Designated MSRP Node Handling on CSN Networks

Rev 1.1 02-Jul-08

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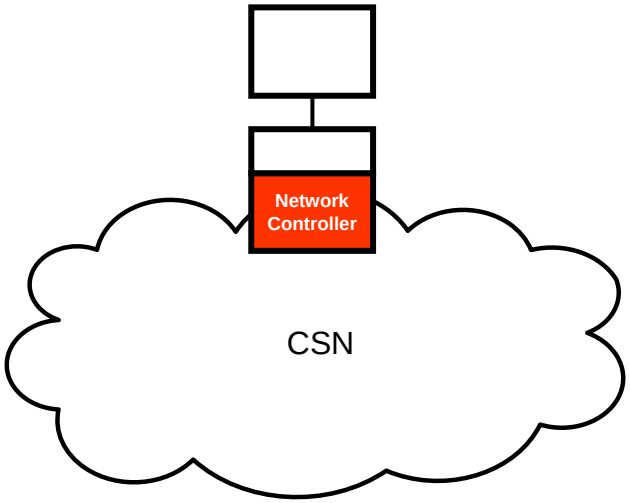
CSN Network Coordinator Characteristics

- CSN's Network Coordinator (NC) is most case dynamically selected
- First node to join the CSN network acts as NC
- NC node could move to another node:

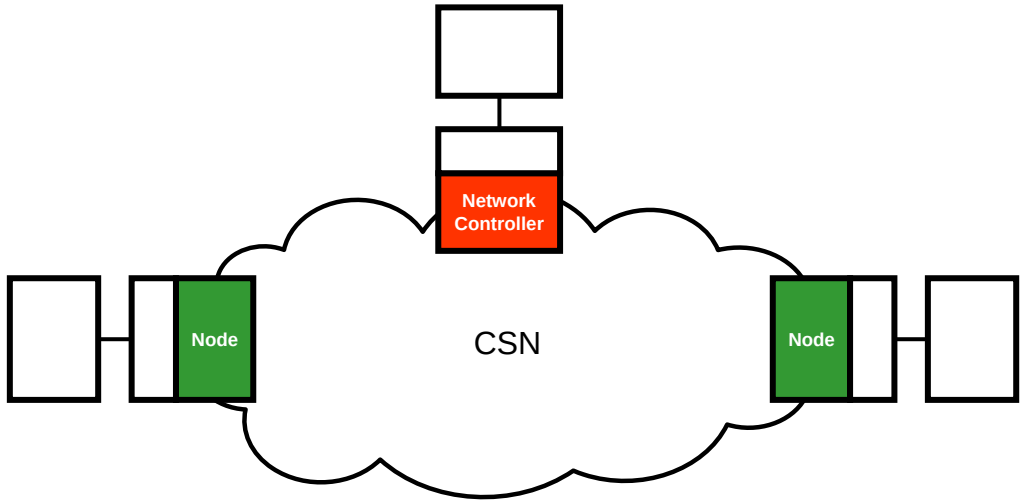
1. Scheduled move - NC Handover
   - a new node with better NC capabilities joins the network and initiates an NC handover
   - the NC node is gracefully shut down and prior to disconnecting, initiates an NC handover with an other node
2. Unscheduled move – NC Backup
   - The NC node disappeared from the network and the NC backup node takes control

CSN Network - NC Selection [1]



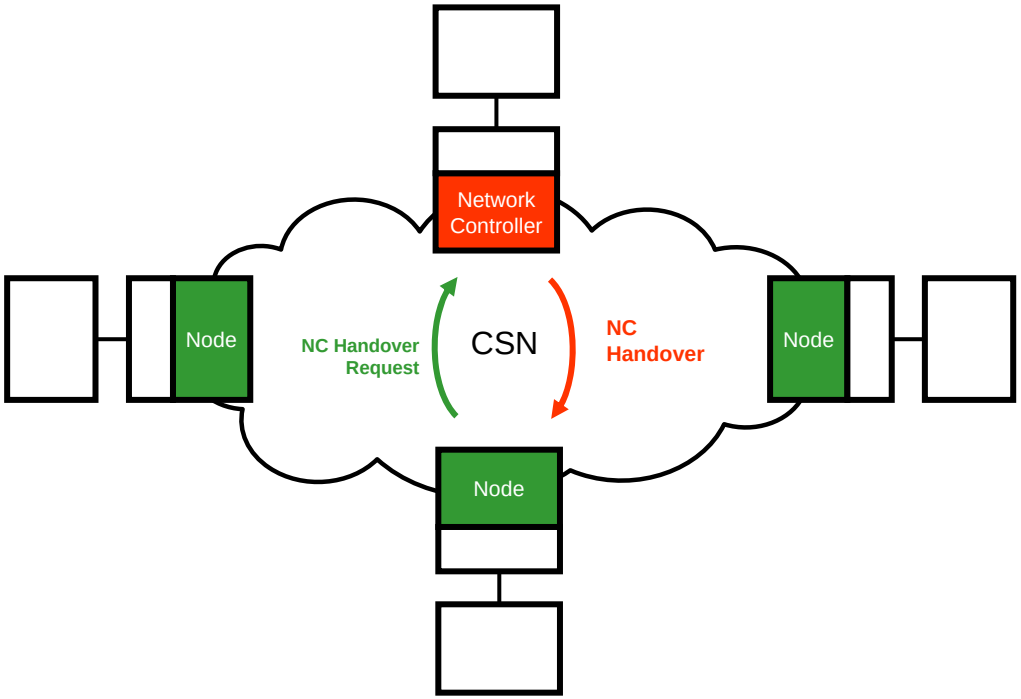
First Node to join the CSN network is the initial NC…

CSN Network - NC Selection [2]



Subsequent Nodes are joining the CSN network…

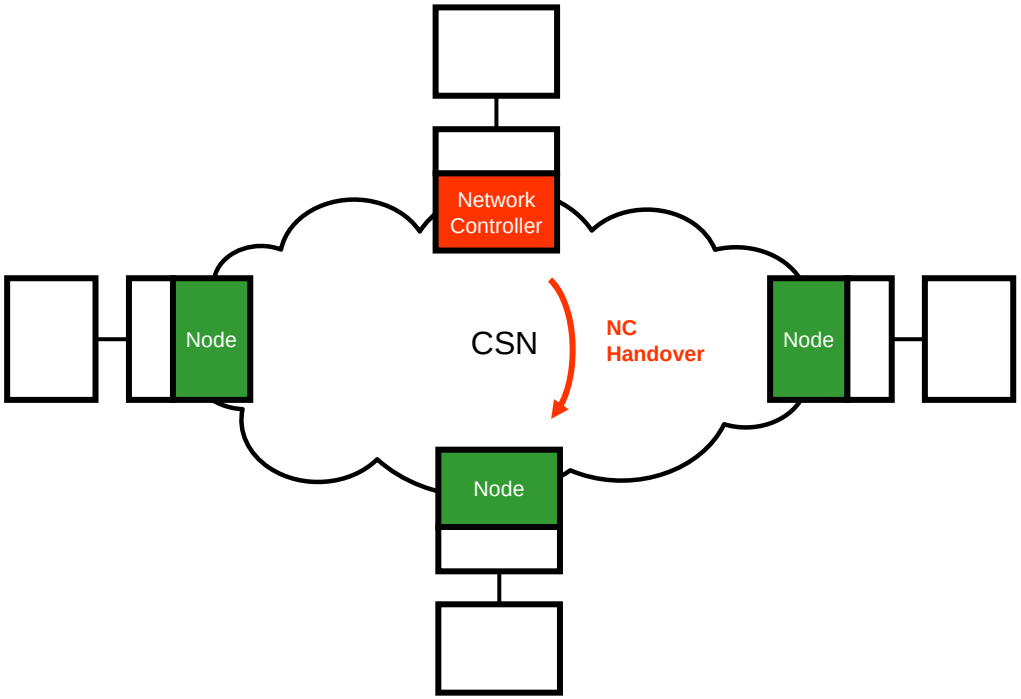
CSN Network – NC Handover [1]



But the NC node could dynamically change if:

1) a new node with better NC capabilities joins the network

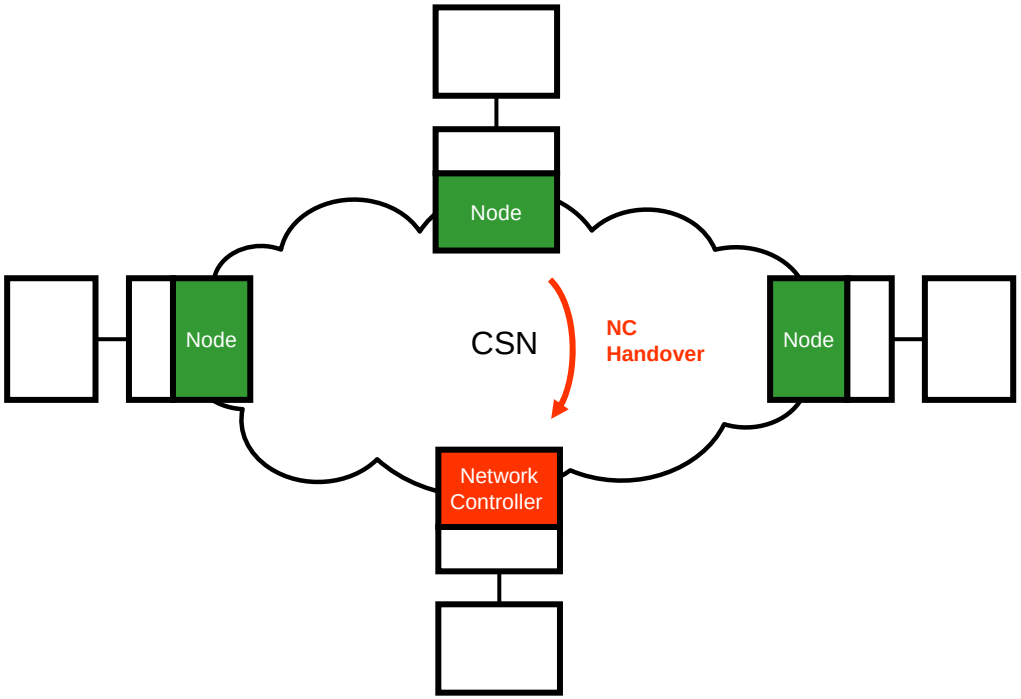
CSN Network – NC Handover [2]



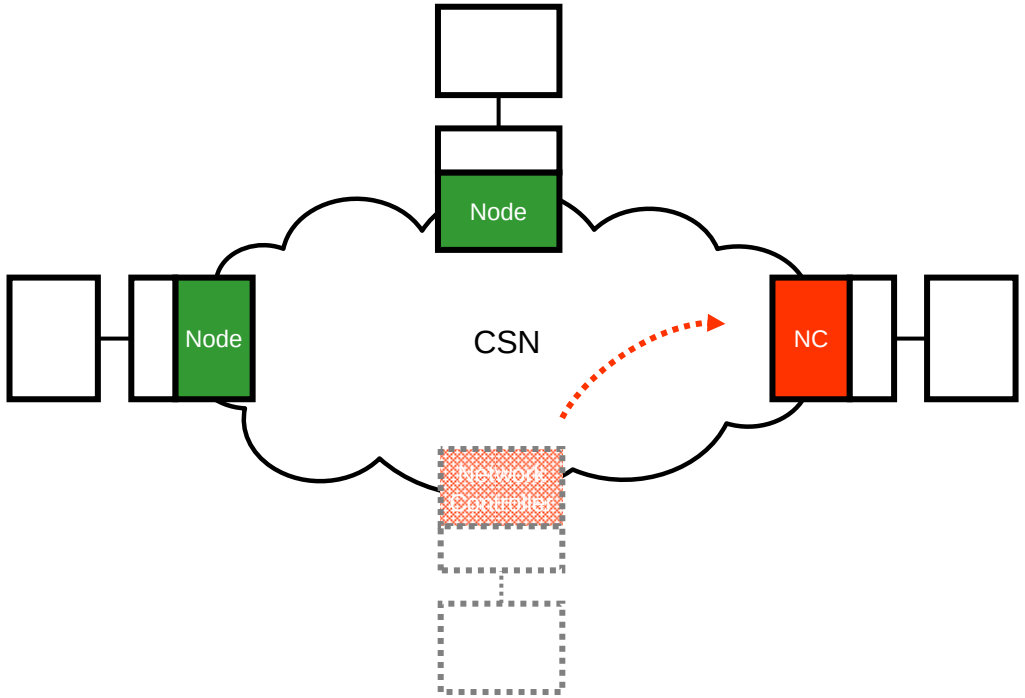
But the NC node could dynamically change if:

1) a new node with better NC capabilities joins the network
2) **the NC node handovers the control to another node before gracefully shutting down**

CSN Network – NC Handover [3]



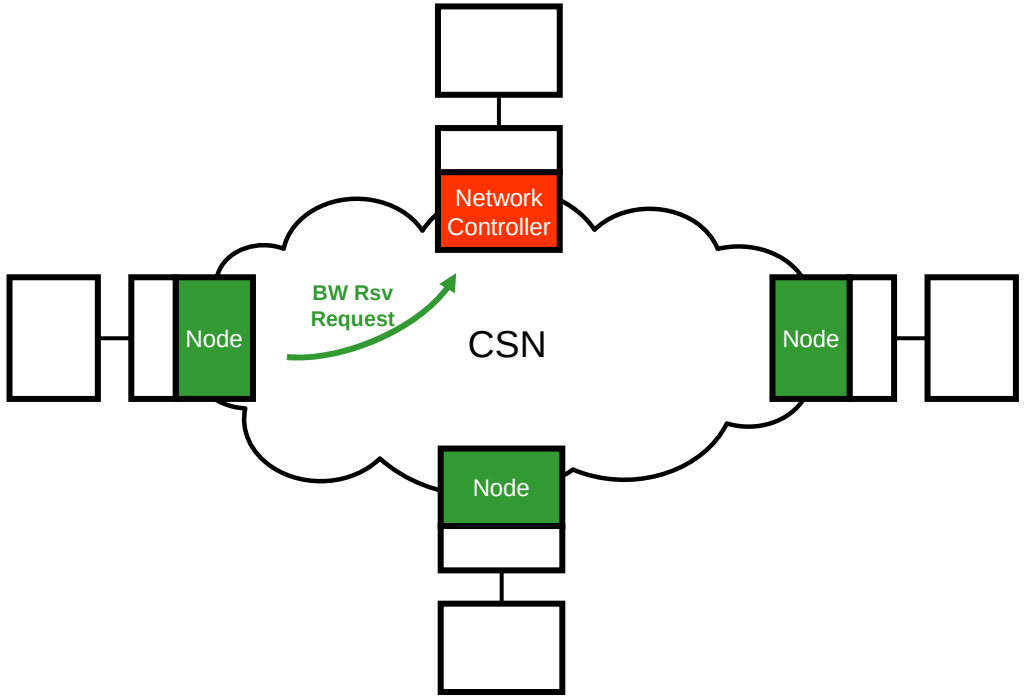
CSN Network – NC Backup



But the NC node could dynamically change if:

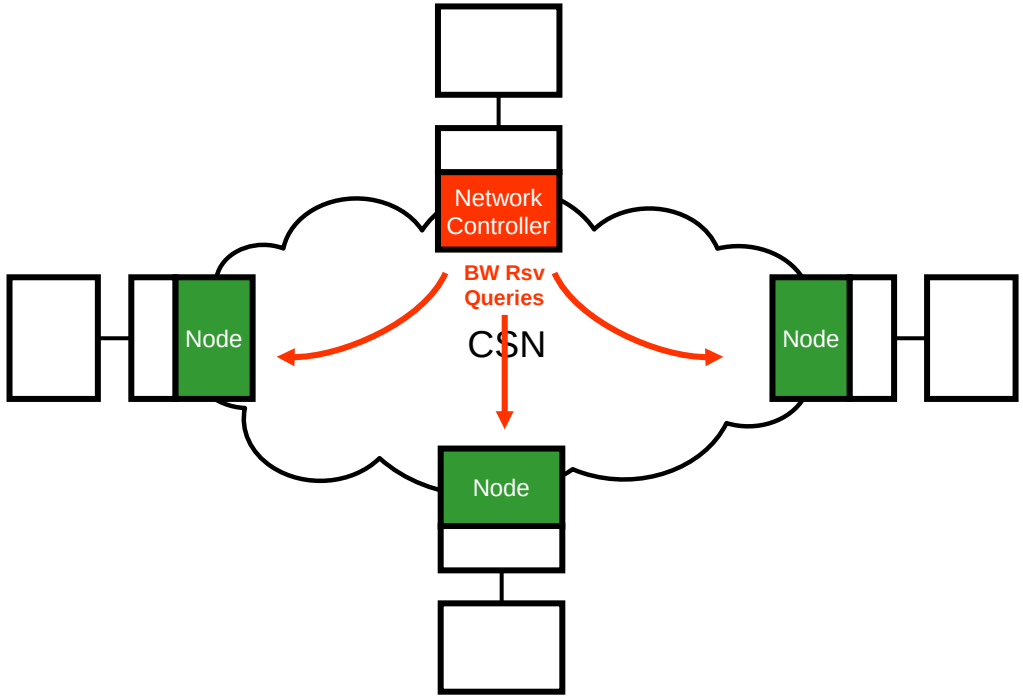
1) a new node with better NC capabilities joins the network
2) the NC node handovers the control to another node before been gracefully shut down
3) **the NC node disappears from the network and the NC Backup node takes control**

CSN Network – Bandwidth Reservation [1]

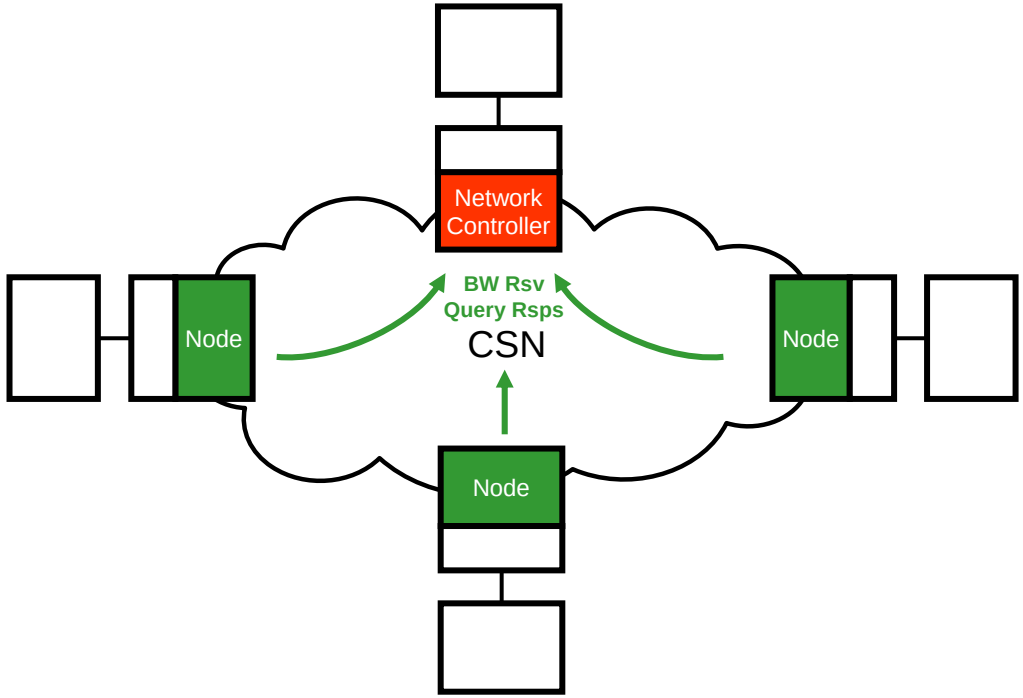


NC does not maintain a central BW Reservation database but
dynamically queries the nodes on each new BW reservation request
…

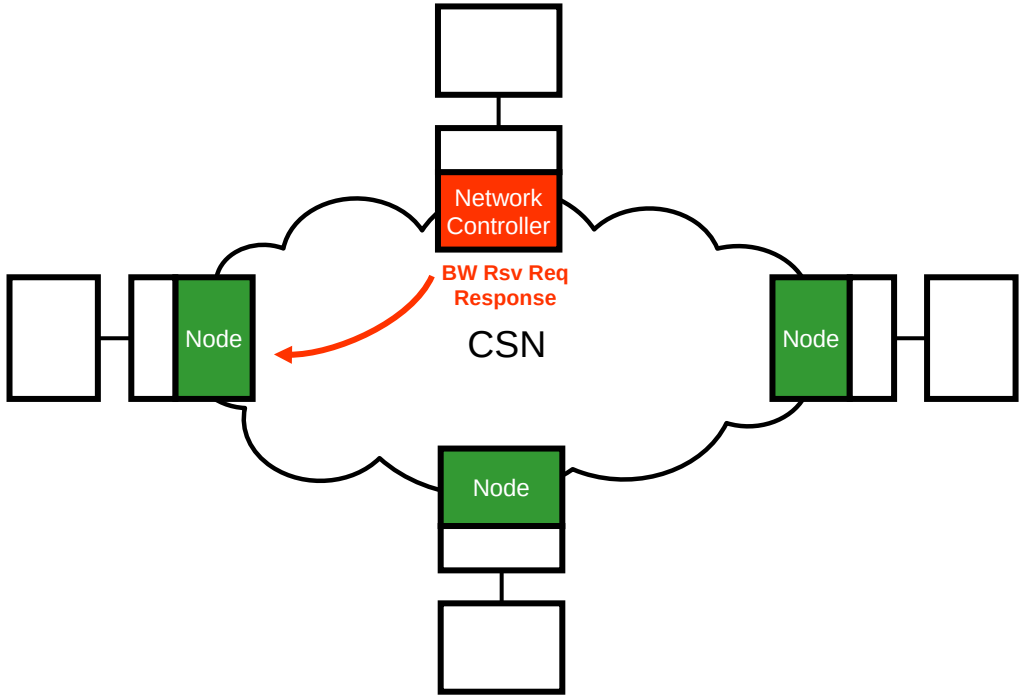
CSN Network – Bandwidth Reservation [2]



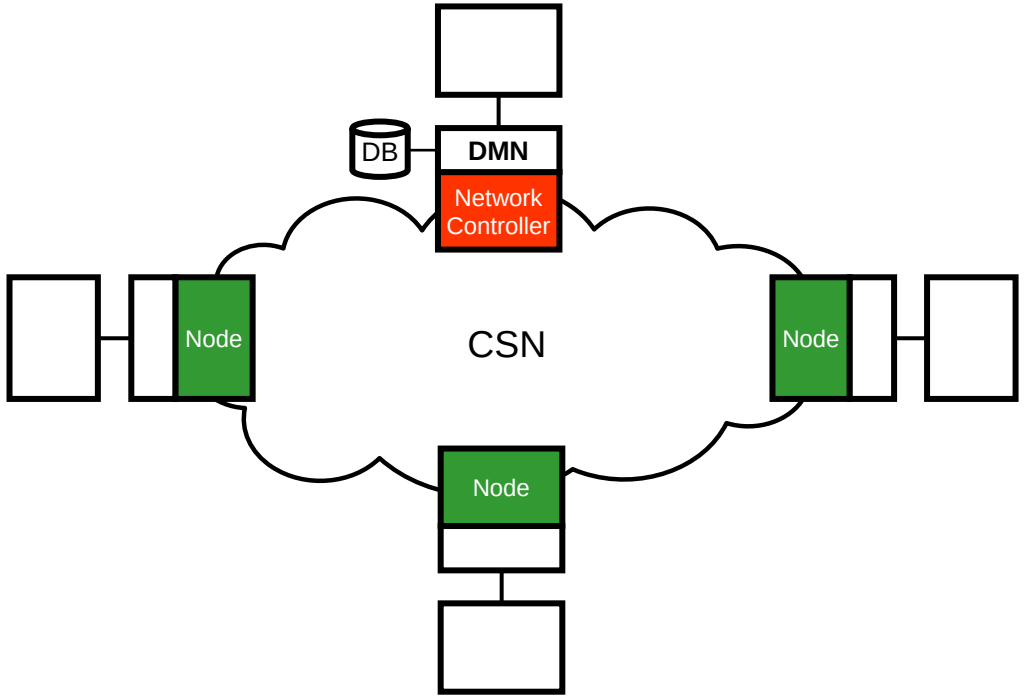
CSN Network – Bandwidth Reservation [3]



CSN Network – Bandwidth Reservation [4]

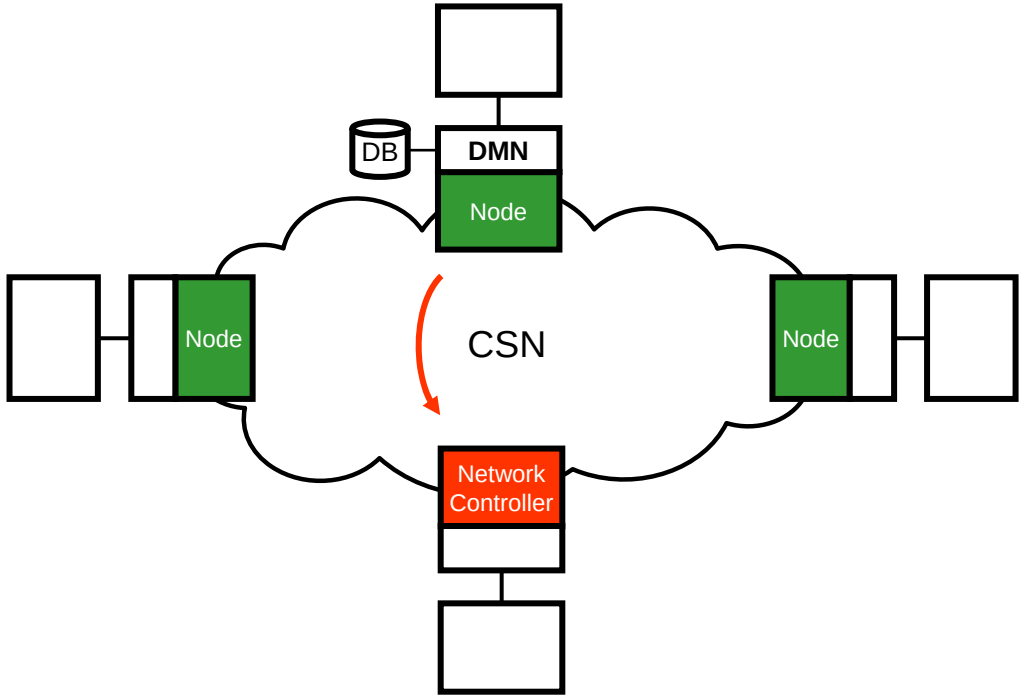


DMN / CSN Network



Initial DMN node is the NC node…

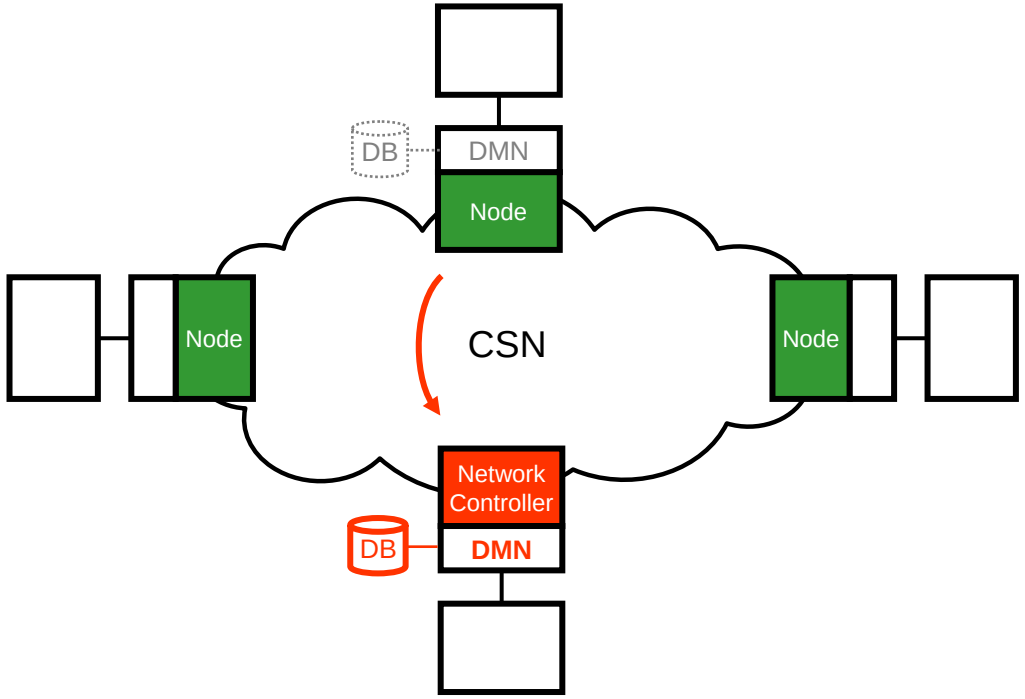
DMN / NC Handover [1]



2 options to handle DMN node in case of NC Handover :

1) **DMN stays on initial NC node:**
   the DMN node acts as a proxy toward the CSN's NC

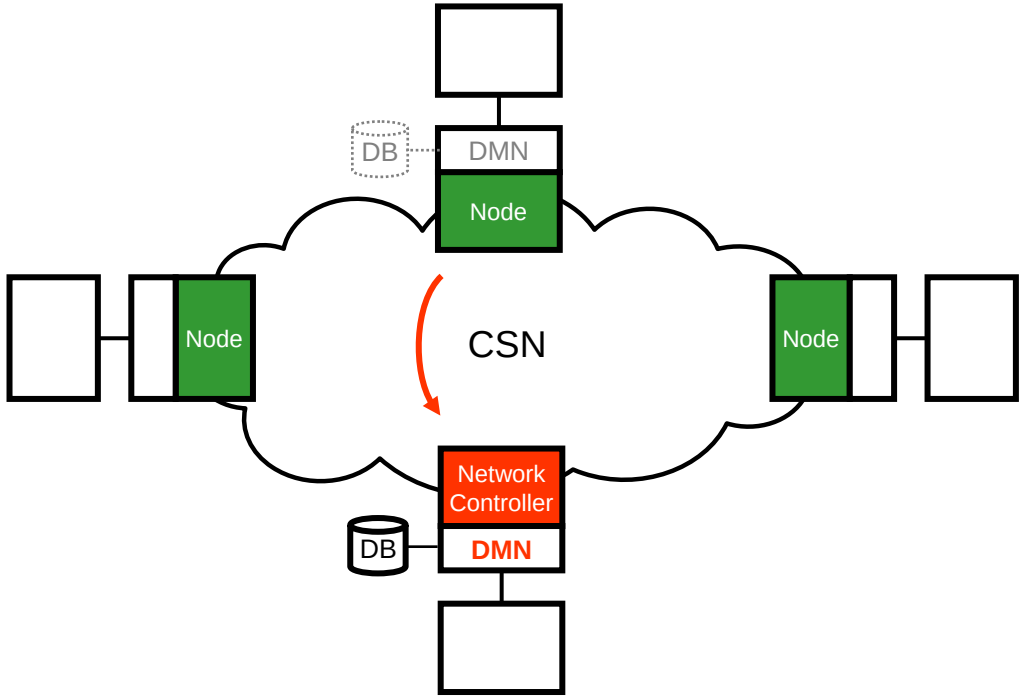
DMN / NC Handover [2]



2 options to handle DMN node in case of NC Handover :

1) DMN stays on initial NC node:
   the DMN node acts as a proxy toward the CSN's CN
2) **DMN migrates to the new NC**

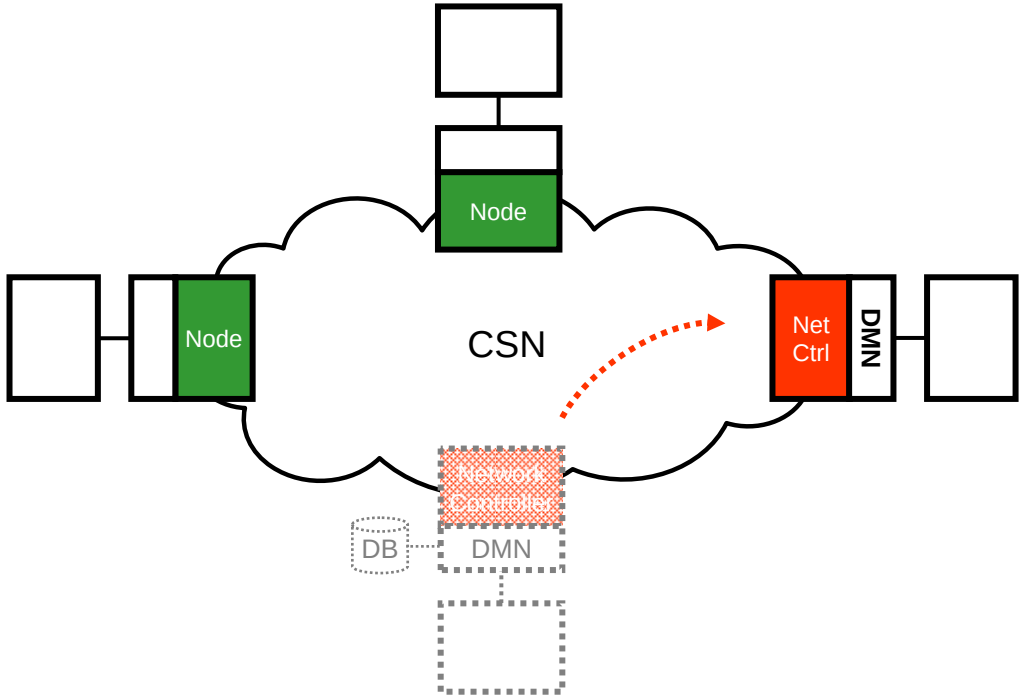
DMN / NC Handover [3]



2 options to manage the DMN DB in case of NC Handover :

1) transfer the DB (not an option for NC Backup)
2) dynamically recreate the DB on the new DMN

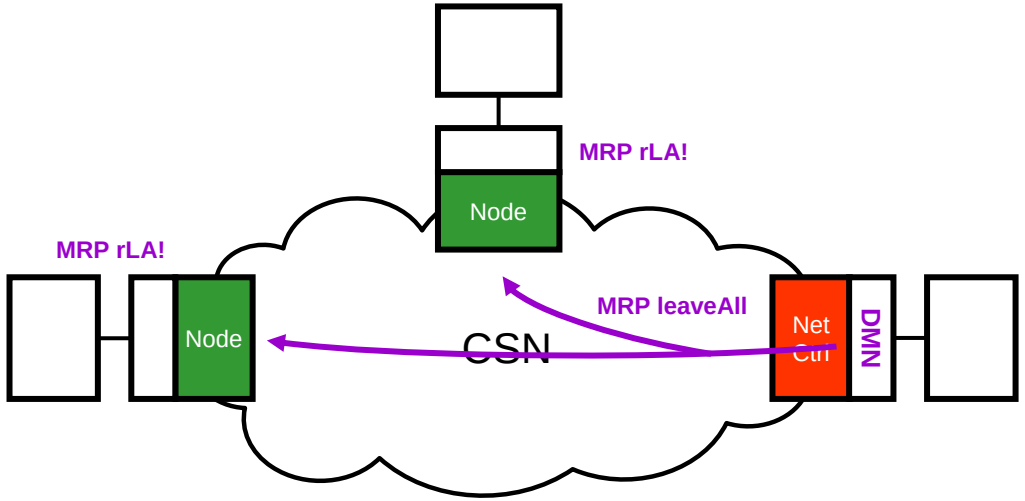
DMN / NC Backup [1]



In case of NC Backup : dynamically recreate the DB on the new DMN

Proposal: use MRP services to recreate the DB

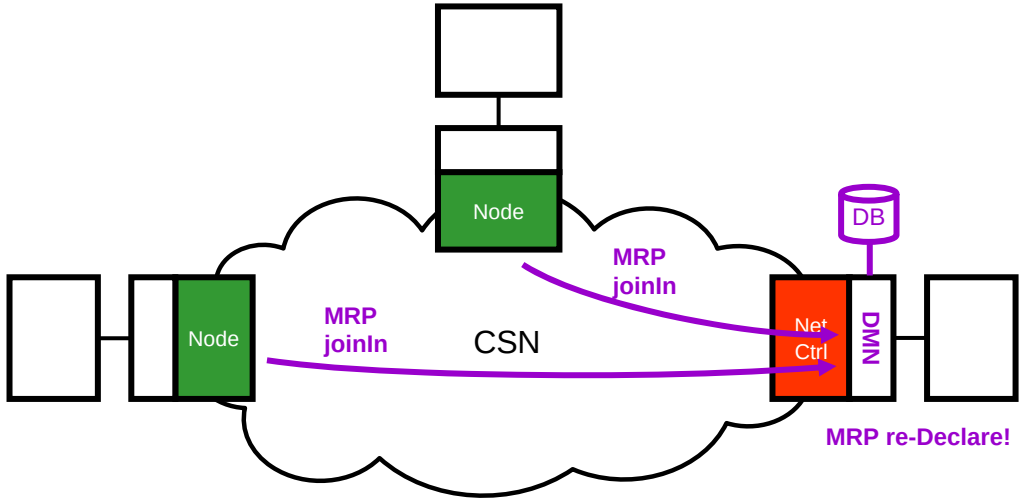
DMN / NC Backup [2]



In case of NC Backup : dynamically recreate the DB on the new DMN
Proposal:

1) **the new DMN generates a leaveAll message**

DMN / NC Backup [3]



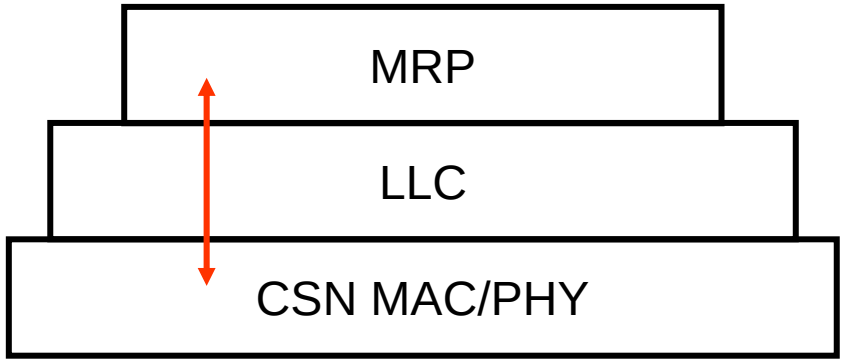
In case of NC Backup : dynamically recreate the DB on the new DMN
Proposal:

1) the new DMN generates a leaveAll message
2) **the MRP Participants re-register to the DMN (allowing the DMN to build its database)**

MRP Message Traffic Type on CSN

- Unicast (node to node) traffic:
  - Pro: non-DMN nodes do not receive MRPDUs
  - Cons: non-DMN nodes should be notified of DMN handover/backup. How ?
- Broadcast traffic:
  - Pro: no DMN address handling in case of handover/backup
  - Cons: non-DMN nodes should filter MRPDUs
- *Which option is the best ?*

Is a new interface needed ?



Interface/API between the CSN & DMN entities to:

- init/release a DMN based on the CSN's node attribute ?
- other ?

Questions ?

Thank you !