



# XMPP

## XEP-0141: Data Forms Layout

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This specification defines a backwards-compatible extension to the XMPP Data Forms protocol that enables an application to specify form layouts, including the layout of form fields, sections within pages, and subsections within sections.

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## 1 Introduction

**Data Forms (XEP-0004)**<sup>1</sup> ("x:data") provides a simple and interoperable way to request and present information for both applications and humans. However, the simple nature of "x:data" requires the form renderer to use a generic "key/value" format. This document builds upon "x:data" to enable applications to specify additional layout information.

## 2 Requirements

The requirements for this document are:

- Provide hints for the layout of form fields.
- Provide hints for the layout of sections within pages.
- Provide hints for the layout of subsections within sections.
- Ensure backwards-compatibility with the existing "x:data" protocol.

## 3 Use Cases

This document defines a new namespace, "http://jabber.org/protocol/xdata-layout". All layout is defined by "pages" and "sections".

All of the use cases refer to the following form:

Listing 1: Sample form

```
<x xmlns='jabber:x:data' type='form'>
  <title>XSF Application</title>
  <instructions>Please fill out this form</instructions>

  <field var='name.first' type='text-single' label='First_Name'>
    <required/>
  </field>
  <field var='name.last' type='text-single' label='Last_Name'>
    <required/>
  </field>
  <field var='email' type='text-single' label='E-mail_Address'>
    <required/>
  </field>
  <field var='jid' type='jid-single' label='Jabber_JID'>
    <required/>
  </field>
</x>
```

---

<sup>1</sup>XEP-0004: Data Forms <<https://xmpp.org/extensions/xep-0004.html>>.

```

<field var='background' type='text-multi' label='Background_
  Information'>
</field>
<field var='future' type='text-multi' label='Jabber_Plans_for_the_
  Next_Six_Months'>
</field>
<field var='reasoning' type='text-multi' label='Reasons_for_Joining'
  >
</field>

<field var='activity.mailing-lists' type='text-multi' label='Recent_
  Mailing_List_Activity'>
</field>
<field var='activity.xeps' type='text-multi' label='XEPs_Authored_or_
  _Co-Authored'>
</field>
</x>

```

Note: Any newlines in the following examples are provided for the purpose of legibility only.

### 3.1 Paging Fields

One of the simplest layout usages is to partition fields into pages. This is done by including one or more <page/> elements within the x:data form. Each <page/> element SHOULD possess a "label" attribute to label the page, MAY contain a <text/> child element for additional information, and SHOULD contain a <fieldref/> element for each field to be included in the page. To reference an x:data field, the <fieldref/> element's "var" attribute MUST be the same as the intended <field/> element's "var" attribute.

Listing 2: Pages of fields

```

<x xmlns='jabber:x:data' type='form'>
  <title>XSF Application</title>
  <instructions>Please fill out this form</instructions>
  <page xmlns='http://jabber.org/protocol/xdata-layout' label='
    Personal_Information'>
    <text>This is page one of three.</text>
    <text>
      Note: In accordance with the XSF privacy policy, your personal
        information will
        never be shared outside the organization in any way for any
        purpose; however,
        your name and JID may be published in the XSF membership
        directory.
    </text>
    <fieldref var='name.first'/>

```

```

    <fieldref var='name.last' />
    <fieldref var='email' />
    <fieldref var='jid' />
    <fieldref var='background' />
  </page>
  <page xmlns='http://jabber.org/protocol/xdata-layout' label='
    Community_Activity'>
    <text>This is page two of three.</text>
    <text>
      We use this page to gather information about any XEPs you&apos;
        ve worked on,
      as well as your mailing list activity.
    </text>
    <text>You do post to the mailing lists, don't_you?</text>
    <fieldref var='activity.mailing-lists' />
    <fieldref var='activity.xeps' />
  </page>
  <page xmlns='http://jabber.org/protocol/xdata-layout' label='Plans
    and Reasonings'>
    <text>This_is_page_three_of_three.</text>
    <text>You're almost done!</text>
    <text>
      This is where you describe your future plans and why you think
        you
      deserve to be a member of the XMPP Standards Foundation.
    </text>
    <fieldref var='future' />
    <fieldref var='reasoning' />
  </page>
  <field var='name.first' type='text-single' label='First_Name'>
    <required/>
  </field>
  <field var='name.last' type='text-single' label='Last_Name'>
    <required/>
  </field>
  <field var='email' type='text-single' label='E-mail_Address'>
    <required/>
  </field>
  <field var='jid' type='jid-single' label='Jabber_JID'>
    <required/>
  </field>
  <field var='background' type='text-multi' label='Background_
    Information'>
  </field>
  <field var='future' type='text-multi' label='Jabber_Plans_for_the_
    Next_Six_Months'>
  </field>
  <field var='reasoning' type='text-multi' label='Reasons_for_Joining'
  >

```

```

</field>
<field var='activity.mailing-lists' type='text-multi' label='Recent_
  Mailing_List_Activity'>
</field>
<field var='activity.xeps' type='text-multi' label='XEPs_Authored_or
  _Co-Authored'>
</field>
</x>

```

Note: The preceding example partitions the fields into three pages, labeled "Personal Information", "Community Activity", and "Plans and Reasonings".

### 3.2 Sectioning Fields

The next usage of layout is to partition pages into sections. This is done by including one or more <section/> elements within each <page/> element. Each <section/> element SHOULD possess a "label" attribute to identify the section, MAY contain a <text/> child element for additional information, and SHOULD contain a <fieldref/> element for each field to be included in the section. A <section/> element MUST contain at least one <fieldref/> element or <reportedref/> element. To reference an x:data field, the <fieldref/> element's "var" attribute MUST be the same as the intended <field/> element's "var" attribute.

Listing 3: Sections of fields

```

<x xmlns='jabber:x:data' type='form'>
  <title>XSF Application</title>
  <instructions>Please fill out this form</instructions>
  <page xmlns='http://jabber.org/protocol/xdata-layout'>
    <section label='Personal_Information'>
      <text>
        Note: In accordance with the XSF privacy policy, your personal
          information will
          never be shared outside the organization in any way for any
          purpose; however,
          your name and JID may be published in the XSF membership
          directory.
      </text>
      <fieldref var='name.first' />
      <fieldref var='name.last' />
      <fieldref var='email' />
      <fieldref var='jid' />
      <fieldref var='background' />
    </section>
    <section label='Community_Activity'>
      <text>
        We use this page to gather information about any XEPs you&apos
          ;ve worked on,

```

```

    as well as your mailing list activity.
  </text>
  <text>You do post to the mailing lists, don't you?</text>
</fieldref_var='activity.mailing-lists' />
</fieldref_var='activity.xeps' />
</section>
<section_label='Plans and Reasoning'>
</text>You're almost done!</text>
  <text>
    This is where you describe your future plans and why you think
    you
    deserve to be a member of the XMPP Standards Foundation.
  </text>
  <fieldref var='future' />
  <fieldref var='reasoning' />
</section>
</page>
<field var='name.first' type='text-single' label='First_Name'>
  <required/>
</field>
<field var='name.last' type='text-single' label='Last_Name'>
  <required/>
</field>
<field var='email' type='text-single' label='E-mail_Address'>
  <required/>
</field>
<field var='jid' type='jid-single' label='Jabber_JID'>
  <required/>
</field>
<field var='background' type='text-multi' label='Background_
  Information'>
</field>
<field var='future' type='text-multi' label='Jabber_Plans_for_the_
  Next_Six_Months'>
</field>
<field var='reasoning' type='text-multi' label='Reasons_for_Joining'
  >
</field>
<field var='activity.mailing-lists' type='text-multi' label='Recent_
  Mailing_List_Activity'>
</field>
<field var='activity.xeps' type='text-multi' label='XEPs_Authored_or_
  _Co-Authored'>
</field>
</x>

```

Note: The preceding example demonstrates a layout similar to the previous example, but using three sections within one page instead of three pages.

As shown in the following example, sections may be nested to produce a more granular



partitioning of fields.

Listing 4: Sections of fields (nested)

```

<x xmlns='jabber:x:data' type='form'>
  ...
  <page xmlns='http://jabber.org/protocol/xdata-layout'>
    <section label='Personal_Information'>
      <text>
        Note: In accordance with the XSF privacy policy, your personal
        information will
        never be shared outside the organization in any way for any
        purpose; however,
        your name and JID may be published in the XSF membership
        directory.
      </text>
      <section label='Name'>
        <text>Who are you?</text>
        <fieldref var='name.first' />
        <fieldref var='name.last' />
      </section>
      <section label='Contact_Information'>
        <text>How can we contact you?</text>
        <fieldref var='email' />
        <fieldref var='jid' />
      </section>
      <fieldref var='background' />
    </section>
    <section label='Community_Activity'>
      <text>
        We use this page to gather information about any XEPs you&apos
        ;ve worked on,
        as well as your mailing list activity.
      </text>
      <text>You do post to the mailing lists, don't_you?</text>
      <fieldref var='activity.mailing-lists' />
      <fieldref var='activity.xeps' />
    </section>
    <section label='Plans and Reasoning'>
      <text>
        This_is_where_you_describe_your_future_plans_and_why_you_think
        _you
        _you
        deserve_to_be_a_member_of_the_XMPP_Standards_Foundation.
      </text>
      <fieldref var='future' />
      <fieldref var='reasoning' />
    </section>
  </page>

```

```
...  
</x>
```

Note: The preceding example partitions the fields into one page and three sections, with the first section being further partitioned into two sub-sections and one free-standing field reference.

### 3.3 Including Tables

Data forms tables (the `<reported/>` and `<item/>` elements) can also be included in the layout, using the `<reportedref/>` element. This element MAY be included anywhere that the `<field-ref/>` element is allowed, but MUST NOT appear more than once.

If a `<reportedref/>` element is specified when no `<reported/>` element is included, then the reference MUST be ignored.

## 4 Business Rules

### 4.1 Discovery

Form providers MAY attempt to discover if the recipient of a form supports the data forms layout protocol extension, although implementations are not required to do so. If implemented, Discovery MUST be implemented as defined in [Service Discovery \(XEP-0030\)](#)<sup>2</sup>, using the namespace `http://jabber.org/protocol/xdata-layout` as a feature.

### 4.2 Field Distribution

In order to prevent the processing from becoming too complex, there are some restrictions in how fields are distributed within the layout.

First, all displayable, modifiable fields (e.g. all except fields of type `"FIXED"` or `"HIDDEN"`) SHOULD be referenced by a page or section. Any that are not referenced MAY remain unrendered, although implementations MAY provide some support for this. To include a `"FIXED"` field in the layout, it MUST possess a `"var"` attribute.

Second, the same field SHOULD NOT be referenced by more than one page or section. Additionally, a field SHOULD NOT be referenced by the same page or section more than once.

Finally, the order of layout elements SHOULD be maintained. Pages SHOULD be rendered in the order they are defined within the `x:data` form, and sections and fields SHOULD be rendered in the order they are defined or referenced within a page or section.

---

<sup>2</sup>XEP-0030: Service Discovery <<https://xmpp.org/extensions/xep-0030.html>>.

### 4.3 Page Labels and Descriptions

The "label" attribute of the <page/> element is RECOMMENDED (although not required). If it is missing, the renderer MAY display whatever it deems appropriate (including nothing or character data of the containing form's <title/> element).

The <text/> child element of the <page/> element is OPTIONAL. If it is missing, the renderer MAY display whatever it deems appropriate (including nothing or character data of the containing form's <instructions/> element).

### 4.4 Section Labels and Descriptions

The "label" attribute of the <section/> element RECOMMENDED (but not required). If it is missing, the renderer MAY use whatever it deems appropriate (including nothing).

The <text/> child element of the <section/> element is OPTIONAL. If it is missing, the renderer MAY use whatever it deems appropriate (including nothing).

### 4.5 Internationalization/Localization

This document relies on the internationalization/localization mechanisms provided by [XMPP Core](#)<sup>3</sup>. Specifically, labels and descriptions MUST be appropriate for the locale indicated by the containing stanza or <form/> element.

## 5 Security Considerations

There are no security considerations introduced by this document.

## 6 IANA Considerations

This document requires no interaction with the [Internet Assigned Numbers Authority \(IANA\)](#)<sup>4</sup>.

---

<sup>3</sup>RFC 6120: Extensible Messaging and Presence Protocol (XMPP): Core <<http://tools.ietf.org/html/rfc6120>>.

<sup>4</sup>The Internet Assigned Numbers Authority (IANA) is the central coordinator for the assignment of unique parameter values for Internet protocols, such as port numbers and URI schemes. For further information, see <<http://www.iana.org/>>.

## 7 XMPP Registrar Considerations

### 7.1 Protocol Namespaces

The [XMPP Registrar](#) <sup>5</sup> includes 'http://jabber.org/protocol/xdata-layout' in its registry of protocol namespaces.

## 8 Formal Definition

### 8.1 <page/> Root Element

The <page/> element is the root layout element for "http://jabber.org/protocol/xdata-layout" namespace. One <page/> elements is contained within the <x xmlns='jabber:x:data'/> element for each page to be rendered. The <page/> element MAY possess an attribute that specifies a natural-language label for the page, and MAY contain child elements specifying a description, sections of the page, and field and table references.

The 'label' attribute specifies the label for this page. This attribute is OPTIONAL. Its value is any string.

### 8.2 <section/> Element

The <section/> element is used to further partition the layout within a page. The <section/> element MAY possess an attribute that specifies a natural-language label for the section, and MAY contain child elements specifying a description, subsections, and field and table references.

The 'label' attribute specifies the label for this section. This attribute is OPTIONAL. Its value is any string.

### 8.3 <fieldref/> Element

The <fieldref/> element is used to situate a form field within the layout. The <fieldref/> element MUST possess a single attribute to identify the field it references, and is otherwise empty.

If a <fieldref/> element within a <page/> or <section/> references a non-existent field, then that reference MUST be ignored.

The 'var' attribute specifies the form field being referenced. This attribute is REQUIRED, and its value SHOULD be the same as the "var" attribute of one of the <field/> elements in the containing form.

---

<sup>5</sup>The XMPP Registrar maintains a list of reserved protocol namespaces as well as registries of parameters used in the context of XMPP extension protocols approved by the XMPP Standards Foundation. For further information, see <https://xmpp.org/registrar/>.

## 8.4 <reportedref/> Element

The <reportedref/> element is used to situate a form "table" (as described by the <reported/> and <item/> elements) within the layout. The <reportedref/> element has no attributes or children.

## 8.5 <text/> Element

The <text/> element is used to provide natural-language text that describes a page or section, provides instructions or notes about the page or section, and the like. A <page/> or <section/> element MAY contain an unbounded number of <text/> child elements. The XML character data of this element SHOULD NOT contain newlines (the \n and \r characters), and any handling of newlines (e.g., presentation in a user interface) is unspecified herein.

## 8.6 XML Schema

```
<?xml version='1.0' encoding='UTF-8'?>
<xs:schema
  xmlns:xs='http://www.w3.org/2001/XMLSchema'
  targetNamespace='http://jabber.org/protocol/xdata-layout'
  xmlns='http://jabber.org/protocol/xdata-layout'
  elementFormDefault='qualified'>
  <xs:annotation>
    <xs:documentation>
      The protocol documented by this schema is defined in
      XEP-0141: http://www.xmpp.org/extensions/xep-0141.html
    </xs:documentation>
  </xs:annotation>
  <xs:element name='page'>
    <xs:complexType>
      <xs:choice minOccurs='0' maxOccurs='unbounded'>
        <xs:element ref='text' minOccurs='0' maxOccurs='unbounded' />
        <xs:element ref='section' minOccurs='0' maxOccurs='unbounded' />
        <xs:element ref='fieldref' minOccurs='0' maxOccurs='unbounded' />
        <xs:element ref='reportedref' minOccurs='0' maxOccurs='unbounded' />
      </xs:choice>
      <xs:attribute name='label' type='xs:string' use='optional' />
    </xs:complexType>
  </xs:element>
```

```
<xs:element name='section'>
  <xs:complexType>
    <xs:choice minOccurs='0' maxOccurs='unbounded'>
      <xs:element ref='text' minOccurs='0' maxOccurs='unbounded' />
      <xs:element ref='section' minOccurs='0' maxOccurs='unbounded' />
    >
    <xs:element ref='fieldref' minOccurs='0' maxOccurs='unbounded' />
    <xs:element ref='reportedref' minOccurs='0' maxOccurs='unbounded' />
  </xs:choice>
  <xs:attribute name='label' type='xs:string' use='optional' />
</xs:complexType>
</xs:element>

<xs:element name='fieldref'>
  <xs:complexType>
    <xs:simpleContent>
      <xs:extension base='empty'>
        <xs:attribute name='var' type='xs:string' use='required' />
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>
</xs:element>

<xs:element name='reportedref' type='empty' />

<xs:element name='text' type='xs:string' />

<xs:simpleType name='empty'>
  <xs:restriction base='xs:string'>
    <xs:enumeration value='' />
  </xs:restriction>
</xs:simpleType>

</xs:schema>
```