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Protocol-Specific Profiles for JSContact

Abstract

This document defines the "JSContact Profiles" registry, an IANA registry for named subsets of JSContact elements. The document aims to facilitate using JSContact in the context of contact data exchange protocols or other use cases in which supporting all JSContact semantics might be inappropriate.

Status of This Memo

This is an Internet Standards Track document.

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1. Introduction

The JSContact [RFC9553] contact card data model and format are designed for use in address book applications and directory services. Intended as an alternative to the prevalent vCard [RFC6350] data format, JSContact covers vCard core semantics and extensions, and it provides a rich model for personal names, postal addresses, and localization. All JSContact elements are relevant for some contact card use cases, and similar to vCard, implementations are expected to support these elements when exchanging contact card information using protocols such as CardDAV [RFC6352] and the JSON Meta Application Protocol (JMAP) for Contacts [RFC9610].

In contrast, other protocols and document specifications might require exchanging *some* contact card information, but not all of what JSContact provides. [Section 1.7.4](#) of [\[RFC9553\]](#) outlines how JSContact implementations may ignore unknown JSContact elements, but this only applies to future extensions of [\[RFC9553\]](#); they are still expected to implement all elements of the core specification. Also, the extensibility of JSContact and the requirement to preserve arbitrary contact elements might not be adequate for some protocols.

To make use of JSContact under these circumstances, this document defines a new IANA registry for JSContact that allows registration of named subsets of JSContact elements. These subsets are referred to as "JSContact profiles" and are meant to bring the following benefits:

- Protocol designers might be encouraged to use JSContact rather than coming up with their own contacts format. This facilitates cross-protocol data exchange and migration.
- Different protocols use the same IANA registry to express which JSContact elements they support. This facilitates understanding their commonalities and reusing existing profiles.
- A central registry provides implementors of JSContact libraries with a consistent format documenting which profile supports what elements rather than having to look up that information from possibly distinctly organized Internet-Drafts.

This document is organized as follows. [Section 3](#) defines JSContact profiles; [Section 4](#) discusses the new "JSContact Profiles" registry created by IANA; and [Appendix A](#) illustrates JSContact profiles using an example.

2. Notational Conventions

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 ABNF definitions in this document use the notations of [\[RFC5234\]](#). ABNF rules not defined in this document are defined in [\[RFC5234\]](#) (such as the ABNF for DIGIT).

3. JSContact Profiles

A JSContact profile is a named and versioned set of JSContact elements, such as properties, types, and values. The JSContact elements **MUST** be registered in the IANA "JSContact" registry group [\[IANA.jscontact\]](#). A profile **MAY** define additional restrictions for these elements as outlined in [Section 3.3](#), but a profile **MUST NOT** loosen restrictions. This document creates an IANA registry for JSContact profiles (see [Section 4](#)).

A JSContact object complies with a profile if all its properties are in the set of properties defined by that profile and the property values comply with the profile restrictions for that property. A JSContact object **MAY** comply with multiple profiles. Accordingly, this document does not specify any means for JSContact data to communicate which profiles it complies with, e.g., it does not define a "profile" property for the Card object.

All properties and values of a JSContact object that complies with a profile **MUST** also be valid ([Section 1.7](#) of [\[RFC9553\]](#)). Handling JSContact data that is valid but that does not comply with the expected profile is protocol-specific. This document deliberately does not define such non-compliant data as invalid. Profile designers decide on their own strategies for handling non-compliant data, one of which may be to reject it as invalid. JSContact data that complies with a profile may still not be valid in the context of that protocol; the protocol specification **MAY** define additional restrictions that a profile cannot express.

[Section 3.1](#) defines how to name a JSContact profile; [Section 3.2](#) defines how to version it; [Section 3.3](#) defines how to specify the properties supported by that profile; and [Section 3.4](#) describes how to determine the supported properties.

3.1. Profile Name

A JSContact profile has a unique name. The name **MUST** only contain ASCII lowercase alphabetic and numeric characters, optionally separated by hyphens. It **MUST** start with an alphabetic character, and it **MUST** be of at least 1 character and at most 255 characters in size. Formally, it **MUST** be a valid "profile-name" defined in [Figure 1](#).

```
profile-name = lalpha *( ["-"] lalpha / DIGIT )  
              ; at most 255 characters in size  
  
lalpha       = %x61-7A ; a-z
```

Figure 1: ABNF Rule for JSContact Profile Name

3.2. Profile Version

A JSContact profile has a current version, and each profile is versioned independently. The version **MUST** be a positive integer, and it **MUST** increase whenever the profile properties (see [Section 3.3](#)) change. The initial version value is 1.

3.3. Profile Properties

A profile defines a list of property entries that together determine the set of properties supported by that profile, as described in [Section 3.4](#). The list **MUST NOT** be empty.

Each property entry consists of the following elements:

Property Name: This is the name of the JSContact property that this entry refers to. This **MUST** be a property name registered in the "JSContact Properties" registry. A property name **MAY** occur multiple times in the property entry list if the profile-specific restrictions for that property cannot be expressed with a single entry, but such multiple entries **MUST NOT** result in conflicting restrictions for the same property. This field **MUST NOT** be empty.

Property Context: This is a comma-separated list of JSContact object types that support this property in this profile. Each of these types **MUST** also be listed in the Property Contexts for this property in the "JSContact Properties" registry, but a profile **MAY** only support the property in a subset of these contexts. This field **MUST NOT** be empty.

Restricted Attributes: This restricts the attributes of the property. This specification only defines how to restrict the attributes such that a property becomes mandatory in the listed Property Contexts, despite the property originally being defined to be optional in the same contexts. The verbatim value "mandatory" (without quotes) indicates that it is mandatory in this profile; the absence of any value indicates that this profile does not restrict the property attributes of the original definition.

Restricted Property Type: This restricts the property value type in the listed Property Contexts. It allows a profile to restrict the allowed types to the original type definition such that future changes to JSContact do not extend the allowed types of the property for this profile, and it allows a profile to restrict the allowed types to a subset of the original type definition. The absence of any value indicates that this profile does not restrict the property value type of the original definition or any future extensions of the value type.

If set, the restricted value type **MUST** exactly match the original definition at the time when the profile is defined, or the original value type **MUST** contain some type signature in the form "A|B" and the restricted value type **MUST** resemble the original except that some of the original "A|B" forms now only allow a subset of the original choices. Restricted property types **MUST NOT** redefine the "defaultType" attribute ([Section 1.3.3 of \[RFC9553\]](#)); the rules about when to set the "@type" property ([Section 1.3.4 of \[RFC9553\]](#)) of the original type definition still apply.

As an example of restricting the type definition to prevent future type extensions in the profile, one might restrict the type definition of the "addresses" property of the Card object to "Id[Address]", which matches the original definition as of this writing.

As an example of restricting the type to a subset of the original value, one might want to restrict the "date" property of the Anniversary object to only allow partial dates as values. To do so, the original value type "PartialDate|Timestamp" can be restricted to "PartialDate". Note that the original value type need not be exactly in form "A|B". For example, the type signature "Id[A|B|C]" could be restricted to any of "Id[A|B]", "Id[A|C]", "Id[B|C]", "Id[A]", "Id[B]", "Id[C]", and the type signature "(A|B|C)" could be restricted to one of "A[]" or "B[]".

Restricted Enum Values: This restricts the enumerated values defined for this property to a subset of those values. The values **MUST** be listed in the "JSContact Enum Values" registry for this property and context. Allowed values are separated by a comma; the absence of any value indicates that all enumerated values are allowed. A profile **MAY** exclude the default enumerated value of a property, in which case all instances of the object **MUST** have this property set to one of the allowed values.

Restricted PatchObject: This restricts the PatchObject value of this property such that each JSON Pointer key in the PatchObject **MUST** consist of exactly one JSON Pointer reference token ([Section 3 of \[RFC6901\]](#)). For example, with this restriction, the "localizations" property of the

Card object can only patch properties of the Card object by replacing their values entirely. The verbatim value "yes" (without quotes) indicates that this profile restricts PatchObject keys to a single token; the absence of any value indicates that it does not restrict them. This **MUST NOT** be set to "yes" if the property value type is not a PatchObject.

All profiles **MUST** support "@type" and "version"; therefore, profiles **MUST NOT** include entries for these properties.

3.4. Supported Properties

The supported properties of a JSContact profile are determined by the profile's property entries and the contents of the IANA "JSContact Properties" registry, which are referred to here as "IANA-registered properties" for short. The "version" property of the Card object and the "@type" property of any object type are always supported.

A Card object complies with the profile if all its properties are part of the supported properties and all property values are valid according to the restrictions defined in the applicable property entries. A PatchObject **MUST NOT** patch properties that are not supported in that profile.

The following describes the steps to determine the supported properties:

1. Initialize the set with all properties of the Card object for which a property entry contains "Card" in the Property Context of the profile. If no such entry exists, then initialize the set with all IANA-registered properties of the Card object.
2. For every property in the set having either an object type as the value type or a list, map, or union of object types, add all properties for which a property entry contains those object types in the Property Context of the profile. If no such property entry exists, then add all IANA-registered properties for the object types.
3. Repeat the previous step until all object types that are value types of properties in the set have been considered.

[Appendix A.4](#) describes how to determine the supported properties of the example profile in [Appendix A](#).

4. IANA Considerations

IANA has created the "JSContact Profiles" registry within the "JSContact" registry group. The purpose of this new registry is to register profiles for JSContact data. The registry policy to add an entry to this registry is "Specification Required" [[RFC8126](#)]; this applies to defining a new profile name or version. The registry policy to update an existing profile is "Expert Review"; this applies to updating the references of an entry. The change controller is the IETF.

An entry in this registry consists of the following, all of which **MUST** be set:

Name:

This is the name of the profile. This field is immutable after creation. The name **MUST** be unique among all registered profiles and **MUST** comply with the definitions in [Section 3.1](#).

Version:

This is the version number of the profile. This field is immutable after creation. It **MUST** comply with the definitions in [Section 3.2](#).

Reference:

This refers to the specification of the protocol or use case for which this profile applies. The reference **MUST** include the section number or section name that defines or updates the property entries for this profile, as defined in [Section 3.3](#).

Designated experts assert that all proposed assignments are valid according to the definitions in this document. For example, they check that:

- the profile name is unique,
- the entries in the profile entries are syntactically valid,
- only known property names are referred to,
- type restrictions do not incorrectly alter the type of a property, and
- the version number increases.

On the other hand, designated experts do not decide the contents of the profile as long as the assignments are valid.

The decision whether to register a new profile name or register a new version for an existing profile depends on the scope of the proposed profile. A new profile name is recommended if the profile is introduced in the context of an application or protocol for which no JSContact profile is already registered or if the proposed profile properties or restrictions substantially differ from existing profiles for that context. A new version is recommended if the profile context does not change and multiple implementations of the current profile will also support the new version. The profile version of the new entry for an already-registered profile by that name has to be higher than the last registered version for that profile. Existing registry entries are preserved.

This document does not define any initial contents for the "JSContact Profiles" registry.

5. Security Considerations

This document does not provide any new security considerations. The security considerations in [Section 4](#) of [\[RFC9553\]](#) apply.

6. References

6.1. Normative References

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Appendix A. Example Profile

This section provides an example of a JSContact profile and illustrates how a JSContact Card complies with that profile.

The properties of the example profile are defined in [Appendix A.1](#). The profile describes contact cards that can only contain:

- Contact cards for individuals and organizations, but no other kinds such as groups or devices.

- Full postal address lines, but no address components or any other property of the Address object type. The value type of the "addresses" property is pinned to its original definition, so that future JSContact extensions of that type do not become part of the profile.
- Full names and name components, but no other properties of the Name object type.
- Email addresses, where all properties of the EmailAddress object are supported.
- Anniversaries for birthdays, and only having "date" property values of type PartialDate, not Timestamp.
- Localizations, with the restriction that the PatchObject must only patch properties of the Card object.

An example of JSContact data that complies with this profile is shown in [Appendix A.2](#). An example of its fictive IANA registration is shown in [Appendix A.3](#). This profile is just for illustration; it is not registered with IANA. [Appendix A.4](#) describes how to determine the supported properties for that profile.

A.1. Profile Properties Example

The following entries define properties of that profile. Entry elements with empty values are omitted:

Property Name: addresses
Property Context: Card
Restricted Property Type: Id[Address]

Property Name: anniversaries
Property Context: Card

Property Name: emails
Property Context: Card

Property Name: kind
Property Context: Card
Restricted Enum Values: individual,org

Property Name: localizations
Property Context: Card
Restricted PatchObject: yes

Property Name: name
Property Context: Card

Property Name: full

Property Context: Address
Restricted Attributes: mandatory

Property Name: date
Property Context: Anniversary
Restricted Property Type: PartialDate

Property Name: kind
Property Context: Anniversary
Restricted Enum Values: birth

Property Name: components
Property Context: Name

Property Name: full
Property Context: Name

Property Name: kind
Property Context: NameComponent

Property Name: value
Property Context: NameComponent

A.2. Card Object Example

The following Card object complies with the example profile:

```
{
  "@type": "Card",
  "version": "1.0",
  "name": {
    "components": [
      { "kind": "given", "value": "Hayao" },
      { "kind": "surname", "value": "Miyazaki" }
    ]
  },
  "addresses": {
    "a1": {
      "full": "71 Cherry Court, Somewhere, 123S0, UK"
    }
  },
  "emails": {
    "e1": {
      "address": "hayao@example.com"
    }
  },
  "anniversaries": {
    "a1": {
      "kind": "birth",
      "date": {
        "month": 3,
        "day": 4
      }
    }
  },
  "localizations": {
    "jp": {
      "name": {
        "components": [
          { "kind": "surname", "value": "宮崎" },
          { "kind": "given", "value": "駿" }
        ]
      }
    }
  }
}
```

Note that:

- The Address, Card, Name, and NameComponent object values only contain properties for which a property entry exists in the profile.
- The EmailAddress object contains the "address" property. This is allowed because the profile contains a property entry for the "emails" property of the Card object, but it does not define entries for the EmailAddress object properties. Consequently, all properties of the EmailAddress object can be set.
- The "full" property of the Address object is set. It is the only property allowed to be set in that profile for Address, and the "full" property is mandatory for this profile.

- The "kind" property of the NameComponent object is set to "surname" and "given". Since the profile does not restrict the enumerated values of this property, all valid NameComponent "kind" property values are supported.
- The "kind" property of the Card object is not set. The profile restricts the enumerated values of this property to "individual" and "org". Since "individual" is the default value for this property, there is no need to set it.
- The "date" property of the Anniversary object is restricted to be of type PartialDate in this profile. Because PartialDate is the default type for this property, there is no need to set the "@type" property of the PartialDate object.

A.3. IANA Registry Example

The following would be registered at IANA if this were a real profile:

Name: jscontact-simple-example

Version: 1

Reference: This document, [Appendix A.1](#)

See [Section 4](#) for the definition of each registry item.

A.4. Supported Properties Example

The following illustrates how to determine the supported properties of the example profile in this appendix, according to the steps defined in [Section 3.4](#):

1. We initialize the set of supported properties with all profile properties for which the Property Context includes the Card object. The set now includes the following properties:
 - Card.addresses
 - Card.anniversaries
 - Card.emails
 - Card.kind
 - Card.localizations
 - Card.name
2. Next, we determine which of the properties in the current set have an object type as the value type. These are the Card.addresses, Card.anniversaries, Card.emails, and Card.name properties, so we need to inspect the object types Address, Anniversary, EmailAddress, and Name. The "addresses" entry restricts the value type of that property to "Id[Address]", which matches its original definition, but any future type extension would still require us only to inspect the Address type.

3. For the Address object type, the profile has an entry for the "full" property, which contains the Address object in the Property Context, so we add that and only that to the set of supported properties. It now contains:

- Address.full
- Card.addresses
- Card.emails
- Card.kind
- Card.localizations
- Card.name

The value type of the Address.full property is not an object type, so we need not consider a new object type to inspect. The remaining object types to inspect are the Anniversary, EmailAddress, and Name objects.

4. For the Anniversary object type, the profile explicitly lists the "kind" and "date" properties, so we add them to the set of supported properties. It now contains:

- Address.full
- Anniversary.date
- Anniversary.kind
- Card.addresses
- Card.emails
- Card.kind
- Card.localizations
- Card.name

The newly added Anniversary.date property has object value type PartialDate, so we add that to the list of object types to inspect. The entry restricts the type of that property to only be of that type, so we do not add the object value type Timestamp. The remaining object types to inspect are the EmailAddress, Name, and PartialDate objects.

5. For the PartialDate object type, the profile does not contain any entry where the Property Context contains the PartialDate object. Instead, we add properties from the "JSContact Properties" registry where the Property Context includes the PartialDate object. The set of supported properties now contains:

- Address.full
- Anniversary.date
- Anniversary.kind
- Card.addresses
- Card.emails
- Card.kind
- Card.localizations
- Card.name

- PartialDate.calendarScale
- PartialDate.day
- PartialDate.month
- PartialDate.year

None of the newly added properties have object value types. The remaining object types to inspect are the EmailAddress and Name objects.

6. For the EmailAddress object type, the profile does not contain any entry where the Property Context contains the EmailAddress object. Instead, we add properties from the "JSContact Properties" registry where the Property Context includes the EmailAddress object. The set of supported properties now contains:

- Address.full
- Anniversary.date
- Anniversary.kind
- Card.addresses
- Card.emails
- Card.kind
- Card.localizations
- Card.name
- EmailAddress.address
- EmailAddress.contexts
- EmailAddress.label
- EmailAddress.pref
- PartialDate.calendarScale
- PartialDate.day
- PartialDate.month
- PartialDate.year

None of the newly added properties have object value types. The remaining object type to inspect is the Name object.

7. For the Name object type, the profile explicitly lists the "components" and "full" properties, so we add them to the set of supported properties. It now contains:

- Address.full
- Anniversary.date
- Anniversary.kind
- Card.addresses
- Card.emails
- Card.kind
- Card.localizations
- Card.name

- `EmailAddress.address`
- `EmailAddress.contexts`
- `EmailAddress.label`
- `EmailAddress.pref`
- `Name.full`
- `Name.components`
- `PartialDate.calendarScale`
- `PartialDate.day`
- `PartialDate.month`
- `PartialDate.year`

The newly added `Name.components` property has object value type `NameComponent`, so we add that to the list of object types to inspect.

8. For the `NameComponent` object type, the profile does not explicitly list any property. Instead, we add properties of the "JSContact Properties" registry where the Property Context includes the `NameComponent` object. The set of supported properties now contains:

- `Address.full`
- `Anniversary.date`
- `Anniversary.kind`
- `Card.addresses`
- `Card.emails`
- `Card.kind`
- `Card.localizations`
- `Card.name`
- `EmailAddress.address`
- `EmailAddress.contexts`
- `EmailAddress.label`
- `EmailAddress.pref`
- `NameComponent.kind`
- `NameComponent.phonetic`
- `NameComponent.value`
- `PartialDate.calendarScale`
- `PartialDate.day`
- `PartialDate.month`
- `PartialDate.year`

None of the newly added properties have object value types, and there are no remaining object types to inspect. This determines the set of supported properties by that profile, in addition to the `"Card.version"` and `"@type"` property that are always supported.

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