RESOLUTION 21: "Provision of technology services by ATHEX"

ANNEX A

Provision of services for connectivity to the Athens Exchange Transactions Network (ATHEX-Net)

Version 1.4

November 2014

Version History

Version	Date	Version description
1.1	December 2005	1η version
1.2	May 2007	2η version
1.3	July 2008	3η version
1.4	November 2014	4th version

Important Notice

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CONTENTS

1 INTRODUCTION

The Athens Exchange Transactions Network (ATHEX-Net) was initially developed in the period 1995-1996, in the framework of implementing the project for the Information Technology development of ATHEX, with the aim of enabling remote trading of shares (Automated Electronic Trading System [ASIS]) as well as other stock exchange products and services in the field of the capital market (Electronic Bond Trading System [SIDO], Dematerialized Securities System [DSS], Integrated Automatic Electronic Trading System [OASIS], etc.).

The main design components of the ATHEX-Net infrastructure are:

- √ ability to conduct electronic trading from the premises of Users (ATHEX Members, banks, supervisory authorities, etc.),
- √ "high performance" coverage of the Thessaloniki Stock Exchange Centre,
- √ increased degree of reliability and availability,
- √ minimisation of operating and maintenance costs,
- √ attainment of uninterrupted operation,
- √ attainment of maximum data security,
- √ ensuring a level playing field in stock markets, and
- √ capacity for geographical and technological expansion to meet future needs, by taking full advantage of developments in the fields of telecommunications and networks.

ATHEX-Net is today the central point for the provision of network connectivity and communication services in the field of the capital market, achieving significant economies of scale and – through the further upgrading and expansion of applications and systems – enabling the effective and modern implementation of solutions to meet business needs in harmonisation with and according to the standards of developed European stock markets.

Through ATHEX-Net, **Application Users** that are ATHEX Members, DSS Operators, data vendors and independent software vendors (ISVs) gain access to a range of services. In particular:

- √ ATHEX offers services to its Members for the use of OASIS applications for trading in securities (OASIS/Securities) and derivatives (OASIS/Derivatives),
- √ ATHEX offers services for the use of DSS applications for the clearing of transactions in its Securities Market and Derivatives Market.

The development of the ATHEX-Net infrastructure as a Private Wide Area Network, with the use of a public telecommunications infrastructure (OTE/Data leased lines, etc.), was carried out in accordance with the requirements/specifications set by all parties involved (Providers and Users of ATHEX-Net applications) and resulted in high-standard connectivity via a "shared network" supporting multiple protocols and services, between **Network Application User Connection Nodes** or **User Nodes** at their offices and the main premises of ATHEX.

This text regulates matters pertaining to the provision of ATHEX-Net Connectivity Services. Its main purpose is to set out:

√ the terms and general framework under which ATHEX provides ATHEX-Net Connectivity Services to ATHEX-Net Application Users,
√ the conditions that must be met by Users in order to connect to ATHEX-Net.

The content hereof is structured as follows:

- Chapter 2 sets out the definitions and explains key concepts to which reference is made in this text.
- Chapter 3 focuses on the agreement for the provision of ATHEX-Net connectivity services for ATHEX-Net Application Users and ATHEX-Net Application Providers (hereinafter "ATHEX-Net Users") and the obligations emanating from the aforesaid agreement for both ATHEX and ATHEX-Net Users. Lastly, it refers to the relevant accompanying documents and reference documents for the provision of ATHEX-Net connectivity services.
- Chapter 4 addresses the selection of the technical solution through which a User connects to ATHEX-Net, depending on the category to which such User belongs (ATHEX-Net Application User or ATHEX-Net Application Provider) and its particular needs. In addition, in the case of ATHEX-Net Application Users, reference is made to the emergency plan.
- Chapter 5 focuses on matters relating to the assistance available to ATHEX-Net Application Users and ATHEX-Net Application Providers and the Support services provided.
- Chapter 6 explains key concepts pertaining to the Management & Operation of ATHEX-Net.
- Chapter 7 covers intellectual and industrial property rights.
- Matters concerning fees and payment method, liability, as well as the duration and termination of relevant contracts for the use of ATHEX-Net are set out in Chapters 8, 9 and 10 respectively.
- Lastly, Chapter 11 deals with matters relating to confidential information, subcontractors, applicable law, etc., while the respective accompanying documents, which are an integral part hereof, are attached hereto as Annex I, and the reference documents as Annex II, the latest updated version of which can be found at the web address https://www.athexgroup.gr.

2 DEFINITIONS

"Athens Exchange Transactions Network or ATHEX-Net": The Private Wide Area Network, with the use of a public telecommunications infrastructure (OTE/Data leased lines, etc.) for provision of connectivity services to ATHEX-Net Application Users.

"ATHEX-Net Application": Any ATHEX-approved service provided to companies duly authorised by ATHEX to use the application and receive connectivity services through ATHEX-Net.

"ATHEX-Net Connectivity Service Users or **Users"**: The Users of applications provided via ATHEX-Net.

"ATHEX-Net Connectivity Services": The network services provided to ATHEX-Net Application Users via ATHEX-Net network interface ports.

"ATHEX-Net Application User": Any entity that acquires the right to use an ATHEX-Net application, either as an authorised Member of ATHEX or following the approval by the ATHEX-Net Administrator of a proposal from the respective ATHEX-Net services provider. The right to use one ATHEX-Net application does not automatically entail the right to use another ATHEX-Net application of either the same or of another ATHEX-Net application provider. By way of indication, the following entities are considered to be ATHEX-Net Application Users:

- ° ATHEX Members
- ° DSS Operators (Investment Firms, Credit Institutions)
- ° Clearing Companies (Investment Firms, Credit Institutions)
- ° Data Vendors
- ° ISVs

"ATHEX-Net Application Provider": Any entity that provides an ATHEX-Net application to other entities (ATHEX-Net service users), in the framework of the organisation, continuous development and operation of the Capital Market, following relevant approval by ATHEX. By way of indication, the following entities are considered to be ATHEX-Net Application Providers:

- ° Athens Exchange S.A. (ATHEX)
- ° Hellenic Central Securities Depository S.A. (ATHEXCSD)
- ° Athens Exchange Clearing House S.A. (ATHEXClear)

"ATHEX-Net Administrator/ATHEX-Net Technical Administrator": The person responsible for ensuring the day-to-day smooth operation and provision of technical support to Users, as well as for the necessary maintenance and expansion of the ATHEX-Net infrastructure. In addition, the ATHEX-Net Administrator shapes the regulatory framework for the operation of ATHEX-Net and arranges for its constant updating in a way that responds to the needs of Application Providers and Users.

"ATHEX-Net Point of Presence": For the purposes hereof, the Point of Presence (PoP) is the appropriately arranged space on the premises of the ATHEX-Net Provider or User, where the ATHEX-Net connectivity equipment is installed.

"ATHEX-Net Node": The equipment through which ATHEX-Net Application Users are provided with ATHEX-Net connectivity services via network interface ports. Each ATHEX-Net Node comprises a configuration of router(s) and switch(es) (or a combination of the aforesaid devices) for connecting "(client) terminal" devices of the user to ATHEX-Net services.

"ATHEX-Net Network Access Port (or **ATHEX-Net connectivity port)"**: The port of the ATHEX-Net connectivity equipment through which ATHEX-Net Application Users are connected to ATHEX-Net.

"ATHEX-Net usage fees": The one-time and fixed monthly fees paid by ATHEX-Net Application Users for the use of ATHEX-Net, which are set in accordance with the pricing policy of ATHEX.

"Area of Responsibility of ATHEX-Net Administrator/Technical Administrator": The Area of Responsibility of the ATHEX-Net Administrator/Technical Administrator at the premises of Users includes:

(a) the installation, set-up, maintenance and proper functioning of the "ATHEX-Net connectivity equipment" and **"**ATHEX-Net connectivity ports" at the premises of Users, and

(b) the network interconnection and communication of the Provider's client-server devices from end-to-end, as well as Gateway devices with client-server devices in accordance with the requirements of the respective "User application connectivity service".

"Area of Responsibility of ATHEX-Net Application Provider": The responsibility of the ATHEX-Net Application Provider is confined to the "Server, Client and Gateway Devices" through which Users are provided with access to Applications of the Provider and the corresponding "User Application Connectivity Service", in the framework of the separate agreements and contracts with Users and the regulations on the administration and operation of the ATHEX-Net service.

"Area of Responsibility of ATHEX-Net Application User": The responsibility of the ATHEX-Net Application User in respect of the use of one or more ATHEX-Net Applications and proper communication therewith, through the corresponding Connectivity Service, is limited to: (a) the provisions of its relevant agreements/contracts with the respective Provider, and (b) ensuring the smooth operation of its internal network in the context of the restrictions set by requirements for the installation and operation of the "User application connectivity service".

The area of responsibility of the ATHEX-Net Application User is essentially confined to the internal Network of the User, i.e. to all the computer, network and passive equipment which is installed and operates on the premises of the User.

"Head of Management and Financial Matters": The competent person on the side of the ATHEX-Net User, who binds and represents the User vis-à-vis the ATHEX-Net Administrator with regard to management and operational matters relating to the use of ATHEX-Net, in the framework of the provisions hereof.

"Head of Technical Matters": The competent person on the side of the ATHEX-Net User, who binds and represents the User vis-à-vis the ATHEX-Net Administrator and ATHEX-Net Technical Administrator with regard to technical matters relating to the use of ATHEX-Net, in the framework of the provisions hereof.

3 AGREEMENT ON THE PROVISION OF ATHEX-NET CONNECTIVITY SERVICES

3.1 Object

The purpose of this chapter is to describe matters relating to the agreement on the provision of ATHEX-Net connectivity services not only between ATHEX and the ATHEX-Net Application Provider but also between ATHEX and the ATHEX-Net Application User.

The aforesaid agreement regulates specific issues regarding the provision of ATHEX-Net connectivity services, as well as the relevant accompanying documents and reference documents that are specified in paragraph 3.2.

Lastly, the relevant obligations of interested parties which emanate from the said agreement are described below in paragraphs 3.3 and 3.4.

3.2 Accompanying Documents and Reference Documents

The contractual relationships between ATHEX and the ATHEX-Net Application Provider, as well as between ATHEX and the ATHEX-Net Application User, which emanate from the Agreement on ATHEX-Net connectivity services, as well as other matters that are subject to continuous development and modifications aimed at providing an improved and more efficient service to ATHEX-Net Users, are adequately documented in the Accompanying Documents and Reference Documents of these presents.

The aforesaid Accompanying Documents are the following:

3.2.1 Athens Exchange Transactions Network (ATHEX-Net)

3.2.2 Connectivity/Support Services provided to ATHEX-Net Application Users

The above accompanying documents, which are issued and amended on the sole responsibility of ATHEX, are available to ATHEX-Net Users on the ATHEX website at https://www.athexgroup.gr.

In addition, the content of the accompanying documents and a brief description thereof are provided in Annex I.

ATHEX notifies ATHEX-Net Users regarding any changes to accompanying documents one month before such changes are applied, except in cases where the changes must be applied urgently in order to provide an immediate solution to some problem with the functioning of applications.

The aforesaid Reference Documents are the following:

3.2.3 Procedures for the Provision of Connectivity Services to ATHEX-Net Application Users

3.2.4 Technical Instructions/Specifications for equipment and tasks for configuring the ATHEX-Net/ATHEX Point of Presence (PoP) infrastructure on the premises of ATHEX-Net Application Users

3.2.5 Procedures for the Provision of Support to ATHEX-Net Application Users

The above Reference Documents, which are issued and amended on the sole responsibility of ATHEX, are available to ATHEX-Net Users on the ATHEX website at https://www.athexgroup.gr.

In addition, the content of the Reference Documents and a brief description thereof are provided in Annex II.

ATHEX may provide additional services to ATHEX-Net Users. In such a case, there will be a supplementary agreement between ATHEX and the ATHEX-Net User which will describe the additional services. There may also be a supplementary agreement in cases where there are deviations in the terms and conditions of the present Agreement in order to satisfy specific requirements of ATHEX-Net Users which may be accepted by ATHEX.

The provisions hereof are applicable for all Supplementary Agreements, unless otherwise agreed.

3.3 Obligations of ATHEX

ATHEX provides connectivity services in accordance with the provisions hereof on the provision of ATHEX-Net connectivity services and the specific needs of ATHEX-Net Application Providers or ATHEX-Net Application Users.

ATHEX may modify the services it provides, either by upgrading and optimising the technical environment, or by making changes when these are technically necessary. ATHEX reserves the right to temporarily suspend its services during the modification period after first notifying the ATHEX-Net Application Provider or ATHEX-Net Application User within a reasonable period prior to implementation of the modifications.

ATHEX shall make every possible effort to provide continuous and uninterrupted connectivity services to ATHEX-Net Application Users in accordance with the obligations emanating from and falling within the Area of Responsibility of the ATHEX-Net Administrator/Technical Administrator.

ATHEX has the obligation to provide ATHEX-Net Application Providers and ATHEX-Net Application Users with technical support services on a daily basis in respect of issues relating to the proper functioning of the ATHEX-Net infrastructure.

3.4 Obligations of ATHEX-Net Users

The ATHEX-Net Application User, in order to meet its particular needs for connecting to ATHEX-Net, must cooperate with ATHEX in a manner that facilitates the selection of the best possible technical solution for implementation.

The ATHEX-Net Application User must pay to ATHEX the one-time and the monthly fees for the use of ATHEX-Net (see Chapter 8) which are applicable for the connectivity technical solution it has selected (see Chapter 4) as well as for any additional service it may receive (e.g. transfer, conversion of node type, access speed upgrade, etc.).

The ATHEX-Net Application User must fulfil all its obligations emanating from and falling within the Area of Responsibility of the ATHEX-Net Application User.

The ATHEX-Net Application User is responsible for:

√ the safe operation, in compliance with the particular specifications, of the equipment installed in the Data Centre on its premises;
√ complying with instructions relating to the specifications of the structured cabling that connects computer equipment to the ATHEX-Net network node, as well as to the specifications of the cables used as carriers of the ATHEX-Net telecommunications circuits.

The above are described in the relevant reference document 3.2.4.

In addition, the ATHEX-Net Application User is responsible for:

√ complying with the instructions regarding the precautions it must take in order to safeguard the equipment of the ATHEX-Net node against unwanted interference from third parties;
√ the operation of the equipment provided to it, in compliance with the relevant instructions of ATHEX,

in accordance with the details set out in the relevant accompanying document under 3.2.2.

The ATHEX-Net Application User must allow ATHEX, or its subcontractors, to access its premises if this is deemed necessary by ATHEX and provided reasonable notice has been given, for reasons pertaining to the implementation of this agreement.

The ATHEX-Net Application User must not use the equipment provided to it by ATHEX for any purpose other than the one described herein for the provision of ATHEX-Net connectivity services.

The use of the equipment may not be transferred. The ATHEX-Net Application User may not change, sell or rent the equipment, nor make it available to a third legal entity (even if the latter is an ATHEX Client), unless provision for this has been made in the terms and conditions hereof for the provision of ATHEX-Net connectivity services. The ATHEX-Net Application User may not permit use of the equipment and software by any third party, nor may they be used for the benefit of any third legal entity.

The ATHEX-Net Application User must ensure that its computer environment (software and hardware) does not cause malfunctions and problems in the environment of the Services provided by ATHEX.

If it is found that irregular operation on the part of the ATHEX-Net Application User is causing problems to ATHEX Services, ATHEX reserves the right to partially or fully suspend the ATHEX-Net Application User's access.

The ATHEX-Net Application User undertakes the technical support and maintenance of the network equipment and related cable infrastructure on its premises.

The ATHEX-Net Application User bears sole responsibility for the development and acceptable operation of the infrastructures on its premises.

4 TECHNICAL SOLUTION FOR A USER'S INTERCONNECTION WITH ATHEX-NET

4.1 General

The ATHEX-Net User may select the connectivity technical solution that best suits its operating plans.

Specifically in the case of ATHEX-Net Application Users, the available types of ATHEX-Net nodes differ with respect to the degree of back-up functionality they provide in the event of faults in hardware and telecommunication circuits. The ATHEX-Net User procures the network equipment at its own expense, on the basis of the guidelines and technical specifications of ATHEX, while the telecommunication equipment and telecommunication circuits are made available following an agreement between ATHEX and ATHEX-Net Application Users, based on a *commodatum* (loan for use). On expiry of the said agreement, all the above equipment is returned to ATHEX.

For the purposes of the interconnection with ATHEX-Net, the network equipment chosen by the ATHEX-Net Application User is installed by the supplier in cooperation with ATHEX (for details, see the relevant reference document under 3.2.4). The ATHEX-Net Technical Administrator reserves the right to not install the ATHEX-Net connectivity equipment if the minimum specifications are not met for the ATHEX-Net connection Node in the Data Centre of the User.

The management and operation of the ATHEX-Net Node of the ATHEX-Net Application User are performed by the ATHEX-Net Technical Administrator, who undertakes the daily checking of the proper operation of all the network and telecommunications equipment and the telecommunications circuits between ATHEX-Net network ports.

The ATHEX-Net connectivity services include:

- determining the choice of the appropriate technical solution for the User's interconnection with ATHEX-Net,
- provision of the connectivity equipment according to the specific needs of the ATHEX-Net User (see accompanying document under 3.2.2),
- configuration for use by the ATHEX-Net Application Provider / ATHEX-Net Application User of all the network and telecommunications equipment, the necessary software, as well as the telecommunications circuits. The specific equipment provided to the ATHEX-Net User is described in the accompanying document for the ATHEX-Net Application User under 3.2.2,
- the management and operation of the connectivity equipment provided (for details, see Chapter 6 below),
- the provision of support services to ATHEX-Net Users as described in the relevant reference document under 3.2.5.

4.2 Choice of technical solution

Subject to the restrictions set out in the relevant accompanying document under 3.2.2, the ATHEX-Net User has the option to choose:

√ the type of ATHEX-Net Node (in the case of an ATHEX-Net Application User) or ATHEX-Net equipment to be installed at its offices,

√ the number of Nodes to be installed in one or more of its Data Centres (in the case of an ATHEX-Net Application User).

The choice of connectivity solution is made with the technical support and cooperation of the Head of Technical Matters on the side of the ATHEX-Net Application User and the ATHEX-Net Technical Administrator.

Specifically in the case of ATHEX-Net Application Users, the ordering of a new ATHEX-Net Node or deactivation of an existing Node or transfer of a Node or conversion of ATHEX-Net Node type is carried out in accordance with the procedures (special application forms, etc.) and the price list for provided services which are described in the relevant documents 3.2.2 and 3.2.3, as well as in Resolution 24 on the charges applicable for ATHEX Markets.

4.3 Emergency plan

ATHEX enables ATHEX-Net Application Users to develop emergency plans that ensure business continuity in exceptional cases where for any reason they are unable to use their Nodes that are permanently connected to ATHEX-Net.

In this respect, the ATHEX-Net Application User must have:

√ prepared the backup Data Centre (disaster recovery site) in accordance with the specifications detailed in the relevant document 3.2.4,
√ subscribed to the Disaster Recovery Node service of ATHEX through the procedures set out in the relevant document 3.2.3,
√ paid to ATHEX the one-off Fee stipulated in the Price List of ATHEX-Net connectivity services for inclusion in the Disaster Recovery Node service.

5 SUPPORT FOR ATHEX-NET USERS

5.1 Object

The purpose of this chapter is to set out the terms and conditions under which ATHEX provides support to ATHEX-Net Users.

5.2 General Principles

ATHEX Support Services to ATHEX-Net Users relate to the services provided daily in connection with:

* the diagnosis and repair of faults in the network infrastructure,
* the diagnosis and repair of malfunctions or applications provided through ATHEX-Net,
* advisory services relating to the proper management and functioning of the network infrastructures,
* choice of the optimal technical solution for connecting to ATHEX-Net and checking of the effectiveness of emergency plans,
* the further development and improvement of applications so that they:
√ make best possible use of the advantages afforded by the network infrastructure, and
√ are more adaptable to the particularities of the existing network infrastructure.

The above relates solely to ATHEX-Net Application Providers.

* Understanding the specifications and technical guidance issued by ATHEX.

On receiving the request from the ATHEX-Net User and depending on the nature of the request, the One-Stop Support Desk of ATHEX provides:

√ support, and/or the solution to the problem, either by telephone or through the use of remote access,
√ support, and/or the solution to the problem, by means of an on-site visit when this is deemed necessary.

If a temporary solution (workaround) is given, it will be followed by a corrective resolution as soon as this becomes available.

5.3 One-Stop Support Desk

ATHEX operates a Network Operations Centre (NOC), to which ATHEX-Net Users can submit requests relating to malfunctions/technical problems they have encountered when using the services and also be provided with relevant advisory services.

The support services relate only to the Services provided by ATHEX to Clients.

The support services do not cover:

√ Incompatible installations and non-compliance with the rules and technical specifications as set out in reference document 3.2.4.
√ Incompatible use of the Services provided, as these are described in the relevant accompanying document.

√ Non-compliance with rules and procedures as set out in reference documents 3.2.3 and 3.2.5.

5.4 Support Services to ATHEX-Net Application Users

In respect of ATHEX-Net Application Users, ATHEX

√ arranges the installation of new ATHEX-Net Nodes of ATHEX-Net Application Users and the conversion of ATHEX-Net Node characteristics as described in the relevant documents 3.2.2 and 3.2.3;
√ detects and repairs faults in the telecommunications circuits of ATHEX-Net Nodes;
√ replaces the network and telecommunications equipment in the event of hardware faults;
√ implements procedures for the resolution of problematic issues in cases where the settings of network devices need to be changed in order to repair software faults;
√ performs remote diagnosis of problems relating to the cables connecting the User's computer systems to the ATHEX-Net Node switches at the premises of ATHEX-Net Users;
√ provides advisory services relating to services provided by ATHEX-Net.

The Support Services provided to ATHEX-Net Application Users are described in detail in the relevant reference document 3.2.5.

6 MANAGEMENT AND OPERATION OF ATHEX-NET

6.1 General

The management and operation of ATHEX-Net is performed by ATHEX, which in this framework undertakes:

√ the daily checking of the smooth functioning of ATHEX-Net;
√ the detection and repair of malfunctions in ATHEX-Net, as well as the repair of faults not only at the level of telecommunications circuits (Hellenic Telecommunications Organization, etc.), but also at the level of active and passive network equipment, in order to ensure the day-to-day proper functioning of ATHEX-Net;
√ the installation of new ATHEX-Net Nodes of Users and the conversion of Node characteristics;
√ the activation or deactivation of network ports on the Nodes of Users on the instructions of Providers in order to connect or disconnect computer equipment of the User;
√ the satisfaction of requests for the adaptation of ATHEX-Net to the needs of ATHEX-Net Application Providers in order to meet new application requirements;
√ the announcement to ATHEX-Net Entities and Users of scheduled changes to ATHEX-Net;
√ the monitoring of the adequacy of ATHEX-Net resources (CPU load of network devices, capacity of telecommunications circuits) and the implementation of upgrades whenever necessary;
√ the application of precautionary settings in the equipment of ATHEX-Net Users in order to address the possibility of problems arising which have previously arisen and been addressed in the equipment of other ATHEX-Net Users;
√ the collection and processing of statistical data relating to the operation of ATHEX-Net and the use of its resources, as well as the issuance of reports on its performance (Accounting and Performance measurement);
√ the development and implementation of a security policy and plan for ATHEX-Net;
√ the monitoring of contracts with Providers regarding the maintenance and technical support of the active and passive network equipment and telecommunications services of ATHEX-Net (Maintenance tracking);
√ the physical management of ATHEX-Net equipment.

More information regarding the above is available in documents 3.2.1, 3.2.2 and 3.2.5.

7 INDUSTRIAL AND INTELLECTUAL PROPERTY RIGHTS

7.1 Property rights and user licences

The ATHEX-Net User acknowledges that all trademarks, trade names, industrial and intellectual property rights used or incorporated in the framework of providing the ATHEX-Net connectivity services or in connection with them, are and shall remain the property of ATHEX.

If the ATHEX-Net User becomes aware of any breach of the aforementioned rights of ATHEX by a third party, it undertakes the obligation to notify ATHEX without delay.

7.2 Warranties of ATHEX-Net Users

The ATHEX-Net User warrants to ATHEX that it has all the necessary authorisations, permits and legal property rights for ATHEX to install and provide the requested ATHEX-Net connectivity services.

8 FEES AND PAYMENT METHOD

8.1 General

The use of the ATHEX-Net connectivity services provided will be priced by ATHEX in accordance with its pricing policy applicable at any time, based on the relevant resolutions of its Board of Directors.

Specifically for the use of the ATHEX-Net connectivity services, ATHEX-Net Users will pay a one-time and fixed monthly fees as described in detail in Resolution 24. On the side of the ATHEX-Net User, the person responsible for handling the above is the Head of Management and Financial Matters.

The above-mentioned fees are subject to the applicable VAT rate.

ATHEX reserves the right to issue additional decisions that modify the cost of the ATHEX-Net services when there are special circumstances.

The payment method in respect of the envisaged cost for the ATHEX-Net connectivity services will be in accordance with the provisions set out in the documents referenced above.

If an ATHEX-Net User does not pay the envisaged fees in accordance with the above, ATHEX will be entitled to charge additional interest on the fees owing for the period of non-payment.

9 LIABILITY

9.1 Specific issues of liability

Neither party shall be liable to the other for loss or damage caused at any time by or arising directly or indirectly from the use of the services, provided it was not due to wilful misconduct or gross negligence of the parties.

ATHEX is expressly released from liability for any actual or consequential loss and loss of profit which may arise in respect of the use of the services provided, or due to a data leak.

If any of the restrictions or provisions concerning the use of technology services provided is declared invalid for any reason whatsoever and ATHEX becomes liable for loss or damage for which in other circumstances the relevant liability would be lawfully excluded, the aforesaid liability of ATHEX may not in any event exceed the actual fee paid by the ATHEX-Net User for the preceding twelve months.

9.2 Force majeure

Neither party shall be liable to the other for anything that may constitute a breach in respect of the ATHEX-Net connectivity services provided but is caused by a force majeure event, and in particular cases that include – but are not limited to – natural phenomena, perils of the air or sea, fires, floods, drought, explosions, sabotage, accidents, embargoes, riots, civil disturbances, power failures, water damage, legislative acts, acts of public authorities, war, strikes, lockouts, boycotts and blockades, as well as the failure or delay of a subcontractor to fulfil its obligations for the aforesaid reasons. The proviso relating to strikes, lockouts, boycotts and blockades shall also apply in cases where the party or its subcontractor adopts or is subject to similar contradictory measures.

10 DURATION AND TERMINATION

10.1 Duration

The ATHEX-Net connectivity services provided will commence as of the relevant decision of the Board of Directors of ATHEX.

10.2 Suspension

The ATHEX-Net connectivity services provided may be suspended in the following cases:

The ATHEX-Net User breaches a term or condition for the provision of the services in question or – from the viewpoint of the ATHEX-Net User – ATHEX is unable to restore the services to the reasonable satisfaction of the other party, within a period of thirty (30) days and following written notification specifying the breach.

There is repeated failure on the part of the ATHEX-Net User or ATHEX to discharge some obligation.

The ATHEX-Net User or ATHEX submits or has submitted an application or has obtained a decision for its dissolution, or has proceeded to liquidation, or is found to be reasonably incapable of settling its debts, or has appointed a liquidator, administrator, trustee or other employee with similar powers for all or part of its tangible assets.

This provision does not prohibit the parties from pursuing other available remedies.

10.3 Termination

Upon termination of the ATHEX-Net connectivity services provided, the User will at its own expense return to ATHEX the ATHEX-Net Node as well as every Document and all copies of Documents, or will completely delete all such copies and furnish ATHEX with a written declaration confirming the aforesaid.

11 MISCELLANEOUS

11.1 Confidential information

All the information, Documents and codes to which reference is made herein, or in other sensitive information relating to the businesses of either of the parties and which may come into the possession of the other party or of its employee, authorised agent or subcontractor (hereinafter referred to as "Information"), are proprietary in nature and confidential. The parties agree that they will use the Information solely as stipulated in the provisions hereof and that during the course of this ATHEX-Net Connectivity Services Agreement, as well as after its expiration or termination, they will not disclose the said information directly or indirectly to a third party, without the prior written consent of the other party.

All hardware, software and other materials received in accordance herewith are and shall remain the property of the providing party, while all the aforesaid Information and copies thereof will be duly returned in response to a written request, or will be destroyed at the option of the owner.

These measures have been taken in order to prevent access to information, for which there is no relevant provision herein. If one of the parties obtains access to information for which there is no agreement in breach of the measures taken, that party agrees not to use the said information for any reason whatsoever and not to disclose it directly or indirectly to a third party.

The recipient party warrants that its employees or agents who use or have access to confidential information shall maintain the confidentiality of such information.

11.2 Amendments

ATHEX reserves the right to amend or vary this text and the relevant accompanying documents and reference documents in the framework of the continuous development and optimisation of the connectivity services provided to ATHEX-Net Users, in accordance with the relevant provisions of the ATHENS Rulebook in force at any time.

Up-to-date versions of the above will be posted on the ATHEX website (www.athexgroup.gr).

11.3 Subcontractors

ATHEX reserves the right to assign to Subcontractors the fulfilment of its obligations to ATHEX-Net Users.

11.4 Applicable Law

The interested parties agree that these presents shall be governed by Greek law.

11.5 Arbitration

The interested parties expressly waive their respective jurisdictions and agree that all disputes which may arise between them (in the framework of their Agreement on the provision of ATHEX-Net connectivity services on the basis of this text) and cannot be resolved in an amicable manner will be referred to arbitration in Athens in accordance with the provisions of the Code of Civil Procedure.

11.6 Entry into Force – Amendments

This text shall enter into force on the date of the relevant resolution of the Board of Directors of ATHEX.

Any amendment hereto shall be made after a relevant decision of the Board of Directors of ATHEX and appropriate notification to users.

12 ANNEX I: The Athens Exchange Transactions Network (ATHEX-Net)

12.1 INTRODUCTION

The Athens Exchange Transactions Network (**ATHEX-Net**) of Athens Exchange (**ATHEX**) was initially developed in the period 1995-1996, in the framework of implementing the project for the Information Technology development of ATHEX, with the aim of enabling remote trading of shares as well as other stock exchange products and services in the field of the capital market (Electronic Bond Trading System [SIDO], Dematerialized Securities System [DSS], Integrated Automatic Electronic Trading System [OASIS], etc.).

The main design components of the ATHEX-Net infrastructure are:

- √ ability to conduct electronic trading from the premises of Users (ATHEX Members, banks, supervisory authorities, etc.),
- √ "high performance" coverage of the Thessaloniki Stock Exchange Centre (TSEC), with ability to conduct electronic trading from the premises of TSEC Members,
- √ "high performance" coverage of ATHEX's London hub, with ability to conduct electronic trading from the premises of remote members,
- √ increased degree of reliability and availability,
- √ attainment of uninterrupted operation and minimisation of operating and maintenance costs,
- √ attainment of maximum data security,
- √ ensuring a level playing field in stock markets, and
- √ capacity for geographical and technological expansion to meet future needs, by taking full advantage of developments in the fields of telecommunications and networks.

This text constitutes the accompanying document for the Athens Exchange Transactions Network (ATHEX-Net). The main aim of this text is to explain basic concepts of ATHEX-Net (e.g. the technical configuration model, its management and operating model), through which Application Users (e.g. custodian banks, etc.) are given access to the Applications of Service Providers (e.g. ATHEX).

12.2 TECHNICAL CONFIGURATION MODEL

12.2.1 General

ATHEX-Net is a Private Wide Area Network, the main purpose of which is to enable remote trading of shares, derivatives (Integrated Automatic Electronic Trading System [OASIS]), as well as other stock exchange products and applications (Dematerialized Securities System [DSS]), across the entire capital market.

ATHEX-Net is today the central point for the provision of network connectivity and communication services in the field of the capital market, achieving significant economies of scale and – through the further upgrading and expansion of applications and systems – enabling the effective and modern implementation of solutions to meet business needs in harmonisation with and according to the standards of developed European stock markets.

The use of ATHEX-Net enables **Application Providers** to offer services to **Application Users** that are their clients (Members). In this framework, ATHEX offers:

* services for the use of OASIS/shares & derivatives (remote broking and the ODL service) to its Members,
* DSS services and transaction clearing services in the Securities and Derivatives Markets to ATHEX Members and banks/custodians.

12.2.2 Description of the Technical Configuration Model

ATHEX-Net has a star topology with ATHEX as the Central Hub (points of presence at the twin data centres of the ATHEX building, the TSEC and the London hub) and end points:

- the ATHEX-Net Application Provider Nodes or Provider Nodes,
- the ATHEX-Net Application User Nodes or User Nodes (brokerage firms, banks, supervisory authorities, etc.).

ATHEX-Net is divided into three (3) zones or areas (Core Network, Distribution Layer, Access Layer).

The three Areas that make up ATHEX-Net are schematically shown in Figure 1 below.

More specifically:

12.2.2.1 Core Network Area

This is the backbone of ATHEX-Net, which is located at the main premises of the Group. The central servers of ATHEX-Net Application Providers are connected to the network equipment of this Area.

The Core Network of ATHEX-Net extends around a central dual point of presence at the twin data centres of the new HELEX Group building. This is the central point for the connection of all points of presence of the ATHEX-Net Core Network. The following points are interconnected through a large number of WAN/Ethernet connections (from 4 Mbps), LAN/Fast Ethernet connections (100Base TX/FX) and high-speed LAN/Gigabit connections (1000Base LX/LH-1000Base SX) in a "common network" of multiple protocols and services. In order to ensure increased availability and reliability, in addition to primary connections there are also secondary and alternative connections.

The purpose of the ATHEX-Net Core Network is to create a common network infrastructure across the entire capital market for connecting the "central server" devices of Providers (wherever these may be located), and making the applications of these device accessible to Application User Nodes via the Access Layer (see paragraph 3.2.3 below).

12.2.2.2 Distribution Network Area

This is the intermediate layer between the Core Network Area and the Access Network Area. The Nodes of ATHEX-Net Users (brokerage firms, banks) are connected to the network equipment of this area. Through this network equipment, ATHEX-Net Users communicate with the services of ATHEX-Net Providers, while for increased availability and redundancy purposes the equipment of this area is connected in dual-homing mode via Fast Internet 100Base-TX/FX to the Core Network (for more details, see the Chapter below on Distribution Network).

It extends between the two central points of presence of ATHEX-Net (on the premises of ATHEX at the twin data centres of the new HELEX Group building) and constitutes the intermediate area between the Core Network Area and the Access Network Area of ATHEX-Net. Through the equipment of the Distribution Network Area of ATHEX-Net, the Nodes of ATHEX-Net Users (brokerage firms, banks, etc.) are connected to the services of ATHEX-Net Providers.

The network equipment of the Distribution Network Area of ATHEX-Net and way it is connected to the equipment of the other two areas is shown in Figure 2 below.

As can be seen in Figure 2, the Distribution network comprises two (2) routers, i.e. one (1) at each of the twin data centres of the new HELEX Group building, thereby creating a Primary/Secondary site configuration. In order to ensure increased availability and reliability, the aforesaid routers connect with the Core Network Area of ATHEX-Net through dual 10G interfaces. In addition, the Access network is connected to the Distribution network of ATHEX-Net by means of two (2) Ethernet connections (4 Mbps) and in such a way (see Chapter 4 below) that the router at the Primary or Secondary site of ATHEX can support the connection of all User Nodes to ATHEX-Net services, even in the case where the router at the other site (Primary or Secondary) is partially or completely unavailable.

12.2.2.3 Access Network Area

The Access Network Area is comprised of all ATHEX-Net User Nodes. Appropriate terminal devices (client) are connected to this area to enable communication with the central server devices of ATHEX-Net and the services of ATHEX-Net. For the same reasons as those referred to in paragraph 3.2.2 above, the equipment of this area is connected in dual-homing mode to the Distribution network of ATHEX-Net.

The equipment and the connections of the Nodes of Users of ATHEX-Net Services (ATHEX Members, banks, supervisory authorities, etc.) with the ATHEX-Net Central Hub (points of presence at the twin data centres of the new HELEX Group building) comprise the Access Network of ATHEX-Net.

Each User Node comprises a router and switch configuration (or a combination of the above devices) to connect the terminal devices (client) of the user with ATHEX-Net services. The terminal devices (client) of users are connected to the switches through the appropriate cabling infrastructure at the user's premises to a network access port (Ethernet 10Base-T), while they are connected – through ATHEX-Net – to the central server devices of Application Providers online by means of the family of TCP/IP protocols. Each terminal device (client) of users is connected to a specific port of the switch.

Each User Node interconnection with the ATHEX-Net Central Hub is via two (2) connections for increased availability and reliability:

The configuration of a User Node and its interconnection with the ATHEX-Net Distribution Network is schematically shown in Figure 3 below.

In general, depending on the degree of availability of ATHEX-Net services offered, but also the various interface technologies (telecommunications circuits), ATHEX-Net Service Users can choose from the following types of access nodes:

Node Type 1.a.1: Its configuration is the minimum necessary. It has only one leased circuit and active equipment is not supported, which is why it is intended only for connecting the member's Disaster Recovery Site to ATHEX.

Node Type 1.a: Its configuration is characterised by high availability in terms of telecommunication circuits (two leased circuits), but it has a single drop point in the active equipment.

Node Type 2.a: Its configuration is characterised by very high availability in terms of active equipment and high availability in terms of telecommunication circuits (two leased circuits).

For more detailed information about Application User node types, Access Network Areas and the services provided for connecting Application Users to ATHEX-Net, see the Accompanying Document "Connectivity Services Provided to ATHEX-Net Application Users".

With regard to the Price List and procedures relating to the connectivity services provided to ATHEX-Net application users, more detailed information is contained in the Accompanying Document "Price List for Connectivity Services Provided to Application Users" and the reference Document "Procedures for Connectivity Services Provided to ATHEX-Net Application Users".

Lastly, regarding procedures relating to the provision of support to ATHEX-Net Application Users, more details are available in the reference Document "ATHEX-Net Application User Support Procedures".

12.3 MANAGEMENT AND OPERATING MODEL

The way in which the Management and Operating Model of ATHEX-Net/ATHEX is deployed internally at each User Node is shown in Figure 4 below.

According to this arrangement, Management Domains are defined for each entity in connection with ATHEX-Net (ATHEX as Administrator/Technical Administrator of the Network, ATHEX-Net Application Providers, and ATHEX-Net Application Users).

More specifically:

12.3.1 ATHEX-Net Administrator/Technical Administrator Management Domain

The ATHEX-Net Administrator/Technical Administrator Management Domain at the premises of Users includes:

(a) the set-up, maintenance and proper functioning of the "ATHEX-Net connection Equipment" and the "ATHEX-Net connection Ports" at the premises of Users, and

(b) the online connection and communication of client devices-Provider server from end-to-end, as well as of Gateway devices (see Figure 4) with client devices/server in accordance with the requirements of the respective "user application connectivity service" (see below).

12.3.2 ATHEX-Net Application Provider Management Domain

The responsibility of the "ATHEX-Net Application Provider" is confined to the "Server, Client and Gateway Devices" (see below) through which the "ATHEX-Net Service" and the corresponding "User

Application Connectivity Service" are provided to Users in the framework of the separate agreements and contracts with Users and the rulebook on the management and operation of the ATHEX-Net service.

12.3.3 ATHEX-Net Application User Management Domain

The responsibility of the "ATHEX-Net Application User" regarding the use of an ATHEX-Net Application and its proper communication with it, through the respective Connectivity Service, is limited to: (a) the provisions of its relevant agreements/contracts with the competent Provider and (b) ensuring the smooth functioning of its internal network in respect of the restrictions set by the installation and operation requirements of the "user application connectivity service".

The ATHEX-Net Application User Management Domain essentially comprises the internal Network of the User, i.e. all the computer, network and passive equipment installed and operating at the premises of the User. There are no restrictions on the specifications of the user's internal network other than those that may be required by the "User Application Connectivity Service". This service is provided through ATHEX-Net, by and to capital market participants (ATHEX-Net service providers and users respectively), subject to the relevant approval of the ATHEX-Net Administrator, for the purpose of connecting the applications of "ATHEX-Net Service Users" with "ATHEX-Net Services". Responsibility for providing, managing and operating the service lies with the Provider of the respective ATHEX-Net Service.

Communication between applications in the internal network of the User and ATHEX-Net is enabled by means of special devices (hardware and software) which are installed at the "ATHEX-Net Point of Presence" on the premises of each "ATHEX-Net Service User". These devices are called Gateways and are usually computer systems with two network cards, one of which is connected to an "ATHEX-Net Connection Port" and the other to internal network equipment of the User.

Each Gateway device has all or part of the software required for the provision of the "User Application Connectivity Service". In addition, through the aforesaid device, direct communication (at level 3 and 4 of the ISO Reference Model) with "Client-Server Devices" is prohibited and permitted only through the "User Application Connectivity Service" that is suitable for this purpose. Responsibility for managing and operating these devices in the above framework lies with the Provider of the respective user application connectivity service.

The ATHEX-Net Application Provider is also responsible for the maintenance of the software that gives the User access to the connectivity service. This is the application programming interface (API) or application, which is either independent software or part of the software of the "User Application Connectivity Service". This specific software is installed in computer systems in the internal network of Users, and through it and the corresponding "User Application Connectivity Services" network communication is possible between applications in the internal network of Users and ATHEX-Net services.

12.1 FIGURES AND TABLE

Access Network Area

ATHEX-Net Application Users (Members, banks, etc.)

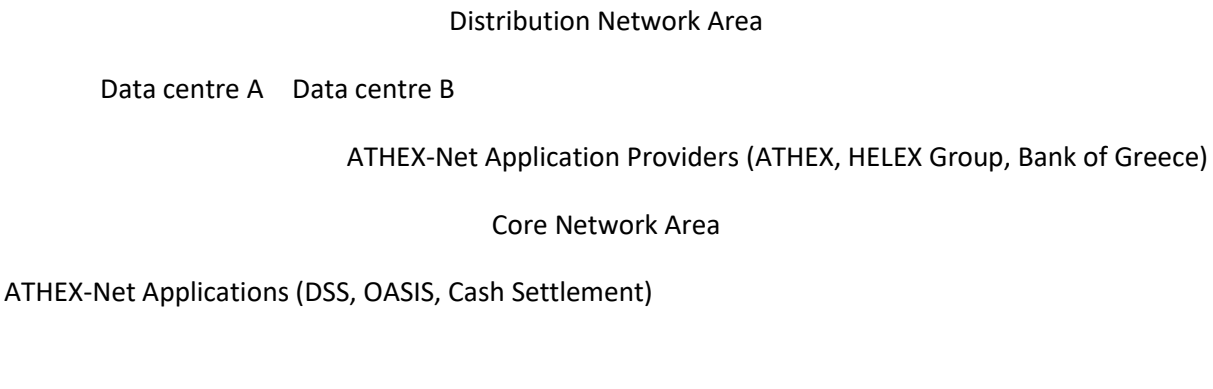


Figure 1: ATHEX-Net Zones or Network Areas

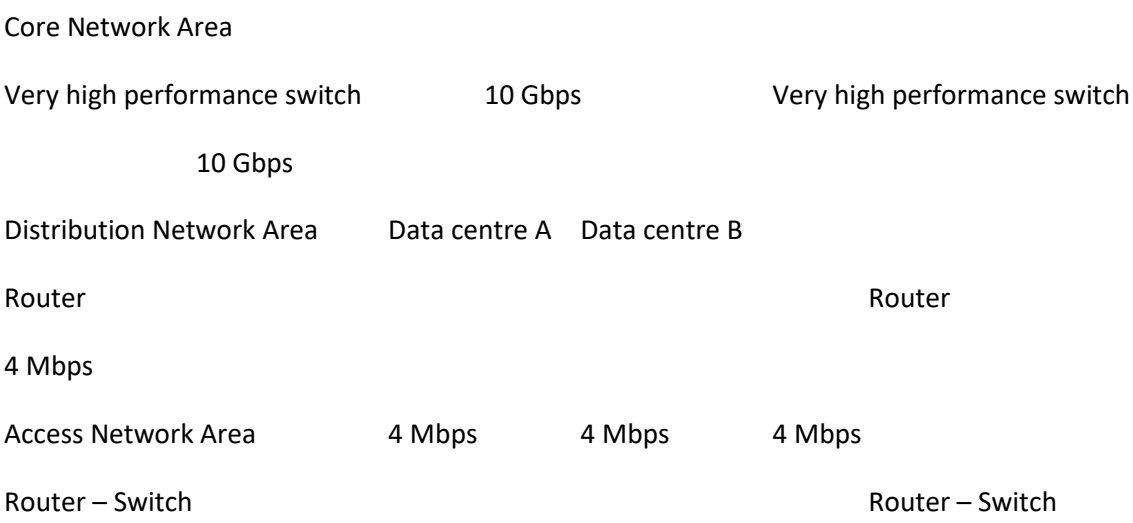


Figure 2: Distribution Network equipment and its connection to other ATHEX-Net areas

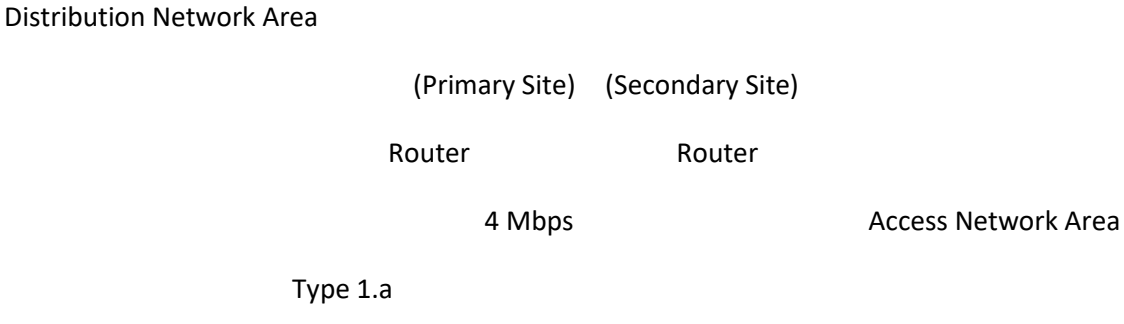


Figure 3: User Node configuration and its connection to the ATHEX-Net Distribution network

ATHEX-Net Administrator
Management Domain

ATHEX-Net User Node (PoP)

ATHEX-Net Application Provider
Management Domain

ATHEX-Net Application User
Management Domain
(ATHEX Members, banks, etc.)

ATHEX-Net Application User Network Infrastructure
off premises with ATHEX-Net/ATHEX PoP infrastructure

Type 1 Configuration

Provision of Services for the Connection of User Applications with
ATHEX-Net Services through an ATHEX-Net/ATHEX Point of Presence
Type 1.a or 1.a.1 or 2.a in the same building

ATHEX-Net Administrator &
Technical Administrator
Management Domain
(ATHEX – ASYK)

ATHEX-Net User Node (PoP)

ATHEX-Net User Node (PoP)

ATHEX-Net Application Provider
Management Domain
(ATHEX, CSD, ADECH, ASYK, etc.)

ATHEX-Net Application User
Management Domain
(ATHEX Members, banks, etc.)

ATHEX-Net Application Service User Network Infrastructure
off premises with ATHEX-Net/ATHEX PoP infrastructure

Type 2 Configuration

Provision of Services for the Connection of User Applications with
ATHEX-Net Services through an ATHEX-Net/ATHEX Point of Presence
Type 2.a in different buildings

Figure 4: Description of a Member's internal network at each User Node – ATHEX-Net/ATHEX Management and Operating Model

Figure 5: Port configuration at a node with one (1) switch

Figure 6: Port configuration at a node with two (2) switches

Table 6.1 Points of connection of computer systems to switch network ports		
S/N Network Port	Terminal hostname	Terminal Description
1	Ws 1	1st terminal ORAMA OASIS
2	Ws 2	2nd terminal ORAMA OASIS
3	Ws 3	3rd terminal ORAMA OASIS
4	Ws 4	4th terminal ORAMA OASIS
5	Ws 5	5th terminal ORAMA OASIS
6	Ws 6	6th terminal ORAMA OASIS
7	Ws 7	7th terminal ORAMA OASIS
8	Ws 8	8th terminal ORAMA OASIS (former internal Control terminal ORAMA OASIS)
9	Ws 9	9th terminal ORAMA OASIS (former Ws 0 terminal ORAMA OASIS)
10	Ws 10	10th terminal ORAMA OASIS (former Ws 00 terminal ORAMA OASIS)
11	SAT 1	1st terminal DSS
12	SAT 2	2nd terminal DSS
13	SAT 3	3rd terminal DSS
14	SAT 4	4th terminal DSS
15	SAT 5	5th terminal DSS
16	SAT 6	6th terminal DSS
17	SAT 7	7th terminal DSS
18	SAT 8	8th terminal DSS
19	SAT 9	9th terminal DSS
20	SAT 10	10th terminal DSS
21	----	Free Network Port
22	----	Free Network Port

23	ODL Production Gateway	Production Application Gateway 3, Securities Market OASIS
24	ODL Production Gateway	Production Application Gateway 4, Securities Market OASIS

Table 6.1 Points of connection of computer systems to switch network ports		
S/N Network Port	Terminal hostname	Terminal Description
25	ODL Production Gateway	Production Application Gateway 1, Securities Market OASIS
26	ODL Shadow Gateway	Test Application Gateway 1, Securities Market OASIS
27	DTS (ADEX) Production Gateway	Production Application Gateway 1, Derivatives Market OASIS
28	DTS (ADEX) Shadow Gateway	Test Application Gateway 1, Derivatives Market OASIS
29	SAT Production Gateway	Production Application Gateway 1, DSS API
30	SAT Shadow Gateway	Test Application Gateway 1, DSS API
31	ODL Production Gateway	Production Application Gateway 2, Securities Market OASIS
32	ODL Shadow Gateway	Test Application Gateway 2, Securities Market OASIS
33	DTS (ADEX) Production Gateway	Production Application Gateway 2, Derivatives Market OASIS

34	DTS (ADEX) Shadow Gateway	Test Application Gateway 2, Derivatives Market OASIS
35	SAT Production Gateway	Production Application Gateway 2, DSS API
36	SAT Shadow Gateway	Test Application Gateway 2, DSS API
37	BoG 1	1st terminal for the connection of the cash settlement application to the Bank of Greece
38	BoG 1	2nd terminal for the connection of the cash settlement application to the Bank of Greece
39	TEST ORAMA	Test Application 1, ORAMA OASIS

Table 6.1 Points of connection of computer systems to switch network ports

S/N Network Port	Terminal hostname	Terminal Description
40	TEST ORAMA	Test Application 2, ORAMA OASIS
41	SAT Prn	Network printer 1, for the needs of the DSS
42	SAT Prn	Network printer 2, for the needs of the DSS
43	ODL Production Gateway + ORAMA	Production Application Gateway 2 & ORAMA OASIS, Securities Market OASIS
44	ODL Shadow Gateway + ORAMA	Test Application Gateway 2 & ORAMA OASIS, Securities Market OASIS
45	HOL ME	Telecommunications Port
46	Forthnet ME	Telecommunications Port
47	IP Phone	IP Telephony device
48	Firewall	Firewall for the needs of connecting ATHEX-Net to the internal network of Members
GE 0/1	UP Link	Retained for the purpose of connecting to ATHEX-Net equipment

GE 0/1	UP Link	Retained for the purpose of connecting to ATHEX-Net equipment

13 ANNEX II: AVAILABLE NETWORK CONNECTIVITY SERVICES

13.1 General

ATHEX provides Network Connectivity and Support Services to Stock Exchange Application Users (ATHEX Members, DSS Operators, Data Vendors, ISVs, etc.) via the Athens Exchange Transactions Network.

By means of the appropriate configuration (Access network), Users of ATHEX-Net service are able to connect to ATHEX-Net and communicate through the Distribution network and Core network with the servers of service Providers.

Paragraph 3.2 presents the options available to ATHEX-Net Application Users to choose the technical connectivity solution that best suits their business plans depending on:

- their requirements in terms of the degree of availability of the network equipment and telecommunications circuits connecting the User Node to the distribution network,
- the total number of available network ports at each User.

Paragraph 3.3 presents the possibilities available to ATHEX-Net Application Users to request the conversion of the characteristics of the technical solution they have chosen.

13.2 Connectivity services for ATHEX Members – DSS Operators

13.2.1 Choice of technical solution for connecting to ATHEX-Net

ATHEX-Net is managed by ATHEX, which for the provision of services to ATHEX-Net users is paid fees as detailed in the relevant resolution on charges applicable to ATHEX Markets.

ATHEX-Net Application Users are able to choose the type of ATHEX-Net node as well as the telecommunications interface (e.g. connection speed) considered adequate to meet their operational needs. In the present phase, for the Athens area, two (2) Ethernet telecommunications circuits (underground fibre optic), each with a speed of 4 Mbps have been selected as the most advantageous solutions from an economic and technical perspective. With regard to ATHEX-Net nodes, the available types are described in paragraph 3.2.1.

The network equipment is provided by ATHEX-Net Application Users and is in conformity with the specifications issued by the **ATHEX-Net Technical Administrator (i.e. ATHEX)**.

ATHEX places orders with its collaborating telecommunications providers for the construction of telecommunications circuits of appropriate specifications for connecting the premises of ATHEX-Net Application Users with the Core Network. The circuits belong to ATHEX and the ATHEX-Net User installs its equipment of choice in collaboration with ATHEX at a Data Centre which the user has set up on its own responsibility and in accordance with the guidelines and specifications issued by ATHEX (see reference document “Technical Guidelines – Specifications of equipment and tasks for configuring the ATHEX-Net/ATHEX Point of Presence (PoP) at the premises of ATHEX-Net Application Users”.

For ATHEX-Net connectivity purposes, the network equipment is calibrated and passes under the exclusive control of the ATHEX-Net Technical Administrator.

The management and operation of the ATHEX-Net Node of the User are performed by the ATHEX-Net Technical Administrator, who undertakes the daily checking of the functionality of all the network and telecommunications equipment as well as of the telecommunications circuits of ATHEX-Net nodes in accordance with the stipulations of the reference document "ATHEX-Net Application User Support Procedures".

The ATHEX-Net connectivity services, which ATHEX provides to ATHEX-Net Application Users, include:

- determining the choice of the appropriate technical solution for the User's interconnection with ATHEX-Net,
- configuration for use by the ATHEX-Net Application Provider / ATHEX-Net Application User of all the network and telecommunications equipment, the necessary software, as well as the telecommunications circuits,
- the management and operation of the connectivity equipment provided,
- the provision of support services to ATHEX-Net Users.

The ATHEX-Net User has the option to choose:

- the type of ATHEX-Net Node or ATHEX-Net equipment to be supplied and installed at its offices,
- the address at which the ATHEX-Net equipment will be installed,
- the number of Nodes to be installed in one or more of its Data Centres (in the case of an ATHEX-Net Application User).

The connection of each new ATHEX-Net Node or deactivation of an existing Node or transfer of a Node or conversion of ATHEX-Net Node type is carried out in accordance with the procedures detailed in the accompanying document "Procedures for the Provision of ATHEX-Net Application User Connectivity Services". The ATHEX-Net User, depending on the technical solution it chooses, pays the corresponding ATHEX fees for the use of ATHEX-Net as set out in the relevant ATHEX resolution on charges.

The choice of connectivity solution is made with the technical support and cooperation of the ATHEX-Net Technical Administrator.

13.2.2 Choice of ATHEX-Net node type

The choice of ATHEX-Net node type is made on the basis of the technical characteristics of the different node types. In summary, the available ATHEX-Net User node types are shown in the following table:

Available ATHEX-Net node types			
Node type code	Routers	Switches	Leased circuits

Type 1.a.1	1	1	1
Type 1.a	1	1	2
Type 2.a	2	2	2

Table 13-1 Available ATHEX-Net node types

The technical characteristics of ATHEX-Net nodes are detailed in paragraph 13.7.

In addition, in the case of ATHEX-Net Users based abroad, as well as for the needs of Disaster Recovery sites, Users are given the option to choose node type 1.a.1 or 2.a.1, i.e. with one (1) instead of two (2) telecommunications circuits.

Lastly, for reasons of increased security, ATHEX-Net Users have the option to install a firewall device "behind" the router(s) at their offices, with appropriate settings for the protection of their internal network.

13.2.3 Connectivity services in the Athens area

For the ATHEX-Net User node types described above, the following types of charges apply:

a) One-time installation fees, which include the remuneration to ATHEX for the work provided by its technicians, as well as the charges of telecommunications providers relating to the installation of telecommunications connections.

b) Fixed monthly fees, which include the telecommunications fees of providers, as well as connection fees for the network ports used in ATHEX-Net.

All the above fees are payable to ATHEX. For more detailed information on charges, see the relevant ATHEX resolution on Market charges.

13.2.4 Connectivity services in the Thessaloniki area

The types of applicable charges are those described in paragraph 3.2.3 above, for the node type and telecommunications connection circuits chosen by the User.

More specifically, the one-time installation fees and fixed monthly fees for new connections are set as appropriate, depending on the connection type and requirements in each case.

For more detailed information on charges, see the relevant resolution of ATHEX.

13.2.5 Connectivity services in other areas of Greece excluding Athens and Thessaloniki

The types of applicable charges are those described in paragraphs 3.2.3 and 3.2.4.

13.2.6 Connectivity services from abroad

The types of applicable charges are those described in paragraphs 3.2.3 and 3.2.4.

13.2.7 Conversion of ATHEX-Net nodes

In addition to the main service for the connection of networks to ATHEX-Net through the activation of ATHEX-Net Application User nodes, other services are also provided such as:

√ ATHEX-Net User node transfer services
√ ATHEX-Net User node type conversion services

The procedures for the submission and satisfaction of requests relating to the aforementioned services are described in detail in the reference document "Procedures for the Provision of ATHEX-Net Application User Connectivity Services". The fees for implementation of the above services are described in detail in the relevant resolution on charges applicable to ATHEX Markets.

13.2.8 Creation of a Disaster Recovery node

ATHEX-Net Users can also choose the Disaster Recovery node service.

The following connection options are available:

a) 1st connection option: Two (2) telecommunications circuits
b) 2nd connection option: One (1) telecommunications circuit

The procedure for satisfying requests relating to this service is described in detail in the reference document "Procedures for the Provision of ATHEX-Net Application User Connectivity Services". The fees for implementation of the above services are described in detail in the relevant resolution on charges applicable to ATHEX Markets.

13.3 ATHEX-Net Connectivity Services for Independent Software Vendors (ISVs)

13.3.1 In the Athens area

For each type of ATHEX-Net node chosen by an ISV, the following connection options are available:

a) 1st connection option: Two (2) telecommunications circuits
b) 2nd connection option: One (1) telecommunications circuit

13.3.2 In other areas of Greece excluding Athens

The types of applicable charges are those described in paragraph 3.3.1 above, for the node type and telecommunications connection circuits chosen by the User.

More specifically, the one-time installation fees and fixed monthly fees for new connections are set as appropriate, depending on the connection type and requirements in each case.

For more detailed information on charges, see the relevant ATHEX resolution.

13.4 ATHEX-Net Connectivity/Hosting Services for Data Vendors

The following three (3) ATHEX-Net connectivity/hosting solutions are available to Data Vendors.

13.4.1 1st connection option (via the Internet)

By choosing this connection type, Data Vendors gain access to Data via the Internet.

For more detailed information on the charges for this connection, see the relevant ATHEX resolution on charges.

13.4.2 2nd connection option (via X.21 serial interface)

This connection type enables Data Vendors to connect to ATHEX-Net and gain access to Data through an appropriate telecommunications connection device and X.21 serial interface.

For more detailed information on the charges for this connection, see the relevant ATHEX resolution on charges.

13.4.3 3rd connection option (via Ethernet interface)

This connection type enables Data Vendors to connect to ATHEX-Net and gain access to Data through an appropriate telecommunications connection device, router and Ethernet RJ45 interface.

In this particular case, services are also provided for the hosting of the Data Vendor's aforesaid device at the Data Centres of ATHEX.

For more detailed information on the charges for this connection, see the relevant resolution of ATHEX on charges.

13.5 Software Installation Services

ATHEX gives Users of OASIS technical services the option to themselves install the necessary software for accessing the services provided (e.g. OASIS/Securities, OASIS/Derivatives, DSS, etc.).

In cases where Users prefer the necessary software to be installed by ATHEX, the appropriate technicians are provided to perform the relevant software installations.

For more detailed information on the charges for these services, see the relevant ATHEX resolution on charges.

13.6 Other services provided

13.6.1 Preventive maintenance and monitoring of the proper functioning of Members' Gateway systems (Securities & Derivatives subsystem)

These services include:

√ the installation of new software application versions (upgrades) for Gateways
√ daily technical administration and monitoring of proper functioning (system administration) and
√ timely notification of any hardware malfunctions to Users' technical administrators for the purpose of their repair.

For more detailed information on the charges for these services, see the relevant ATHEX resolution on charges.

13.6.2 Server Hosting for Members' OASIS Gateway systems

This service involves the provision of a Server computing system for the installation of Gateway application software for the Securities or Derivatives subsystem and includes the following:

√ Operating system upgrades

√ Installation and upgrades of antivirus software

√ Guarantee of good operation of system hardware, which includes the repair and/or replacement of components by the supplier (if required)

For more detailed information on the charges for these services, see the relevant ATHEX resolution on charges.

13.6.3 Preventive maintenance and checking of proper functioning of Members' DSS-API systems

These services include:

√ the installation of new DSS-API software versions

√ daily technical administration and monitoring of proper functioning (system administration) and

√ timely notification of any hardware malfunctions to Users' technical administrators for the purpose of their repair.

For more detailed information on the charges for these services, see the relevant ATHEX resolution on charges.

13.6.4 Monitoring of the smooth functioning of Data Vendor interfaces

This service relates to the daily monitoring of the operating performance of the telecommunications circuits connecting Data Vendors to ATHEX-Net.

In addition, it provides Data Vendors' technical administrators with timely notification of any malfunctions in their ATHEX-Net interface circuits, so that the necessary steps can be taken to resolve them.

For more detailed information on the charges for these services, see the relevant ATHEX resolution on charges.

13.6.5 Technical administration of ATHEX-Net User node (in Greece)

This service relates to:

a) The technical administration of the telecommunications circuits connected to the central nodes of ATHEX-Net and includes:

i) the daily monitoring of the operating performance of the telecommunications circuits,

ii) communication with circuit providers for the purpose of restoring the smooth operation of circuits in cases of malfunctions.

b) The technical administration of ATHEX-Net User node equipment, which includes:

i) the daily monitoring of the smooth operation of the active equipment of the ATHEX-Net node,
ii) communication with providers for the purpose of restoring the smooth operation of nodes whenever necessary,
iii) the configuration of settings to serve the operating needs of Users' applications.

For more detailed information on the charges for these services, see the relevant ATHEX resolution on charges.

13.6.6 Technical administration of ATHEX-Net User node (outside Greece)

These services are the same as those described in paragraph 3.6.5, with the exception of a (ii) and b (ii) where communication with providers/suppliers is the responsibility of the Member.

For more detailed information on the charges for these services, see the relevant ATHEX resolution on charges.

13.6.7 Access to the Test environment of the Securities Market

This service gives ATHEX Members access to the Test environment of the Securities Market, so that they can familiarize themselves by performing tests in the operating environment of the ATHEX Securities Market. Such access is provided on a daily basis during regular business hours and days.

For more detailed information on the charges for this service, see the relevant ATHEX resolution on charges.

13.6.8 Access to the Test environment of the Derivatives Market

This service gives ATHEX Members access to the Test environment of the Securities Market, so that they can familiarize themselves by performing tests in the operating environment of the ATHEX Derivatives Market. Such access is provided on a daily basis during regular business hours and days.

For more detailed information on the charges for this service, see the relevant ATHEX resolution on charges.

13.6.9 Access to the Test environment of the DSS

This service gives ATHEX Members access to the Test environment of the DSS, so that they can familiarize themselves by performing tests in the DSS operating environment. Such access is provided on a daily basis during regular business hours and days.

For more detailed information on the charges for this service, see the relevant ATHEX resolution on charges.

13.6.10 Access of Data Vendors to the Test environment

This service enables Data Vendors to access the data feed Test environment, so that they can familiarize themselves by performing tests in the respective operating environment. Such access is provided on a daily basis during regular business hours and days.

For more detailed information on the charges for this service, see the relevant ATHEX resolution on charges.

13.6.11 Application development support for Users of ATHEX Technology Services

13.6.11.1 ATHEX Members – DSS Operators – Independent Software Vendors

This service provides technical support (e.g. via telephone, e-mail or the drafting of additional technical instructions) to ATHEX-Net Users (ATHEX Members, ISVs, etc.) for the development of applications for use in the Securities Market, Derivatives Market and DSS.

For more detailed information on the charges for this service, see the relevant ATHEX resolution on charges.

13.6.11.2 Data Vendors

This service provides technical support (e.g. via telephone, e-mail or the drafting of additional technical instructions) to Data Vendors for the development of applications for use in connection with the ATHEX Data Feed.

For more detailed information on the charges for this service, see the relevant ATHEX resolution on charges.

13.6.12 Co-location services for ATHEX Members

The main advantage gained by users of these services is the closer proximity to the central services of the OASIS trading system (for both the Securities subsystem and the Derivatives subsystem), given that **ATHEX Members have faster communication with the central systems of OASIS at speeds ranging from 100 Mbps to 1 Gbps**.

13.6.12.1 Monthly rental cost of Rack (42U)

This service is provided in combination with the services of paragraphs 3.6.12.2 ("Monthly cost for provision of additional power") and 3.6.12.3 (“Co-location of ATHEX Members' Gateway systems").

This particular service includes 1.5 kVA power consumption.

For more detailed information on the charges for this service, see the relevant ATHEX resolution on charges.

13.6.12.2 Monthly rental cost of ½ Rack (21U)

This service is provided in combination with the services of paragraphs 3.6.12.2 ("Monthly cost for provision of additional power") and 3.6.12.3 (“Co-location of ATHEX Members' Gateway systems").

This particular service includes 0.75 kVA power consumption.

For more detailed information on the charges for this service, see the relevant ATHEX resolution on charges.

13.6.12.3 Monthly cost for provision of additional power (1 kVA)

This service is provided in combination with the services of paragraphs 3.6.12.1 and 3.6.12.2.

For more detailed information on the charges for this service, see the relevant ATHEX resolution on charges.

13.6.13 Co-location of ATHEX Members' Gateway systems (Securities/Derivatives)

This service enables the co-location of ATHEX Members' Gateway systems at the Data Centre of ATHEX, for the main purpose of providing closer proximity to the central services of the OASIS trading system of ATHEX in order to achieve speeds of up to 1 Gbps.

It entails the following charges:

(a) Fixed monthly connection charge (depending on the technical solution selected by the Member) and

(b) Fixed monthly charge for co-location equipment (per U).

There is a choice of three (3) connectivity options:

(a) Connection via Internet (VPN tunnel over Internet).

(b) Connection via the Member's existing circuits for connecting with ATHEX-Net.

(c) Connection via an independent leased line and active network equipment of the Member.

For more detailed information on the charges for this service, see the relevant ATHEX resolution on charges.

13.6.14 Technical Support from an ATHEX Engineer/Technician, outside the framework of the pre-agreed services (on business days, during working hours 09:00-17:00)

ATHEX has appropriate qualified technical staff for cases where technical support is requested outside the framework of the technology services already provided to ATHEX-Net Users.

In such cases, the relevant charge is specified in the resolution on charges for ATHEX Markets.

13.6.15 Technical Support from an ATHEX Engineer/Technician, outside the framework of the pre-agreed services (outside business days/working hours)

The same applies as stated in paragraph 13.6.14 above.

For details of charges outside business days/working hours, see the relevant ATHEX resolution.

13.6.16 Use of Common Access Points (CSPs) at the premises of ATHEX

ATHEX Members and DSS Operators are provided with the option to install and set up a CSP environment according to the needs of each Member/Operator.

More specifically, they can use one (1) to six (6) terminals (ORAMA, DTW/DCW or DSS) as well as printing capability, the use of a telephone and fax transmission.

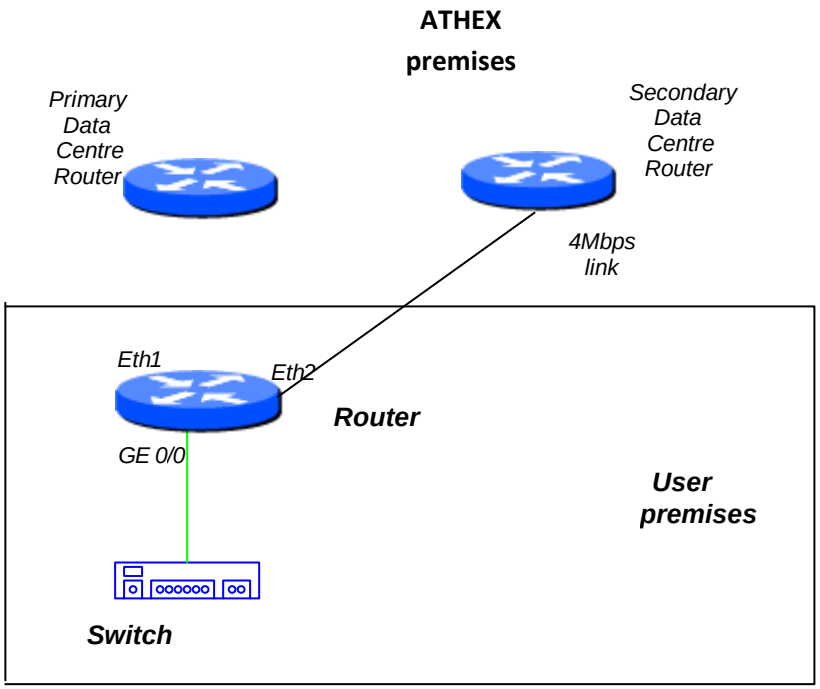
For more detailed information on the charges for this service, see the relevant ATHEX resolution on charges.

13.7 Technical characteristics of the different ATHEX-Net node types

13.7.1 ATHEX-Net node type 1.a.1

Its configuration is the minimum necessary. It has only one leased circuit and active equipment is not supported, which is why it is intended only for connecting the member's Disaster Recovery Site to ATHEX.

The node consists of one (1) switch (Cisco Catalyst 2960), one router (Cisco 2821) and one IP phone 7970G.



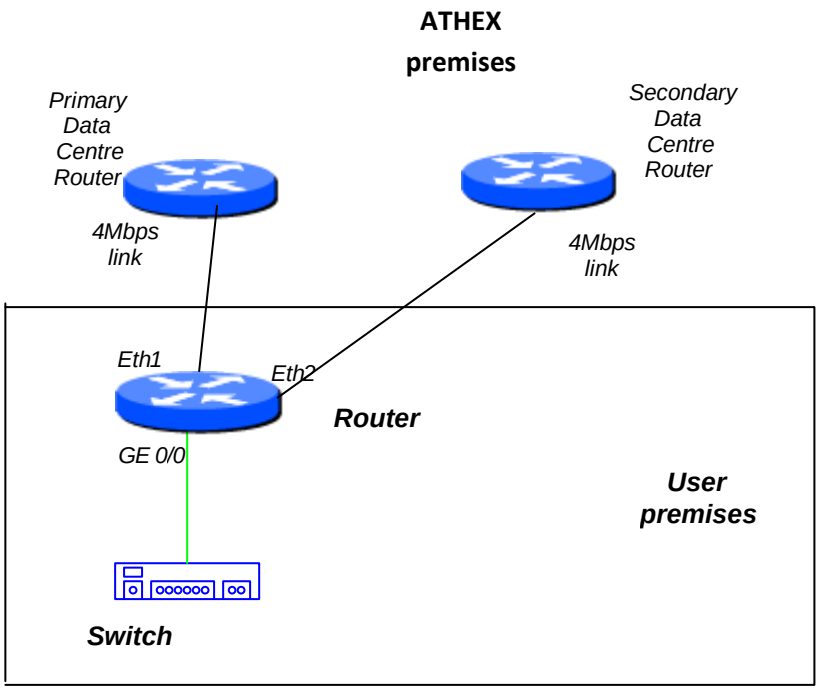
Type 1.a.1

Figure 13-1 Configuration of Node type 1.a.1

13.7.2 ATHEX-Net node type 1.a

Its configuration is characterised by high availability in terms of telecommunication circuits (two leased circuits), but it has a single drop point in the active equipment.

The node consists of one (1) switch (Cisco Catalyst 2960), one router (Cisco 2821) and one IP phone 7970G.



Type 1.a

Figure 13-2 Configuration of Node type 1.a

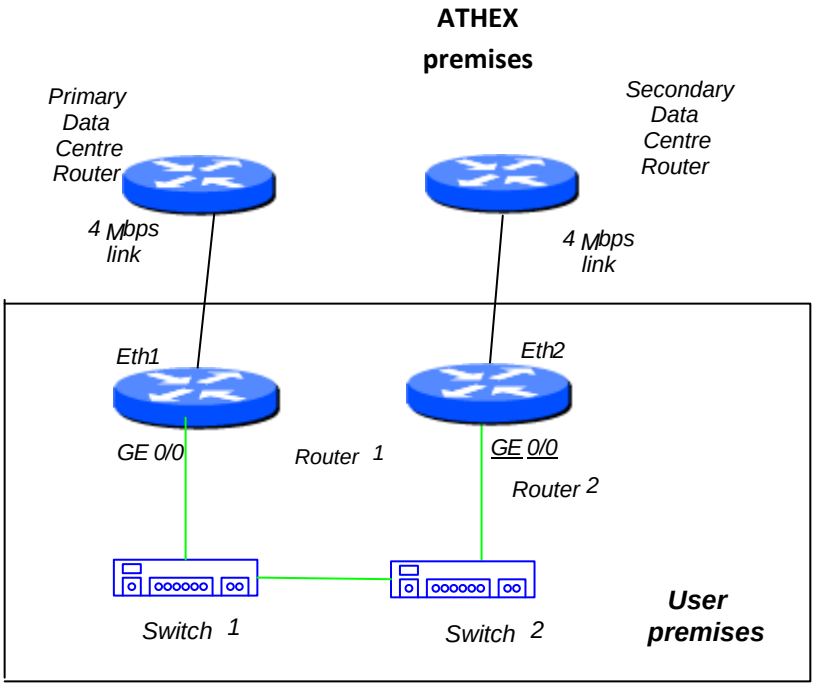
All the node status problems relating to node type 1.a are summarized in the following table:

Failure map – Node type 1.a					
Router	Down	Up	Up	Up	Up
Switch	Up	Down	Up	Up	Up
Serial 0/1	Up	Up	Down	Up	Up
Serial 0/0	Up	Up	Up	Down	Up
Node status	Down	Down	Up	Up	Up

13.7.3 ATHEX-Net node type 2.a

Its configuration is characterised by very high availability in terms of active equipment (two routers and two switches) and high availability in terms of telecommunication circuits (two leased circuits).

The node consists of two (2) switches (Cisco Catalyst 2960), two routers (Cisco 2821) and one IP phone 7970G.



Type 2.a

Figure 13-3 Configuration of Node type 2.a

All the node status problems relating to node type 1.a are summarized in the following table:

Failure map – Node type 2.a							
Router 1	Down	Up	Up	Up	Up	Up	Up
Router 2	Up	Down	Up	Up	Up	Up	Up
Switch 1	Up	Up	Down	Up	Up	Up	Up
Switch 2	Up	Up	Up	Down	Up	Up	Up

Serial 0/1	Up	Up	Up	Up	Down	Up	Up
Serial 0/0	Up	Up	Up	Up	Up	Down	Up
Node status	Up	Up	Up	Up	Up	Up	Up

13.8 Minimum specifications for ATHEX-Net User Node premises

The technical specifications listed below relate to the configuration of the necessary infrastructure (space for the placement of the ATHEX-Net active equipment, structured cable infrastructure, power supply, etc.), in the building of each remote point for the placement of the ATHEX-Net active network equipment.

13.8.1 A. Space for the placement of the ATHEX-Net active equipment:

Within a special 19-in metal mounting construction, there should be empty space for a 25 Rack Unit (height of 135 cm) for the placement of each ATHEX-Net node:

Description of node 1.a.1 or 1.a equipment	Rack Unit for node type 1.a.1 or 1.a
1 Cisco 2821 router	2 U
1 Catalyst 2960 switch	1 U
1 terminal device for the fibre optic circuits	10 U
1 or 2 Ethernet converters of telecom providers	2 U
Patch panel for the structured cabling (48 U)	2 U
Total	17 U

Description of node 2.a.1 equipment	Rack Unit for node type 2.a
2 Cisco 2821 routers	4 U
2 Catalyst 2960 switches	2 U
1 terminal device for the fibre optic circuits	10 U
2 Ethernet converters of telecom providers	2 U
Patch panel for the structured cabling (48 U)	2 U
Total	20 U

The space in which the metal mounting construction is installed must be air-conditioned and with controlled access (hereinafter “ATHEX-Net distribution frame”).

13.8.2 B. Installation of Structured Cabling Infrastructure

13.8.2.1 B1 Installation of telecommunications circuit cables:

- Fibre optic cables

Installation of fibre optic input cable for circuit terminations.

The ATHEX-Net User must assist the fibre optic circuit provider in routing the fibre optic cables from the street line of the building to the data centre. In cases where the office building is not owned by the ATHEX-Net User, the latter must obtain permission from the building administrator for the performance of works for the routing of the fibre optic cables inside the building. ATHEX has secured the contractual obligation on the part of the provider to make good any damage caused by the cable routing works.

- Wireless link cables

Installation of antenna and cable termination of the wireless circuit.

The ATHEX-Net User must assist the wireless link circuit provider in installing the antenna and routing the cables from the roof of the building to the data centre. In cases where the office building is not owned by the ATHEX-Net User, the latter must obtain permission from the building administrator for the performance of works for the installation of the antenna and the routing of the cables inside the building. ATHEX has secured the contractual obligation on the part of the provider to make good any damage caused by the cable routing works.

- Hellenic Telecommunications Organization (OTE) cables

Installation of a four-pair (at least) cable for connecting the ATHEX-Net distribution frame to the OTE main distribution frame (usually in the basement) of the building. The specifications of this cable must be at least UTP Category-3 (but preferably UTP Category-5).

Routing and termination of the above cable, to a patch panel with at least four (4) RJ45 connectors placed in the mounting construction in the ATHEX-Net distribution frame and to a wall-mounted distribution terminal strip with ten (10) positions, placed in a secure metal frame next to the OTE distribution frame. The termination of the above cable at its two ends should be prepared so that one pair of the cable terminates at each RJ45 port of the ATHEX-Net distribution frame, and specifically at pins 3, 4 of the RJ45 port.

Termination of one (1) telecommunications circuit (OTE/ISDN/BRI) which connects the building of the ATHEX-Net User to the ATHEX-Net central node at ATHEX (via the cable infrastructure specified above). Labelling of the ports of the ATHEX-Net distribution frame on which the aforesaid line is listening.

13.8.2.2 B2 Installation of structured cabling:

Creation of a horizontal structured cabling system with UTP Category-6 specifications (recommended) to cover all possible workposts on the premises of the building. Gathering of all the horizontal cabling at a patch panel placed in the mounting construction in the ATHEX-Net distribution frame. The exclusive use of UTP Category-6 materials (cables, sockets, patch panels) is required, as well as of plastic ducts, false ceiling or false floor for the routing of cables. Provision should be made for at least one (1) RJ45 socket at each workpost.

Existence of UTP Category-6 RJ45 to RJ45 patch cords, with a length of one (1) meter (for use in the ATHEX-Net distribution frame) and three (3) meters (for connecting user terminals to sockets).

Electric power supply: Permanent power supply to all the telecommunications and network equipment from Uninterrupted Power Supply (UPS) equipment with a capacity of ≥ 1.5 kVA. It is also recommended that provision be made for an uninterrupted power supply also for user terminals to ensure their undisturbed operation in the event of a power cut or voltage drop.

14 ANNEX III: RELEVANT REFERENCE DOCUMENTS

14.1 Procedures for the Provision of Connectivity Services to ATHEX-Net Application Users

14.2 Technical Instructions/Specifications for equipment and tasks for configuring the ATHEX-Net/ATHEX Point of Presence (PoP) infrastructure on the premises of ATHEX-Net Application Users

14.3 Procedures for the Provision of Support to ATHEX-Net Application Users