SDR WG Agenda (12/95)

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- SDR Incremental Deployment Proposal
- Route Construction and Probing
- Futures: ERP, GRE, How to move forward

Incremental Deployment

- Learn from mbone experience
  - some is better than none
- Basic Approach:
  - Point packets needing SDR to local SDR FS
  - Incrementally populate internet with FSs
  - Register SDR capability with IRR and use it for route construction
  - SDR Probe for information about non-SDRP hops and dynamics.

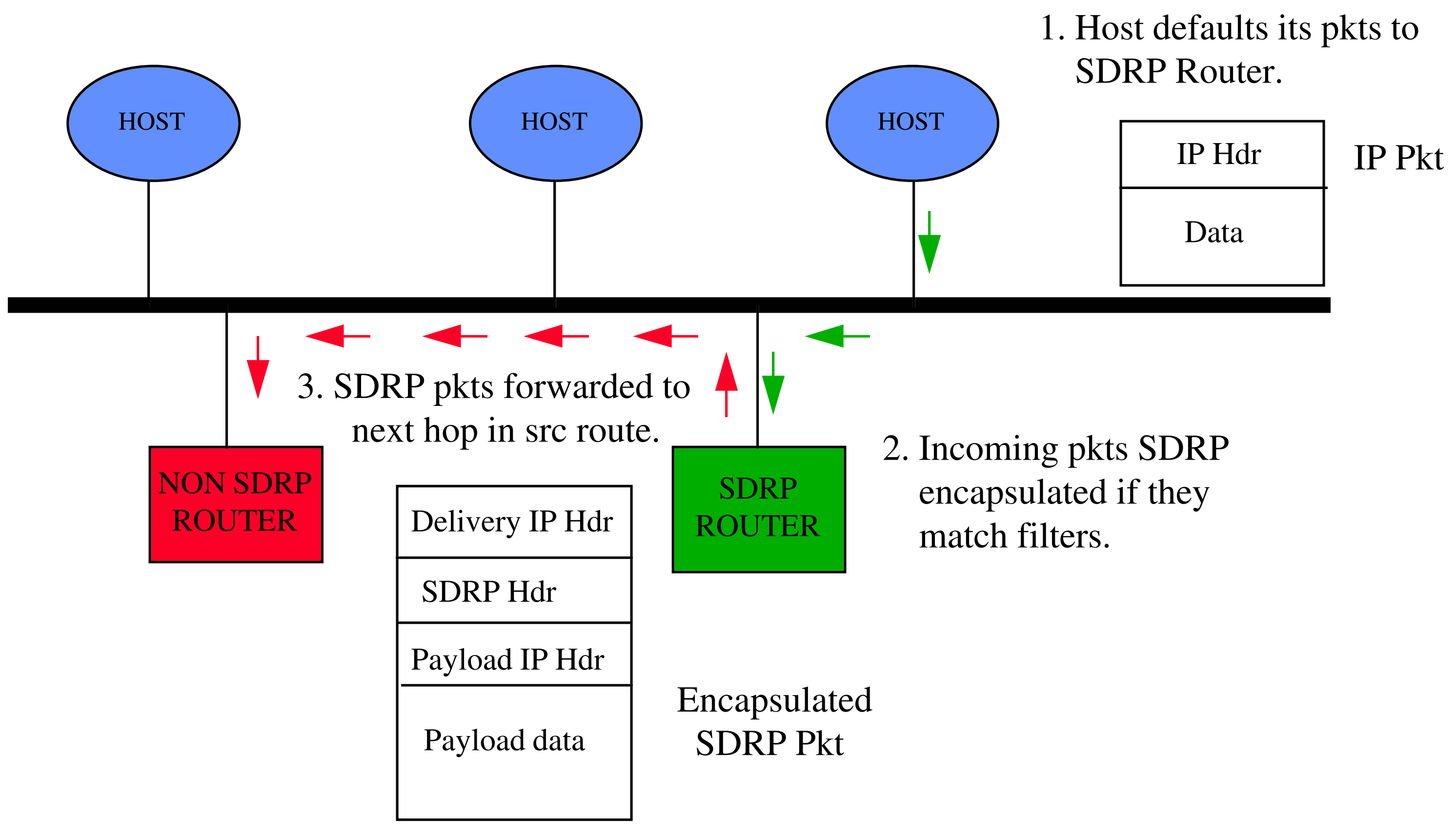
Route construction using IRR

- Register SDR capable domains and routers with IRR
- Use PRpath to construct usable routes not available through HbH routing (BGP/IDRP)
  - limited by incremental deployment
- Apply policy selection criteria
  - Select ASs (inclusion)
  - Avoid ASs (exclusion)
  - Prefer ASs (preference)
- Install packet filters

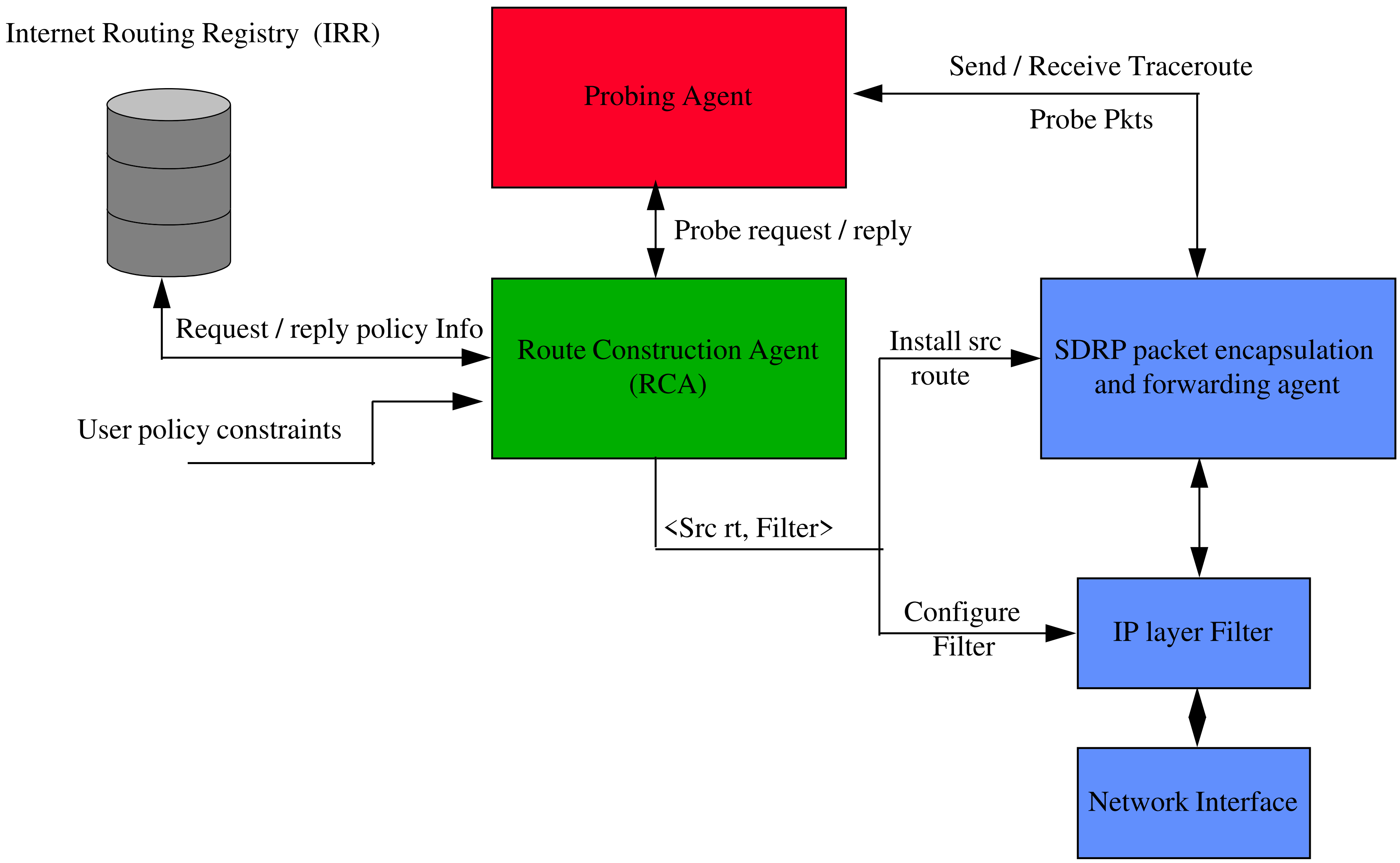
Probing

- SDRP probe to verify route availability
- Incremental deployment means very loose source routing
- Special probe of loose source route to extract detailed route (Includes non SDRPs)
- Apply policy filters to detailed route:
  - select ASs/IP addrs
  - avoid ASs/IP addrs
  - prefer ASs/IP addrs

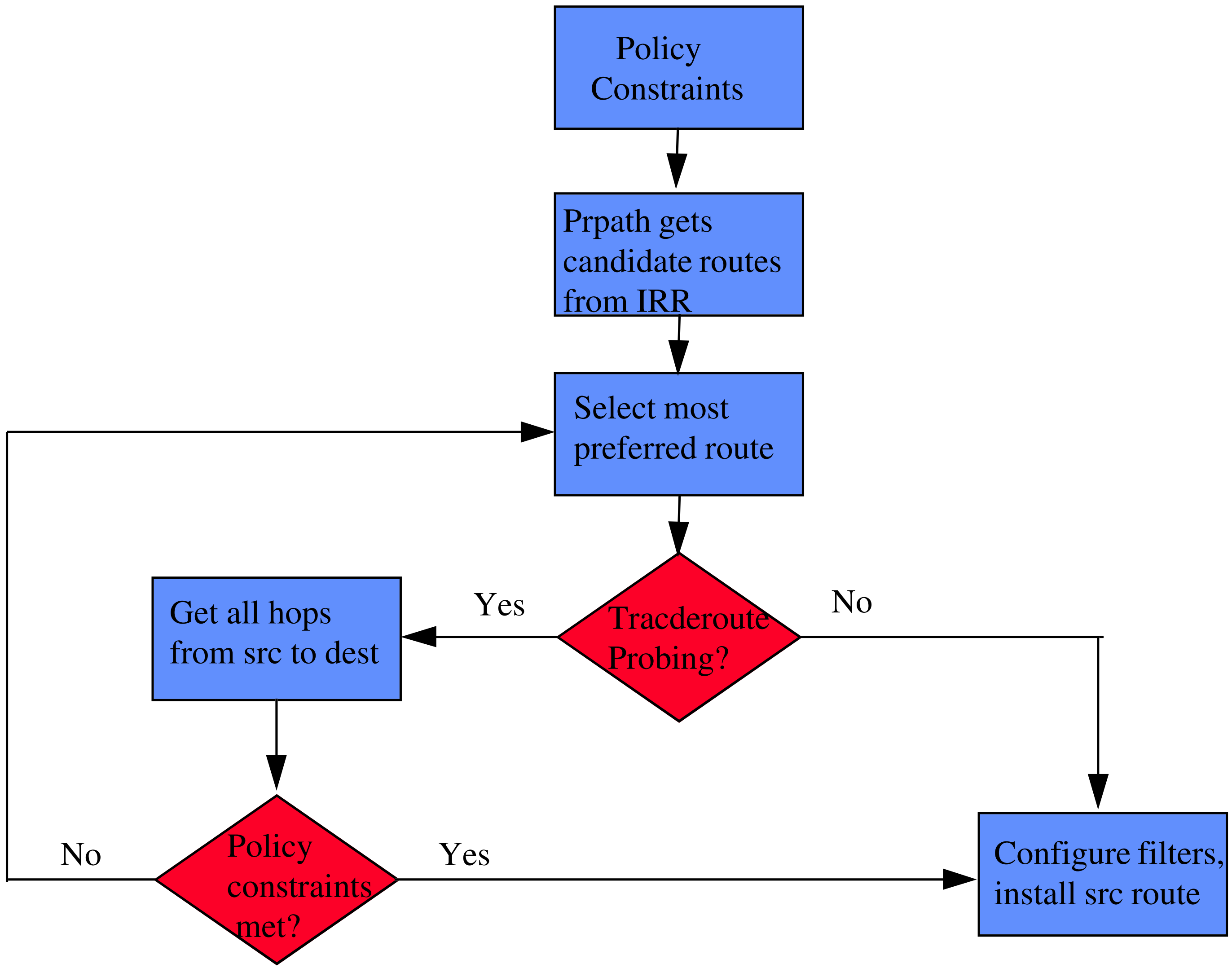
SDRP DEPLOYMENT



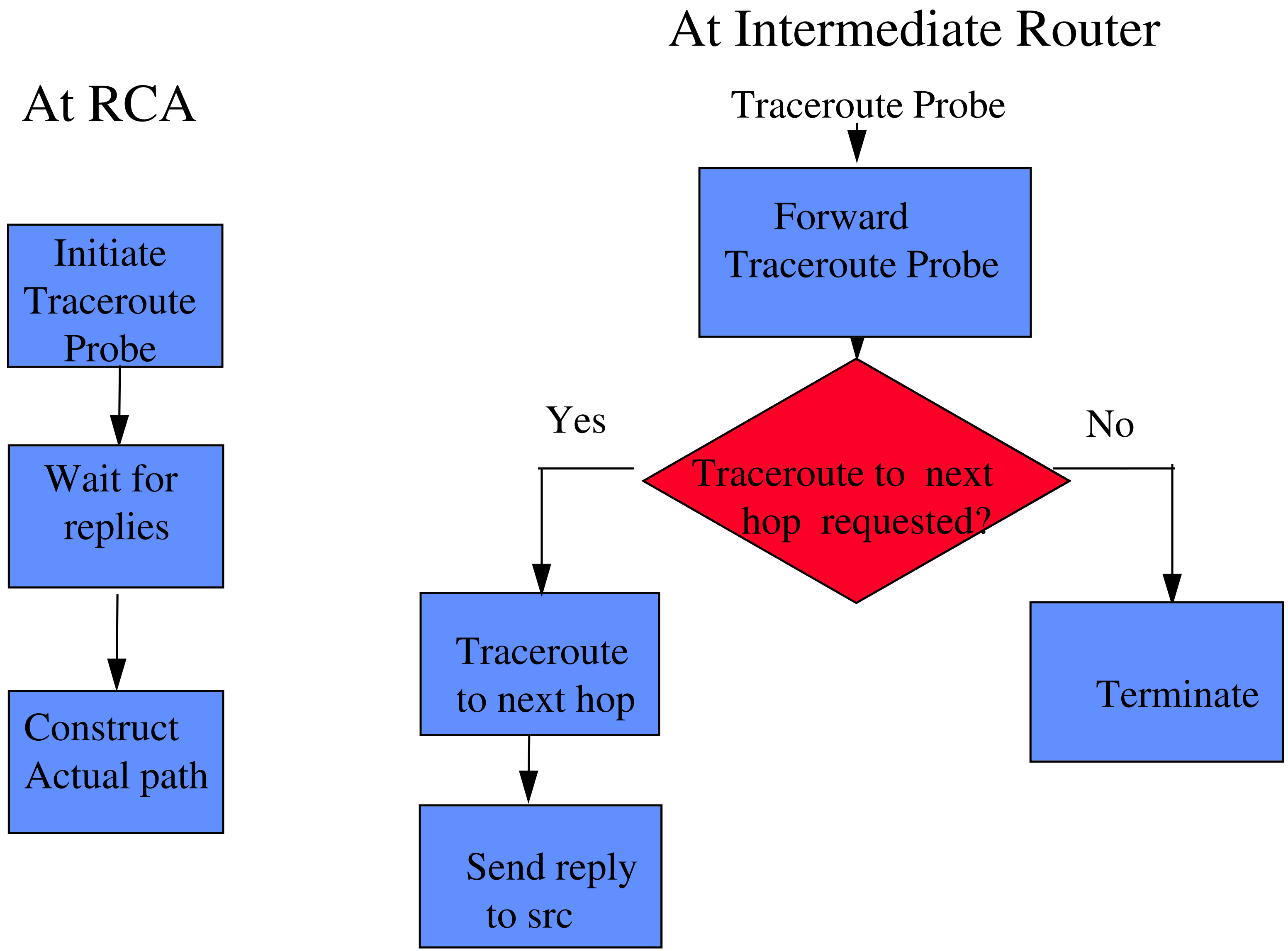
SDRP Implementation Architecture



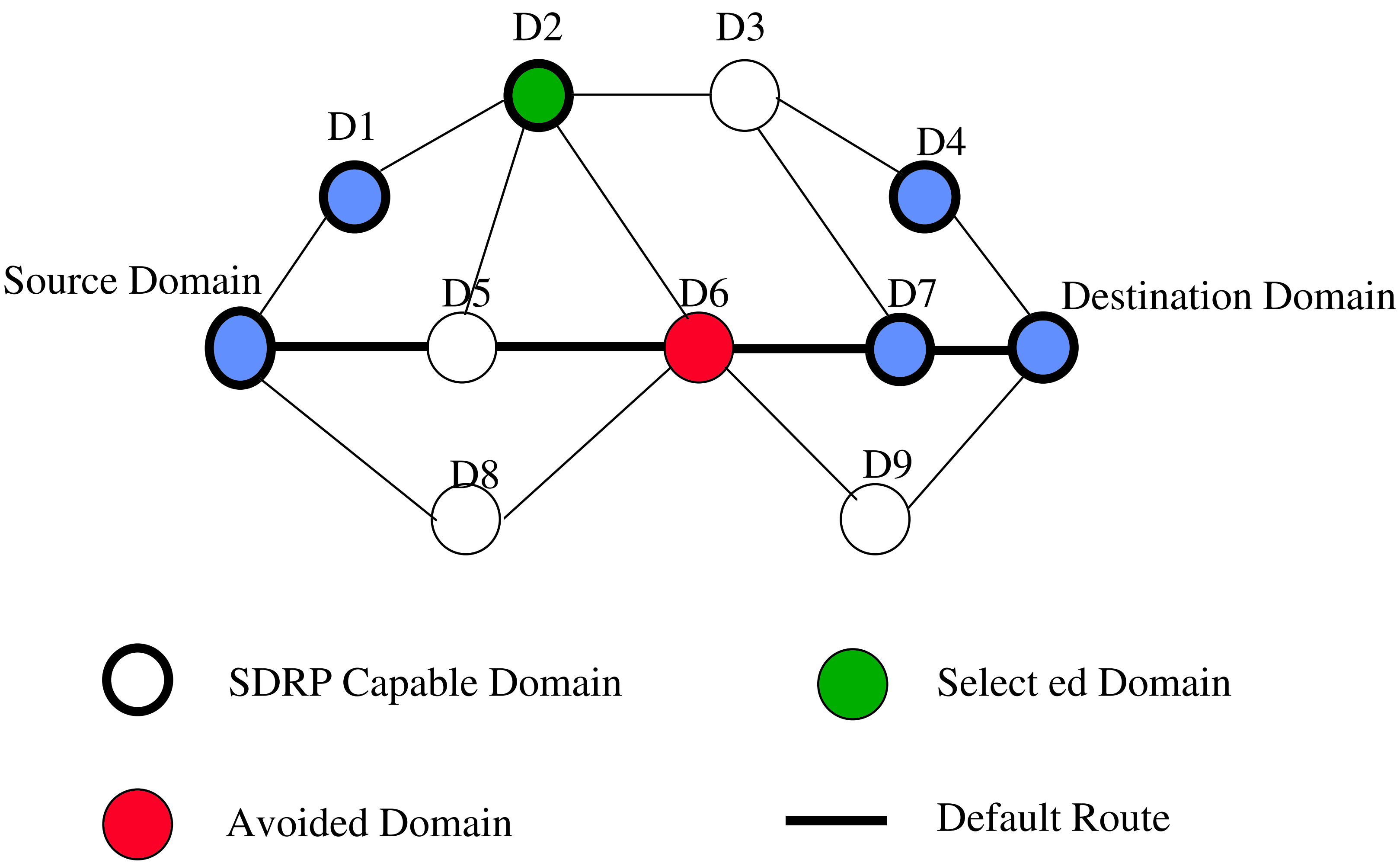
Route Construction Agent



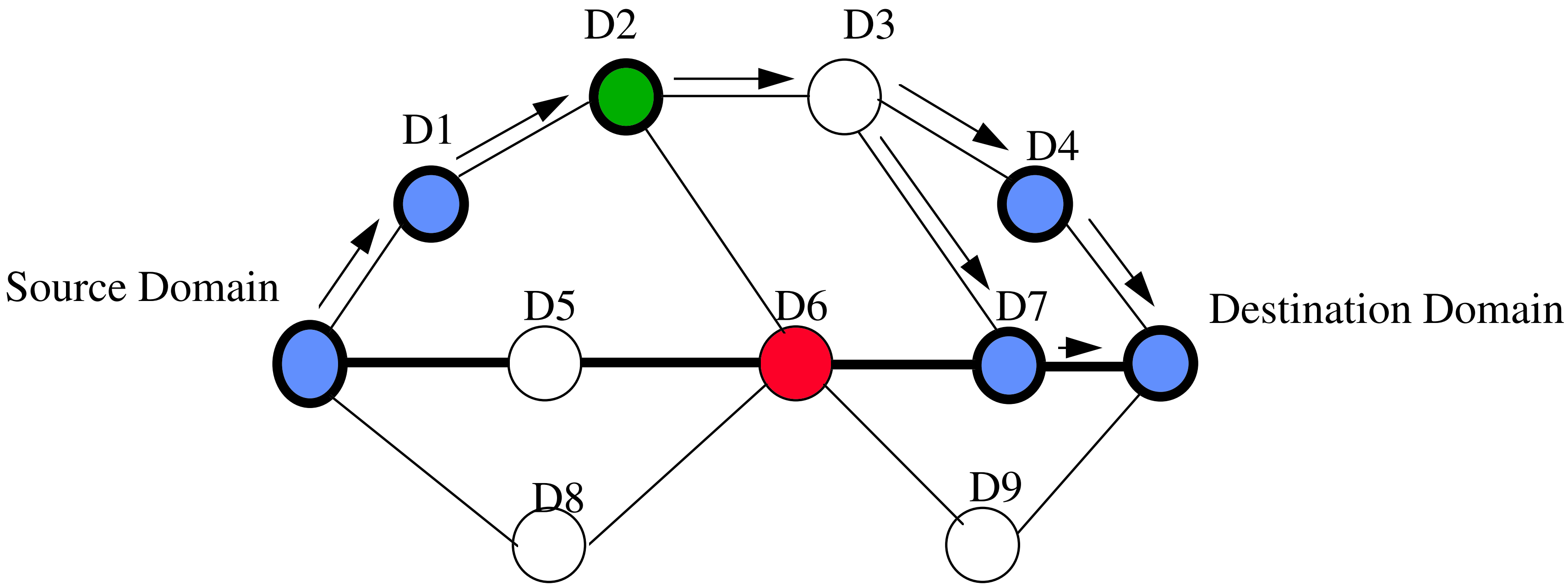
Probing


At Intermediate Router
At RCA
Traceroute Probe
Forward Traceroute Probe
Initiate Traceroute Probe
Yes
No
Traceroute to next hop requested?
Wait for replies
Traceroute to next hop
Terminate
Construct Actual path
Send reply to src

Example Topology



Route Construction Mechanics



Prpath returns paths ordered by preferences in IRR

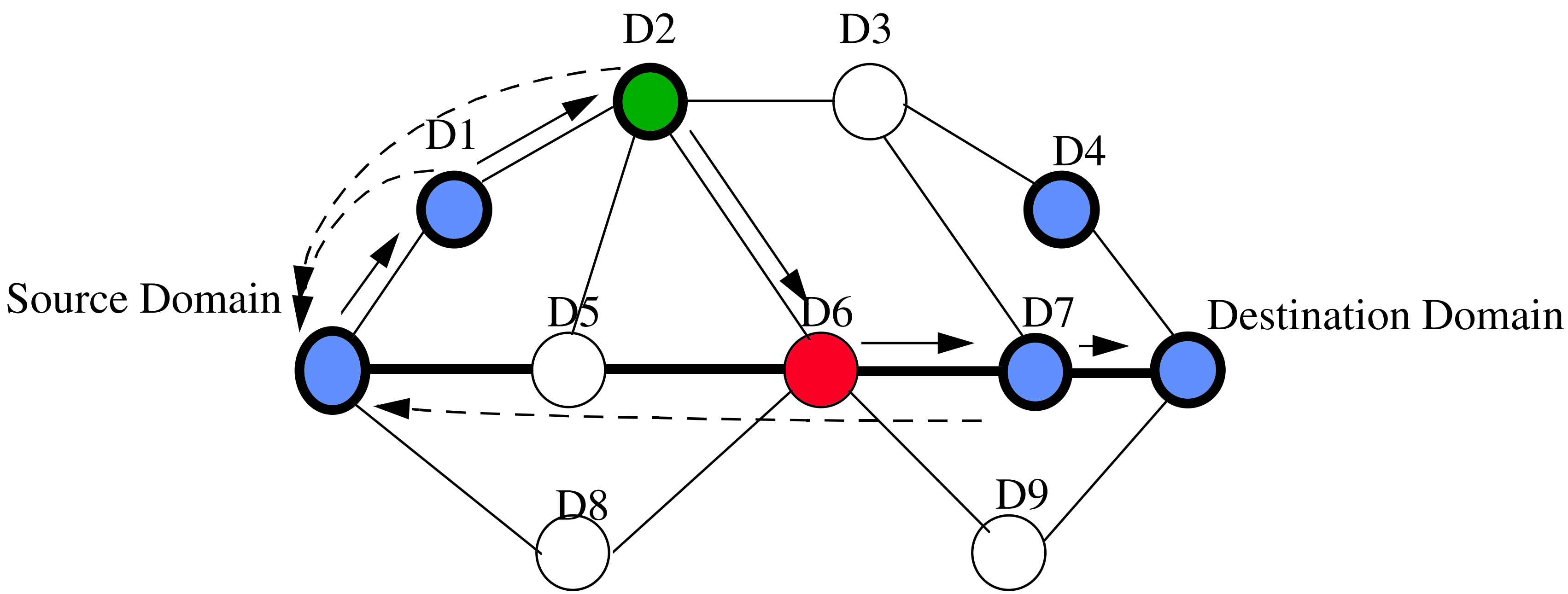
1. Src, D1, D2, D3, D7, Dest
2. Src, D1, D2, D3, D4, Dest

RCA selects path1.

SDRP src route is D1, D2, D7 , Dest

Traceroute Probing done to find actual path

Traceroute Probe Mechanics

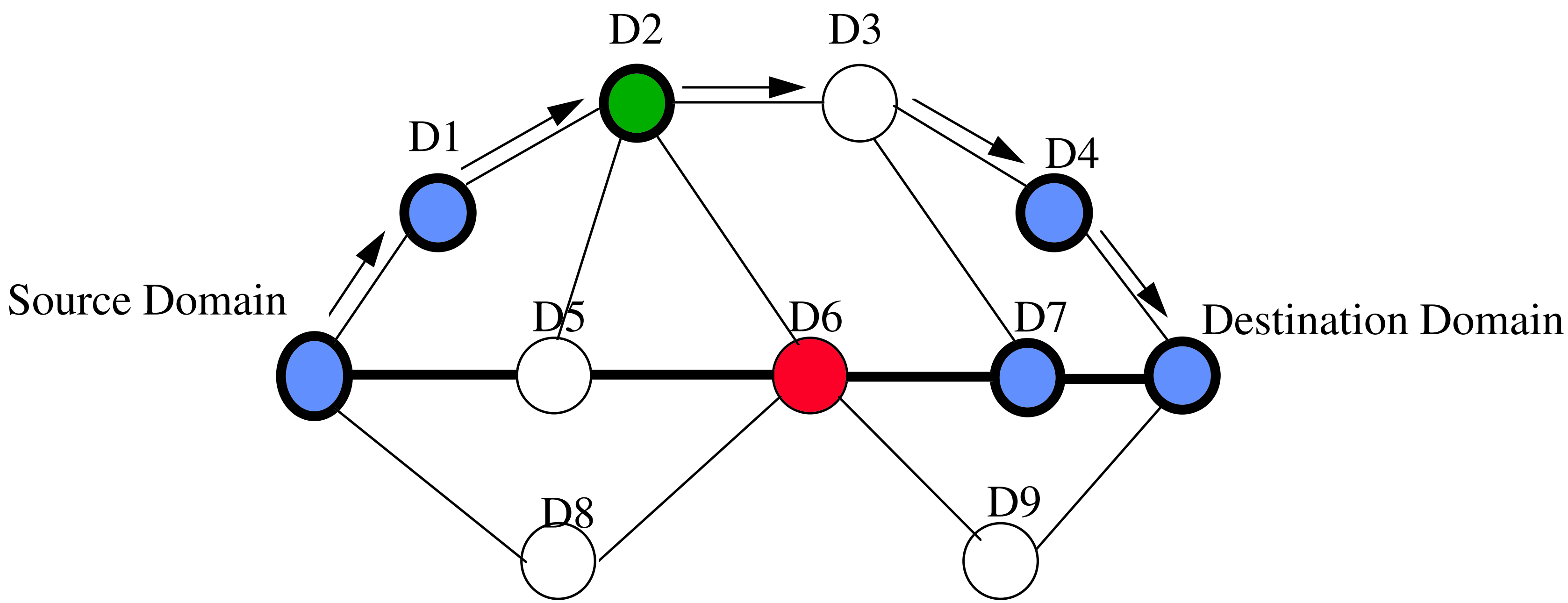


SDRP Hop by SDRP Hop traceroute results :

D1 returns <D1, D2> ; D2 returns <D2, D6, D7 >; D7 returns <D7, Dest>

Path followed found to be Src, D1, D2, D6, D7 , Dest

Path violates Exclusion policy



Path 2 : Src, D1, D2, D3, D4, Dest chosen

SDRP src route is D1, D2, D4

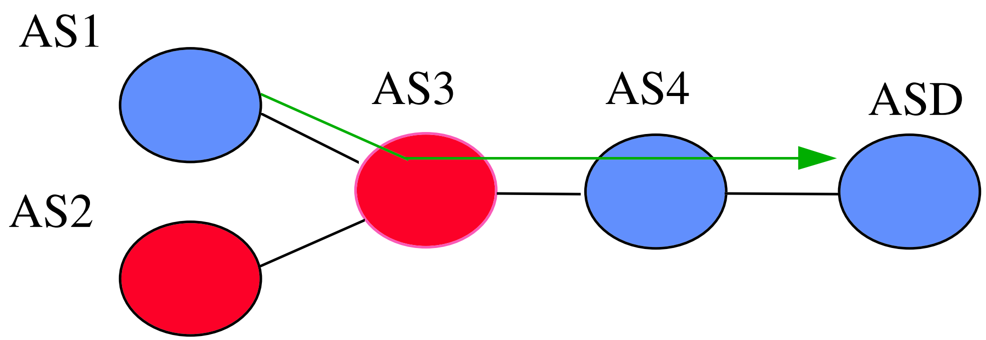
Actual path found from probing : Src, D1, D2, D3, D4, Dest

Policy constraints are satisfied.

Proposed Modifications: SDRP Policies in IRR

- SDRP can realize more policies than BGP/IDRP

Example: Can realize policies for downstream domains



– AS4 does not advertise routes of ASD to AS3.
– AS4 can realize with SDRP - allow only AS1 and not AS2 or AS3 to reach ASD.

Proposed Modifications: SDRP Policies in IRR

- Policies in IRR BGP/IDRP specific.

- Need to have SDRP policies also in IRR.

aut-num object:

```
aut-num:     AS4
as-in:       from ASD accept ANY
   . . .
as-out:      to AS3 announce NOT ASD
   . . .
sdrp-allow:  <AS1 .*  ASD>
```

Proposed Modification to aut-num object

- Need to identify SDRP-capable ASes in IRR
  - Aut-num object:

```
aut-num:        AS500
      . . .
as-in:          from AS5004 accept ANY
      . . .
as-out:         to AS5004 announce ANY
      . . .
comm-list:      AS-SDRP-CAPABLE
      . . .
source:         RADB
```

  - AS Communities proposed in RPS WG.

Proposed Modification to inet-rtr object

- Need to register SDRP routers in IRR

inet-rtr object:

inet-rtr: rtr1.radb.net
localas: AS5000
. . .
sdrp-capable: YES (may be replaced by SDRP policy info in the future)
. . .
source: RADB

Future issues

- Deployment : Mkt demand

  . . . wait for PIM :}
- Forwarding Protocol
  - SDRP vs GRE : need full explicit (source) route capability
  - ERP : need to rewrite spec with simplified source route approach
- Route Construction : Investigate other approaches