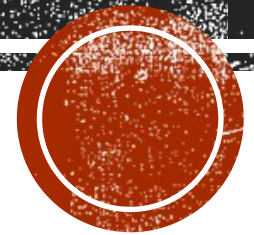
SID ALLOCATION VIA DHCP



draft-kompella-spring-dhcp

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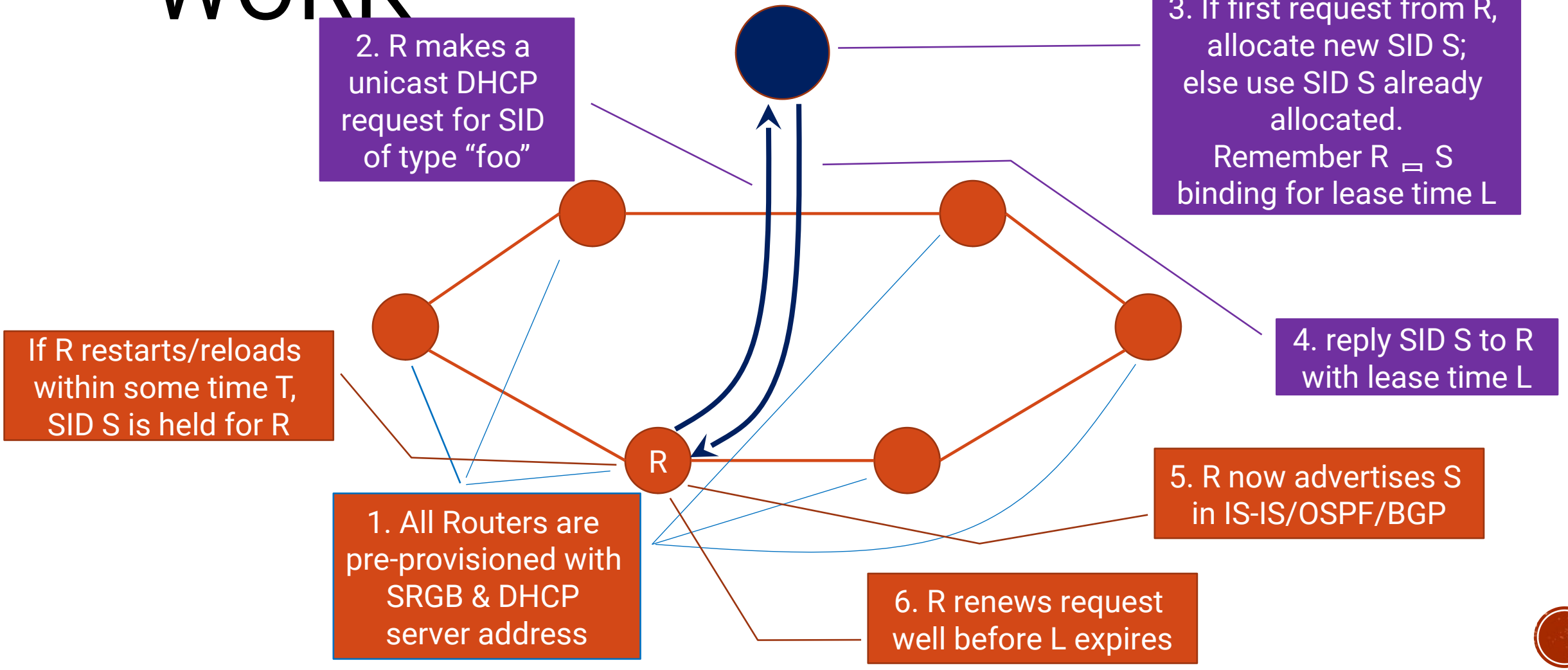
PROBLEM STATEMENT

- Certain types of SIDs need to be unique in some domain (e.g., an IGP area, or a BGP AS)
  - These include node SIDs and ring SIDs (see later)
- This means:
  - a given SID MUST NOT be allocated to two different routers in the domain
  - a router SHOULD get back the same SID on restart
- These properties can be accomplished by “manual” management
  - However, there are several drawbacks to such an approach
  - As the number of types of such “global” SIDs increases, this gets worse
  - Fortunately, we have better tools for this, in particular, DHCP

SKETCH OF HOW THIS WOULD WORK

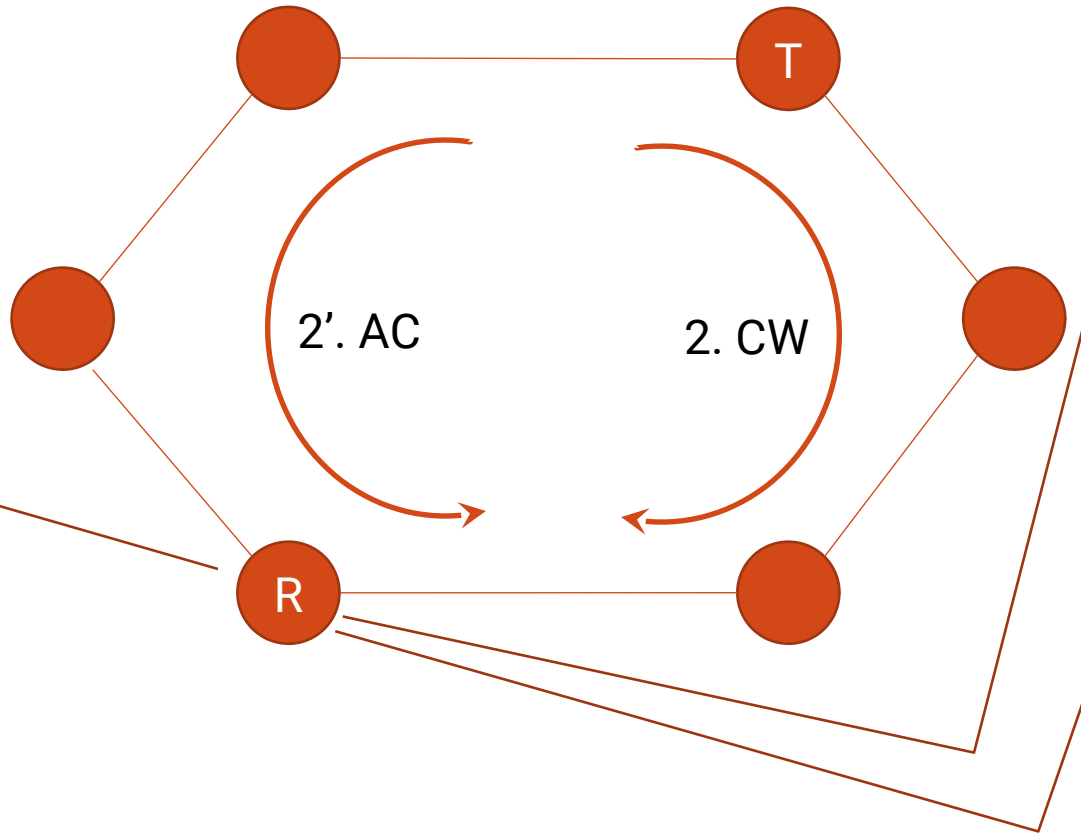


SID TYPES

- We believe this is useful for node SIDs, anycast SIDs and ring SIDs
- This is also useful for “compressed” SIDs for SRv6+ and others

RING SIDs (refresher)

1. All nodes in ring complete “ring discovery” process



2. Each node then makes a DHCP request for a pair of ring SIDs

3. Each node, on receiving the pair of ring SIDs, advertises it into IS-IS/OSPF

4. Each node, on receiving the IGP update, inserts entries into the FIB for the main and backup paths

FIB ENTRIES

- Node T, when it receives a pair, CW & AC, of ring SIDs for R, installs four FIB entries:
  1. A primary entry in the CW direction towards R, using the CW SID advertised by R and employing the usual SID math
  2. A backup entry for the above FIB entry using the AC SID
  3. A primary entry in the AC direction towards R, using the AC SID advertised by R and employing the usual SID math
  4. A backup entry for the above using the CW SID

Note that “forcing” packets in the required direction (even if not along the shortest path) needs exactly one SID and no fancy IGP computations

COMMENTS? THOUGHTS?

- The DHCP draft aims to streamline provisioning of “global” SIDs
  - Other approaches are clearly possible, but (we feel) DHCP is uniquely suited to this problem
- The RMR with SPRING draft offers an approach tailored to the special case of rings and ring protection
  - There are other methodologies that work in all topologies, but we believe that rings are ubiquitous and simple, and deserve a correspondingly simple and largely self-configuring approach to this topology