CLASS: 030-02/25-002/002
REG.NO.: 3801-2-002-02-25-3
Zagreb, 3 June 2025

Pursuant to Article 6 of The Policy of the Croatian Internet Exchange (CIX) the Croatian Center for the Exchange of Internet Traffic (CLASS: 030-02/25-002/002, REG.NO.: 3801-2-002-02-25-1, hereinafter referred to as the "Policy CIX“) I hereby issue the following document

TECHNICAL DESCRIPTION AND SERVICES OF CIX

I Techical specification

CIX infrastructure is distributed and its nodes are located at:

- CIX1 – Ulica Josipa Marohnića 5, Zagreb (data center Srca HR-ZOO ZG1)
- CIX2 – Selska cesta 93, Zagreb (data center Digital Reality ZAG1)
- CIX3 – Ivane Brlić-Mažuranić 30, Varaždin (data center DC North).

The CIX infrastructure consists of:

- Active network equipment (Ethernet switches)
- Linux servers (Route Servers)
- Communication racks in secured and climate-controlled data centers
- Telecommunications capacities connecting the CIX nodes

CIX members connect within CIX via the peering VLAN:

- IPv4 address space: 185.1.87.0/24
- IPv6 address space: 2001:7f8:28::/64
- AS number: 51702

Each CIX member is assigned one IPv4 and one IPv6 address per interface/channel for connection to the peering VLAN.

Only 1 MAC address per interface/channel is allowed within the peering VLAN. The use of STP (Spanning Tree Protocol) is prohibited.

Physical connection of member equipment is possible via copper/UTP cables or optical connections to LC connectors using SFP, SFP+, or QSFP28 modules. Supported connection types and specifications are can be found in the table below.

Josipa Marohnića 5 - 10000 Zagreb
T +385 1 6165 555
M office@srce.hr
W www.srce.unizg.hr

Type of connection	Connection characteristics
1GE	1000Base-T; UTP cable CAT 5E
	LC 1000Base-LH; wavelength: 1310 nm; up to 40 km using single-mode fiber
	LC 1000Base-LX; wavelength: 1310 nm; up to 10 km using single-mode fiber
	LC 1000Base-SX; wavelength: 850 nm; up to 550 m using multi-mode fiber
	LC 1000Base-BX-D wavelength 1490 nm TX / 1310 nm RX (on the CIX side); 1000Base-BX-U wavelength 1310 nm TX / 1490 nm RX (on the member side); up to 10 km using single-mode fiber
10GE	LC 10-GbE port (IEEE 802.3ae Type 10Gbase-SR); wavelength: 850 nm; up to 300 m using multi-mode fiber
	LC 10-GbE port (IEEE 802.3ae Type 10Gbase-LR); wavelength: 1310 nm; up to 10 km using single-mode fiber
	LC 10-GbE port (IEEE 802.3ae Type 10Gbase-ER); wavelength: 1550 nm; up to 40 km using single-mode fiber
	LC 10GBASE-BX-D wavelength 1330 nm TX / 1270 nm RX (on the CIX side); 10GBASE-BX-U wavelength 1270 nm TX / 1330 nm RX (on the member side)
100GE	LC 100GBASE-LR4 wavelengths WDM 1295.56 nm, 1300.05 nm, 1304.59 nm, 1309.14 nm; 10 km using single-mode fiber

To achieve the desired bandwidth, it is possible to aggregate identical interfaces into channels using LACP (Link Aggregation Control Protocol) within the same CIX node.

A redundant Route Server infrastructure has been established within the peering VLAN for the purpose of multilateral peering, utilizing OpenBGPd and the MD5 algorithm. A prerequisite for achieving redundancy is establishing peering with both Route Servers. To maximize efficiency in traffic exchange via CIX, it is recommended to apply an Open Peering Policy.

To ensure high availability, the CIX infrastructure is monitored using network monitoring tools.

The CIX information services include both public and internal CIX websites. All publicly accessible information about CIX is published on the public CIX website, with no access restrictions. On the internal CIX website, members are granted restricted access to only their own data.

II Services and prices

The **University Computing Centre of the University of Zagreb**, as the coordinator of CIX, provides the following services at the prices specified below:

1. Connection to CIX :

Service Name	Service Description (Level)	Monthly Fee (EUR)
1G	• 1 Gbit/s interface for connection to CIX • access to the CIX peering VLAN	150,00
First 10G	• 10 Gbit/s interface for connection to CIX • access to the CIX peering VLAN	450,00
Additional 10G	• 10 Gbit/s interface for connection to CIX • access to the CIX peering VLAN	225,00
100G	• 100 Gbit/s interface for connection to CIX • access to the CIX peering VLAN	1.600,00

Service Name	Service Description (Level)	One-time fee (EUR)
Setup fee	• one-time fee for administrative processing of CIX membership admission	400,00

It is possible to use multiple interfaces within a single channel (LACP).

2. Route Servers for establishing multilateral peering between CIX members

This service is included in the price of item 1: Connection to CIX.

3. Additional VLANs for special purposes of interconnecting members independently of the CIX peering VLAN

This service is included in the price of item 1: Connection to CIX.

4. Limited housing of equipment for CIX members connected at the **CIX1 location**.

Service Name	Space in a 19" communication cabinet at the CIX1 location	Monthly Fee (EUR)
Colocation of equipment CIX1 1RU	• Colocation of equipment in a 19" communication cabinet at the CIX1 location, in a space of 1 RU (rack unit) • Ensuring conditions for the proper operation of the housed equipment	30,00

The housing of CIX members equipment at the CIX2 and CIX3 locations is regulated by InterXion Hrvatska d.o.o. and DC North d.o.o. and is not part of the CIX services.

5. CIX Information Services

The service is included in the price of item 1. Connection to CIX.

The amounts from item 1. i item 4. of the Services and prices are subject to value-added tax according to the tax residence of the service recipient, in accordance with applicable legal regulations on value-added tax.

The prices stated in this document are valid from 1 September 2022.

Director

srce Sveučilište u Zagrebu Sveučilišni računski centar
Ivan Marić
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Ivan Marić