

The challenge

In order to open its new infrastructure, scheduled for the beginning of 2011, the Cannes Hospital Centre (Alpes-Maritimes) wanted to have a new high-performance data transmission network.

The solution

The hospital centre opted for a fully fibre optic mesh network. It is made up of 13 Avaya chassis Ethernet switches including peripheral equipment.

Value created

- The high performance network supplies 2400 data ports to the hospital centre's infrastructure.
- Its full mesh architecture guarantees a high level of availability thanks in particular to the RSMLT (Routed Split Multi-Link Trunking) protocol.
- It is easy to administer thanks to Avaya's new Unified Communication Management software suite.
- The network is used to carry all data traffic (with priority given to voice and biomedical data): file transfers, VoIP, access control, video surveillance, technical management, biomedical applications (imaging, monitoring, etc.). It optimises patient care by making it easier to manage administrative and medical files.
- Practitioners and patients benefit from a service platform that is easy to access, including a WiFi network (500 ports) which enables all data to be managed at the patient's bedside as well as mobile monitoring.

An ambitious network project lies at the heart of the renovation of the Cannes Hospital Centre.

During the first three months of 2011 the final departments of the new Cannes Hospital Centre will be opened. This is the last stage of a long building project lasting several years which has seen the complete renovation of its infrastructure including the construction of a new building. This project has harnessed the energies of many people and organisations so that the town of Cannes and the surrounding area can benefit from state-of-the-art equipment meeting the latest care and in-patient standards in order to provide the population with high quality medical services dispensed by staff with the latest technological advances.

Avaya technology at the heart of the Cannes Hospital Centre information systems

"Today in a modern hospital organisation controlling information and distributing it quickly play a crucial role," explained Jérôme Bousquet, the hospital centre's Information Systems' manager. "There are many technical solutions for processing all kinds of information whether it is patient files, digital imaging, interpretations of various analyses etc.". The medical staff must be able to have access to updated data any time and anywhere in order to carry out their tasks with patients calmly and effectively. To do this Mr. Bousquet thinks it is vital to rely on a high-performance network which can supply all the services and which can ideally meet any specific requirement. "This is why, when the hospital centre was refurbished, we decided to review our network from top to bottom and consequently to invest in a new infrastructure."

The planned network must primarily meet ambitious targets in terms of security, throughput rate and high availability for the various critical applications, both for transferring all types of data (voice, data, media) and for the ability to access information from anywhere thanks to WiFi integration options. The major technical structural choices pointed to a fully meshed network consisting of fibre optics right to the user's outlet socket. The decision to choose Avaya technology for this new network was made as a matter of course.

"In the old hospital we were already using Avaya equipment just like many other hospitals all elsewhere. We were quickly able to design the new architecture by capitalising on our knowledge and our experience. We were looking for a robust, simple, tried and tested, high-performance solution. With the core network equipment that Avaya offered we knew that we would be able to achieve these objectives."

The selected architecture is made up of 13 ERS 8310 chassis platforms. They not only supply the core network (3) but also act as edge switches (two in each of the five technical rooms - four of which are in the new building). *"With the fully fibre optic mesh network option we preferred to install Avaya chassis switches rather than the normal switches because they can support 48 fibre port cards which makes them a great fit for this system."*

This infrastructure guarantees a high output level for capillary distribution between the core network and the various departments of the hospital centre. All the connections are dual attachment connections which means that they can provide a nominal 20 gigabit bandwidth (2x10) between the core network and the peripheral distribution chassis while

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the bandwidths to the ports are one gigabit. With this design the network can supply about 2400 user ports in a normal operating period - 500 for the patients’ rooms, 1000 for the offices, 500 for WiFi and 400 dedicated to purely biomedical applications. *"We are going to have a network that is perfectly suitable for the operation of a modern hospital"*, forecast Mr. Bousquet.

Security, availability, management: a justified choice

The features of the Avaya solution guarantee the total security and availability of information flows. The architecture is extremely reliable, both physically and logically (redundancy, dual CPU) in order to provide superior services and support the roll out of all the required applications (administrative and medical data, images, VoIP, WiFi, etc.). *"Networks of this size are not common,"* stated Nicolas Windpassinger, Key Account sales representative at Avaya. *"Total fibre optic mesh networks in a structure as complex as a hospital, that’s exceptional!"*

The network selected is a full mesh design which simultaneously keeps all links active. Should a link (or a card) fail, this architecture minimises any period of unavailability for the user, thanks particularly to the RSMLT (*Routed Split Multi-Link Trunking*) protocol.

In addition, the deployment of dual edge switches in each distribution bay increases the security of the system. *"If one of them fails you only lose half the connections,"* explained Mr. Bousquet. *"Furthermore, by deciding to distribute the terminal outlets between the two edge switches you can maintain minimum system connectivity in the rooms and offices. In addition, we have defined procedures to react to problems with the switches very rapidly. As it happens, apart from configuring addresses, they are the same*

switch models with the same configuration mode, which makes operation considerably easier."

Finally, Mr. Bousquet indicated that the quality of the system administration weighed heavily in favour of the Avaya solution. *"In terms of operating the Local Area Network (LAN) the Avaya equipment has a very high level of functionality and is very easy to administer. Thanks to its Java Device Manager and Unified Communications Management software we have a solution that is completely controlled on the graphical interface of the administration station."* For Mr. Bousquet, the concepts implemented are uniform and consistent and the administration tool is intuitive and technical. The same applies to the configuration operations which use clear, iterative, easy to use procedures.

A project meticulously prepared and tested

So that the network would be totally operational when the new hospital was finally opened, a punishing project preparation and implementation schedule was followed, from the functional study, modelling and testing stages until the initial scheduled roll outs in June 2010.

As it was a major refurbishment and reconstruction building project on an existing site we had to devise a way to disrupt the activities of the hospital centre as little as possible. *"With our network integrator, Spie, we supported Mr. Bousquet’s teams at all stages of the project,"* noted Mr. Windpassinger. *"In some buildings where the equipment did not comply with current standards, we had to carry out recabling work in order to ensure that each room had the required number of sockets."*

Finally, the hardware architecture had to be tested ‘under live conditions’’. *"We can test the equipment before delivering it to the building,"* continued Mr. Bousquet. *"We set up all the equipment in a special*

room to configure and test the switches. When the buildings are supplied with the fibre optic cables installed only the manual changes remain to be done which will make migration easier.”

For this operational testing data traffic management takes on a particular importance. Given the large number of connection points the switches must easily carry large volumes of traffic over and above their redundancy. “We successfully carried out the saturation tests on the gigabit and 10 gigabit connections. The same applied to VoIP, because in a hospital establishment, it is out of the question that the telephone system should break down.”

Finally, the system must also enable traffic prioritisation to be managed, not only for voice but also for very sensitive biomedical data which must be able to circulate quickly for the various specialist requirements. “Our medical teams will constantly use the system’s data transfer capacities. And in this area the requirements will grow constantly in all departments, for monitoring resuscitation, transferring column images from coelioscopes and scanners, etc. All this data can be transferred from one station to another or from measuring equipment on a patient to the interpretation console.”

A service platform which benefits both medical practitioners and patients

The new Cannes Hospital Centre network is used to make maximum use not only of all the information available but also the new technologies which are constantly being introduced to enhance the various medical specialities. “It would be no use having the latest medical innovations if the information required for diagnostics and decision-making for treatments is not properly distributed to the various users, to the different machines,” insisted Mr. Bousquet. With the Avaya high-

performance network the hospital centre now has an authentic digital highway on which large quantities of data can travel, particularly multimedia content, with no risk of loss or disruption of service. “Our aim is to create a service platform that anyone can easily access, anywhere and any time. The technology becomes transparent and all the people involved have access to the information they need to carry out their duties.”

Mr. Bousquet listed three main types of requirements for the circulation of data across the the network. Firstly he distinguished the information services’ requirements: administrative data management (file transfers) to which must be added telephony traffic (VoIP). Then he mentioned the technical service requirements: monitoring installations, access control, video surveillance and the centralised technical management of the buildings. Finally he emphasised the specific requirements of the biomedical departments associated with the numerous applications and equipment used by the medical profession and the hospital staff.

To do this the hospital centre favoured access to a WiFi infrastructure. “We paid a great deal of attention to the WiFi architecture so that we could access information and applications at the patient’s bedside. We carried out exhaustive studies and tests for security, feasibility, integration, topographical coverage and guaranteed results. This went way beyond just installing WiFi access points.” Thus all sorts of information can be managed on a mobile terminal at the patient’s bedside. In addition patients will also have an Internet connection in their rooms (both WiFi and from the bar on the bed head).

Finally the new network can also support roving monitoring biomedical applications. If a patient is being moved around the hospital centre the information from equipment that he may have on him

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(a cardiac holster, for example) continues to be recorded and monitored in real time and can trigger an alarm if necessary.

Best practices for a global quality procedure

The considerable potential provided by the new network can open up new opportunities for the hospital centre. “This operation, which is costing a great deal of money, will project us sustainably into the future,” continued Mr. Bousquet.

Thus the circulation and use of information open up new practices that promote better care for the patients from the time they are admitted and make it easier to manage administrative and medical files (care, prescriptions etc.). “We now have information all the time, even if it is sometimes a little basic, such as consultation records which we found hard to obtain before because their archives were often inaccessible at the time they were wanted. Now the information system is open to all professionals of the hospital centre who can search and consult what they need - a discharge letter, a doctor’s accompanying comments, an anatomy report etc.”

This better use of information improves the hospital’s quality procedure and will enable its services to be evaluated better from a

financial point of view. The optimisation of information systems, particularly in terms of response and deadlines, takes on its full meaning when faced with the hospital's budget targets. *"Controlling medical information will not only make the staff's jobs easier and provide better conditions for the quality of care but will also have an impact on our budgeting process. This has become a vital target in all French hospitals which all have the same problems."* In addition, the savings made by digitising the physical media (paper copies, films etc.) will also fit in with an environmental process (green IT) of which Mr. Bousquet's teams have been made aware.

"We think that with Avaya we have made a structural choice which meets our strategic needs because we have a reliable, mature technology with features in terms of output and functionalities that completely meet our requirements," said Mr. Bousquet happily. *"Today, after being worried when Avaya got into the difficulties which we all know about in 2009, we are reassured to know that Avaya has started up its business network division again. We actually need to guarantee that our investments will last. We also think that Avaya's telephony range and Avaya's network range can be the basis of an industrial strategy aimed at consolidating the assets of both companies in their respective strong points."*

To find out more

To find out more about how Avaya can help your company to achieve its aims, contact your Avaya sales representative, one of Avaya's certified sales partner programme members or go to www.avaya.com/emea.

SYSTEMS

- 13 ERS 8310 modular switches (core network and peripherals)
- RSMLT (Routed Split Multi-Link Trunking) protocol

ABOUT THE CANNES HOSPITAL CENTRE

The Cannes Hospital Centre (Alpes-Maritimes) is a public health establishment which is a legal entity and has financial autonomy. It operates in several sites and has 742 beds and 83 rooms. The staff is made up of 1,500 employees and more than 200 doctors. The annual operating budget is more than 100 million euros.

In 2005, the hospital centre recorded nearly 22,000 hospital stays, 35,000 emergency cases, 86,000 consultations and nearly 5,800 surgical operations.

The new hospital (work on which will be finished at the beginning of 2011) will enable it to improve its provision of care with small in-patient units (80% single rooms and none with more than 2 beds), to group the same kind of activities, cool rooms in summer. It will meet safety standards for equipment and people. It will comply with anti-seismic standards, fire safety standards, will be on the alert for Legionnaire's disease, electrical safety etc.

ABOUT AVAYA

Avaya is a world leader in business communication systems. Avaya designs and implements unified communications solutions, call centres and services associated with the leading businesses and organisations throughout the world, directly and via its network of partners. Businesses of all sizes rely on Avaya for modern communications that improve efficiency, collaboration, customer service and competitiveness. For more information please go to www.avaya.com/emea.

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References to Avaya include the activities of Nortel Enterprise, acquired by Avaya on 18th December 2009.

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The Avaya logo consists of the word "AVAYA" in a bold, red, sans-serif font. The letters are closely spaced and have a slight shadow effect.

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