

NOTIFICATION OF THE STOCK EXCHANGE OF THAILAND

Re: Standards of securities trading through the DMA system, 2007

By virtue of Clause 16 of the Regulations of the Stock Exchange of Thailand re: Securities trading through the DMA system, 2007 dated January 9,2007, the Stock Exchange of Thailand hereby issues the following regulations:

1. This notification shall come into force on March 6, 2007.
- *2. The members shall comply with the standards of securities trading through the DMA system as per the attachment hereof.
**(Amended March 23,2009.)*

Notified on this 9th day of January 2007.

(Signed Patareeya Benjapolchai)

(Mrs. Patareeya Benjapolchai)
President

Rationale of the Notification: The Exchange deems it appropriate to prescribe the standards of the computer systems for securities trading through DMA system, the security precaution of the computer system, and the order screening system in order to support the trading of securities. Hence, it is advisable to issue this Notification.

Computer Standards for Securities Trading through the DMA System

Securities trading through the DMA system may affect the security of the trading system and any trading order transmitted through it may be considered an improper order. Therefore, the Exchange has established the following standards for members undertaking DMA trading:

- I. Computer configuration standards for securities trading through the DMA system
 - form of securities trading through the DMA system
 - security management
 - physical and Environment security
 - network security
 - system security
 - application security
- II. Order screening system
 - order which conceals or disrupts the queue of another person's order
 - order which unduly influences the price of securities

I. Computer Standards for Securities Trading through the DMA System

Form of securities trading through the DMA system

The securities trading system shall have the following characteristics:

1. The customer has a trading system used for sending trading orders via a network between the customer and the member.
2. The customer trading system must have an order management server generating trading orders and sending them to the broker trading system.
3. The broker order management server must be separated from the broker front-office for receiving the customer's trading order.
4. The customer order management server must be separated from the broker order management server.
5. The member has an order screening system.
6. The member has standard security systems

Example of system connection

Figure 1 is an example of a system connection configuration for securities trading through the DMA system, where:

1. **Order management server** means a customer's computer equipment which performs the functions of creating trading orders that will be transmitted through the broker trading system;
2. **Broker order management server** means a member's computer equipment which is receiving and sending a customer's trading orders, to the broker trading system, and monitoring trading orders before sending them to the broker front office;
3. **Broker front-office** means a computer system which performs the function of connecting with the Exchange's trading system.

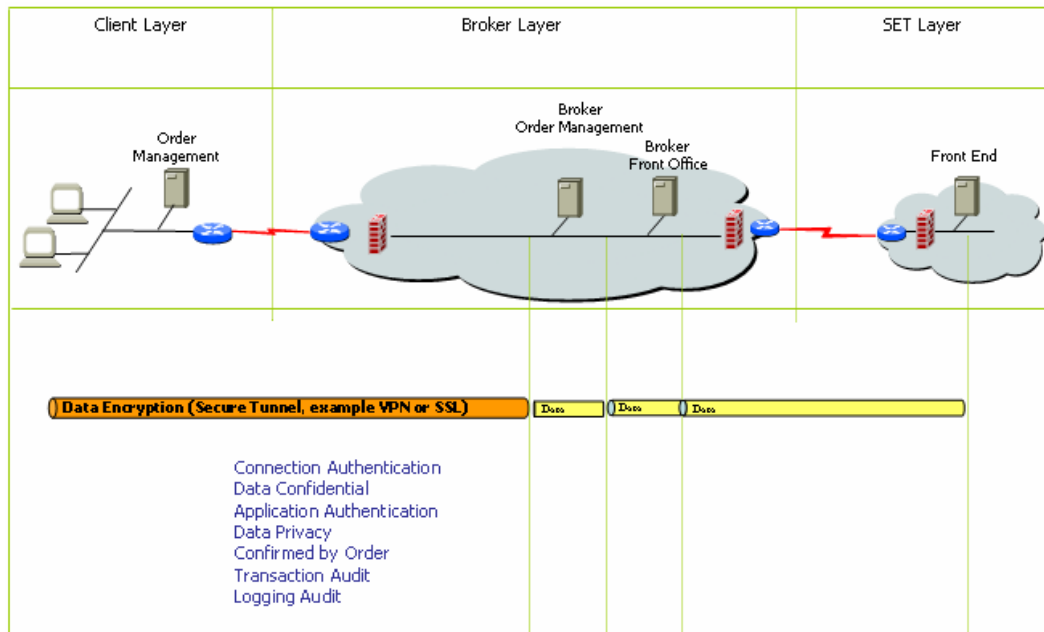


Figure 1: Sample of Connection

Security management In order to ensure confidentiality, integrity, authenticity and non-repudiation for the security standards of securities trading through the DMA system, the standard systems shall include:

- **Physical and Environment Security-** A security system available in the installation site of member's computer equipment used in the provision of service through DMA system.
 - A computer room must be specially allocated and separated.
 - A computer room must be installed with a standard security system; for example, the access to/exit from a computer room shall require the use of access control card or be monitored by an officer throughout 24 hours.
 - All accesses to/exits from a computer room and reasons for the accesses shall be recorded.
 - The electrical system shall be continually performed.
 - The computer room must be installed with an alarm system, such as electrical, humidity and fire alarm systems, which can be adjusted when needed. (.)
 - Equipment maintenance schedule and procedures shall be install in the computer room.
- **Network Security** - A system that prevents unauthorized persons or malicious software accessing DMA system and causing damage (e.g. data sniffing, hacking, unauthorized disclosing, unauthorized changing, or denying of services)
 - having a security system, such as a firewall, VPN, etc., between member and customer networks.
 - having records of usages or event logs of various network equipments must be maintained for at least a month for the purpose of examination, problem resolution or inspection when requested by the Exchange.
 - the types of services of all kinds of security and network equipment that are connected in the network must be prescribed according to actual usage.
 - being protected from sniffing.

Suggestion:

- to ensure the member's system security, other network systems should be secure and equipped to monitor intruders, protect against malicious software, etc.

User Authentication and Privacy The authentication of system users to ensure that they are the actual authorized users and not the false ones, including the protection to ensure that only personal data can be retrieved and recorded and that no person other than the owner will be allowed to have access to such data.

- System security - the security of a member's computer system (server) in trading through DMA system
 - before accessing the server, all users must be authenticated to ensure that they are the actual authorized users. Any authentication measures or technologies may be implemented such as user and password identification. The password shall:
 - Consist of at least 8 characters including special ones and numerals.
 - There should be a policy on change of password at every appropriate interval, such as every three months.
 - Password should not be displayed in a form of clear text.
 - Software or technique that allows any computer equipment or device related to the trading system to record a password for its automatic retrieval in the future should not be used.
 - Storage of password in the server shall require encryption.
 - Username and Password designations and deliveries shall be made carefully to secure such information.
 - Where login is unsuccessful after five consecutive attempts the account will be locked.
 - Servers shall function only when needed for the trading system.
 - Usage records and event logs of all servers, such as user logins, use of server, shall be maintained for the purpose of examination for at least a month, and should be immediately available for inspection if requested by the Exchange.
- Application security – the system ensuring the authentication and privacy of customers.
 - The members shall have measures to ensure the accuracy and security of customers' securities trading orders (authentication and non-repudiation).
 - Customer information shall be stored securely, used appropriately and not disclosed to those not entitled to know the information.
 - Before accessing to the trading system, the member's officers must be authenticated to ensure the authentication of the authorized persons. Any authentication measures or technologies may be implemented such as the identification of user and password. The password shall meet the characters as follows:
 - Each password must consist of at least 6 characters and include both special and numeric characters.
 - Password must be change at every appropriate interval such as every 3 months.
 - Password should not be displayed in a form of clear text.

- Software or technique that allows any computer equipment or device related to the trading system to record a password for its automatic retrieval in the future should not be used.
- The process of allocation and delivery of username and password to customers must be adequately secured.
- Storage of password in the server shall require encryption.
- Where login is unsuccessful after 5 consecutive attempts, the account will be locked.
- o Order log of the application must be maintained for examination for at least 2 years, recording order details, such as date, time, IP, customer ID, and designated trader ID. The log shall be available immediately for inspection if requested by the Exchange.

Suggestions regarding passwords both system and application

- o Use a complicated or difficult to identify password rather than:
 - having a password the same as the username.
 - using a word found in a dictionary.
 - using a line of characters such as 12345678, !@#%\$%^&*,etc.
- o Time-out should be no longer than 60 minutes, prompting an automatic logout after idle time.

***II. Order Screening System**

According to the requirements of the Exchange, a member's computer that is connected to the trading system must be equipped with an Order Screening System to screen some types of improper orders, for which the forms can be predefined. **However, for the recording of orders to avoid detection by the Order Screening System, and for some types of improper orders which the Order Screening System cannot detect, the Exchange will monitor trading transactions, executed by customers, by taking into account the trading behavior, intent, and prevailing market conditions, according to normal procedures.**

The types of improper trading orders for which a screening system is implemented are as follows:

1. Orders which intervene the queue and conceal another person's order; and
2. Orders which unduly influence the price.

1. Orders which intervene the queue of and conceals another person's order

This refers to the transmission of a bid or offer at a price substantially higher or lower than the projected price, which cannot be matched, or the transmission of a bid or offer which is not intended to give rise to trading at such price, irrespective of whether such order is cancelled later or not, with the intent to intervene the queue or conceal another person's order. An order of this type is as described below.

	Type of Securities	Examination Period	Examination Criteria
1	Securities traded on the main board, in the case of the first trading day (IPO), or in other cases where there are no ceiling and floor. ¹	Pre-opening and pre-closing sessions.	The trading system will not accept orders transmitted at the prices which are 50% higher than or 50% lower than the following prices: <ol style="list-style-type: none"> 1. the projected opening price or the projected closing price; 2. if there is no projected opening price or projected closing price during such time, the last sale price shall be used; 3. if there is no last sale price: <ul style="list-style-type: none"> ▪ the IPO price shall be used in the case of securities on the first trading day, ▪ the system will not make an examination in other cases where there is no ceiling and floor¹.
2	Securities traded on the foreign board and having characteristics as follows: <ul style="list-style-type: none"> - Being the first trading day (IPO) of such securities on the main board. - Other cases where such securities that are traded on the main board have no ceiling and floor¹. 	Pre-opening and pre-closing sessions.	The trading system will not accept orders transmitted at prices which are 50% higher or 50% lower than the following prices: <ol style="list-style-type: none"> 1. the projected opening price or the projected closing price; 2. if there is no projected opening price or projected closing price during such time, the last sale price shall be used; 3. if there is no last sale price during such time, the last sale price of such securities on the main board shall be used; 4. if there is no last sale price of such securities on the main board: <ul style="list-style-type: none"> ▪ the IPO price shall be used in the case of securities on the first trading day, ▪ the system will not make an examination in other cases where there is no ceiling and floor¹.

Remarks: The last sale price means the last executed price on a day on which orders are recorded, excluding the closing price on the previous business day (previous closing price).

¹ For example, securities that are traded on the first day after a period of more than 1 year from the SP, or securities that are subject to capital decrease by means of reduction in number of shares, etc.

2. Orders which unduly influence the price of securities

This refers to the transmission of a bid or offer at a price which is substantially higher or lower than the projected price, in order to control the price of securities. The member must have in place an examination system as follows:

	Type of Securities	Examination Period	Examination Criteria
1	Securities traded on the main board.	Pre-opening and Pre – closing session.	The member must prepare a warning message for any trading orders transmitted by investors at prices which are 10 spread higher or 10 spread lower than the following prices: 1. the projected opening price or the projected closing price; 2. if there is no projected opening price or projected closing price during such time, the last sale price shall be used; 3. if there is no last sale price, the prior closing price shall be used.
2	Securities trade on the main board in the case of the first trading day (IPO), or in other cases where there is no ceiling and floor ¹ .	Opening session.	The member must prepare a warning message for any trading orders transmitted by investors at prices which are 30% higher than or 30% lower than the last sale price.
3	Securities traded on the foreign board and having characteristics as follows; - Being the first trading day (IPO) of such securities on the main board. - Other cases where such securities that are traded on the main board have no ceiling and floor ¹ .	Opening session.	The member must prepare a warning message for any trading orders transmitted by investors at prices which are 30% higher or than 30% lower than the following prices: 1.the last sale price; 2.if there is no last sale price during such time, the last sale price of such securities on the main board shall be used.

***Amended March 23, 2009.*

Market Control Department
The Stock Exchange of Thailand