

PUBLISHING JINI SERVICE IN UDDI

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CERTIFICATE

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE
MOST MERCIFUL

DEDICATED TO MY FAMILY AND FRIENDS

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TABLE OF CONTENTS

Topic No.	Topic	Page No.
Chapter 1	INTRODUCTION	1-5
1.1	Service Oriented Architecture	1
1.2	Motivation	2
1.3	Problem Statement	3
1.4	Objectives	3
1.5	Features	3
1.5.1	Successful Publication of Jini Service in UDDI	4
1.5.2	Synchronization of Lookup Service and UDDI	4
1.5.3	Transparent and Dynamic Execution	4
1.5.4	Addressing Leasing Issues	5
1.6	Organization Of Report	5
Chapter 2	LITERATURE REVIEW	6-28
2.1	Related Work	6
2.1.1	JISGA	6
2.1.2	JUDY	8
2.1.3	JGRID	8
2.1.4	H2O	10
2.1.5	ICENI	11
2.1.5.1	Implementation using Jini	11
2.1.5.2	Implementation using JXTA	12
2.1.5.3	Implementation using OGSA	13
2.2	Literature Analysis	14
2.3	Web services: A Typical Service Oriented Architecture	14
2.3.1	The Web Services Architecture	15
2.3.2	Roles in a Web Services Architecture	16

2.3.3	Operations in a Web Service Architecture	17
2.3.4	Artifacts of a Web Service	18
2.3.5	The Web services Platform	19
2.3.6	SOAP	20
2.3.7	UDDI	22
2.3.8	WSDL	22
2.4	JINI	23
2.4.1	Infrastructure	25
2.4.2	Programming Model	26
Chapter 3	PROPOSED DESIGN AND ARCHITECTURE	29-67
3.1	Architectural components and implementation details	31
3.1.1	Proxy Object Analyzer	31
3.1.2	WSDL Processor	32
3.1.2.1	Parsing with SAX	33
3.1.3	UDDI Publisher	34
3.1.4	Leases	37
3.1.4.1	Cancellation	38
3.1.4.2	Expiration	38
3.1.4.3	Granting and handling leases	38
3.2	Database Design	40
3.2.1	Database Schema	40
3.2.1.1	Auth_token	41
3.2.1.2	Binding_template	42
3.2.1.3	Contact	42
3.2.1.4	Service_name	43
3.2.1.5	Business_service	43
3.2.1.6	Discovery_url	43
3.2.1.7	Tmodel	44
3.2.1.8	Tmodel_instance_info	44
3.2.1.9	Business_entity	45

3.2.1.10	Business_name	45
3.2.1.11	Publisher	46
3.2.2	UDDI Relational Model	47
3.3	Dataflow Diagrams	48
3.3.1	Context Data Flow Diagram	48
3.3.2	Diagram Zero	49
3.4	Information Flow Diagram	51
3.5	Class Diagrams	52
3.6	Sequence Diagrams	53
3.7	Tools and Technologies Used	56
3.7.1	Apache-axis	56
3.7.2	JAX-RPC	57
3.7.3	UDDI4J	59
3.7.3.1	The UDDIProxy class	61
3.7.4	jUDDI	64
3.8	Testing and Results	66
3.8.1	Scenario 1	66
3.8.2	Scenario 2	67
3.8.3	Scenario 3	67
3.8.4	Scenario 4	67
Chapter 4	FUTURE DIRECTIONS AND CONCLUSIONS	68-69
4.1	Future Directions	68
4.1.1	Solution for Publishing Web Service as Jini Service	68
4.1.2	Development of Prototype	68
4.1.3	Integration	68
4.2	Conclusions	69
Chapter 5	USER GUIDE	70-93
5.1	Setting up Jini	70
5.1.1	Starting Web Server	70
5.1.2	Starting Reggie	71

5.1.3	Start Jini Service	72
5.2	Setting up Apache Axis	73
5.2.1	Setting up Tomcat	73
5.2.2	Setting up Class-path	74
5.3	Setting up UDDI	74
5.3.1	Setting up jUDDI and UDDI4J	74
5.3.2	Setting up Mysql	74
5.3.3	Configuring jUDDI with AXIS and Tomcat	74
5.4	Starting Integration Service	85
5.4.1	Compilation through Make	85
5.4.2	Running Integration Service	91
5.4.3	Checking UDDI status	92
5.5	Summary	93
	REFERENCES	94
	APPENDICES	96
	Appendix A UDDI4J Material	96
	Appendix B. Test Cases	102
	Appendix C. UDDI Results	106

LIST OF FIGURES

Figure No.	Title	Page No.
1	Web Services roles, operations and artifacts	16
2	Jini Framework and components	25
3	Jini Framework components and interaction in SOA	28
4	Architecture of System and its interaction with Lookup service	30
5	UDDI Datatypes	35
6	WSDL document type	36
7	Lease in Jini Framework	38
8	Relational Model of the test UDDI registry	47
9	Context DFD	48
10	Diagram 0	49
11	Flow Diagram of System	51
12	Class Diagram showing relationship between the classes	52
13	Sequence diagram for POA and WSDL Processor Interaction	54
14	Sequence diagram for UDDI Publisher Interaction with system	55
15	tmodel entry in UDDI	102
16	binding_template entry in UDDI	102
17	business_service entry in UDDI	104
18	business_entity entry in UDDI	104

LIST OF TABLES

No.	Title	Page No.
1	UDDI Operations and their Detailed Description	21
2	auth_token	41
3	service_name	42
4	binding_template	42
5	Contact	42
6	business_service	43
7	discovery_url	43
8	Tmodel	44
9	tmodel_instance_info	44
10	business_entity	45
11	business_name	45
12	Publisher	46
13	Code fragment for creating a UDDIProxy	61
14	finding business	62
15	Iterating through list of businesses	62
16	Authentication	63
17	Creating and saving a business entity and populating it	63
18	Iterating through data received from save_business	63
19	Deleting business	64
20	Publisher Table Description	65

LIST OF ABBREVIATIONS

OGSA	Open Grid services Architecture
OGSI	Open Grid services Infrastructure
WSDL	Web service Description Language
UDDI	Universal Description and Discovery Integration
SOAP	Simple Object Access Protocol
CORBA	Common Object Resource Broker Architecture
IDL	Interface Definition Language
LDAP	Lightweight Directory Access Protocol
SOA	Service Oriented Architectures
TCP/IP	Transmission Control Protocol/ Internet Protocol
SAX	Simple API for XML
SMTP	Simple Mail Transfer Protocol
SAAJ	SOAP with attachment API for JAVA
MIME	Multi-purpose Internet Mail Extensions
IIOP	Internet Inter-ORB Protocol
UUID	Universally Unique ID
ADS	Advertisement and Discovery of Services
DISCO	Discovery of Services
LUS	Lookup Service
JISGA	Jini-based Service-oriented Grid Architecture
ICENI	Imperial College e-Science Networked Infrastructure

ABSTRACT

In distributed computing, we often need to integrate services across distributed, heterogeneous, dynamic environments formed from the disparate resources within a single enterprise and/or from external resource sharing and service provider relationships. We present a system that provides solution to how Jini services can be integrated with Web services within a common Service-Oriented Architecture (SOA) for Grid computing.

This integration is technically challenging because of the need to achieve various levels of quality of service when running on top of different native platforms and under dynamic workload conditions. But there is an inherent communication gap that exists between Jini service oriented architectures (SOA) and Web services and Grids, due to different communication protocols, service descriptions, schema definitions and message structures they use. Web Services use SOAP (Simple Object Access Protocol) over HTTP (Hyper Text Transport Protocol) as communication protocol but Jini is primarily based on RMI (Remote Method Invocation). These both protocols are inherently different in many aspects. Also both SOAs differ in many aspects like both use different discovery and lookup mechanisms.

Integrated Jini and web services architecture also defines Jini service descriptions in terms of Web services Description Language (WSDL), so that Jini services can describe and advertise themselves in UDDI (Universal Description Discovery & Integration). Building on concepts and technologies from the Jini, Grid and Web services communities, this architecture put together a proposition made to cope with heterogeneous and continuously changing needs of information

processing, service provision and utilization in dynamically evolving environment to meet these requirements.

This common SOA permits the transparent interaction of Jini services and Web services, thereby extending the usefulness and applicability of both approaches. The main benefits of this work are that Jini services can be accessed from outside of a Jini community and Jini services can be invoked in the same way as any other Web service. Regarding the implementation of proposed architecture, we are able to publish Jini Service in UDDI and it can be discovered and described as normal web service. In addition to this task, leasing issues are resolved for the service at UDDI. Implementation is provided for synchronization of Lookup service and UDDI.