FIA Poznan: Value creation, value flows and liability over virtual resources
Poznan, 25 October 2011

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Decoupled physical and virtual operation and provision: Enhanced Convergence and Customisation

- Convergence
  - Architecture
  - Information models
  - Workflows
- Customisation/Flexibility
  - Deployment models
  - Information handlers
  - Actor-to-role assignments

Virtualisation and infrastructure multiplexing enables CapEX reduction
Reducing and distributing the Cost of Infrastructure Ownership at all layers

Reduce OpEX
specification of resource requirements enables right-sizing

Reduce CapEX
reduce need for on-premise infrastructure and complex operations via service provisioning model

Reference scenario for Virtual Infrastructure for Virtual Infrastructure Operator

Resource Ownership
- Legal
- Economic
- Administrative
- Operational
- Usage
Thank you.
Any questions?

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Challenges I

• Coordinating the planning and operations of IT and Network virtualized resources:
  – A common or unified architecture, workflow and information model.
• Decoupling of physical and virtual infrastructure consumption, on-demand provisioning and operation roles for delivery of customized & Isolation:
  – Value creator: physical and virtual infrastructure providers and operators
  – Value consumers: application providers, IaaS brokers
• Key Value technology:
  – Unified workflow for brokered IT and Network virtualisation management
  – Control plane extensions offering new cloud connectivity services
• Main Bottleneck:
  – Workflow standardization and acceptance by acting organisations
  – Establishment of broker services
Challenges II

• Liability (value guarantor) and revenue scenarios:
  – VI for VIO as an enhanced form of brokered IaaS offering.
  – Cloud-based EIS deployment and scaling, where virtual infrastructures are “right-sized” for Enterprise Information system requirements.
  – Distance of storage from computation, net throughput and bandwidth required given response-time guarantees, number of anticipated users and transactions, volumes of data to be stored, payloads and compute workloads
  – Anycast network services for simplified registration and discovery of infrastructure service providers

• Decoupling the traditionally integrated roles towards infrastructure providers and infrastructure operators:
  – increases flexibility, improves manageability, allows the exploitation of new revenue streams and
  – allows the emergence of new business models, facilitates entrance of new "players“, reduces the barriers for entering the market
### End Customers want to:

- Reduce IT capital investments and operational costs
- Reduce implementation time (faster time-to-value)

### Customers expect AP to:

- Enable automatic facility management
- Simplify provisioning

### The mission of AP is to:

- Define and develop enabling technology, management tools and value added services to help customers deploy and manage existing on-premise AP applications in virtualized data centers and cloud infrastructures.

### GEYSERS will help AP customers to:

- Reduce the Total Cost of Ownership (TCO) of the AP’s systems
- Improve their scalability and business agility
- Hide complexity
GEYSERS’ Service Delivery Framework

VI Provisioning Workflow
- Service Request/SLA Negotiation
- Planning/Design
- Deployment (Instant& Config& Synchro)
- Operation&Monitoring
- Decommissioning

On-demand Service Provisioning Workflow
- Service Requests/SLA negotiation
- Composition/Reservation
- Deployment
- Registr&Synchro
- Operation (Monitoring)
- Decommissioning

Re-planning
Re-Composition
Re-Cooling
Re-Composition
Re-Cooling

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## VIP, VIO & AP analysis

<table>
<thead>
<tr>
<th>VIP, VIO, AP</th>
<th>Cost Impact</th>
<th>Performance Impact</th>
<th>Manageability and Resiliency impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planning</strong></td>
<td>Infrastructure resource planning permits to reduce the CAPEX. A wider VIP market increases prices competitiveness, lowering resources prices. positive but not disruptive.</td>
<td>Virtual infrastructure can be composed of fine adaptation of resources optimizing the performance of the overall system. The Virtual Infrastructure flexibility increases its alignment with the specific service. Positive but not disruptive.</td>
<td>Planned infrastructure will be dynamically managed with defined VIO-VIP interfaces (e.g. SML-NCP, SML-LICL interfaces) positive but not disruptive.</td>
</tr>
<tr>
<td><strong>Provisioning</strong></td>
<td>It enables an assisted/automated infrastructure provisioning and permits to reduce the OPEX. benefits from the agility of the underlying provisioning framework as he can use virtualized resources on demand.</td>
<td>it provides optimal resource allocation to VI optimizing also the performance of the overall system. The Virtual Infrastructure flexibility increases its alignment with the specific service. positive but not disruptive.</td>
<td>planned and provisioned network will be managed better, in automatic way. assisted/automated provisioning. Benefit from for automatic provisioning of the virtual architecture.</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>It enables an integrated network+IT operation as well as enhanced connectivity services reducing the OPEX application provider can reduce CAPEX through increased operations automation.</td>
<td>reduced human intervention for management it provides optimal resource allocation to VI optimizing also the performance of the overall system. enables swift responses to clients’ demands.</td>
<td>monitoring tools and enhanced connectivity will ease infrastructure adaptability. With increased automation the Application provider has the possibility to “tweak” the virtual infrastructure for its specific needs.</td>
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<td>Scaling up and down of</td>
<td>The benefits of the GEYSERS architecture in this phase are very positive in</td>
<td>it enables the fine tuned resource usage, optimizing the performance of the overall</td>
<td>it enables the network scaling with a reduced human intervention for management tasks.</td>
</tr>
<tr>
<td>Scaling up and down of</td>
<td>terms of costs impacts, because it reduces under and overprovisioning,</td>
<td>system.</td>
<td>The impact of active up/down scaling of resources on automation is positive as this allows the</td>
</tr>
<tr>
<td>resource usage</td>
<td>reducing unnecessary expenses.</td>
<td>application can better use the available resources.</td>
<td>application provider to achieve higher control on the used resources.</td>
</tr>
<tr>
<td></td>
<td>application provider can increase his business agility by scaling faster.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance/</td>
<td>The benefits of the GEYSERS architecture in this phase are not disruptive as</td>
<td>The relationship between this phase and performance impacts is positive but not</td>
<td>The impact of GEYSERS architecture, regarding error recovery, on automation is positive as the</td>
</tr>
<tr>
<td>Error recovery</td>
<td>other phases, but remain positive.</td>
<td>disruptive.</td>
<td>application provider can react more quickly and resume activities without business loose.</td>
</tr>
<tr>
<td></td>
<td>application provider can gain from the reduced time needed to recover from</td>
<td>application can continue to function if the re-planning of the virtual architecture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>error.</td>
<td>is done in a seamless way.</td>
<td></td>
</tr>
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<td>Decommissioning</td>
<td>benefits are not disruptive as other phases, but remain positive.</td>
<td>The relationship between this phase and performance impacts is positive but not</td>
<td>Decommissioning on automation is positive as the application provider can more easily change the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>disruptive.</td>
<td>offered services without worrying about security risks.</td>
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Example: Virtual Network across Multiple Physical Infrastructure Providers’ Network

Expected output in terms of cost minimization per dynamic service

- Revenue: cost reduction for the deployment of new network services from a VIO’s perspective. Revenue increase and cost sharing for the PIP is enabled by the provisioning of virtual networks and dynamic services to multiple customers over a common infrastructure.