Overview of the JINI Networking Technology

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What is a JINI system?

- It is a distributed system based on the idea of federating groups of users and the resources they require.

What is JINI Networking Technology?

- An architecture for building a high level network environment that transcends problems/issues of underlying transport protocols.
- Sun's attempt to extend Java programming environment to the realm of networking

Goals of the JINI System

- Enable users to share services and resources
- Provide easy access to resources anywhere wherever the user is
- Simplify the task of building, maintaining and altering network of devices, software and users

Key Concepts

- Service – An entity that can be used by a person, program or another service.
- Lookup Service – Connects services to client users
- RMI – Allows full objects including code to be passed within the network

Key Concepts

- Security – Extends Java security to distributed objects
- Transactions – Wraps distributed operations to maintain object integrity
- Events – Allows objects to register interest in other object's events

Components

- Infrastructure – Set of components that enables building of the JINI system
- Programming Model – Set of interfaces that defines object communication protocols
- Services – Objects with interfaces that define operations they can perform

Infrastructure

- Distributed security system integrated into RMI
- Discovery and Join protocols that allow services to become part of the federation
- Lookup service that serves as repository of services

Programming Model

- Leasing Interface that implements duration based allocation of resources
- Event and Notification Interface that enables event-based communication among JINI-enabled services
- Transaction Interface that enables changes to be made atomically or none at all

Service Architecture

- Discovery/Join Protocol – Process of adding a service to the JINI system
- Lookup – Locating a service by type and loading the client with service object
- Interfaces – May be implemented locally or divided like in client/server approach
- Peer Lookup – Services may register with Client if no Lookup service is found

Service Implementation

- Services may be combined into object groups that reside in single address space or JVM
- Service may be implemented by a specialized hardware
- No distinction among services implemented on different machines, downloaded in local address space, or implemented in hardware

Example

- Printer connects to network, locates Lookup service and registers for a fixed duration
- User connects a digital camera to print picture
- Digital camera registers with Lookup service similar to the printer
- Camera requests for printer object and chooses from among available printer services

Example

- Camera may invoke printer configuration interface to let user configure printer
- Camera calls printer print method to print the image
- Camera may register with printer service for event notification
- Printer notifies camera that picture was printed or error encountered

End of Presentation

Thank you very much!