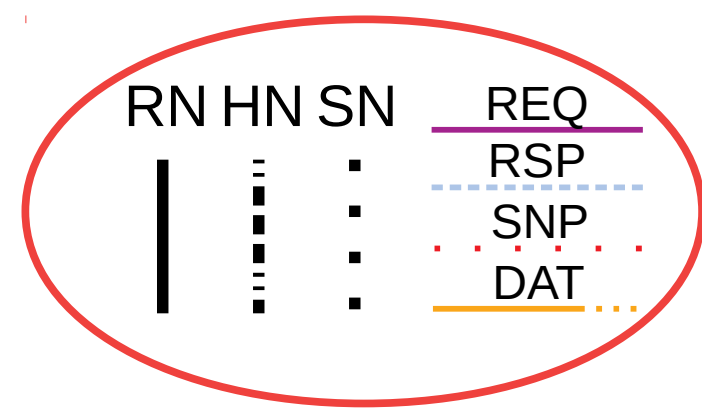




ARM AMBA 5 CHI NOTES

last updated: 28-08-19

Channels & Nodes



Nodes:

RN



HN



SN



Channels:

REQ



RSP



SNP



DAT



Channel dir & link sigs

RN cannot:

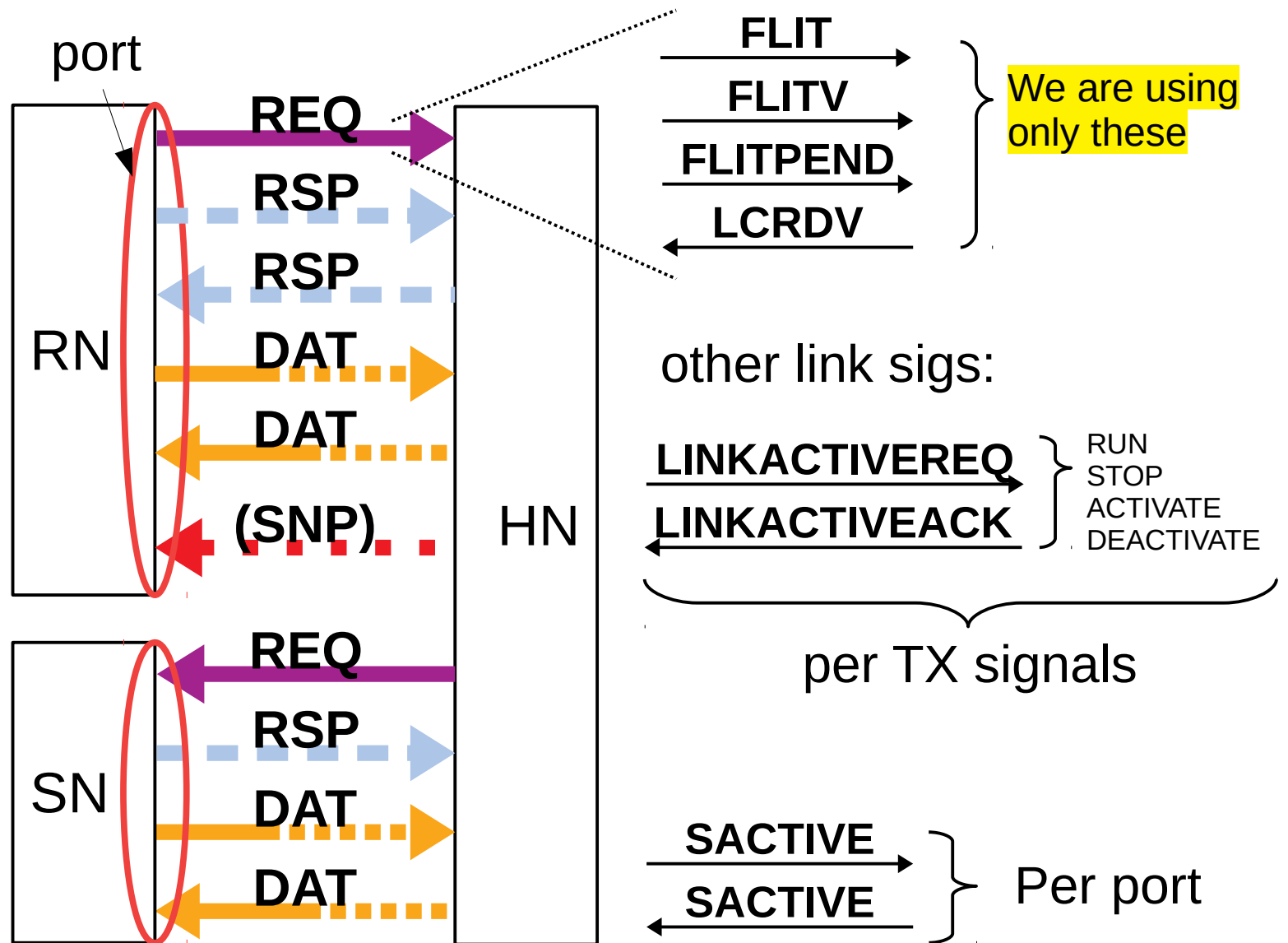
- accept req
- Issue snp

HN cannot

- accept snp

SN cannot:

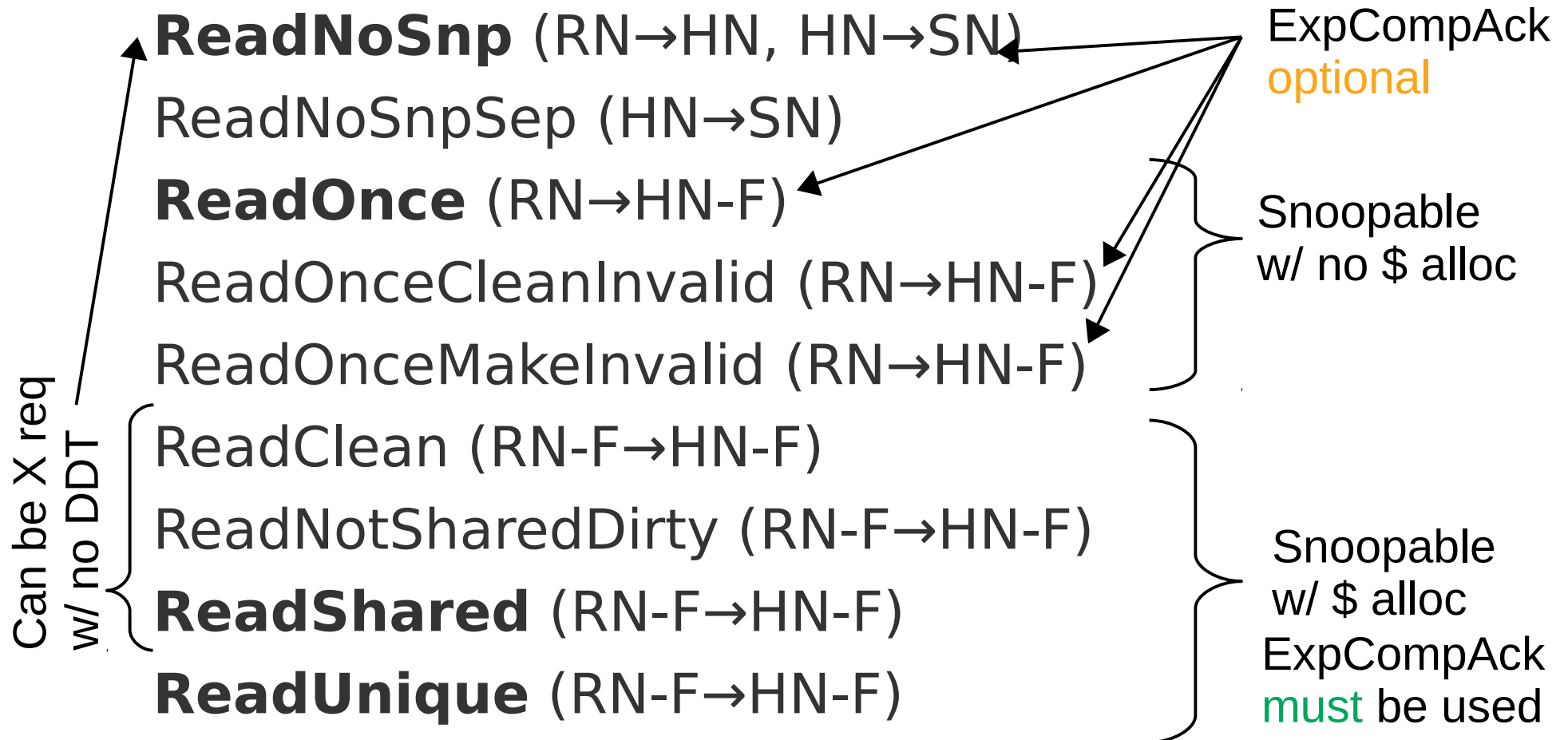
- issue req
- accept resp
- issue snp
- accept snp



Read* (9 in total)

We are using the bold ones

ExpCompAck: Bit indicating if requestor will
sen a CompAck (Completion Ack)



DDT: Direct Data Transfer

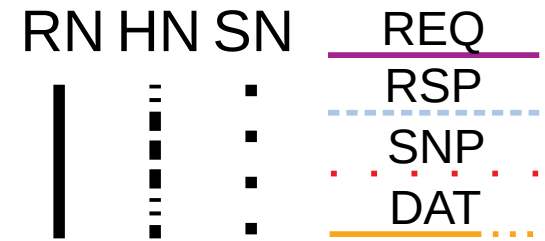
“alloc”: MSB bit of mem_attr field of request flit

X req: “excl” bit of request flit

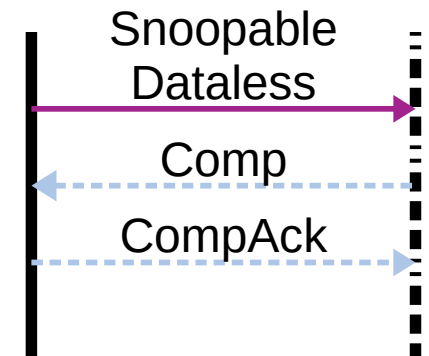
Dataless (9)

We are using the bold ones

Can be Excl=1



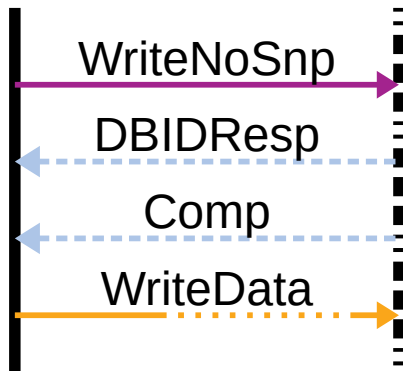
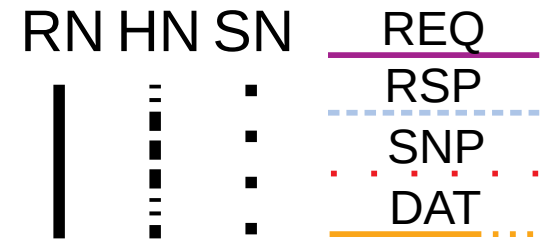
- **CleanUnique** (RN-F→HN-F)
 - MakeUnique (RN-F→HN-F)
 - Evict (RN-F→HN-F)
 - StashOnceUnique (RN→HN-F)
 - StashOnceShared (RN→HN-F)
 - **CleanShared** (RN→HN, HN→SN)
 - CleanSharedPersist (RN→HN, HN→SN)
 - **CleanInvalid** (RN→HN, HN→SN)
 - **MakeInvalid** (RN→HN, HN→SN)
- ExpCompAck **must** be used
- CMO



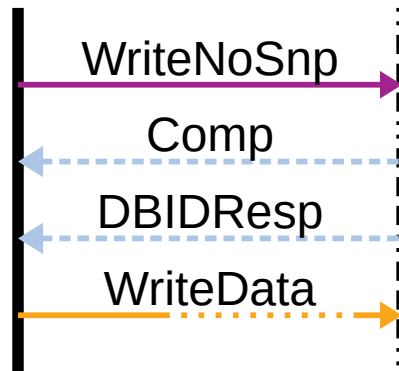
Write* (10)

- **WriteNoSnP**[Ptl,Full] (RN→HN, HN→SN) Can be Excl=1
 - **WriteUnique**[Ptl,Full,PtlStash,FullStash] (RN→HN-F) ExpCompAck optional
 - **WriteBack**[Ptl,Full] (RN-F→ HN-F) CopyBack (4)
 - **WriteCleanFull** (RN-F→ HN-F)
 - WriteEvictFull (RN-F→ HN-F)
- We are using the bold ones**
- Update mem/\$
- Update mem only
-

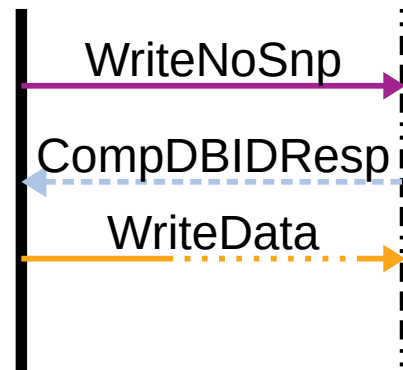
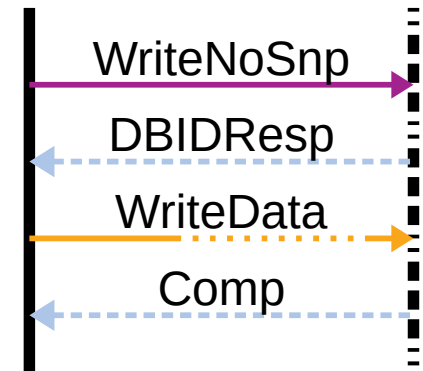
WriteNoSnp (store w/o snp'n other msts)



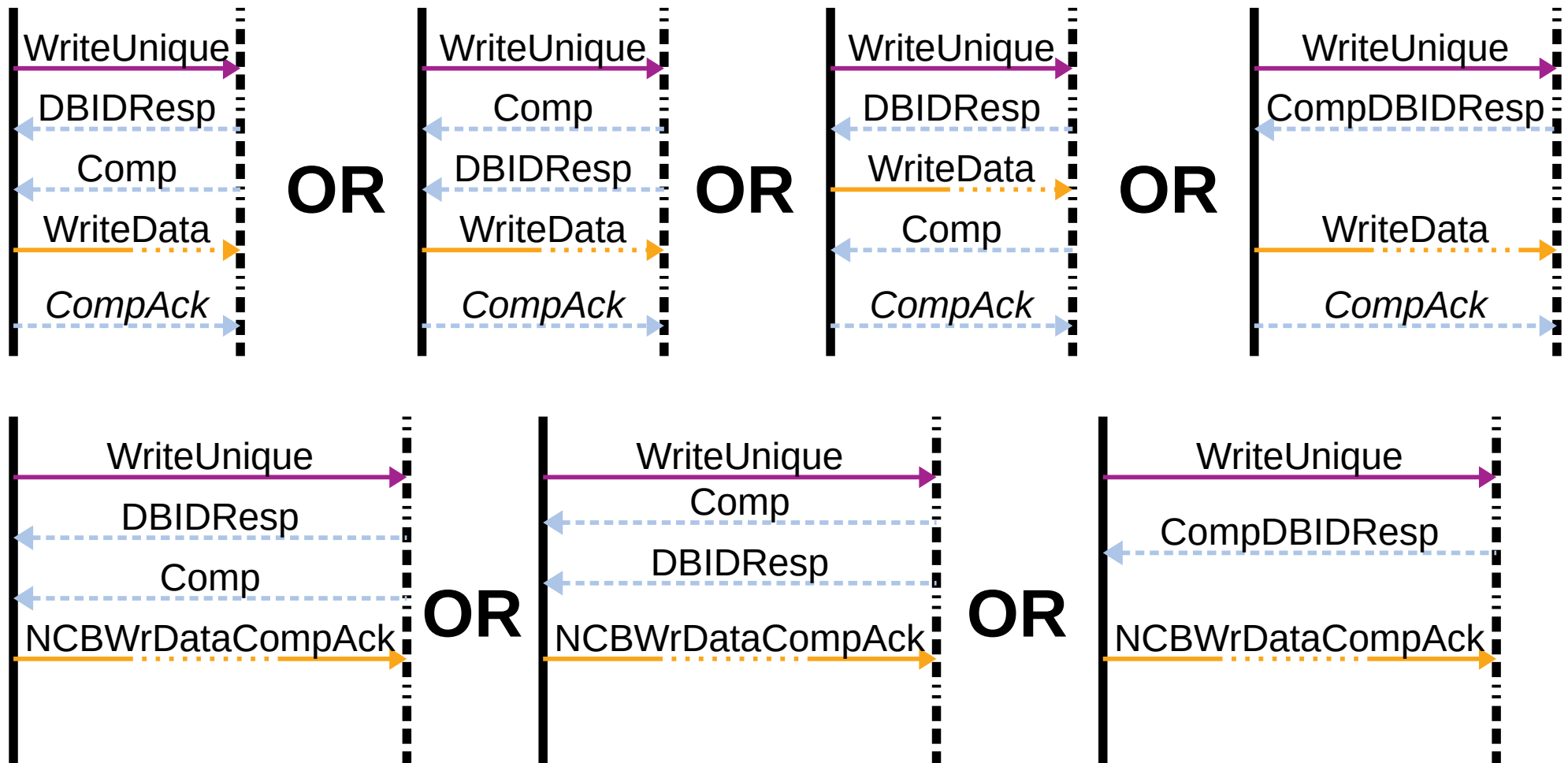
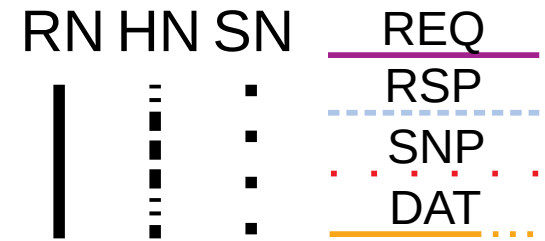
OR



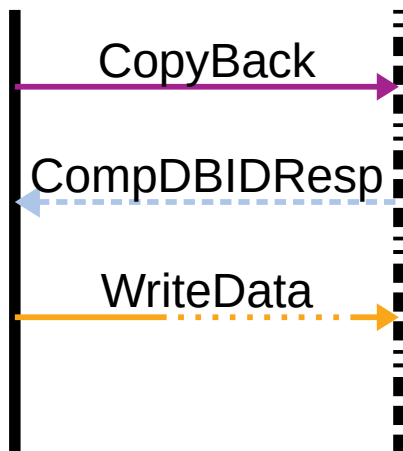
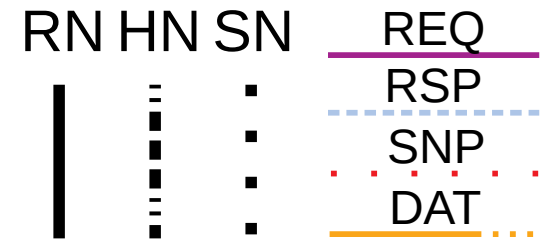
OR



WriteUnique (store w/ snp'n other RN-Fs)



CopyBack



Recall CopyBack transactions:

WriteBack[Ptl,Full] (RN-F → HN-F)

WriteCleanFull (RN-F → HN-F)

WriteEvictFull (RN-F → HN-F)

Update mem/\$

Update mem only

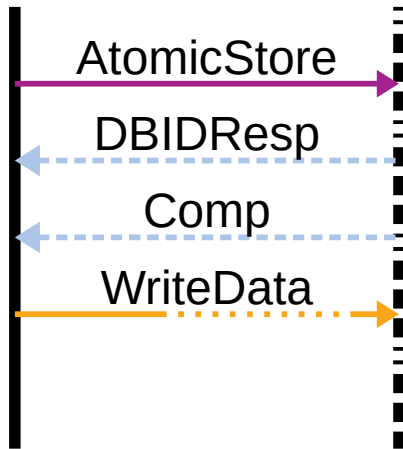
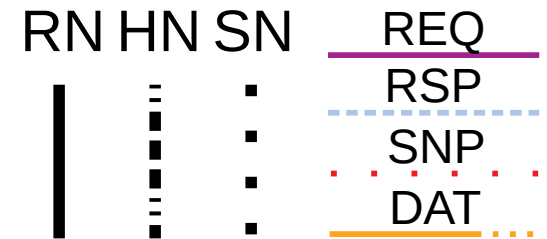
CompDBIDResp should be sent after any pending snoop request has been completed

Atoms (4) - (RN→HN, HN→SN)

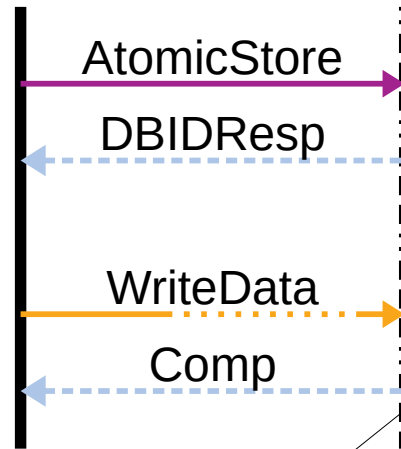
- **AtomicStore** → 1-way data
 - **AtomicLoad**
 - **AtomicSwap**
 - AtomicCompare
- 2-way data

We are using the bold ones

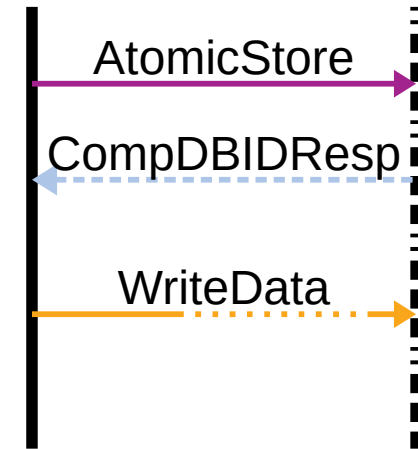
Atomics



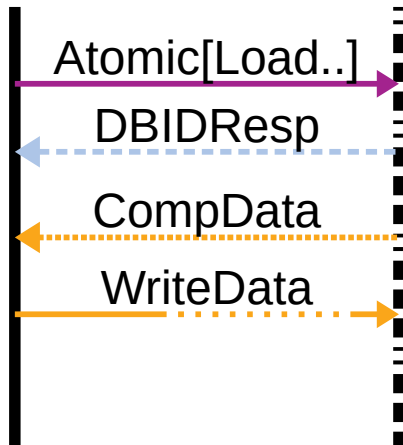
OR



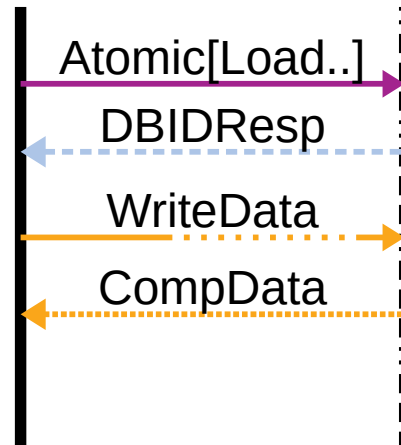
OR



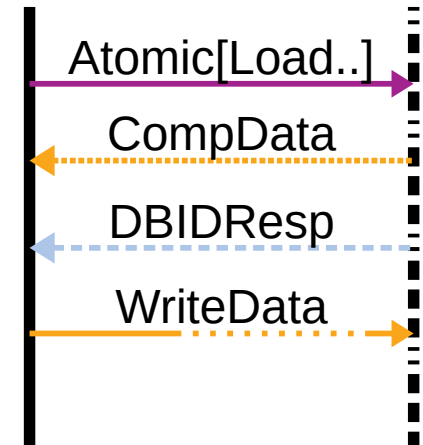
Permits the possibility of error resp. (impl. defined)



OR

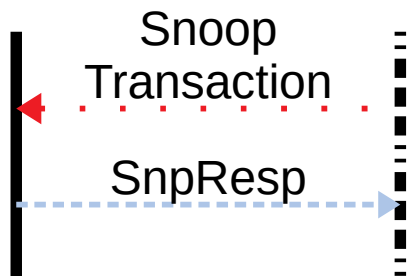


OR

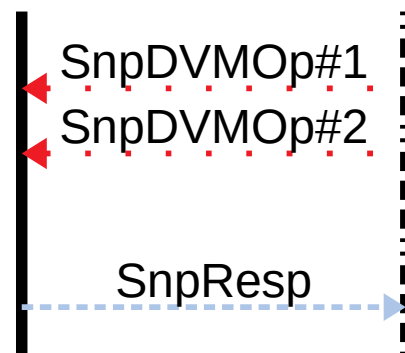


Data-less snoop (resp w/o data)

Regular Snoop:



Snoop DVM:



Snoop w/ data (resp+data to HN)

