IBM Tivoli Software

IBM Tivoli Directory Server 6.0 - Replication

Excerpt taken from presentation given on April 24, 2007
Implementing a replication topology: Configuring Replication

Support Technical Exchange Web site
http://www-306.ibm.com/software/sysmgmt/products/support/supp_tech_exch.html

8/15/2007

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We are now ready to configure replication

Lets take stock of where we are.

- **At this time we have 1 authoritative master running (peer1) and two clean and synchronized systems ready to become a peer (peer2) and a replica (replica1)**
- **The user data is loaded on peer1 and we have cleaned up any unneeded replication agreements**
- **All three servers should be started at this time using the commands from slide 18**

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The best tool for replication … as simple as ldapsearch

When trying to determine your topology it is always a good idea to start by running the following search:

#ldapsearch –h hostname –D cn=root –w *** -s sub objectclass=ibm-repl***

This will show us any configured replication agreement currently on the system. At this time this entry should return blank from:

peer1, peer2 and replica1

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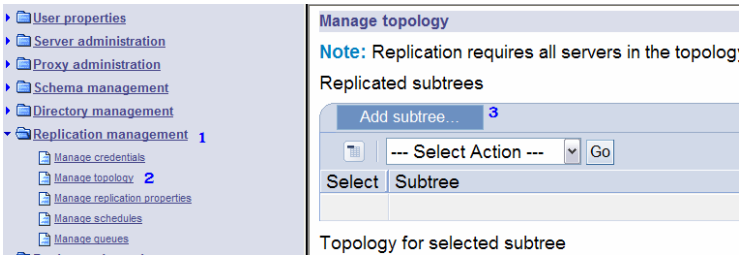
Configuring replication from the web admin tool

- **Login to the webadmin as cn=root on Peer1 (Authoritative Master)**
- **Replication Management**
  - Manage Topology
    - Add Subtree



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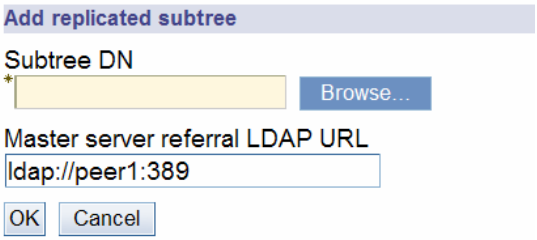
Next, we have to select our tree

There are two options in this case:

1. **We can manually type in our subtree**
2. **We can browse and select our subtree**

In this example we are going to click on Browse…



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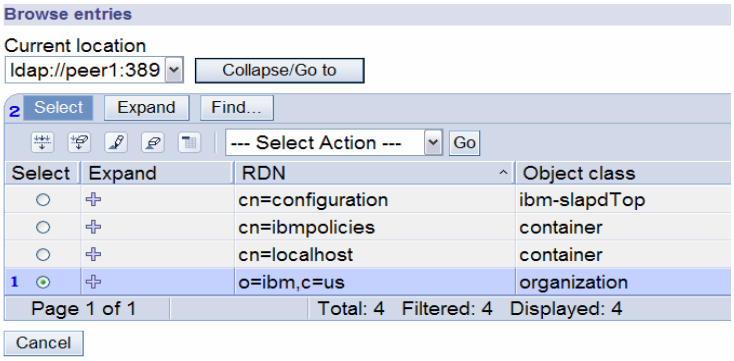
Select the subtree you want to replicate

You will notice the selection screen is very similar to the Directory Management section of webadmin



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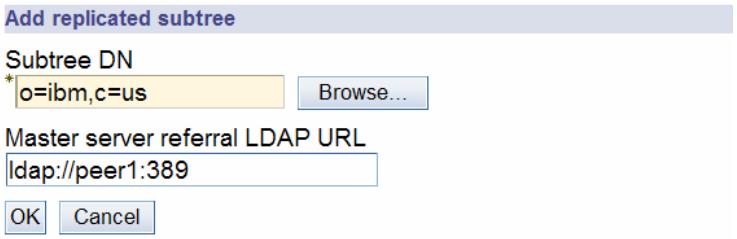
Checking our subtree

- **We have selected our subtree, and the last thing we need to check is to make sure we are not using another system for our "Master Server Referral LDAP URL"!!!**

Click OK



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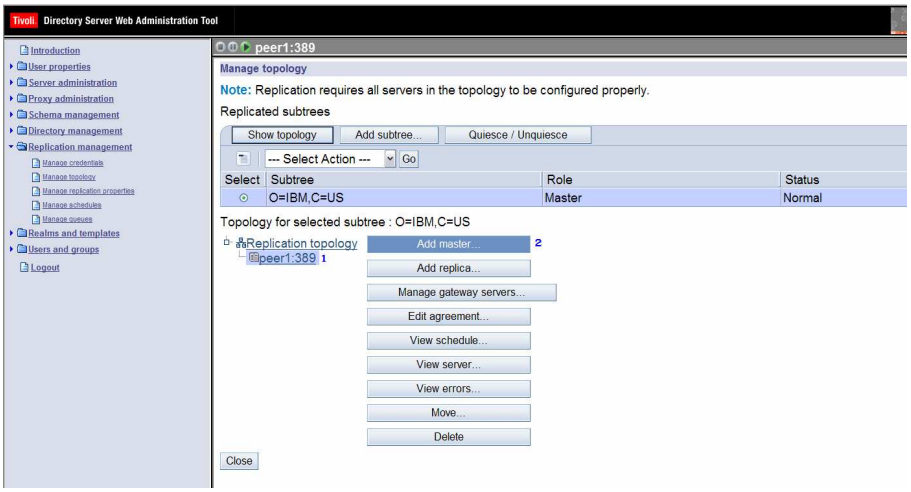
This is what the basic topology will look like



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So, what is actually taking place under the covers?

- **Everything that we just did via the webadmin adds specific entries to the directory itself. Lets start with the top level object o=ibm,c=us**

 # ldapsearch -D cn=root -w secret -s sub -b " " objectclass=ibm-repl*

o=IBM,c=US

objectclass=top

objectclass=organization

objectclass=ibm-replicationcontext

o=IBM

ibm-replicareferralurl=ldap://peer1:389

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Defining the replica group

- **Once the top level entry is set, then we must create an object where all replication related data will be stored. This is called the replicaGroup and looks like:**

ibm-replicaGroup=default,o=ibm,c=us

ibm-replicagroup=default

objectclass=ibm-replicagroup

objectclass=top

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Next we have the definition of the master

- **This is a very important entry as it tells Peer1 that he is actually a master for this section of the tree and looks like:**

cn=peer1:389,ibm-replicaGroup=default,o=ibm,c=us

objectclass=ibm-replicasubentry

objectclass=top

ibm-replicaserverid=peer1

ibm-replicationserverismaster=TRUE

cn=peer1:389

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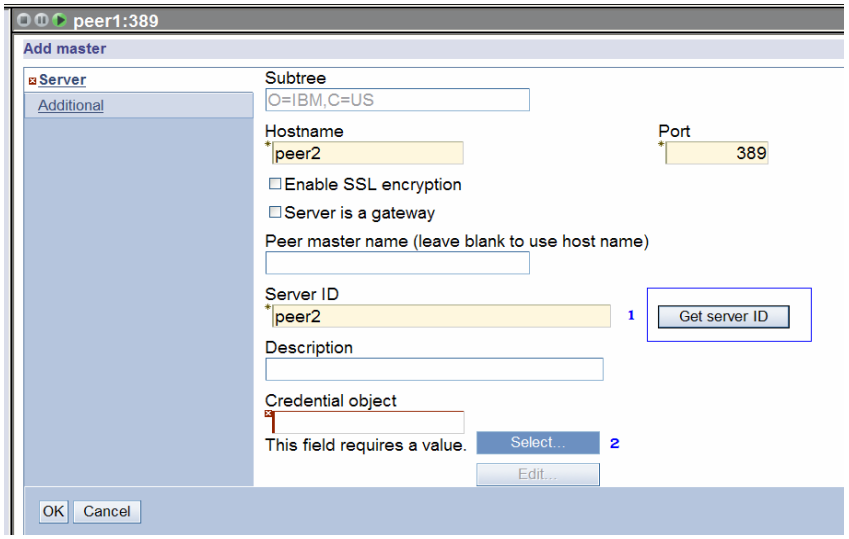
Add a Master screens…



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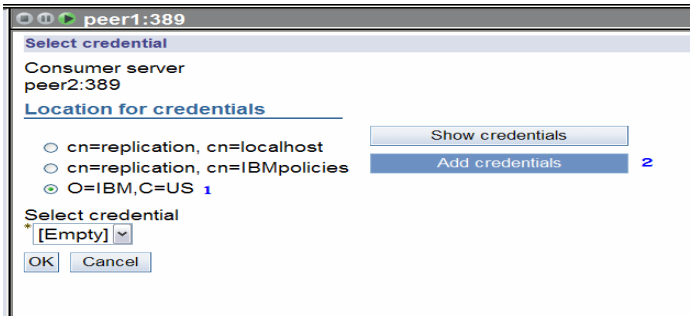
Adding the credential object – OUTBOUND!

- **Ok, so in this panel what we are doing is setting our OUTBOUND credential. This will be the bind dn that is used when PEER1 tries to replicate to any other system.**



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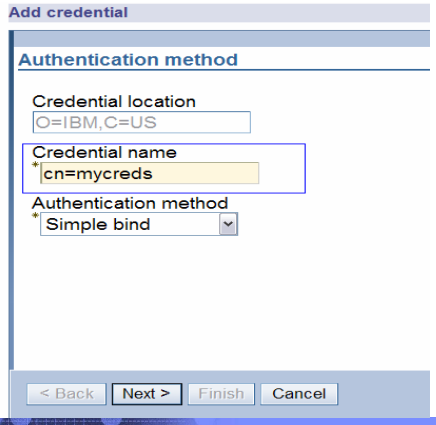
Adding the credential – Naming your credential object

- **In this first screen you can name the credential object anything you want:**



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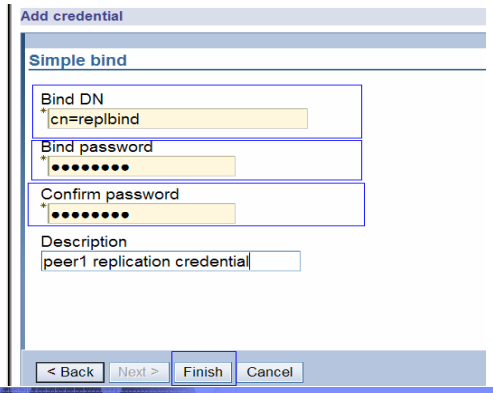
Setting your bind credential.

- **The key to this dn is that it MUST NOT BE the cn=root dn. In fact, this dn should not match any real user on your system. In my case I will use cn=replbind**



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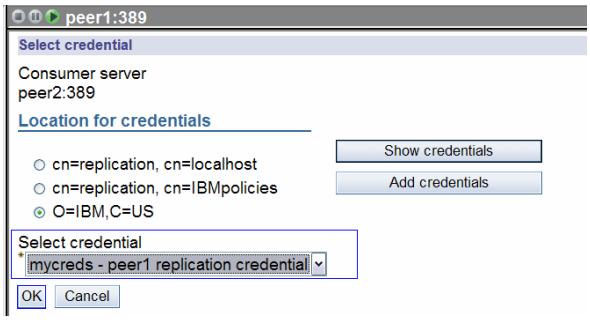
The view of our newly created cred

- **We can now see the credential object we created stored under the o=ibm,c=us tree:**



Click OK

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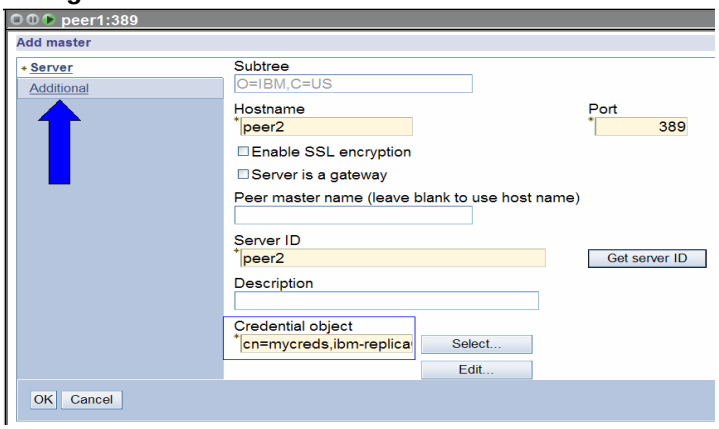
We are back in the Add Master screen

- **We can now see the credential object we created as part of this agreement. Next we must click on the Additional tab:**



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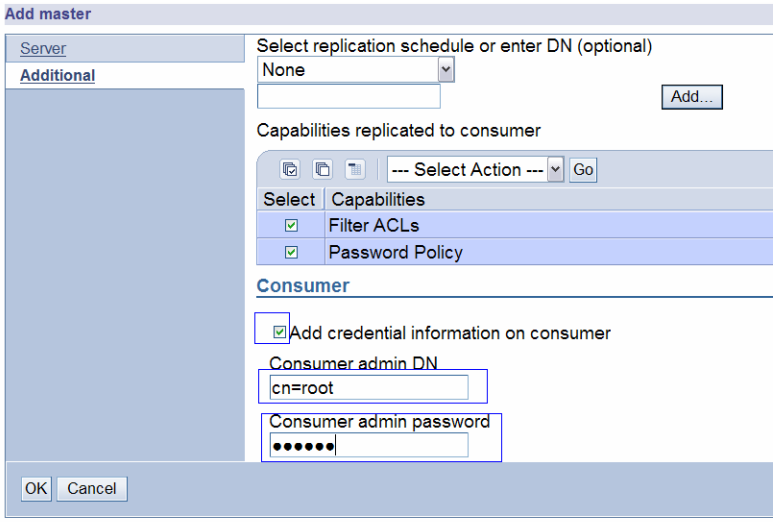
The Additional Tab:



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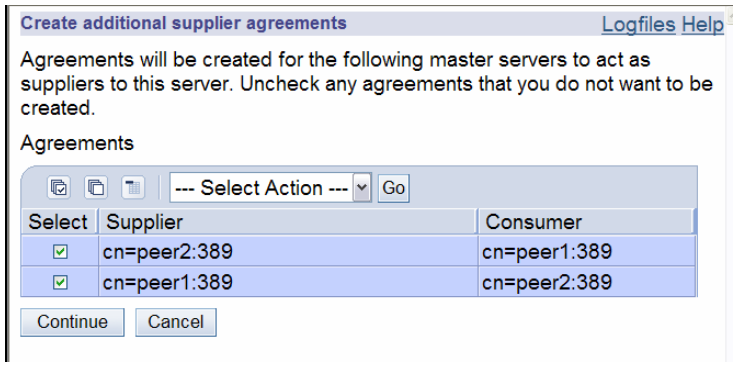
The Create additional supplier agreements screen

- **This screen is what builds the replication agreements between each system. This is a way for us to customize how we want to replicate, in this case I want both agreements:**



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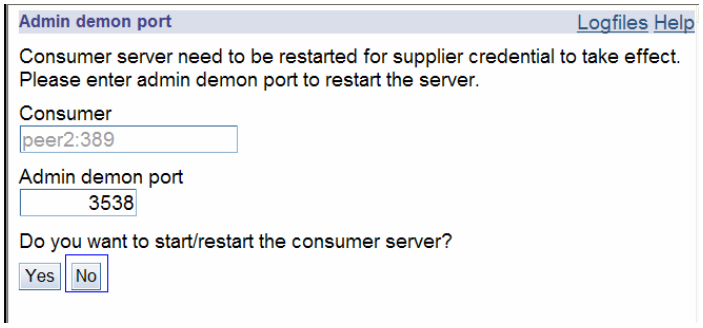
Next it will ask you if you want to restart Peer2…

I will typically answer no to this question as:

1. **It takes a while for the ibmslapd process to restart**
2. **I will be restarting peer2 anyway during the data sync later**



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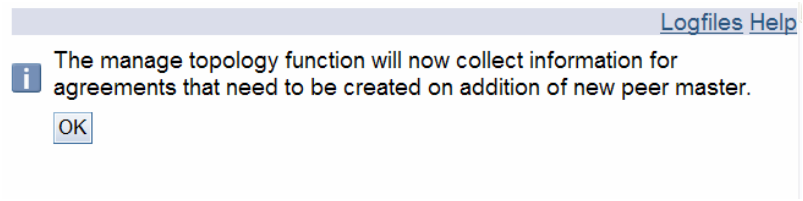
Next the ITDS server will fill in the gaps

- **At this stage the replication subsystems will collect topology information and then create the credential information that is still required for this topology to work.**

  Click OK



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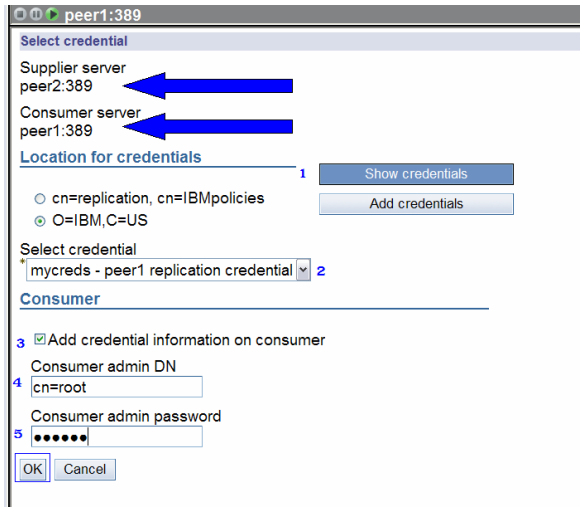
As part of 6.0 replication it will also…

- **The replication manager will create the credentials needed on Peer2 to replicate back to Peer1**



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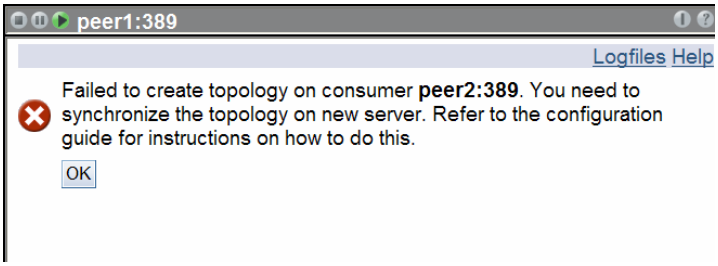
Because I didn't restart both Peer1 and Peer2…

- **This is an error message you are going to get almost every time, ignore it (We will sync when we have all agreements built anyway).**

Click OK



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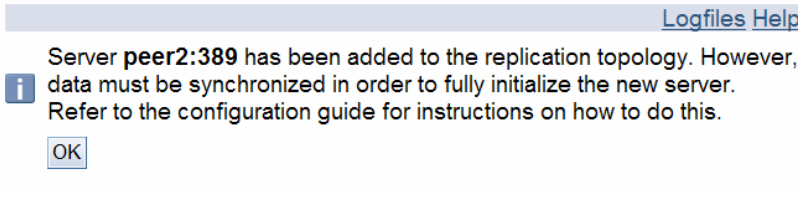
One more informational message…

- **Finally the replication management system will let us know our topology is complete:**

  Click OK



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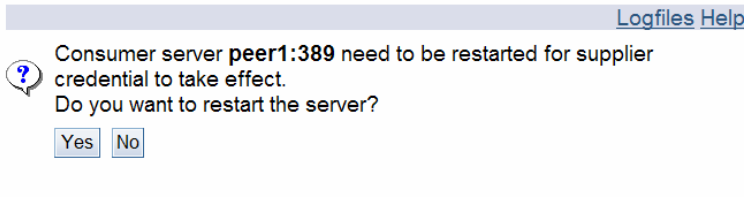
Will ask us if we want to restart Peer1

- **I usually skip this step due to the same reasons as before, BUT .. You have to pay attention here. If you do NOT restart your Master the credential object will not be in play and as such Peer2 will NOT be able to replicate to Peer1 … we will discuss in detail later.**

Click NO



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Lets look at what is actually added

- **When we add the credential to the consumer for INBOUND replication the update is not made to the database, but is actually stored within the ibmslapd.conf file:**

dn: cn=Supplier1177533245327, cn=configuration

cn: Supplier1177533245327

ibm-slapdmasterdn: cn=replbind

ibm-slapdmasterpw: {AES256}URuLoPlzqApEBtS8gtOK0g==

ibm-slapdreplicasubtree: O=IBM, C=US

objectclass: ibm-slapdconfigentry

objectclass: ibm-slapdsupplier

objectclass: top

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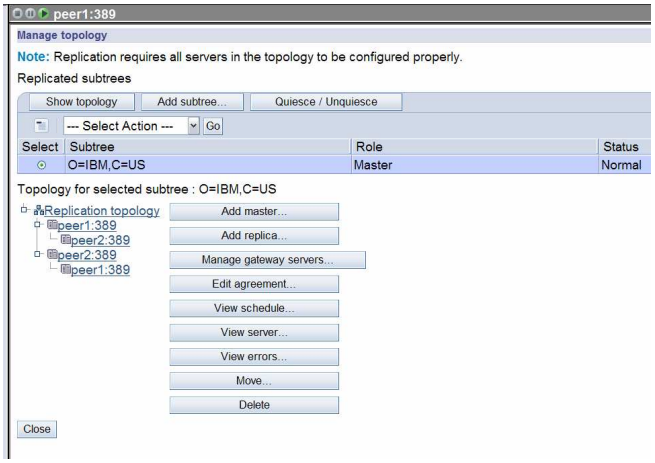
What a peer to peer topology looks like

- **At this point we only have Peer1 and Peer2 in our peer to peer replication agreement, but this is what the topology looks like:**



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So lets take another dive under the covers… ;-)

- **Using the ldapsearch we spoke of in slide 28 we can review how each of these tasks we took show up in the directory.**
- **First lets look at the credential object.**

cn=mycreds,ibm-replicaGroup=default,O=IBM,C=US

replicacredentials=replbind (This is the Password!)

description=peer1 replication credential

objectclass=ibm-replicationcredentials

objectclass=ibm-replicationcredentialssimple

objectclass=top

replicabinddn=cn=replbind (This is the bind dn used)

cn=mycreds

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The actual agreements.

- **There are two agreements that make up the replication between Peer1 and Peer2. It is important to understand how these agreements look, and the function of each**
- **The key: Write it down.**
  Consumer, Supplier, Subtree

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Peer1 to Peer2 agreement

This is how the agreement will appear where Peer2 is acting as a consumer (replica) while Peer1 is acting as a suppler (master)

cn=peer2:389,cn=peer1:389,ibm-replicaGroup=default,O=IBM,C=US

ibm-replicaconsumerid=peer2

ibm-replicationonhold=TRUE

ibm-replicacredentialsdn=cn=mycreds,ibm-replicaGroup=default,O=IBM,C=US

ibm-replicaurl=ldap://peer2:389

objectclass=ibm-replicationagreement

objectclass=top

cn=peer2:389

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And the Peer2 to Peer1 agreement…

- **Basically the same but in the correct order for this configuration:**

cn=peer1:389,cn=peer2:389,ibm-replicaGroup=default,O=IBM,C=US

ibm-replicaconsumerid=peer1

ibm-replicationonhold=TRUE

ibm-replicacredentialsdn=cn=mycreds,ibm-replicaGroup=default,O=IBM,C=US

ibm-replicaurl=ldap://peer1:389

objectclass=ibm-replicationagreement

objectclass=top

cn=peer1:389

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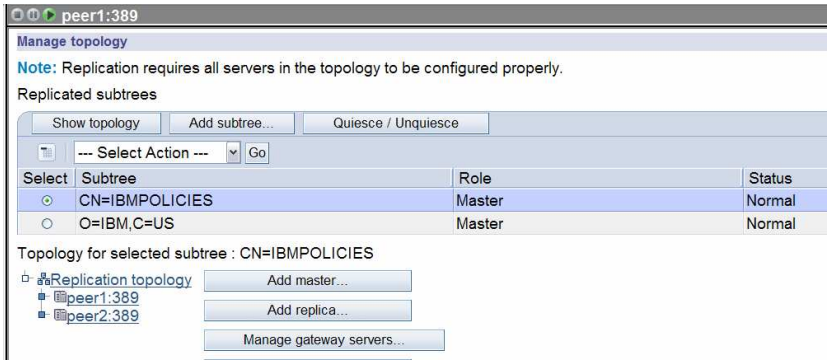
Lather… rinse … repeat

- **We use the same steps to add our other subtrees. In this configuration I want to have my schema and passwordPolicy attributes replicate so I add the cn=ibmpolicies subtree**



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