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Nota di contenuto	Cover; Title Page; Contents; List of Acronyms; Preface; Chapter 1. Virtualization; 1.1. Virtualization techniques; 1.1.1. Full virtualization; 1.1.2. Paravirtualization; 1.2. Virtualization tools; 1.2.1. Xen; 1.2.2. VMware; 1.2.3. OpenVZ; 1.3. Scenario and methodology; 1.3.1. Hardware/software description; 1.4. Performance evaluation; 1.4.1. CPU Performance; 1.4.2. Memory performance; 1.4.3. Hard disk and file system performance; 1.4.4. Network performance; 1.4.5. Overall performance - linux kernel compilation; 1.4.6. Single virtual machine tests; 1.4.7. Multiple virtual machine tests 1.5. Summary 1.6. Bibliography; Chapter 2. Virtual Network Interfaces; 2.1. Virtual networks: isolation, performance and trends; 2.1.1. Network virtualization approaches; 2.1.2. Network virtualization technologies; 2.1.3. Characteristics of Xen and OpenFlow network virtualization technologies; 2.1.4. Performance evaluation; 2.2. Xen prototype; 2.2.1. Virtual machine server (VMS); 2.2.2. Virtual machine server client; 2.2.3. Graphical user interface; 2.3. OpenFlow prototype; 2.3.1. Applications; 2.3.2. OpenFlow Web server; 2.3.3. Graphical user interface; 2.4. Summary; 2.5. Bibliography

Chapter 3. Performance Improvement and Control of Virtual Network Elements  
3.1. Xen-based prototype; 3.1.1. Xen migration; 3.1.2. Xen statistics; 3.1.3. Xen topology; 3.1.4. Virtualization hardware improvements; 3.2. OpenFlow-based prototype; 3.2.1. FlowVisor; 3.2.2. OpenFlow migration; 3.2.3. OpenFlow statistics; 3.2.4. OpenFlow discovery; 3.2.5. OpenFlow spanning tree; 3.3. Summary; 3.4. Bibliography; Chapter 4. State of the Art in Context-Aware Technologies; 4.1. Autonomic systems; 4.1.1. Characteristics of autonomic systems; 4.1.2. Architecture and operation of autonomic systems  
4.2. Piloting with multi-agent systems  
4.2.1. Definition of agents; 4.2.2. Characteristics of agents; 4.2.3. Cognitive agents; 4.2.4. Reactive agents; 4.2.5. Multi-agent systems; 4.3. Options to build the autonomic platform; 4.3.1. Ginkgo; 4.3.2. DimaX; 4.3.3. JADE; 4.4. Context-aware technology for network control; 4.4.1. Context-aware system architecture; 4.4.2. Sensing subsystem; 4.4.3. Thinking subsystem; 4.4.4. Acting subsystem; 4.5. Summary; 4.6. Acknowledgments; 4.7. Bibliography; Chapter 5. Providing Isolation and Quality-of-Service to Virtual Networks  
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5.2. Challenges in packet forwarding using Xen; 5.3. Controlling Domain 0 shared resources; 5.3.1. Maximum usage controller; 5.4. Summary; 5.5. Bibliography; Chapter 6. Piloting System; 6.1. Autonomic Piloting Systems; 6.1.1. Architecture; 6.1.2. Piloting plane of the horizon project; 6.1.3. Related work; 6.1.4. Interaction of piloting, management and virtualization planes; 6.1.5. Responsibilities of the piloting plane in the horizon architecture; 6.2. Piloting plane functions and requirements; 6.3. Preliminary piloting plane design  
6.3.1. Dynamic planner

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## Sommario/riassunto

The first chapter of this title concerns virtualization techniques that allow sharing computational resources basically, slicing a real computational environment into virtual computational environments that are isolated from one another. The Xen and OpenFlow virtualization platforms are then presented in Chapter 2 and a performance analysis of both is provided. This chapter also defines the primitives that the network virtualization infrastructure must provide for allowing the piloting plane to manage virtual network elements. Following this, interfaces for system management of th

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