ATHEX Network Management Department

Market Data Feed Service (MDFS) Network Specifications

Version: 8

Contents

Revision History

Version	Date	Description
1.0	2023/09/15	Draft -1st review
2.0	2024/01/12	2nd review
3.0	2024/01/13	3rd review
4.0	2024/01/15	4th review
5.0	2024/01/17	5th review
6.0	2024/02/13	6th review
7.0	2024/03/05	7th review
8.0	2024/07/10	8th review

1. Introduction

This document refers to network specifications needed for Data Feed customers to use the new Market Data Feed Service (**MDFS**) through **multicast** (**M/MDFS**) provided by Athens Exchange (ATHEX).

It also refers to network specifications needed for customers to use the new Market Data Feed Service (MDFS) through **TCP (unicast retransmission)** provided by ATHEX.

MDFS will provide the following environments for multicast & TCP retransmission service:

- Production (PRD)
- TEST (UAT)

From now on, MDFS refers to "Market Data Feed Service" wherever met in this document.

2. Customer Registration

The current form should be completed (whenever needed) and sent to ATHEX Network Department (ATHEX NOC) at: noc@athexgroup.gr at word format file with name:

> *<customer_name>_MDFS.doc*

The form needs to be completed for all communications between the Network Management Department of ATHEX and customers.

The below table should be completed by customer's appropriate department:

Customer Company Name:	
Technical Contact for communication (name):	
Phone number:	
Email :	

Table A: Customer information

3. Points of Presence for MDFS supply

Multicast for Market Data Feed Service will be provided equally in terms of content from two points, for redundancy reasons:

- Main Site of ATHEX infrastructure
- Alternative Site of ATHEX infrastructure

A slight time-to-delivery offset may apply between content from the two data sources. Multicast Market Data Feed Service (M/MDFS) can also be provided to a customer through ATHEX's Points of Presence in London (through x-connections or Remote Member node):

- LD4
- LD8

4. Means of MDFS supply

Multicast Market Data Feed Service (M/MDFS) will be provided to Data Feed customers via:

- Leased Lines (including x-connections) through Source-Specific Multicast (SSM),
- Internet though Source-Specific Multicast (SSM) and use of GRE (Generic Routing Encapsulation) tunnels between customer and ATHEX and
- Colocation service through Any-Source Multicast (ASM).

To recover lost packets a TCP (unicast) retransmission service will be provided to Data Feed customers via:

- Leased Lines (including x-connections),
- Internet and
- Colocation service

4.1 Source-Specific Multicast (SSM) through leased lines and x-connections.

Multicast Sources and Groups for SSM implementation through Leased Lines are provided in Table 1. Data Feed customers should make sure that they can route the ATHEX internal server source IP and not have a conflict for the multicast IP groups. PIM (Protocol Independent Multicast) neighborship should be implemented between ATHEX and Data Feed customer equipment.

For access to PRD environment Data Feed customer's using leased lines, ATHEX suggest that Data Feed customers have at least:

- one (1) leased line in Main Site at least 6Mbps
- one (1) leased line in Alternative Site at least 6Mbps

Total bandwidth requirement: at least 12 Mbps

For access to UAT environment Data Feed customer's using leased lines, ATHEX suggest that Data Feed customers may have:

- one (1) leased line in Main Site at least 6Mbps
- one (1) leased line in Alternative Site at least 6Mbps

The total bandwidth requirement it depends of the number of leased lines: 6 or 12 Mbps

Customer participation must be communicated with ATHEX NOC prior to use. Multicast groups for each leased line will be different and are provided in Table 1. For each customer, the appropriate multicast groups will be communicated during the implementation.

In case of ATHEX Trading Members located in Athens who already have own (1) leased line per ATHEX Data Center (Main and Alternative Site), the bandwidth required is 6 Mbps/leased line additional to the current trading operation bandwidth needs.

Leased Line	Main Site Source / Multicast IP	Alternative Site Source / Multicast IP
Production Environment	10.200.204.20 / 232.0.1.x x=[1..254]	10.200.206.20 / 232.0.2.x x=[1..254]
UAT Environment	10.200.204.101 / 232.1.1.y y=[1..254]	10.200.124.102 / 232.1.2.y y=[1..254]

Table 1: Multicast server Source IPs and Multicast group IPs

Important note:

In order to avoid any kind of RPF (Reverse Path Forwarding) check failure at customer's equipment they must route multicast source's IPs to the interface connected upon ATHEX network equipment.

Customer should configure "*pim neighborship*" for SSM multicast and include the below configuration at their side:

"ip pim sparse-mode"

"ip igmp static-group 232.x.x.x source 10.200.x.x"

In case of M/MDFS through London PoPs, if a customer has already a single or double x-connection then they will receive the M/MDFS from Main and Alternative Site's servers through the primary international line connecting ATHEX to London.

If needed, they will receive the M/MDFS through the backup international line (in case primary line is inactive/malfunctioned).

In case of a Remote Member's node connected to London POPs via leased line, M/MDFS will be provided similarly.

Multicast source IPs and multicast group IP ranges are the ones mentioned in Table 1.

4.2   Retransmission through leased lines

For the retransmission case ATHEX suggest that Data Feed customers have at least:

- One (1) leased line in Main Site
- One (1) leased line in Alternative Site

Total bandwidth requirement: 2 Mbps per leased line (4Mbps total bandwidth)

In case of access to UAT environment, an additional bandwidth of 2 Mbps per leased line is required.

In table 2, the IPs are defined. The ports will be defined for each customer.

Leased Line	Main Site Source	Alternative Site Source
Production Environment	10.200.204.20 tcp/port x x: will be defined for each customer	10.200.206.20 tcp/port x x: will be defined for each customer
UAT Environment	10.200.204.101 tcp/port y y: will be defined for each customer	10.200.124.102 tcp/port y y: will be defined for each customer

Table 2: Server Source IPs for retransmission

4.3   Source Specific Multicast (SSM) through Internet

M/MDFS will be provided over the Internet through GRE tunnels for customers who require it. Multicast server sources will be of public IP and are provided in Table 3 below.

Customer should configure "*pim neighborship*" for SSM multicast and include the below configuration at their side:

"ip pim sparse-mode"

"ip igmp static-group 232.x.x.x source 193.242.243.x"

GRE Tunnels	Main Site Source/ Multicast IP	Alternative Site Source 1 / Multicast IP
Production Environment	193.242.243.134 / 232.0.128.x x=[1..254]	193.242.243.135 / 232.0.129.x x=[1..254]
UAT Environment	193.242.243.136 / 232.1.128.y y=[1..254]	193.242.243.137/ 232.1.129.y y=[1..254]

Table 3: Multicast server Source IPs and Multicast group IPs for Internet option

Customers should have one GRE tunnel for connecting to ATHEX Main Site and another for connecting to ATHEX Alternative Site. Customers should provide their public tunnel's IP during communication with ATHEX Network Management Department.

- Internet customers will receive multicast traffic from Main Site Source through the respective GRE Tunnel:
  For interface tunnel configuration:
  - ✓ 10.207.218.x/30, it will be defined together with ATHEX Network Operation Department)
  - ✓ Customer should communicate the public IP in Table 4

ATHEX Main Site tunnel IP	Customer tunnel IP
193.242.255.53/32	<to be filled>/32

Table 4: GRE tunnel ends

- Internet customers will receive multicast traffic from Alternative Site Source through the respective GRE Tunnel:
  For interface tunnel configuration:
  - ✓ 10.207.219.x/30, it will be defined together with ATHEX Network Operation Department)
  - ✓ Customer should communicate the public IP in Table 5

ATHEX Alternative Site tunnel IP	Customer tunnel IP
193.242.255.54/32	<to be filled>/32

Table 5: GRE tunnel ends

The bandwidth requirements are the same as described above for PRD and UAT environment (6Mbps for multicast per VPN connection, per environment).

4.4 Retransmission through Internet

For retransmission through the internet, table 6 defines the server IPs.

GRE Tunnels	Main Site Source	Alternative Site Source
Production Environment	193.242.243.134 tcp/port x x: will be defined for each customer	193.242.243.135 tcp/port x x: will be defined for each customer
UAT Environment	193.242.243.136 tcp/port y y: will be defined for each customer	193.242.243.137 tcp/port y y: will be defined for each customer

Table 6: Unicast server Source IPs for Internet option

The bandwidth requirements are the same as described above for PRD and UAT environment (2Mbps for multicast per VPN connection, per environment).

4.5 Any-Source Multicast (ASM) through colocation infrastructure

For collocated customers, ASM IPs and groups are provided in table 7 and further configurations will be provided during the implementations with ATHEX Network Management Department. In case, more multicast groups are provided, these will be communicated appropriately

Leased Lines	Main Site Source/ Multicast IP	Alternative Site Source / Multicast IP
Production Environment	10.200.204.20/ 239.0.1.x x=[1..254]	10.200.206.20/ 239.0.2.x x=[1..254]
UAT Environment	10.200.204.101/ 239.1.1.y y=[1..254]	10.200.124.102/ 239.1.2.y y=[1..254]

Table 7*: Multicast Source IPs/ Multicast IPs for ASM*

As we refer to LAN topology (Colocation zone) the minimum system's connectivity is 1GE. However, the bandwidth requirements are the same as described above for PRD and UAT environment (6Mbps for multicast per connection, per environment).

4.6 Retransmission through collocation service

For the case of retransmission through collocation server, the IPs will be the same as table 2.

As we refer to LAN topology (Colocation zone) the minimum system's connectivity is 1GE. The bandwidth requirements are the same as described above for PRD and UAT environment (2Mbps for multicast per connection, per environment).
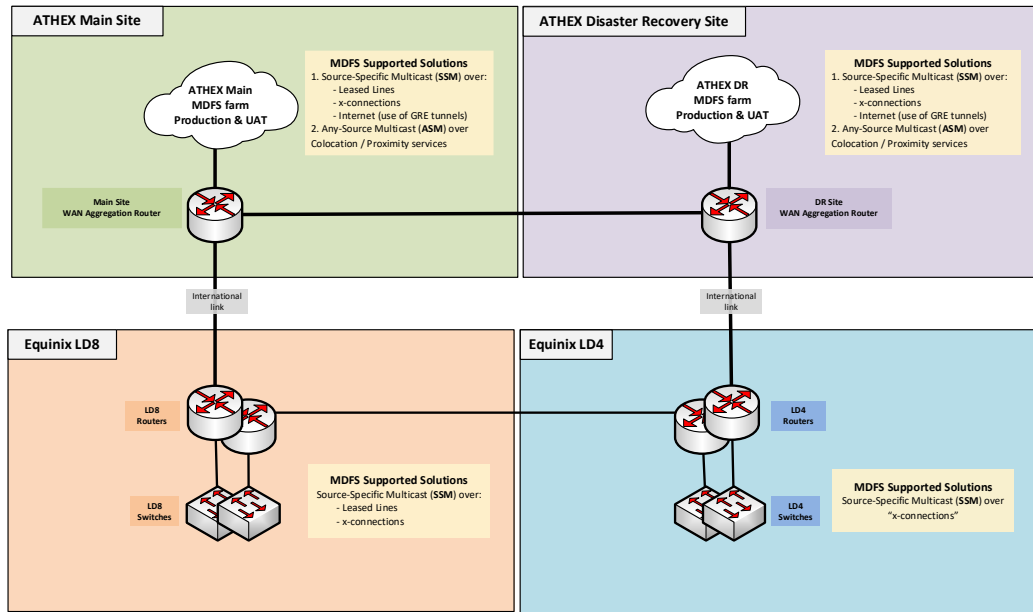
5. Terms and Conditions

The customer is responsible for obtaining any and all approval(s) for importing and operating their equipment, as may be required by the respective local laws and regulations.

Both parties are responsible for securing their respective ends of the connection against unauthorized third-party access.

6. Appendixes

6.1 MDFS ATHEX DCs

Figure 1: *MDFS in ATHEX Data Centers*

6.2 Multicast protocols

No	Data Center	Multicast protocol	Service Connectivity
1	ATHEX Main Site	SSM	Leased Line
			x-connection
			Internet (use of GRE Tunnel)
		ASM	Colocation / Proximity
2	ATHEX Alternative Site (DRS)	SSM	Leased Line
			x-connection
			Internet (use of GRE Tunnel)
		ASM	Colocation / Proximity
3	ATHEX Equinix LD4	SSM	x-connection
4	ATHEX Equinix LD8	SSM	Leased Line
			x-connection

Table 8: *M/MDFS - Multicast protocols*