



# XMPP

## XEP-0253: PubSub Chaining

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This specification defines a method for chaining pubsub nodes together, resulting in lightweight repeaters for pubsub notifications.

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## 1 Introduction

To enable lightweight repeaters for [Publish-Subscribe \(XEP-0060\)](#)<sup>1</sup> notifications, we need the ability to subscribe one pubsub node to another pubsub node. This specification defines a method for doing so, using [Ad-Hoc Commands \(XEP-0050\)](#)<sup>2</sup>.

## 2 How It Works

The owner of a pubsub node can subscribe that "local" node to a "remote" node using the flow described below. In these examples, the node owner is `admin@consumer.tld`, the local node is `weatherbot@consumer.tld/Chicagoland`, and the remote node has a NodeID of "OHR" at the pubsub service `notify.weather.tld`.

Listing 1: Owner requests chaining

```
<iq from='admin@consumer.tld/client'
  id='chaining-1'
  to='weatherbot@consumer.tld'
  type='set'
  xml:lang='en'>
  <command xmlns='http://jabber.org/protocol/commands'
    action='execute'
    node='http://jabber.org/protocol/pubsub#chaining' />
</iq>
```

Unless an error occurs, the service SHOULD return the appropriate form.

Listing 2: Service returns chaining form to node owner

```
<iq from='weatherbot@consumer.tld'
  id='chaining-1'
  to='admin@consumer.tld/client'
  type='result'
  xml:lang='en'>
  <command xmlns='http://jabber.org/protocol/commands'
    node='http://jabber.org/protocol/pubsub#chaining'
    sessionId='a73sjjvkl37jfea'
    status='executing'>
    <x xmlns='jabber:x:data' type='form'>
      <title>Chaining Request</title>
      <instructions>Fill out this form to complete your request.</
        instructions>
      <field type='hidden' var='FORM_TYPE'>
```

---

<sup>1</sup>XEP-0060: Publish-Subscribe <<https://xmpp.org/extensions/xep-0060.html>>.

<sup>2</sup>XEP-0050: Ad-Hoc Commands <<https://xmpp.org/extensions/xep-0050.html>>.

```

    <value>http://jabber.org/protocol/pubsub#chaining</value>
  </field>
  <field label='The Node ID of the local pubsub node'
        type='text-single'
        var='local-node'>
    <required/>
  </field>
  <field label='The Jabber ID of the remote pubsub service'
        type='jid-single'
        var='remote-service'>
    <required/>
  </field>
  <field label='The NodeID of the remote pubsub node'
        type='text-single'
        var='remote-node'>
    <required/>
  </field>
</x>
</command>
</iq>

```

Listing 3: Admin submits chaining form to service

```

<iq from='admin@consumer.tld/client'
  id='chaining-2'
  to='weatherbot@consumer.tld'
  type='submit'
  xml:lang='en'>
  <command xmlns='http://jabber.org/protocol/commands'
    node='http://jabber.org/protocol/pubsub#chaining'
    sessionid='a73sjjvkl37jfea'
    status='executing'>
    <x xmlns='jabber:x:data' type='submit'>
      <field type='hidden' var='FORM_TYPE'>
        <value>http://jabber.org/protocol/pubsub#chaining</value>
      </field>
      <field var='local-node'>
        <value>Chicagoland</value>
      </field>
      <field var='remote-service'>
        <value>notify.weather.tld</value>
      </field>
      <field var='remote-node'>
        <value>OHR</value>
      </field>
    </x>
  </command>
</iq>

```

Listing 4: Service informs admin of completion

```
<iq from='weatherbot@consumer.tld'
  id='chaining-2'
  to='admin@consumer.tld/client'
  type='result'
  xml:lang='en'>
  <command xmlns='http://jabber.org/protocol/commands'
    node='http://jabber.org/protocol/pubsub#chaining'
    sessionId='a73sjjvkl37jfea'
    status='completed' />
</iq>
```

At this point, the service itself will subscribe to the remote node.

Listing 5: Service subscribes to remote node for chaining

```
<iq type='set'
  from='weatherbot@consumer.tld/Chicagoland'
  to='notify.weather.tld'
  id='sub1'>
  <pubsub xmlns='http://jabber.org/protocol/pubsub'>
    <subscribe
      node='OHR'
      jid='weatherbot@consumer.tld/Chicagoland' />
  </pubsub>
</iq>
```

Now subscribers who are local to the consumer.tld XMPP service can subscribe directly to weatherbot@consumer.tld/Chicagoland instead of the remote pubsub node at notify.weather.tld. We therefore refer to weatherbot@consumer.tld/Chicagoland as a "chaining node" and the remote node as a "chained node".

### 3 Notifications

When a chaining node delivers a notification to its subscribers, it SHOULD include an [Extended Stanza Addressing \(XEP-0033\)](#)<sup>3</sup> header of "ofrom" to specify the chained node or service that generated the notification (note: this header is not yet defined in XEP-0033).

Listing 6: Chaining node notifies subscribers

```
<message from='weatherbot@consumer.tld/bot'
  to='subscriber@consumer.tld'
  id='foo'>
  <event xmlns='http://jabber.org/protocol/pubsub#event'>
```

<sup>3</sup>XEP-0033: Extended Stanza Addressing <<https://xmpp.org/extensions/xep-0033.html>>.

```
<items node='Chicagoland'>
  <item id='ae890ac52d0df67ed7cfd51b644e901'>
    <example xmlns='urn:xmpp:example'>message</example>
  </item>
</items>
</event>
<addresses xmlns='http://jabber.org/protocol/address'>
  <address type='ofrom' jid='notify.weather.tld' />
</addresses>
</message>
```

## 4 Determining Support

If a pubsub service supports Ad-Hoc Commands, it MUST advertise the commands it supports via [Service Discovery \(XEP-0030\)](#)<sup>4</sup> (as described in XEP-0050: Ad-Hoc Commands); such commands exist as well-defined discovery nodes associated with the service. In particular, if a pubsub service supports chaining it MUST advertise a command of "http://jabber.org/protocol/pubsub#chaining".

## 5 Security Considerations

The ability to subscribe one node to another node introduces the possibility of exposing non-public information in a public way, since the access controls for the node that originates a notification might not be known or enforced by the downstream node. Therefore, the upstream node (or its owner) is advised to make a careful access decision before allowing a downstream node (or any other entity) to subscribe.

Note: The upstream node can discover the identity of the downstream node by sending a service discovery information ("disco#info") request to the downstream node, and MAY cancel or decline the downstream node's subscription if it determines that the node has an identity of "pubsub/leaf" or "pubsub/collection".

## 6 IANA Considerations

This document requires no interaction with the [Internet Assigned Numbers Authority \(IANA\)](#)<sup>5</sup>.

<sup>4</sup>XEP-0030: Service Discovery <<https://xmpp.org/extensions/xep-0030.html>>.

<sup>5</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

The [XMPP Registrar](#)<sup>6</sup> shall include the following information in its registries.

### 7.1 Protocol Namespaces

The XMPP Registrar shall include 'http://jabber.org/protocol/pubsub#chaining' in its registry of protocol namespaces (see <<https://xmpp.org/registrar/namespaces.html>>).

### 7.2 Field Standardization

[Field Standardization for Data Forms \(XEP-0068\)](#)<sup>7</sup> defines a process for standardizing the fields used within [Data Forms \(XEP-0004\)](#)<sup>8</sup> scoped by a particular namespace (see <<https://xmpp.org/registrar/formtypes.html>>). The reserved fields for the 'http://jabber.org/protocol/pubsub#chaining' namespace are specified below.

```
<form_type>
  <name>http://jabber.org/protocol/pubsub#chaining</name>
  <doc>XEP-0253</doc>
  <desc>Forms used for chaining of pubsub nodes.</desc>
  <field var='local-node'
        type='text-single'
        label='The_Node_ID_of_the_local_node' />
  <field var='remote-node'
        type='text-single'
        label='The_NodeID_of_the_remote_node' />
  <field var='remote-service'
        type='jid-single'
        label='The_Jabber_ID_of_the_remote_pubsub_service' />
</form_type>
```

## 8 Acknowledgements

Thanks to Joe Hildebrand for his feedback.

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<sup>6</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/>>.

<sup>7</sup>XEP-0068: Field Data Standardization for Data Forms <<https://xmpp.org/extensions/xep-0068.html>>.

<sup>8</sup>XEP-0004: Data Forms <<https://xmpp.org/extensions/xep-0004.html>>.