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Service Binding Mapping for Agents
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Abstract

With the continuous introduction of intelligent agent communication and interaction protocols, the current DNS cannot adequately meet the requirements for agent service resolution. This document defines a new DNS resource record type, AGENT, which is a SVCB-compatible RR type, and specifies the mapping specifications.

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1. Requirements notation

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

2. Introduction

Building on the existing DNS, SVCB records provide additional convenience for clients to select different services and obtain the parameters required for connections.

With the rapid development of artificial intelligence, various communication and interaction protocols related to agents are currently being developed. Agents have put forward new technical requirements in terms of session, communication, service invocation, and collaboration, and existing DNS cannot adequately meet the needs of agent service resolution.

This document defines a new DNS resource record type, AGENT, which is a SVCB-compatible RR type, and specifies the mapping specifications required by SVCB.

3. Basic requirements

To provide special handling for agent service use cases, the AGENT RR type is defined as a SVCB-compatible RR type, specific to the "agent" scheme.

The presentation format of the record is: Name TTL IN AGENT SvcPriority TargetName SvcParams

4. SvcParamKeys defined by SVCB

The SVCB record [RFC9460] defines a set of initial SvcParamKeys, which are applicable to the AGENT scheme.

4.1. "alpn"

This key indicates the set of protocols supported by the endpoint.

When a specific protocol is designated, corresponding configurations shall be implemented via other parameters in accordance with the usage requirements and specifications of that protocol, so as to provide a complete protocol suite supporting it.

Otherwise, setting only this value without specifying other necessary parameters for the protocol shall be considered an error.

4.2. "port"

The "port" SvcParamKey defines the port number to be used for connecting to this alternative endpoint.

If this key is not present, the client shall use the default port number of the transport protocol.

4.3. "ipv4hint" and "ipv6hint"

The "ipv4hint" and "ipv6hint" keys convey the IP addresses that the client may use to access the agent service.

5. Definition of the New SvcParamKeys

In addition to the aforementioned SvcParamKeys defined by SVCB, this document specifies new SvcParamKeys for agent service usage.

5.1. "apn"

The "apn" SvcParamKey is used to indicate the protocol employed for agent communication and interaction, where "apn" refers to Agent Protocol Negotiation.

When a specific protocol is designated, other parameters must be configured in accordance with the usage requirements and specifications of that protocol to provide a complete protocol suite supporting it.

Otherwise, setting only this value without specifying other necessary parameters for the protocol shall be considered an error.

The "apn" key shall be used in conjunction with the "alpn" key.

Since some agent-related protocols are currently in the stage of discussion and revision, the usage and supporting requirements of this parameter will be updated accordingly based on the release of future protocols.

5.2. "agentpath"

The value of the "agentpath" SvcParamKey is the URI template of the agent.

5.3. "descpath"

Agent description information includes attribute details such as agent identity, authentication, capabilities, and collaboration mechanisms. Currently, its specific form varies across different protocols.

The "descpath" SvcParamKey is used to identify the access address (e.g., the URL) of the agent’s detailed information.

6. Security Considerations

The use of DNSSEC is optional for AGENT records.

The downgrade attacks relevant to the SVCB record are also applicable to this document.

7. IANA Considerations

To be determined.

8. Acknowledgments

To be determined.

9. References

9.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <https://www.rfc-editor.org/info/rfc2119>.

[RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <https://www.rfc-editor.org/info/rfc8174>.

9.2. Informative References

[RFC9460] Schwartz, B., Bishop, M., and E. Nygren, "Service Binding and Parameter Specification via the DNS (SVCB and HTTPS Resource Records)", RFC 9460, DOI 10.17487/RFC9460, November 2023, <https://www.rfc-editor.org/info/rfc9460>.

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