

0BASE-T Possibilities

Geoff Thompson
affiliated with Nortel
Presented to Energy Efficient Ethernet
Study Group
July 2007

What is 0BASE-T

- A new term that has been bandied about before
- The zero means 0 Megabits/second
- The BASE-T means 802.3 RJ-45 LAN
- Possible meanings:
 - Auto-Negotiation (*logical but not used*)
 - PoE
 - Wake on LAN
 - (New) EEE Power control ←What I mean

- Full POWER OFF is the ultimate in power savings.
- Full POWER OFF (generally) makes it difficult for a device to respond to a POWER ON command from the network.

2 major possibilities for responding to a POWER ON command from the network. (1)

- Wake on LAN
 - Long history
 - Proprietary
 - Probably only applicable to 10BASE-T (or coax)
 - Requires keeping some portion of the receiver powered on.
 - Requires minimal logic to be powered on (simple state machine)
 - Requires link beat (or ?) to keep link active

2 major possibilities for responding to a POWER ON command from the network. (2)

- PoE Turn On
 - Requires PoE
 - DTE can be fully off but the PoE switch has to be up
 - Requires talking to the switch to power up the DTE

More about Wake on LAN.

- Frame based
 - A couple proprietary methods
 - Uses a well known packet that can be recognized in the MAC chip
 - Requires DTE to system signal to cause wake-up
 - Does not require participation by the bridge (switch)
- Issues.
 - IP issues (patents, trade names)
 - How many vendors support?
 - Do they all do it the same way, same packet?
 - Where is it documented?

More about Wake on PoE.

- PoE (IEEE Std 802.3af) already has per port power management of the PSE (i.e. supply end)
- PoE is currently undergoing enhancement (P802.3at)
- No changes would actually be required for us to use this capability.
- A management “application” would be needed however.

Turning DTE off (both mechanisms)

- Turn off is presumably accomplished by an in-band packet based command.
- Any network TURN OFF request has serious network and operational security concerns.
- This portion should be done by 802.1
- Would be part of the “management application”.

About the Management Application (both mechanisms)

- Runs somewhere else in the network
- Has to be positioned (or have agent that is positioned) in network to sense demand for the powered-off DTE
- Could run in the switch as part of the Switch Management application
- Not an 802.3 style or scope project

CONCLUSION

- Either would provide a solid foundation for the capability
- The capability “should” be a part of EEE
- Both are foundation only. Significant additional work to be done
- Some work is outside scope of 802.3