

An Overview of Jini Technology

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Abstract— Jini became a promising technology to build fault tolerant distributed systems. The actual Jini architecture however lacks a strong security model. Based on a concrete example, this paper aims at reviewing the main security architectures that have been proposed by the research community and presents an evaluation of them. This work may serve as a basis for securing Jini-based systems by selecting the set of solutions provided by each model, depending on the security needs introduced by each specific application.

Key words: Jini Technology

I. INTRODUCTION

The Jini networking technology developed by Sun Microsystems, is an innovative technology for building reliable, fault-tolerant distributed applications. It allows to easily form networks to share services without previous planning, installation or administration effort. This work is part of a collaboration project between the SOFTENG (Software Engineering Group) at the University of Fribourg and the LIP6 (Laboratoire d'Informatique Paris 6) at the University Pierre et Marie Curie Paris VI. We are interested in designing and developing a software framework for context-based security in distributed systems. The resulting framework is intended to be a generic prototype used by distributed applications in order to integrate dynamic security solutions. Our framework is developed using the Java programming language and the jini technology. However, due to the ad hoc nature of jini, security is of main concern. Until now, only few efforts partly deal with the jini security model.

II. GIGABIT WIRELESS FEATURES

This Gi-Fi technology allows wireless uncompressed high definition content and operates over a range of 10 meters without interference. Gi-fi chip has flexible architecture. It is highly portable and can be constructed in everywhere. Entire transmission system can be built on a cost effective single silicon chip that operates in the unlicensed, 57-64GHz spectrum band. Gi-Fi technology also enables the future of information management, is easy to deployment with the small form factor.

A. Capacity of High Speed Data Transfer

The data transfer rate of Gigabit wireless technology is in Gigabits per second. Speed of Gi-Fi is 5 Gbps; which is 10 times the data transfer of the existing technologies. Providing higher data transfer rate is the main invention of Gi-Fi. An entire High-Definition (HD) movie could be transmitted to a mobile phone in a few seconds, and the phone could then upload the movie to a home computer or screen at the same speed.

B. Interference in Data Transfer

It uses the 60GHz millimeter wave spectrum to transmit the data, which gives it an advantage over Wi-Fi. Wi-Fi's part of the spectrum is increasingly crowded, sharing the waves with devices such as cordless phones, which leads to interference and slower speeds. But the millimeter wave spectrum (30 to 300 GHz) is almost unoccupied, and the new chip is potentially hundreds of times faster than the average home Wi-Fi technology.

C. Power Consumption

Power consumption of the present technologies such as Wi-Fi and Bluetooth are 5mili watts and 10mili watts but chip of Gi-Fi uses a tiny one-millimeter-wide antenna and it has less than 2mili watts of power consumption that in compare to the current technologies is very less.

D. Provides High Security

Gi-Fi technology is based on IEEE 802.15.3C and this standard provides more security since it provides optional security in the link level and service level. Point-to-point wireless systems operating at 60 GHz have been used for many years by the intelligence community for high security communications and by the military for satellite to satellite communications.

III. APPLICATIONS OF GI-FI TECHNOLOGY

- 1) Gi-Fi technology has many attractive features that make it suitable for use in many places and devices. Gi-Fi technology offering reduced the chip size and power consumption, can be used to send and receive large amounts of data in a variety of applications For example, it is intended for use in a wide range of devices including personal computers, tablets, and smart phones. The technology's fast data-synchronization rates enable the rapid transfer of video, bringing the wireless.
- 2) This technology can be effectively used in wireless pan networks, Inter-vehicle communication systems, Ad-hoc information distribution with Point-to-Point network extension, media access control (MAC), imaging and other applications.
- 3) Gi-Fi technology is able to transfer gigabits of data within seconds and therefore it can be used for huge data file transmission and it is expected that this chipset replaces HDMI cables and could develop wireless home and office of future.
- 4) Gi-Fi technology also can be used in broadcasting video signal transmission system in sports stadiums and mm-Wave video video-signals transmission systems. The technology could also be used for beaming full HD video in real-time and could be used by notebooks and other computers to wirelessly connect virtually all the expansion needed for a docking station, including a secondary display and storage.

IV. BENEFITS OF GI-FI TECHNOLOGY

A. Removing Cables

For many years cables ruled the world. Optical fibers played a dominant role for its higher bit rates and faster transmission. But the installation of cables caused a greater difficulty and thus led to wireless access.

B. Cost of Chip is low

Gi-Fi's chip uses only a tiny one-millimeter-wide antenna and less than 2mili watts of power. Low-cost chip allows technology to be readily incorporated into multiple devices. The chip in Gi-fi would likely cost less to build . Then a small design would allow cell phones and othersmall devices to add the technology without significantly drive up the price.

C. Privacy and Security

Encryption technology in Gi-Fi ensures privacy and security of content. About 70 per cent of firms have deployed their WLAN in a secure firewall zone but arestill using the old WEP protocol,

D. Flexibility

One of the problems with wire connections and cables is complexity for connecting, but in the Gigabit wireless technology simplicity is one of the features.

V. ADVANTAGES

Jini technology is a sophisticated platform on which to develop network-aware applications. Jini technology provides users access to resources located anywhere on the network. Both user and resource locations can change without affecting the application. Users, devices, and resources can join and leave the network without manual reconfiguration [3]. Jini developers used the Internet as a model for developing their product and sought to take advantage of the Internet's advantages in terms of reliability, scalability, maintenance and administration, and security. Jini is freed from having to deal with specific operating system and hardware requirements by Java technology, while Jini itself frees the client and service to interact without having to concern themselves with the particulars of the network.

VI. JINI INFRASTRUCTURE

Jini is a distributed computing framework. Hence the participants in the Jini network are called clients and servers. A server has an interface, which is the API that it presents to the outside world. This interface is called the service interface or the service. A server is hence an implementation of a service. Jini software runs on top of Java Virtual machine and will work in any IP-based network of machines with Java VMs. It is based entirely on Java and depends on Java to function. Jini technology presupposes the existence of network connecting devices and Jini-enabled communicate with each other over this network. A Jini network contains communities, or federations, or clients and services. A Jini service joins a federation, to share its service with clients. A Jini client joins a federation to gain access to services. Federations are dynamic constructs, appearing and disappearing based on the demands of Jini devices.

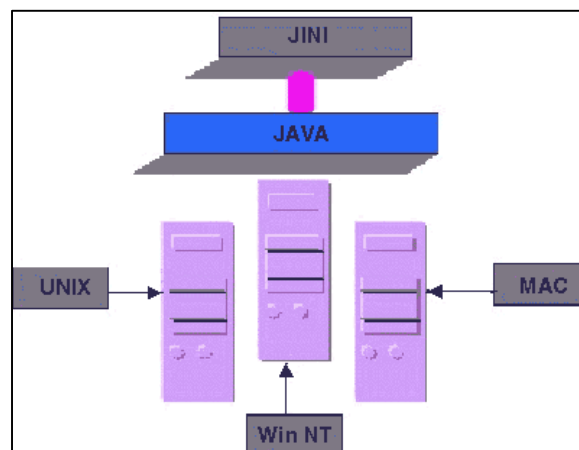


Fig. 1: Jini Architecture

the network for any reason, such as machine crashes or power surges, do not affect the remaining devices' operation. A Jini client that loses contact with a server can recover and continue processing. It is precisely these features that make Jini technology ideal for embedded systems in a dynamic environment. But network plug-and-play capabilities and self-configuration are also attractive for enterprise systems [9]

VII. JINI LOOKUP SERVICE

The Jini Lookup service is the heart of a Jini community. The lookup service is similar in principle to the naming service used in other distributed computing paradigms like CORBA's COS Naming Service. It holds the registrations of all other services available in the Jini community. An application that wants to use a Jini service finds the desired service by looking for the service's registration within the lookup service [2]. A Jini service must register itself with the Jini lookup service in order to be used. The Jini lookup service is just another service. The service interface of the lookup service defines all the operations that are possible on the lookup service. It defines the way in which clients in a Jini community locate services. There may be more than one instance of the lookup service running in the community. This is to provide a certain level of redundancy. Jini lookup services are organized into groups. There is a default group called the public group.

VIII. CONCLUSION

Gi-Fi has given and it is conspicuous that more research should be done in the field of this new wireless technology and its applications .The Bluetooth which covers 9-10mts range and wi-fi followed 91mts .no doubt introduction of wi-fi wireless network has proved a revolutionary solution to bluetooth problem the standard original limitations for data exchange rate and range, number of chances, high cost of infrastructure have not yet possible for wi-fi to become a power network, then towards this problem the better technology despite the advantages of rate present technologies led to the introduction of new ,more up to date for data exchange that is GI-FI. The comparison is performed between Gi-Fi and existing wireless technologies in this paper shows that these features along with some other benefits that make it suitable to replace the existing wireless technologies. It removes cables that for many years ruled over

the world and provides high speed data transfer rate. Gi-Fi technology has much number of applications and can be used in many places and devices such as smart phones, wireless pan networks, media access control and mm-Wave video-signals transmission systems.

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