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## Use the SAN field

### Abstract

In the decade since [RFC6125] was published, the subjectAltName extension, as defined in [RFC5280] has become ubiquitous. This document updates [RFC6125] to specify that the fall-back techniques of using commonName attribute to identify the service MUST NOT be used.

### Discussion Venues

This note is to be removed before publishing as an RFC.

Source for this draft and an issue tracker can be found at <https://github.com/richsalz/draft-rsalz-use-san>.

### Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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## 1. Introduction

In the decade since [\[RFC6125\]](#) was published, the `subjectAltName` extension, as defined in [\[RFC5280\]](#) has become ubiquitous. This document updates [\[RFC6125\]](#) to specify that the fall-back techniques of using `commonName` attribute to identify the service MUST NOT be used.

## 2. Conventions and Definitions

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.

The terminology from [\[RFC6125\]](#) is used here. Specifically, the following terms and brief definition (as a reminder):

\*CN-ID: the Common Name element from a Distinguished Name.

\*DNS-ID, SRV-ID, URI-ID: different types of entries in a `subjectAltName` extension.

### **3. The New Rules**

The CN-ID MUST NOT be used. The appropriate value in the subjectAltName extension MUST be used to get the presented identity of the server.

While not discussed in [[RFC6125](#)], this section also implicitly prohibits the use of the Domain Component or emailAddress RDN's.

The following sections repeat the above rule in other forms, for the purpose of updating [[RFC6125](#)].

#### **3.1. Designing Application Protocols**

Applications should determine which form of name they want to use, and specify the appropriate subjectAltName extension. Unless there are reasons to do otherwise, applications SHOULD use the DNS-ID form.

#### **3.2. Representing Server Identity**

Servers either MUST NOT issue a CN-ID, or MUST use a form for the Common Name RDN that cannot be mistaken for an identifier. Not using Common Name is preferred.

#### **3.3. Verifying Service Identity**

When constructing a list of reference identifiers, the client MUST NOT include any CN-ID present in the certificate. This means that section 6.4.4 of [[RFC6125](#)] MUST be ignored.

### **4. Constraints on Wildcards**

Wildcard certificates are discussed in section 7.2 of [[RFC6125](#)], which says that the specifications "are not clear or consistent" about where a wildcard can appear.

This document specifies that a wildcard can appear

- \*only as the left-most label; or

- \*as the last character in a left-most label

### **5. Security Considerations**

The CN-ID, domainComponent, and emailAddress RDN fields are unstructured free text, and using them is dependant on ordering and encoding concerns. In addition, their evaluation when PKIX nameConstraints are present is ambiguous. This document removes those fields from use, so a source of possible errors is removed.

Because of the ambiguity around wildcards, [RFC6125] mentions that it is possible to have exploitable differences in behavior. By simplifying those practices to one rule, this source of errors should be avoided.

All other security considerations of [RFC6125] and its dependant documents are still relevant.

## 6. IANA Considerations

This document has no IANA actions.

## 7. 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>>.
- [RFC5280] Cooper, D., Santesson, S., Farrell, S., Boeyen, S., Housley, R., and W. Polk, "Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile", RFC 5280, DOI 10.17487/RFC5280, May 2008, <<https://www.rfc-editor.org/info/rfc5280>>.
- [RFC6125] Saint-Andre, P. and J. Hodges, "Representation and Verification of Domain-Based Application Service Identity within Internet Public Key Infrastructure Using X.509 (PKIX) Certificates in the Context of Transport Layer Security (TLS)", RFC 6125, DOI 10.17487/RFC6125, March 2011, <<https://www.rfc-editor.org/info/rfc6125>>.
- [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>>.

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TODO acknowledge.

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