Policies Migration

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Background Introduction

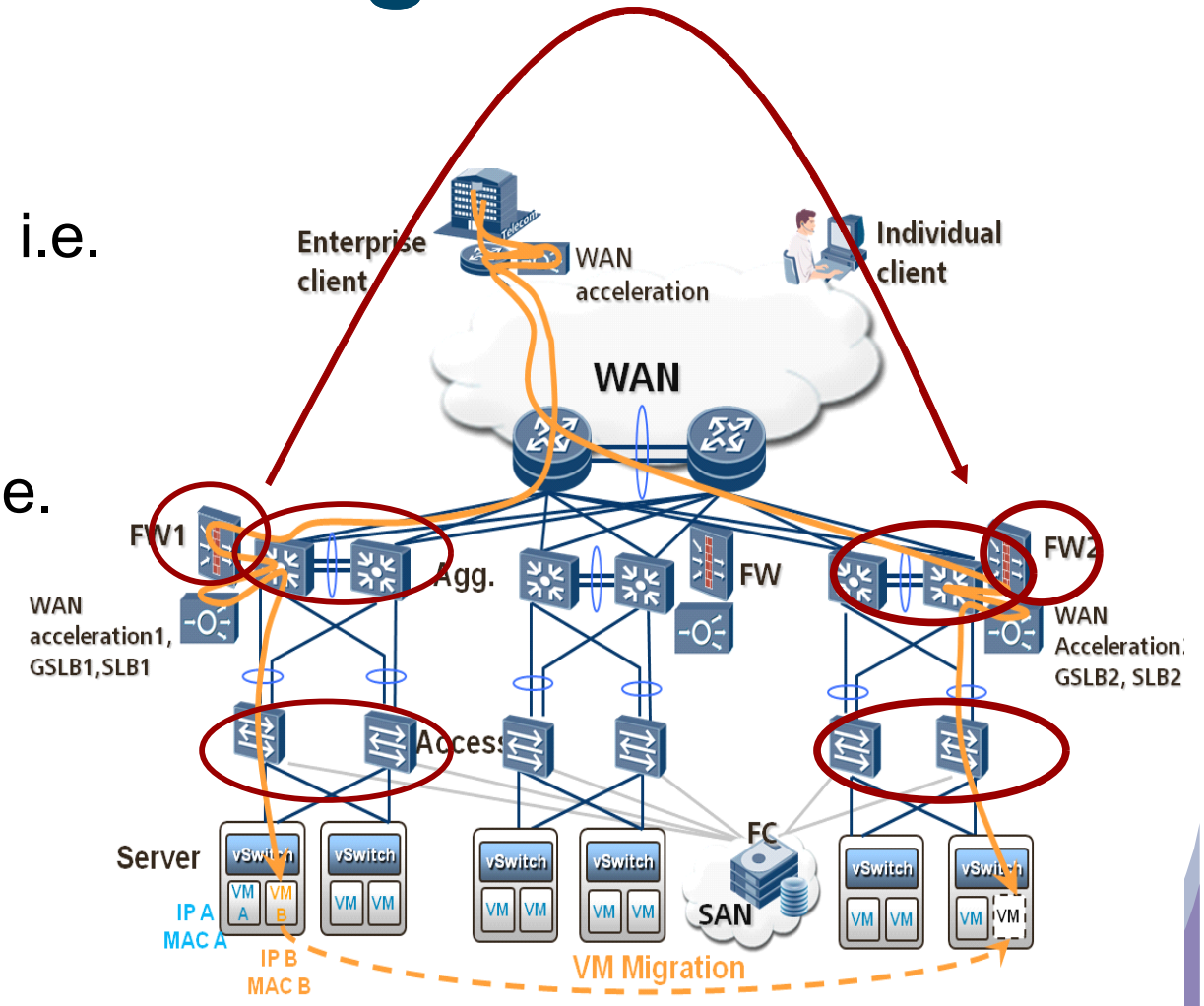
- Cloud Computing
  - Server Virtualization
  - Storage Virtualization
- VM Migration, in order to
  - Make full use of idle resource
  - Decrease CAPEX & OPEX, energy-saving
  - Traffic optimization and load balancing
  - Increase service availability
- Storage Migration, in order to
  - Traffic optimization
  - Quick response

In-site and Between-sites Migration

- Most current VM migration is in-site migration, in which
  - old and new VMs use shared storage
  - L2 Connectivity is guaranteed
- Strong requirements in between-sites migration, together with storage migration, in order to enable
  - Resources-effective
  - DC consolidation/expansion/migration
- Additional technologies to guarantee L2 connectivities betweens DCs, which is out of scope of this problem statement.

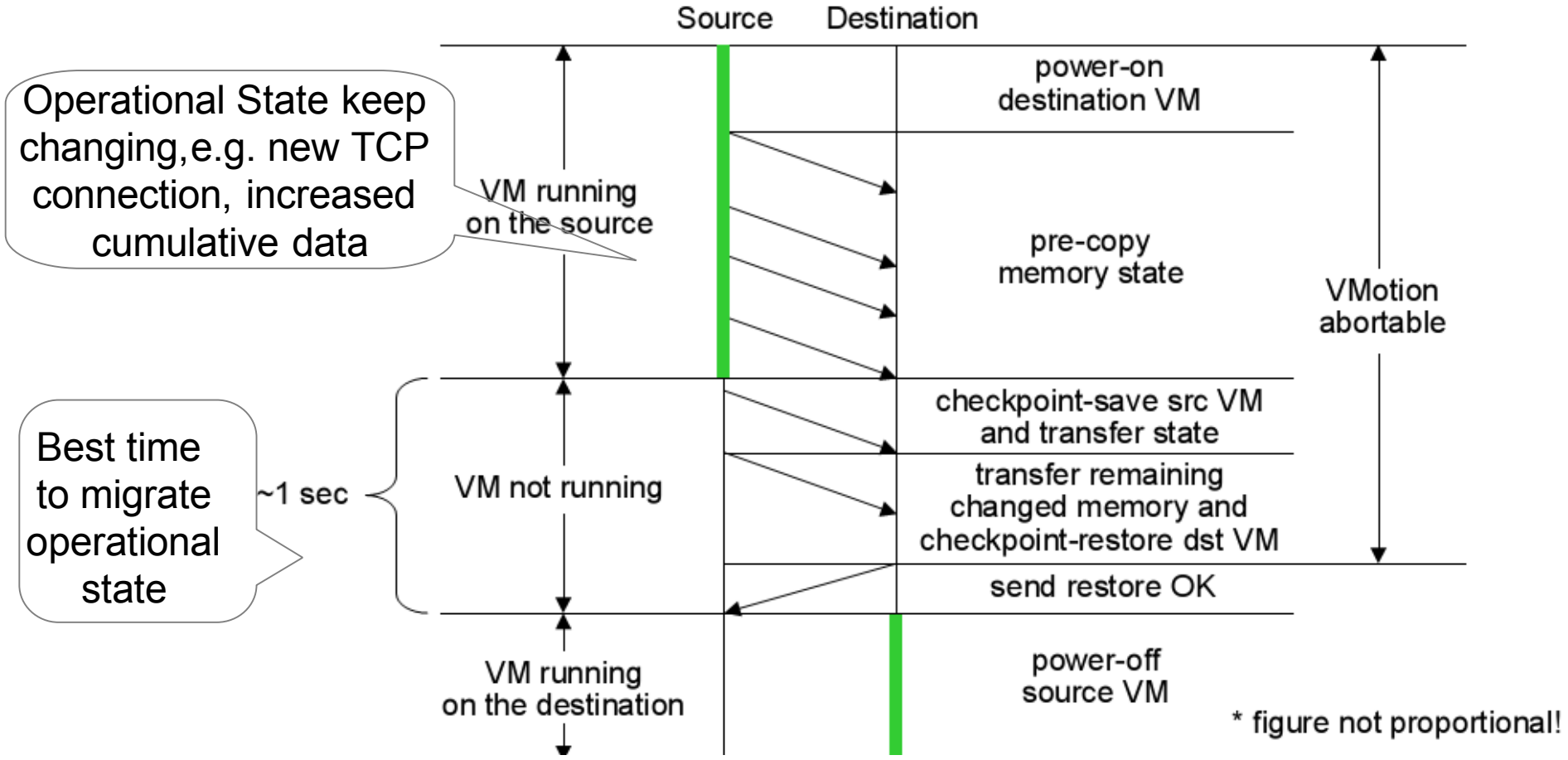
Policies Migration

- Policies include:
  - Configuration State, i.e. static policies configured by manager.
  - Operational State, i.e. dynamic policies generated during service running.
    - TCP State
    - Dynamic ACLs
    - Cumulative Data
  - We focus on operational state.



Considerations-WHEN?

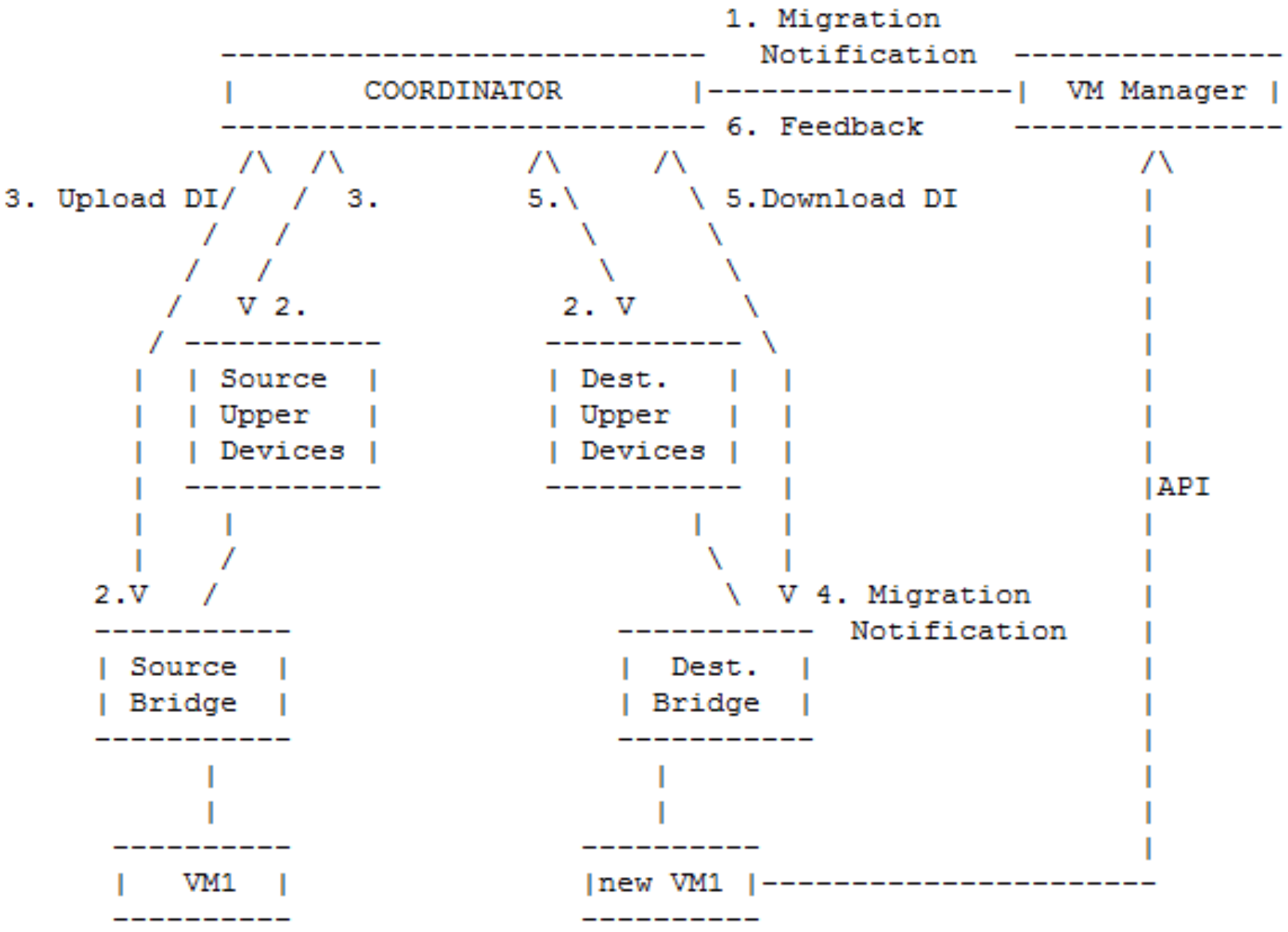
- WHEN: VM migration may take minutes even hours, during which operational state could keep changing, e.g. new TCP connection is established, or sequence number increased. 'VM-not-running' is the best period to migrate Dynamic Information.



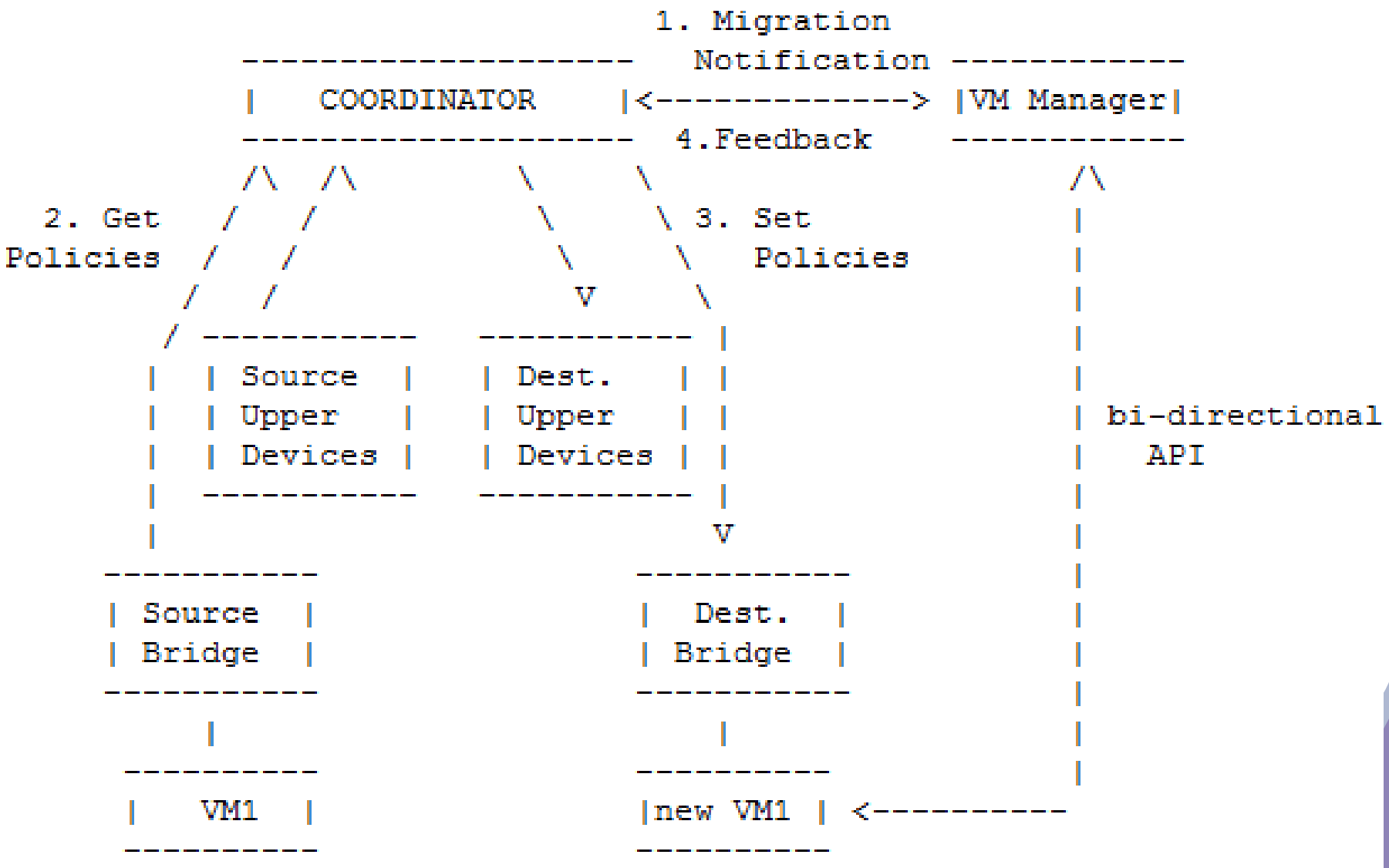
Considerations-WHERE?

- Need to learn where there are operational states that need to be migrated.
- Also need to learn two ends of the migration,i.e. source and destination network devices.
- The operational state migration is not definitely one-to-one model. Since network architecture could be asymmetrical, so that could also be multiple-to-one and one-to-multiple

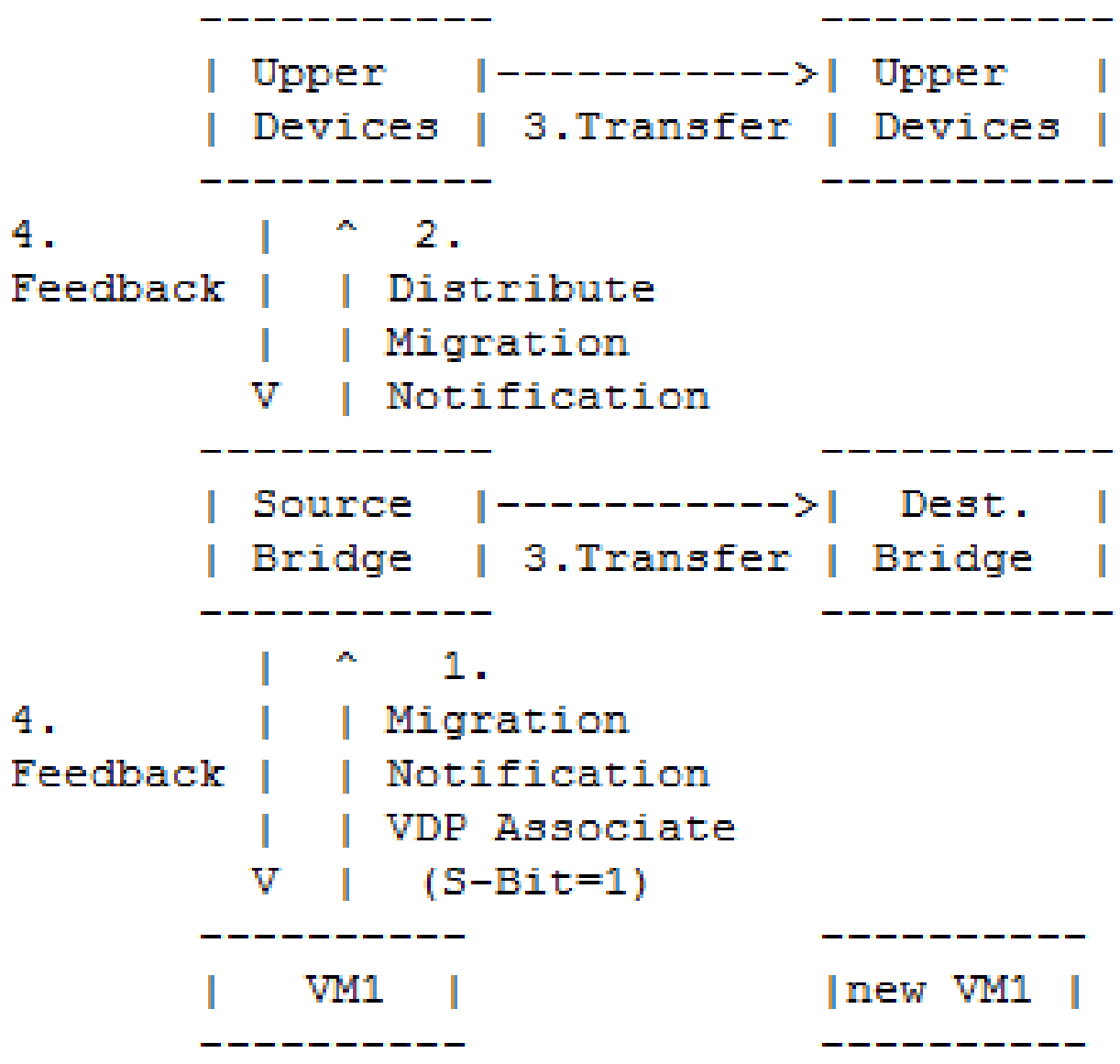
Potential Solution-1



Potential Solution-2



Potential Solution-3



What can be done in TSV Area

- Migration Notification from COORDINATOR to network devices
- Policies Transfering between network devices and COORDINATOR

- According to the final solution, we may also need cooperation between OPSA and TSV to define the communication between COORDINATOR and network manager for Notification and Feedback.

Q&A

Gap Analysis

Dynamic Policy Migration Requirements	Whether Satisfied by MIDCOM	
Notifies accurate migration time to devices	**No**	**New Feature**
Mutual authentication	**Yes**	**Could Reuse MIDCOM**
Capability negotiation	**No**	**New Features**
Dynamic policy transferring	**No**	
Configure dynamic policy on destination devices	**No**	
Delete dynamic policy from source devices (how & when)	**No**	
Peer-to-peer interaction	**Yes**	**Could Reuse MIDCOM**
Peers-to-peer interaction	**Yes**	
Peer-to-peers interaction	**Yes**	
Interaction atomicity	**Yes**	
Notify failure and reply reason	**Yes**	
Symmetric architecture	**Yes**	
Asymmetric architecture	**No**	**New Features**
Between two different Data Center domains	**No**	