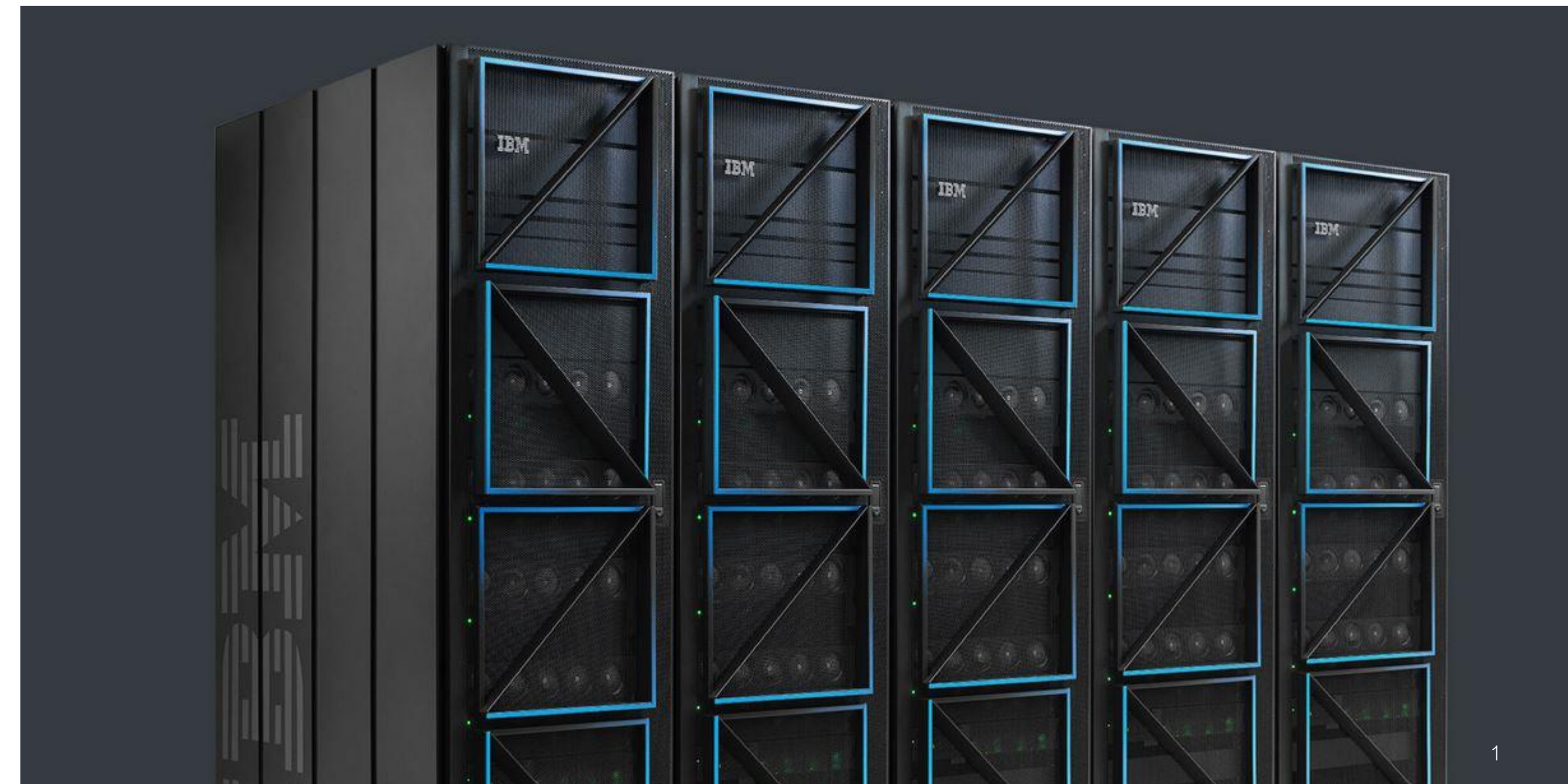# Power10 PowerVM Overview

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New PowerVM Features

PowerVM Partition Mobility

- Both Active and Inactive Mobility follow a support statement of N-2 releases

- Power10 will support migration between Power10, POWER9 and POWER8 servers but Power10 will not support direct migration from POWER7

- If you have VMs on POWER7 servers that you wish to migrate to POWER10.
  - Must first migrate to POWER8 or POWER9
  - Must then perform a second migration to Power10

PowerVM

Live Partition Mobility

3

PowerVM Partition Mobility
Optical Device Support

- Previously if optical devices was configured, LPM and Remote Restart would fail

- Now, LPM and Remote Restart succeed if there is no media installed in the device

- Changes are in VIOS 3.1.3 so not required to have Power10 hardware to take advantage of this enhancement

PowerVM Partition Mobility
Automatic selection of network device in Mover/Server Partition (MSP)

- Previously LPM did not consider adapter speed, type of connection (direct, SEA) and existing LPM traffic on possible MSP connections

- Now, HMC determines the fastest adapter available in the MSP automatically unless the user has specified to migrate using a specific adapter.

- Changes are in HMC version 10 and VIOS 3.1.3 so support is available on Power10 and earlier hardware

POWER10 Compatibility Mode

Functions tied to new Power10 Compatibility Mode
- New instructions
  - Single Instruction/Multiple Data (SIMD)
  - Additional Crypto support
  - New load/store instructions
- Support for radix (vs hashed) hardware page table for Linux
- Need application changes to utilize new instructions

Other improvements like energy savings, core strength, thread strength, cache changes, Open CAPI attached memory, and such are utilized in all compatibility modes

AIX levels

If installing the AIX operating system LPAR with any I/O configuration (one of these):
AIX Version 7.2 with the 7200-05 Technology Level and Service Pack 7200-05-03-2136, or later
AIX Version 7.2 with the 7200-04 Technology Level and Service Pack 7200-04-05-2148 (planned availability February 11, 2022)

If installing the AIX operating system Virtual I/O only LPAR (one of these):
AIX Version 7.2 with the 7200-05 Technology Level and Service Pack 7200-05-01-2038, or later
AIX Version 7.2 with the 7200-04 Technology Level and Service Pack 7200-04-01-1939, or later
AIX Version 7.1 with the 7100-05 Technology Level and Service Pack 7100-05-05-1937, or later

IBM released statement of direction for AIX 7.3
AIX Update Access Key reminder support

VIOS levels

VIOS 3.1.3.10, or later

Linux Release levels

- SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server 15, Service Pack 3, or later
- SUSE Linux Enterprise Server 12, Service Pack 5, or later
- SUSE Linux Enterprise Server 15, Service Pack 3, or later
- Red Hat Enterprise Linux for SAP with Red Hat Enterprise Linux 8 for Power LE version 8.4, or later
- Red Hat Enterprise Linux 8 for Power LE, version 8.4, or later
- Additional releases over time

Newer versions of Linux have support for Radix Hardware Page Tables instead of Hashed Page Tables which were used prior to Power10.

IBM i Release levels

- V7R3 TR 11 and later TRs

- V7R4 TR5 and later TRs

- Additional releases over time

Discontinued PowerVM Features

Power10

- Introduction of new models gives IBM the opportunity to reflect on how POWER systems are being leveraged.
- Analysis based on call home data, user groups, individual discussions
- As more and more functions are added to IBM products the costs to maintain and test these products continues to grow.
- Dropping features that have low adoption rates, allows IBM to re-use these resources to add new features to our offerings

PowerVM Active Memory Sharing (AMS)

Background
- Allows a group of VMs to share a pool of memory (DRAM)
- Ability to overcommit pool which results in hypervisor using VIOS to "page out" memory from memory pool to VIOS storage device
- Requires paging spaces to be set up on a per VM basis to reserve space in the VIOS for the memory contents when paging is required.
- Performance degrades when pool is overcommitted

PowerVM Active Memory Sharing (AMS)

- Call Home data indicates that 0.27% of the VMs on POWER servers are utilizing AMS
- Of those, only a handful running on POWER9
- AMS doubles much of our testing efforts as tests need to run with both dedicated and shared memory.

Power10 Change
- Starting in Power10, Platform will no longer support AMS VMs
- HMCs will still support AMS if managing POWER9 or POWER8 server

To Prepare for Power10
- Utilize dedicated memory instead of shared memory for VMs prior to upgrade to Power10

PowerVM Logical Memory Blocks (LMBs)

- Logical Memory Block (LMB) is the granularity of memory that can be assigned to a VM.
- Supported sizes are 16MB, 32MB, 64MB, 128MB, 256MB
- 97% of all servers are running with 256MB LMB size. Most systems default to use this size but customers can override the default.
- LMB size is a trade-off between granularity and internal management of quantity of LMBs.
- With the largest LMB size (256MB), 64TB VM requires 262,133 individual LMBs. It is not practical to efficiently manage this number of objects.

PowerVM Logical Memory Blocks (LMBs)

Power10 Change
- Starting in Power10, only 128MB and 256MB LMB sizes will be supported.

To Prepare for Power10
- Recommend at planned outage on current servers to change to 256MB LMB size if using smaller size. 256MB allows partition migration between Power10, POWER9 and POWER8.

PowerVM Workload Management Groups (eWLM)

- Workload groups was a concept created back in POWER5 to allow an external tool to communicate to "agents" running in VMs to move resources between VMs in their group.
- IBM offering was called Enterprise Workload Management (eWLM).
- In 2006, IBM dropped support for the eWLM offering on POWER in favor of HMC based tools (Dynamic LPAR – DLPAR).
- According to call home data, only 27 VMs in 3 customer accounts have specified a workload group (profile option in HMC).

To Prepare for Power10
- Recommend at planned outage, if you are using workload group, change value to none in profile
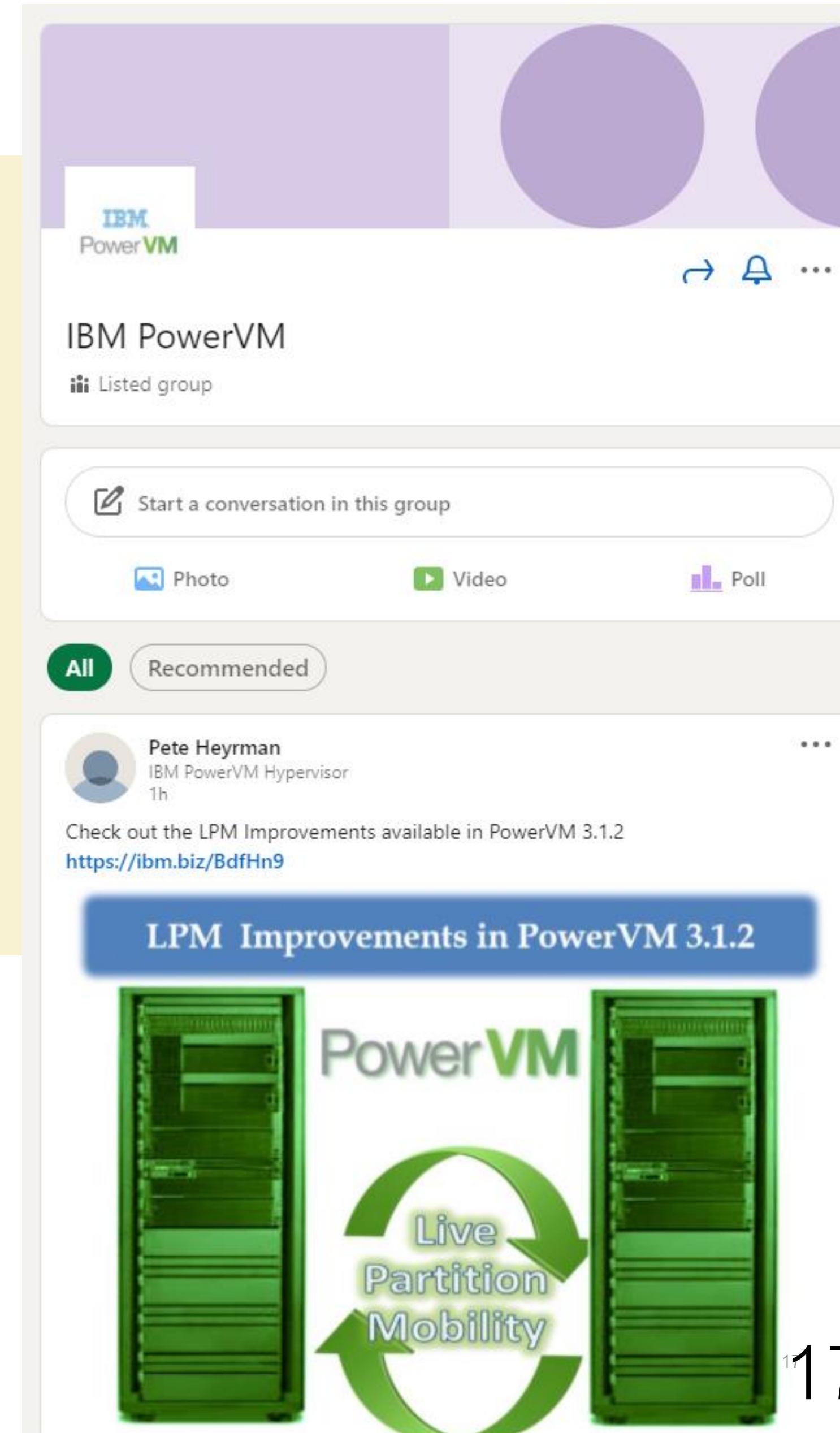
PowerVM Social Media Presence

Linked in

Started October, 2015

2902 Members

https://ibm.biz/powervmgrp

IBM PowerVM

IBM PowerVM

Listed group

Start a conversation in this group

Photo   Video   Poll

All   Recommended

Pete Heyrman
IBM PowerVM Hypervisor
1h

Check out the LPM Improvements available in PowerVM 3.1.2
https://ibm.biz/BdfHn9

LPM Improvements in PowerVM 3.1.2

PowerVM
Live Partition Mobility

PowerVM Section

Questions?