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Smart home profiles for 6LoWPAN devices

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Supplement 57 to ITU-T G-series Recommendations

Smart home profiles for 6LoWPAN devices

Summary

Supplement 57 to ITU-T G-series Recommendations addresses Internet protocol version 6 (IPv6) adaptation layers for smart home systems, where embedded devices communicate with each other over low power and lossy networks (LLNs) for the purpose of sensor data collection and equipment control by using IPv6 over low power wireless personal area network (6LoWPAN) technology. Devices in smart home systems include home appliances, home energy equipment and various sensors within and around the home. Assumed applications for the communication include energy management, healthcare, home security and smart metering, while excluding broadband applications or mobile applications.

This Supplement addresses both IP-based wired and wireless low-power communications for smart home, and provides supplemental information to Recommendations ITU-T G.9903 and ITU-T G.9959. Additional information on other ITU-T G-Series Recommendations may be provided in future revisions of this Supplement.

History

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Supplement 57 to ITU-T G-series Recommendations

Smart home profiles for 6LoWPAN devices

1 Scope

This Supplement addresses Internet protocol version 6 (IPv6) adaptation layers for smart home systems, where embedded devices communicate with each other over low power and lossy networks (LLNs) for the purpose of sensor data collection and equipment control by using IPv6 over low power wireless personal area network (6LoWPAN) technology. Devices in smart home systems include home appliances, home energy equipment, and various sensors within and around the home. Assumed applications for the communication include energy management, healthcare, home security and smart metering, while excluding broadband applications or mobile applications.

The Supplement addresses both IP-based wired and wireless low-power communications for smart home systems, and provides supplemental information to [ITU-T G.9903], [ITU-T G.9959], as well as [TTC JJ-300.10] and [TTC JJ-300.11].

Communication devices for the smart home are generally embedded systems with constrained resources, and use low-power link technologies; thus it is common to implement a specific set of options from a given protocol. This set of options is called a "profile". Specification of a profile facilitates the implementation of integrated embedded equipment that supports multiple low-power links. This Supplement clarifies which adaptation layer functions for carrying IPv6 frames are supported by the 6LoWPAN-based adaptation layers, for example, those specified in [ITU-T G.9903], [ITU-T G.9959], as well as [TTC JJ-300.10] and [TTC JJ-300.11]. Additional information on other G-Series Recommendations and standards may be provided in future revisions of this Supplement.

2 References

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- [IETF RFC 7428] IETF RFC 7428 (2015), *Transmission of IPv6 packets over ITU-T G.9959 networks*.
- [TTC JJ-300.10] Standard TTC JJ-300.10 (2015), *Home network communication interface for ECHONET Lite (IEEE 802.15.4/4e/4g 920MHz-band wireless)*.
- [TTC JJ-300.11] TTC Standard JJ-300.11 (2014), *Home network communication interface for ECHONET Lite (ITU-T G.9903 Narrow band OFDM PLC)*.

3 Definitions

3.1 Terms defined elsewhere

None.

3.2 Terms defined in this Supplement

This Supplement defines the following terms:

3.2.1 integrated device: A network device in a smart home system that communicates with multiple smart home devices for smart home applications, such as home security and home energy management system (HEMS).

3.2.2 low power and lossy network (based on the definition given in [IETF RFC 6550]): Low power and lossy networks (LLNs) are made up of many embedded devices with limited power, memory, and processing resources. They are interconnected by a variety of links, such as IEEE 802.15.4, Bluetooth, low power WiFi, ITU-T G.9959, PLC (powerline communication), or other wired low power links. LLNs are transitioning to an end-to-end IP-based solution to avoid the problem of non-interoperable networks interconnected by protocol translation gateways and proxies.

3.2.3 profile: A specification of a set of options of existing protocols for use in a particular condition.