XEP-0105: Tree Transfer Stream Initiation Profile

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A profile describing metadata for transferring trees of files using stream inititation.

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1 Introduction

File transfers of entire trees require a lot more metadata and prior setup to link paths to files with unique ids so that clients can track them. This profile provides a more robust method of defining that metadata so that directory trees can be transfered.

2 Requirements

- Provide a full featured set of information that is applicable to tree transfers.
- Meta-data that is to be provided:
  - number of files
  - size of entire tree
  - list of files and stream ids

3 Usage

The tree transfer profile is in the ”http://jabber.org/protocol/si/profile/tree-transfer” namespace. The profile is fairly simple: it consists of the root element with child elements that specify a directory structure of files with stream ids that will be used for each file.
This profile requires support for the File Transfer profile described in SI File Transfer (XEP-0096) [1]. Once you have accepted this SI, a new SI using the File Transfer profile will be offered for each file in the tree. This profile provides a mapping of files with paths and reserved stream ids which will be used to auto-accept a File Transfer SI that uses that same stream id from the sender.
The root element is <tree> and has two attributes. The attributes are used only during the offer stage of stream initiation:

- *size* - The size, in bytes, of all of the files to be sent.
- *numfiles* - The number of files/File Transfer SIs that are in the tree.

The *size* and *numfiles* attributes MUST be present in the profile.
The only possible child element of the root is <directory/> since there are other specifications that handle single file transfers. The directory structure is sent in a hierarchical manner with nested <directory/> and/or <file/> tags. One or more <file/> elements will be sent, one for each file. One or more <directory/> elements will be sent, one for each directory.
The <directory/> element has one attribute:

- *name* - The name of the directory to create on the target system.

[1] XEP-0096: SI File Transfer <https://xmpp.org/extensions/xep-0096.html>.

The attribute is REQUIRED on each <directory/> element.
The <file/> element has two attributes:

- *sid* - The stream id that MUST be sent for the File Transfer SI.
- *name* - The name of the file. The file should be saved to the same location in the target directory tree as the <directory/> hierarchy defines.

Both attributes are REQUIRED on each <file/> element. The total number of <file> elements MUST equal the numfiles attribute sent in the <tree/> element.
The stream-method that is accepted for a Tree Profile SI MUST be remembered and the subsequent File Transfer SIs MUST NOT provide a Feature Negotiation packet. The stream-method has already been chosen and should be used for all of the streams.
Implementations of this profile MUST support Stream Initiation (XEP-0095) [2] and XEP-0096.

4 Examples

Listing 1: Profile Usage in Stream Initiation Offer

```
<iq type='set' id='offer1' to='receiver@jabber.org/resource'>
  <si
    xmlns='http://jabber.org/protocol/si'
    id='a0'
    profile='http://jabber.org/protocol/si/profile/tree-transfer'>
    <tree
      xmlns='http://jabber.org/profile/si/profile/tree-transfer'
      numfiles='9'
      size='80500'>
      <directory name='cd_collection'>
        <file sid='ft1' name='coll.index'/>
        <directory name='album1'>
          <file sid='ft2' name='song1.mp3'/>
          <file sid='ft3' name='song2.mp3'/>
          <file sid='ft4' name='song3.mp3'/>
          <file sid='ft5' name='song4.mp3'/>
        </directory>
        <directory name='album2'>
          <file sid='ft6' name='song1.mp3'/>
          <file sid='ft7' name='song2.mp3'/>
          <file sid='ft8' name='song3.mp3'/>
          <file sid='ft9' name='song4.mp3'/>
        </directory>
      </directory>
    </tree>
```

[2] XEP-0095: Stream Initiation <https://xmpp.org/extensions/xep-0095.html>.

```
    <feature xmlns='http://jabber.org/protocol/feature-neg'>
      <x xmlns='jabber:x:data'>
        <field var='stream-method' type='list-single'>
          <option><value>http://jabber.org/protocol/bytestreams</value
              ></option>
          <option><value>http://jabber.org/protocol/ibb</value></
              option>
        </field>
      </x>
    </feature>
  </si>
</iq>
```

Listing 2: Simple Profile Usage in Stream Initiation Result

```
<iq type='result' to='sender@jabber.org/resource' id='offer1'>
  <si xmlns='http://jabber.org/protocol/si'>
    <feature xmlns='http://jabber.org/protocol/feature-neg'>
      <x xmlns='jabber:x:data' type='submit'>
        <field var='stream-method'>
          <value>http://jabber.org/protocol/bytestreams</value>
        </field>
      </x>
    </feature>
  </si>
</iq>
```

Listing 3: Subsequent File Transfer Offer

```
<iq type='set' id='offer2' to='receiver@jabber.org/resource'>
  <si xmlns='http://jabber.org/protocol/si'
      id='ft1'
      mime-type='text/plain'
      profile='http://jabber.org/protocol/si/profile/file-transfer'>
    <file xmlns='http://jabber.org/protocol/si/profile/file-transfer'
          name='coll.index'
          size='500'/>
  </si>
</iq>
```

Listing 4: Subsequent File Transfer Result

```
<iq type='result' to='sender@jabber.org/resource' id='offer2'>
  <si xmlns='http://jabber.org/protocol/si'/>
</iq>
```

Above is repeated for ft2, ft3, etc...

5 IANA Considerations

No interaction with the Internet Assigned Numbers Authority (IANA) [3] is required as a result of this document.

6 XMPP Registrar Considerations

The profile described in this document will be registered with XMPP Registrar [4] as a valid Stream Initiation profile.

7 XML Schema

```
<?xml version='1.0' encoding='UTF-8'?>

<xs:schema
    xmlns:xs='http://www.w3.org/2001/XMLSchema'
    targetNamespace='http://jabber.org/protocol/si/profile/tree-
        transfer'
    xmlns='http://jabber.org/protocol/si/profile/tree-transfer'
    elementFormDefault='qualified'>

  <xs:element name='tree'>
    <xs:complexType>
      <xs:attribute name='numfiles' use='required' type='xs:integer'/>
      <xs:attribute name='size' use='required' type='xs:integer'/>
      <xs:element ref='directory' minOccurs='0' maxOccurs='1'/>
    </xs:complexType>
  </xs:element>

  <xs:element name='directory'>
    <xs:complexType>
      <xs:attribute name='name' use='required' type='xs:string'/>
      <xs:element ref='directory' minOccurs='0' maxOccurs='unbounded'/
          >
      <xs:element ref='file' minOccurs='0' maxOccurs='unbounded'/>
    </xs:complexType>
  </xs:element>
```

[3] 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/>.

[4] 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/>.

```
  <xs:element name='file'>
    <xs:complexType>
      <xs:attribute name='name' use='required' type='xs:string'/>
      <xs:attribute name='sid' use='required' type='xs:string'/>
    </xs:complexType>
  </xs:element>

</xs:schema>
```