Considerations of software generated message on XMPP

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Motivation

* More and more software uses XMPP as Transport Layer of their data flow

Example 1:

* Connect and configure more than 10k access router through agent software via XMPP MUC.

Example 2:

* XMPP for home electronics.
* In a situation which many home electronics (multi vendor) are connected to network and runs XMPP agent software.
* If we could stop what we don’t need and get what we want, it would be good. And it is different from DoS attack defence (because it only matters with reducing data amount)
Problems

In Example 1:

* When type “show version”, some Router reply with “show version” in it.
* then, software runs out of control.

In Example 2:

* Since the devices which will be connected is diverse and many, we should have standard.
* Moreover, there should be zero-config system will be useful for home electronics for using filtering and so on.
<msg from="a@ex.com" to="b@ex.com"> hello </msg>
<msg from="b@ex.com" to="a@ex.com"> hello </msg>
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If both a and b are softwares made by same organisation, this is definitely a software bug.
A and B are software from the same organisation. C is from another software made by another organisation. In this case, is this just a software bug?
A server and many clients.
1. Many clients (more than 10k) are connected to sever.
2. A client sends messages to other clients.
3. Many clients responds.
4. Server response will be slow down.

Human:
show version;

Client1:

hoge Operating Software System
hoge 7233 Software, Version 12.0
(5)WC2, RELEASE SOFTWARE (fc1)
Compiled Tue 23-Oct-01 12:26 by hoge

ROM: Bootstrap program is hoge boot loader

Switch uptime is 1 hour, 24 minutes
System returned to ROM by power-on
System image file is "flash:hoge.img"

hoge processor 829mhz with 3951 mb memory
Processor board ID hoge001
Last reset from system-forget

Processor is running beginner edition
hoge enabled
hoge feature required
24 FastEthernet/IEEE 802.3 interface(s)

32K bytes of flash-simulated non-volatile configuration memory.
hoge registered number: 3941312

Client2:

hoge Operating Software System
hoge 7233 Software, Version 12.0
(5)WC2, RELEASE SOFTWARE (fc1)
Compiled Tue 23-Oct-01 12:26 by hoge

ROM: Bootstrap program is hoge boot loader

Switch uptime is 1 hour, 24 minutes
System returned to ROM by power-on
System image file is "flash:hoge.img"

hoge processor 829mhz with 3951 mb memory
Processor board ID hoge001
Last reset from system-forget

Processor is running beginner edition
hoge enabled
hoge feature required
24 FastEthernet/IEEE 802.3 interface(s)

32K bytes of flash-simulated non-volatile configuration memory.
hoge registered number: 3941312
Possible Solution

- TTL
- Path vector
- Back Pressure (bytes/minute limitation)
- Filtering: XEP - 0273
this can be solved by hop count, or TTL limit:

<msg from="a@ex.com" to="b@ex.com" hop_cnt="1"> hello </msg>
<msg from="b@ex.com" to="c@ex.com" hop_cnt="2"> hello </msg>
<msg from="c@ex.com" to="a@ex.com" hop_cnt="3"> hello </msg>
<msg from="a@ex.com" to="b@ex.com" hop_cnt="4"> hello </msg>
stop
<msg from="a@ex.com" to="b@ex.com"> hello </msg>
<msg from="b@ex.com" to="c@ex.com"> hello </msg>
<msg from="c@ex.com" to="a@ex.com"> hello </msg>
<msg from="a@ex.com" to="b@ex.com"> hello </msg>
<msg from="b@ex.com" to="c@ex.com" path="a,b"> hello </msg>
<msg from="c@ex.com" to="a@ex.com" path="a,b,c"> hello </msg>

this can be solved by path vector:

<msg from="a@ex.com" to="b@ex.com" path="a"> hello </msg>
<msg from="b@ex.com" to="c@ex.com" path="a,b"> hello </msg>
<msg from="c@ex.com" to="a@ex.com" path="a,b,c"> hello </msg>

stop
An example of Back Pressure.

Ex: XEP-0205: Limiting the absolute size of stanza
Where can we solve this?

When we consider XMPP as transport protocol, where XMPP core and IP lies are similar. There are solutions at upper layer and IP layer in IP, so we can consider XMPP could have these.
Next Step

- Continue?
  - If anyone want to collaborate with this, we will continue writing this draft.
  - Anyone?
- Submit as XEP?
  - There are many possible solutions for these problem, so we can submit to XMPP Standards Foundation as XEP.
  - Some solution can be submitted as I-D to IETF.