DATASHEET

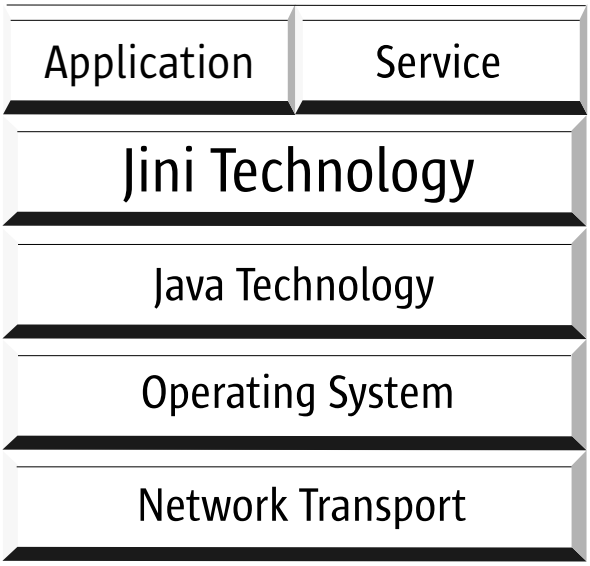
JINI™ NETWORK TECHNOLOGY

KEY HIGHLIGHTS

- Works consistently and reliably across unstable networks
- Adapts to changing network conditions for better resiliency
- Simplifies network maintenance and administration for lower costs
- Shortens developer learning curve for faster deployment of solutions
- Accommodates current infrastructure to protect existing investments
- Preserves the network's flexibility and resiliency

NETWORK EVOLUTION

Over the last quarter century, network technology has evolved immensely. Client/server and multitier models operating within a single business enterprise have given way to an Internet/Web environment where services are provided by nodes scattered over a far-flung network. Today, the next generation of network interaction is emerging that has the capability to shatter existing performance ceilings. Participants in one network will directly access and use the services provided by participants in another network. It is in this network environment — one of mind-numbing complexity driven by geometric increases in scale, rate of change, and multiplicity of participant interactions — that the simplicity of the Jini™ architecture wins.



The Jini architecture

JINI NETWORK TECHNOLOGY

Constructing networks that can adapt to the demands of dynamic computing environments requires an innovative architecture that can effectively and efficiently accommodate change and complexity. And at the same time, this technology must be easy to learn, use, and deploy. Remarkably elegant, yet unexpectedly simple, Jini network technology is designed to meet these requirements.

As a network architecture, Jini technology enables the spontaneous assembly and interaction of services and devices on a network. Any connectivity scheme can interoperate with Jini technology because it is both wire-protocol and transport-protocol neutral. Jini technology addresses the challenges of scale, component integration, and ad-hoc networking that are typically encountered in distributed computing environments. Built on the Java™ platform, Jini

technology provides an open solution for network interoperability issues, such as:

- Finding and connecting services on a network
- Creating reliable sets of services out of unreliable parts — including the network itself
- Dealing with networks that are very large or last a very long time
- Enabling components of a service to change at any time — without interrupting the service

THE VALUE OF SIMPLICITY

By providing a fast, easy way for clients to locate and use available services, Jini technology simplifies interactions over a network. No preconfiguration is required by the user, and system administration is minimized. With Jini technology's commanding service discovery mechanisms, clients can use a particular service without having any foreknowledge of its implementation. This simplification offers improved productivity, cost savings, and ease-of-use benefits to your business.

As a distributed computing architecture, Jini technology also eases implementation details. For the developer familiar with the Java programming language, Jini technology simplifies the task of writing distributed applications and other services for the network. Powerful helper utilities assist with service and client development by encapsulating common functionality related to service discovery, lease management, and maintaining a service's registration in Jini technology-enabled lookup services. Additional design flexibility is provided by Jini technology's superior capabilities for moving objects around the network, making wire protocols a transparent implementation detail.

From an infrastructure perspective, Jini technology significantly minimizes system and network management, increasing productivity and liberating resources for other tasks.

UNLIMITED BUSINESS OPPORTUNITIES

Many industries are exploring new business opportunities by taking advantage of Jini technology's ability to "glue" dissimilar processes, functions, and information together in very large-scale applications. The versatility of Jini technology is evident in the breadth of solutions being applied in such diverse industries as finance, building maintenance, telecommunications, home automation, manufacturing, automotive, travel, and others.

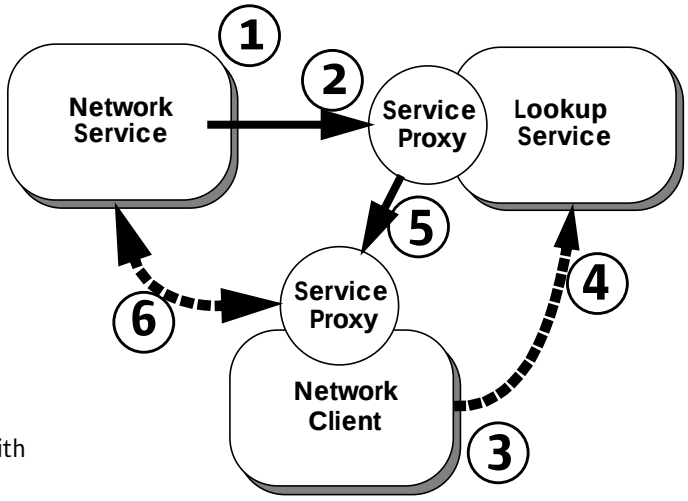
The Jini architecture can enable an entire industry to seamlessly integrate fragmented information systems into one easily accessible network. For example, the tourist industry, which typically comprises a wide variety of entities and resources, can facilitate greater interaction and the shared use of distributed services through a common environment. By providing a well-established, distributed computing platform that takes advantage of applications designed to run in a heterogeneous network, Jini technology delivers performance and reliability gains to users. This means that a family-run hotel and a major international airline serving millions of passengers a year can access the same tourist data and use similar applications to improve quality of service.

HOW JINI TECHNOLOGY WORKS

Jini network technology consists of an infrastructure and programming model that addresses the fundamental issues of how clients and services discover and connect with each other to form an impromptu community. Written entirely in the Java language and utilizing its object-oriented features, Jini technology uses the mechanisms pioneered by the Java Remote Method Invocation API to move objects around the network.

Services employ a proxy (an object with service attributes and communication instructions) to move around the network. Through the processes of discovery and join, services are found and registered on a network. Registering means that the service has sent a service proxy to all lookup services on the network, or a selected

1. **Discover**
Network service discovers available lookup services (LUS)
2. **Join**
Network service sends service proxy to LUS
3. **Discover**
Network client discovers available LUS
4. **Lookup**
Network client sends a request to LUS to find desired services
5. **Receive**
LUS sends registered service proxy to network client
6. **Use**
Network client interacts directly with network service via service proxy



How Jini technology works - a flow diagram

subset. A lookup service is equivalent to a directory or index of available services, where proxies to these services and their code are stored. When a service is requested, its proxy is sent to the requesting client so that the service can be used. After that, the proxy conducts all communication between the client and the service.

To preserve the network's flexibility and resilience, Jini technology introduces the concept of leasing. When a service joins the network, it registers its availability for a certain leased time. Before the time expires, the service may renegotiate the lease. If the service is removed from the network, its entry in the lookup is removed automatically when the lease expires.

As an example of how Jini technology could be used, envision a group of high-rise office buildings connected by a Jini technology-enabled network. Various building services would register with a lookup service by sending their proxies to the lookup service. These proxies could be services for phones, lights, security, heating, air conditioning, backup power, elevators, conference rooms, sanitation, garbage disposal, recycling, food service, and so on. Finer detail could include temperature control scheduling, facility room utilization, fuel consumption, maintenance, and security access. All of these services could be set up in a hierarchical lookup service to support owners, managers, tenants, and suppliers for multiple buildings.

When a service is required, the requester would receive the proxy code from the lookup service, enabling direct access to that service. For instance, a security management application might interact with a computer room monitoring service that has high and low water marks for temperature control, enabling the facility manager to be notified immediately of an emergency when these parameters are exceeded. Another scenario might be a fuel consumption

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service from the oil company that triggers just-in-time automatic resupplying of fuel oil for better cost controls.

NO-COST ACCESS TO SOURCE CODE

To further the advancement of Jini technology, Sun makes Jini source code freely available to developers. The Sun™ Community Source License (SCSL) offers access to source code at no cost. For information on how to download Jini network technology, go to www.sun.com/software/communitysource/jini/download.html.

Companies wishing to commercially deploy a Jini technology-enabled service or product must comply with the terms of a commercial-use license and the Jini Technology Core Platform Compatibility Kit (TCK) to ensure interoperability of Jini technology-enabled implementations. Use of the Jini logo is optional, and there are no associated fees with any of the licenses.

WHY YOU SHOULD USE JINI NETWORK TECHNOLOGY

If you need to solve the complex network problems of scaling, component integration, and ad-hoc networking, Jini technology can provide rewarding benefits.

- Easy to learn
- Simple to use
- Economical to deploy
- Source code freely available
- Active developer community
- No software fees or royalties

FOR MORE INFORMATION

To learn more about Jini technology and the Sun Community Source License model, please visit www.sun.com/jini.

For access to the Jini technology licensee community, please visit www.jini.org.

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