Case Study

AUTOSTRADE SpA
Italian Motorway Provider uses IP Videoconferencing to Manage Vast Motorway Network

VCON
VISUAL COMMUNICATIONS

Background

Autostrade SpA is an Italian provider of motorway services responsible for a network of approximately 3000 km of motorways spanning the whole of Italy, from Bari and Cassino in the South to Genoa, Milan and Udine in the North. In the early 1990's, Autostrade SpA installed fiberoptic cables along their entire motorway network to provide for their internal telecommunications requirements. In 1997 Autostrade SpA founded Autostrade Telecommunicazioni SpA for the purpose of managing the company's fiberoptic network which currently links most Italian cities.

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The need for a Videoconferencing Solution

With Autostrade SpA's offices widely distributed across the Italian peninsula, there was a clear need for a solution to the high communication and travel costs the company was incurring on a regular basis. Prior to 1998, the company used conventional communication methods to meet their needs but they also used a broadcast television network, based on traditional analog technology. This system was extremely costly in terms of codecs, architecture, resources and bandwidth and the underlying network did not reach all locations. With these obvious constraints, the system was only used a few times per year.

In 1995-96 Autostrade SpA commissioned Autostrade Telecommunicazioni to come up with a new solution for audio and video communication, and one that would provide high quality audio and video. The result of the study was a decision in 1997 to install an H.323 network and deploy multipoint videoconferencing across the network. As Autostrade's fiberoptic cables contained ample spare capacity, a separate 2 Mbps network was simply constructed to support all conferencing traffic.

Project Automation was commissioned by Autostrade Telecommunicazioni to handle all aspects of the conferencing solution, including network design and implementation, codec selection and testing, as well as integration of all networked conferencing components.

Why VCON?

Project Automation chose VCON products for their flexibility. According to Antonello Russo, Project Leader, "Only VCON offers a wide range of products, from room systems to simple desktop solutions which are compatible with a single, powerful software developer's kit - VCON's VDK. VCON's products are also fully compatible with other H.323 hardware and software-only products. We implemented VCON's Interactive Multicast technology with success and satisfaction. VCON's PacketAssist™ technology is the quantum leap which ensures that communication over an IP backbone is stable and reliable, keeping Quality of Service (QoS) at high levels for both video and data streams, even in congested environments."

The H.323 conferencing network is used to carry audio, video and data. The network is based on an IP backbone that runs from 2 Mbps to 8 Mpbs and is configured in a star topology with Florence at its hub, as this is Autostrade's networking center. Nine Autostrade regional offices and a number of secondary nodes in cities distributed all over Italy are connected to the hub. A few locations are served from a secondary network node and, in these cases, additional bandwidth is used to connect the secondary node node to Florence and to support the additional conferencing traffic.

terminals in one or more multi-sessions at video and data rates of up to 1.5 Mbps.

A Customized User Interface using the VCON Development Kit (VDK)

Project Automation developed their own customized application interface and a centralized monitoring and management tool called "System Keeper" for the codecs using the VCON development kit (VDK).

The centralized management software, System Keeper, controls all the conference steps, including logging conference requests, reservation of rooms and resources (terminals, VCRs, TV monitors) and the invitation and confirmation of participants. System Keeper is also used to designate a "Chairperson" who has overall control of the conference and to manage requests from participants to "take the floor". Any participant can send a request to speak to the chairperson and System Keeper's reservation mechanism manages the audio/video requests in automatic, semi-automatic or manual modes. System Keeper also keeps track of the progress of meetings and logs a report when a meeting has finished.

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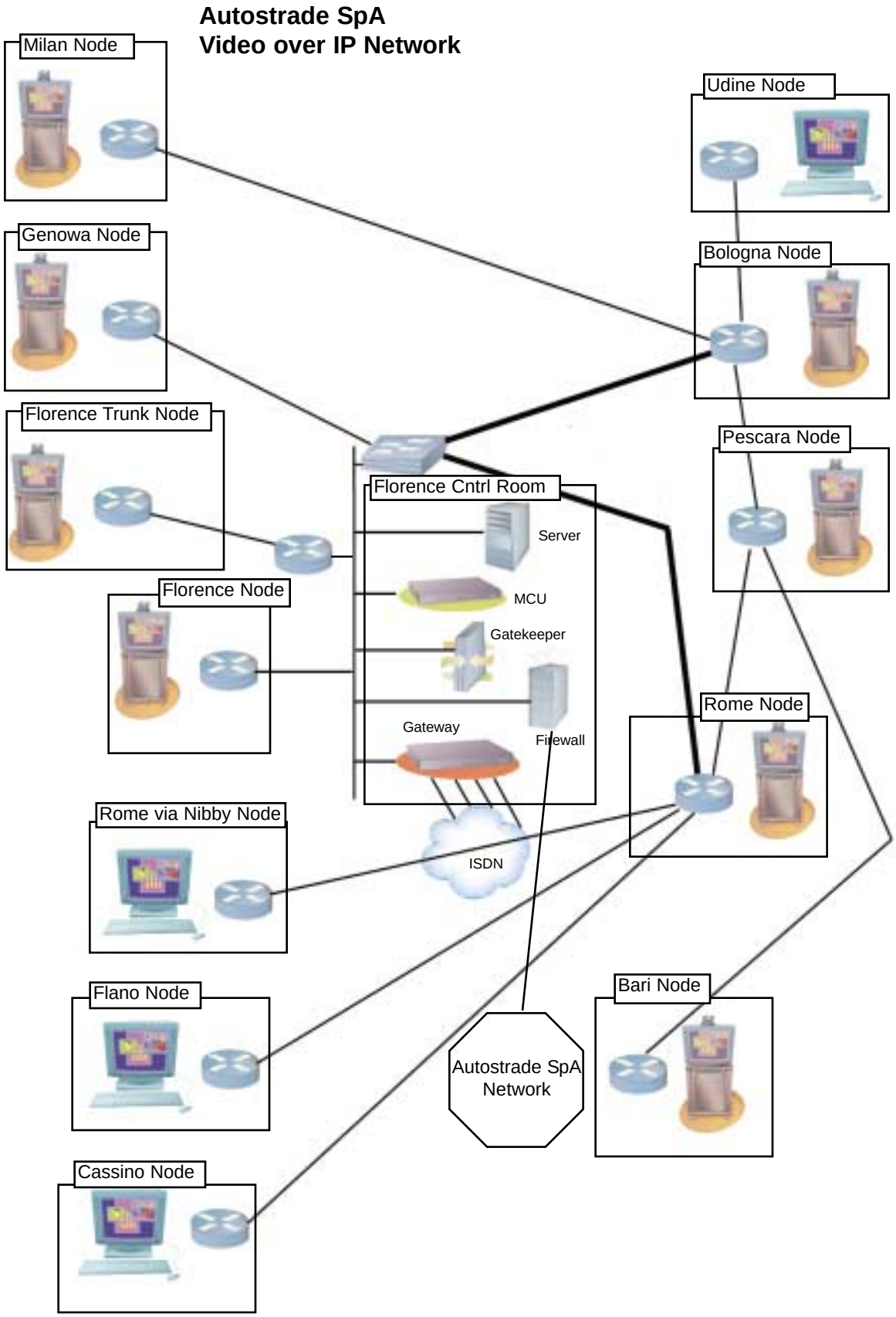
Project Automation has installed a range of VCON desktop and group systems: 14 videoconferencing systems built around VCON's Monitor 3000 board and 5 built around the Escort 25; 5 MediaConnect 6000's (with a customized software interface) and 10 Escort 25's. The routers, switches and hubs are Cisco and the ISDN-LAN Gateway, Gatekeeper and 16 MCU's were provided by Ezenia!.

Every endpoint on the network serves as a complete access point, offering a range of communication possibilities including point-to-point connection, multipoint connection through an MCU with audio mixing, multipoint conferences using VCON's Multicast technology, and MPEG closed-circuit TV for very high-quality video transmission over IP. Equipped with switched ethernet Cisco Technology, all endpoints are also able to connect to remote ISDN terminals via the gateway service located in Florence. The network's MCU's can support up to 16

"I have been working with PC video boards, software development kits and a variety of communication equipment since 1990, but I have never seen a product as stable, powerful and easy-to-use as VCON's VDK," stated Russo. "It allows you to have full control of the conference without requiring any knowledge of the low-level hardware, software and protocols. With the VDK it is really possible to write an application in just a few days!"


Autostrade SpA
Video over IP Network
Milan Node
Udine Node
Genowa Node
Bologna Node
Florence Trunk Node
Pescara Node
Florence Cntrl Room
Server
MCU
Gatekeeper
Gateway
Firewall
Florence Node
Rome Node
Rome via Nibby Node
ISDN
Flano Node
Bari Node
Autostrade SpA
Network
Cassino Node

Installation and Operation

The system was operational as of 20 December 1998 and was first used to hold a Christmas conference connecting 9 cities all over Italy in that year. The final version of the System Keeper software was released in April 1999 and the Multicast capability was configured in September. With more than 35 terminals currently installed and Multicast-enabled, use of the network has dramatically increased since September.

Autostrade is currently using the videoconferencing network to serve three main functions: 1) for corporate communications, including briefing sessions in which the company CEO communicates important announcements to all employees; 2) meetings between senior management in the various Austostrade offices and 3) employee training sessions.

An Eye to the Future

Autostrade is the biggest motorway company in Italy but there are approximately 20 additional motorway companies operating in the Italian peninsula. The aim now is to equip these smaller companies with the same videoconferencing capability which is proving so beneficial for the management of the Autostrade network.

Autostrade Telecommunicazioni also intends to enhance the existing videoconferencing network with a number of additional features in the near future. A few examples are a software-only audio/video player, a Web-based interface and a Video over Internet Gateway.

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Autostrade also used the system to audio and video link all operational sites on the night of December 31 1999 - January 1 2000, with the purpose of monitoring and solving any millennium bug problems in Autostrade systems. The system worked during the entire night and no bugs were detected.

"We are very happy with the system," stated Alessandro Neldi, Videoconferencing Project Manager at Autostrade SpA. "Although we have only just finished the installation process, the network is already having a clear impact in terms of savings on the costs incurred for travel between our various offices."

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DOC71026 Rev 1 10/02