# **IP-Over-USB Gateway**

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# **IP-Over-USB Gateway**

#### **Presentation Outline**

- Motivation
- Specification
- Plan & Methodology
- Results
- Conclusion
- Recommendations

### Motivation

- Network small devices where RJ-45 (Ethernet) jack is too big.
- Most gadgets will already have USB capabilities for data transfer.
- Prove that USB can be used to implement complex network configurations.

## Specification

#### Gateway

- NAT
- DHCP
- Autoconfiguration at boot
- Support multiple clients

### simultaneously

#### Client

- Plug and play device recognition
- Minimal user intervention for configuration

## **Plans & Methodology**

- 1. Network traffic over USB
- 2. Gateway software configuration
- 3. Automation









### Results

#### Functionality

- Gateway is fully functional.
- Auto-configuration works correctly.
- Sacrificed features:
  - Gadget as a client.
  - MAC address collision.

### Results

#### Performance

- USB 2.0 transfer speeds better than 100BaseT Ethernet.
- USB 2.0 latency similar to Ethernet on average.
- USB 1.1 performance was very poor.
- Results make sense based on rated speed of protocols.

### Conclusion

- Project was a success.
- USB is a feasible networking medium.
- All necessary drivers ship with the Linux kernel, allowing for easy setup on Linux machines.
- Drivers are available for other OS's.
- Based on a well documented standard.

### Recommendations

- More tests needed to determine true performance of IP-over-USB.
- Create installation scripts to configure desktop as a gateway--total automation.
- Should test a USB gadget.
- Can be scaled down to an embedded device.