GOBIERNO DE ESPAÑA

MINISTERIO DE ECONOMÍA, INDUSTRIA Y COMPETITIVIDAD

MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

Red IRIS

Services Portfolio

Red IRIS

What is RedIRIS?

RedIRIS is the Spanish academic, research network that has been providing advanced communications services to the national scientific community and universities since 1988.
It is funded by the Ministry of Science and Innovation and is included in the Ministry's map of Special Scientific and Technological Facilities. It is managed by the public business entity Red.es, which is an agency of the Ministry of Industry, Energy and Tourism.

RedIRIS has over 450 affiliated institutions, for the most part universities and public research centres, that meet the affiliation criteria (*) set by the Ministry of Economy and Competitiveness for this purpose.

RedIRIS has RedIRIS-NOVA at its disposal in order to fulfil its mission, and this new optical transmission trunk network based on dark fibre will be in operation over the coming decades. The use of advanced optical equipment means that the Spanish research community will have access to multiple circuits of up to 100 gigabytes per second from the main research centres, including the astronomical observatories in the Canary Islands.

This network will enable Spanish researchers to have tools at their disposal to collaborate with each other electronically under optimum conditions, on both a national and international scale.

(*) More information on affiliation:
http://www.rediris.es/rediris/instituciones/afiliacion.html

CONNECTIVITY

RedIRIS places a high-capacity communications trunk network at the disposal of its affiliated institutions that provides them with access to both the worldwide research Intranet and to the global Internet. RedIRIS also offers other connectivity-related services such as IPv4 and IPv6 routing and multicast content distribution.
More information:
http://www.rediris.es/servicios/conectividad/

Academic and research Intranet

The basic communications infrastructure of RedIRIS is a high-capacity communications trunk network rolled out countrywide that provides the Spanish academic and scientific community with access to the worldwide research Intranet.

Using this network, institutions affiliated with RedIRIS can connect to other academic and research centres under optimum conditions, thereby helping them to take part in national and international research projects, including e-science projects that require mass data transmission or certain advanced services that are not available in the commercial sphere.

While domestic Internet connections offer from 1 to 50 Mbps, RedIRIS provides dedicated 10,000 Mbps connections for e-science projects

This service enables users to make connections where end-to-end communication is controlled as a result of RedIRIS's collaboration with other regional or international academic networks. RedIRIS also offers monitoring tools which end users can use to check service quality and status such as traffic statistics, the link occupancy map (weather-map), network node availability (looking-glass) and to analyse a link's status in detail (PerfSONAR).

Global Internet Access

The connectivity service which RedIRIS offers its affiliated institutions is complemented by access to localised content on commercial IP networks.

RedIRIS has a presence in Spain's two Internet exchange points for commercial traffic: ESPANIX (located in Madrid) and CATNIX (located in Barcelona). It also has contracts with international connectivity providers for access to global Internet services.

IP routing service

Internet address space management is co-ordinated globally by several organisations following a hierarchical structure: ICANN monitors the management of these resources worldwide. In Europe, RIPE is responsible for managing these addresses and below that come the Local Internet Registries (LIRs), like RedIRIS, which is responsible for managing address space (both IPv4 and IPv6) previously allocated by RIPE and which RedIRIS places at the disposal of its affiliated institutions so that they have the IP addresses required for Internet access.

IPv6 Service

IPv6 is the latest version of the protocol that supports all Internet communication and has been designed to solve the problem of address space on the current IPv4 protocol starting to run out, among
other matters.

RedIRIS has been working with this protocol since the '90s, initially facilitating experiments with the protocol and subsequently disseminating its use among affiliated institutions.

Initially, an experimental "tunnel"-based network was created. In 2003, the protocol was deployed natively in the trunk network in operation and succeeding in beating the world record for transferring information to native
IPv6.

Multicast content distribution service

Multicast is a network technology that helps to reduce the number of copies of the same content moving through the network to reach several destination computers, by making copies of the content in the communications equipment closest to the information's end recipients. This represents a major saving of resources when information is distributed to a large number of users.

RedIRIS has been one of the pioneering networks in working with this technology and offering this service. The service has been offered since 2000, for example with the Òpera Oberta Project.

DNS Service

The DNS (Domain Name System) is a hierarchical system whereby domain names (e.g. “rediris.es”) are associated with the IP addresses which are used to identify the devices connected to the network and which, owing to their format, (e.g.134.23.2.255) are hard to remember.

Institutions affiliated with RedIRIS keep their own DNS servers, which enable them to resolve Internet queries on the IP addresses that correspond to their domain names. From the outset, RedIRIS has provided the option of hosting a copy of affiliated institutions' DNS information in a RedIRIS secondary server, so that, in the event that the main DNS server of these institutions crashes, the RedIRIS secondary server can provide the information.

At present, 99% of the institutions affiliated with RedIRIS avail of this service.

RedIRIS also places the IRIS-DNS information and coordination forum at the disposal of its affiliated institutions.

Network Incident Management

RedIRIS has a support service for incidents or requests relating to its connectivity services. This service is provided by IRIS-NOC (Network Operations Center), the team responsible for the management and operation of RedIRIS, which was formed when RedIRIS was created in 1988.

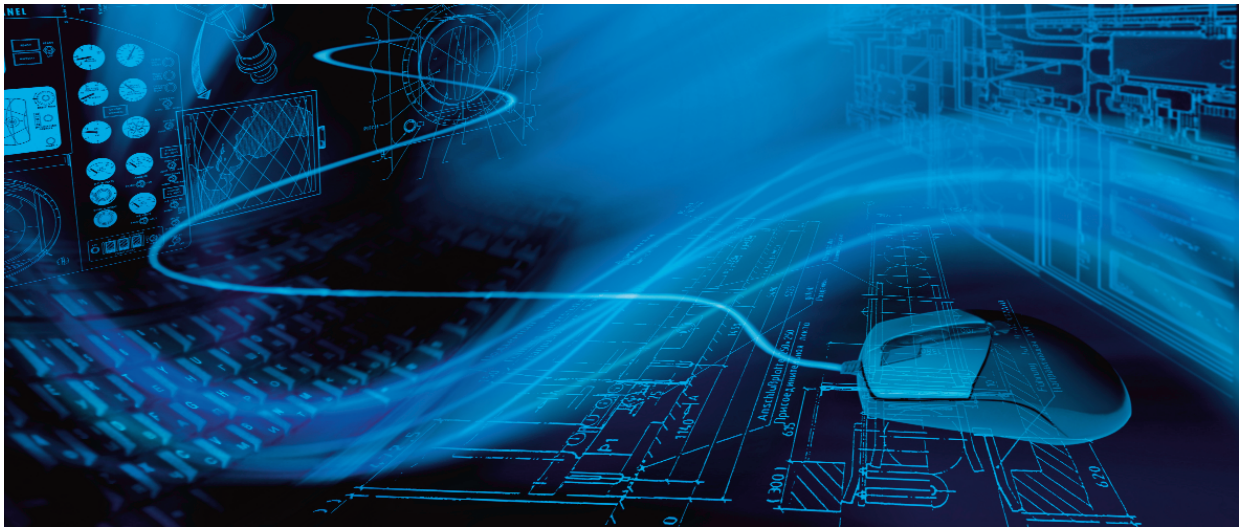
This network operations centre is in charge of implementing, managing and monitoring the RedIRIS network services.

IRIS-NOC places two coordination lists at the disposal of the affiliated institutions: IRIS-TICKETS (notification of incidents and scheduled work that could affect the service) and IRIS-IP (information and coordination of RedIRIS connectivity services).

Device time synchronisation service

The RedIRIS time synchronisation service is responsible for setting all the devices connected to the network to the same time; this makes it easier to run certain applications, guarantees the performance quality parameters on the network are measured correctly, incident management, etc.

In order to guarantee the highest level of accuracy in synchronising all the devices, the NTP (Network Time Protocol) protocol is used from the time station (hora.rediris.es) synchronising with GPS receivers and with the standards of the Real Observatorio de la Armada (ROA).



PRIVATE NETWORKS

RedIRIS places virtual circuits at the disposal of its affiliated institutions to enable them to connect research groups in different geographic locations as if they were on the same network, thereby allowing them to benefit from the operational advantages of local area networks in order to develop research projects or to deploy one institution's Intranet across all its centres.

More information:

http://www.rediris.es/servicios/redes_privadas/

Virtual circuits

Virtual circuits can be used to connect users in different geographical locations as if they were on the same network (LAN, "Local Area Network" environment), thereby enabling them to benefit from all these local networks' operational advantages.

Virtual circuits are point-to-point circuits that can be constructed using more than one type of communications technology. The same project can request several circuits in order to connect all the groups taking part in the same private virtual network. The capacity of each circuit can vary from just a few megabytes to several gigabytes per second.

As a result of the coordination between the European academic and research networks, it is possible to deploy these virtual circuits beyond national borders by means of the pan-European academic network GÉANT, which supports these private virtual networks.

Optical circuits

This circuit is a specific type of virtual circuit which offers RedIRIS affiliated institutions that require it an optical circuit of 10Gbps exclusively intended for carrying out their tasks.

Any institutions that require this service must send a request which will be evaluated by the Ministry of Science and Innovation. The latter is responsible for deciding whether or not it will cover the cost of providing such a service.

The connection offered by RedIRIS can be set up:
- Between two RedIRIS affiliated institutions
- Between a RedIRIS affiliated institution and another institution affiliated to one of the European national academic networks that use the pan-European academic network GÉANT.
- Between a RedIRIS affiliated institution and another institution affiliated to one of the European international academic networks (outside Europe).

SECURITY

The security of the computer networks and the servers connected through these networks is one of RedIRIS's major concerns. The RedIRIS (IRIS-CERT) security team undertakes preventive measures and acts in a co-ordinated manner with the affiliated institutions in order to respond to any incidents that may arise on the network. In addition, RedIRIS provides security certificates and services to improve e-mail quality, and it advises its affiliated institutions on security-related issues in telematic networks.
More information: http://www.rediris.es/servicios/seguridad/

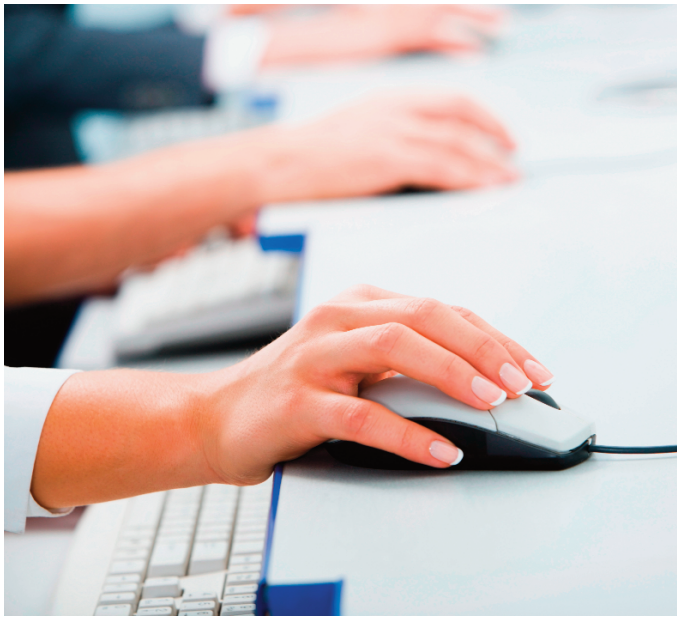
Security incident management

The aim of the RedIRIS security incident management service (IRIS-CERT) is to co-ordinate the response to IT security incidents that affect affiliated institutions' security such as denial-of-service attacks, viruses, worms, trojan horses, etc. and undertake preventive measures by giving these centres advance warning about any potential problems, offering advice and providing additional support.

IRIS-CERT also provides a coordination service for incidents that occur on a national scale and for those incidents that affect the National Grid Initiative.

E-MAIL QUALITY

RedIRIS places tools at the disposal of its affiliated institutions in order to help improve their e-mail quality. Most notable among the services on offer are the e-mail service configuration audit, the management of IP address reputation lists to help reduce spam, and a centralised anti-spam filter platform ("Washer").
More information:
www.rediris.es/servicios/calidad_correo/



Thanks to the unified anti-spam filter service, RedIRIS can deliver "clean e-mail" to institutions

Reputation lists

RedIRIS places the IRISRBL (Reputation Based/Block List) reputation service at the disposal of its affiliated institutions; this service uses the sender's IP to identify spam e-mail in order to immediately block and delete it.

The service aggregates the IP addresses identified as malicious due to their bad reputation in such a way that a simple DNS query is all it takes to get information on whether to accept the e-mail or not. The service also detects and deletes "false positives" (IP addresses that are mistakenly treated as spam and stored as malicious IPs) and adds them to the "RedIRIS White List". This White List includes the trusted IP addresses of all the e-mail servers of Spanish Internet providers, grouped in the ABUSES Forum, which RedIRIS co-ordinates.

Unified anti-spam filter service

By means of the unified anti-spam filter service, known colloquially as a "Washer", RedIRIS places a shared platform at the disposal of all the affiliated institutions that sign up for the service which adds additional filters on top of the IRISRBL reputation filter to significantly reduce both spam (which can amount to 90% of the messages received) as well as malware
in all the institutions' incoming e-mails.

In this service, affiliated institutions' e-mail is redirected to RedIRIS high-availability servers with the latest generation in anti-spam filtering software so that RedIRIS can deliver "clean e-mail" to the institutions (this is where the "Washer" name comes from).

Affiliated institutions can also customise the default filters as well as setting up local quarantine services for their account in order to give users the option of checking filtered messages before they are deleted.

DIGITAL IDENTITY

RedIRIS digital identity services simplify access of affiliated institutions' users to different online services by means of mechanisms that allow for flexible data exchange in accordance with the strictest privacy and security standards. Users need only log in once and always to their home institution in order to access the different services that accept this information. More information: http://www.rediris/servicios/identidad/

Federation of identities

With this service, users log in with their credentials to their home institution (an institution affiliated with RedIRIS and enabled as an "identity provider"). Once logged in, the data will be transmitted through the RedIRIS federation of identities service (SIR), and users can access the Internet services provided by those "service providers" integrated in this federated digital identity system that accept that identification.

For example, users recognised as such by the institutions participating in SIR, can access services such as the online portal of numerous scientific magazines, or software companies that offer free packages to university students.

Identifier registry

This service enables the institutions affiliated with RedIRIS to register unique and automatically-processable identifiers in the form of text strings (URI) or numeric strings (OID), structured in line with international standards.

Service management can be provided directly from RedIRIS, or RedIRIS can delegate management to the affiliated institutions interested in offering the service directly.

PGP Key Server

PGP ("Pretty Good Privacy") is a set of programmes whose aim is to protect information distributed through the Internet by using public-key cryptography and to facilitate document authentication through digital signatures.

RedIRIS has the only PGP key server in Spain which is synchronised with all the other PGP servers on the Internet so that they all share the same information. This PGP key server provides easy access to updated information on existing public keys needed for data encryption and validating digital signatures.

Digital certificates

This RedIRIS service offers affiliated institution users the option of obtaining certificates for their servers (web servers and other types) free of charge which they can use to set up secure communications channels. These server certificates are automatically recognised by the majority of browsers or e-mail clients on the market.

The identity service is capable of interoperating with almost any identity management mechanism an institution has in place

IRIS-SARA

The IRIS-SARA service provides universities with access to the SARA Network, the General State Administration's service providing access to the networks of the Spanish Public Administrations (General State Administration, Regional and Local Authorities) which offers over 2,000 online services, such as the @firma platform, a telematic notification service and a verification system for residence and identity details.

This service, which RedIRIS can offer thanks to an agreement between the Spanish University Rectors' Association (Conferencia de Rectores de Universidades Españolas, CRUE) and the Ministry of the Presidency, is centralised, secure, flexible and can be integrated into universities' service infrastructure without requiring any major changes to their network infrastructure.

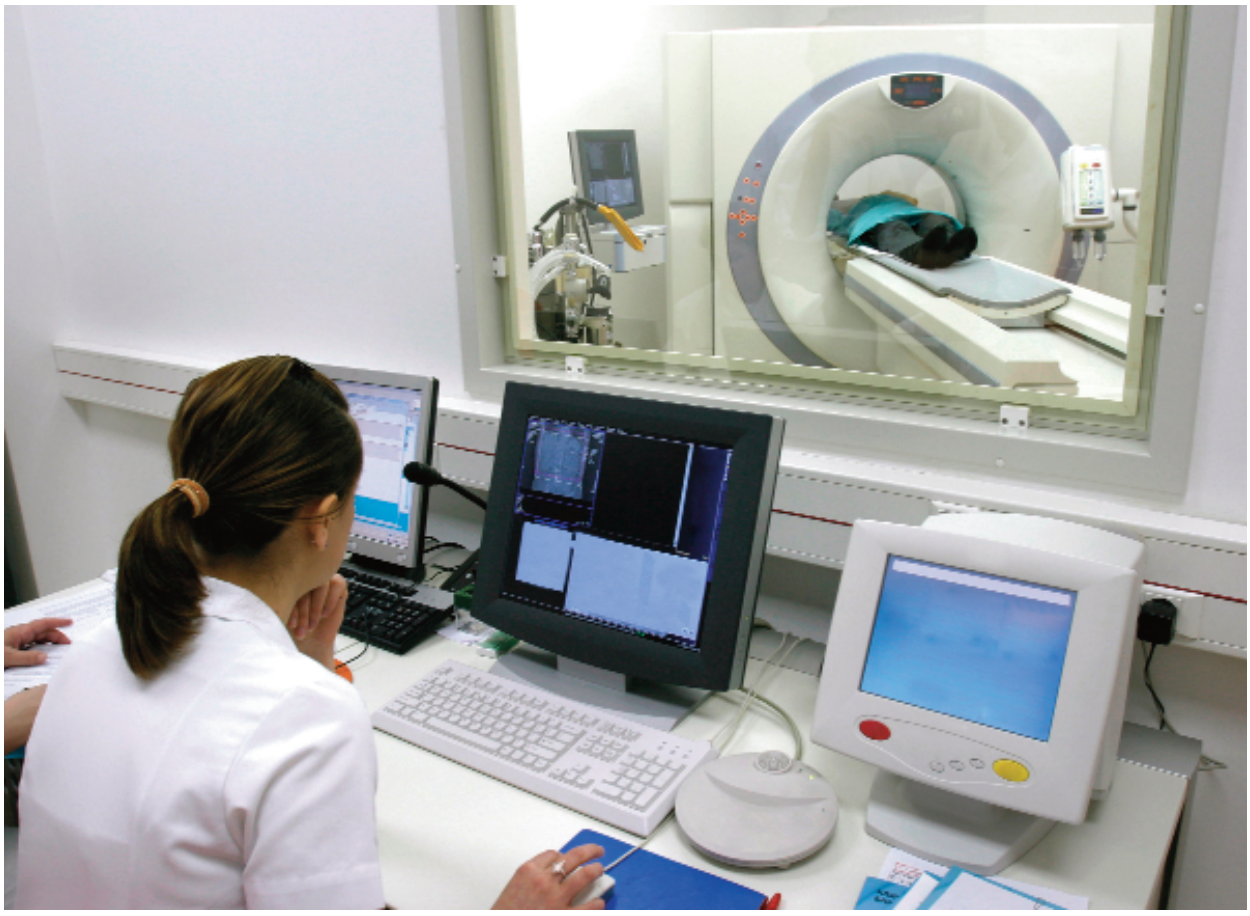
Universities who wish to access these Public Administration resources can request the service from RedIRIS subject to some minimum configuration requirements.

Identity service for e-science

RedIRIS offers its users digital certificates for secure access to e-science resources such as supercomputers or grid computing.

This e-science specific digital certificate service, known as pkIRISGrid, has been validated by EUGridPMA, the organisation that co-ordinates the certification authorities that provide services to European e-science, which means that the certificates are accepted by all organisations validated by the IGTF (International Grid Trust Federation).

With this service, RedIRIS enables the affiliated institutions that request it and fulfil the requirements to act as registration authorities and issue certificates for the personnel and devices of those bodies involved in e-science projects.



ROAMING

RedIRIS provides affiliated institutions with a roaming service so that their users can avail of a virtual work environment with Internet connection, accessing the services and resources of its home organisation from another location and, in turn, enabling them to use the services and resources of the organisation which is hosting them at that time.

More information:
www.rediris.es/servicios/movilidad/

eduroam.es

The eduroam service means users can travel from one institution to another that also has the service deployed and enjoy wireless connectivity at all times.

The main advantage that this service offers is that users can connect to the host institution's wireless network transparently, using their home organisation's login details as if they were in their own office and without having to request an account in the institution they have travelled to.

The institution must be connected to the eduroam service so that users from another institution can automatically operate on their network. This service is currently available in more than 100 institutions countrywide and in hundreds of institutions in Europe and other parts of the world.

COLLABORATION

One of the fundamental aims of RedIRIS is to promote collaboration between researchers. To this end, RedIRIS offers affiliated institutions a collaborative repository and e-mail distribution lists so that users with common interests can exchange information quickly and efficiently, while ensuring that these exchanges remain secure and confidential.

More information:

http://www.rediris.es/servicios/colaboracion/

Distribution Lists Service

The RedIRIS distribution lists are tools that promote coordination and collaboration between groups of researchers with common interests (e.g. rheumatologists or medieval history experts) by facilitating information exchange via e-mail.

Every list is managed by one or more administrators who have tools at their disposal that enable them to easily adapt the list to their user group's needs. For example, administrators can set different access policies (public lists, private lists, moderated lists, etc.), create web files of the message sent (with an in-built search function), allow messages to be sent through the website, or publish internal newsletters.

RedIRIS also provides value-added services on this platform such as: OFER-TRABEC (distribution of job vacancies, scholarships and research projects) and DISEVEN (distribution of information on academic and scientific events).

Collaborative repository

The collaborative repository is a service that enables information (including high-capacity files) to be exchanged between the research groups that collaborate through the RedIRIS distribution lists. This RedIRIS application enables users to share documents (with change management and version control), to configure permissions to access shared folders, or perform document searches, among other options.

Repository of replicas

RedIRIS has a repository of content replicas, including distributions of freeware that are relevant for the scientific community, as well as open-access documentation and information.

These copies are stored on RedIRIS FTP servers, which offer the best downloading conditions to members of the institutions connected to the RedIRIS network infrastructure, although it is also possible to access this open-access repository from anywhere on the Internet.

AutoList Service

AutoList is a service that RedIRIS is offering its affiliated institutions for creating and managing discussion and advertising distribution lists and for distributing electronic magazines.

It is a free service, similar to the RedIRIS LISTSERV list service - which has been available for over twenty years - and offers affiliated institutions the advantage of providing their own list service directly to their users and with their own domain. This opens the possibility of creating and managing email lists via LISTSERV. Institutions may also opt for this process if they already have distribution lists incorporated into their own software, as the lists can be easily transferred to the AutoList service.

Main characteristics of the service:
- Creation of email distribution lists, with the institution's own domain
- Reduction in the institution's resources by using Autolist
- Control panels available for PER, the list administrator and subscriber
- Free service for affiliated institutions, as opposed to payment solutions, with advertisements or that involve inappropriate processing of the exchanged information
- Facilities for transferring local lists
- Conversion of attachments into website links

DISSEMINATION

RedIRIS undertakes various measures aimed at disseminating information about its activity and services among members of its community.

Most noteworthy among these activities are the organisation of specialised events such as the Security of Roaming Forums, the Working Groups and, in particular, Technical Conferences that bring together over 450 representatives of its affiliated institutions on an annual basis.

RedIRIS also organises specialised training courses on issues relating to connectivity, security, roaming, e-science, or any other subject that is of interest to the community at any given time.

In addition, RedIRIS publishes a newsletter and provides information on its services through its website where, among other things, it publishes press releases with any news considered significant for its affiliates.

More information: http://www.rediris.es/servicios/difusion/

CONSULTANCY

RedIRIS offers its affiliated institutions technical support on issues relating to communications network management, device and computer network security, digital identity-related issues, handling procurement procedures, the installation and use of videoconferencing systems, or any other issue relating to the work of RedIRIS. In addition, RedIRIS offers consultancy services to adapt its services to the specific needs of research projects undertaken by members of the Spanish academic and scientific community.

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