

AGREEMENT FOR THE SUPPLY AND USE OF THE ATHEX MARKET
INFORMATION TO MEMBER'S APPLICATIONS

INFORMATION & TECHNICAL SPECIFICATIONS

ANNEX B'



AGREEMENT FOR THE SUPPLY AND INTERNAL USE OF THE ATHEX MARKET INFORMATION TO MEMBER'S APPLICATIONS

1. INFORMATION & TECHNICAL SPECIFICATIONS

The information provided to the Member, includes the markets trading in Athens Stock Exchange (Securities, Derivatives, FTSE/ATHEX Indices) and the Member can select the numbers of the below levels prices Bid/Ask (BBO):

- 1 Best Bid/Ask (1BBO),
- 5 Best Bid/Ask (5BBO),
- 10 Best Bid/Ask (10BBO),
- FULL ORDER DEPTH (FOD) & 10BBO.

The provision of the information from ATHEX and the content is described in the below technical specifications (IOCP environment):

- **OASIS IDS Market Data Feed Specification V 4.0.6**
- **OASIS IDS Interface Technical Specification V 4.0.0**

Or later versions in effect.

The network connection of the Member with the ATHEX IOCP environment can be implemented through trading network and Internet (for the test environment), according to the guidelines at the **below form**:

2. FORM FOR THE CONNECTIVITY OF THE INTERNAL NETWORK OF THE ATHEX MEMBER WITH THE IOCP INFRASTRUCTURE OF THE ATHENS STOCK EXCHANGE

The current form refers to the connectivity of the internal network of ATHEX Member with the ATHEX IOCP infrastructure. This form should be completed by the appropriate department of the Member for technical issues.

Then, this form should be sent via email to the ATHEX Network Department at the following email address: noc@helex.gr.

The file sent by your side should have the following name and it also should be at Windows Word format:

<Company Name>_ver2.0.doc

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1. General Information of node & technical contact details for the specific implementation

Company Name:

Node Name:

Node Type:

Technical Contact for Installation: 1.1

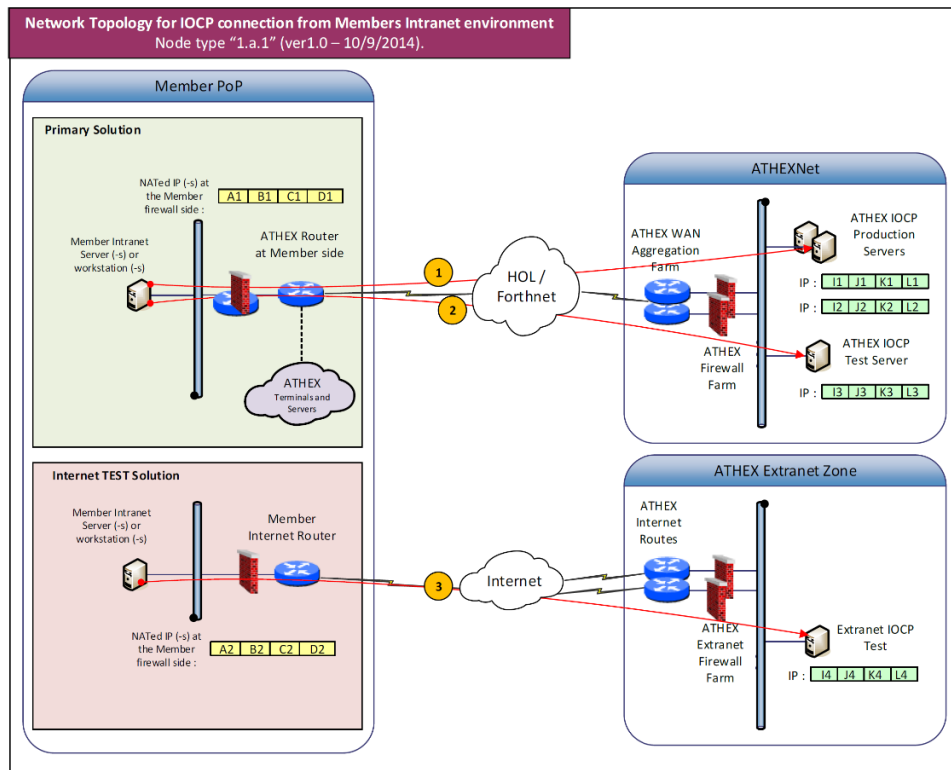
Phone:

Mobile phone:

Email :

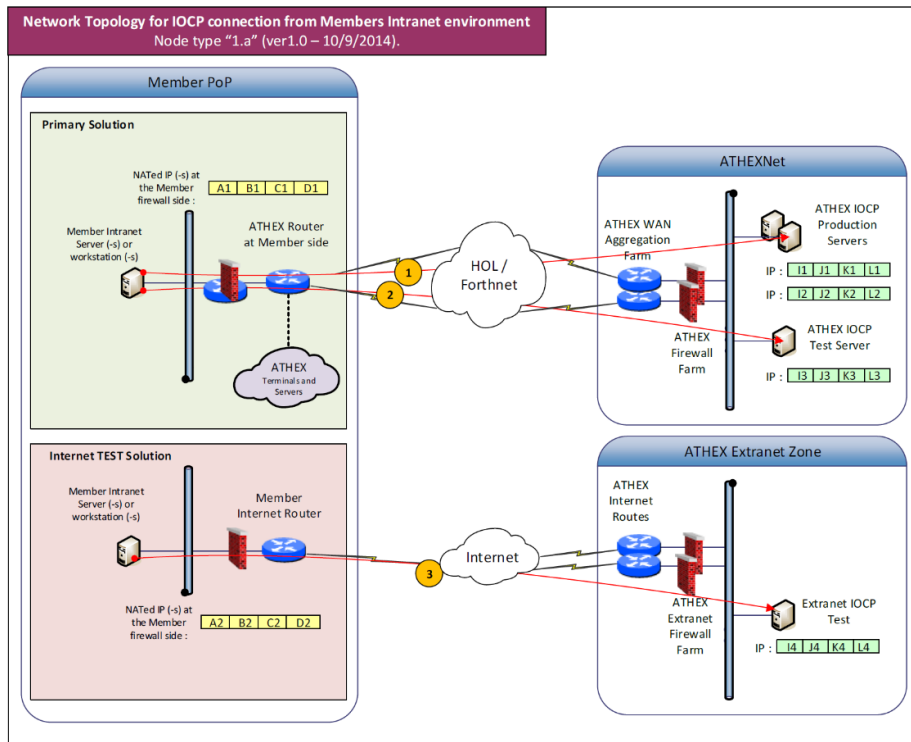
2. Network Topology

Depending on the type of node referring above, it will be implemented the model of network connection of the Intranet infrastructure of the Member with the ATHEX IOCP infrastructure.

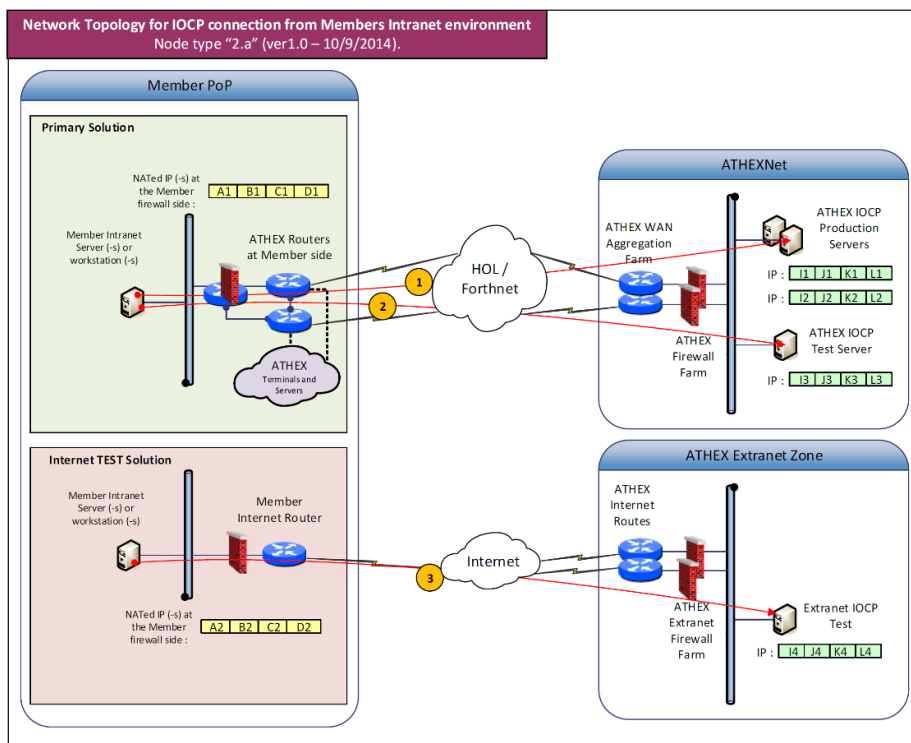


Network Diagram for the node of type 1.a.1

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Network Diagram for the node of the type 1.a



Network Diagram for the node of type 2.a

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3. IOCP application flows characteristics

Services and flows definition

3.1. The primary interface in the production environment

As primary interface of the production environment is the connection of the existing circuits of the ATHEX applications. The Intranet communication of the terminals with the ATHEX IOCP Servers is TCP, in predefined ports: 1124 (control) and 1125 (data).

3.2. The primary interface in the shadow (test) environment

As primary interface of the test environment is the connection of the existing circuits of the ATHEX applications. The Intranet communication of the terminals with the ATHEX IOCP Servers is TCP, in predefined ports: 1124 (control) and 1125 (data).

3.3. Connectivity through Internet

As the test interface via Internet is the connection of the Intranet terminals of the Member, where its network infrastructure communicates with the ATHEX IOCP Server. The connection is TCP and the below predefined ports are: 1124 and 1125.

According to the above, please see the below table concerning the network communication and the characteristics of the application:

Flow ID	Application flow description	Protocol	Source IP	Source port	Destination IP	Destination Port	Description
1a	Primary Interface in the production environment.	TCP	A1.B1.C1.D1	x TCP port gt 1023	11.J1.K1.L1 12.J2.K2.L2	1124	Control Channel
1b	Connection of the Intranet terminals to the ATHEX IOCP production environment, through the ATHEX circuits.	TCP	A1.B1.C1.D1	x TCP port gt 1023	11.J1.K1.L1 12.J2.K2.L2	1125	Data Channel
2a	Primary Interface in the test environment. Connection of the	TCP	A1.B1.C1.D1	x TCP port gt 1023	13.J3.K3.L3	1124	Control Channel

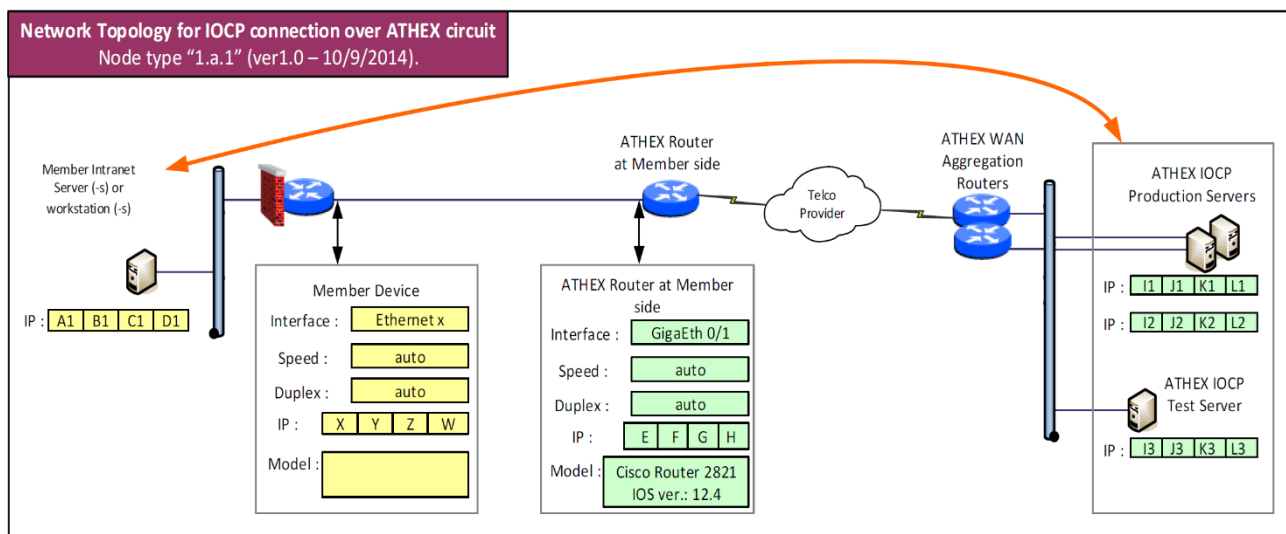
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2b	Intranet terminals to the ATHEX IOCP test environment, through the ATHEX circuits.	TCP	A1.B1.C1.D1	x TCP port gt 1023	I3.J3.K3.L3	1125	Data Channel
3a	Connection through Internet.	TCP	A2.B2.C2.D2	x TCP port gt 1023	I4.J4.K4.L4	1124	Control Channel
3b	Connection of the Intranet terminals to the ATHEX IOCP test environment, through internet.	TCP	A2.B2.C2.D2	x TCP port gt 1023	I4.J4.K4.L4	1125	Data Channel

Table 1, Application Flows

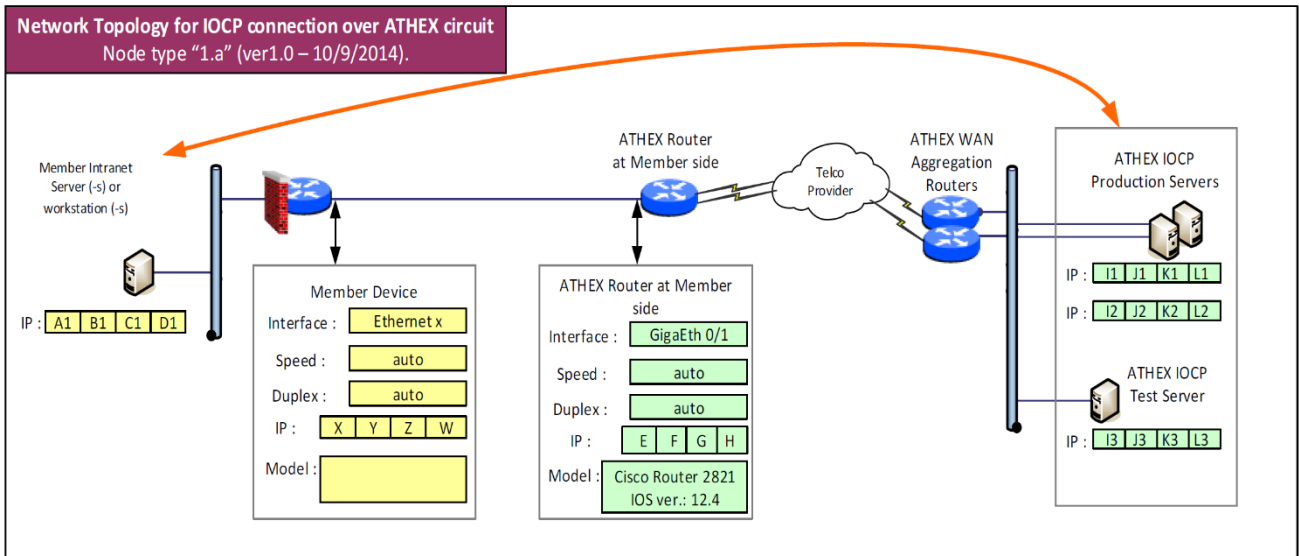
4. Network Settings

Depending on the Node Type, referring above, it will be implemented the model of network connection of the Intranet infrastructure of the Member with the ATHEX IOCP network infrastructure.

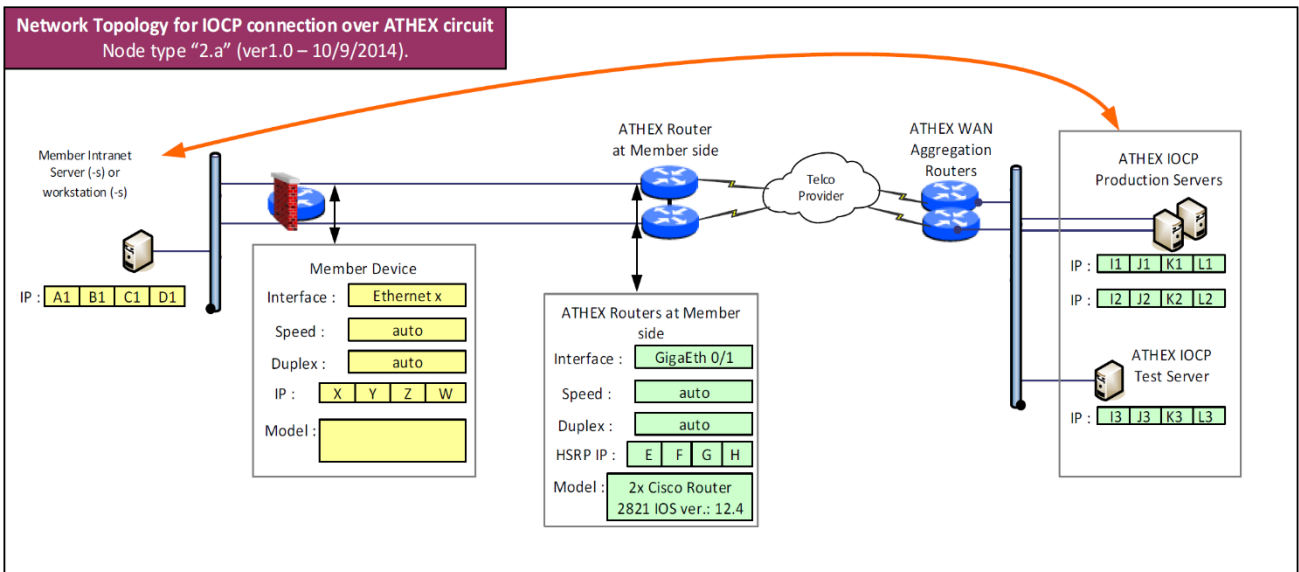


Network topology for the node of type 1.a.1

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Network topology for the node of type 1.a



Network Topology for the node of type 2.a

The administrator of the network infrastructure of the Member will have to complete the empty fields below. These fields will help the implementation of the interconnection of the internal infrastructure with the ATHEX IOCP infrastructure.

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4.1. LAN Connection parameters and setting:

The interconnection of the internal infrastructure of the Member with the ATHEX IOCP infrastructure will be realized, through the existing circuits that connect the node < NODE NAME > with ATHEX. The speed of each circuits is 4Mbps with Round Trip Time (RTT) of 2msec, the technology is Metro Ethernet, while the Telco providers of the circuits, are Forthnet and Hellas On Line (HOL).

4.1.1. ATHEX LAN parameters

For the connection of the network infrastructure of the < Company Name >: the Gigabit Ethernet interface 0/1 of the network equipment (Cisco Router 2821) with the < Node Address > & the < Node Name >, should be connected with the Member's network equipment, so as to allow communication of the Member's internal terminals (front office) with the ATHEX IOCP infrastructure. The connection is exclusively through the UTP cabling type Cat6 (in case that the equipment of the Member supports Ethernet 1Gbps) or Cat5e (in case that the equipment of the Member supports Ethernet 100Mbps).

In this communication, below it is presented the parameterization has been done by ATHEX to the Gigabit Ethernet interface 0/1, where it connected with the network infrastructure of the Member:

```
!  
interface GigabitEthernet0/1  
ip address 10.< Node ID >.< Branch >4.2 255.255.255.248  
no ip redirects  
ip accounting output-packets  
ip accounting access-violations  
no cdp enable  
load-interval 30  
duplex auto  
speed auto  
standby 41 ip 10.< Node ID >.< Branch >4.1  
standby 41 priority 120  
standby 41 timers 2 5  
standby 41 preempt  
!  
ip route 10.< Node ID >.< Branch >4.32 255.255.255.224 10.< Node ID >.< Branch >4.4  
!
```

Note: We would like to note that due to the fact that the speed of Ethernet infrastructure of the Member's

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node is 1Gbps (Gigabit Ethernet), it is necessary that the network equipment should have the corresponding speed, in order to avoid problems with the speed of Ethernet interface.

4.1.2. Member LAN parameters

```
!
interface Gigabit Ethernet
ip address 10.<Node ID>.<Branch>4.5 255.255.255.248
duplex auto
speed auto
HSRP or Firewall standby ip 10.<Node ID>.<Branch>4.4
!
ip route 10.200.121.37 255.255.255.255 10.<Node ID>.<Branch>4.1
ip route 10.200.121.38 255.255.255.255 10.<Node ID>.<Branch>4.1
ip route 10.200.124.38 255.255.255.255 10.<Node ID>.<Branch>4.1
!
```

4.1.3. Compatibility check between ATHEX Network equipment and the Member devices

The equipment, which is used by the Member for the connection with ATHEX, is Cisco Router 2821 and it is fully compatible with any other network equipment of Cisco including Cisco Routers, Cisco Firewalls (information can also be obtained at the following URL: http://www.cisco.com/c/en/us/products/collateral/routers/2800-series-integrated-services-routers-isr/product_data_sheet0900aecd8016fa68.html)

In case that other network equipment will be used by the Member, then it may require further research for the compatibility of the interconnection of the two (2) infrastructures.

For this connection, please be so kind to complete the fields of the below table (the model and the manufacturer), in order to connect with the Cisco Router 2821 of the Member's node.

Manufacturer	Model	Operation system version
1.2	1.3	

4.1.4. IP addressing of the Network equipment

Following the above information, the network equipment (Cisco Router 2821), which is located at the premises of the Member, shall have the private IP address:

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Private IP address for the ATHEX Router at member site (E.F.G.H)	10.<Node ID>.<Branch>4.1
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Also, below it is presented the private IP address of the network equipment of the Member, which will connect with the Cisco Router 2821:

Private IP address for the Member Network device (X.Y.Z.W)	10.<Node ID>.<Branch>4.4
---	--------------------------

Please note that for the communication of the two (2) in the interconnection of the network equipment, is necessary the Ethernet infrastructure and the support of "static routes".

5. IP Address settings

5.1. Mapping of the IP addresses for the connection of the Intranet terminals of the <Company Name> at the node <Node Name> with the ATHEX IOCP infrastructure in the production environment and in the primary interconnection:

As described in the above sections, the primary ATHEX IOCP servers have the IP addresses:

Primary IOCP servers 1 (I1.J1.K1.L1)	10.200.121.37
Primary IOCP servers 2 (I2.J2.K2.L2)	10.200.121.38

In this implementation and to avoid overlap among private networks, which ATHEX uses with those of each Member, it is necessary the usage of the private networks which will be allocated by ATHEX and which can be used either as the IP address of the terminal of the Member or as NAT IPs in a plurality thereof.

Private IP address for the <Company Name> at the node <Node Name> (A1.B1.C1.D1) which will be allocated by ATHEX:	10.<Node ID>.<Branch>4.32 /28
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5.2. Mapping of the IP addresses for the connection of the Intranet terminals of the <Company Name> at the node <Node Name> with the ATHEX IOCP infrastructure at the production environment and the primary interconnection:

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Following the above information, the ATHEX TEST IOCP server has the IP address:

TEST IOCP servers 1 (I3.J3.K3.L3)	10.200.124.38
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In this implementation and to avoid overlap among private networks, which ATHEX uses with those of each Member, it is necessary the usage of the private networks which will be allocated by ATHEX and which can be used either as the IP address of the terminal of the Member or as NAT IPs in a plurality thereof.

Private IP address for the <Company Name> at the node <Node Name> (A1.B1.C1.D1) which will be allocated by ATHEX:	10.<Node ID>.<Branch>4.32 /28
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5.3. Mapping of the IP addresses for the connection of the Intranet terminals of the <Company Name> at the node <Node Name> with the ATHEX IOCP infrastructure at the test environment through the Internet:

As described in the above sections, the Test ATHEX IOCP server has the IP address: **193.242.251.163**

In this case, the mapping of the public IP addresses should be done, in order to be implemented the connection of the terminals to the IOCP Server through the Internet.

Public IP address for the <Company Name> at the node <Node Name> (A2.B2.C2.D2)

6. Credentials (Connection Accounts) to the IOCP

Obtaining the information of the Data Feed involves creating “**Connection Accounts per IOCP Server**” and the issue of the corresponding credentials (Username/Password). A prerequisite for the creation of the connection accounts is to identify the specific IP address (from the range IP address we gave you) from which we will permit your access to the IOCP Servers.

Please send the IP via email to the following emails: NOC@helex.gr and DFS@helex.gr.