

ndnSIM - Bug #2764

HopCount Calculation "broken" due to content store

04/22/2015 01:51 AM - Christian Kreuzberger

Status:	Closed	Start date:	04/22/2015
Priority:	Normal	Due date:	
Assignee:	Yuanzhi Gao	% Done:	100%
Category:	NFD	Estimated time:	0.00 hour
Target version:			

Description

It seems that when data is added to the content store, the hop count tag is not removed. Therefore, when data is SERVED from the content store, the hop count tag is not reset to 0. Instead, the old hop count tag is served, leading to wrong results on the client.

Details:

You can reproduce this problem by looking at the ndnsim website:

<http://ndnsim.net/2.0/metric.html#application-level-trace-helper>

ndn-tree-app-delay-tracer.cpp will serve as an example, the result is as follows

Time	Node	Appld	SeqNo	Type	DelayS	DelayUS	RetxCount	HopCount
10.0057	leaf-1	257	0	LastDelay	0.0057344	5734.4	1	2
10.0057	leaf-1	257	0	FullDelay	9.00573	9.00573e+06	3	2
10.0066	leaf-1	257	1	LastDelay	0.0065808	6580.8	1	2
10.0066	leaf-1	257	1	FullDelay	0.0065808	6580.8	1	2
11.0029	leaf-2	257	0	LastDelay	0.0028672	2867.2	1	2
11.0029	leaf-2	257	0	FullDelay	0.0028672	2867.2	1	2
11.0057	leaf-3	257	0	LastDelay	0.0057344	5734.4	1	2
11.0057	leaf-3	257	0	FullDelay	0.0057344	5734.4	1	2

In addition, the website states that

"HopCount the number of hops that the retrieved Data packet traveled on the way back from producer application or cache."

Which is obviously not true in this example, the hop counts should not all be 2 (leaf 2 or 3 should be served out of the cache).

How To Fix:

I digged into the code, and saw that the forwarder is not aware of the tags, and the netdevice is not aware of the cache - so I was only able to "hotfix" this in a quick and dirty way, by modifying the behaviour of NFD/daemon/fw/forwarder.cpp - Forwarder::onIncomingData(Face& inFace, const Data& data).

The diff file is attached, basically I removed the hopcount tag before adding the data packet to the cache. I changed

```
// CS insert
if (m_csFromNdnSim == nullptr)
m_cs.insert(data);
else
m_csFromNdnSim->Add(data.shared_from_this());

to

// remove hop count tag before adding to content store !!!
ns3::Ptr<ns3::Packet> tmpPacket = ns3::ndn::Convert::ToPacket(data);
ns3::ndn::FwHopCountTag tag;
tmpPacket->RemovePacketTag(tag);

// CS insert
if (m_csFromNdnSim == nullptr)
m_cs.insert(*(ns3::ndn::Convert::FromPacket(tmpPacket)));
else
m_csFromNdnSim->Add(ns3::ndn::Convert::FromPacket(tmpPacket));
```

The results are promising:

Time	Node	Appld	SeqNo	Type	DelayS	DelayUS	RetxCount	HopCount
10.0057	leaf-1	257 0	LastDelay	0.0057344	5734.4	1	2	
10.0057	leaf-1	257 0	FullDelay	9.00573	9.00573e+06	3	2	
10.0066	leaf-1	257 1	LastDelay	0.0065808	6580.8	1	2	
10.0066	leaf-1	257 1	FullDelay	0.0065808	6580.8	1	2	
11.0029	leaf-2	257 0	LastDelay	0.0028672	2867.2	1	1	
11.0029	leaf-2	257 0	FullDelay	0.0028672	2867.2	1	1	
11.0057	leaf-3	257 0	LastDelay	0.0057344	5734.4	1	2	
11.0057	leaf-3	257 0	FullDelay	0.0057344	5734.4	1	2	

I am not sure if my way to fix it is the right way, I'm quite sure there is a better way to do it.

Best regards,
Christian

History

#1 - 04/24/2015 11:57 AM - Yuanzhi Gao

- Status changed from New to In Progress
- Assignee set to Yuanzhi Gao

#2 - 04/30/2015 12:22 AM - Yuanzhi Gao

- Status changed from In Progress to Resolved
- % Done changed from 0 to 100

Hi Christian,

I think you are right that hop count tag should be removed before the data is inserted into content store, otherwise the hop count would be wrong when data is retrieved from cache.

Thank you very much.

Best regards,
Yuanzhi

#3 - 08/20/2015 08:27 PM - Alex Afanasyev

- Status changed from Resolved to Closed

Files

hopcount.diff

1.49 KB

04/22/2015

Christian Kreuzberger