HPA Policies and Mappings

Refer wiki page: https://wiki.onap.org/display/DW/Policy+Specification+and+Retrieval+for+OOF

<table>
<tr><th>Policy</th><th>Attributes</th><th>hpa-feature</th><th>Tosca Mapping</th><th>Openstack Mapping</th><th>AAI representation (Eg:)</th></tr>
<tr><td>HPA CPU Topology Policy Example</td><td>numCpuSockets

numCpuCores

numCpuThreads</td><td>cpuTopology</td><td></td><td>hw:cpu_sockets, hw:cpu_cores, hw:cpu_threads,</td><td>hpa-capability-id="a369fd3d-0b15-44e1-81b2-6210efc6dff8",

hpa-feature="cpuTopology",

architecture="generic",

hpa-version="v1",

<table><tr><th>hpa-attribute-key</th><th>hpa-attribute-value</th></tr><tr><td>numCpuSockets</td><td>{value:4}</td></tr><tr><td>numCpuCores</td><td>{value:4}</td></tr><tr><td>numCpuThreads</td><td>{value:8}</td></tr></table></td></tr>
<tr><td>HPA Basic Capabilities Policy Example</td><td>numVirtualCpu

virtualMemSize</td><td>basicCapabilities</td><td>virtual_cpu#num_virtual_cpu

virtual_memory#virtual_mem_size</td><td>vcpus,

ram</td><td>hpa-capability-id="b369fd3d-0b15-44e1-81b2-6210efc6dff9",

hpa-feature=" basicCapabilities",

architecture="generic",

hpa-version="v1",

<table><tr><th>hpa-attribute-key</th><th>hpa-attribute-value</th></tr><tr><td>numVirtualCpu</td><td>{value:4}</td></tr><tr><td>virtualMemSize</td><td>{value:4, unit:"MB"}</td></tr></table></td></tr>
<tr><td>HPA OVS DPDK Policy Example</td><td>dataProcessingAccelerationLibrary</td><td>ovsDpdk</td><td></td><td></td><td>hpa-capability-id="b369fd3d-0b15-44e1-81b2-6210efc6dffa",

hpa-feature="ovsDpdk",

architecture="Intel64",

hpa-version="v1",

<table><tr><th>hpa-attribute-key</th><th>hpa-attribute-value</th></tr><tr><td>dataProcessingAccelerationLibrary</td><td>{value:" v12.1"}</td></tr></table></td></tr>
<tr><td>"HPA CPU Pinning Policy Example</td><td>logicalCpuThreadPinningPolicy

logicalCpuPinningPolicy</td><td>cpuPinning</td><td></td><td>hw:cpu_thread_policy

hw:cpu_policy</td><td>hpa-capability-id="c369fd3d-0b15-44e1-81b2-6210efc6dffa",

hpa-feature="cpuPinning",

architecture="generic",

hpa-version="v1",

<table><tr><th>hpa-attribute-key</th><th>hpa-attribute-value</th></tr><tr><td>logicalCpuThreadPinningPolicy</td><td>{value:" prefer"}</td></tr><tr><td>logicalCpuPinningPolicy</td><td>{value:" dedicated"}</td></tr></table></td></tr>
</table>

<table>
<tr>
<td>HPA NUMA Policy Example</td>
<td>numaNodes

numaCpu-N

numaMem-N</td>
<td>numa</td>
<td></td>
<td>hw:numa_nodes

hw:numa_cpus:N

hw:numa_mem:N</td>
<td>hpa-capability-id="c369fd3d-0b15-44e1-81b2-6210efc6dffa",

hpa-feature="numa",

architecture="generic",

hpa-version="v1",
<table>
<tr><th>hpa-attribute-key</th><th>hpa-attribute-value</th></tr>
<tr><td>numaNodes</td><td>{value:2}</td></tr>
<tr><td>numaCpu-0</td><td>{value:[0,1]}</td></tr>
<tr><td>numaCpu-1</td><td>{value: [2,3,4,5]}</td></tr>
<tr><td>numaMem-0</td><td>{value:2, unit:"MB"}</td></tr>
<tr><td>numaMem-1</td><td>{value:4, unit:"MB"}</td></tr>
</table>
</td>
</tr>
<tr>
<td>HPA SriovNICNetwork Policy Example</td>
<td>pciCount

pciVendorId

pciDeviceId</td>
<td>SriovNICNetwork</td>
<td>virtual_network_interface_requirements#network_interface_requirements#interfaceType

virtual_network_interface_requirements#nic_io_requirements#pciVendorId

virtual_network_interface_requirements#nic_io_requirements#pciDeviceId

virtual_network_interface_requirements#nic_io_requirements#pciNumDevices

virtual_network_interface_requirements#nic_io_requirements#physicalNetwork?</td>
<td><code>sriov_nic=sriov-nic-<vendor>-<Vendor ID>-<Device ID>-physicalNetwork:COUNT</code>

It is expected thatOpenstackadministrator creates alias that stars with sriov and put the vendor ID, device ID.

Example: Assume that there are two SRIOV-NIC cards supported by a region, Intel and Mellanox.

Examples:

sriov-nic-intel-1234-5678-physnet1:1

sriov-nic-mellanox-2345-6543-physnet1:1</td>
<td>hpa-capability-id="ty53fd3d-0b15-11w4-81b2-6210efc6dff9",

hpa-feature="sriovNICNetwork",

architecture="intel64",

hpa-version="v1",
<table>
<tr><th>hpa-attribute-key</th><th>hpa-attribute-value</th></tr>
<tr><td>pciCount</td><td>{value: 1}</td></tr>
<tr><td>pciVendorId</td><td>{value: "1234"}</td></tr>
<tr><td>pciDeviceId</td><td>{value: "5678"}</td></tr>
<tr><td>physicalNetwork</td><td>{value:" physnet1"}</td></tr>
</table>
</td>
</tr>
<tr>
<td>HPA PCIe Passthrough Policy Example</td>
<td>pciCount

pciVendorId

pciDeviceId</td>
<td>pciePassthrough</td>
<td>virtual_network_interface_requirements#network_interface_requirements#interfaceType

virtual_network_interface_requirements#nic_io_requirements#pciVendorId

virtual_network_interface_requirements#nic_io_requirements#pciDeviceId

virtual_network_interface_requirements#nic_io_requirements#pciNumDevices</td>
<td><code>pci_passthrough:alias=ALIAS:COUNT</code>

Openstack administrator is expected to create ALIAS as

<aliasName>-<deviceType>-<architecture>-<PCIe vendor ID in Hex>-<PCIe device ID>

QuickAssist example: "mycrypto-qat-intel-8086-0443"</td>
<td>hpa-capability-id="f453fd3d-0b15-11w4-81b2-6210efc6dff9",

hpa-feature="pciePassthrough",

architecture="intel64",

hpa-version="v1",
<table>
<tr><th>hpa-attribute-key</th><th>hpa-attribute-value</th></tr>
<tr><td>pciCount</td><td>{value: 1}</td></tr>
<tr><td>pciVendorId</td><td>{value: "8086"}</td></tr>
<tr><td>pciDeviceId</td><td>{value: "0443"}</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr>
<td>HPA Local Storage Policy Example</td>
<td>diskSize

ephemeralDiskSize

swapMemSize</td>
<td>localStorage</td>
<td></td>
<td>disk

swap</td>
<td>hpa-capability-id="u456fd3d-0b15-90r4-81b2-6210efc6dff9",

hpa-feature="localStorage",

architecture="generic",

hpa-version="v1",
<table>
<tr><th>hpa-attribute-key</th><th>hpa-attribute-value</th></tr>
<tr><td>diskSize</td><td>{value:4096, unit:"GB"}</td></tr>
<tr><td>ephemeralDiskSize</td><td>{value:160, unit:"GB"}</td></tr>
<tr><td>swapMemSize</td><td>{value:8192, unit:"MB"}</td></tr>
</table>
</td>
</tr>
<tr>
<td>HPA CPU Instruction Set Extensions Policy Example</td>
<td>instructionSetExtensions</td>
<td>instructionSetExtensions</td>
<td></td>
<td>hw:capabilities:cpu_info:features</td>
<td>hpa-capability-id="c369fd3d-0b15-44e1-81b2-6210efc6dffa",

hpa-feature="instructionSetExtensions",

architecture="Intel64",

hpa-version="v1",
<table>
<tr><th>hpa-attribute-key</th><th>hpa-attribute-value</th></tr>
<tr><td>instructionSetExtensions</td><td>{value: ["AAA", "BBB"]}</td></tr>
</table>
</td>
</tr>
<tr>
<td>HPA Huge Pages Policy Example</td>
<td>memoryPageSize</td>
<td>hugePages</td>
<td>virtual_memory#vdu_memory_requirements#memoryPageSize</td>
<td>hw:mem_page_size

values can be ANY, 4KB, 2MB, 1GB

How to handle large, small, any from openstack?

if the hw:mem_page_size is an integer it is assumed the unit is in KB

The deafult value for small page is 4k, for large page is 2M or 1G(recommended value 2M), for any page, libvirt will firstly to try to find large pages, if failed then will fall back to small pages. so it's suggest do not support any page in current release version</td>
<td>hpa-capability-id="e769fd3d-0b15-77b3-81b2-6210efc6dffa",

hpa-feature="hugePages",

architecture="generic",

hpa-version="v1",
<table>
<tr><th>hpa-attribute-key</th><th>hpa-attribute-value</th></tr>
<tr><td>memoryPageSize</td><td>{value:2, unit:"MB"}</td></tr>
</table>
</td>
</tr>
</table>