DE-CIX TECHNICAL ACCESS DESCRIPTION

I. GENERAL PROVISIONS

1. Overview, scope of application

This document contains the Technical Access Description (TAD) for the DE-CIX access product. This TAD is part of the DE-CIX contractual framework.

This TAD shall apply only to the DE-CIX access product. DE-CIX access may, however, be a prerequisite for other DE-CIX services. Access to the DE-CIX infrastructure is realized by a physical port. This document contains only technical specifications and documentation. Please consult the Master SLA for service levels.

2. Amendment

This document may be revised and amended at any time pursuant to the provisions of the DE-CIX Agreement.

3. Product prerequisites

The DE-CIX access requires the following DE-CIX products for its normal operation:

- None.

4. Applicable standards

Members' use of the DE-CIX network shall at all times conform to the relevant standards as laid out in STD0001 and associated Internet STD documents.

II. HARDWARE

DE-CIX currently supports the following hardware configurations. All configurations use single mode optical fiber connections only.

Type	Bandwidth	Available Optics
1 GE line rate	1 Gbps	1000 Base-LX
10 GE line rate	10 Gbps	10,000 Base-LR 10,000 Base-ER**
100 GE line rate	100 Gbps	100,000 Base-LR* 100,000 Base-LR4*
400 GE line rate	400 Gbps	400GBase –LR4

* LR and LR4 transceivers are subject to availability in the respective data center. Additional fees may apply.

** 10,000 Base-ER on request. Additional charges apply.

For the cabling, our product CampusFIBER is used, if available.

III.   PHYSICAL LAYER CONFIGURATION (ISO/OSI LAYER 1)

1.   Bandwidth

Bandwidth of the access is subject to the respective client order. Generally, and subject to availability in the respective data center, DE-CIX offers the following bandwidths:

- 1 Gbps
- 10 Gbps
- 100 Gbps
- 400 Gbps

2.   Access configuration

The following parameters must be configured for various access bandwidths:

Port bandwidth	Policy	Parameter settings
1 Gbps ethernet	**Configure explicitly**	Bandwidth = 1 Gbps Full Duplex = enabled auto negotiation = disabled
10 or 100 Gbps Ethernet	**Auto-sensing**	No modification needed.
400 Gpbs Ethernet	**Autosensing**	No modification needed.

3.   Link aggregation

Link aggregation allows the bundling of multiple physical links to one logical link. This is also known as Port Channel, Port Aggregation, Trunking or Etherchannel depending on the vendor's product name (specified by IEEE 802.3ad/LACP).

On the DE-CIX platform, link aggregation may be used subject to the following configuration settings:

Parameter	Policy	Remarks
1 Gbps port bandwidth	**Allow**	Max. 4 ports per bundle
10 or 100 Gbps port bandwidt	**Allow**	Max. 8 ports per bundle
400 Gbps port bandwidth	**Allow**	Max. 8 ports per bundle
LACP Protocol	**Required**	Non LACP usage by special request only.
LACP timeout	**Short**	-

4.   Layer 2 MTU

The minimum layer 2 MTU must be set high enough to not restrict the MTUs of any service used on the port.

5.   VLAN tagging

VLAN tagging is supported for service differentiation. The standard dot1q (IEEE 802.1q) is generally supported. The standard QinQ (IEEE 802.1ad) is supported only in some locations and only by request.

VLAN IDs must be coordinated with DE-CIX. Not all IDs may be available for customer use at all locations.