

Migrate Workflow from vCenter

Arun

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Agenda

- **Vmprov migrate**
- **Relocate spec**
- **Migrate workflow**
- **Compute spec**
 - vMotion Spec
 - ComputeColdMigrationActions
 - ComputeHotMigrationActions

Migrate workflow

- **VpxdVmprov::Migrate** (vmprov.cpp)
 - Change host, resource pool or datastore for a VM
 - S/X/vMotion
 - FSR
 - Disks only migration
 - Relocate i.e cold migration
 - FT/FTCPT migration ?
 - VM should be already state locked
 - Creates a context for migration – Passed to all workflow actions
 - Instantiates a workflow for migration
 - The workflow runs as the child of the current LRO.
 - Relocate spec and VM mo object are the inputs

Relocate Spec

- **Input to the Vmprov migrate**
- **Spec for moving or copying a VM to different datastore/host**
 - Disk info - transformation/Location/diskMoveType/Options etc
 - Service locator - X-VC
 - Destination Folder - X-VC
 - Datastore - Target Datastore
 - Resource pool - Required for XVC/Clone from template
 - Host - Target host
 - VirtualDeviceSpec - Add virtual Ethernet card

Migrate Workflow actions

- Queue of actions execute for a migration
- An action may add more actions to the end of the queue
 - InvokePrechecks
 - Callbacks for prechecks
 - SelectDestination
 - For vMotion/XvMotion
 - CheckPermission
 - X-VC
 - CheckCompatibility
 - Checks for DRS vs Manual/Set RP/host
 - Reserve directory
 - X/SvMotion
 - CreateInventoryVm
 - X-VC
 - ComputeSpec
 - Prepare spec for hot/cold migration.
 - InvokeCallbacks
 - Pre migration callbacks.

Compute Spec

■ Prepare spec according to migration type

- Update NFC IPs
- Compute NFC copy spec
- New copy spec builder - Disk specification
- Update src and dst VM path
- Compute spec for change primary datastore or change diskdatastore
- Compute snapshot relay layout spec for Change primary/disk Datastore
- If VM powered on compute vMotion spec
- Compute next actions based on migration type i.e hot/cold
 - ComputeColdMigrationActions
 - ComputeHotMigrationActions
- Set cancel option only in case of cold migration or SvMotion.

Compute vMotion Spec

■ vMotion requirements

- Determine migration type i.e change host/datastore
 - vMotion/FSR/DisksOnly
- Get source and destination host ip
- Get vmotion stream ips
- FT logging information in case of FT migration
- Determine swap configuration
- With all above info, prepare VMotionManager Spec.

ComputeColdMigrationActions

- **Computes next set of actions for cold migration**
 - UnregisterSourceVm
 - SwitchHostAndPool
 - If ChangePrimaryDatastore
 - CreateDestinationVM
 - RelaySnapshot
 - Else
 - RegisterDestinationVm
 - ReconfigureVm
 - RelayoutSnapshot
 - If only changePool
 - SwitchHostAndPool, ReconfigureVm, RelayoutSnapshot

ComputeHotMigrationActions

■ Computes next set of actions for hot migration

- If ChangePrimaryDataStore
 - CreateDummyVMotionDisks
 - CreateDestinationVM
 - RelayayoutSnapshots
- If changing Host or Primary Datastore or Disk Datastore
 - PrepareSource
 - PrepareDestination - Change host or datastore
 - InitiateDestination - Change host or datastore
 - InitiateSource
 - SwitchHostAndPool - In case of Same VC
 - CompleteSource
 - CompleteDestination - Change host or datastore

■ PrepareSource

- VC
 - Mark VM as vMotioning state
 - vMotionManager->PrepareSourceEX(vmotionSpec)
 - Add prepareSource task to track.
- Hostd
 - VMotionManagerImpl::PrepareSourceEx(vmotionSpec)
 - New vMotionSrc->Prepare and pass spec

■ PrepareDestination

- VC
 - vMotionManager->PrepareDestinationEX(vmotionSpec)
 - Add prepareDestination task to track.
- Hostd
 - VMotionManagerImpl::PrepareDestinationEx(vmotionSpec)
 - New vMotionSrc->Prepare and pass spec

■ InitiateDestination

- VC
 - Lookup Service endpoint – X-VC
 - Get a new vpxd task info listener
 - VMotionManager-InitiateDestination(migrationID, dstVMcfgPath)
 - Get new tracking LRO in case of XVC
- Hostd
 - Find the destination entry map with migration ID
 - dstEntry->Initiate(cfgpath, taskRef)

■ InitiateSource

- VC
 - VMotionManager-InitiateSourceEX(migrationID, dstWid)
- Hostd
 - VMotionManagerImpl::InitiateSourceEX(migrationId, dstID)
 - InitiateSourceInt
 - Find the source entry map
 - srcEntry->Initiate