

NREN Service categories:

I. Network & connectivity services

- 1.1 Basic IP-connectivity services: commercial internet vs. research & educational networks
- 1.2 Customer connections to the NREN-backbone: type of connections +specific routing configurations (BGP, VRRP, ...)
- 1.3 Carrier/telco -service between NREN<-> “customer” managed circuits or dark fiber
- 1.4 Bandwidth on demand
- 1.5 End-to-End connectivity for end users groups (incl. Lightpaths-wavelengths)
- 1.6 Access@home - for end users – Student rooms...
- 1.7 Wireless access (WLAN services from NREN ? – WIMAX- WIFI)
- 1.8 VPN-services (incl. Lightpaths, MPLS-VPN's, VPN- encryption & IP-tunnels)
- 1.9.DNS services
- 1.10 NTP-service
- 1.11 IPv6 (enabled network, experiment & promotion)
- 1.12. IP-Multicast (enabled network, experiment & promotion)
- 1.13 Network Support services :
 - 1.13.1 7*24 Helpdesk
 - 1.13.2 7* 24 Network Monitoring (customer connection: for ex. incl real-time & periodic reporting services- bandwidth usage – SLA measurement etc..)
 - 1.13.3 Performance Enhancement Response Team (PERT)
 - 1.13.4 Detective™ –tool (cfr.Surfnet, Internet2 detective)
- 1.14 IP & DNS Registration services:
 - 1.14.1 IP-address allocation (RIPE LIR for IPv4, IPv6, Multicast IP)
 - 1.14.2 Domain name registration (National TLD + other:.eu, .org...)
 - 1.14.3 ENUM registration (Phone number -> internet domain name)

II. Security services

- 2.1 CSIRT - CERT: Computer Security Incident/Emergency Response Team
- 2.2 Anti-virus control: (+ Anti spam ?)
- 2.3 Intrusion prevention
- 2.4 Netflow monitoring tool
- 2.5 Vulnerability testing tool (Network & web services)

III. Authentication & "Mobility" services (~ 1.13 Registration services ?)

- 3.1 Authentication & Authorisation Infrastructure (single sign on for all applications/services)
- 3.2 Identity management systems
- 3.2 PKI certificate service
- 3.3 Server Certificate Service
- 3.4 Inter-(W)LAN/network access: EDUROAM

IV. Housing - Storage – hosting – content delivery services

- 4.1 Housing /co-location facilities
- 4.2 Webhosting /Hot standby
- 4.3 Mail relay / back up services
- 4.4 Disaster recovery – off site back up services
- 4.5 Storage Area Network (SAN) – infrastructure
- 4.6. Netnews/Usenet server
- 4.7 Academic/educational software distribution: frame agreements & clearing (see also 4.4)
- 4.8 FTP & Mirroring services (Proprietary & non proprietary software, Wiki,...-)
- 4.9 Hosting services/applications for research and educational community (for. Ex. Scientific databases, WIKI's, administration tools ..) , .
- 4.10 Media storage and –streaming facilities:
 - 4.10.1 *Media portals*
 - 4.10.2 *Streaming facilities (streaming server, podcasting, p-to-p facilities)*
 - 4.10.3 *Media conversion services*

V. Network communication tools & conferencing

- 5.1 (Video)conferencing tools/application + MCU & gatekeepers service
- 5.2 VoIP / IP-Telephony and/or IP-Voice gateway service (VoIP <-> PSTN)
- 5.3 Instant Messaging (IRC, jabber..etc..-)
- 5.4 Mailinglist services
- 5.5 E-Mail gateway services (e-mail <-> fax, sms, pager..) ,
- 5.6 Search Engines
- 5.7 Anti-spam services

VI. Network computing resources

- 6.1 GRID computing (for ex. Co-ordination within NREN community, offering CPU, gatekeeper...)

VII. E-Learning / Tele-teaching /e-research

- 7.1 Virtual Learning Environments (VLE's)
- 7.2 Digital Repositories

VIII. User interaction - knowledge dissemination

- 8.1 Consultancy and advise (**for services mentioned in all categories above !**)
- 8.2 Training: workshops, seminars
- 8.3 Support & User Portals
- 8.4 User (advisory) groups /forums
- 8.5 User BLOG's (Per user category / thematically)
- 8.6 User conferences
- 8.7 NREN publications:
 - 8.7.1 *newsletters*
 - 8.7.2 *magazines*
 - 8.7.3 *cookbooks/user manuals*
 - 8.7.4 ...

IX. NREN side activities/services (not NREN-users specific)

- 9.1 Registry for national TLD (cfr. SWITCH, EENET,...)
- 9.2 National Internet Exchange (cfr. BELNET-BNIX, ...)

Some other criteria for service classification/categories:

A. Target group / scope

a.1 focus on connected Institutions (wholesale) or end users (retail)?

a.2 focus on specific user segment : research/education/ICT-dept/...

B. Basic, Optional or Advanced...

- Basic/standard Service (*included in standard package -for ex. Connectivity, IP-assignment, news services...*)
- Optional service (*charged extra – on customer request*)
- Advanced Service (*technology push/ R&D/ high end service for research*)

C. Functional order (~ relation with NREN organisational structure):

- Network operations services
- R&D services
- Security services
- Middleware services
- Registration services ("Hostmaster"- function)
- User support & communication