

CORE WG
Internet-Draft
Intended status: Informational
Expires: August 15, 2014

A. Rahman
InterDigital Communications, LLC
February 11, 2014

Sleepy Devices: Do we need to Support them in CORE?
draft-rahman-core-sleepy-nodes-do-we-need-01

Abstract

This document summarizes the discussion in the CORE WG related to the question of whether support of sleepy devices is required for the CoAP protocol, CORE Link Format, CORE Resource Directory, etc. The only goal of this document is to trigger discussions in the CORE WG so that all relevant considerations for sleeping devices are taken into account.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <http://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on August 15, 2014.

Copyright Notice

Copyright (c) 2014 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in [Section 4.e](#) of

the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

- [1.](#) Terminology and Conventions [2](#)
- [2.](#) Introduction [2](#)
- [3.](#) Background [2](#)
- [4.](#) Drafts Related to Sleepy Nodes [3](#)
- [5.](#) WG Email List Poll for Sleepy Node Deliverable [4](#)
- [6.](#) Summary [4](#)
- [7.](#) Acknowledgements [4](#)
- [8.](#) IANA Considerations [4](#)
- [9.](#) Security Considerations [4](#)
- [10.](#) References [4](#)
 - [10.1.](#) Normative References [4](#)
 - [10.2.](#) Informative References [5](#)
- Author's Address [7](#)

[1.](#) Terminology and Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

This document assumes readers are familiar with the terms and concepts that are used in [[I-D.ietf-core-coap](#)] and [[RFC6690](#)].

[2.](#) Introduction

At IETF-87 (Berlin), it was suggested to review/summarize the CORE WG interest on the topic of Sleepy Node support. Specifically whether the WG feels that explicit support of sleepy endpoints is required for the CoAP protocol, CORE Link Format, CORE Resource Directory, etc. Alternatively, whether the WG feels that Sleepy Node support can be completely done outside CORE such as in the lower Layer 2 (MAC) scheduling and/or in Layer 7 (application) logic.

[3.](#) Background

The base CoAP specification [[I-D.ietf-core-coap](#)] ([section 2.3](#)) provides indirect support of sleepy nodes via the support of caching by intermediaries. This allows resource representations (previously

retrieved) from a sleepy node to be temporarily available to other clients from a caching proxy even though the node (origin server) is currently asleep.

[4.](#) Drafts Related to Sleepy Nodes

There have been multiple drafts in the CORE WG directly related to the subject of Sleepy Nodes including:

- o [[I-D.rahman-core-sleepy-problem-statement](#)] summarizes the overall problem space of Sleepy Nodes.
- o [[I-D.cao-core-aol-req](#)] defines requirements for Sleepy Nodes to behave as if they are "always on".
- o [[I-D.dijk-core-sleepy-reqs](#)] defines requirements for Sleepy Nodes based on home and building control use cases.
- o [[I-D.rahman-core-sleeping](#)] defines general requirements for Sleepy Nodes.
- o [[I-D.bormann-core-roadmap](#)] provides a classification and overview of CORE drafts (and features) including a section on Sleepy Nodes.
- o [[I-D.arkko-core-sleepy-sensors](#)] describes a sensor network implementation and shows how different communication models affect implementation complexity and energy consumption (including Sleepy Node support).
- o [[I-D.giacomin-core-sleepy-option](#)] defines a proxy that acts as a store-and-forward agent for a Sleepy Node.
- o [[I-D.castellani-core-alive](#)] defines a new CoAP message type which the Sleepy Node multicasts to all interested devices when it wakes up.
- o [[I-D.fossati-core-publish-option](#)] allows an endpoint to temporarily delegate authority of its resources (when it is sleeping) to a proxy server that is always on.

- o [[I-D.fossati-core-monitor-option](#)] extends the Observe functionality to handle the scenario when both the server and clients are Sleepy Nodes.
- o [[I-D.dijk-core-sleepy-solutions](#)] defines an architectural approach to support Sleepy Nodes.
- o [[I-D.rahman-core-sleepy](#)] defines new parameters that describe an endpoint's sleepy characteristics and stores them in the Resource Directory.

- o [[I-D.vial-core-mirror-server](#)] defines a special type of Resource Directory from which endpoints can fetch the resource regardless of the (sleep) state of the server.

[5.](#) WG Email List Poll for Sleepy Node Deliverable

A pulse was taken on the WG Email list asking for interest in a "CORE Sleepy Node support" deliverable [[Post-IETF87-Poll](#)], [[Post-IETF88-Poll](#)].

The interesting (but non-normative) results were as follows:

- o Support FOR a new CORE Sleepy Node support deliverable: 11
- o Support AGAINST a new CORE Sleepy Node support deliverable: 3

[6.](#) Summary

There have been over ten drafts related to the concept of CORE support of Sleepy Nodes. The WG Email list poll on the topic had a large majority of responders supporting creation of a CORE charter item for support of Sleepy Nodes. However there were some important and high profile dissenters that argued against such a charter item. Another point to consider is that during WG discussions, the CORE Mirror Server [[I-D.vial-core-mirror-server](#)] is sometimes referred to as the "existing" solution for CORE Sleepy Node support. However, this draft was never adopted as a WG draft.

[7.](#) Acknowledgements

Thanks to Carsten Bormann and Zach Shelby for valuable discussions and feedback on the topic of Sleepy Nodes.

8. IANA Considerations

This memo includes no request to IANA.

9. Security Considerations

Not applicable.

10. References

10.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

Rahman

Expires August 15, 2014

[Page 4]

Internet-Draft

Sleepy Devices for CORE

February 2014

10.2. Informative References

[I-D.arkko-core-sleepy-sensors]

Arkko, J., Rissanen, H., Loreto, S., Turanyi, Z., and O. Novo, "Implementing Tiny COAP Sensors", [draft-arkko-core-sleepy-sensors-01](#) (work in progress), July 2011.

[I-D.bormann-core-roadmap]

Bormann, C., "CoRE Roadmap and Implementation Guide", [draft-bormann-core-roadmap-05](#) (work in progress), October 2013.

[I-D.cao-core-aol-req]

Cao, Z., "Allways-online Requirement for Sleeping CoAP Node", [draft-cao-core-aol-req-00](#) (work in progress), July 2011.

[I-D.castellani-core-alive]

Castellani, A. and S. Loreto, "CoAP Alive Message", [draft-castellani-core-alive-00](#) (work in progress), March 2012.

[I-D.dijk-core-sleepy-reqs]

Dijk, E., "Sleepy Devices using CoAP - Requirements", [draft-dijk-core-sleepy-reqs-00](#) (work in progress), June 2013.

[I-D.dijk-core-sleepy-solutions]

Dijk, E., "Sleepy Devices using CoAP - Possible Solutions", [draft-dijk-core-sleepy-solutions-02](#) (work in progress), November 2013.

[I-D.fossati-core-monitor-option]

Fossati, T., Giacomini, P., and S. Loreto, "Monitor Option for CoAP", [draft-fossati-core-monitor-option-00](#) (work in progress), July 2012.

[I-D.fossati-core-publish-option]

Fossati, T., Giacomini, P., and S. Loreto, "Publish Option for CoAP", [draft-fossati-core-publish-option-03](#) (work in progress), January 2014.

[I-D.giacomini-core-sleepy-option]

Fossati, T., Giacomini, P., Loreto, S., and M. Rossini, "Sleepy Option for CoAP", [draft-giacomini-core-sleepy-option-00](#) (work in progress), February 2012.

[I-D.ietf-core-coap]

Shelby, Z., Hartke, K., and C. Bormann, "Constrained Application Protocol (CoAP)", [draft-ietf-core-coap-18](#) (work in progress), June 2013.

[I-D.ietf-core-resource-directory]

Shelby, Z., Bormann, C., and S. Krco, "CoRE Resource Directory", [draft-ietf-core-resource-directory-01](#) (work in progress), December 2013.

[I-D.rahman-core-sleeping]

Rahman, A., Zuniga, J., and G. Lu, "Sleeping and Multicast Considerations for CoAP", [draft-rahman-core-sleeping-00](#) (work in progress), June 2010.

- [I-D.rahman-core-sleepy-problem-statement]
Rahman, A., Fossati, T., Loreto, S., and M. Vial, "Sleepy Devices in CoAP - Problem Statement", [draft-rahman-core-sleepy-problem-statement-01](#) (work in progress), October 2012.
- [I-D.rahman-core-sleepy]
Rahman, A., "Enhanced Sleepy Node Support for CoAP", [draft-rahman-core-sleepy-04](#) (work in progress), October 2013.
- [I-D.vial-core-mirror-server]
Vial, M., "CoRE Mirror Server", [draft-vial-core-mirror-server-01](#) (work in progress), April 2013.
- [Post-IETF87-Poll]
Rahman, A., "Do we need a CORE charter item for CoAP support of Sleepy Nodes?", August 2013, <<http://www.ietf.org/mail-archive/web/core/current/msg04750.html>>.
- [Post-IETF88-Poll]
Rahman, A., "WG interest in Sleepy Node topic", November 2013, <<http://www.ietf.org/mail-archive/web/core/current/msg05098.html>>.
- [RFC6690] Shelby, Z., "Constrained RESTful Environments (CoRE) Link Format", [RFC 6690](#), August 2012.

Author's Address

Akbar Rahman
InterDigital Communications, LLC
Montreal, Quebec H3A 3G4
Canada

Phone: +1-514-585-0761

Email: akbar.rahman@interdigital.com