

Some Thoughts about Bi-directional Communications

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For discussion in WoT IG

Key Statements

- Many of IoT use cases require both peers to act as both client and server.
- NAT/firewalls cause problems:
 - The ability for the cloud server to send a request to the IoT device is limited.

WoT Architecture

- These statements touched the core of WoT architecture.

Proxy or direct connect?

- Proxy server was suggested in the discussion.
- Direct connection is also possible.
- In “WoT - Standards and remote health monitoring example”, slide 8, a proxy server was shown.
- In “An introduction to the Web of Things Framework”, slide 10, WoT servers were proposed and described as many scales.

Proxy server is a consensus

- I guess everyone agrees that proxy servers are a good solution.
- The only problem is that it may not be the only solution.

IPv4 vs. IPv6

- “WoT on IPv4” and “WoT on IPv6” may be separated.
- In WoT on IPv4, I guess proxy server model is practical; direct connection model is (almost) not practical.
- In WoT on IPv6, both proxy server and direct connection are possible.

WoT on IPv6 direct connection

- The question raised by Isomaki about LTE IPv6 is related to whether WoT on IPv6 direct connection model is practical.
- I do not have experience on this. This should be explored to determine if this model is OK.

WoT Proxy on IPv4 and IPv6

- This could be the main model.
- The proxy could be called WoT server (at one scale) as in “An introduction to the Web of Things Framework”.
- For the WoT server running in a PC, I like to call it dew server because of my research.
- I also like to call it this way because cloud server and dew server are a good pair.

WoT dew server model on IPv4 and IPv6

- In most cases, the bi-directional communication is between IoT devices and the dew server.
- There is no problem because they are directly connected.

Bi-directional Communication

- In most cases, the cloud server does not need to communicate with IoT devices.
- Only when necessary, the dew server will communicate with the cloud server.
- The bi-directional communication between a dew server and IoT devices is frequent; the bi-directional communication between a dew server and a cloud server is less frequent.

Most data is local

- Most data is under the control of the dew server.
- Only the permitted data will go out to the cloud server.

Control Center

- The dew server could be the control center.
- Such a control center could be set up in a house, a car, a hospital ward, a farm, a warship, and so on.

Questions

- Does that mean the direct connection model and the dew server model could lead to two different standards? Some products follow the first one, while the others go with the second one?
- Should IPv4 and IPv6 specification be in one or two?

Questions

- Is it OK to say IPv4 direct connection is not practical? Or should that still be kept as one option?