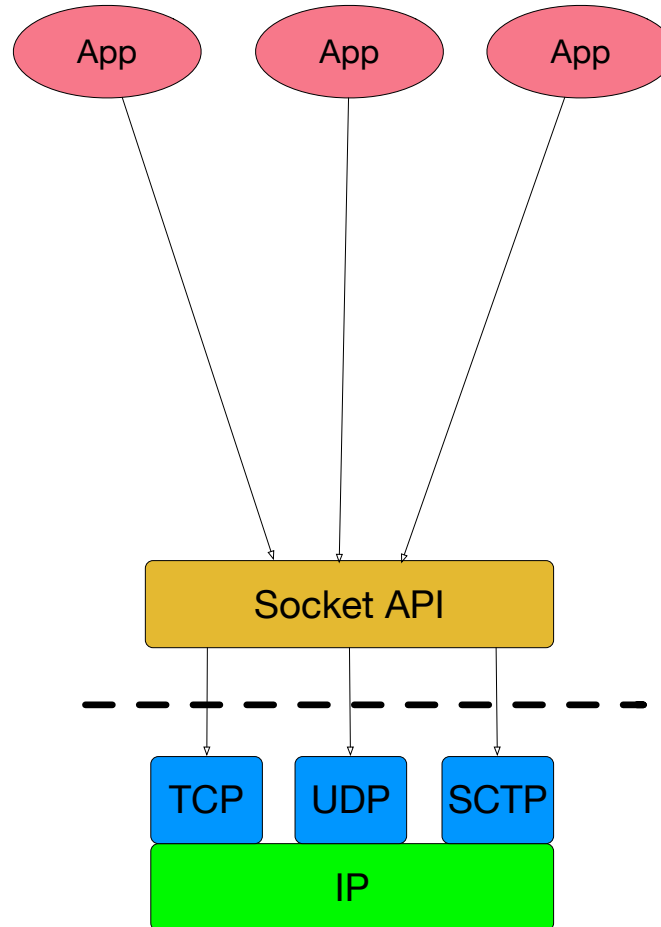


2.5G is slow
3G has unpredictable latency
WiFi maintains really high bandwidth
4G has high, but variability in bandwidth

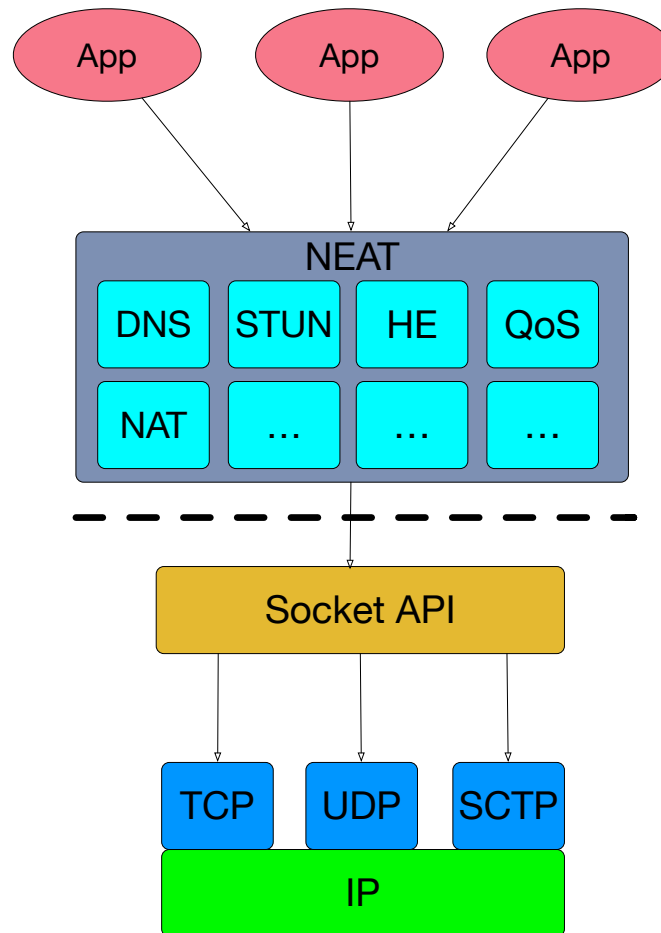
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Application Requirements have changed



The Network Should 'Just Work'



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<https://neat-project.org>

<https://github.com/neat-project/neat>

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