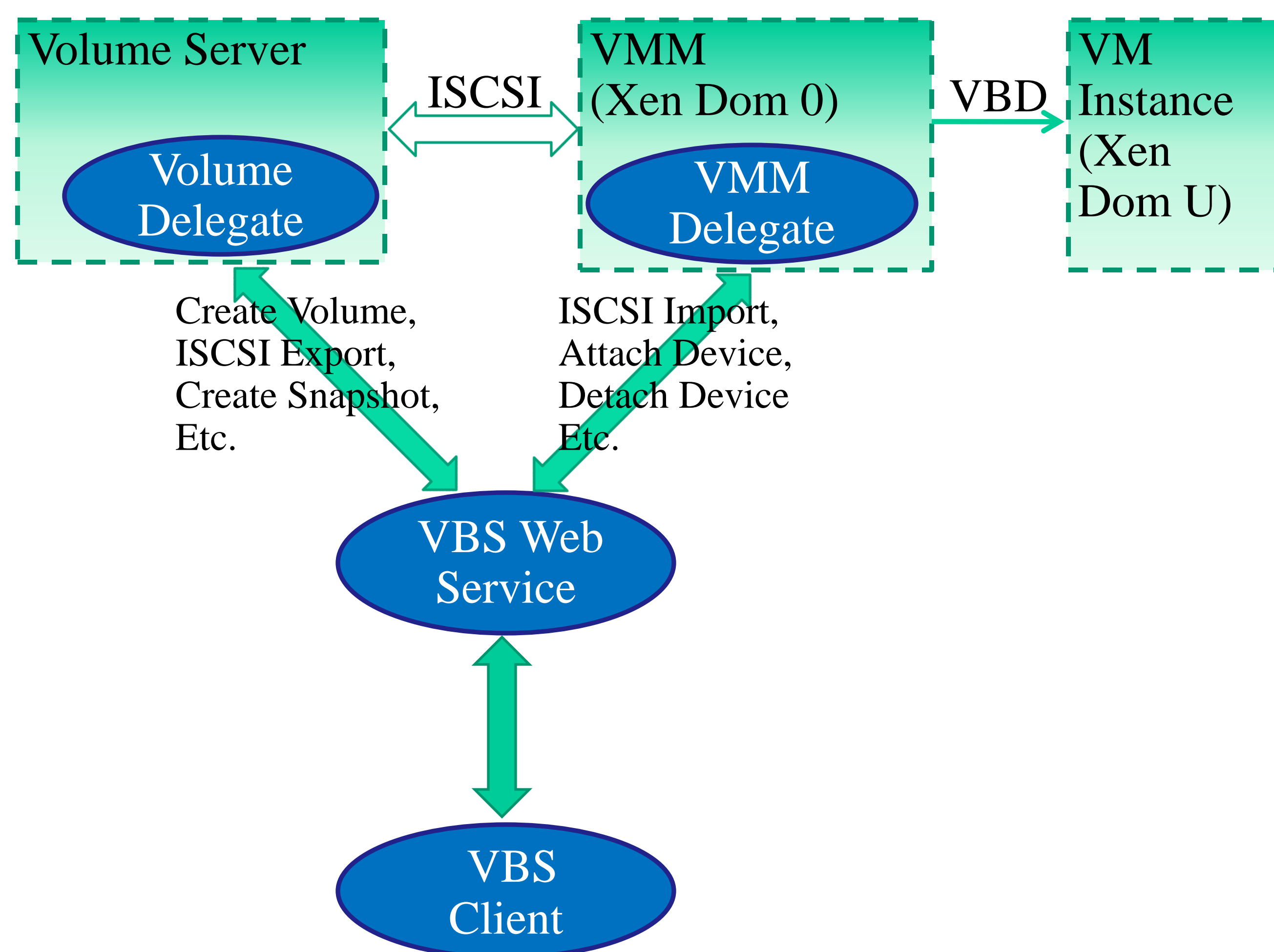


## Motivation

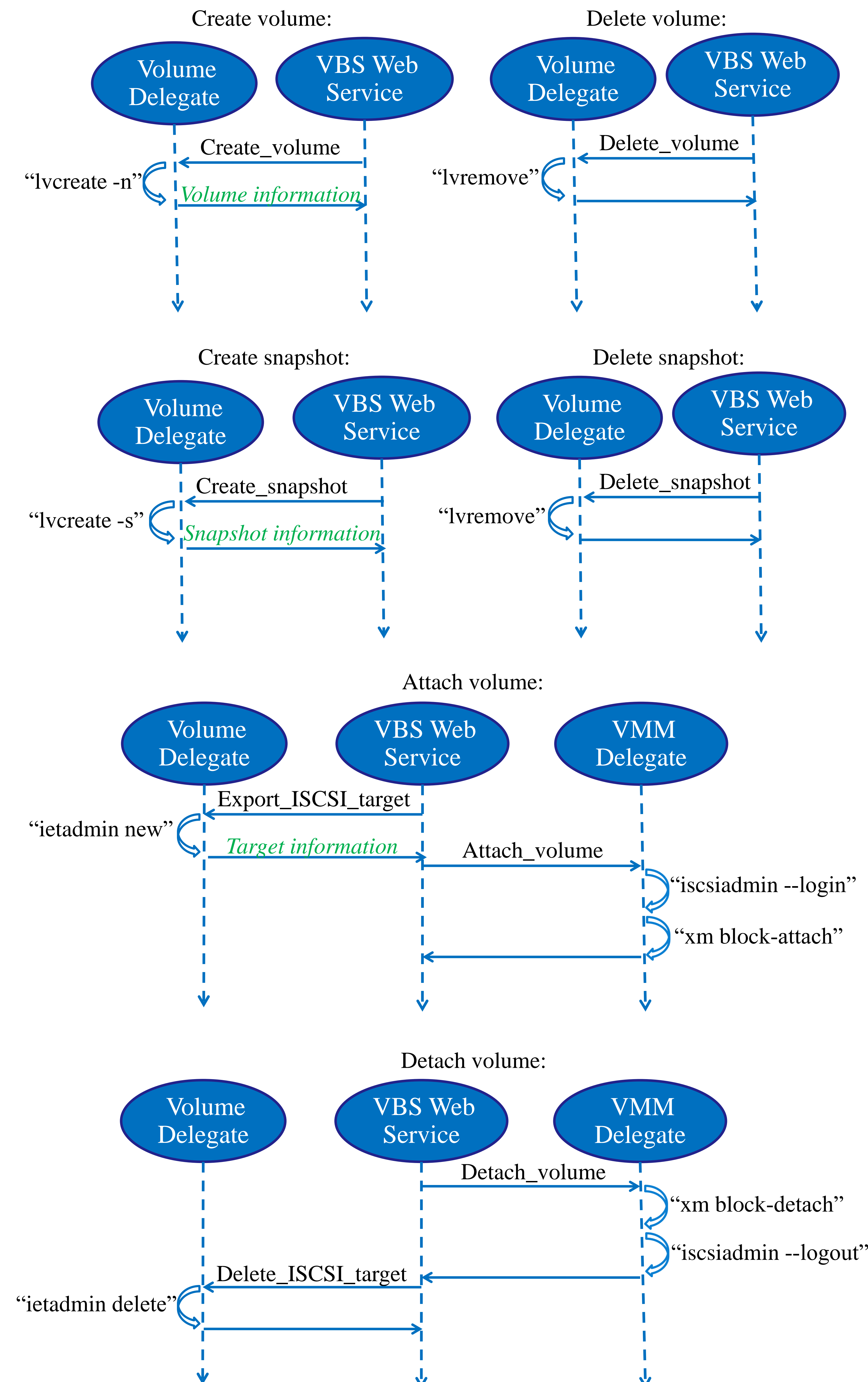
- Similar functionalities to Amazon's Elastic Block Store (EBS)
- More flexibility
- Interfaces:
  - create-volume <size> <comment>
  - delete-volume <volume id>
  - describe-volumes
  - describe-volume <volume id>
  - create-snapshot <volume id> <comment>
  - delete-snapshot <snapshot id>
  - describe-snapshots
  - describe-snapshot <snapshot id>
  - attach-volume <volume id> <VMM Hostname> <VM Id> <VM Device>
  - detach-volume <volume id>

## Web service architecture



- VMM: Virtual Machine Manager
- VBD: Virtual Block Device

## Workflows



## Support other volume servers and VMMs

- Build new Volume Delegate Service
- Build new VMM Delegate Service
- Command line extraction:

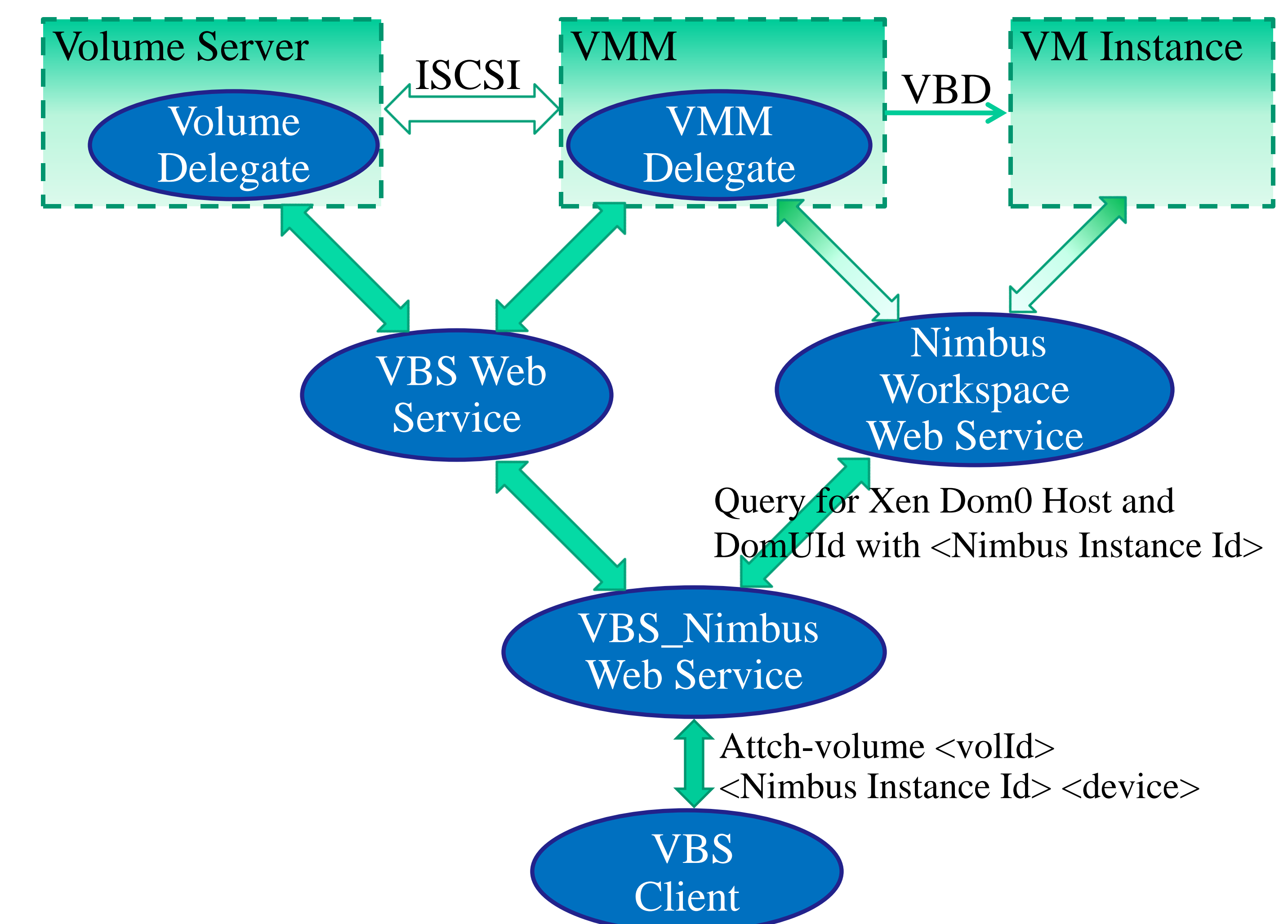
Java source code:

```
String program = "xm";
String[] args = {"block-attach", domUID, "phy:"+dom0Dev, domUDev, "w"};
UtilSet.antExecute(program, args, ...);
```

Property file:

```
blockAttachCmd=xm block-attach <domUID> phy:<dom0Dev> <domUDev> w
blockDetachCmd=xm block-detach <domUID> <domUDev>
```

## Integration with Nimbus



## Challenges and Future Work

- Consistency
  - metadata maintenance, volume id generation
- Performance
  - multiple service instances, asynchronous snapshot creation
- Fault tolerance
  - roll-back in case of failure, large volume creation