PART II – SOFTWARE

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Introduction

This Part of the manual provides an overview of the Nexus 220 System, and the basic steps required for software installation and pre-configuration.

Minimum PC Specifications

Consider a number of factors when determining the correct PC specifications for different scenarios:

- Number of Doors
- Number of Tagholders supported by the System
- Whether the Base Application and Firebird Database will reside on the same PC

Description	Nexus220-1	Nexus220-2	Nexus220-3
Description	Single APB Door or 2 non-APB Door System	4 APB Door System	128 APB Door System
Processors A high performance model released within the last three months	1 Desktop Processor	1-2 Server Processor(s)	2 or more Server Processors
Free Memory Available for use by the Database Server only	1 GB	2 GB	4 GB
Free Hard Disk Space Needed for Database storage, backups and archived copies	80 GB	160 GB	320 GB
Display Monitor and graphics accelerator	1 024 x 768	1 024 x 768	1 024 x 768
Operating System Validated Operating System platforms	Microsoft Windows Vista (Business or Ultimate); Microsoft Windows XP Professional	Microsoft Windows Vista (Business or Ultimate); Microsoft Windows XP Professional	Microsoft Windows Vista (Business or Ultimate); Microsoft Windows XP Professional
Database Server Supported Database platforms	Firebird 2.1	Firebird 2.1	Firebird 2.1

Table 1 – Minimum PC Specifications

The volume of transactions per Site affects the performance of the Database Server PC. Adjust the specification allowing for rapid Database growth and Reports that work with large result sets.

Nexus 220 Applications

The Nexus 220 Software incorporates a collection of Modules and Utilities. The Modules form the core of the Nexus 220 Suite and provide control for everyday and important functions. The Utilities provide support for advanced configuration and system maintenance. This section provides a brief description of Nexus 220's Modules and Utilities.

Nexus 220 Modules

Base Application Module

The Base Application is the communication, configuration and Tag enrollment module for the Nexus 220 Software. This user-friendly Module, allows for systematic installation and configuration of the System using wizards where possible.

The Nexus 220 Base Application performs a number of important functions including:

Communication

- Monitors the Database for edits made by for example, the Base Application and the Web Enrollment Module.
- Communicates details of all changes or edits made to the relevant Controllers.
- Polls the Controllers for transactions, then logs the transactions to the Database.
- Runs the web server.
- Open socket connection ports for Modules such as Graphics (which make a direct connection to the Base Application).

Site and Host configuration

- **Auto-ID**—reports detected Hardware to the Nexus 220 System Software, and configures the Hardware for communication purposes.
- **Site Configuration**—allows configuration of your site.
- **Controller Configuration**—allows configuration of the installed Controllers.
- **Door Configuration**—allows configuration of the installed Terminals.
- **Access Group Configuration**—the key element of access control, this setting allows configuration of when (Access Time Patterns), and where (Areas) Tagholders have access.
- **Tagholder Configuration**—allows configuration of Tagholder details.
- **Holiday Configuration**—allows configuration of Holidays affecting your site.
- **Reason Code Configuration**—allows configuration of Reason Codes.
- **Message Configuration**—allows configuration of personalised messages.
- **Batch Tag Registration Configuration**—allows enrollment and configuration of batches of Tags.
- **Input and Output Devices Configuration**—allows configuration of Input and Output devices connected to your Nexus 220 System for use in Building Management.
- **Actions Configuration**—allows configuration of event driven or time triggered actions for use in Building Management.

The Base Application is a “scaled” software suite, therefore, features “unlock” based on the unlock codes (feature licences) purchased. The Base Application Unlock Code options include the following:

- Support for up to 128 doors
- Multiple Site support

Web Enrollment Module (General)

This Module is intended for use for example, by an operator using a PC at a location remote from the System’s Base Application (Host PC). This Module requires no extra Nexus 220 software installation, simply installing Java Runtime Environment V1.40 or above allows any member of your staff (provided they have a valid username and password) access to the Module.

The Module’s basic function is enrolling Tags so **employee Tagholders** may access selected areas at named times. As this is an enrollment Module, each PC running the Module must connect to a Registration Reader. The benefit of running this now entirely web-based Module is less bandwidth usage promoting improved network speed. You may use the Web Enrollment Module with Windows® Internet Explorer 7 (and above) or alternatively Firefox 2 (and above).

Web Enrollment Module (Visitor)

This Module is intended for use for example, by an operator using a PC at a location remote from the System’s Base Application (Host PC). This Module requires no extra Nexus 220 software installation, simply installing Java Runtime Environment V1.40 or above allows any member of your staff (provided they have a valid username and password) access to the Module.

The Module’s basic function is enrolling Tags so **visitor Tagholders** may access selected areas at named times. As this is an enrollment Module, each PC running the Module must connect to a Registration Reader. The benefit of running this now entirely web-based Module is less bandwidth usage promoting improved network speed. You may use the Web Enrollment Module with Windows® Internet Explorer 7 (and above) or alternatively Firefox 2 (and above).

AmanoTouch Module

The AmanoTouch Module facilitates the integration and configuration of various third-party Biometric Readers for use with the Nexus 220 Software. These systems currently include various Sagem Fingerprint Readers integrated with the Nexus 220 Software via the Biometric Server Software. The Server Software also allows for the direct enrollment (registration) of Tagholders and related biometric data at those Biometric Readers from within the Nexus 220 Software.

The introduction of biometric access control greatly increases the access control capabilities of Nexus 220 Systems where you need extra security measures.

Card Designer Module

The Card Designer Module lets you design templates for use with Credit Card Tags. These templates can then be used to print information on to these Tags, such as company name, Tagholder's name, ID number, employee number, department, barcode, and so on, as well as a photograph of the Tagholder.

Web Reports Module

The Nexus 220 Software lets you compile Reports on functions and transactions within the Nexus 220 System. As these Reports are essentially Web Reports, so you can compile Reports for one or more Sites over LAN or WAN networks. The Reports Software allows selection of single or multiple Sites, allowing management of both.

Filters readily displayed on the screen, let you select parameters for running your Report. These filters may consist of information fields (occasionally), drop-down menus, checkboxes or calendars.

Webstore Module

The Webstore Module allows for the on-line purchase of unlock codes that provide added software features and hardware functionality.

The Hardware **System 2 Upgrade** upgrades your **Nexus 220 Controller** from a Stand-alone Controller (with a locked Terminal Bus), to a System Controller. As a System Controller, you have support for up to 32 Anti-passback doors (dependent on your System type).

The Software unlock facility enables purchase of the following feature licenses (for use with System 3 and System 4 only):

- Web Tagholder Enrollment License
- Web Visitor Enrollment License
- Amano-Touch License
- Multi-site License
- Card Designer License

Nexus 220 Utilities

Ethernet Discovery Utility

The Ethernet Discovery Utility allows the following actions:

- Detection of Controllers on the network.
- Configuration of the network address settings.
- Configuration of the Controller's settings.

Universal Time Attendance Export Utility

The Universal Time Attendance Export Utility lets you extract time and attendance transaction records from the Nexus 220 Database for use by your time and attendance application.

The Export Utility makes use of user defined templates (created in Design Mode) that specify the data for extraction and the export format. Using the Run Mode, you have the choice of exporting the records interactively or as scheduled (using Windows® Scheduler). Command line arguments specify the Mode and other parameters.

Automatic Database Upgrade Utility

After completing the login action, the Automatic Database Upgrade Utility checks the Nexus 220 Database version. If the Utility confirms the Nexus 220 Database is older than that needed by the Nexus 220 Software, a Warning dialog tells you an upgrade is needed. If you do not upgrade the Database immediately, the Nexus 220 Software closes.

Database Conversion Utility

The Database Conversion Utility converts existing AXP120 or AXP200 Databases for use in Nexus 220. The Conversion Utility uses the same Amano RS constraints as the Nexus 220 Software itself. This means the Utility checks for an Amano RS and then checks the Nexus 220 System itself, confirming the number of allowed Tagholders and so on.

Note, the Utility does NOT move information such as Doors (Locations), Terminals, Controllers and so on. The Utility does move information such as Tagholder details, Tag information, Holidays, Messages, Reason Codes, Door Mode Patterns, Access Groups and Access Patterns. Therefore, at start-up, perform an Auto-ID of your Hardware and configure and link Doors (Locations) to Access Patterns.

Firmware Upgrade Utility

The Firmware Upgrade Utility lets you perform the following actions:

- Identify Firmware versions of connected Hardware.
- Selection and configuration of Communications Port.
- Ping the connected Hardware (provides confirmation that Hardware is connected and working).
- Perform in-field Firmware Upgrades to connected Hardware.

IBConsole Utility

IBConsole is a third-party database configuration and administration tool. You can use IBConsole to perform advanced configuration and administration tasks on the Nexus 220 Database.

Translate Utility

This Utility facilitates changing field names in the Database to another language. The Utility requires that you manually enter the replacement text.

Peripheral Hardware

Nexus 220 uses the following peripheral hardware devices to perform Tagholder registration and Software unlocking function.

Amano ISR

This “single unit” is an external Registration Reader that connects direct to the PC via USB. The Amano ISR allows for registration of **125 kHz Tags**. This Registration Reader does not support Amano Standard Tags or third-party Tags.

Amano RS

The Amano RS performs the following functions:

- Stores Hardware and Software license information.
- **Support for Antenna Readers**—Reads 125 kHz Tags when used with the Amano RRA Registration Antenna Reader.
- **Support for Wiegand Readers**—Reads Wiegand Tags when used with the Wiegand Registration Reader.

The Amano RS connects directly to the PC and is powered by USB.

Nexus 220 Network Specifications

The Nexus 220 Suite is designed to run over a network in Client-Server Mode. However, it *can* also run successfully on a single PC.

Architecture

Client-Server

Client-Server architecture consists of users' PC's (Clients) connected via a network to a central host (Server). In most situations, Client PC's are workstations that access files or databases, or applications running on one or more Servers.

In Nexus 220, the following are **Server** components:

- Nexus 220 Base Application
- Database

The rest of the applications are **Client** components.

Software Connection Relationships

Figure 1 shows the relationship between the Nexus 220 Database and Nexus 220 Client applications.

Socket connections enable communication between PC's. **Database connections** enable communication between PC's and the Nexus 220 Database. **Jaybird** is an interface component installed with Nexus 220, facilitating database interaction.

Network Hardware

An Nexus 220 compatible network requires the following hardware:

- **CAT5** or **CAT6 UTP** cabling
- **100 Mbps** or faster, **TCP/IP** enabled Network Interface Cards (NICs)

Routers

If routers or switches are used, they must conform to the following:

- **TCP/IP** protocol
- **100 Mbps** or faster

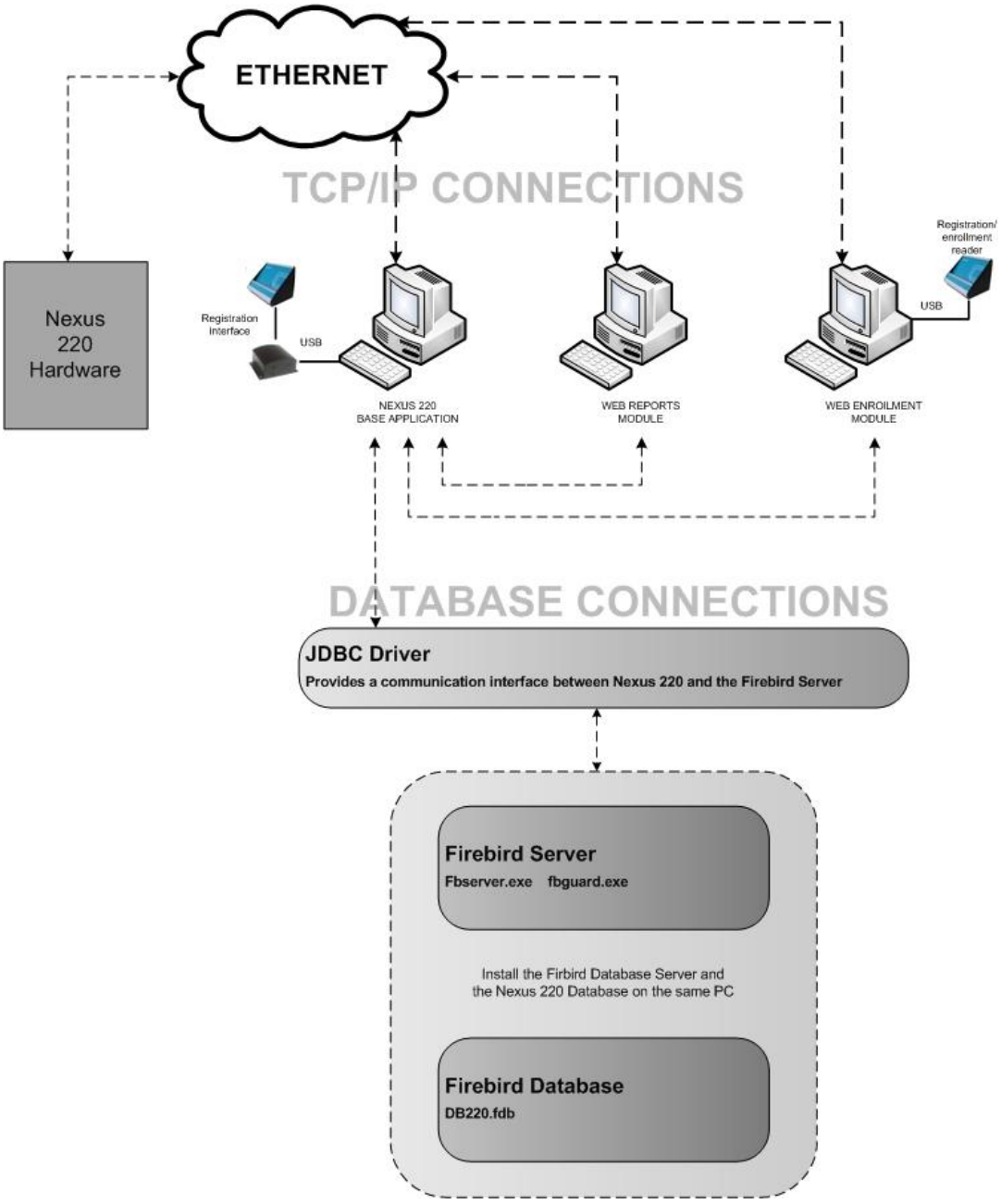

Figure 1 – Software Connection Relationships Diagram

Nexus 220 Modules in a Network Environment

The Nexus 220 Software is designed to run over a network in Client-Server architecture. However, all Modules can run on a stand-alone PC. The following components are important when running Nexus 220 over a LAN or WAN:

- Nexus 220 Database
- Firebird Database Server
- Nexus 220 Base Application

Nexus 220 Database

By default, Nexus 220 uses a **Firebird** Database. Firebird installs with the Nexus 220 Software, during the software installation process. The default location for the Database is as follows:

- C:\Nexus220\Database\DB220.FDB

DB220.FDB *is the name of the database file.*

Firebird is an open-source product—it has no licensing fee. For more information refer to the following websites: http://www.opensource.org and http://www.firebirdsql.org/.

Firebird Server

Firebird Server is a Database Server program that facilitates connections between the **Nexus 220 Database** and the Nexus 220 Base Application.

Install Firebird Server on the same PC as the Nexus 220 Database.

Nexus 220 Base Application

The Nexus 220 Base Application functions primarily as a **Communication Server**. It performs the following functions:

- Retrieves transactions from Nexus 220 Controllers.
- Facilitates configuration of the Nexus 220 System.
- Monitors the Nexus 220 Database for changes.
- Communicates Database changes to the Nexus 220 Controllers.
- Runs the Web Server.

The **Web Enrollment** and **Web Reports Module** process and report information real-time. To do this, they use **TCP/IP** socket connections to connect to the Base Application.

Socket connections are also used to send messages to the Base Application.

General Network Requirements

The following requirements are essential for Nexus 220 to operate over a network:

- Network hardware must support the **TCP/IP** protocol
- The network must support **100 Mbps** bandwidth or greater

Running Nexus 220 across a LAN

Figure 2 illustrates the network configuration for running Nexus 220 Software across a Local Area Network (LAN).

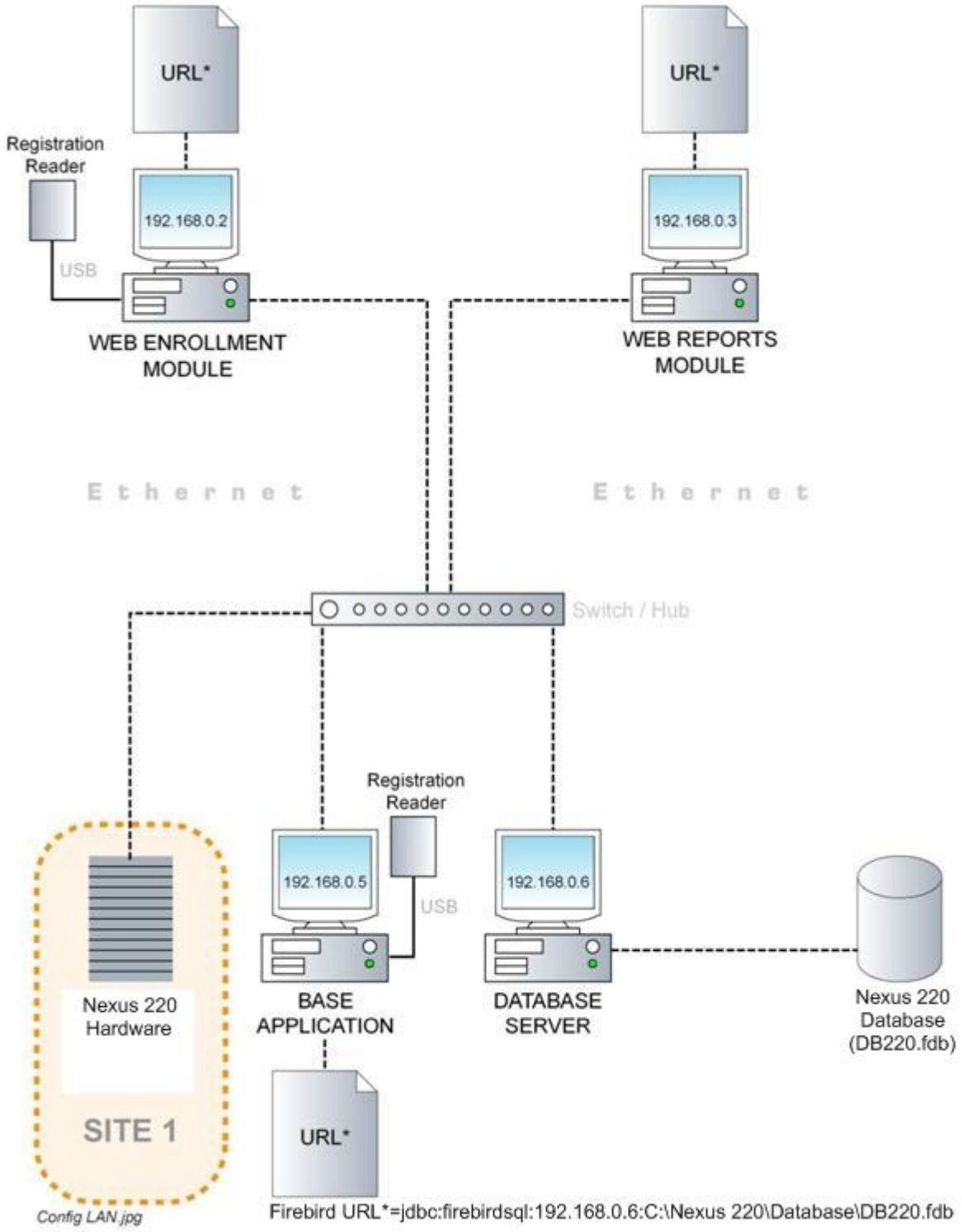

Figure 2 – Nexus 220 Configuration across a LAN

Running Nexus 220 across a WAN

Figure 3 illustrates the network configuration for running Nexus 220 Software across a Wide Area Network (WAN).

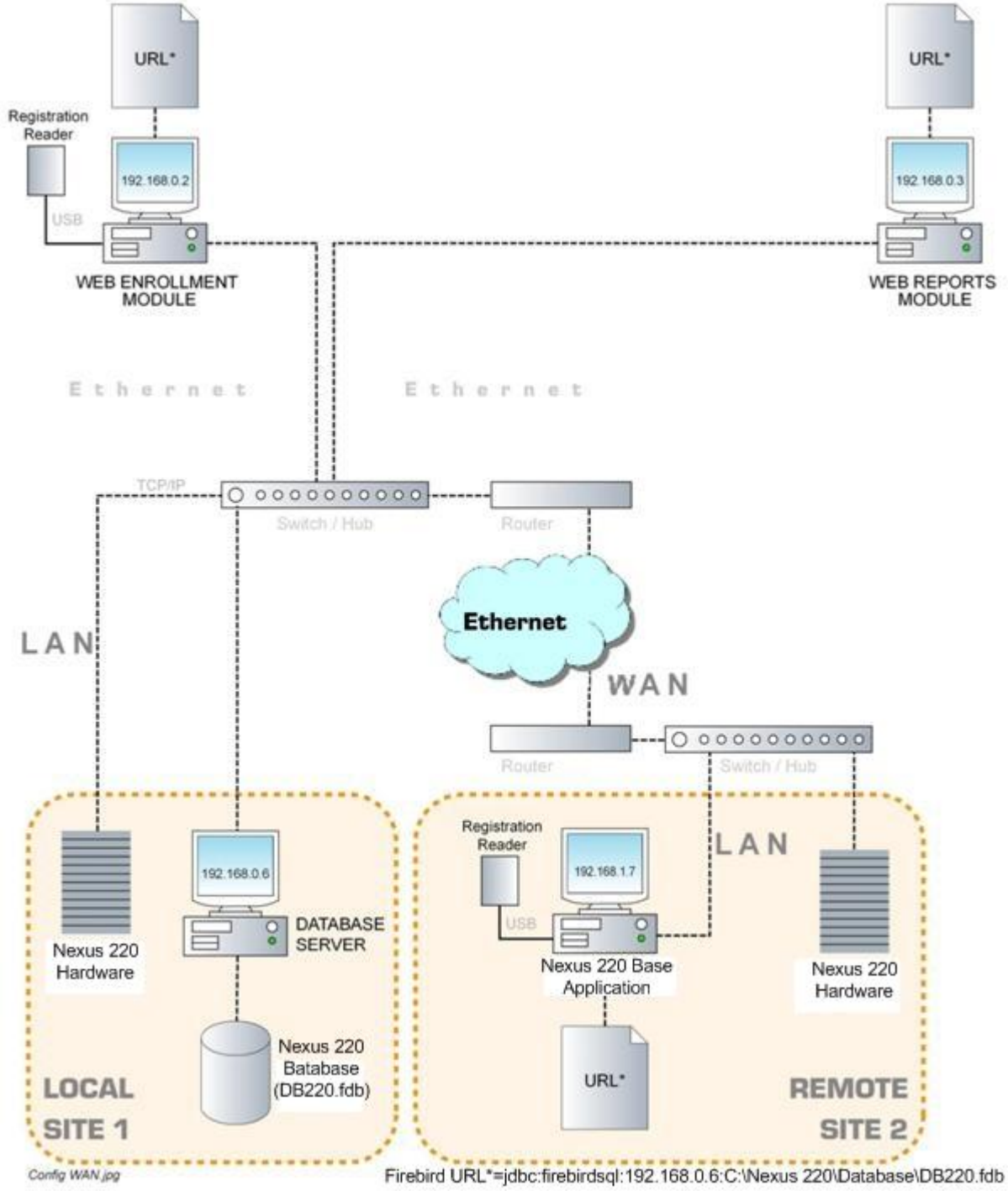

Figure 3 – Nexus 220 Configuration across a WAN

Communication across a WAN is generally slower than across a LAN. Therefore, carefully assess your WAN before implementing Nexus 220.

Minimum WAN Requirements

The Base Application and the Controllers (the Base Application communicates with) need a minimum throughput of 1 MBps. For example, a WAN capable of 2 MBps bandwidth, must assign at least 1 MBps for exclusive use by the Base Application and Controllers.

Properties Files

Nexus 220 Base Application stores its connection settings in editable text files called **Properties Files**. These files contain URLs that specify the location of the Database Server. If the URL is incorrect, the application will not function.

Configuring Nexus 220 Modules for a Stand-alone (Single PC) System

This section provides the requirements for installing all Nexus 220 Modules, including the Database Server, on a single PC.

Connecting to the Database

The Nexus 220 Suite installs by default to **C:\Nexus220**. The URL in the Base Application's **Properties File** points to the following default Database location:

- C:\Nexus220\Database\DB220.FDB

If you move the Database to another location on the PC, you must change the URL in the Properties file to point to the new Database location.

For security reasons, we recommend that you do not share the Database folder.

The following extract shows the default format for the Database URL:

ixp220.database.Interbase.URL.0=C:/Nexus220/Database/DB220.FDB

If you move the Database, you must update this URL to reflect the new location. For example, if you move the **DB220.FDB** file to a folder called **Site1** on drive **D**, you must change the URL to the following:

ixp220.database.Interbase.URL.0=D:/Site1/DB220.FDB

If you install other Nexus 220 Applications on the Database Server, the URLs in each Client Properties File must use a local path (for example "Localhost"), not a network path.

Configuring Nexus 220 Modules for a LAN (Firebird)

If you distribute Nexus 220 Modules across a LAN, at the Nexus 220 **Logon** dialog, edit the **Server Name** and **Database** URL accordingly. Modifying these fields automatically modifies the Properties file.

Configuring Nexus 220 Modules for a WAN

Running Nexus 220 across a WAN is similar to running Nexus 220 across a LAN. However, WANs generally have slower performance. Nexus 220 has options to minimize the resources required by a slower-than-usual architecture.

Advanced Base Application Settings

Figure 4 shows the Communications Configuration Dialog.

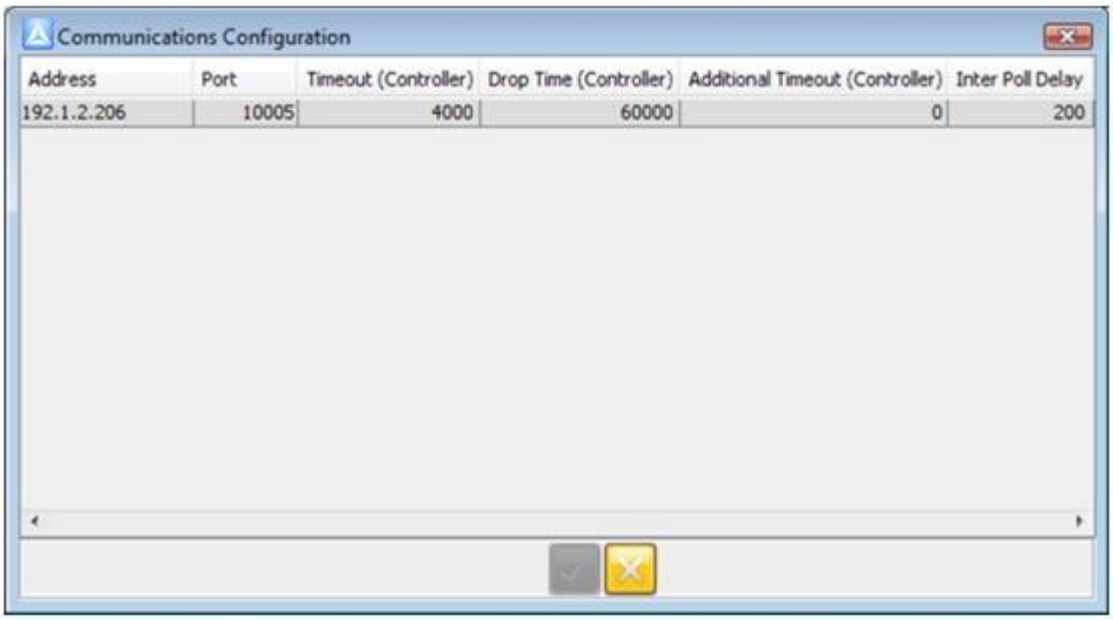

Figure 4 – Communications Configuration Dialog

Edit the following settings as required to compensate for the Base Application running across a WAN:

- **Drop Time (Controller)**—increase this figure to compensate for the WANs slower performance.
- **Additional Timeout (Controller)**—increase this figure to compensate for the WANs slower performance.
- **Inter Poll Delay**—reduce the cost of communicating across the WAN by polling less often. Increase the value as required thus increasing the interval between polls.

Figure 3 on page 14 illustrates a possible Nexus 220 Configuration where a second site is connected via a WAN. In this type of scenario, it is important to determine how much bandwidth is available to the Base Application Server. If resources are limited, we recommend editing the advanced Base Application settings to further reduce the bandwidth that Nexus 220 requires to operate efficiently.

Using Routers Configuration

The following factors affect bandwidth when a router is used:

- Number of hardware devices configured in the Base Application.
- Number of Tagholders.
- Existing WAN load usage.
- Number of Nexus 220 client applications that access data via a router.

Router Configuration

WAN routers must enable *pass-through communication* on the port that the Database Server is using for connection. This is essential if the router has a built-in firewall.

Firebird Port

Firebird uses **Port 3050** by default. Therefore, ensure that WAN routers have **TCP/IP** enabled for network traffic sent to Port 3050.

Bandwidth Requirements

Every Nexus 220 installation will have different bandwidth requirements. For example, a Base Application that uploads 200 Tags to a single Controller can do so through a 64 k ISDN line. However, a Base Application that has to upload 5 000 Tags to five Controllers needs at least a 768 k dedicated ISDN line.

It is impossible to specify the exact requirement for a WAN. However, we recommend a *minimum* WAN connection bandwidth of **1 MBps**. For *optimal* performance across a WAN, we advise you to consider a connection with at least **2 MBps** of bandwidth.

Perform bandwidth-intense activities such as uploading Tag data to Controllers after-hours, thereby reducing network load during normal hours.

System Concepts

System Architecture Concepts

An Nexus 220 Access Control System comprises the following elements:

- Sites
- Controllers
- Doors (Locations)
- Zones

The Nexus 220 System Architecture is illustrated elsewhere in this Manual.

Sites

Each System consists of one or more **Sites**. Sites are independent of each other. Each Site can have only one Host. The Host is the **Base Application** Module for a particular Site.

Controllers

A Nexus 220 Site supports up to 64 **Nexus 220 Controllers**. Each Controller supports up to 64 **Terminals (Fixed Addresses)**.

Door (Location)

A Door (location) is a physical access control point. It comprises a group of **Readers** servicing an access control point. A Door (location) supports up to two Terminals for the following functions.

- Door Entry
- Door Exit

Zones

A **Zone** is a group of Doors (Locations - access control points). Entry and exit to and from a Zone is achievable via its Doors (Locations) only. Generally, a Zone is a physically bounded area containing one or more Doors (Locations).

System Building Blocks

Nexus 220 Software Suite

The Nexus 220 Software Suite is designed to run on Microsoft Windows® XP (Professional) and Vista (Business or Ultimate). These limitations are important for the efficiency and reliability of the System.

Supervisory Elements—Host PC

Each Site requires a Host PC for control and supervision of the Site. Alternatively, multiple PC's can be used for the same function.

On a typical Site, the following functions are performed by the Host PC:

- **Database Server**—dedicated to the Site Database.
- **Base Application**—dedicated to processing communications between the Database Server and the Controllers. It also performs a polling function from the Server to the Controllers.
- **Client Workstation**—dedicated to supervisory aspects.

System Buses

The Nexus 220 System offers a choice of the following system busses:

- **TCP/IP Bus**—links the System Controller and Host PC to the LAN or WAN.
- **USB**—links the System Controller to the Host PC.
- **The Controller Bus**—this RS485 bus links the System Controller to the Host PC.
- **The Terminal Bus**—the RS485 bus that connects each Controller to its Terminals. There is one Terminal Bus per Controller, with support for up to 64 Fixed Addresses.

Serial Peripheral Ports

Some hardware units have an RS232 Serial Peripheral Port. They can be connected to a single peripheral device.

Software Installation Procedure

The Nexus 220 Software does NOT support Windows® 95, 98, 2000 or NT.

*Windows® Vista users must disable the **User Account Control** before installing the Nexus 220 Software. Disable the control as follows:*

1. *Select **Start**>**Control Panel**.*
2. *Select the **User Accounts** icon.*
3. *Select the **Turn User Account Control On or Off** option.*
4. *Deselect the **Use User Account Control (UAC) to Help Protect Your Computer** option.*

Log on to Windows® with Administrator privileges to install the Nexus 220 Software.

New Nexus 220 Installation

The Nexus 220 Software Suite is supplied on an installation **CD-ROM**. Before you install it, ensure you have read the following:

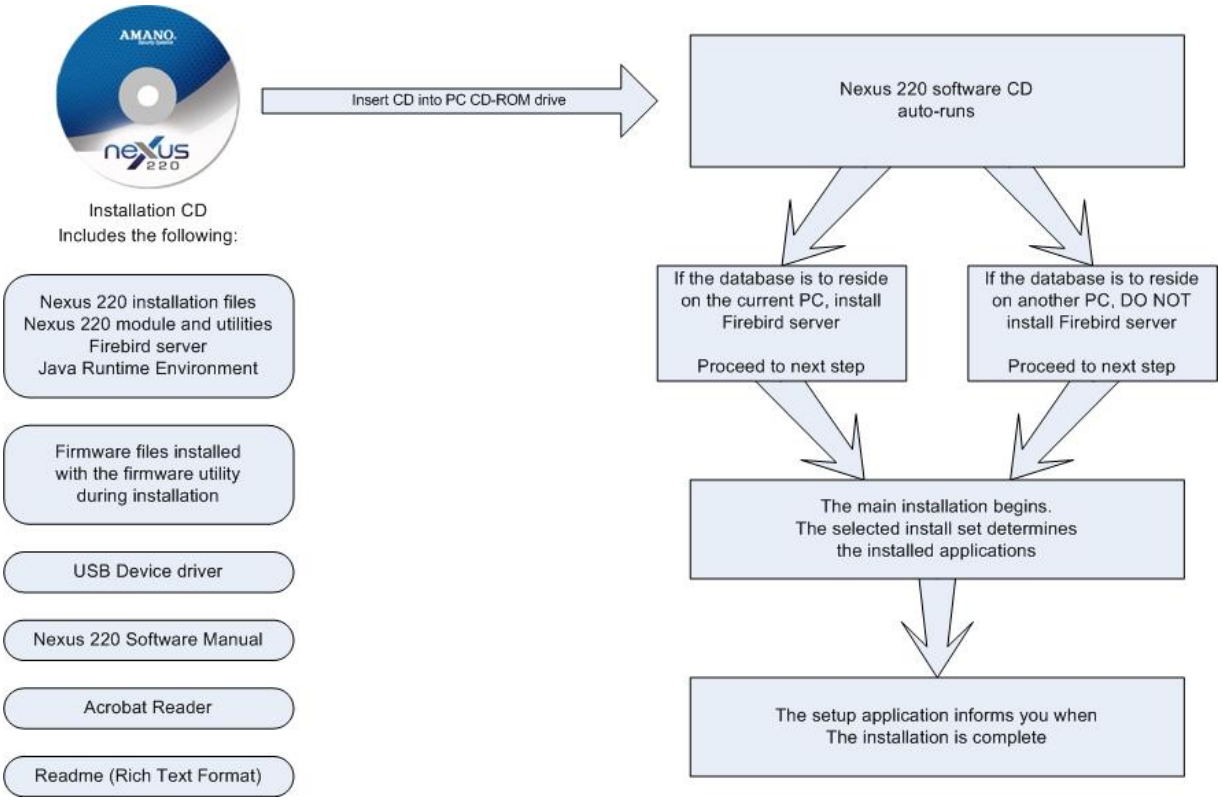

Figure 5 – Nexus 220 Software Installation Flowchart

PC Hardware Requirements

Refer to the section Minimum PC Specifications on page 4.

Installation Sequence

The Nexus 220 Installation CD uses an automated, interactive Installation **Wizard** to guide you through the installation process. The Wizard prompts you at various stages to select installation options. This makes it possible to customize the Nexus 220 Software Suite.

Install the Nexus 220 Software in the following sequence:

1. **Database Sever**—this is ESSENTIAL. Refer to the section, Installing the Database Server below.
2. **Applications**—Modules and Utilities.
3. **Database**—installed with the Base Application.
4. **USB Driver**—only required if your System makes use of USB Enrollment Readers or Controllers.

Installing the Database Server

A Database Server is required to host the Nexus 220 Database. If you install the Nexus 220 Software to a single PC, the Database Server installs automatically. However, if using more than one PC to host the Nexus 220 Software, install the Database Server manually.

Firebird automatically prompts to install, if a previous version is not detected.

Any PC on the network can host the Database Server. Nexus 220 uses **Firebird 2.1** as its Database Server. To install Firebird manually, proceed as follows:

Installing Firebird

1. Select a PC to host the Database Server.
2. Insert the Nexus 220 Installation CD in the PC's CD-ROM drive.
3. Browse to the **\database\firebird** directory on the Nexus 220 Installation CD.
4. Double-click **Firebird.exe**.
5. In the **Select Language Setup** dialog, from the drop-down menu, select your preferred language.
6. Click the **OK** button.

Firebird Installation Wizard

1. At the Welcome dialog, review and follow the on-screen instructions.
2. Click the **Next** button.
3. At the Licence Agreement dialog, select the **I Accept the Agreement** radio button.
4. Click the **Next** button.
5. Review the Information dialog, and then click the **Next** button.
6. In the Select Destination Location dialog, select the **Destination Directory**—we recommend that you use the default location of **C:\Program Files\Firebird\Firebird_2_1**.

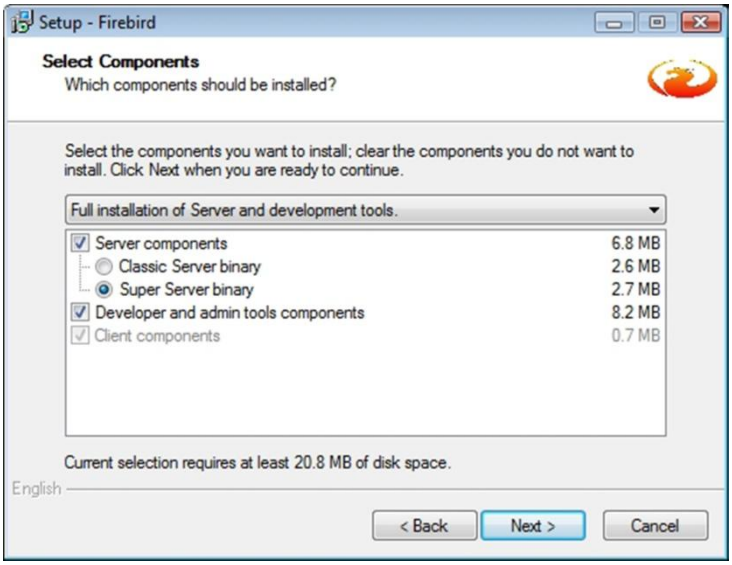

Figure 6 – Firebird Select Components

7. From the drop-down menu, select the **Full Installation of Super Server and Development Tools** option.
8. At the Select Start Menu Folder screen click **Next**.

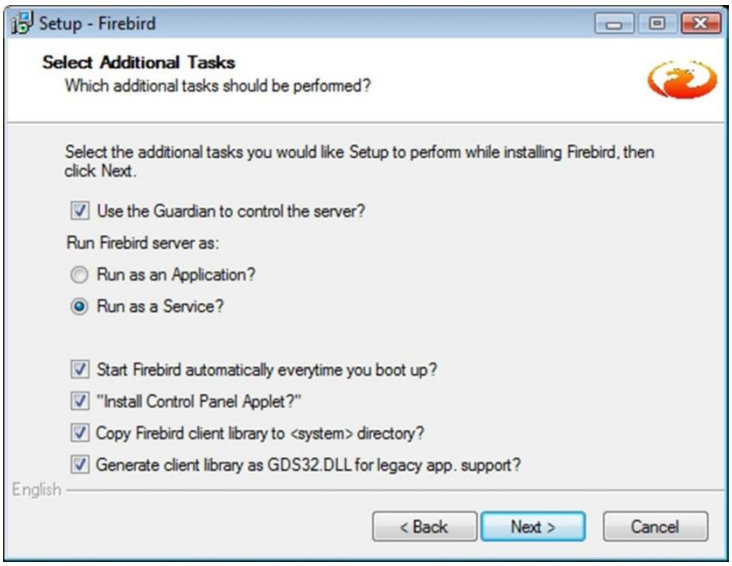

Figure 7 – Firebird Select Additional Tasks

9. On the Select Additional Tasks screen:
   - Select the **Use the Guardian to Control the Server?** option.
   - Select the **Run as a Service?** option.
   - Select the **Start Firebird Automatically Everytime You Boot Up?** option.
   - Select the **"Install Control Panel Applet?"** option.
   - Select the **Copy Firebird Client Library to <System> Directory?** option.
   - Select the **Generate Client Library as GDS32.DLL for Legacy app. Support?** option.
10. Click the **Next** button.
11. Click the **Install** button.
12. Review the Information dialog and then click the **Next** button.
13. Click the **Finish** button.

Nexus 220 Installation Procedure

To install the Nexus 220 Software Suite on a single Host PC proceed as follows:

1. Insert the Nexus 220 Installation CD into the CD-ROM drive.
2. Select the **Install Nexus 220 Suite** option.

If the CD does not start up automatically, browse the CD in Windows® Explorer and double-click Setup.exe.

3. Select **English** as the language option.
4. Click the **OK** button.

If no Database Server is present, one is installed. Follow the onscreen instructions for this.

5. At the Introduction screen, click **Next**.
6. At the Licence Agreement screen, select the **I Accept the Terms of the Licence Agreement radio** button.
7. Click the **Next** button.
8. At the Choose Install Folder screen, click **Next**.

*If you change the installation directory file path, ensure that you enter **text only, NO spaces**.*

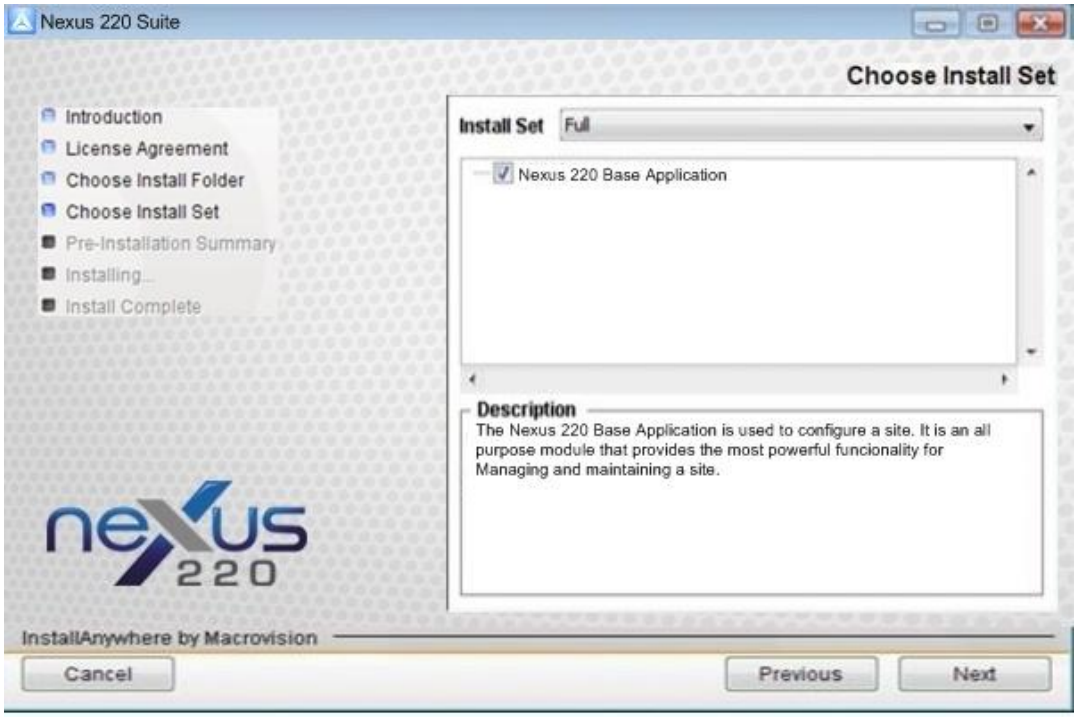

Figure 8 – Install Set Menu

9. At the **Choose Install Set** screen, from the **Install Set** drop-down list, make your preferred installation type selection.

An Install Set is a collection of pre-selected applications suitable for specific scenarios.

Customize an Install Set option by selecting or de-selecting applications from the list.

10. Click the **Next** button.
11. Click the **Install** button.
12. At the Install Complete dialog, click the **Done** button.

By default Windows® XP (SP2 and SP3) installs a firewall. If you wish to keep this Firewall, ensure that you unblock the TCP Ports thereby allowing functionality of the Nexus 220 Software. Continue as follows:

1. *Select **Start**>**Control Panel**.*
2. *Select the **Windows Firewall** icon.*
3. *In the Windows Firewall Settings dialog, select the **Exceptions** tab.*
4. *Click on the **Add Port** button.*
5. ***Unblock the TCP Port** in the Add a Port dialog, by completing the **Name** (any name for example Amano) and **Port Number** (use **10005** for Ethernet Controllers) text boxes.*
6. *Select the **TCP** radio button.*
7. *Close the Add a Port dialog, by clicking the **OK** button.*
8. *At the Windows Firewall Settings dialog, again click on the **Add Port** button.*
9. ***Set the Ethernet Firebird Port** by completing the **Name** (any name, for example Firebird Service) and **Port Number** (use **3050** for Ethernet communication).*
10. *Select the **TCP** radio button.*
11. *Close the Add a Port dialog, by clicking the **OK** button.*
12. *Close the Windows Firewall Settings dialog, by clicking the **OK** button.*

*When using **separate PC's for the Base Application (Host PC) and Database (Server PC)** installation, continue as follows:*

1. *On the **Host PC**, install the Nexus 220 Software as listed under the section **Nexus 220 Installation Procedure**.*
2. *Stop the Firebird Server Software.*
3. *On the **Server PC**, install Firebird Server as listed under the section **Installing the Database Server**. Ensure that Firebird automatically runs as a service and that it has started.*
4. *Copy the Database file from the Database folder on the Host PC to the NEW Database folder on the Server PC.*
5. *Re-name the original Database file that remains on the Host PC to prevent you selecting it by mistake later.*
6. *Install the IB Console Utility on the Server PC, by copying the Utility from the **C:\Nexus220\Tools** folder on the Host PC.*

Database Encoding

The default database uses **UNICODE-FSS** encoding.

Install the USB Driver for the USB Registration Reader Interface

The Nexus 220 Software uses a USB Registration Reader Interface to read Tags. Some Interface versions also provide an RS485 communication link to the Controllers.

The Nexus 220 Installation CD includes a USB driver for the USB Registration Reader Interface. You can find the USB driver in the following locations:

- The **USB_Device_Driver** directory on the CD.
- The **Nexus220\USB_Device_Driver** folder on the Host PC.

To install the driver, proceed as follows:

*If there are old Amano USB Device Drivers on the PC, delete them **before** installing the provided driver.*

*On some PC's, the **New Hardware Found** wizard displays every time you plug in a **USB Registration Reader Interface** with a new USB Serial Number (Fixed Address). If this happens, choose the option to automatically install the unit; The **New Hardware Found** wizard will not display again.*

1. Plug the **USB Registration Interface** into a USB port on the PC. The **Found New Hardware Wizard** displays.
2. Select the **Locate and Install Driver Software (Recommended)** option.
3. Select **I don't have the Disk. Show me Other Options**.
4. Select the **Browse My Computer for Driver Software (Advanced)** option.
5. Click the **Browse** button.
6. In the Browse for Folder dialog, select the **Nexus220\USB_Device_Driver** folder.
7. Click the **OK** button.
8. Click the **Next** button.
9. At the Windows Security dialog, select the **Install this Driver Software Anyway** option.
10. Click the **Close** button.

You will notice that the Wizard pops up twice, installing two drivers; one for the **USB Registration Reader** and one for the **COM Port to USB Bridge**.

Upgrading an Existing Installation

1. Backup the existing Nexus 220 Database.
2. Copy the **Properties** files if running Nexus 220 on a LAN or WAN.
3. Uninstall the Nexus 220 Software.
4. Install New Nexus 220 Software.
5. Ensure that the Database Server is **Firebird 2.1** or higher. If not, uninstall the existing version and replace it with the newer version.
6. Upgrade the Nexus 220 Database if necessary.
7. Upgrade the Controller and Terminal Firmware if necessary.

*Ensure that you configure your Nexus 220 Controllers correctly **before** proceeding further with your Nexus 220 installation. Refer to Part VII – Utilities for configuration information.*

Pre-configuration Procedure

It is critical that there are no communication problems prior to Software configuration. Otherwise, the System will not function.

*Ensure that the **Unit Location Chart** is correctly filled in when installing the Controllers.*

After installing all the Nexus 220 Software components, perform the **Pre-configuration Procedure**. This procedure ensures that the hardware communication infrastructure functions correctly.

RS485 Communications Infrastructure

1. Using the supplied USB Cable, connect the Amano RS to the PC.
2. Using the Nexus 220 Controllers RS485 Controller Port, connect the Nexus 220 Controller to the Amano RS.

USB Communications Infrastructure

1. Plug the **Nexus 220 Controller** into a USB port on the PC. The **Found New Hardware Wizard** displays.
2. Select the **Locate and Install Driver Software (Recommended)** option.
3. Select **I don't have the Disk. Show me Other Options**.
4. Select the **Browse My Computer for Driver Software (Advanced)** option.
5. Click the **Browse** button.
6. In the Browse for Folder dialog, select the **Nexus220\USB_Device_Driver** folder.
7. Click the **OK** button.
8. Click the **Next** button.
9. At the Windows Security dialog, select the **Install this Driver Software Anyway** option.

Take note of the COM Port number displayed by the Driver Software Installation dialog.

10. Click the **Close** button.

TCP/IP Communications Infrastructure

Start the Discovery Utility

In Windows®, go to **Start**>**All Programs**>**Nexus220**>**Utils**>**Ethernet Discovery Utility**.

*Alternately, access the Ethernet Discovery Utility direct from the Nexus 220 Base Application. From the Menu Bar, select **Hardware**>**Unit Discovery**.*

View all Available Controllers

To view all the Nexus 220 Network Controllers on the local subnet:

1. On the menu bar, go to **Network**>**Search Local Subnet**.
2. If the Discovery Application fails to find any Devices, at the **Device Not Found** dialog, click the **OK** button.
3. On the menu bar, go to **Network**>**Advanced Local Search**.

*By selecting **Advanced Local Search**, you may:*

1. *Select the correct **Network Interface** (only displayed where more than one exists).*
2. *Enter the correct **Subnet Mask**.*

If the search returns Controller details, then the Discovery Application (while running) retains the Network Interface and Subnet Mask information captured, for further searches. You may however, use the Advanced Local Search feature again during the session for further searches using different search criteria.

4. At the Select Network Interface dialog, select the relevant Network Interface, if more than one displays.
5. Click the **OK** button.
6. In the Input dialog, in the textbox, enter the **Subnet Mask** for your network.
7. Click the **OK** button.
8. Wait for the Controllers to display.

Sort the information displayed in either ascending or descending order by selecting the column header. The arrow displayed in the column header indicates whether sorting is ascending or descending, and the column on which the sort took place.

View a Specific Controller

To view a specific Controller:

1. On the menu bar, go to **Network**>**Search IP**.
2. In the **Enter IP Address** dialog, enter the **IP Address** of the Controller you're searching for.
3. Click on the button.
4. Wait for the Controller to display.

Secure Logon

*The default password is **masterkey**, for improved security we recommend that you change this password.*

1. In the **Device Password** dialog, enter your **password**.
2. Click on the button.

Configure IP Addresses

If you do not know your Configuration Settings, contact your Network Administrator.

If a DHCP server is present, IP Addresses are dynamically assigned initially. Obtain a suitable IP Address from your Network Administrator. A static IP Address is essential for the Controller because a DHCP Server may assign a new IP Address resulting in the Software losing communications.

If the Controller is NOT on the DHCP Server, ensure the PCs on the same IP Range as that of the Controller. If the PCs IP Range differs, you cannot change the Controller's settings.

Configure the Controller's IP Address settings as follows:

1. In the **Ethernet Discovery Utility** window, select the Controller for configuration.
2. From the Menu Bar, select **Network**>**Configure IP**.
3. **Logon** if requested (see page 27).

Figure 9 – Configuration Settings Dialog

4. Assign the Nexus 220 Controller to EITHER a local or non-local Subnet as follows:

Local Subnet refers to the subnet connecting the Controller and the PC (whether running Nexus 220 or the stand-alone Ethernet Discovery Utility).

By assigning an invalid IP Address, the Nexus 220 may no longer communicate. Refer to the Controller's Installation Manual for information on restoring factory defaults.

Case 1 (using the integrated Ethernet Discovery Utility)—access the Ethernet Discovery Utility direct from the Nexus 220 Base Application (see the Tip on page 26). After detection and configuration it's not necessary to assign a Logical Address, as the Nexus 220 Auto-ID process does this. Therefore it is not necessary to export the settings to a file.

1. In the Device IP Address textbox, enter a **Device IP Address**.
2. Tick the checkbox to set the IP Address to **Static**.

3. In the Gateway IP Address textbox, enter a **Gateway IP Address**.
4. Tick the checkbox to set the Gateway IP Address to **Static**.
5. Continue with *ONE* of the procedures (Subnet Mask *or* Subnet Host Bits) that follow:

Subnet Mask

1. Select the **Subnet Mask** radio button.
2. In the textbox, alongside, enter the **Subnet's Address**.
3. Tick the checkbox to set the Subnet Mask to **Static**.

Subnet Host Bits

1. Select the **Subnet Host Bits** radio button.
2. Enter the number of bits in the textbox.

6. If necessary, amend the supplied Device Name.

*Use the same **site prefix** to name devices belonging to the same site. Example: "**Site 1** – Factory", "**Site 1** – Testing".*

7. Ensure the **Force Update** checkbox is **UNCHECKED** when assigning an Address on the Local Subnet. Alternatively, ensure the **Force Update** checkbox is **CHECKED** when assigning an Address on an external subnet.

If the Force Update checkbox remains UNCHECKED, the Controller changes the IP Address testing communication on the new Address. If successful, the update is final; if not, the Controller reverts to its old settings.

By CHECKING the Force Update checkbox, the Controller changes the IP Address and reboots. In this case, if the Address points outside the Local Subnet, the Controller is not found until it's physically moved to the new location.

Changes to the IP Configuration result in the Controller rebooting on acceptance of the change. The Configuration Settings dialog remains open while allowing the Controller to reboot. On closure of the dialog, the Utility again searches for the Controller and if successful, displays the updated Controller details.

8. Click the **Update** button.

Case 2 (using the stand-alone Ethernet Discovery Utility)—use this version of the Ethernet Discovery Utility when installing a Controller at a remote location without prior configuration on the local subnet of the Host PC. Install the Utility on a PC on the Remote Subnet to detect and configure the Controller. Do NOT check the Force Update checkbox. Export the settings to a file for manual entry into the Nexus 220 Base Application.

Change the Default Password

1. On the menu bar, go to **Configuration**>**Change Password**.
2. **Logon** if requested (see page 27).
3. In the **Enter New Device Password** dialog, in the **Enter New Password** textbox enter a new password for the selected Controller.

Your new password must not exceed 16 characters.

4. In the **Confirm New Password** textbox re-enter your chosen password.
5. Click on the button.

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