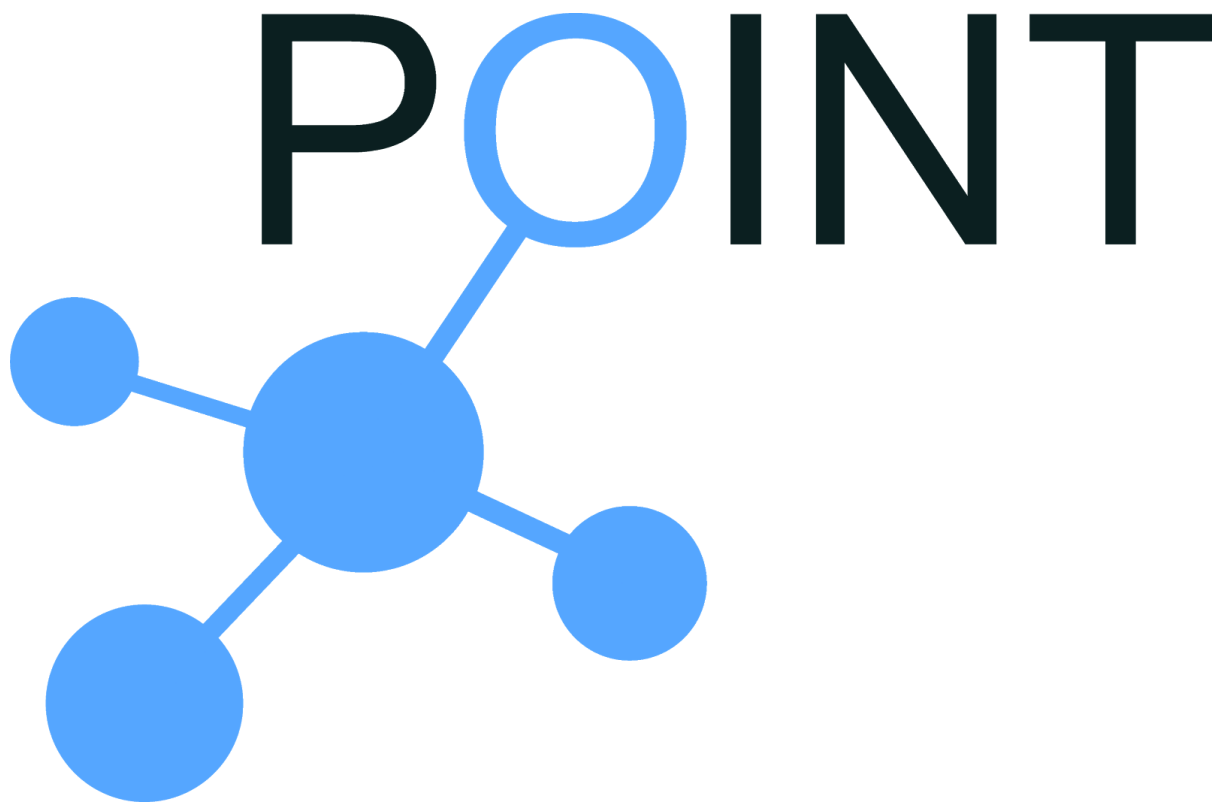


## Examples

Deploy a Growing POINT Network using the Dynamic Deployment Tool

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# 1. Overview

To bootstrap a simple 3-node ICN topology, the standard Blackadder deployment tool used large configuration files, similar to the `~/blackadder/deployment/examples/sample_topology.cfg`, which was introduced above. However, this might be a time-consuming and error-prone process, since multiple parameters must be manually added with a specific format. In addition to this, if there is a requirement to update the topology, this single configuration file needs to be updated and ICN processes will restart in every topology node, which does not allow the seamless operation of the non-affected ones.

The updated deployment tool suggests a more dynamic approach for the ICN topology formation and configuration, which enables the addition and deletion of nodes without disrupting the operation of non-attached ones. ICN topologies can now be dynamically deployed with small configuration files each time, instead of a complex and error-prone one.

The following examples will show how to extend an existing topology configured in deployment file `~/blackadder/deployment/examples/basic_3node_icn.cfg`, adding a new node, and also removing it. The topology to be created is presented in Figure 6.1. DS abbreviation means that node will act as the Deployment Server, while TM and RV indicate that node will act as the Topology Manager and RendezVous node.

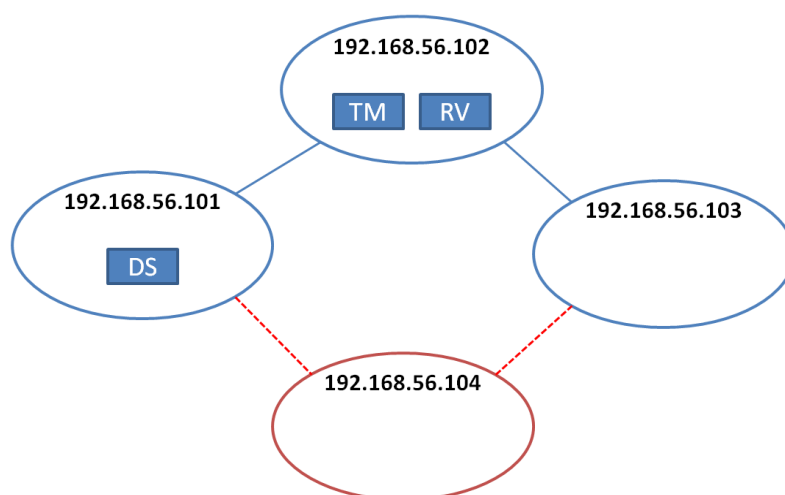


Figure 1: Sample topology for attaching and detaching a node

To deploy the basic 3-node example and also start the deployment server (DS) at node 192.168.56.101, login to node 192.168.56.101 and execute:

```
$ ./deploy -c examples/basic_3node_icn.cfg --dynamic
```

This command calculates and prepares all the necessary files, and copies them to each node, starts the Click process in all 3 nodes, as well as TM process in node 192.168.56.102, and finally starts the deployment server in node 192.168.56.101 at port 9999, and waits for incoming deployment requests. Hence, the blue-colored nodes (192.168.56.101-103) of Figure 6.1 are properly deployed.

## 2. Attach a new node

To add node 192.168.56.104, the user can now login to node 192.168.56.104 and use the `~/blackadder/deployment/examples/new_node.cfg` file, aiming to add the node to the existing topology, and connect it with nodes 192.168.56.101 and 192.168.56.103.

To send the deployment request to the deployment server at 192.168.56.101, execute:

```
$ ./client 192.168.56.101 examples/new_node.cfg
```

The deployment server will process the incoming request, generate the new topology graphml file, generate and send the new Click files, as well restart the Click and TM processes in nodes 192.168.56.101 and 192.168.56.103. Note that node 192.168.56.102 will not be affected. Hence, now the complete topology including 4 nodes (192.168.56.101-104) is fully functional and the user can run any of the existing Blackadder samples.

## 3. Detach an existing node

If for some reason, node 192.168.56.104 has to be removed from the topology, the user must login to 192.168.56.104 and use the configuration file `~/blackadder/deployment/examples/delete_node.cfg`.

To send it to the deployment server, execute:

```
$ ./client 192.168.56.101 examples/delete_node.cfg
```

Upon reception of such request, the deployment server will delete the node 192.168.56.104, update all required Click and TM files in all topology nodes and also restart all respective processes. Hence the topology will return to the original 3-nodes state.