Réseaux IP Européens

Network Coordination Centre

QUARTERLY REPORT

Issue 6
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RARE

The RARE association provides the framework for NCC operations.

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RIPE Network Coordination Centre

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Introduction

RIPE (Réseaux IP Européens) is a collaborative organisation open to all European Internet service providers. The objective of RIPE is to ensure the necessary administrative and technical coordination to allow the operation of a pan-European IP network. Much of this work is achieved through voluntary effort. RIPE does *not* operate a network of its own.

The RIPE Network Coordination Centre (RIPE NCC) is a European organisation with a charter to support RIPE. It is specifically focused on undertaking those activities which cannot be effectively performed by volunteers from the participating organisations.

The work of the RIPE NCC is divided into two areas: Core Activities and Development Projects. The former are defined in the RIPE NCC activity plan (document ripe-035) and are funded by European Internet Service Providers. The development projects are defined within RIPE and funded separately by interested organisations. Currently all development projects are run under the auspices of the RARE Technical Programme.

The RIPE NCC is located at NIKHEF in the Amsterdam Science Park. It has 3 staff members for the core activities and one staff member for the development projects. The RARE Association provides the legal and financial framework for the RIPE NCC.

This is the sixth quarterly report produced by the RIPE NCC and covers the core activities during the period July to September 1993. The development projects will be briefly mentioned as well. Again there has been a conscious effort to avoid duplication of information by including references to previous reports. As always, comments and suggestions are very welcome.

Management Summary

NCC activities have been running smoothly during the reporting period while we continue to provide a high level of service. The European part of the Internet as counted by the RIPE hostcount has grown by 16%.

Registry

Analysis shows that the Internet Registry function of the NCC uses an increasing amount of resources which is expected to exceed 1 FTE by early next year. This is a somewhat unexpected development due to an increasing number of requests for significant amounts of address space. It is important that the NCC be involved in the handling of these requests in order to ensure fair allocations across Europe.

Since routine registry activities have a high priority, it can be expected that other NCC activities will suffer if personnel resources cannot be extended by mid 1994. Currently there is no provision for that in the 1994 budget, so this would need to be covered by additional income.

Population of the RIPE Routing Registry has improved further to a point where the amount of registered information is sufficient to be useful for prototype tools such as prtraceroute.

Database

New database software has been deployed at the NCC, shortening update times to a few minutes and significantly reducing NCC staff resources needed for database updates. This new software is also more easily configurable and can be adapted for use at local registries.

Due to delays which are almost exclusively beyond our control there is still little progress in the area of automatic database alignment with the InterNIC.

Information Services

The GOPHER service has been significantly enhanced and a new WWW service introduced.

Joint Projects

The GISD and Route Server projects have been concluded successfully and the final reports are published as RIPE documents. A new project “Policy-based Routing Implementation and Deployment in Europe” has just started.

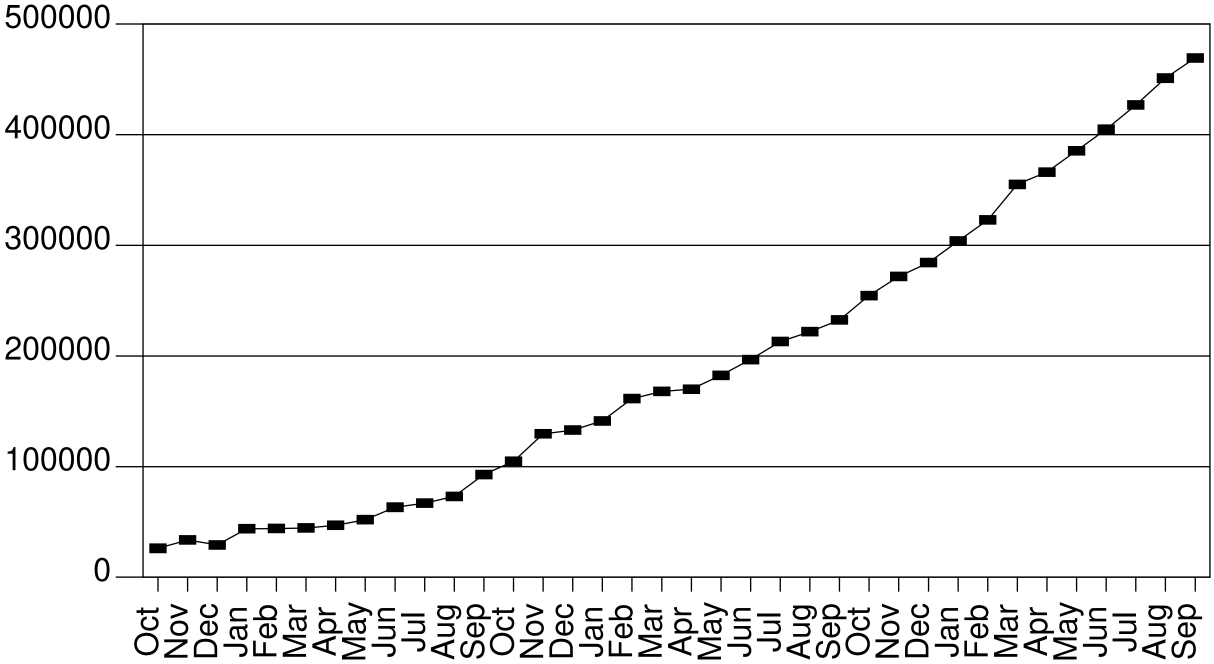
RIPE NCC Core Services

DNS Coordination

DNS Hostcount

Nothing has changed to the hostcount procedure. The September 1993 hostcount shows a total of over 469000 hosts in Europe. During the reporting period more than 65,000 were added during the reporting period, which represents an approximately 16% increase.

RIPE DNS Hostcount History 1990-1993



In the hostcount, any machine that appears in the Domain Name System with an A record is counted as a host. Hosts with more than one A record are counted once, and hosts with the same A record, but different domain names inside the same top level domain are also counted just once.

All DNS output, not just the A records, are saved and are available in the RIPE document store, two files for each country: the standard output, and the error messages. Please check the README file for more details

`ftp.ripe.net:ripe/hostcount/README`

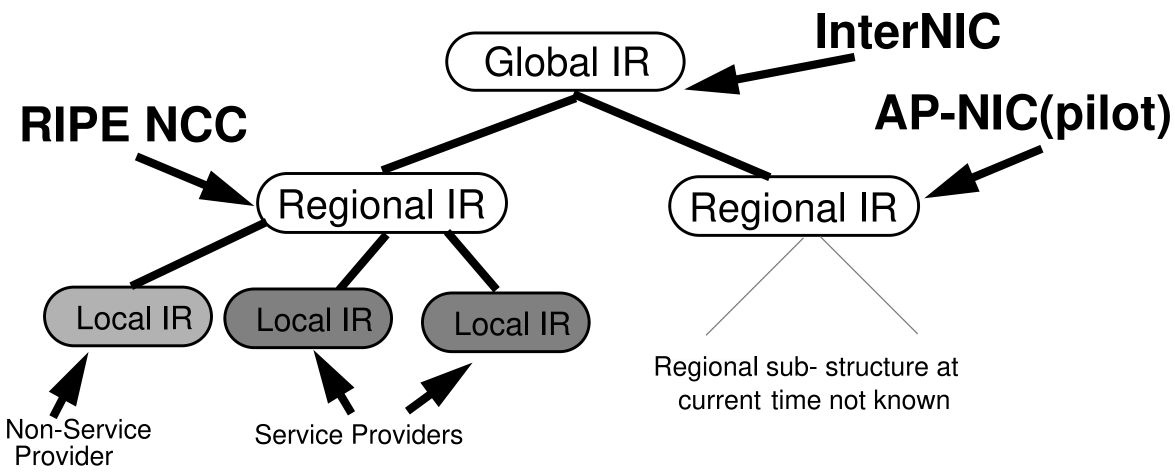
Hostcount History

1990	Oct	26141
	Nov	33665
	Dec	29226
1991	Jan	43799
	Feb	44000
	Mar	44506
	Apr	46948
	May	52000
	Jun	63267
	Jul	67000
	Aug	73069
	Sep	92834
	Oct	104828
	Nov	129652
	Dec	133000
1992	Jan	141308
	Feb	161431
	Mar	167931
	Apr	170000
	May	182528
	Jun	196758
	Jul	213017
	Aug	221951
	Sep	232522
	Oct	254585
	Nov	271795
	Dec	284374
1993	Jan	303828
	Feb	322902
	Mar	355140
	Apr	366164
	May	385522
	Jun	404930
	Jul	426827
	Aug	451116
	Sep	469356

Internet Registry

Delegated Internet Registry (IR)

The RIPE NCC has been the regional registry for Europe since August 1992. It coordinates the processing of all forms of IP network number requests. Following the success of the NCC operation in Europe, an Asian-Pacific NIC (AP-NIC) has started as a pilot project coordinating IP requests for Asia. Following this the diagram depicting the hierarchy of IP network number allocations can be redrawn as shown below.



Local Registries

There are now a total of 22 local non-provider IR's. New since the last quarterly report is Portugal. Coverage in Europe is progressing extremely well and the RIPE NCC is grateful to all those who perform this valuable service to the community.

As before the number of local registries continues to increase. There are now 75 local registries allocating class C network numbers in Europe. Organisations wishing to become local registries must first confirm that they have read and understood "RIPE NCC Internet Numbers Registration Procedures" (Current doc ID: ripe -072).

Internet Registry Workshop

The NCC organised a half-day informal workshop for local Internet registries in conjunction with the 16th RIPE meeting. With 29 participants the workshop was quite well attended. Registry procedures and experiences were discussed in general as well as using example cases. The participants were very positive about the informal information exchange. Consequently the RIPE local-IR WG asked the NCC to organise such a workshop once a year in conjunction with a RIPE meeting.

Common Template

The European IP network number template expired at the end of September. A revised document was sent out which included a new important text in the Additional notes section “Organisations requesting additional address space”.

Address Space Policy 194.x.y.0

In September 1993, the RIPE NCC has been delegated the 194.x.y block of class C addresses. This was necessary because there are currently no big blocks of contiguous address space unassigned in block 193. This does not mean that block 193 is exhausted! In fact of the 65536 network numbers in that block there are currently 18463 assigned which represents about 28%. The lack of contiguous address space is caused by the many reservations in that block. These are due to the effort to maximise the effect of CIDR aggregation.

Meanwhile the expected use of CIDR for these addresses is much different from what was expected earlier. In particular we do not expect to be able to aggregate networks with different routing policies for quite some time to come, if at all. This means that the reservation policy can be much more conservative than earlier guidelines suggest. The NCC will propose such new guidelines in the next quarter.

Reverse Name Lookup for 193... and 194...Networks

The number of service providers providing reverse lookup name service for the address space delegated to them is increasing. Currently 86 of the associated in-addr.arpa zone are delegated. The same service is also available for the new 194... block.

NCC Workload and Performance

The number of requests that the NCC receives on a daily basis has stabilised for the moment. The nature of requests has changed significantly however. The NCC is receiving much less simple requests that only need to be forwarded to other registries or need small amounts of address space to be allocated. Instead the number of requests for significant amounts of address space (>32 class C numbers) has increased. Still all requests can be dealt with (in terms of forwarding, allocating or requesting further information) the same day. However an increasing number of requests need further information and multiple interactions with the requestor and other registries. This means that more resources are now needed to deal with registry related activities than during the previous reporting period.

This trend is a consequence of the European Internet Registry system's better visibility and the RIPE recommendation to involve the NCC in assignments of significant amounts of address space. This involvement is necessary to ensure fairness of allocations across Europe and to support the local registries in these more difficult cases.

The NCC registry receives 11 mail messages and sends about the same amount on an average working day. Assuming an average 20 minutes to deal with each message, answering the mail alone takes more than 1/2 FTE. On busy days just processing routine requests can take much more time as it often involves evaluating extensive technical information, referring to earlier correspondance and registry records, coordination with local registries and phone calls.

In the future we do not expect the number of requests to be stable but to increase again. Besides the day-to-day operations the registry activity also needs to adapt to change: more registries come on-line and need support; procedures need to be adapted; general coordination between registries also needs resources. Considering all this we expect the resources necessary for the registry function will exceed one FTE by early next year.

Address Space Usage 193.x.y.0 and 194.x.y.0

During the reporting period, the NCC assigned a total of 18 class B network numbers (12 of which were referred via local registries), delegated 19 blocks of class C network numbers and have reserved 5 blocks of class C network numbers. The assignment and reservation of class C blocks was done in accordance with the CIDR scheme to allow route aggregation in the future. It should be noted that blocks are reserved based on usage estimates given by the local registries for a period of about 24 months. Should the assignment rate differ from the estimated one, reserved blocks can and will be used for other purposes.

During the reporting period the European registries have assigned a total of 4591 class C networks.

The detailed status of the address space delegated to the RIPE NCC can be found in Appendix B and C for class B and class C network numbers respectively.

RIPE Network Management Database

New Database Software

As announced in the pervious quarterly report, during this quarter the NCC has implemented and deployed new software to maintain the RIPE database. The reasoning behind a new implementation of the software was that the manpower involved in processing database updates was consistently increasing. At the same time new functionality was needed for the routing registry. Improvements in update response times -although not absolutely needed- were welcome too.

The new software was designed with the following aspects in mind:

- decrease manpower needed
- lower turn-around times
- strengthen syntax checking
- allow easy extension
- provision for guarded attributes

The new software was completed and tested in August and September. The most important new features are:

- on the fly updates, i.e. updates are immediately visible in whois
- turn around times of minutes instead of a day
- completely written in Perl
- strong syntax checking
- guarded attributes provision

The software has been taken into production early September, and so far no major failures have been found. There are some slight changes in the way updates should be sent to the RIPE NCC:

- `ripe-dbm@ripe.net` becomes **`auto-dbm@ripe.net`**
- `assign@ripe.net` becomes **`auto-assign@ripe.net`**

For normal updates and assignments please use the new mailboxes. Updates sent here will be processed immediately without intervention by NCC staff. Except for mail system delays the turnaround time should be significantly less than 5 minutes.

An interim implementation of guarded *objects* has been done.The guarded objects are the Autonomous System, the Boundary Gateway, Routing Privilege, and Community. The boundary gateway and routing privilege will disappear as soon as ripe-081 takes full effect. These objects can *not* be changed through the automatic update procedure, but should still be sent to <ripedbm@ripe.net>, and will be processed after authorization by the NCC.

We have put out the current software as used at the NCC as a beta release to several sites. Due to time constraints on NCC staff, an official release should not be expected until November. Please contact the NCC for the beta software.

We are open to suggestions about the new software, especially on the syntax-checking. We realize that in some areas we have implemented fairly strict syntax rules, in some cases very strict. This has been necessary because there is no human plausibility checking involved any more. Questions about error and or warning messages should be send to <ripe-dbm@ripe.net>.

Database updates

During the reporting period the NCC has processed 58189 object updates, an average of almost 1000 per working day. This amount of represents a significant increase over last quarter's. This is only partly due to installation and testing of the new database software. It shows that most Internet service providers take the maintenance of RIPE database information seriously. Almost all these updates are now being processed without intervention by NCC staff.

The updates consist of additions and changes as well as so called "NOOPS". NOOPS are updates received which do not differ from the information already recorded in the database. The NCC accepts such requests because it makes bulk updates from secondary NICs easier: secondary NICs can just send in their whole database without having to select just the records which changed since the last bulk update was sent to the NCC.

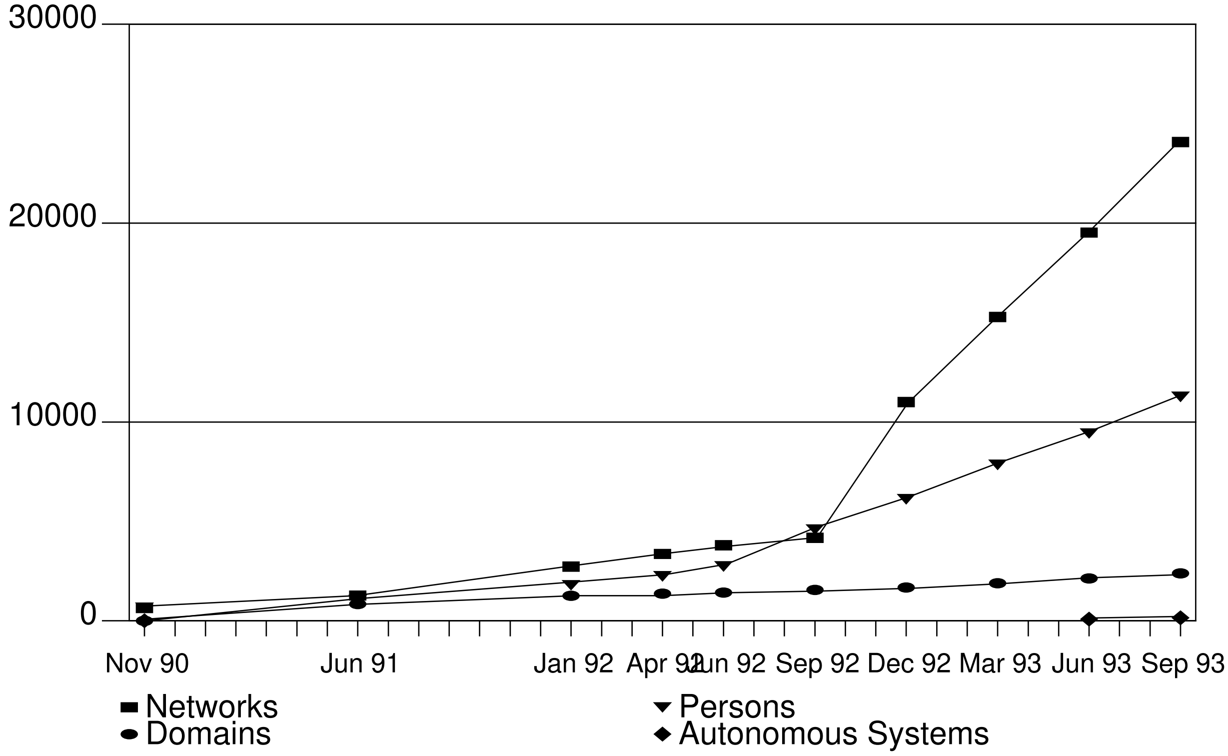
Database Action	Q1 1993 (number)	Q1 1993 (perc)	Q2 1993 (number)	Q2 1993 (perc)	Q3 1993 (number)	Q3 1993 (perc)
Updated	18586	66%	12840	46%	35021	60%
Added	3885	20%	4578	38%	5992	30%
NOOP	5467	14%	10692	16%	17246	10%
TOTAL	27938		28110		58189	

NOTE: Update statistics for September 1993 are not 100% exact due to the change of database software.

Database Statistics

Again the number of networks in the database has increased significantly due to the large number of newly assigned class C network numbers (see the table overleaf).

RIPE Database Objects



Month	Nets	Persons	Domains	Autonomous Systems
Nov 90	643	670	0	
Jun 91	1270	1053	845	
Jan 92	2728	1792	1254	
Apr 92	3365	2242	1360	
Jun 92	3797	2736	1422	
Sep 92	4172	4594	1549	
Dec 92	11080	6116	1680	
Mar 93	15281	7846	1894	
Jun 93	19523	9423	2134	85
Sep 93	24077	11267	2382	153

Database Coverage

The following table shows the database coverage as compared against previous quarters. Significantly there have been more reductions in coverage than increases in coverage over the quarter. Coverage is particularly low in Finland and in Denmark. Any effort to attack this problem requires a high level of resources which need to be applied constantly. These resources are currently not available due to other activities. In our view this is an important area where additional resources are needed and could have significant impact and this is one area where effort applied by the local registries (where resources permit) could have an impact. The importance of this becomes even more pronounced as the database slowly assumes its additional function as European Routing Registry.

Country	Nets in DNS Q3 1993	Nets in DB Q3 1993	Perc. Q3 1993	Perc. Q2 1993	Perc. Q1 1993	Perc. Q4 1992	Perc. Q3 1992
BG	2	2	100	100	100	0	0
CY	3	3	100	100	100	0	0
LI	1	1	100	50	0	0	0
LV	1	1	100	100	100	0	0
PL	26	26	100	97	92	100	90
RO	3	3	100	100	100	0	0
SK	14	14	100	100	0	0	0
HU	33	32	97	96	100	100	100
CZ	51	49	96	97	0	0	0
FR	657	612	93	94	91	94	95
AT	126	116	92	94	89	82	63
ES	37	34	92	92	87	95	88
CH	152	136	89	92	87	85	93
DE	574	512	89	89	87	83	80
EE	29	26	89	58	0	0	0
UA	9	8	89	100	0	0	0
IL	62	54	87	87	75	76	71
NL	165	143	86	88	86	86	80
UK	475	399	84	84	70	70	67
PT	89	74	83	84	86	86	80
IS	32	26	81	75	84	83	50
BE	30	24	80	95	82	100	100
GR	20	16	80	80	73	75	66
HR	5	4	80	80	83	0	0
IE	50	40	80	81	82	86	90
LU	10	8	80	70	50	60	50
TR	10	8	80	71	0	0	0
IT	218	174	79	83	81	81	82
NO	111	87	78	76	76	70	58
SE	243	180	74	74	70	59	49
SI	15	10	67	63	75	100	0
YU	2	1	50	50	50	50	100
FI	333	158	47	45	44	39	6
DK	34	12	35	33	35	39	40
SU	66	1	1	3	16	0	0
CS	45	0	0	0	27	100	100
TN	0	0	0	50	100	100	100

Document Store

Gopher Reorganisation

A new gopher server has been installed at the RIPE NCC and the structure of the gopher data has been improved. The server can be accessed in the same way as the old server at:

❍ gopher gopher.ripe.net

The top level menu is shown below:

```
     Root gopher server: gopher.ripe.net

--> 1.  How this Gopher server is organised.
    2.  RIPE Gopher Information Server/
    3.  InterNIC Gopher Server/
    4.  Info on European Networks & Organisations/
    5.  Related Internet Documents/
    6.  ISO country code information/
    7.  Keyword Searches from menu of documents/

      Press ? for Help, q to Quit, u to go up a menu
```

As a general design principle, the most relevant areas of interest were kept as close to the top level menu as possible. Thus the description of how the server is organised is the first entry in the menu and the second entry takes the user to a sub-menu of all RIPE specific information. This menu is shown overleaf.

Links to the RFC, FYI, IETF, IESG and separately to the InterNIC gopher server were also felt to be important and useful reference sources for the RIPE community

.

```
      RIPE Gopher Information Server

--> 1.  What is RIPE?.
    2.  Information about the next RIPE meeting/
    3.  Previous RIPE meeting docs/
    4.  RIPE Working Group documents (to be implemented)/
    5.  Number listing of RIPE series of documents/
    6.  Draft RIPE documents/
    7.  Archived RIPE documents/
    8.  European Hostcount Statistics/
    9.  Network Management Database/
    10. RIPE European templates & forms/
    11. Fun and Games/
    12. Presentations/

      Press ? for Help, q to Quit, u to go up a menu
```

Please try it! As always we are happy to receive comments and suggestions for improvement. In fact since this report was written the gopher server has been rewritten to include links to new directories.s

Operational WWW server

The RIPE NCC now has WWW server in operation. The document URL for the RIPE NCC home page is http://www.ripe.net/ripe/default.html. The server can be accessed at:

- www.ripe.net

The server has been reorganised to offer access to useful documents and information specific to the RIPE community. The home page is shown below:

```
                 WELCOME TO THE RIPE NCC
Welcome to the RIPE Network Coordination Centre.If you are
not familiar with us, we can be briefly explained as pro-
viding a support service to Internet Service Providers in
Europe.

What's on offer ?

 About RIPE[1] and the RIPE NCC[2]
 Next RIPE meeting, IETF and other meetings, news etc[3]
 The RIPE document store[4](FTP)
 Search[5] RIPE Network Management Database
 Access Gopher at the RIPE NCC[6]
 Quick Access[7] to all RIPE Documents (ASCII only)
 Projects[8] at the RIPE NCC
 Pictures[9] of the RIPE NCC Staff
 Click here[10] for related WWW/Gopher servers

For general queries, comments please don't hesitate to
contact us at  ncc@ripe.net[11]

    1-11, Up, <RETURN> for more, Quit, or Help:
```

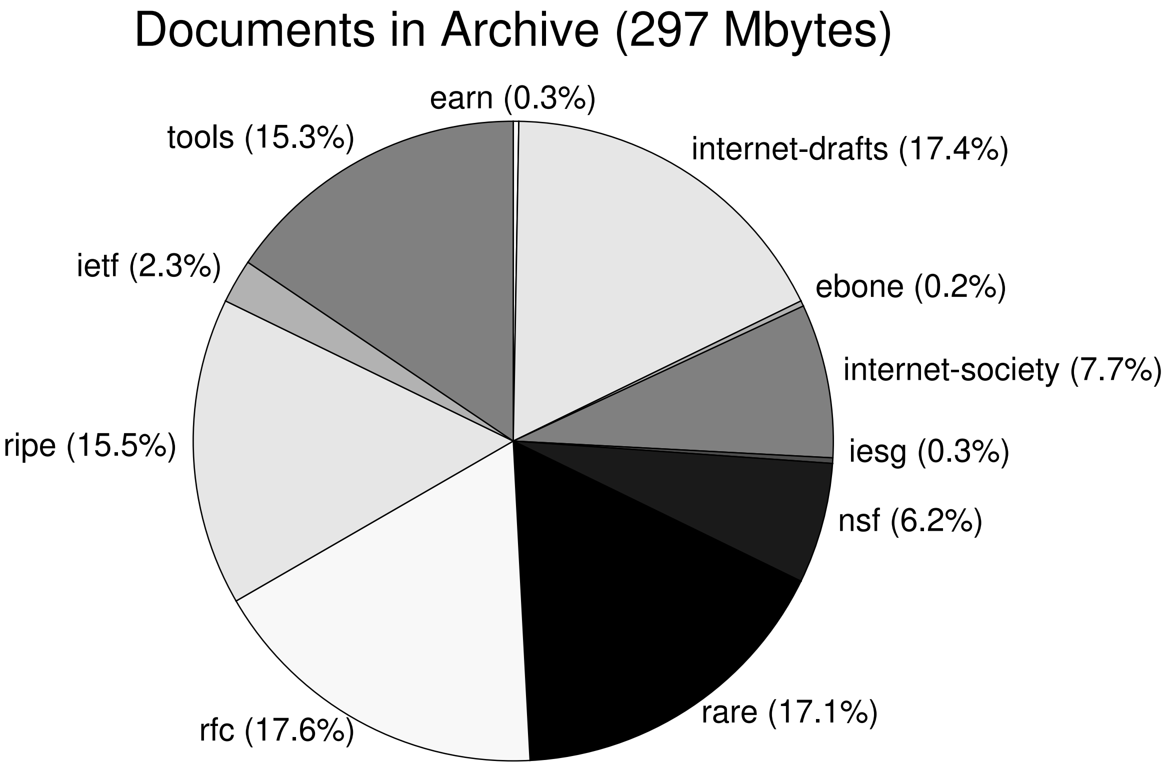
Users of graphical WWW clients such as the NCSA Xmosaic browser will be able to access some of the more "fun" parts of the server - like the voices and pictures of some of the NCC staff (the more beautiful ones are still to be added however).

From the HOME page of the RIPE NCC WWW server you can directly access information relating to RIPE and other related network information. For example, [7] gives you direct access to all the ascii versions of the RIPE documents; [3] will take you to a sub-menu with links to information about forthcoming IETF meetings; RIPE meeting information and the RARE compiled list of network related meetings and conferences. [5] is a WAIS search of the RIPE Network Management database and [8] takes you to information about the joint RARE/RIPE development projects being carried out at the NCC.

Again, please try it! We are happy to receive comments and suggestions to improve the service as this is part of an ongoing reorganisation of the RIPE document store.

Document Store Statistics

In total the document store contains approximately 6174 documents. By volume, it accounts for over 297 Megabytes.



Area	Files	Kbytes
earn	15	804
ebone	39	534
iesg	69	971
ietf	920	6882
internet-drafts	805	51280
internet-society	1019	22590
nsf	157	18321
rare	1006	50145
rfc	911	51842
ripe	750	45661
tools	404	45015
Total	6174	297502

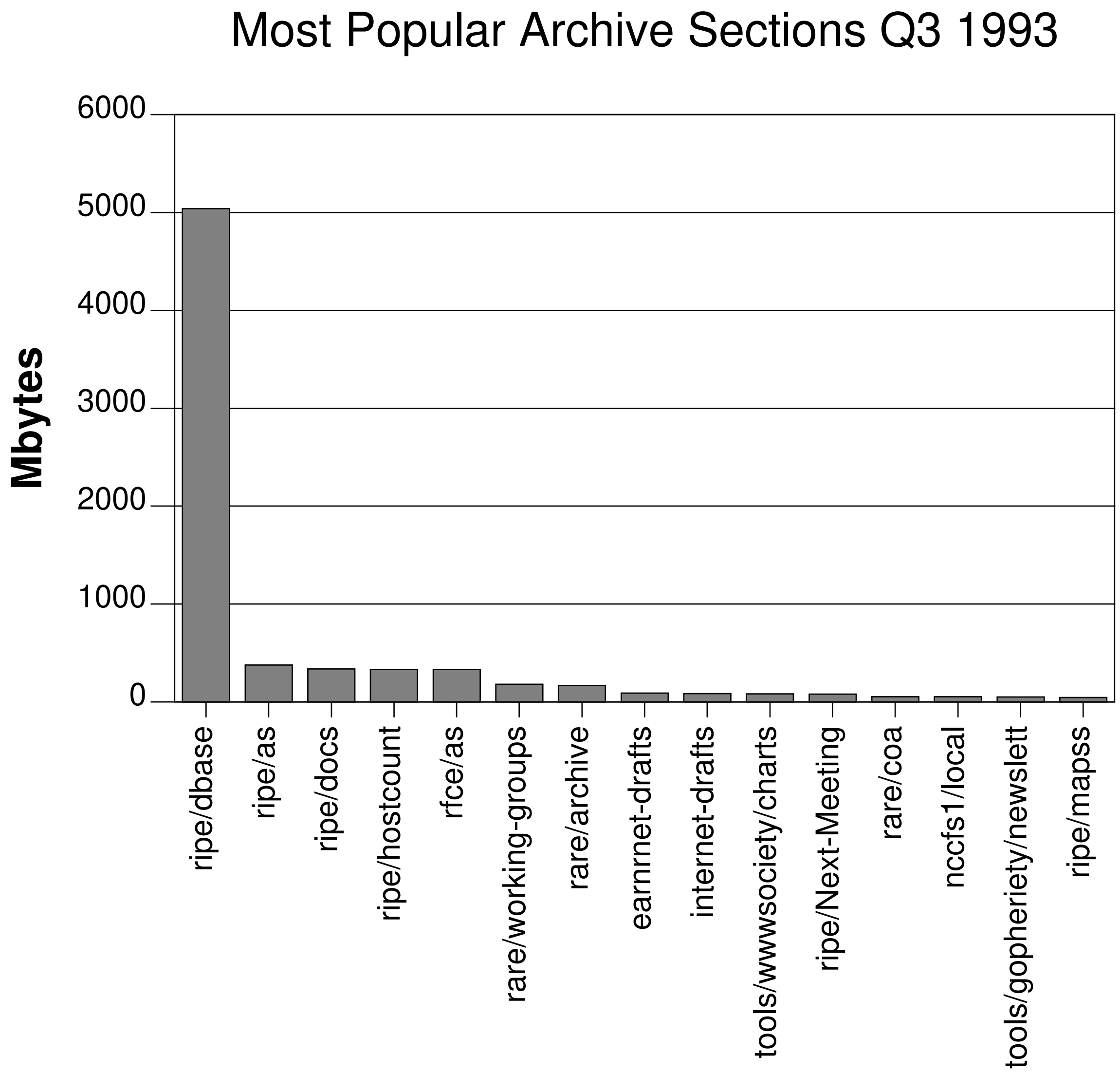
RIPE documents

The following documents were added to the document store during the reporting period:

- ripe-089 Delegated Internet Registry - Leaflet
- ripe-090 RIPE NCC Quarterly Report, Issue 5, June 1993
- ripe-091 European Autonomous System Number Application Form and Supporting Notes
- ripe-092 The First Year of the RIPE NCC Report
- ripe-093 Implementation of a Route Server for Policy Based Routing across the GIX Project - Final Report
- ripe-094 Generic Internet Service Specification (GISS) Project Final Report

FTP Usage Statistics

The most popular archive sections of the RIPE document store are tabulated below. This displays the top 15 most popular sections which were accessed using ftp.The most popular section is the ripe database, with approximately 5000 Megabytes transferred.



The number of Megabytes transferred using ftp per top level domain is shown below:

Archive Section	Files Sent	KBytes Sent	% of Files Sent	% of Bytes Sent
ripe/dbase	6173	5039473	6.61	65.83
ripe/as	54437	376203	58.31	4.91
ripe/docs	5612	337383	6.01	4.41
ripe/hostcount	2701	332103	2.89	4.34
rfc	5664	331239	6.07	4.33
rare/working-groups	2699	180818	2.89	2.36
rare/archive	2655	168761	2.84	2.20
earn	383	90537	0.41	1.18
internet-drafts	1824	85852	1.95	1.12
tools/www	429	83208	0.46	1.09
ripe/Next-Meeting	373	80714	0.40	1.05
rare/coa	579	54379	0.62	0.71
tools/gopher	2789	50333	2.99	0.66
ripe/maps	794	46632	0.85	0.61

Domain Name	Files Sent	Bytes Sent	% of Files Sent	% of Bytes Sent
UNKNOWN	998	185191873	1.07	2.42
at	664	338828138	0.71	4.43
au	101	10700540	0.11	0.14
be	1119	57416280	1.20	0.75
br	7	422305	0.01	0.01
ca	82	6992747	0.09	0.09
ch	3425	496728858	3.67	6.49
cl	1	163616	0.00	0.00
com	438	36207742	0.47	0.47
cr	5	270956	0.01	0.00
cs	16	1000719	0.02	0.01
cz	966	59208722	1.03	0.77
de	1637	318535514	1.75	4.16
dk	32	1485115	0.03	0.02
edu	666	140341146	0.71	1.83
ee	21	4126745	0.02	0.05
es	934	85127116	1.00	1.11
fi	5734	372609193	6.14	4.87
fr	828	153394672	0.89	2.00
gb	1	61239	0.00	0.00
gov	133	18673466	0.14	0.24
gr	1834	68879532	1.96	0.90
hk	3	2124945	0.00	0.03
hr	11	246004	0.01	0.00

Domain Name	Files Sent	Bytes Sent	% of Files Sent	% of Bytes Sent
hu	605	47817088	0.65	0.62
ie	190	17594556	0.20	0.23
il	943	407657494	1.01	5.33
in	2	3748	0.00	0.00
int	2	505569	0.00	0.01
is	5	1205722	0.01	0.02
it	4793	854877586	5.13	11.17
jp	17936	979659916	19.21	12.80
kr	2063	88350541	2.21	1.15
lu	9	261827	0.01	0.00
mil	36	1958049	0.04	0.03
net	29523	2038538150	31.63	26.63
nl	1621	150928171	1.74	1.97
no	200	36485209	0.21	0.48
org	147	18223986	0.16	0.24
pl	530	35827958	0.57	0.47
pt	548	29487498	0.59	0.39
ro	1	46283	0.00	0.00
se	13466	514597543	14.42	6.72
sg	6	127126	0.01	0.00
si	79	2513916	0.08	0.03
sk	162	10976373	0.17	0.14
su	19	891473	0.02	0.01
tr	22	1218628	0.02	0.02
tw	19	4220215	0.02	0.06
ua	40	590637	0.04	0.01
uk	702	49222605	0.75	0.64
us	19	1205389	0.02	0.02
ve	9	1459001	0.01	0.02

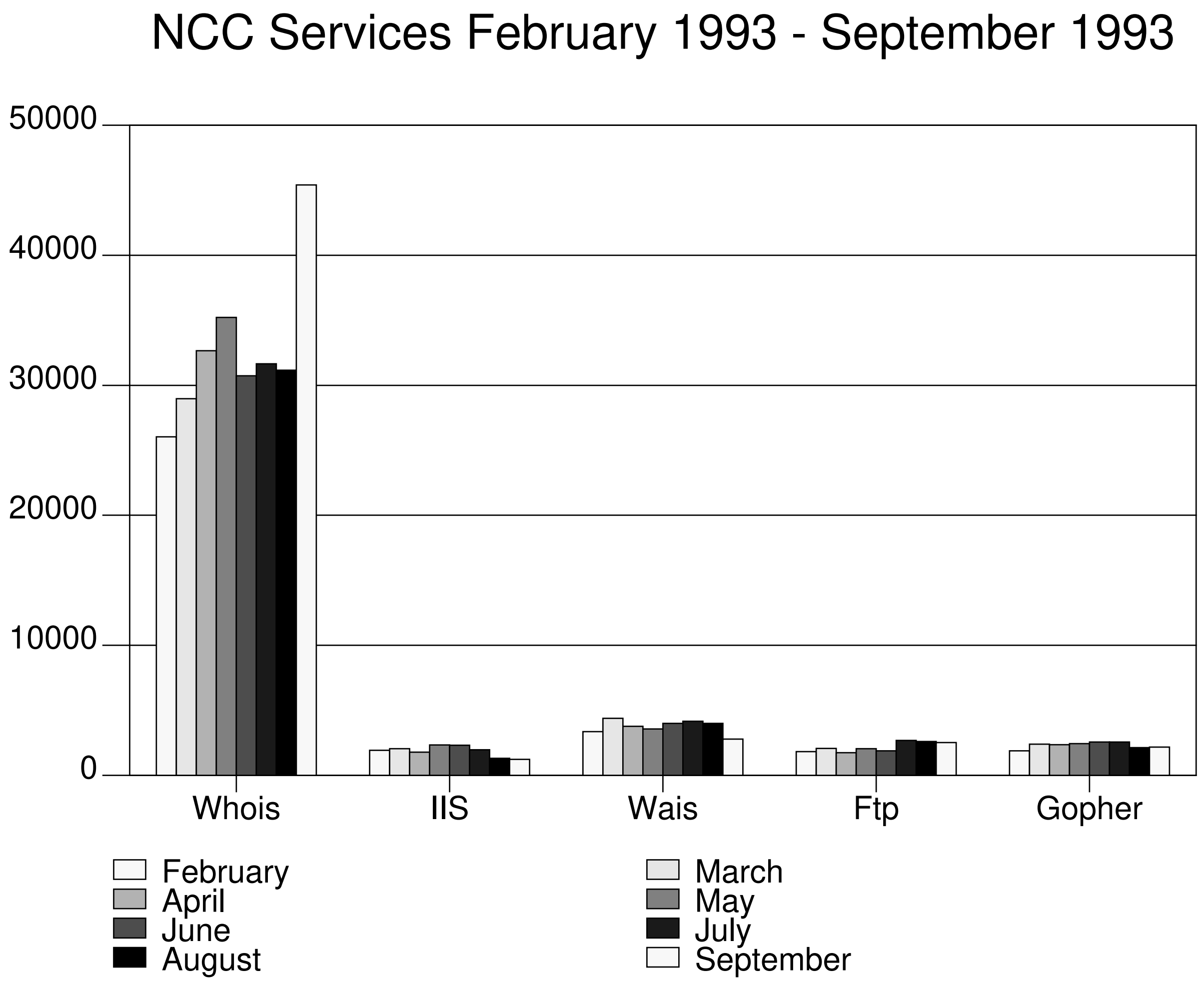
These statistics show clearly that the RIPE document store is a very focused resource being used by the right community. It is also evident that it is regarded as an important source for European information worldwide rather than only locally.

Interactive Information Server

The NCC Interactive Information Server is a popular method of access to the RIPE document store catering for users with minimal hardware and/or software support to access information stored by the NCC. Full details on access methods are given in the RIPE NCC information leaflet “Interactive Information Server” and in the first edition of the NCC Quarterly Report.

General Service Usage Statistics

Statistics for the use of the various NCC information services were collected for the third quarter of 1993. The table below shows the total number of connections made for each service from July 1992 (Whois, IIS, Wais, Ftp and Gopher) contacted either directly from a user client or from the NCC Interactive Information Service. The breakdown is given as total number of connections per month:



The provisional access from the EuropaNet (formerly IXI) network has been used 1234 times during the reporting period, which is approximately 20 times per working day on average. The figure for this quarter is down on the previous quarter (51) because the X.25 access to the IIS was out of service for 2/3 of the reporting period due to X.29 software problems. The resolution of these problems had low priority since the X.25 access is provided on a resources available basis.

Service	1992 Jul	Aug	Sep	Oct	Nov	Dec	1993 Jan	Feb
Whois	7909	7845	8044	12373	9769	19255	24299	26027
IIS	669	591	628	1027	1018	1148	1662	1924
Wais	1040	682	816	2552	2460	2240	2316	3359
FTP	849	645	625	1173	1344	1757	1443	1816
Gopher	371	337	340	1115	1318	1156	1310	1882

Service	1993 Mar	Apr	May	Jun	Jul	Aug	Sep
Whois	28961	32660	35215	30721	31655	31150	45410
IIS	2040	1785	2326	2313	1978	1311	1236
Wais	4375	3764	3564	3994	4162	3996	2776
FTP	2067	1735	2038	1891	2693	2610	2521
Gopher	2394	2345	2439	2559	2563	2120	2178

The number of connections to the various servers at the NCC broken down by the source of the request is shown in the table below.

Top Level	Whois	IIS	Wais	Ftp	Total	
IIS	9233	0	8658	0	17891	IIS
IXI	29	1205	0	0	1234	IXI
LOCAL	2282	95	20	458	2855	LOCAL
NCC-X25	0	23	0	0	23	NCC-X25
PSPDN	0	1	0	0	1	PSPDN
UNKNOWN	1260	481	108	437	2286	UNKNOWN
arpa	1	0	0	0	1	arpa
at	676	129	47	196	1048	at
au	34	14	18	110	176	au
be	1042	34	0	75	1151	be
bg	3	0	0	0	3	bg
br	9	7	0	6	22	br
ca	138	37	14	88	277	ca
ch	808	98	72	403	1381	ch
cl	3	2	0	1	6	cl
com	199	110	536	248	1093	com
cr	2	0	0	2	4	cr
cs	153	32	0	3	188	cs
cz	534	92	0	170	796	cz
de	7079	191	49	641	7960	de
dk	229	17	0	25	271	dk
ec	1	0	0	0	1	ec
edu	7726	273	628	594	9221	edu
ee	53	42	0	9	104	ee
es	297	83	8	89	477	es
fi	628	49	513	120	1310	fi
fr	4428	68	28	603	5127	fr
gb	0	0	0	1	1	gb

Top Level	Whois	IIS	Wais	Ftp	Total	
gov	252	29	14	86	381	gov
gr	422	39	2	228	691	gr
hk	0	0	0	2	2	hk
hr	6	24	2	2	34	hr
hu	296	130	1	160	587	hu
ie	693	30	0	170	893	ie
il	10	17	0	165	192	il
in	0	1	0	3	4	in
int	0	1	0	1	2	int
is	149	3	0	8	160	is
it	1239	132	27	368	1766	it
jp	56	11	11	94	172	jp
kr	6	5	1	151	163	kr
lu	122	18	0	14	154	lu
lv	0	1	0	0	1	lv
mil	28	25	2	10	65	mil
mx	0	1	3	0	4	mx
my	1	0	0	0	1	my
net	6549	130	18	645	7342	net
nl	4746	362	59	639	5806	nl
no	1890	84	13	99	2086	no
nz	2	2	0	0	4	nz
org	1665	26	33	31	1755	org
pl	681	84	0	75	840	pl
pr	2	1	0	0	3	pr
pt	346	18	3	74	441	pt
ro	0	18	0	3	21	ro
se	368	37	39	227	671	se
sg	1	1	0	6	8	sg
si	98	20	0	18	136	si
sk	103	14	3	14	134	sk
su	108	16	0	16	140	su
tr	51	27	0	11	89	tr
tw	2	1	0	6	9	tw
ua	262	5	0	3	270	ua
uk	872	123	24	217	1236	uk
us	49676	3	0	8	49687	us
ve	0	0	0	11	11	ve
yu	0	0	1	0	1	yu
za	6	3	4	0	13	za
Total	107555	4525	10959	7844	130883	

Publications

Journals/Newsletters

Articles about and relating to the RIPE NCC were published in the following:

- Internet Monthly Report, August 1993
- Internet Society News “RIPE NCC - Coordinating European Internetworking”, Summer 1993, vol. 2, no. 2

RIPE NCC Information Leaflets

As previously reported, the RIPE NCC has produced a series of information leaflets which comprise the following:

- Interactive Information Server
- Network Management Database
- Delegated Internet Registry

You can obtain copies of these leaflets by sending email to `ncc@ripe.net` stating how many copies you would like to receive.

Presentations

Over the reporting period the following external presentations were delivered by the RIPE NCC:

- IETF, July 12-18, Amsterdam, Netherlands, Daniel Karrenberg:
  “The European Routing Registry”,
  plenary presentation
- INET’93, San Francisco, Tony Bates:
  “Technical Implementation of the RIPE Route Server”,
  published in proceedings
- CCIRN/IEPG, San Francisco, Daniel Karrenberg:
  “New developments in the European Internet and at the RIPE NCC”
- German EUnet Workshop, Dortmund, Daniel Karrenberg:
  “Internet in Europa, Bemerkenswertes aus der Sicht eines Beteiligten"

Again the RIPE NCC encourages organisations who feel they would benefit from a presentation by the RIPE NCC to contact them.

RIPE Support Activities

RIPE meetings - minutes

The proposal to improve minute taking at RIPE meetings was outlined in the previous quarterly report (doc ID: ripe-090). The deadline for submitting summaries of presentations or working group reports was one week after the meeting. The level of cooperation from both speakers and working group chairs was very high and this enabled the minutes to be circulated in just over two weeks after the meeting. Thanks to all those who contributed to this success.

In the same proposal, speakers at RIPE meetings were invited to store their presentations in the RIPE document store. The response to this invitation was good and the following presentations were added after the 16th RIPE meeting in Amsterdam.

- ripe-m16-dfk-NCC-REPORT.ps.Z
- ripe-m16-ejb-DANTE.ps.Z
- ripe-m16-hd-DANTE.txt
- ripe-m16-marten-DBDETAILS.ps.Z
- ripe-m16-marten-DBPLEN.ps.Z
- ripe-m16-pwj-JIPS.txt
- ripe-m16-tony-GISSREP.ps.Z
- ripe-m16-tony-PRIDE.ps.Z
- ripe-m16-tony-RRSTATS.ps.Z
- ripe-m16-tony-RSREP.ps.Z

NCC Funding

During the reporting period the NCC has also supported the RIPE chair and the RARE treasurer in their efforts to collect funding for the NCC. Specifically the NCC has contacted all potential contributors which had not yet made a formal commitment. As a result further funding was secured. from commercial service providers. This support has hence been taken over by the RARE secretariat.

Referrals and End-User Enquiries

It follows that as the RIPE NCC receives more general exposure, so the number of end-user enquiries received will increase. This has indeed been the case, where Increasingly the RIPE NCC receives requests for general information concerning the it's activities. The number of queries relating to how to obtain IP numbers or how to register domain names has remained constant.

Joint Projects

The joint development projects described here are not part of the NCC core activities funded out of the NCC budget. These projects are separate activities funded exclusively by interested parties through RARE.

The co-location of project staff at the NCC and common management of the projects and NCC core activities has been very beneficial to both the NCC and the projects. While striving to maximise the synergetic effects, NCC management takes great care to clearly divide NCC and project resources.

Both the Generic Internet Service SPecification (GISS) and Route Server (RS) projects have been concluded successfully. The final reports of both have been published as RIPE documents. GISS will continue as an IETF working group under the new name GISD as it has been realised that Description describes the intention better than Specification. A new project called “Policy-based Routing Implementation and Deployment in Europe” PRIDE is just starting up taking up where the RS Project stopped.

PRIDE

The PRIDE project is just starting. The project description is available in the RIPE document store. A short summary is given below:

In order for the Internet to cope with its current growth, the routing problem will also need to be solved at the regional and local levels. The RS project has recognised this by spending significant resources on establishing consensus within RIPE on how routing policies are stored in the European routing registry [ripe-81]. Once registered the information can be used to ensure proper operation of the European part of the Internet. In order to promote the European routing registry and the associated technology two key ingredients are needed:

Implementation

A set of tools for use by local network operators needs to be developed. The RS project deals only with the tools needed by the route server itself. While some of these can be adapted there are not sufficient resources to properly produce tools for local network operators. These tools will enable them to use the routing policy stored in the routing registry to perform such tasks as check actual routing against policies defined, ensure consistency of policies set by different operators, and simulate the effects of policy changes.

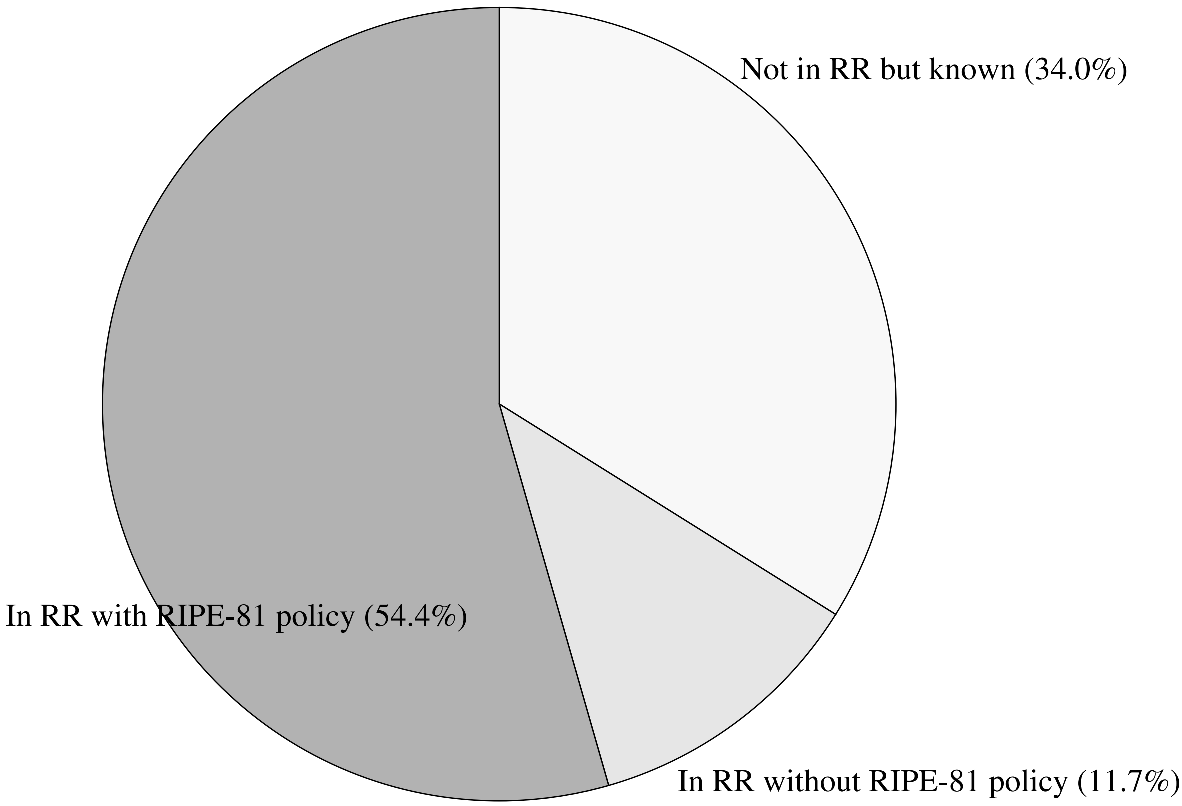
Deployment

In order to be useful the routing registry and associated tools need to be deployed rapidly by all significant network operators in the European Internet. This means there is a big need for information and training of the network operator staff, coordination of deployment and support activities. If enough information and education pressure can be applied there is a good chance that the technology will be deployed outside Europe as well. First signs of this are already visible as the CIX (Commercial Internet eXchange) association has announced their intention to deploy a route server using the RIPE routing registry technology.

Routing Registry

By examining routing tables within Europe we observe some 90 European AS'es in use. The breakdown of their registration status in the RIPE Database (the current Routing Registry) is shown below:

Breakdown of known European AS (Total: 103)



Acknowledgements

The RIPE NCC wishes to thank the RARE Secretariat for their excellent support throughout this quarter.

We wish also to thank the local registries for their excellent work, especially with regard to the allocation of IP numbers.

Appendix A

Meetings Attended

The following meetings were attended by staff during the second quarter of the RIPE NCC operations.

Date	Name & Location	Attendee
12-6 July	IETF Amsterdam, NL	Marten Terpstra Anne Lord Tony Bates Daniel Karrenberg
17-9 Aug	INET'93 San Francisco, US	Daniel Karrenberg Tony Bates
23-24 Aug	IEPG and CCIRN San Francisco, US	Daniel Karrenberg
8 Sept	German EUnet Workshop Dortmund, Germany	Daniel Karrenberg
15-17 Sept	RIPE 16 Amsterdam, NL	Marten Terpstra Anne Lord Tony Bates Daniel Karrenberg
20-23 Sept	Interop NOC Paris, France	Marten Terpstra

Appendix B

Class B Network Number Allocations to Date

The table below summarises all assignments of class B network numbers made through the RIPE NCC to date. The “Via” column indicates through which registry the NCC received the request and solicited the necessary justification.

Network Number	Via
141.92	RIPE NCC
141.93	RIPE NCC
141.94	JANET
141.95	JANET
141.96	RIPE NCC
141.97	JANET
141.98	SWITCH
145.224	JANET
145.225	DE-NIC
145.226	RIPE NCC
145.227	JANET
145.228	DE-NIC
145.229	JANET
145.230	DE-NIC
145.231	INRIA
145.232	SWITCH
145.233	JANET
145.234	CH-NIC
145.235	SE-NIC
145.236	HU-NIC
145.237	PL-NIC
145.238	InterNIC
145.239	PIPEX
145.240	ICNET
145.241	EUnet-AT
145.242	RIPE NCC
145.243	DE-NIC
145.244	RIPE NCC
145.245	EUnet-CH
145.246	RIPE NCC

Network Number	Via
145.247	DATANET
145.248	RIPE NCC
145.249	RU-NIC
145.250	SWITCH
145.251	SE-NIC
145.252-254	Free
160.44-160.52	DE-NIC
160.53	SWITCH
160.54-160.58	DE-NIC
160.59	SWITCH
160.60	DE-NIC
160.61-160.62	CH NIC
160.63	SWITCH
160.219	EUnet/CH
160.220	RIPE NCC
163.156-163.157	RIPE NCC
163.158	CH-NIC
163.159-163.160	RIPE NCC
163.161	SWITCH
163.162	GARR
163.163-163.165	RIPE NCC
163.166	ICNET
163.167	JANET
163.168-163.175	RIPE NCC
164.1	RIPE NCC
164.2	RIPE NCC
164.3	EUnet/AT
164.4	SE-NIC
164.5	RIPE NCC
164.6	PIPEX
164.7	RIPE NCC
164.8	ARNES
164.9	SE-NIC
164.10	SE-NIC
164.11	JANET

Network Number	Via
164.12	RIPE NCC
164.13	Telecom Finland
164.14	RIPE NCC
164.15	RIPE NCC
164.16-164.34	DE-NIC
164.35	RIPE NCC
164.36	RIPE NCC
164.37	SE-NIC
164.38	PIPEX
164.39	HP
164.40	RIPE NCC
164.61	free
164.128	DATRAC
164.129	RIPE NCC
164.130	RIPE NCC
164.131	RIPE NCC
164.132	GARR
164.133	DE-NIC
164.134	UK-NIC
164.135-164.143	Free

Appendix C

Class C Block Allocations to Date

The table below summarises the delegation status of the class C network number blocks allocated through the NCC and the number of networks allocated from these blocks. The "p/n" column indicates whether the block in question is delegated to the local registry of a service provider or is used to allocate numbers to organisations without a service provider.

It should be noted that blocks are reserved based on usage estimates given by the local registries for a period of about 24 months. Should the assignment rate differ from the estimated one, reserved blocks can and will be used for other purposes if necessary.

Block	p/n	nets assigned	Country	Registry
192.162	?	26	NCC	Miscellaneous TN,RO,PT
192.164	p	238	AT	EUnet/AT
192.165	?	192	SE	NORDUnet
192.166	?	176	DE	DE-NIC
192.167	?	154	IT	GARR
192.168	p	0	EU	EUnet/NOC
193.0	?	149	none	NCC
193.1	p	22	IE	HEANET
193.2	p	16	YU	ARNES
193.3	?	154	DK	EUnet/DK
193.4	?	89	IS	Iceland everything
193.5	p	178	CH	SWITCH
193.6	p	160	HU	Sztaki
193.7	p	0	DE	chambers of commerce DE-NIC
193.8	n	132	CH	non-provider CH-NIC
193.9	n	215	EU	NCC non-provider European
193.10	p	23	SE	SUNET
193.11	p	resvd	SE	SUNET
193.12	p	120	SE	SWIPNET
193.13-15	p	resvd	SE	SWIPNET
193.16	n	156	DE	non-provider DE-NIC
193.17	n	94	DE	non-provider DE-NIC

Block	p / n	nets assigned	Country	Registry
193.18	n	254	DE	non-provider DE-NIC
193.19	n	0	DE	non-provider DE-NIC
193.20	n	256	DE	non-provider DE-NIC
193.21	n	256	DE	non-provider DE-NIC
193.22	n	178	DE	non-provider DE-NIC
193.23	n	198	DE	non-provider DE-NIC
193.24	n	132	DE	non-provider DE-NIC
193.25	n	140	DE	non-provider DE-NIC
193.26	n	192	DE	non-provider DE-NIC
193.27	n	136	DE	non-provider DE-NIC
193.28	n	138	DE	non-provider DE-NIC
193.29	n	217	DE	non-provider DE-NIC
193.30	n	55	DE	non-provider DE-NIC
193.31	n	resvd	DE	non-provider DE-NIC
193.32	p	252	UK	non-provider UK-NIC
193.33-34	n	resvd	UK	Sainsbury's (multiple B request)
193.35	n	254	UK	non-provider UK NIC
193.36	n	252	UK	non-provider UK NIC
193.37	n	256	UK	non-provider UK NIC
193.38	n	256	UK	non-provider UK NIC
193.39	n	206	UK	non-provider UK NIC
193.40	n	34	EE	NCC non-provider EE
193.41	n	resvd	EE	non provider EE
193.42	n	94	IT	non provider IT NIC
193.43	n	resvd	IT	non provider IT NIC
193.44	p	41	SE	TIPNET
193.45	p	resvd	SE	TIPNET
193.46	p	36	SE	TIPNET
193.47	p	7	SE	TIPNET
193.48	p	165	FR	RENATER
193.49	p	115	FR	RENATER
193.50	p	170	FR	RENATER
193.51	p	99	FR	RENATER
193.52	p	171	FR	RENATER
193.53	n	117	BE	NCC non-provider (dup)

Block	p / n	nets assigned	Country	Registry
193.54	p	125	FR	RENATER
193.55	p	135	FR	RENATER
193.56	n	158	FR	non-provider FR NIC
193.57	n	129	FR	non-provider FR NIC
193.58	n	35	BE	NCC non-provider
193.59	p	61	PL	academic
193.60	p	210	UK	JANET
193.61	p	238	UK	JANET
193.62	p	16	UK	JANET
193.63	p	209	UK	JANET
193.64	p	59	FI	EUnet/FI
193.65	p	0	FI	EUnet/FI
193.66-67	p	resvd	FI	EUnet/FI
193.68	p	9	BG	EUnet/BG
193.69	p	resvd	IS	EUnet/IS
193.70	p	resvd	IT	EUnet/IT
193.71	p	85	NO	EUnet/NO
193.72	p	105	CH	EUnet/CH
193.73	p	resvd	CH	EUnet/CH
193.74	p	56	BE	EUnet/BE
193.75	p	resvd	BE	EUnet/BE
193.76	p	0	HR	EUnet/HR
193.77	p	18	HR	EUnet/HR
193.78	p	86	NL	EUnet/NL
193.79	p	106	NL	EUnet/NL
193.80	p	140	AT	EUnet/AT
193.81-83	p	resvd	AT	EUnet/AT
193.84	p	190	CS	EUnet/CS
193.85	p	152	CZ	EUnet/CZ
193.86	p	resvd	SK/CZ	EUnet/SK/CZ
193.87	p	37	SK	EUnet/SK for SANET
193.88	p	122	DK	EUnet/DK
193.89	p	10	DK	EUnet/DK
193.90	p	resvd	Dk	EUnet/DK
193.91	p	1	DK	EUnet/DK

Block	p / n	nets assigned	Country	Registry
193.92	p	19	GR	EUnet/GR
193.93	p	17	GR	EUnet/GR
193.94	p	5	TN	NCC EUnet/TN
193.95	p	resvd	TN	EUnet/TN
193.96	p	152	DE	EUnet/DE
193.97	p	127	DE	EUnet/DE
193.98	p	160	DE	EUnet/DE
193.99	p	109	DE	EUnet/DE
193.100-103	p	resvd	DE	EUnet/DE
193.104	p	68	FR	EUnet/FR
193.105	p	105	FR	EUnet/FR
193.106	p	91	FR	EUnet/FR
193.107-111	p	resvd	FR	EUnet/FR
193.112	p	149	UK	EUnet/UK
193.113	p	67	UK	EUnet/UK (special)
193.114	p	207	UK	EUnet/UK
193.115	p	133	UK	EUnet/UK
193.116	p	1	UK	EUnet/UK
193.117-119	p	resvd	UK	EUnet/UK
193.120	p	40	IE	EUnet/IE
193.121-123	p	resvd	IE	EUnet/IE
193.124	p	202	RU	EUnet/RU + xSU
193.125	p	resvd	RU	EUnet/RU + xSU
193.126	p	67	PT	EUnet/PT
193.127	p	14	ES	EUnet/ES
193.128	p	218	UK	PIPEX
193.129	p	138	UK	PIPEX
193.130-133	p	resvd	UK	PIPEX
193.134	p	0	CH	SWITCH
193.135	p	resvd	CH	SWITCH
193.136	p	75	PT	RCCN
193.137	p	resvd	PT	RCCN
193.138	?	5	SI	NCC general
193.139	p	254	FR	Individual Block allocation
193.140	?	91	TR	NCC general

Block	p / n	nets assigned	Country	Registry
193.141	p	49	DE	XLINK + reserved
193.142	n	82	FI	NCC non-provider
193.143	n	19	FI	NCC non-provider
193.144	p	169	ES	RedIRIS
193.145	p	30	ES	RedIRIS
193.146-147	p	resvd	ES	RedIRIS
193.148	n	146	ES	non-provider ES NIC
193.149-155	n	resvd	ES	non-provider ES NIC
193.156	p	90	NO	UNINETT
193.157	p	56	NO	UNINETT
193.158-159	p	resvd	NO	UNINETT
193.160	n	146	NO	non-provider NO NIC
193.161	n	40	NO	non-provider NO NIC
193.162	n	39	DK	non-provider DK NIC
193.163	n	resvd	DK	non-provider DK NIC
193.164	n	3	PL	NCC non-provider
193.165	n	resvd	PL	non-provider
193.166	p	35	FI	FUNET
193.167	p	resvd	FI	FUNET
193.168	n	45	LU	NCC non provider
193.169	p	0	UK	AT&T Istel
193.170	p	74	AT	NCC ACONET
193.171	p	resvd	AT	ACONET
193.172	p	52	EU	NCC EMPB
193.173	p	resvd	EU	EMPB resvd
193.174	p	160	DE	DFN
193.175	p	resvd	DE	DFN
193.176	n	252	NL	non provider NL NIC
193.177	n	84	NL	non provider NL NIC
193.178	n	37	IE	NCC non provider IE
193.179	n	resvd	IE	non provider IE
193.180	n	236	SE	non provider SE NIC
193.181	n	243	SE	non provider SE NIC
193.182	n	230	SE	non-provider SE NIC
193.183	n	189	SE	non-provider SE NIC

Block	p/n	nets assigned	Country	Registry
193.184	p	4	FI	Helsinki Telephone Company
193.185	p	resvd	FI	Helsinki Telephone Company
193.186	n	254	AT	non provider AT NIC
193.187	n	248	AT	non provider AT NIC
193.188	n	28	several	NCC Middle East
193.189	n	64	NG	NCC Nigeria
193.190	p	83	BE	Belgian National Research Net
193.191	p	resvd	BE	Belgian National Research Net
193.192	n	11	PT	NCC non provider
193.193	n	resvd	PT	NCC non provider reserved
193.194	?	3	MA	MA general NCC managed
193.195	p	58	UK	UK DEMON
193.196	p	196	DE	DE BelWue
193.197	p	4	DE	DE BelWue
193.198	n	17	HR	NCC non provider
193.199	n	65	FI	National Board of Education
193.200	n	0	BG	BG Non provider
193.201	n	resvd	BG	BG Non provider reserved
193.202	n	175	Pan Eur	NCC
193.203	n	1	YU-SPL	NCC
193.204	n	102	IT	GARR NIS
193.205-207	n	resvd	IT	GARR NIS reserved
193.208	p	242	FI	DATANET
193.209	p	72	FI	DATANET
193.210-211	p	resvd	FI	DATANET reserved
193.212	p	39	NO	Telepost Communication AS
192.213-215	p	resvd	NO	Telepost Communication AS
193.216	p	3	NO	DAXnet
193.217	p	resvd	NO	DAXnet reserved
193.218	n	6	GR	NCC non-provider
193.219	n	4	LT	NCC non-provider
193.220	n	resvd	LT	NCC non-provider reserved
193.221	p	145	Pan-Eu	NCC
193.222	n	167	CH	CH non-provider
193.223	n	186	CH	CH non-provider

Block	p / n	nets assigned	Country	Registry
193.224	p	15	HU	HU General Sztaki
193.225	p	resvd	HU	HU General reserved Sztaki
193.226	p	13	RO	RO partly delegated
193.227	n	31	EG	EG non-provider NCC managed
193.228	p	0	UK	UK Chernikeef
193.229-231	p	resvd	UK	UK Chernikeef
193.232	n	29	RU	RU xSU non-provider
193.233	n	resvd	RU	RU xSU non-provider reserved
193.234	n	208	SE	SE non-provider
193.235	n	0	SE	SE non-provider
193.236	n	0	PT	PT non-provider
193.237-239	b	resvd	PT	PT non-provider
193.240	p	0	RACAL	RACAL Network Services
193.241	n	resvd	SE	NCC
193.242	n	128	Pan-EU	NCC
193.243	p	32	UK	NCC
193.244	p	512	BE	Kredietbank
193.245-247	p	512	BE	Kredietbank
193.248-253	p	1530	FR	France Telecom Internal Network
193.254	n	1	AL	NCC
193.255	?	free	none	NCC

Appendix D

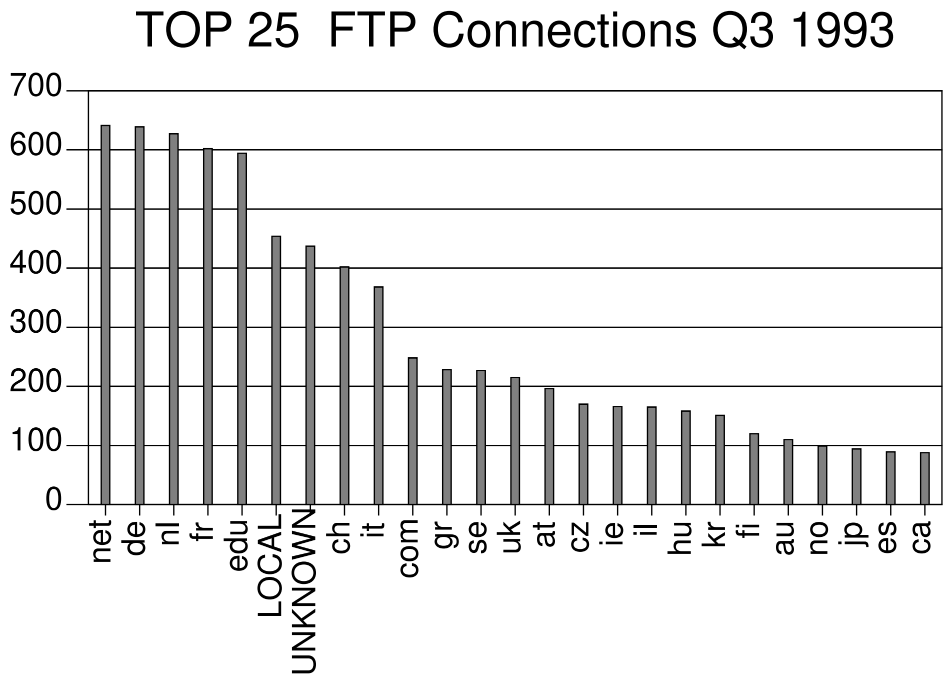
Domain Table

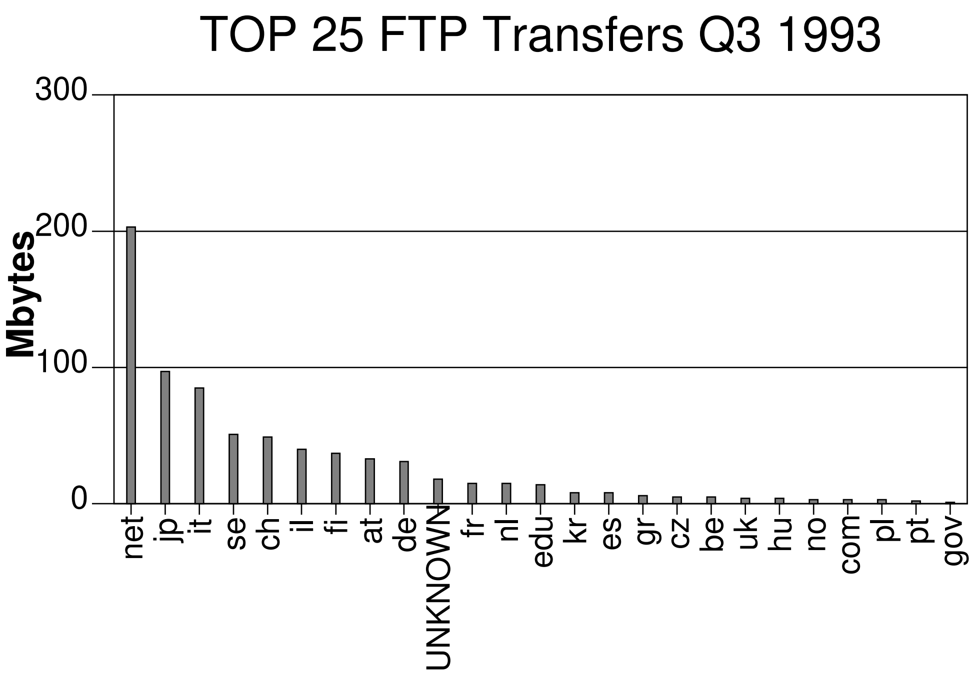
This appendix gives an overview of all top level domains, and other categories mentioned in the tables and graphs.

Domain	Specifying
IXI	EuropaNet (formerly IXI)
IIS	the Interactive Information Server
LOCAL	the NCC itself using IP
NCC-X25	the NCC itself using X.25
PSPDN	the Public Data Network
UNKNOWN	no mapping between IP address and domain name could be found
com	commercial organisations (mainly in the US)
edu	educational organisations (mainly in the US)
gov	US government organisations
mil	US military organisations
net	network providers and related organisa-tions
org	organisations (mainly in the US)
al	Albania
at	Austria
au	Australia
be	Belgium
br	Brazil
bg	Bulgaria
by	Byelorus
ca	Canada
ch	Switzerland
cl	Chile
cs	Czechoslovakia
de	Germany
dk	Denmark
dz	Algeria
ee	Estonia

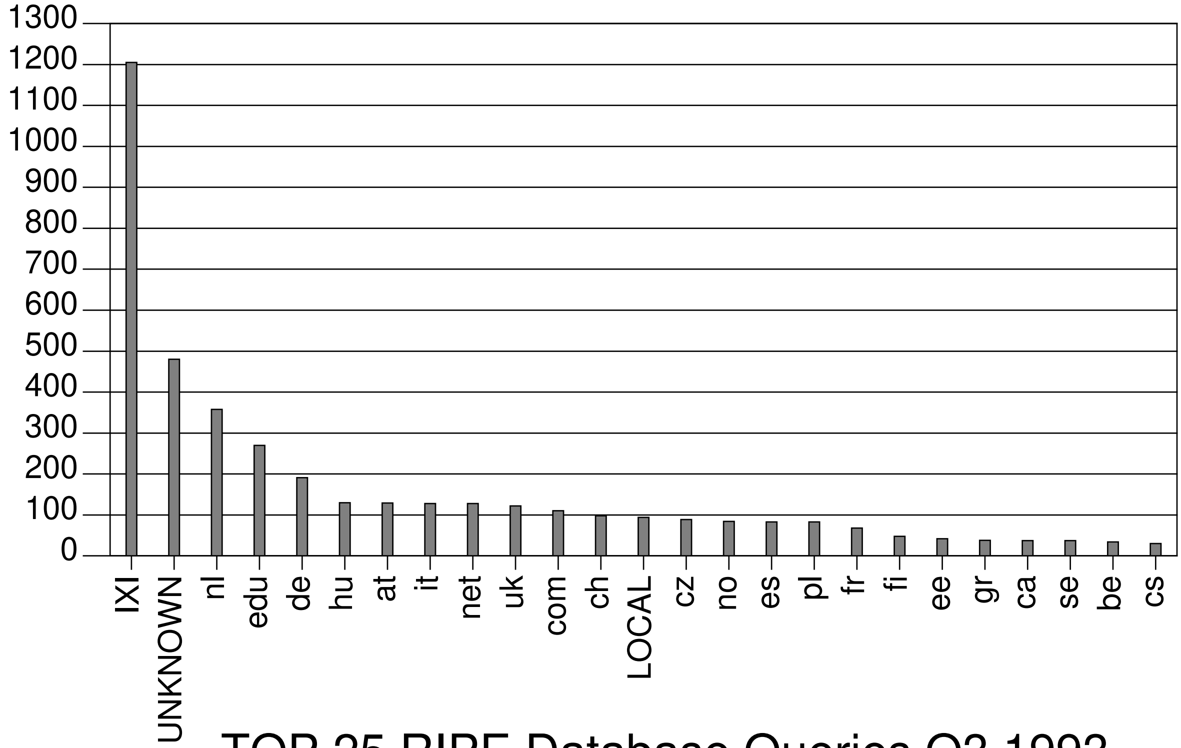
Domain	Specifying
es	Spain
fi	Finland
fr	France
gb	Great-Britain
gr	Greece
hk	Hong Kong
hr	Croatia
hu	Hungary
ie	Ireland
in	India
is	Iceland
it	Italy
il	Israel
jp	Japan
kr	Korea
lt	Lithuania
lu	Luxembourg
lv	Latvia
mx	Mexico
nl	Netherlands
no	Norway
nz	New Zealand
pl	Poland
pt	Portugal
ro	Romania
se	Sweden
sg	Singapore
si	Slovenia
su	USSR
tn	Tunesia
tw	Taiwan
ua	Ukraine
uk	United Kingdom
us	United States
va	Vatican City State
yu	Yugoslavia
za	South Africa

Appendix E

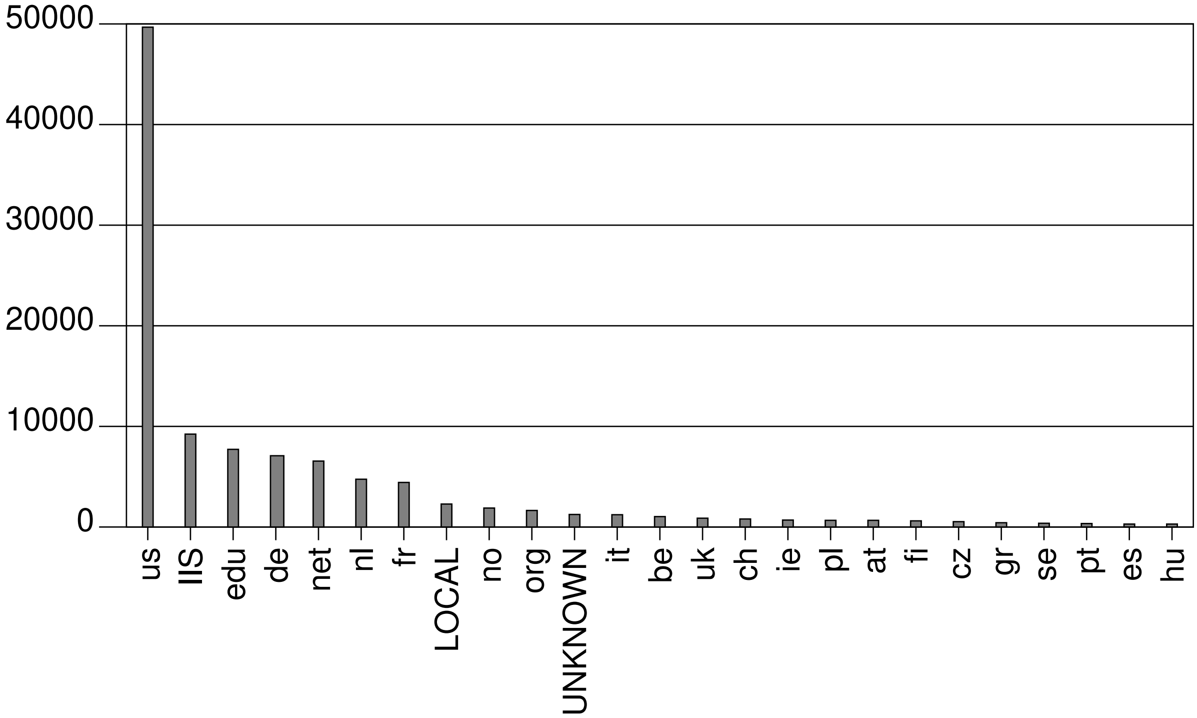

TOP 25 FTP Connections Q3 1993
700
600
500
400
300
200
100
0
net
de
nl
fr
edu
LOCAL
UNKNOWN
ch
it
com
gr
se
uk
at
cz
ie
il
hu
kr
fi
au
no
jp
es
ca


TOP 25 FTP Transfers Q3 1993
Mbytes
300
200
100
0
net
jp
it
se
ch
il
fi
at
de
UNKNOWN
fr
nl
edu
kr
es
gr
cz
be
uk
hu
no
com
pl
pt
gov

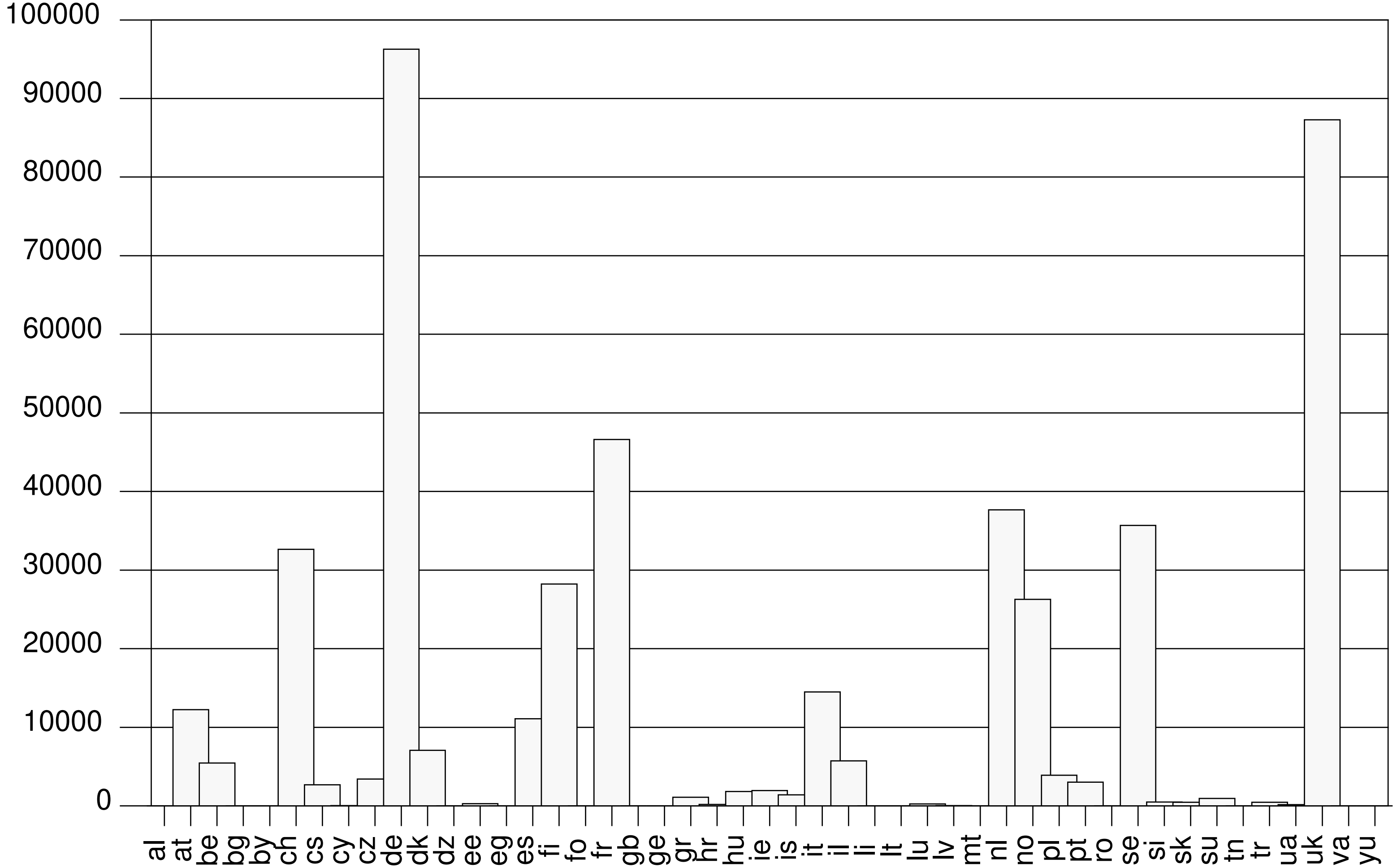
TOP 25 Interactive Information Server Usage Q3 1993



TOP 25 RIPE Database Queries Q3 1993



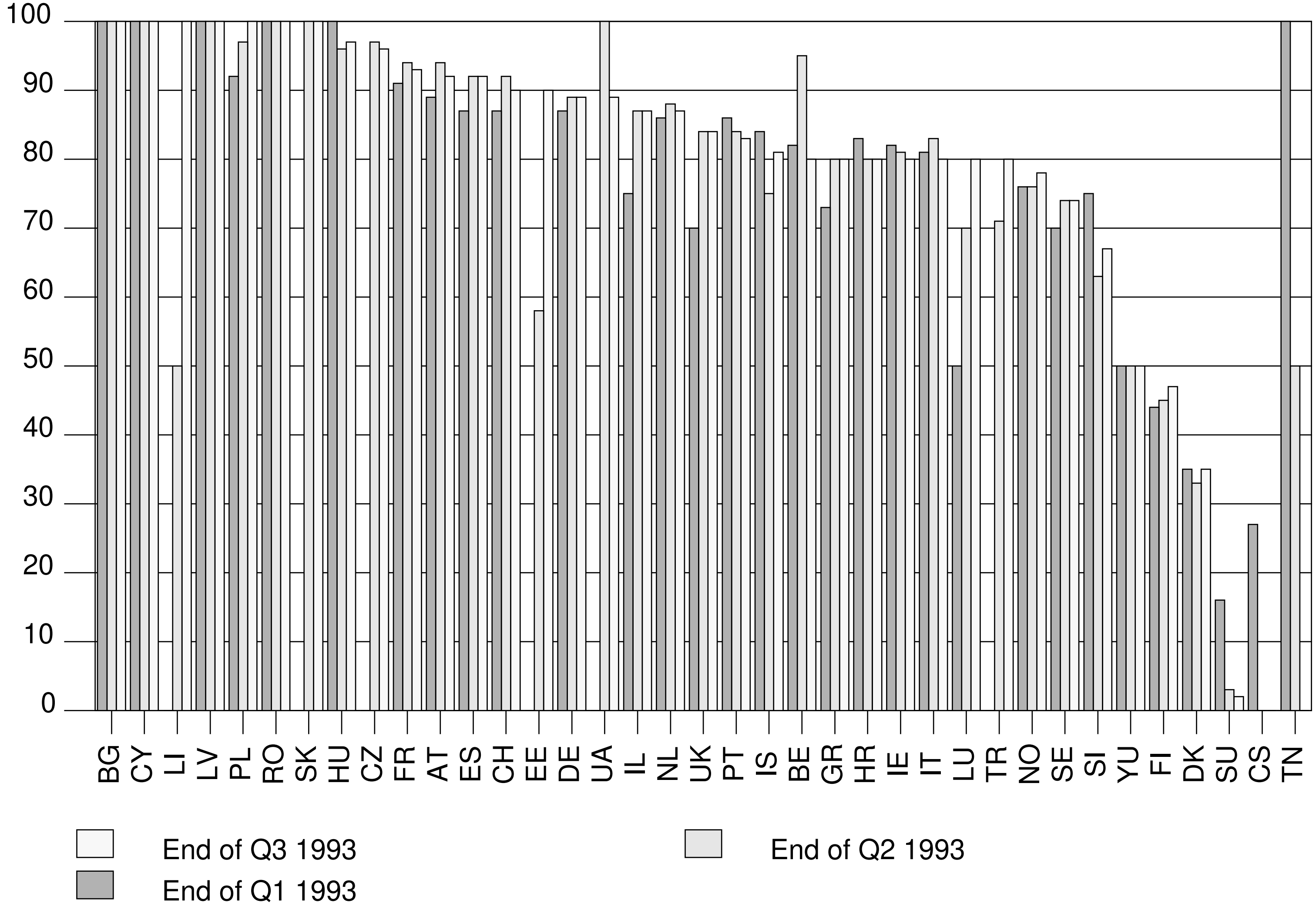
RIPE DNS Hostcount per Country, September 1993



Total machines in DNS in Europe: 451,116

RIPE Network Coordination Centre
Quarterly Report
Issue 6, September 1993

Networks in DNS Registered in RIPE Database 1993



Appendix F

Note on Statistics

The arrangement of categories including country codes in some statistical tables and figures have been standardised to make the data more easily comparable between different tables and editions of these reports. As a consequence some categories appear with no data and/or seemingly nonsensical combinations. See Appendix D for domain table.

In the PostScript version of this document much information is presented both in graphical and in table form. This apparent duplication is necessary because the graphics cannot be represented in the ASCII version of the document which has to contain the same information as the PostScript version.