Common NFVI Telco Taskforce
Antwerp Face-To-Face Sessions

Beyond Botrange
Reference Model Chapters:
> Ch 3: Modeling – Bernard Tsai (DT)
> Ch 4: Abstraction – Mark Shostak (AT&T)
> Ch 5: Infra Profiles & Requirements – Karine Sevilla (Orange)

September 26, 2019
Reference Model Chapter 3: Modelling
Reference Model – Chapter 3 Modelling
L0 Infrastructure Abstraction

**Changes:**

- **NFVI decomposition**
  virtual resources, physical resources and management software
- **Virtual Resources: Tenant**
  alignment with definition in chapter 1
- **Management Software**
  identification of main software modules

---

* https://github.com/cntt-n/CNTT/blob/master/doc/ref_model/chapters/chapter03.md
Reference Model Chapter 4: Infrastructure Abstraction
Infrastructure Abstraction

You are HERE!
Major Updates Since Paris
(assumes general chapter familiarity)

✓ Abstraction details consolidated in Chapter 4 from Chapter 3
✓ The new Chapter 4 covers
  - Infrastructure Resources, Capabilities and Metrics
  - Catalogue, including:
    • Flavours (aka T-Shirt sizes)
    • Instance Types

- 4.1 Capabilities and Metrics.
  - 4.1.1 Exposed vs Internal.
  - 4.1.2 Exposed Infrastructure capabilities.
  - 4.1.3 Exposed Infrastructure metrics.
  - 4.1.4 Internal Infrastructure capabilities.
  - 4.1.5 Internal Infrastructure metrics.
  - 4.1.6 VIM capabilities.
  - 4.1.7 VIM metrics.

- 4.2 Catalogue.
  - 4.2.1 Compute Flavours.
  - 4.2.2 Virtual Network Interface Specifications.
  - 4.2.3 Storage Extensions.
  - 4.2.4 Instance types.
  - 4.2.5 Instance capabilities mapping.
  - 4.2.6 Instance metrics mapping.
  - 4.2.7 One stop shop.

Content from Ch. 3

Original Ch. 4 Content
Major Updates Since Paris
(assumes general chapter familiarity)

✓ Enhanced cache management

<table>
<thead>
<tr>
<th>Ref</th>
<th>VIM capability</th>
<th>Unit</th>
<th>Definition/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.vim.res.cap.001</td>
<td>Virtual Compute allocation</td>
<td>Yes/No</td>
<td>Capability to allocate virtual compute resources to VNFC</td>
</tr>
<tr>
<td>e.vim.res.cap.002</td>
<td>Virtual Storage allocation</td>
<td>Yes/No</td>
<td>Capability to allocate virtual storage resources to VNFC</td>
</tr>
<tr>
<td>e.vim.res.cap.003</td>
<td>Virtual Networking resources allocation</td>
<td>Yes/No</td>
<td>Capability to allocate virtual networking resources to VNFC</td>
</tr>
<tr>
<td>e.vim.res.cap.004</td>
<td>Multi-tenant Isolation</td>
<td>Yes/No</td>
<td>Capability to isolate resources between tenants</td>
</tr>
<tr>
<td>e.vim.res.cap.005</td>
<td>Images management</td>
<td>Yes/No</td>
<td>Capability to manage VNFC software images</td>
</tr>
</tbody>
</table>

Table 4-12: VIM capabilities related to resources allocation.

✓ Now with more VIM!

Table 4-13: VIM capabilities related to resources allocation.
### Major Updates Since Paris
(assumes general chapter familiarity)

- **Refined vNIC Extension**

<table>
<thead>
<tr>
<th>Virtual network interface option</th>
<th>Description (Bandwidth in Gbps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n1, n10, n1T, n1Q, n1P, n1H</td>
<td>1x 1, 2x 1, 3x 1, 4x 1, 5x 1, 6x 1 Gbps</td>
</tr>
<tr>
<td>n10, n10D, n10T, n10Q, n10P, n10H</td>
<td>1x 10, 2x 10, 3x 10, 4x 10, 5x 10, 6x 10 Gbps</td>
</tr>
<tr>
<td>n25, n25D, n25T, n25Q, n25P, n25H</td>
<td>1x 25, 2x 25, 3x 25, 4x 25, 5x 25, 6x 25 Gbps</td>
</tr>
<tr>
<td>n50, n50D, n50T, n50Q, n50P, n50H</td>
<td>1x 50, 2x 50, 3x 50, 4x 50, 5x 50, 6x 50 Gbps</td>
</tr>
<tr>
<td>n100, n100D, n100T, n100Q, n100P, n100H</td>
<td>1x 100, 2x 100, 3x 100, 4x 100 Gbps</td>
</tr>
</tbody>
</table>

Original Table 4-15

<table>
<thead>
<tr>
<th>Virtual Network Interface Option</th>
<th>Interface Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>n1, n2, n3, n4, n5, n6</td>
<td>1, 2, 3, 4, 5, 6 Gbps</td>
</tr>
<tr>
<td>n10, n20, n30, n40, n50, n60</td>
<td>10, 20, 30, 40, 50, 60 Gbps</td>
</tr>
<tr>
<td>n25, n50, n75, n100, n125, n150</td>
<td>25, 50, 75, 100, 125, 150 Gbps</td>
</tr>
<tr>
<td>n50, n100, n150, n200, n250, n300</td>
<td>50, 100, 150, 200, 250, 300 Gbps</td>
</tr>
<tr>
<td>n100, n200, n300, n400, n500, n600</td>
<td>100, 200, 300, 400, 500, 600 Gbps</td>
</tr>
</tbody>
</table>

Revised Table 4-15
Major Updates Since Paris
(assumes general chapter familiarity)

- Consolidated Capabilities mapping - Mappings consolidated to single table
- Labels added to Capabilities mapping for readability

<table>
<thead>
<tr>
<th>Ref</th>
<th>B Instance</th>
<th>N Instance</th>
<th>C Instance</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.nfvi.res.cap.001</td>
<td>Per selected</td>
<td>Per selected</td>
<td>Per selected</td>
<td>Exposed resource capabilities as per Table 4-1</td>
</tr>
<tr>
<td>(#vCPU cores)</td>
<td>&lt;Flavour&gt;</td>
<td>&lt;Flavour&gt;</td>
<td>&lt;Flavour&gt;</td>
<td></td>
</tr>
<tr>
<td>e.nfvi.res.cap.002</td>
<td>Per selected</td>
<td>Per selected</td>
<td>Per selected</td>
<td></td>
</tr>
<tr>
<td>(Amount of RAM (MB))</td>
<td>&lt;Flavour&gt;</td>
<td>&lt;Flavour&gt;</td>
<td>&lt;Flavour&gt;</td>
<td></td>
</tr>
<tr>
<td>e.nfvi.res.cap.003</td>
<td>Per selected</td>
<td>Per selected</td>
<td>Per selected</td>
<td></td>
</tr>
<tr>
<td>(Total instance (ephemeral) storage (GB))</td>
<td>&lt;Flavour&gt;</td>
<td>&lt;Flavour&gt;</td>
<td>&lt;Flavour&gt;</td>
<td></td>
</tr>
<tr>
<td>e.nfvi.res.cap.004</td>
<td>Per selected</td>
<td>Per selected</td>
<td>Per selected</td>
<td></td>
</tr>
<tr>
<td>(# vNICs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Major Updates Since Paris
(assumes general chapter familiarity)

✓ Updated “1-Stop Shop” Graphic
Beyond Botrange…

To-Do List

- Major changes to accommodate containers (identified)
- Complete refinements to vNIC extension
- Clear definitions for Resources, Capabilities, Metrics, etc.
- Refine Metrics (instrument-based metrics → Test ch., language, etc.
- Resolve performance-related issue
- Decouple sizes from performance profiles in Storage Extensions matrix

Challenges

- Changes to accommodate containers (to be identified)
- Impress your friends 😊 Contribute to CNTT RM container development!!!
Beyond Botrange...

Come join the Wednesday Chapter 2/4/5 weekly meeting!

✓ Every Wednesday at 13:00 UTC
✓ Find current bridge info here: https://github.com/cntt-n/CNTT/wiki/Meetings
Reference Model Chapter 5: Feature Set and Requirements from Infrastructure
Reference Model - Chapter 5
Feature set and Requirements from Infrastructure

Chapter 5 focuses on NFVI SW and HW profiles

- Requirements from nodes hosting workloads
- Set of features exposed to VNFs
- SW and HW profiles features and configurations characterizing the 3 Instances types:
  - Basic
  - Network Intensive
  - Compute Intensive
Reference Model - Chapter 5
Feature set and Requirements from Infrastructure

RM 2 status:
NFVI SW and HW profiles reviewed

NFVI SW profiles

NFVI HW profiles
Beyond Botrange

Keep the profiles agnostic to technologies choices

Topics to be developed within the next release

- RM 2.0 NFVI profiles are oriented compute node, lack of content and description for storage
- Improve the hardware profiles specifications (e.g. CPU)
- Develop a 4\textsuperscript{th} instance type “Storage intensive”: NFVI profile hosting VNFs with specific storage needs (high storage IOPS and high storage volume)

Missing Features?
Q&A

Thank You!