City of Tokyo Metropolitan Highway Line

HIGHLY RELIABLE COMMUNICATION SYSTEM

COMPANY OVERVIEW

Many of today's rapid transit and highway systems face a myriad of problems communicating between central operation centers and the various stations, driver rest stops, parking areas and information kiosks that provide the latest in traffic information. The City of Tokyo Metropolitan Highway Line system consists of a central information-control center and hundreds of information kiosks and displays scattered along the highway. This allows the drivers and passengers who visit the rest stops to get information on traffic conditions, projected arrival times, alternate routes, and enforcement points where traffic is being redirected or controlled due to obstructions in the roadways caused by construction or accident.

APPLICATION

At the center of the Tokyo network is a Windows Server 2000 system backed up by a Solaris 8 system, while the kiosks are based on Windows XP. The majority of the network nodes are similarly diverse, using Cisco 3661, 3640 and 1720 routers for the backbone. The current 100 or so kiosks are served by network connections with a minimum of 256 kbit/second bandwidth. However, local conditions—humidity, nearby electrical activity and other factors—can sporadically reduce the data rate to and from the terminals down to about 64k bits/second.

CHALLENGE

The city needed a low maintenance, highly reliable communications system that was sufficiently robust for the delivery of constant updates to the kiosks. One of the problems facing the developers was that the environment in which these connections are maintained runs the gamut: under roadways and rail lines, next to hot cabling in the transit system through a variety of soil and wetness conditions.

HIGHLIGHTS

- Today's transportation systems face communication challenges between central operation centers and the various stations, rest stops, information kiosks and more.

- The city of Tokyo needed a robust, connectivity solution to deliver data to its information kiosks in real-time. It selected RTI Connext DDS for its flexible architecture and QoS settings.

Depending on weather conditions, the transmission capabilities of the various physical media can vary widely.

SOLUTION

What appealed to the developers of the Tokyo Highway Line information kiosk network was that the publish-subscribe middleware from RTI is unlike the typical client/server link. RTI essentially provides a connectionless API.

With RTI middleware, system designers do not need to be concerned with the underlying communications protocols. The developer only needs to tell the system what the bandwidth constraints are, what information is needed at each node, what actions need to be taken, when to send it or to receive it, and what is required in response.

While current connections to the terminals are based on standard Cisco routers over copper cable, Tokyo's highway system engineers want to expand the network with a variety of other network connections: wireless, copper and optical

Tokyo Highway Line system developers value RTI as a connectionless API, since most network configurations are heavily dependent on underlying hardware or software. Designers can adapt RTI publish- subscribe middleware to a heterogeneous system with servers and terminals based on different types of processors and running different operating systems.

cable, power lines, and even telephone wiring. Unlike many of the typical network protocols, the performance of which is very much dependent of the bandwidth available, publish-subscribe is much more forgiving and able to work with a minimum bandwidth.

ABOUT RTI

Real-Time Innovations (RTI) is the largest software framework provider for smart machines and real-world systems. The company's RTI Connext® product enables intelligent architecture by sharing information in real time, making large applications work together as one.

With over 1,500 deployments, RTI software runs the largest power plants in North America, connects perception to control in vehicles, coordinates combat management on US Navy ships, drives a new generation of medical robotics, controls hyperloop and flying cars, and provides 24/7 medical intelligence for hospital patients and emergency victims.

RTI is the best in the world at connecting intelligent, distributed systems. These systems improve medical care, make our roads safer, improve energy use, and protect our freedom.

RTI is the leading vendor of products compliant with the Object Management Group® (OMG) Data Distribution Service™ (DDS) standard. RTI is privately held and headquartered in Sunnyvale, California with regional headquarters in Spain and Singapore.

Download a free 30-day trial of the latest, fully-functional Connext DDS software today: https://www.rti.com/downloads.

Your systems. Working as one.

CORPORATE HEADQUARTERS

232 E. Java Drive, Sunnyvale, CA 94089
Telephone: +1 (408) 990-7400
Fax: +1 (408) 990-7402
info@rti.com

rti.com
rti_software
rtisoftware

company/rti
connextpodcast
rti_software