TECHNICAL BRIEF: VMWARE TO AWS MIGRATION CHALLENGES
Client: HigherTech
Target Environment: VMware Cloud on AWS (VMC) + Native AWS Hybrid

1. NETWORKING & CONNECTIVITY CHALLENGES

A. The "Stretched L2" Complexity
- Requirement: HigherTech needs to keep IP addresses for legacy apps.
- Challenge: Stretching Layer 2 networks over a WAN (via Direct Connect) introduces latency and increases the broadcast domain size, which can degrade performance.
- Mitigation: We will use VMware HCX Network Extension (NE). However, we must strictly limit the number of extended networks and plan to "swing" the gateway to AWS as soon as a full subnet is migrated to prevent "hairpinning" traffic back and forth between on-prem and cloud.

B. MTU Mismatches
- Challenge: AWS Jumbo Frames support (9001 MTU) vs. On-Premise standard frames (1500 MTU).
- Detail: If the Direct Connect path involves intermediate devices that don't support Jumbo Frames, packet fragmentation will severely degrade migration speed (vMotion performance).
- Technical check: Verify end-to-end MTU capability on the Direct Connect circuit immediately.

2. STORAGE & COMPUTE MISALIGNMENT

A. The "Storage Bloat" Problem
- Challenge: VMC on AWS uses bare-metal hosts (e.g., i3.metal or i4i.metal). These come with fixed NVMe storage limits.
- Scenario: HigherTech has VMs with 4TB of storage but only 2 vCPUs. To get enough storage in VMC, you might be forced to buy 3 extra hosts just for disk space, leaving expensive CPU/RAM sitting idle.
- Mitigation:
  1. Clean up: Delete old snapshots and "zombie" VMDKs before migration.
  2. Offload: Attach external NFS datastores (like Amazon FSx for NetApp ONTAP) to the VMC cluster to handle bulk storage without buying more hosts.

3. MIGRATION METHODOLOGY & CUTOVER

A. Live vMotion vs. Cold Migration
- Challenge: Live vMotion requires <250ms latency and is sensitive to packet loss.
- Detail: For the large SQL database VMs (2TB+ RAM), vMotion may fail if the memory change rate (dirty pages) exceeds the replication bandwidth.
- Mitigation: Use "Bulk Migration" (vSphere Replication) for large VMs. This replicates data in the background and requires a small reboot window, which is safer than a failed Live vMotion.

4. OPERATIONAL MODEL SHIFT

A. Shared Responsibility Model

- Challenge: HigherTech admins are used to having "root" access to ESXi hosts.
- Change: In VMC on AWS, AWS/VMware manages the ESXi hosts and vCenter patching. HigherTech admins gets "CloudAdmin" privileges, which restricts access to certain host-level configurations.
- Impact: Any 3rd party host-level plugins (e.g., old backup agents, legacy monitoring tools) will break and must be replaced with AWS-compatible versions.

5. COMPLIANCE & SECURITY

A. Firewall Policy Translation

- Challenge: Migrating NSX-v (legacy) rules to NSX-T (modern VMC standard) is not always 1:1.
- Detail: Security Groups in AWS work differently than firewall rules on-prem. We need to audit the "East-West" traffic flow to ensure we don't accidentally open internal ports once the VMs are moved to the cloud.