

# **Telecom Italia Net Computing**

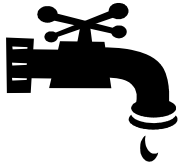
## **Dynamic IT Resource Provisioning**

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# **Introduction**

- **Telecom Italia has launched a complete and integrated program, named Net Computing, whose objective is to provide IT services on demand for ICT market**
- **This enables “pay-per-use” delivery model aligned with clients actual business needs**
- **In order to achieve a strong competitive value on ICT market the platform was built with relevant operational efficiencies and high flexibility**
- **The main objectives were:**
  - **Build an optimized and virtualized IT infrastructure multi vendor**
  - **Supply IT services with a degree of automation comparable to the network services commonly being provided by this industry**

# The solution required to satisfy specific business requirements



## IT Resources Efficiency

- Maximize the IT resources usage
- Support multi vendor server platforms (AIX, VMWare, Solaris and HP-UX)



## Operations Efficiency

- Rapid provisioning of computing resources
- Minimize skill required to perform IT management



## Clients pay-as-they-go

- Align the services costs to the clients actual needs



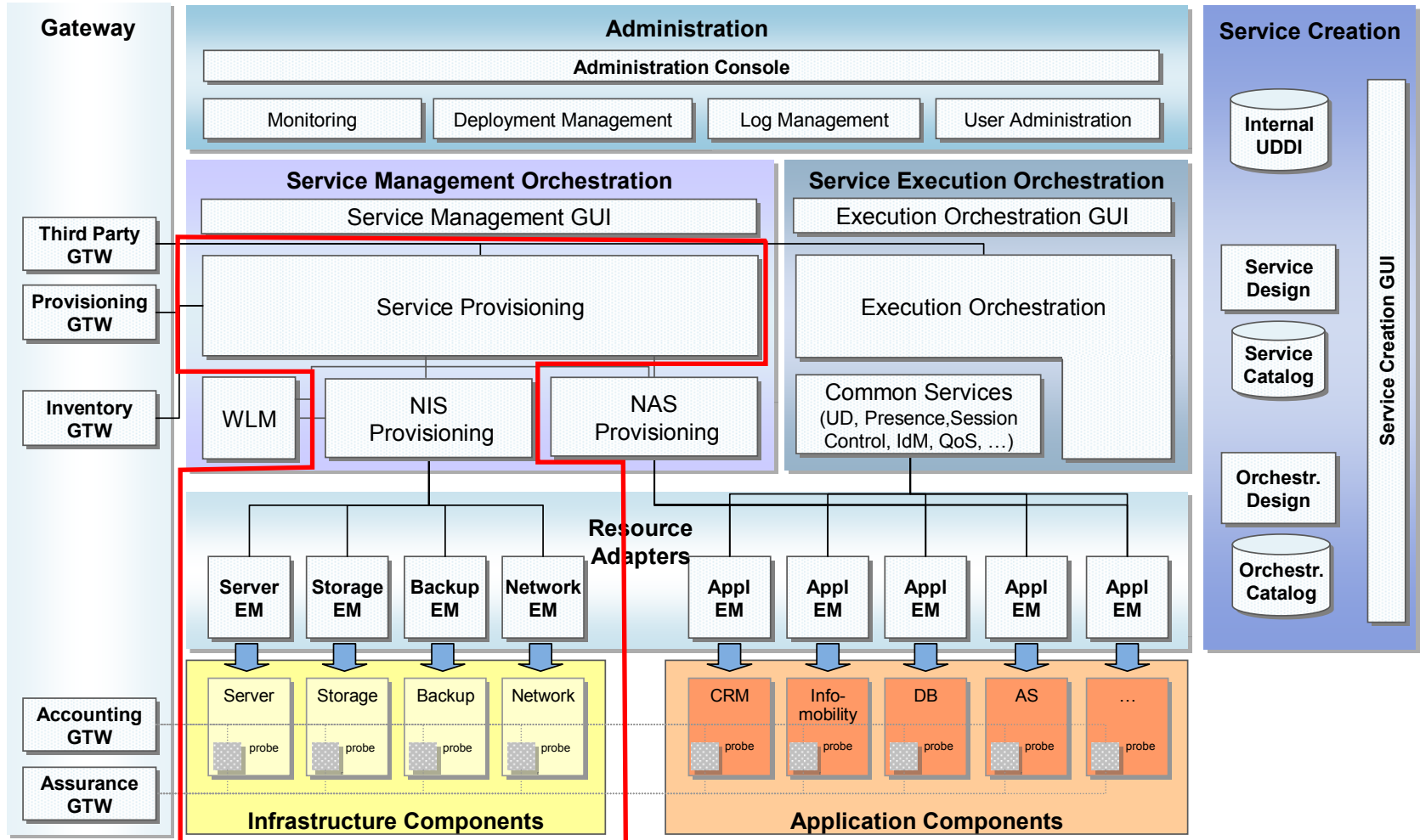
## Integration

- Integrate the platform with current BSS/OSS systems for processes automation.

## Business requirements have been translated in technical requirements

Business requirements	Technical requirements
Maximize the average of IT resources usage	<ul style="list-style-type: none"> <li>• Extensive usage of server <b>virtualization</b></li> <li>• Definition of <b>granular</b> Service Elements (elementary parts making a complete IT Service)</li> <li>• Implement IT resources <b>share</b> policies (service/clients)</li> </ul>
Support multi vendor server platforms	<ul style="list-style-type: none"> <li>• <b>Standardize</b> the Service Elements to be achievable on all the server platforms in scope</li> </ul>
Rapid provisioning of IT resources	<ul style="list-style-type: none"> <li>• <b>Automate</b> the provisioning activities to instantiate a new service/client</li> </ul>
Minimize skill required to perform IT management	<ul style="list-style-type: none"> <li>• Implement a <b>cross-platform</b> provisioning solution hiding server specific characteristics</li> </ul>
Align the services costs to the clients actual needs	<ul style="list-style-type: none"> <li>• Define Service Elements as <b>base plus extension</b> that could be tailored to the specific clients needs</li> </ul>
Integrate the platform with Service provisioning component for processes automation.	<ul style="list-style-type: none"> <li>• Realize a SOA based solution and export <b>Web Services</b> to be called by external applications</li> </ul>

# Net Computing platform - Logical Architecture

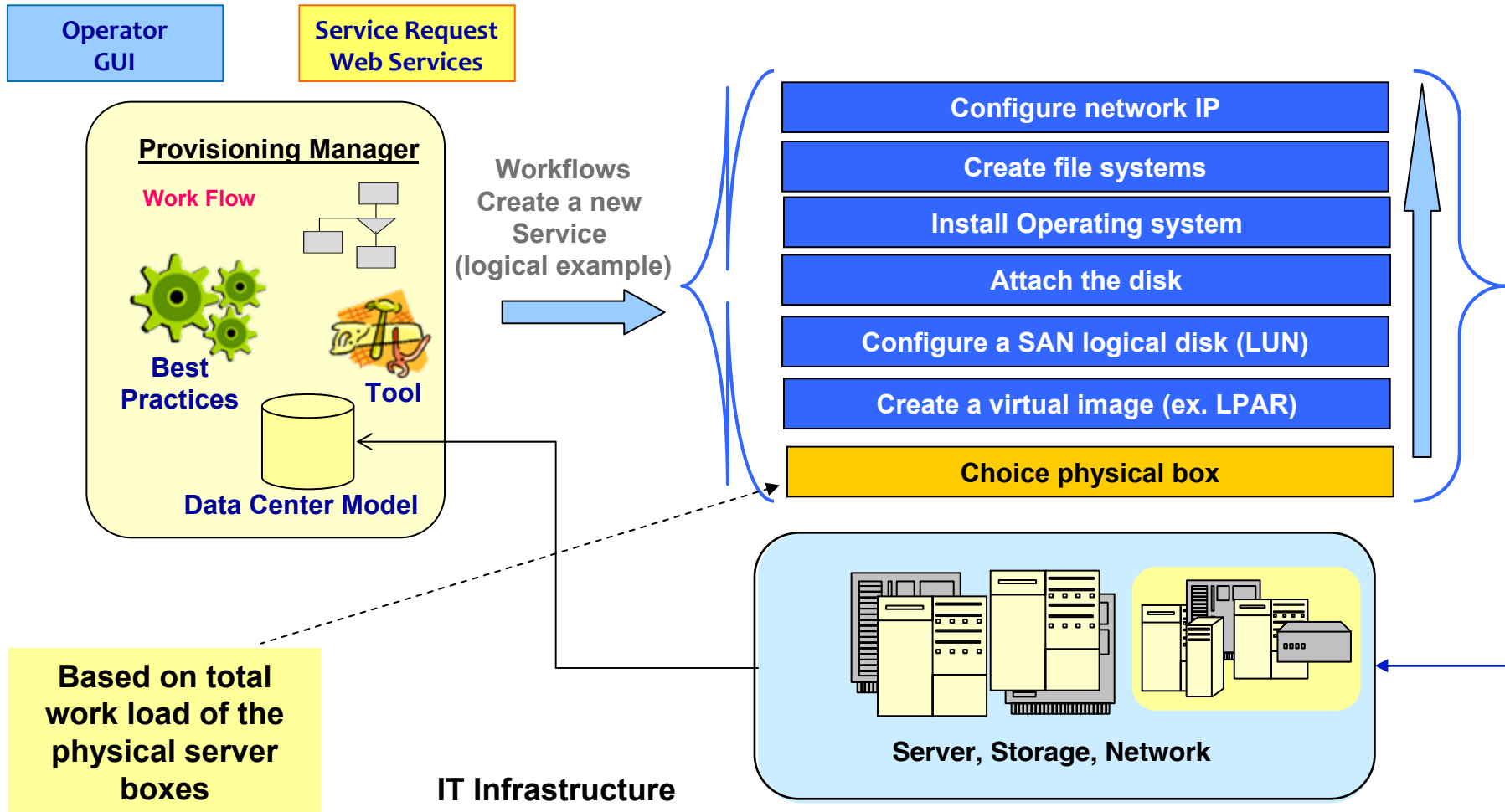


In scope

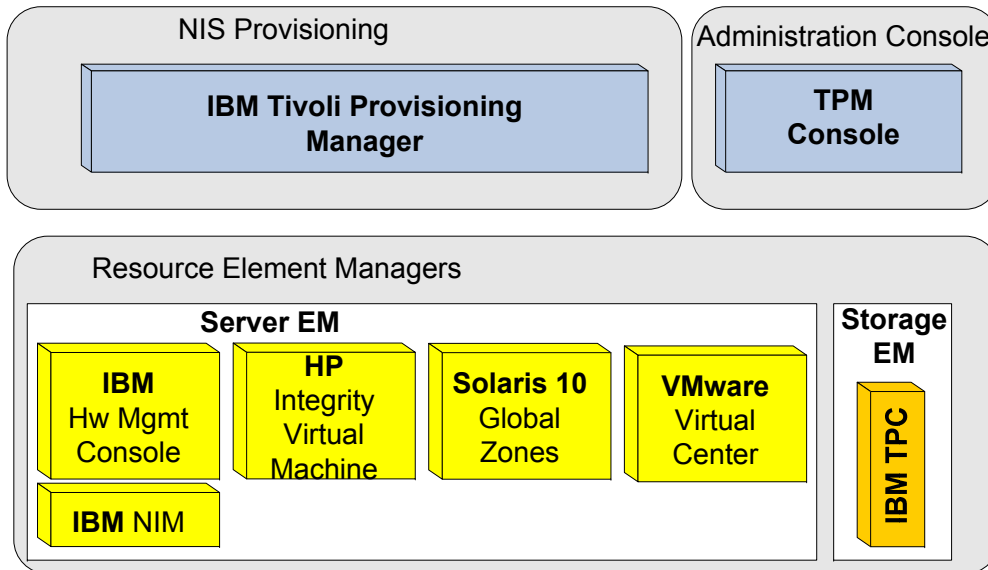
## Automating complex tasks with Tivoli Provisioning Manager

- **The automatic provisioning of infrastructure service elements is provided by the IBM Tivoli Provisioning Manager (TPM) product**
- **IBM Tivoli Provisioning Manager provides an environment on which IT tasks can be automated, such as the provisioning and configuring of servers, virtual machine, operating systems and storage.**
- **The data center automation, contains services for Market, is performed by running coordinated workflows that execute a number of steps to instantiate an IT service**
- **The Provisioning Data Center Model (DCM) is the database that contains the configuration of servers, storage, network, interfaces of the components to be provisioned**

# Example: instantiation of a “logical” IT Service Provisioning service type based on workflows



## Details of NIS Provisioning solution component. The physical resources are provisioned by Element Managers



IBM p595  
AIX 5.3



HP Integrity  
HP-UX 11i-v2



SUN T2000  
Solaris 10



Fujitsu  
Primepower  
Solaris 10



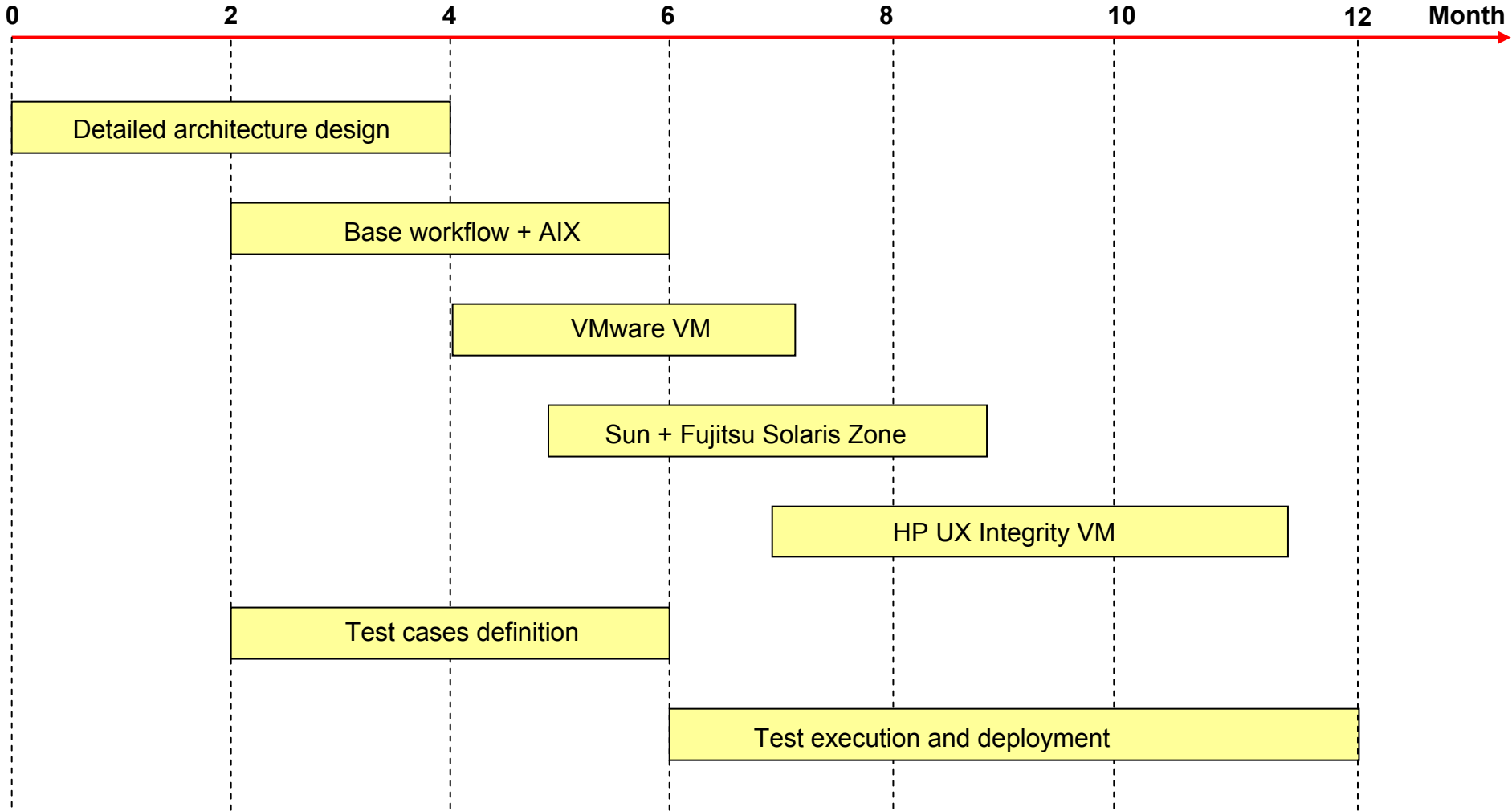
IBM Blade Center  
(VMware,  
Windows, Linux)



IBM DS8300

- All servers are virtualized
- A service is composed by elementary Service Elements (SE)
- Service Elements are provisioned by Element Managers specific for the resource
- TPM interfaces the Element Managers
- TPM Console provide operations and user profiling definition

# High level project implementation schedule



# Conclusions

- **Leverage on all the “de-facto” virtualization technologies (IBM, SUN, Fujitsu, VMware and HP)**
  - The solution catches the best of each virtualization technologies and implements a real complete unattended provisioning process;
  
- **Implements an industrialized process**
  - Starting from undifferentiated systems it is possible to obtain a well defined virtual partition in accordance with the customer specification;
  - All the complexity is completely hidden. The user needs to know only general and well defined information to interact with the system;
  
- **Standardize the virtual system within a virtualization model**
  - Defined a virtualization model (storage acquisition, boot method, network connection schema, virtual system profile, O.S. Level, etc.) it is possible to build systems compliant to it;
  
- **Optimize the hardware utilization level**
  - The solution offers the basis to have physical system loaded at a predefined utilization level. It is possible to define the overbooking policies;
  
- **Open solution**
  - The implementation takes into account of possible evolutions. It is possible to plug-in another virtualization model, virtualization architecture, operating system, allocation schema, overbooking model, resource allocation group, etc.;