Security
(Password Protection)

Introduction

This document will explain the various levels of password protection in the iQ ES model generators and the iQ Explorer II software package. It will also explain how the two security systems work together, and when they don't.

Standalone iQ ES Password Protection

Four levels of security access exist in the iQ ES generator. They are Administrator, Process Engineer, Setup and Operator. One unique password is permitted for Administrator, Process Engineer and Setup. No password is necessary for an Operator. Only one password for each level exists on the generator.

Administrator

Administrator level permits access to all screens. This is the same access level if no passwords are added to the generator.

Process Engineer

Process Engineer level permits access to all screens excluding the Hardware Setup screen.

Setup

Setup level permits access to the Select Setup, Operate, Graph, Help and Security screens.

Operator

When any security password is enabled, and no user has entered a password (e.g. at power up), then the access level is the Operator level, by default. Operator level permits access only to the Operate, Graph, Help and Security screens.

Standalone iQ Explorer II Password Protection

Six levels of security access exist in the iQ Explorer II software package. They are Administrator, Process Engineer, Setups, two customizable levels and Operator. To log into iQ Explorer II, a User ID is required to be accompanied by a password. In iQ Explorer II an Operator level user will be required to enter a password to access the software. There are no limits to the number of users that may be added to iQ Explorer II.

Administrator

Administrator level permits complete access to iQ Explorer II. This is the same level of access when Security is disabled.

Process Engineer

Process Engineer level excludes access to changing language, changing units, modifying Options settings and settings in the System tab. Settings in the System tab are like those in Hardware Setup of the iQ ES generator.

Setups

Setup level permits read only access to all settings, but additionally permits the ability to select a different active setup on the iQ ES generator or load a setup from file.

Custom 1 and Custom 2

The Administrator is the only access level permitted to configure the custom security levels. They include the same level of access as a Setups level user, but may include one or more of the following other parameter sets:
Amplitude,
Trigger,
Hold,
Pressure,
Weld,
Reset Part Count,
Servo Position Limits,
and Frequency Scan
The Administrator may define custom names for the two custom security levels for ease of use.

Operator

Operator level permits read only access to all settings. No modifications to any parameter are permitted.

Access Rights (Connecting iQ Explorer II to an iQ ES Generator)

No Password Protection

When there is no password protection enabled and iQ Explorer II connects to an iQ ES model generator, it begins with a read only access level. All the parameter settings in the generator are uploaded to iQ Explorer II for view.

If the iQ Explorer II user wants to modify the parameters, they need only click the button associated with the welder in the Show Welders toolbar (assuming the window does not open automatically). Since the user interface at the iQ ES model generator has initial editing rights, the front panel must actively yield the editing rights to iQ Explorer II before iQ Explorer II may edit a parameter setting. A prompt at the generator will ask the user to "Yield control to remote user?" iQ Explorer II will display the message "Welder in use. Please wait while requesting access to welder." If access rights are denied at the generator, then iQ Explorer II will allow the user to view the weld parameters as read only. If access rights are transferred, iQ Explorer II will be permitted to modify any parameter in the generator.

After the access rights are transferred to iQ Explorer II, any user at the front panel of the generator will no longer be able to access any of the screens where parameters can be modified. The user at the front panel will need to reacquire access rights before they can make modifications.

The purpose for this kind of access management is to prevent multiple users from modifying the generator, simultaneously. For example, if a setup file is loaded from iQ Explorer II at the same time a user changes the active setup at the front panel of the generator, the mix of settings would be a terrible problem.

See Figure-1 on the next page to better understand the exchange.

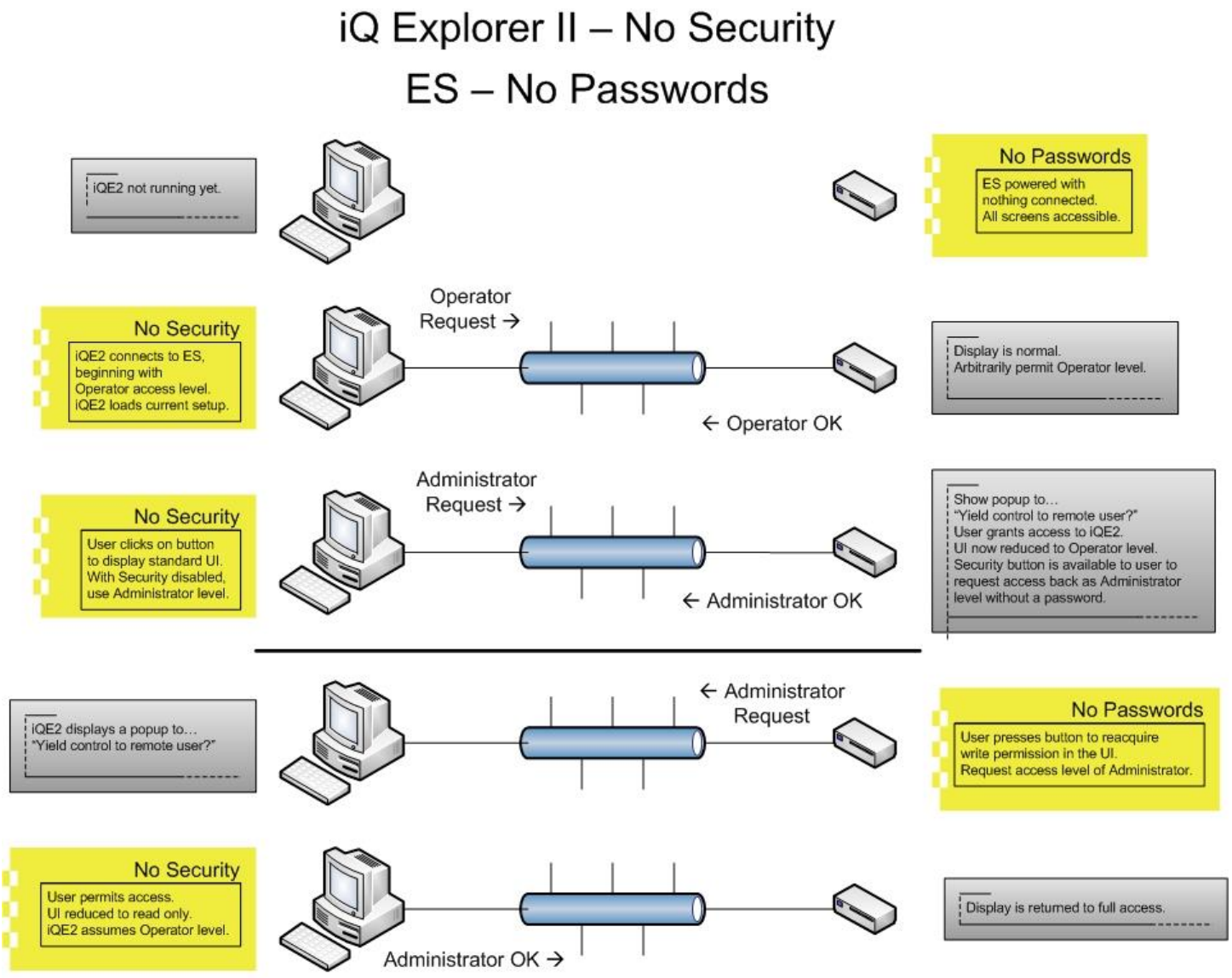

Figure - 1

Access Request Timeout

When any user interface displays the "Yield control to remote user?" prompt, there is the possibility that there is no one present to respond to the request to yield control. Both the iQ ES model generator and iQ Explorer II give the user fifteen seconds to respond to the request. After the fifteen seconds has elapsed, either device responds with a default response. The user may define the default response with an option setting in the Security screen of the generator, and the Security tab of the Options settings in iQ Explorer II. By default, the answer to the question is to deny the access to the remote user.

See Figure-2 below to better understand the exchange.

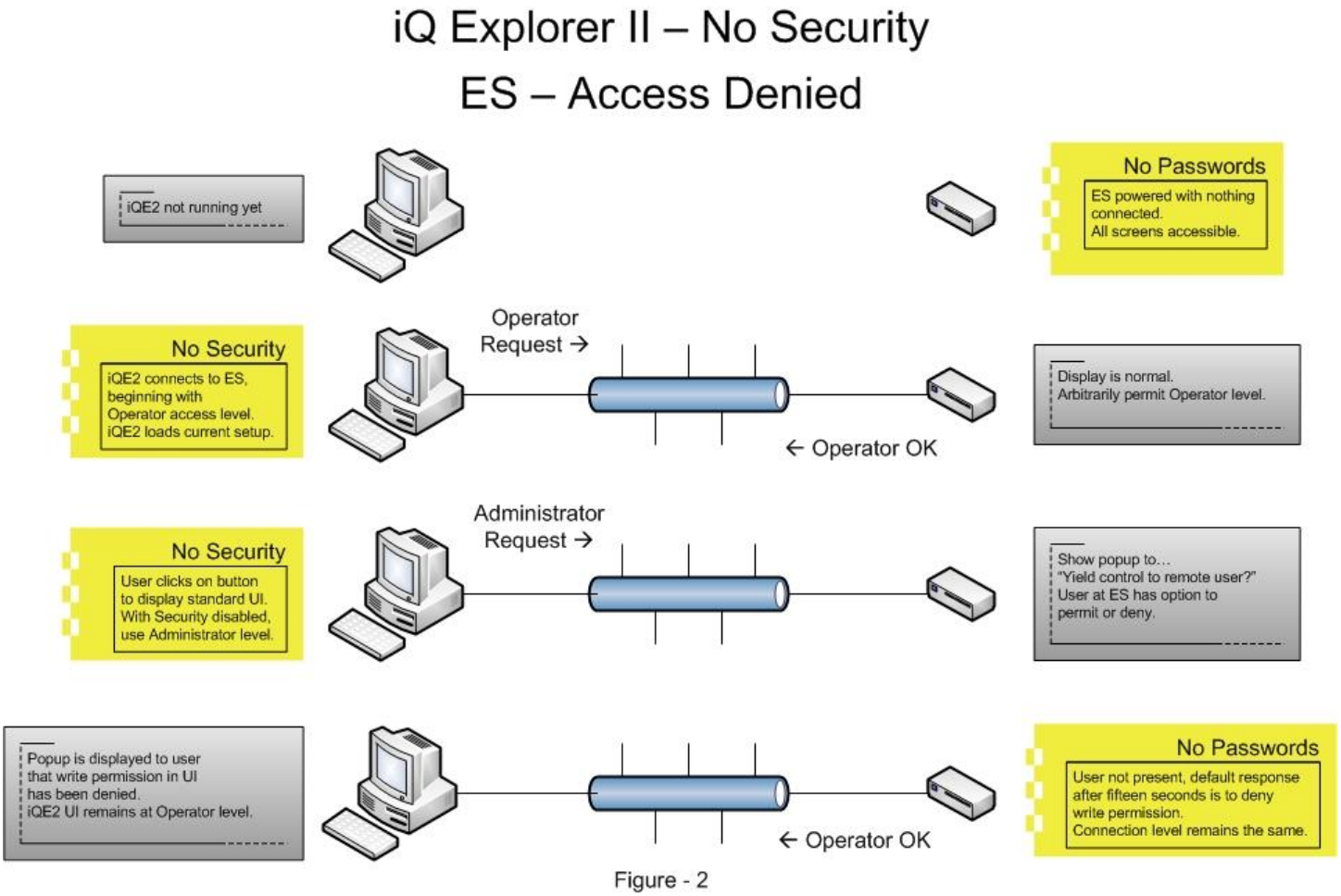

Figure - 2

Combined Password Protection

Both the iQ ES model generator and iQ Explorer II may support password protection, but they are designed to work independently. However, iQ Explorer II has special access privileges should a security password be enabled on the generator.

When the iQ ES model generator has one or more security passwords enabled, and the user at iQ Explorer II initially connects to that generator, this user will be prompted for a password on iQ Explorer II. If the user does not enter the proper password, then the connection to the generator will be severed and no attempt to connect to it will be made during this session.

If the user does enter the proper password, that password is persistently stored in iQ Explorer II and the user is granted access to the generator's parameters. Because the password of the generator is stored persistently, the next time iQ Explorer II connects to this specific generator, it will use this password and gain access to the generator's parameters.

See Figure-3 and Figure-4 on the following pages to illustrate the exchange.

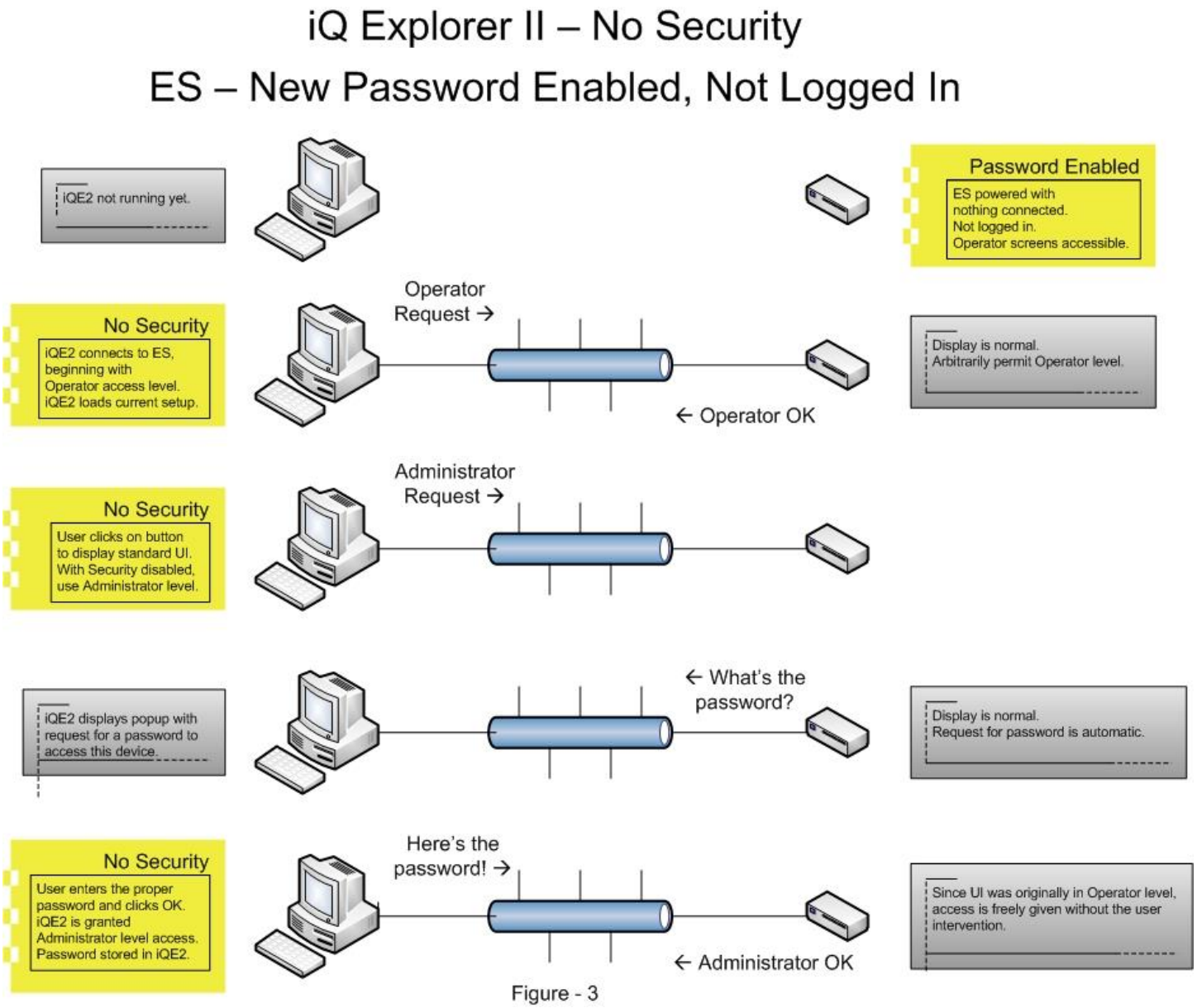

Figure - 3

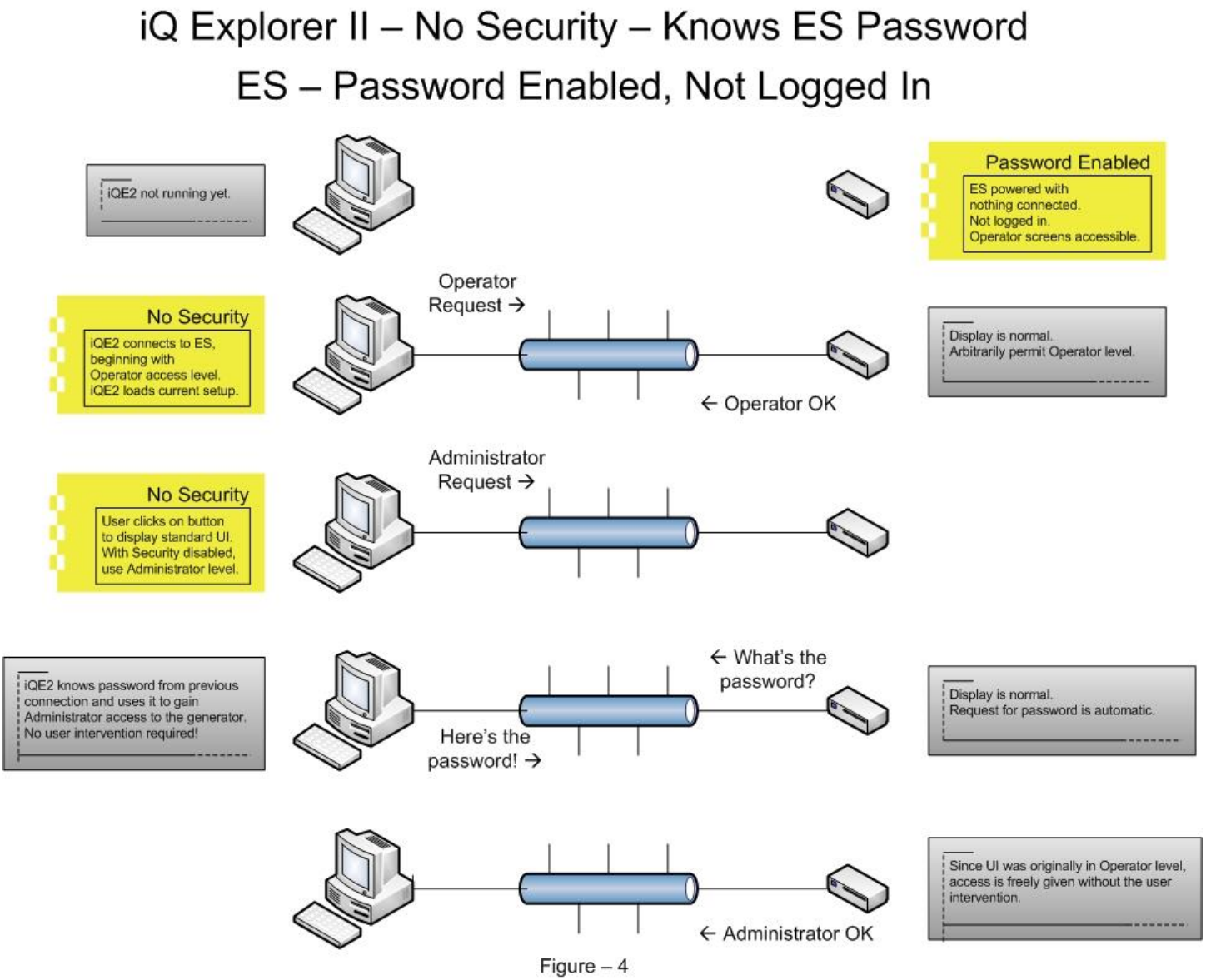

Figure – 4

Access Rights (Multiple iQ Explorer II connections to a Single iQ ES Generator)

iQ Explorer II running on a PC/HMI connects to an iQ ES model generator via TCP/IP and can connect to a customer's network. iQ Explorer II is designed to support connections to multiple generators on a network. Furthermore, the iQ ES model generator can manage multiple iQ Explorer II connections running on multiple PCs/HMIs.

If the user decides to configure their network with multiple iQ Explorer II network connections, the same rules apply for preventing multiple user interfaces from modifying parameters, simultaneously. When one iQ Explorer II user interface has edit writes to a specific generator and a second iQ Explorer II on the network wants this access, the iQ ES generator manages the question and answer between the two connections and adjusts the access levels the same as it would if it were requesting access rights, itself.

Network Security

If you prefer that iQ Explorer II operators use the same user names and passwords as your employees use to access their PCs, there is a feature in iQ Explorer II that provides access to that user information. This requires that the PC/HMI that hosts iQ Explorer II reside on the company network. If your company uses Windows Active Directory, iQ Explorer II uses the LDAP protocol to access this information.

To enable this feature, open Options in iQ Explorer II and navigate to the Security tab. Check the box next to "Network Security" to enable the LDAP protocol to Windows Active Directory. The administrator will need to provide a domain name to identify which domain the user information exists. Clicking on the "Assign Groups" button will display the full set of "Organizational Units" (referred to as OU) in the domain. Click on an OU and press the "Show Groups" button to reveal the set of groups assigned to that OU.

All groups that have no iQ Explorer II user levels assigned to them are set to Operator by default. To change a user level of a specific group, click the "Operator" cell in the list and select a different user level. All users that have this group attributed to their user information in Windows Active Directory will have this access level. To make this easy to configure, the administrator could have the company IT department create groups specific to the access levels of iQ Explorer II and assign various operators to one of these groups.

If your company network is extensive, populating the complete set of OUs in the "Assign Groups" popup will take a long time. To help reduce the list of OUs in this popup, the administrator can enter a single OU in the "Location" field. The "Location" field is found below where the domain was entered. If the groups are defined in a nested set of OUs, the syntax to enter the location is a list of OU names separated by a "\" (e.g. TopOU\Security\Groups).

Basically, the administrator assigns an iQ Explorer II access level to a group or groups. Any user that is assigned to this group will have those access rights in iQ Explorer II.

Note that assigning access levels to network groups in iQ Explorer II must be repeated to each instance of iQ Explorer II if there are multiple instances of iQ Explorer II running on a company network.

iQ Explorer II Barcode Support

There is an important condition to understand with regards to enabling the barcode per cycle feature in iQ Explorer II. When the user enables this feature with an iQ ES model generator communicating with it, the generator will assume a barcode enabled mode of operation.

This mode of operation will produce the following conditions:

1) Modifying parameters from the front panel of the iQ ES model generator is not permitted.
2) If iQ Explorer II is disconnected from a generator that has barcode enabled, that generator will not be permitted to run a cycle until iQ Explorer II is connected again.
3) No barcodes are displayed in the cycle data of the generator.

The reason for these restrictions is that the barcode management is handled by iQ Explorer II. Without iQ Explorer II obtaining a barcode for a cycle, no welding is permitted since no barcode could be associated with the weld result.

iQ Explorer II FDA 21 CFR Part 11 Compliance

Enabling FDA 21 CFR Part 11 compliance in iQ Explorer II involves much of what the barcode per cycle support includes, plus auditing:

1) Every modification to any parameter, any change of setup and every user login is recorded in a comma-delimited text file stored in the "Audit" subdirectory. You can see this directory when you open the "iQ Explorer II Directories" link available on the desktop of your PC/HMI.
2) Modifying parameters from the front panel of the iQ ES model generator is not permitted.
3) If iQ Explorer II is disconnected from a generator that has FDA 21 CFR Part 11 enabled, that generator will not be permitted to run a cycle until iQ Explorer II is connected again.

By the specifications of FDA 21 CFR Part 11, every action must be associated with a user logged into the system and recorded as such. Since iQ Explorer II manages the password and user ID for this feature, if iQ Explorer II is not running, then the system cannot attribute the modification or the running of a cycle to a user. Therefore, these restrictions are in place.

Tips

If users modify parameters at every UI

The default settings are best. Force the user at the other UI to yield access.

If users modify parameters at iQ Explorer II predominantly or exclusively

Add a simple Administrator password at the iQ ES model generator and have iQ Explorer II remember it. The advantage here is that no user will need to "Yield control to remote user?" once iQ Explorer II stores the password. This will make the interface between iQ Explorer II and the generator seamless.

If iQ Explorer II is used exclusively for data gathering

Disable "Automatically display welder access window when discovered" in iQ Explorer II Options. Cycle data is always saved in iQ Explorer II, so displaying screens are not necessary unless the user really needs to see the data.

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