

AGREEMENT

Between

Norwegian Internet eXchange (NIX)
c/o USIT, University of Oslo

And

<<Name of NIX-customer>>

This agreement governs the terms and conditions for connecting to, and the management of, the following Internet exchange-points (IXPs) in Norway:

- NIX1, Oslo
- NIX2, Oslo
- BIX, Bergen
- TRDIX, Trondheim
- TIX, Tromsø
- SIX, Stavanger

Version 3.01 Prices changed February 6th, 2011 by KOO
Version 3.02 Optics for NIX1 changed August 15th, 2012 by KOO
Version 3.03 HMG9 and Digiplex added, optics adjusted, SIX updated,
FastEthernet removed, March 21st, 2016 by KOO
Version 3.04 Removed pricing from contract and referred to nix.no

Background

In order to realise open IP traffic exchange in Norway, a set of neutral IP exchange-points (IXPs) have been established. Organisations who want to exchange IP traffic can connect their equipment to a neutral medium at one or more of these IXPs, as long as they fulfill the requirements in this contract.

Terminology

For the purpose of this agreement the following terms shall have the following meanings:

NIX

"Norwegian Internet eXchange" (NIX) consists of six IXPs

- NIX1 in Gaustadalleen 23B, HMG9 and Digiplex, Oslo
- NIX2 in St.Olavs plass 5, Oslo
- BIX in Bergen

- TRDIX in Trondheim
- TIX in Tromsø
- SIX in Stavanger

If nothing else is specified in this document, the term NIX refers to all of the six IXPs.

HMG9 is Hans Møller Gasmanns vei 9 in Oslo. NIX1 is present in the Verizon area (3rd floor). Digiplex is CCR A at Digiplex Oslo, Ulvenveien 89B in Oslo.

Overall responsibility for the NIX

USIT, University of Oslo, is the organisation that manages the neutral media that realize the IXPs described in this agreement, all contracts and all contact with the NIX customers.

The point of contact is: nett-drift@usit.uio.no
Problems can also be reported by phone: +47 22 84 00 04

NIX manager

The local organisation in charge of technical management of an IXP.

- NIX1 University of Oslo
- NIX2 University of Oslo
- BIX University of Bergen
- TRDIX Norwegian University of Science and Technology
- TIX University of Tromsø
- SIX University of Stavanger

All contact between the NIX customers and the NIX managers should go through USIT.

NIX customer

Organisation that fulfills the obligations and establishes IP traffic-exchange at NIX, as described in this agreement.

Various types of organisations can connect to NIX:

- Traditional ISPs
- Carriers
- Content providers
- Web hosters
- Mobile operators
- VoIP providers
- Other IP centric organisations, such as: E.g. Google, Akamai Technologies Inc., root-servers, Domain Registry System etc.

Obligations of a NIX customer:

- LIR status by RIPE (or other RIR)
- AS-number given by RIPE (or other RIR)
- Announcement of this AS-number at one or more other IXPs on the Internet
- An operational NOC (Network Operation Center) that can respond to e-mail from USIT, NIX managers and other NIX customers within 4 working hours

The following are NOT qualified as NIX customers in this context:

- Companies running an internal IP service to connect themselves to the Internet
- IP network providers running isolated networks that are not connected to the Internet.

Rules for connecting to the NIX:

An organisation can become a NIX customer and connect to NIX IXPs in order to realize IP traffic-exchange if the following conditions are fulfilled:

- The organisation fulfills the requirements for a NIX customer, as described in section "Terminology"
- The organisation has given USIT the following information:
 - Invoice address
 - E-mail address (a mailing list) for administrative and technical information from USIT, the NIX managers and other NIX customers
 - A URL to a web-page with contact-information for the organisation (NOC, peering and other issues/problems) and other relevant information for USIT, NIX managers and other NIX customers
 - AS-number to be announced, with information regarding where it is announced on the Internet
 - Desired physical interface at each of the NIX IXPs
 - Rype of connection and name of connection-supplier at each of the NIX IXPs
 - Time schedule for each connection
- This agreement is signed by the organisation and USIT.

Routing on NIX is done with BGP4. Multicast-routing can be done with MSDP and PIM (not just PIM!). Routing with other routing protocols or "default routing" is not allowed.

Each NIX customer must take proper actions to limit the number of unnecessary packets broadcasted or flooded on the IXPs. NIX customers not conforming to this will be warned, and eventually disconnected.

Private VLAN-services are available at all NIX IXPs. Contact USIT (nett-drift@usit.uio.no) for technical details.

The neutral medium is based on ethernet-switch technology. The following interface technologies are available:

- 1000BaseX/SFP on NIX1, NIX2, BIX, TRDIX, TIX and SIX
- 10GBaseX/X2 on NIX1 Gaustadalleen 23B only
- 10GBaseX/XFP on NIX2 only
- 10GBaseX/SFP+ on NIX1 (all sites) and SIX

When using 1000BaseLX or 10GBaseLR optics, NIX will supply the optics in the NIX-switches.

When using other optics the NIX customer must supply the optics (SFP/X2/XFP/SFP+ modules). NIX customers are encouraged to use vendor-supplied optics, but must choose vendor-compatible optics. USIT can refuse to install incompatible optics if it creates problems for the operation of the IXP in any way.

- NIX1 Gaustadallen 23B, BIX, TRDIX and TIX use Cisco Catalyst 6500s.
- NIX1 Gaustadallen 23B, NIX1 HMG9, NIX1 Digiplex and SIX use Cisco Nexus 9372.
- NIX2 uses Brocade/Foundry NetIron RX8.

The connection to the neutral medium can be done in on of the following ways:

a) With a router at NIX1 (available at NIX1 Gaustadalleen 23B ONLY.)

Contact USIT (nett-drift@usit.uio.no) for details.

b) With a LAN-connection (available at all NIX IXPs)

The NIX customer rents a LAN-connection with one of the above specified interface technologies from a connection-supplier. The connection-supplier must contact USIT in due time to be allowed to place the necessary equipment at NIX in order to realise the LAN-connection.

c) With dark fibre (available at all NIX IXPs)

The NIX customer can lease "Dark Fibre" to the neutral medium and install a media convert, or connect to the GBIC/SFP/XENPAK/XFP in order to convert from fibre to the appropriate interface technology.

Obligations of USIT and the NIX managers

USIT and the NIX managers shall:

- Purchase, install and maintain the neutral medium which realises each IXP inside a defined, protected physical area.
- Provide traffic statistics for everyone connected. Statistics showing traffic in bits per second from and to the NIX medium per ISP, shall be available to the SPs. ISPs who distribute this statistics information outside their own organization will loose their access to the statistics. Accumulated traffic statistics (all the traffic through each NIX IXP, and the grand total) will be publicly available.
- Ensure that there is no unauthorised tapping of the traffic on the neutral medium.
- Report operational problems, if discovered, to the NIX customers' operation centers via the NOC contact info provided by the NIX customers.

Obligations of the NIX customers

Every NIX customer shall:

- Ensure that the connection to the neutral medium follows the specifications above
- Establish at its expense the necessary connection to each NIX IXP. Information regarding connection-orders must be sent to USIT, at latest 5 working days before the connection-supplier starts the installation. Suppliers showing up without prior notice will not be admitted.
- Allow statistics collection from all the NIX IXPs as described above.

Application for membership and connection of new ISPs

The NIX IXPs are open to all organisations who wish to have open IP traffic-exchange and who fulfill the rules for connecting to NIX.

Every NIX customer who wants to connect to a NIX IXP, can be connected after signing this agreement together with USIT.

USIT and the NIX managers coordinate the practical work.

Notice of termination and disconnect/discontinuation of ISPs

This agreement can be terminated by a NIX customer with three (3) months notice. The termination notice should be sent as an e-mail to nett-drift@usit.uio.no.

Without previous notice, a NIX customer can be disconnected if the NIX customer is infringing with this agreement.

Also see chapter "Governing law, disputes".

The NIX managers take care of the physical disconnect.

Rules concerning the management of the NIX

USIT and the NIX managers aim for maximum uptime of every NIX IXP.

Planned maintenance shall be announced at least 5 working days in advance.

Unscheduled work should be announced as soon as possible.

NIX customers causing problems or performance degradation can be temporarily disconnected without prior notice. Notice of the disconnection should however be given as soon as possible to the relevant parties.

Errors and problems can be reported to nett-drift@usit.uio.no or by phone to +47 22 84 00 04.

Pricing

Pricing is described in detail here: <https://www.nix.no/Joining/Pricing/>

Pricing will coincide with the signature date of this document.

Liability

Each of the parties have a right to compensation for any loss or damage caused by the other partys negligence.

Neither party shall be liable to the other for any indirect or consequential damage, including lost profit and loss of information etc.

Any liability is at all times limited to an amount of NOK 50,000.- pr NIX-contract pr year.

Confidentiality

Information not available to the public, including security routines, technical solutions, products or services of which the parties have learned during activities under this agreement, shall be treated as confidential and not disclosed to any third party.

Force majeure

Any unforeseeable event beyond a party's control making the performance of its obligations under this agreement impossible including, but not limited to, insurrection or civil disorder, strike, act of Government or authorities, suspends the agreement for that time. If the situation lasts for more than three (3) months, the agreement can be declared null and void after 14 days from the written notice by any of the parties.

Governing law, disputes

NIX is governed by Norwegian laws.

If one of the parties considers that the other is in breach of its obligations under this agreement, the party must give written notice promptly.

Disputes arising from this agreement shall in first instance be settled by mediation between the parties. If the parties fail to resolve the dispute within 30 days, either party can commence proceedings before the Norwegian courts.

Signing

The agreement is signed by the parties in two copies. Each party keeps one copy.

Date:

Date:

For NIX

For the NIX customer