Addition 1 of CIX Policy



University of Zagreb University Computing Centre - SRCE

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According to Article 5 of the Policy of Croatian Internet Exchange (CIX), Croatian Center for Exchange of Internet Traffic, this document defines technical specifications, possible types of services and prices of certain types of services.

CIX TEHNICAL DESCRIPTION AND SERVICES

Technical description

CIX Infrastructure is distributed and its nodes are located at:

- CIX1 Josipa Marohnića 5, Zagreb (Data center Srce)
- CIX2 Selska cesta 93, Zagreb (Data center Altus IT d.o.o.)

CIX Infrastructure consists of:

- Active Network switching equipment (1/10/100G)
- Linux Servers (Route Servers)
- 19 " racks in protected and air-conditioned data centers
 - Two redundant optical links and CWDM system with 16x10Gbit/s capacity (connection between CIX1 and CIX2)

CIX members are connected within CIX over peering VLAN: IPv4 address space 185.1.87.0/24, IPv6 address space 2001: 7f8: 28 :: / 64 and AS number 51702.

For the purpose of connecting to peering VLAN, one IPv4 and one IPv6 address per interface/channel is assigned to CIX member.

It is allowed to use 10 MAC (Media Access Control) addresses per interface/channel within the peering VLAN. The use of STP (Spanning Tree Protocol) protocol is not allowed.

Connection of a CIX member's equipment to CIX can be performed by using a Copper/UTP or optical connection to LC connector via SFP or SFP+ module. Supported types and characteristics of the physical connection can be found in the table below.

Connection type	Characteristics	
1GE	1000Base-T; UTP CAT 5E	
	LC 1000Base-LH; wave length: 1310 nm; up to 40 km with single-mode optics	
	LC 1000Base-LX; wave length: 1310 nm; up to 10 km with single-mode optics	
	LC 1000Base-SX; wave length: 850 nm; up to 550 m with multi-mode optics	
	LC 1000Base-BX-D wave lenght 1490 nm TX/1310 nm RX (on CIX side); 1000Base-BX-U wave lenght 1310 nm TX/1490 nm RX (on member side); up to 10 km with single-mode optics	
10GE	LC 10-GbE port (IEEE 802.3ae Type 10Gbase-SR); wave length: 850 nm; up to 300 m with multi-mode optics	
	LC 10-GbE port (IEEE 802.3ae Type 10Gbase-LR); wave length: 1310 nm; up to 10 km with single-mode optics	
	LC 10GBASE-BX-D wave lenght 1330 nm TX/1270 nm RX (on CIX side); 10GBASE-BX-U wave lenght 1270 nm TX/1330 nm RX (on member side); up to 10 km with single-mode optics	
100GE	LC 100GBASE-LR4 wave lenght WDM 1295.56 nm, 1300.05 nm, 1304.59 nm, 1309.14 nm; up to 10 km with single-mode optics	

To achieve the desired bandwidth, it is possible to connect the same types of interfaces to the channels using the Link Aggregation Control Protocol (LACP) inside the same CIX node. For establishment of multilateral peerings inside peering VLAN, a redundant Route Server infrastructure has been established using OpenBGPd and MD5 algorithm. The condition for redundancy is peering with both Route Servers. In order to achieve maximum efficiency in the exchange of traffic through CIX, it is recommended to use the Open Peering Policy.

To ensure high availability, CIX's network infrastructure is monitored by network monitoring tools.

CIX information services include the public and internal CIX web.

On public CIX web www.cix.hr, all public information about CIX has been published without access restrictions.

On internal CIX web, CIX members have limited access and they can only access their own data.

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Services and prices

According to Article 5 of CIX Policy, Srce, as the CIX host, provides each CIX member the following services at quoted prices:

1. Connection to CIX:

Service name	Service description (level)	Monthly fee
1G	 1 Gbit/s interface for connection to CIX access to CIX <i>peering VLAN</i> 	1.150,00 HRK
10G*	 10 Gbit/s interface for connection to CIX access to CIX <i>peering VLAN</i> 	3.450,00 HRK
100G**	 100 Gbit/s interface for connection to CIX access to CIX <i>peering VLAN</i> 	12.750,00 HRK

*The monthly fee for the second and each subsequent 10G connection is 1.725,00 HRK.

** 100G service may have a longer delivery time to the customer.

One-time set-up fee for the first connection to CIX switch amounts 3.000,00 HRK.

It is possible to use multiple interfaces in one channel (LACP).

2. Route Servers for establishing multilateral peering between CIX members.

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

3. Additional VLANs for specific purposes for connecting members regardless of CIX peering VLAN.

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

4. Limited accommodation of network equipment for CIX members connected at CIX1 location.

Space in 19" rack at CIX1 location	Monthly fee
RU (rack unit)	220,00 HRK

Accommodation of CIX members equipment at CIX2 is regulated by Altus IT d.o.o. and isn't part of the CIX services.

The amounts in items 1 and 4 of the Price list are taxable with value added tax by the headquarters of service recipient (taxpayer), in accordance with the value added tax law.

Prices are valid from 01 December 2019.

Director Zoran Bekić, Phd