Global Communications Newsletter

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New Internet Global Vision: Europe Drives IPv6 Deployment

By Jordi Palet, Spain

The 2nd Spanish Global IPv6 Summit (GIS 2002) was held in Madrid last 13–15 March. All conference information is available at http://www.ipv6-es.com. The first, also in Madrid, was held the previous year in January (the information is also available at http://www.consulintel.es/ipv6) that indeed was a great and successful event. For the first time in the world, a standalone IPv6 Forum event gathered over 325 delegates from 23 countries, who rated the event between very good and excellent.

The Global IPv6 Summits are organized by the IPv6 Forum around the world, since the first event in Paris, France, October 1999. The IPv6 Forum is a global consortium of Internet vendors, and research and education networks, with a clear mission to promote IPv6 by dramatically improving market and user awareness of IPv6, creating a quality and secure next-generation Internet, and allowing worldwide equitable access to knowledge and technology, embracing a global moral responsibility. To achieve this goal the IPv6 Forum will:

- Establish an open international forum of IPv6 expertise
- Share IPv6 knowledge and experience among members
- Promote new IPv6-based applications and global solutions
- Promote interoperable implementations of IPv6 standards
- Cooperate to achieve end-to-end quality of service
- Resolve issues that create barriers to IPv6 deployment

These events have the mission of disseminating IPv6 expertise, gathering together researchers and users, and promoting IPv6 and its advantages toward worldwide deployment.

The second Spanish IPv6 Summit attracted over 550 delegates from over 26 countries, representing a wide range of industries and entities from government to education, and including a large number of industrial users. The message of the Spanish IPv6 Summit was that IPv6 is a reality; it is no longer an illusion but a need; and over the last 24 months it has evolved in parallel with the new generations of mobile systems.

The endorsement of industry and Internet/telecom-related associations also prove the importance of IPv6. The support of the event sponsors and endorsers is a clear message in this direction. Indeed, now Europe, like Japan, Korea, China, and other Asian countries, strongly endorses IPv6 deployment.

The European Commission asked industry representatives across Europe to produce reports and recommendations to support and drive IPv6 transition (http://www.ipv6-taskforce.org). Together with the Spanish Presidency, the Heads of State Meeting in Barcelona (15–16 March 2002) made public those recommendations.

On 21 February, an extensive document was published by the European Commission (http://www.ipv6tf.org/PublicDocuments/com2002_0096en01.pdf), in the form of a Communication to the Council and the European Parliament, entitled "Next Generation Internet — priorities for action in migrating to the new Internet Protocol IPv6." This document is the direct result of the IPv6 Task Force report and recommendations, and is a clear embracing by the higher-level European institutions of the adoption of IPv6 as a key issue in European Information Society development, and the goal of Europe being recognized, by 2010, as the most competitive and dynamic knowledge-based economy, playing a leading role in the upgrading of Internet capabilities.

Indeed, one of the recommendations was the continuation of the IPv6 Task Force in order to secure the surveillance and evolution of the adoption plans, and a first move will be the meeting, next September, of the second phase of the European IPv6 Task Force, where CEOs of European industry institutions will work together with IPv6 experts, liased with other international organizations that are working toward the same goal. Meanwhile, a new project, the IPv6 Task Force Steering Committee (IPv6 TF-SC) has been started to support this work.

Also, it is worth mentioning that another recommendation, already announced at the Madrid IPv6 Summit, was the creation of similar national initiatives, to localize the effort and recommendations done by the European IPv6 Task Force. Spain was the first one with the creation of the Spanish IPv6 Task Force (http://spain.ipv6tf.org), last 16 May, backed by the Spanish Ministry of Science and Technology, which is in charge of Information Society Development and Telecommunications activities. Similar initiatives are expected soon in other European countries.

Recently, the Seville Council meeting approved eEurope-2005, "An Information Society for All," where the key issue is "the widespread availability and use of broadband networks throughout the Union by 2005 and the development of Internet protocol IPv6 ... and the security of networks and information, eGovernment, eLearning, eHealth and eBusiness," together with the support of multiplatform access other than PCs, like digital TV and 3G. The document is available at http://europa.eu.int/information_society/eeurope/news_library/documents/eeurope2005/eeurope2005_en.pdf.

As part of the agenda, those responsible for related work in the R&D program for Information Society Technologies (IST) of the European Commission explained the important strategy already initiated, with investments of over €150 million in the 5th Framework Program, and the new strategy with even stronger support for IPv6 in the next 6th Framework Program. The European Parliament recently approved the 6th Framework Program and, within it, adopted strong support with funding for IPv6 R&D, demonstration, and take-off activities.

At the Madrid IPv6 Summit, two new projects, 6NET and Euro6IX, were presented. They started in January 2002, are the biggest in the IPv6 area, and will strongly cooperate in order to support new IPv6 related initiatives in Europe and

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CDMA450 – An Alternative to UMTS in Central and Eastern Europe?

By Nicolae Oac, Romania

Telefonica of Spain established Telefonica Romania in 1992 and launched its mobile service, Telemobil, in April 1993. By the end of 1993 Telemobil had less than 1000 subscribers, well below the expected 3000, and by the end of 1996, its most successful year, it had some 20,000 subscribers, or 0.09 percent penetration, covering 40 percent of the population. The situation worsened and soon, when Telefonica — the main shareholder — failed in its bid to obtain a Romanian GSM license, it sold its stake.

RDT

In September 1998, the Romanian Domestic Telephony (RDT) holding became the main shareholder, and a new foreign managing team was appointed. SunTel, a new analog service based on low emission mobile system technology also operating in the 450 MHz band, was launched on May 25, 1999 in Bucharest, Constanta, and Brasov. It was planned to extend the capacity to other major cities and connecting roads the same year, but only Timisoara and Cluj were covered. Telemobil tried to establish a difference by focusing on middle income subscribers, who were not very attracted by roaming, and by installing payphones in villages without fixed line connection. Unfortunately, both strategies led to a low return on investments. Furthermore, by installing payphones, Telemobil was breaking the monopoly of incumbent RomTelecom. By the end of 1999, SunTel had less than 20,000 subscribers, well below the planned 50,000. Last autumn, this number decreased to some 13,000. The total investment from RDT takeover amounted to US$50 million. Behind the failure of this experiment were technological and financial problems: every GSM900 operator was spending some US$200 million/yr at the beginning, considerably more than the expectations of Telemobil for 2000. In the meantime, GSM services have become mass market products.

Inquam

In October 2000, U.K.-based Inquam, a consortium of Qualcomm (50 percent) and the Middle East investment fund Omnia (50 percent), paid US$40 million for a 95 percent stake in RDT with the aim of launching a new mobile service based on CDMA2000 technology in the 450 MHz band. The technical advantages of CDMA450 include better capacity to reduce background noise and interference and, due to its 4400 bn combinations, in theory it is impossible to intercept calls, clone, or commit any other type of fraud. But CDMA450 has drawbacks too. At present CDMA450 does not support roaming, and currently only two handset models are available.

In January 2001, Jeff Jacobs, Qualcomm vice president, visited Romania and met Romania's president among others, announcing his intention to invest in Romania. A total US$350 million was to be invested until mid-2003, financed by Inquam, equipment suppliers, and international credit. About US$150 million would be allotted to developing a nationwide network, with another US$100 million to be poured into the working capital. More than US$50 million would go into technical invoicing and services systems, with the remainder being pumped into terminals and other equipment needed for network building.

Preparing for Launch

The suppliers for the new network were Lucent Technologies, which delivered CDMA2000 1X Flexnet base station equipment as part of a US$120 million contract, Harris and Kathrein for aerials, and Israel's Comverse, which provided the software platforms for additional services. South Korea's Hyundai and Synertek provided handsets with modems and Microsoft browsers for online connecting. Some 10,000 handsets were delivered in 2001, while about 300,000 handsets will be delivered in 2002. Radiocomunicatii, a broadcaster to be privatized, will provide data transmissions at the national level, a US$5.5 million/year contract being concluded.

Grey Worldwide was appointed to launch the new service commercially, US$8 million being allotted for an advertising campaign with a maximum in 2002.

A cash injection of US$26 million raised Telemobil's share capital to US$52 million in October 2001 and Inquam participation to 99.53 percent. Other shareholders are RomTelecom with 0.23 percent, Radiocomunicatii with 0.23 percent, and others with 0.00002 percent.

As one of the most important American investments in Romania, Telemobil has looked for the support of American and Romanian authorities. On November 1, 2001, Dan Nica, Romanian minister of communications and IT, and U.S. Trade Secretary assistant William Lash agreed to a partnership between California-based Qualcomm, Inquam's main shareholder, and the government of Romania for the standardization and implementation of CDMA technology in Romania. As a major investor in Romania, Telemobil has the right to negotiate fiscal advantages, such as exemption from VAT on imported equipment, exemption from tax on profit for a five-year period from the year the company makes a profit, exemption from payment of tax for reinvested profit, and so on.

Telemobil planned to cover 95 percent of the population and to transmit images early in 2003. Also, it was planned to have at least a 25 percent annual increment in mobile users, and to have a 25 percent market share in 2005, targeting the business community and specially small to medium-sized enterprises (SMEs), but focusing on the rural areas too. Due to lower investments, lower access tariffs for voice and data than the existing GSM tariffs were promised, and Telemobil hoped to make operational profit in 2003 and net profit in 2005. (Using CDMA technology, data transmission costs could be between US$0.03 and US$0.07/Mb, while for GPRS it is at least US$0.40/Mb.) It is intended to keep SunTel for at least two years, to let its users migrate to the new service. SunTel had 11,500 clients, 95 percent business ones. In the last 12 months the subscription process stopped.

In October 2001, Telemobil successfully tested data transmissions at 155 kb/s, considerably more than the current GPRS rate in Romania, 36 kb/s.

Launching Zapp Mobile

On December 7, 2001, in the presence of the Romanian minister of communications and IT and the U.S. Ambassador to Romania, the new service Zapp Mobile was launched. Zapp Mobile provides voice, data transmissions at 153 kb/s, mobile Internet, Web access, HTML Web pages visualization and business dedicated solutions. At launch, the new network covered 42 percent of Romania's population, 60 cities, and 4000 km of roads, having 346 employees and PoPs in the main 30 cities.

The US$3.7 million launch campaign focused on mobile Internet for young people and business and, according to Diwaker Singh, Telemobil's president and CEO by the launch, Zapp Mobile had 10,000 new subscribers in the first 45 days, of which 70 percent were from high revenue business and professional segments. Tariffs were similar to those of GSM operators: monthly subscriptions vary between US$5 and US$85, while prices per minute range between 14 cents and 7 cents for calls inside the network, and 33 cents and 16 cents

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for calls outside the network. Prices for data transmissions range between 2.5 cents and 1.8 cents for 10 kbytes.

Post-Launch

After the commercial launch, the planned objectives have been changed. Early in February 2002, "Zapp Mobile has moved on voice" offered a US$.03 bonus for any minute of incoming call, speculating on a well-known fact: clients from new target segments receive more calls than they initiate. This repositioning, less than two months after the launch, reminds us that Romania is still a voice-driven market (there is only 3 percent fixed Internet penetration in Romania).

Inquam brought US$150 million only for Zapp Mobile launch, which attracted 15,000 users, of which 75 percent represents corporate users, now covering 61 cities. They will focus on the increment of company profitability It is expected that there will be 100,000–120,000 users by the end of 2002. Also, by the end of 2002 or early in 2003, Telemobil plans to implement BRW technology to permit file download and upload, as well as their storage on handsets. Also, they want to increase navigation speed to 2.2 Mb/s by introducing HDR, the successor of CDMA.

Telemobil is the first mobile operator in Romania able to tax 3G services, after the successful implementation of CSG Kenan 3G, a software solution for 3G including billing products. This was done in six months and became fully operational in December 2001, by commercial launch. Late in April 2002, Telemobil won the "Best implementation of a billing service" award against Vodafone, KPN Qwest, Mm02, Telia, and Virgin Mobile Australia.

Zapp Mobile installed the first European network using CDMA450 technology, as well as the first network in the world for mobile telephony using digital technology in the 450 MHz band. Recently, in Russia, two operation licenses for CDMA450 in Moscow and Leningrad were granted, commercial launch being planned for 2002 and 2003, using Lucent Technologies equipment. According to Diwaker Singh, Qualcomm intends to expand the CDMA standard to six other western and central European countries. In 2001, Inquam started negotiations to acquire the Bulgarian analog mobile operator Mobikom with license in the 450 MHz band, Dolphin Telecom with licenses in 450 MHz in the United Kingdom and France, and early in 2002 started negotiations with three Russian CDMA operators (Moscow Cellular Communications, SONET, and St. Petersburg-based Delta Telecom). Also, Inquam plans to build similar networks in Indonesia, Portugal, and Denmark.

Change of Guard, Change in Strategy?

On February 22, 2002, Irwin M. Jacobs, Qualcomm's president and CDMA inventor, visited Bucharest. One month later a change of guard was announced. Cuneyt Turktan, former CEO of Turkey's mobile operator Turkcell, became the new president of Zapp Mobile, while Jonathan Hart, one of Inquam's founders, is the new interim CEO. The restructuring process propagated to the second level of management too, which was totally changed. Diwaker Singh, former CEO and president, left Telemobil in April 2002 for a new position at Inquam HQ in London. So an executive with strong expertise in mobile was gained, as well as one of Inquam's founders for a new business approach!

After a glittering launch, Telemobil returned to anonymity, Zapp Mobile being less and less visible. The question is: can Telemobil succeed in its third attempt? To answer this question one needs to consider the technological gap, business experience, and existing market. Financially, US$350 million over three years does not seem enough to introduce new services into a voice-driven market of 4 million mobile users, dominated by three mobile GSM operators, a cost-sensitive and word-of-mouth-sensitive market. However, the implementation of CDMA450 requires less than a GSM900 operator spends for national coverage (some US$600–700 million for 95 percent population coverage), permitting lower tariffs for a more aggressive market entry.

The question is: how much is Telemobil able to raise or Qualcomm willing to pump into the Romanian experiment? For the time being, GSM has gained a foothold not only in Romania for voice services, so it will be difficult to grab an important market share with a new technology that is a "technological island" at its beginning. The main problem is to increase this island regionally quick enough before UMTS launch, probably in 2004 or 2005.

Zapp Mobile competes with GSM operators, which last year launched GPRS at only 36 kb/s and probably will launch UMTS. While UMTS operators will concentrate on urban areas in a bid to achieve maximum population coverage with minimum cost outlay, CDMA450 could afford to cover the whole country in a faster and cheaper way. If Zapp manages to erode GSM operators' advantage, first of all in voice services, and their ability to deliver applications to business customers, it could attract a sizable portion of high-end business clients.

The liberalization in January 2003 will probably make it easier for Zapp to compete with the national operator, RomTelecom. Telemobil is also excellently positioned to cope with the IT strategy launched by the Romanian government last year, to provide Internet in rural schools, and information points in urban and rural areas (in 2001, the Romanian government launched a project to have all Romanian schools hooked up to the Internet, but of nearly 13,000 Romanian schools, some 11,000 are located in rural areas, many of them in remote parts of the country with little telecommunications infrastructure.) But Telemobil needs a fixed approach, too. Bundling mobile voice, data, and Internet with fixed voice into a full services package at lower tariffs could be a competitive advantage at liberalization.

A success strategy should be based on speed and low tariffs. First, a more aggressive national approach is needed. To be able to compete with GSM operators, Zapp Mobile needs more rapid national coverage: over 90 percent of the population by the end of this year. In a voice-driven market, Telemobil has to focus on voice services, at least at first. To rapidly increase its market share in a cost-sensitive market, Telemobil should lower tariffs, providing prices between RomTelecom's (US$0.03/min in peak hours) and GSM tariffs (over US$0.1/min). But this could also trigger a price war.

A rapid regional approach is also required, but westward. Acquiring NMT450 operators in Central and Eastern European countries like Hungary and Poland, for example, and rapidly launching new services to the market based on CDMA450 could be a way to increase the existing technological island. But one must take into consideration the deep recession telecommunications face, the strong position of GSM in Europe, as well as Qualcomm's financial problems in early 2002.

Could CDMA450 be an alternative to UMTS in Central and Eastern Europe? For the time being world telecommunications face a deep recession, UMTS has big problems, while Romania's CDMA450 has hesitations. It is up to Qualcomm to decide whether Zapp Mobile remains a field trial or becomes a challenger to GSM and UMTS in its home continent, Europe, a continent that is losing the edge in wireless rapidly. Could Zapp Mobile pack mobile and fixed services to become a total service provider in a liberalized market? The recent change of guard could mean a change in strategy and therefore could give an answer.

the rest of the world. We are very proud of Euro6IX, a Spanish initiative we lead, with participation from all over Europe and the rest of the world. These two projects will offer the infrastructure and support for advanced research, not only strictly IPv6-focused but also other related next-generation networks, such as grids, 3G+, and mobile systems.

6NET is in a way a complement to GEANT, in order to provide IPv6 support to European academic and research institutions. GEANT is the gigabit infrastructure replacing the previous TEN-155 project (ATM-based). 6NET partners are mainly national research networks, academic institutions, and some industrial partners. Euro6IX partners are mainly big European telcos, represented by their research arms, together with system integrators, application developers, and a few universities.

The goal of Euro6IX is to support rapid introduction of IPv6 in Europe. Toward this end, the project has defined a work plan describing network design, network deployment, research on advanced network services, development of applications (to be validated through the involvement of user groups and international trials), and active dissemination activities, including events and conferences, contributions to standards (IETF and others), publication of papers, and active promotion of all publicly available project results through the project Web site.

The project will research, design, and deploy a native pan-European IPv6 network called the Euro6IX testbed. It will include the most advanced services obtainable from present technology and will follow the architecture of the current Internet (based on IPv4). It will consider all the levels needed for the worldwide deployment of the next-generation Internet.

Also, a new initiative to support cooperation among all the different projects actually being realized in Europe, to foster new activities, and to coordinate the work of the IPv6 Cluster (http://www.ist-ipv6.org), the 6LINK project (http://www.6link.org), was initiated, and presented for the first time at the Madrid Summit.

During the Summit, a number of project proposals were announced and had already been submitted to the European Commission IST Program for evaluation. Now we can confirm that they have already been approved:

- 6POWER (IPv6 QoS and Power Line Integration), whose main goal is to contribute to ensure affordable broadband access and deployment of IPv6 in Europe. The project will research native support and deployment of IPv6, QoS, and other advanced services (mobility, security, multicast) over power line communication networks, starting at speeds of over 45 Mb/s.
- 6QM (IPv6 QoS Measurement) started on 1 September. The project will develop a comprehensive approach toward IPv6 QoS measurement. This includes the development of a measurement device and server for IPv6.
- Eurov6 (The European IPv6 Showcase) will show the usage of IPv6 products and services, and their impact on anyone at any time. The project brings together vendors and sponsors to test and demonstrate their devices and systems, showing various user applications based on IPv6 products and services permanently at a few locations in Europe ("fixed showcase"), which can be visited physically or accessed remotely, and organizing temporary demonstrations at different locations and/or significant events like Interop ("nomadic showcase").
- IPv6TF-SC (IPv6 Task Force Steering Committee) will facilitate, support, and coordinate the continuation of the work of the IPv6 Task Force, with the renewed mandate of a second phase, with a Steering Committee consisting of IPv6 experts. This will facilitate the successful introduction of IPv6 in Europe and consequently the rest of the world.

Besides the importance of these projects, the conference agenda included a very comprehensive and complete day technical tutorial, with a specific section related to transition and coexistence with IPv4.

In addition, the strategies of other regions were presented, and finally, the event was concluded with a debate on "IPv6 Deployment Strategies" where local speakers and others from all over the world, including Steve Deering, main designer of IPv6, had the opportunity to discuss this topic.

The complete agenda is available at the event Web site (http://www.ipv6-es.com). The presentations have been downloaded by over 495,000 people since the event date, and the Web site has had over 1,000,000 visitors, again, a good confirmation of the interest in IPv6 and the success of the event itself.

A number of demonstrations from different vendors (event sponsors) and projects took place during the event.

The conference offered delegates a wired and wireless network, set up by Euro6IX, with the cooperation of the Spanish National Research Network RedIRIS and the LONG project, 24 hours a day, supporting both IPv4 and IPv6. Attendees were encouraged to bring their laptops, install IPv6 stacks (instructions and help were provided), and accesses of up to 150 laptops were measured. The event was broadcast to the Internet, and delegates were able to use their own laptops to see all the presentations on their own screens.

Another interesting detail was a well-known collaborative application, ISABEL, developed by the Technical University of Madrid, that was already ported to IPv6 and used to distribute the conference and even allow participation of remote speakers as well as a chairman from other countries. Fifteen remote venues were connected with the ability to participate and ask questions online. This experience proved the stability of actual IPv6 platforms.

To conclude, there is no doubt that Europe, and indeed Spain, have a lot to say about IPv6. Stay tuned!

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