IPv6 For Home Networks

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“The first duty of a revolutionary is to get away with it.”

—Abbie Hoffman

AirPort Express

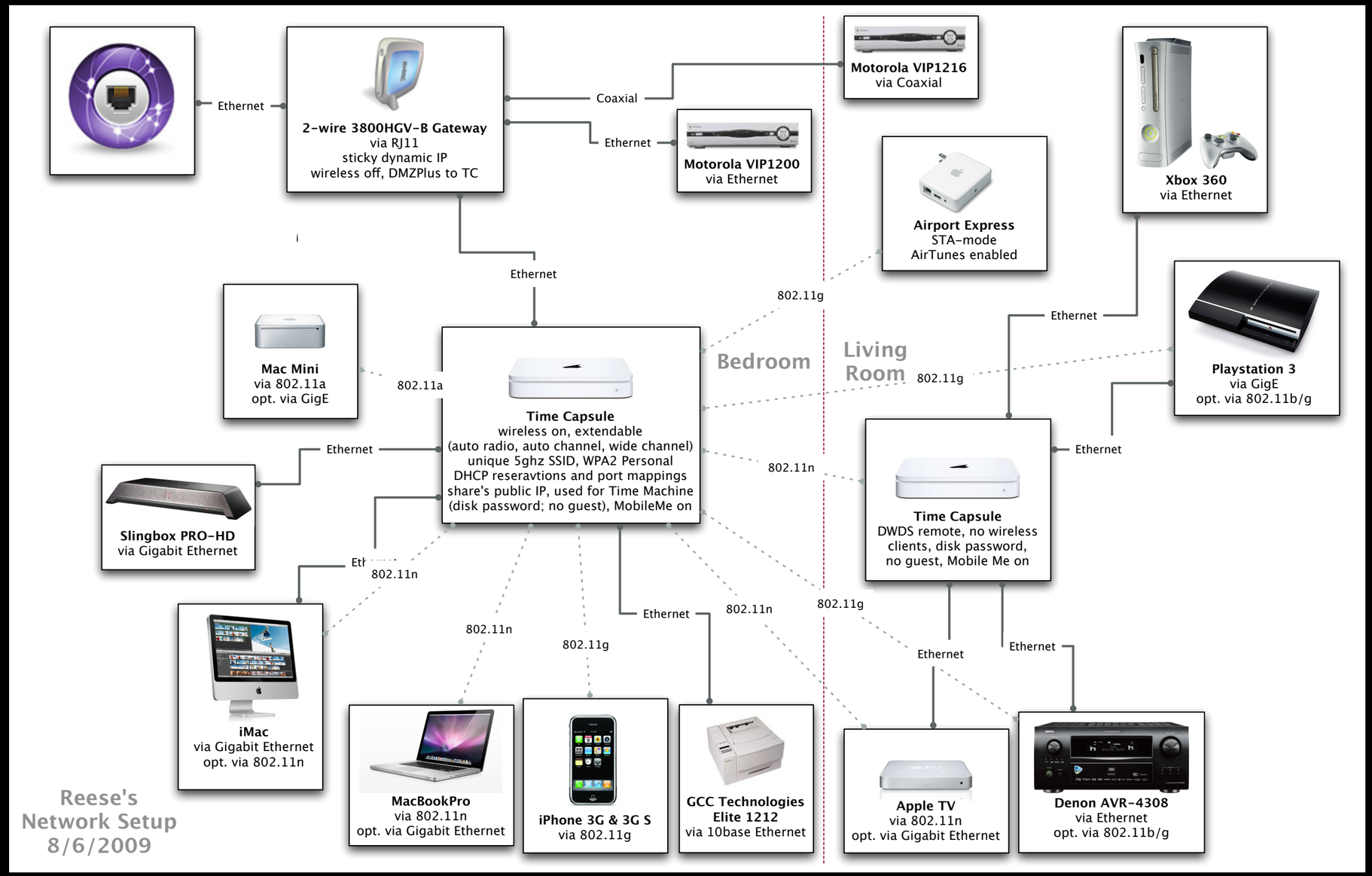
Multi-purpose appliance

- 802.11 access point, USB printer server, iTunes speaker driver.
- Miniature and low-cost.
- Dual-stack IPv4/IPv6 link-local.

Back To My Mac

- Easy virtual private networking.
- Tunnels over IPv4 with NAT-traversal.
- Uses IPv6 unique-local addressing.
- Uses wide-area Bonjour™ for service discovery.

The establishment

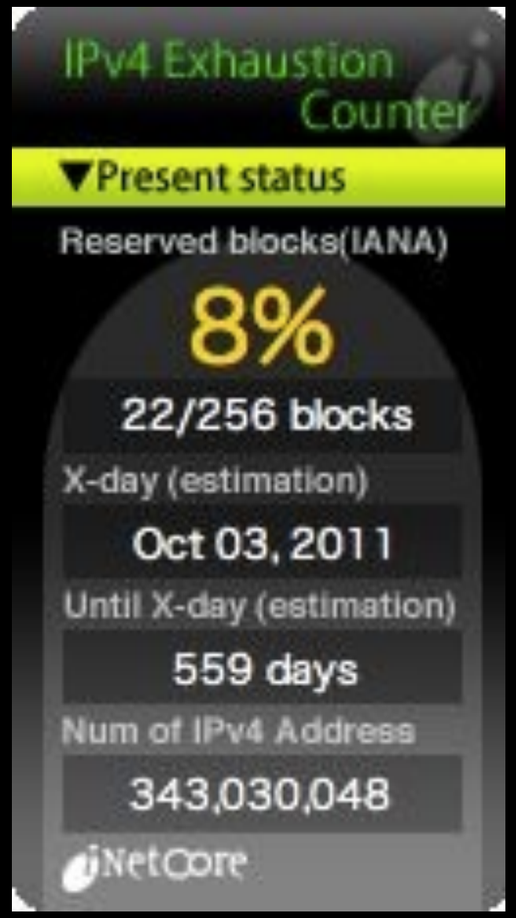


Example home network

Port Forwarding

A service to help you configure your NAT gateway with application-specific port forwarding.

- The list of routers alone goes on for sixteen pages.
- After that you get step-by-step instructions for configuring your router for your application.
- This is the opposite of simple.



Like sands through the hourglass...

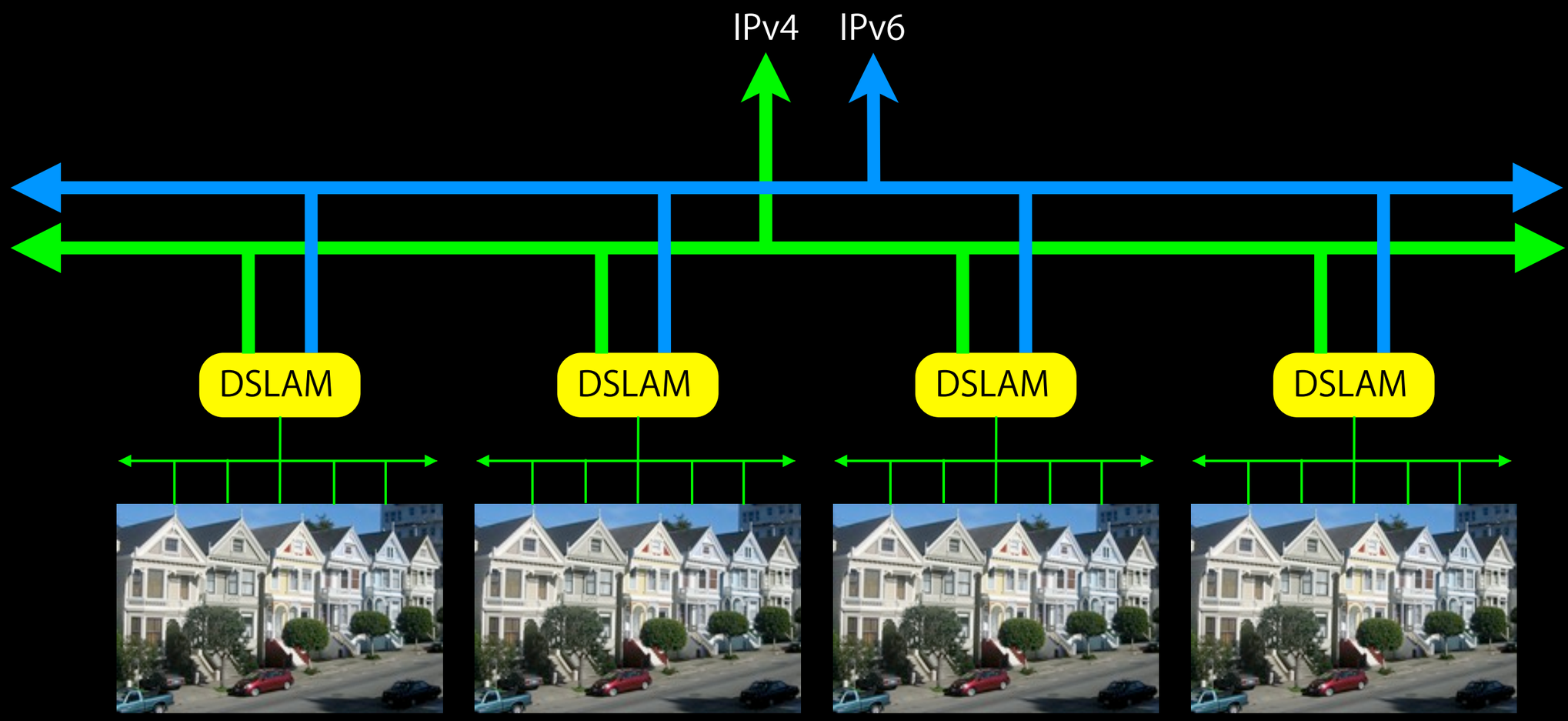
Image credit: Takashi Arano

The establishment (in decline)

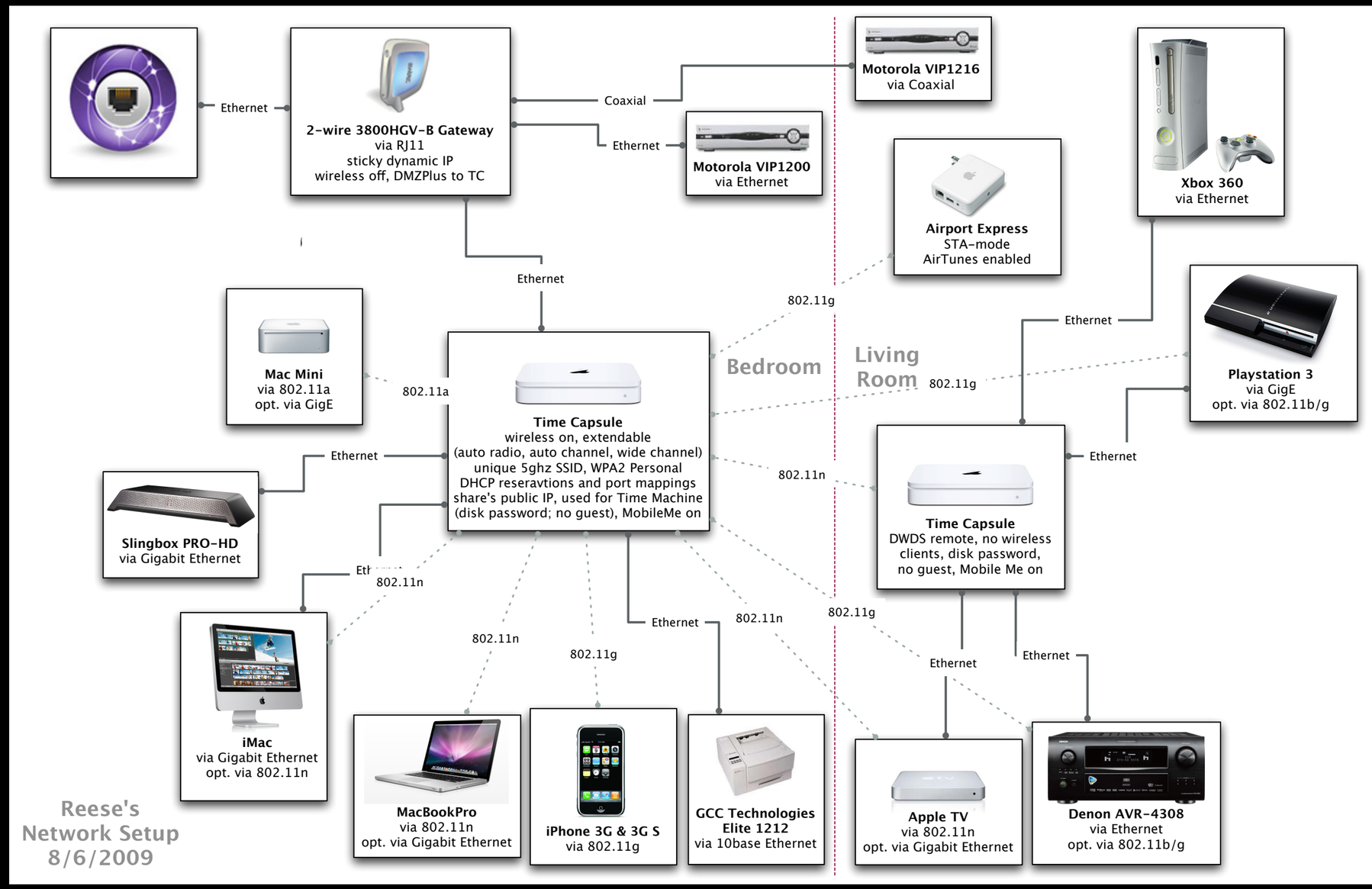
The writing is on the wall...

"Revolutions are not made: they come. A revolution is as **natural** a growth as an oak. It comes out of the past. Its **foundations** are laid far back."

—Wendell Phillips (orator, abolitionist and advocate for First Americans)



When the revolution comes...



Example IPv6 home network

“Surely, you must be joking...”

6RD

http://tools.ietf.org/html/draft-ietf-softwire-ipv6-6rd

Tunnel IPv6 over your existing IPv4 networks.

- Like 6to4 tunneling [RFC 3056], but you control both the forward and reverse paths for your subscribers.
- Requires incremental upgrade to home gateways and a minimal investment in IPv6 peering.
- Proven commercial viability. Free, an ISP in France, has been providing IPv6 to all their customers for over a year with it.

DS-Lite

http://tools.ietf.org/html/draft-ietf-softwire-dual-stack-lite

Tunneling IPv4 through large-scale NAT over IPv6.

- An exit strategy for providing IPv4 to home networks while you switch to an IPv6-only core.
- Requires incremental upgrades to home gateways, assuming they already support full dual-stack.
- Simple DHCP option to configure the tunnel.
- Open-source reference implementation of the DS-Lite NAT is available from the Internet Software Consortium.
- Open-source reference implementation of the home gateway implementation is also available for Open-WRT.

Or not...

"How may I direct your call?"

- Native dual-stack IPv4/IPv6.
- Provider managed tunnels.
- 3rd-party IPv6 over IPv4 service.

"The time to stop a revolution is at the beginning, not the end."

—Adlai E. Stevenson

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