AMERICAN BUSINESS MONITORING SYSTEMS, LLC

DBA ABM DATA SYSTEMS

Phoenix

SignalSafe

UL Manual

Installation and Setup Guide

4/30/2012

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Contents

I. Introduction

Welcome to American Business Monitoring Systems, LLC, *dba* ABM Data Systems, (ABM). We are pleased you have selected ABM as your automation company.

This booklet was designed to help you understand and prepare you for the upcoming implementation of your new ABM system. We hope to familiarize you with several goals for a successful installation and training session, and to assist you in the preparation of your site for use of ABM's Phoenix Alarm Automation and Signal Safe Printer Replacement Software.

This booklet will cover certain necessary criteria that need to be completed prior to installation. We offer an insight into the ABM Customer Network and how it works for you.

II. Site Preparation Checklist

The following checklist is to be reviewed and completed prior to receiving the computer system and/or related hardware. These requirements are ***mandatory*** and must be completed before ABM will install your hardware or software.

— The automation system must have a dedicated 20 AMP power line. This power line is fused separately from the system to the power distribution panel. There must not be any other equipment on the power line.

— The automation system hardware primary power source shall be protected by surge protective devices (SPD) that comply with the Standard for Surge Protective Devices, UL 1449. The SPD shall have a Maximum Continuous Operating Voltage (MCOV) equal to or greater than the normal operating voltage of the system. The SPD Type Designation (Type 1, 2 or 3) must be suitable for the specified installation application. ***See UL 1981, Section 4.3e.***

— All communication circuits shall be protected by secondary protectors. (Best Power Technology: Spike free tower series or equivalent.) ***See UL 1981, Section 4.3f.***

— The Automation system is to be provided with 24 hours of standby power in the form of a listed uninterruptable power system (UPS) under the UL standard UL 1778 or UL 1481. This UPS must provide power to all automation hardware including the following:

- CPU
- Server and its Peripherals
- Receiver(s) and its Peripherals
- Workstations

Refer to the UPS sizing chart on ***Page 25*** to calculate the proper size unit. Best Power Technology: Ferrups Series or equivalent. ***See UL 1981, Section 4.3d.*** A bypass switch is to be provided so that the power supply can be bypassed for maintenance and repair, if necessary, while maintaining uninterrupted power to the automation system.

— A power conditioner, if used, is to be a UL Listed power conditioner under UL 1012. A bypass switch is to be provided so that the power conditioner can be bypassed for maintenance and repair, if necessary. ***See UL 1981, Section 10.***

— Plenty of outlets should be available to plug in each piece of hardware.

— All cables and/or phone line runs must be in place before the install date.

Determine the type of equipment and connections to be used, then use the corresponding cable listed below:

— RS-232: Use 22AWG stranded 8-conductor with Belfoil ™ shield with drain wire (not 4 pair).

— RJ45: Use MW-8 modular wire, Belden # RI-47853.

— 10 Base 2: Network thinnet type Ethernet cable, 50 ohm coax RG58AU. (Chase)

— 10 Base 2: Network thinnet type Ethernet cable, 50 ohm coax RG62AU. (Systec)

— 10 Base T: Telephone wire – 24AWG solid 8-conductor, 100 ohm #1583A-BEL.

— Cables must be run for each PC, printer, receiver, and modem that will be hooked to the server. It is suggested that you leave some slack in the cable for future changes in the layout of your central station.

— If signal lines extend beyond 25 feet or outside the area, UL 497B Isolated Circuit Loop Protectors are required.

— If automatic dialing system is to be used, the customer is responsible for installation of a dedicated touch-tone phone line.

— The customer must also supply the telephone or optional headset for the modem.

— A dedicated phone line must be installed within four feet of the CPU so that the required modem may be used for remote diagnostics and tech-support services from ABM. This must be available at the time of the install. Also, this phone line must be permanently dedicated to the ABM support modem; it cannot be shared with fax or any other device.

— If internal and external modems are not listed under UL 1459, the standard for telephone appliances and equipment, then UL 497A Secondary Protectors are required on the telephone communication circuit lines in addition to isolated Loop Circuit Protectors for signaling lines covered above.

— Room heating and air conditioning must provide a constant temperature of 65 to 80 degrees Fahrenheit, with a relative humidity of 40% to 60%. The HVAC systems must be connected to the central station's 24-hour standby system. ***See UL 1981, Section 4.3c.***

— The system should be located in an area with minimum traffic.

- The system should not be installed in areas with open windows or where it will be exposed to direct sunlight. The site must be free of excessive dust and dirt. Installation in an open warehouse or factory is prohibited.

- All workstations should be in static free environments as should the area immediately surrounding the system. If the server or workstations are in a carpeted area, antistatic mats must be placed in front of the system.

- Network connected automation system workstation terminals installed outside the protected central station operating room area but within areas controlled by the alarm company are not intended to be used by any alarm company personnel (including operators, supervisors, or administrators) for the receipt, acknowledgment, or processing of alarm signals. Workstation terminals installed outside the protected area may be used by authorized alarm company personnel for accessing non-alarm processing, supplementary, subscriber-record related programs resident on the automation system such as account, service, data entry, etc.

- The primary power source of the automated system needs to be protected by a UL 1449 listed TUSS device.

- Any current UL listed antistatic mat, with proper ground is recommended.

- If the system is being installed with a system printer, the printer must also be in a non-carpeted area or on an antistatic mat.

- Proper electrical power and ground must be present. If using high speed printers only, the printer's paper handling devices (ea. Paper basket) must be grounded to the system. Antistatic tinsel must be installed on all paper feed and handling surfaces.

- The customer is responsible for all RS232 interface boards, special interface equipment, chip updates and or proper reprogramming for each central station receiver. Equipment should be installed and tested prior to ABM's installation of the software.

- It is recommended that the training during the week of the installation be in an area separate from the central station.

- The customer is responsible for running temporary cables to the training site. The Training Guide (included here) should be read and a tentative schedule should be set for the training of your central station personnel. Your operators on the night shift, (midnight) should stay late or come in early for Phoenix classes.

- At least one person should be made available to work with the ABM installer at all times during the week of installation. This person should be knowledgeable in central station receiving equipment, data entry procedures and company policy.

A. Remote Connections

All components of a central station automation system shall be located within the operating room. There are very specific requirements and exceptions pertaining to this issue. ***See UL 1981, Section 17***.

1) Terminals from which automation system records and/or data can be changed are not prohibited from being connected to the central station automation system from a location outside the central station when the following conditions are met, ***See UL 1981, Section 17.2. (a) - (e)***:
   - The terminals are connected via a callback modem or directly wired to the central station automation system. Instead of a callback modem, the user from the remote location may call the central station and after being identified, the central station can turn on the modem for a predetermined amount of time.
   - The terminals meet the requirements of Section 7.2.2 and
   - The automation system complies with the security provisions of Program Access and Control, Section 24
   - The requirements in Exception No 1 (a) and (b) to 17.1.
   - The remote location where the terminal is located shall comply

2) Terminals through which automation system records and/or data cannot be changed are not No. 1 (a) and (b) to 17.1. ***See UL 1981, Section 17.2 & 17.4***.

3) The remote automation system equipment, including all of the networking components, complies with the signaling-line transient protection requirements described in 17.6 (e) and (f). ***See UL 1981, Section 17.7d***.

B. Operator Instructions

Instruction codes for UL certified accounts are provided for you. Remember to enter instruction codes on UL certified accounts. Using the Instruction Codes for UL accounts will produce a detailed "Alarm Report" in accordance with UL 1981 requirements, if all the blank fields are filled in by the operator. ***See UL 1981, Section 20.8 a-q.***

1. Standard UL Comments

The following comments that are listed are comments to be used for UL accounts. These comments are to be used per UL. ***See UL 1981, Section 20.8.***

a) *POLICE/FIRE CONTACTED ID#*
b) *ALARM INVESTIGATOR #1 DISPATCHED ID#*
c) *ALARM INVESTIGATOR #2 DISPATCHED ID#*
d) *ALARM INVESTIGATOR #1 ARRIVED*
e) *ALARM INVESTIGATOR #2 ARRIVED*
f) *MOBILE CALL*
g) *RADIO CALL*
h) *WERE CS KEYS USED?*

2. Line Security

When provided, if the line the automation signals are coming in on falls into one of these categories, ***See UL 1981, Section 20.8d***:

a) *Standard*
b) *Encrypted*

C. Runaway Detection Setup

A runaway signal is defined as a signal originating from a transmitter/zone combination sent repeatedly indicating a potential alarm system problem. After a runaway scenario is detected, all other signals with the same zone and signal type are shunted or discarded until the Runaway Reset interval expires. Restoral's do not apply in a runaway scenario. To detect runaway situations, make sure each of the following fields is filled out as instructed in the applicable table:

1. Runaway Indicator

Choose y for yes to detect and discard runaway signals.

2. Runaway Interval Type

Choose the time interval measurement for runaway detection scenarios: **hly** for hourly, **min** for minutes, or **sec** for seconds. This setting works with the Runaway Interval setting and the Runaway Reset Interval setting.

3. Runaway Interval

Enter the length of time (measured in interval types) for runaway detection scenarios. This setting works with the Runaway Interval Type Setting to define the duration of time in which the runaway situation is detected.

4. Runaway signal Threshold

Enter the number of runaway signals within an interval constituting a runaway situation.

5. Runaway Reset Interval

Enter the length of time (measured in interval types) required to reset the runaway detection counter and clock. This defines the time frame required in which no runaway signals are received to cancel the runaway status of that specific signal.

Caution *– Set a low reset interval so that additional relevant signals are not missed.*

Note *– Any new signal and zone combination, except Restorals, will reset the runaway.*

D. Compliance Verification

In order to comply with ***UL 1981, Section 17.2a 1-5***; create archives using removable media along with some type of backup utility. At least one year of alarm history must be stored on the system and/or on a backup media at all times. Reports can be retrieved and printed once the system has been entered with the account number, date, and time. The following account information can be derived – Alarm Tickets, Schedules, Fire Alarm Signals, Panic and Hold-Up Alarms, and Burglar Alarm Signals. Please note the following priority hierarchy:

1st Priority:	Fire Alarm
2nd Priority:	Hold-Up or Panic
3rd Priority:	Medical
4th Priority:	Industrial Supervision if a danger can result (Critical Process Alarm)
5th Priority:	Burglar Alarm
6th Priority:	Other

- Schedules, Fire Alarm Signals, and Panic/Hold-Up Alarm may have equal priority.

E. Login Procedures

The automation system requires all users to logon using an ID and a password consisting of maximum 18 alpha numeric characters (UL requires a minimum of six (6) alphanumeric characters). The users are assigned a predefined level determining their access to services, components, and tables within the automation system (UL requires a minimum of four (4) access levels). ***See UL 1981, Section 22.3***.

General Note – The telephone icon () will automatically pop up in front of any window that is open, if the Alarm Processing window is minimized, when an event comes in. ***See UL 1981, Section 20.16.***

General Note – A software watchdog service which monitors network electrical supervision providing an audible trouble indication within 90 seconds or less is automatically installed and enabled on all required systems: one server in a non-redundant system or both servers in a redundant system and two operator workstations.

III. UL 1981 Automation System Requirements

General – During the normal inspection of the system, the following items should be verified to determine if the equipment is being used properly.

A. Minimum System Configuration

Verify that the automation system is provided with the following devices. The general design and arrangement shall be as shown, unless otherwise indicated. See completed Site List. All hardware must have EDP or ITE labels. ***View configurations page(s) 27 thru 30.***

1. Server

- Pentium class dual or quad processor (Must perform at 2.0 GHz or higher)
- 4 GB RAM (Higher is better)
- (2) 80 GB or higher Hard Drives
- CD/DVD RW Drive
- 6 USB Ports or 4 USB with 2 Serial Ports or Port Expansion Card/Server (As required**)
- 17” Color monitor (1024x768 resolutions)
- Mouse/Keyboard
- Internal or Sound Card with external Speakers (Need if processing on server)
- Internet Connection
- Ethernet Network Card
- TCP/IP Network
- As of this publication date - Windows OS: Windows Server 2003/2008 with latest Service Pack, Windows XP/ Win 7 Pro with latest Service Pack

- As of this publication date - Database: Microsoft SQL 2005/2008 Server with the latest Service Pack.
- Redundant Setup either with MS SQL Replication or Double Take Software

*** Servers must have a serial/network port for each Phoenix receiver license. For redundant systems, PCI port cards may be used. PCI cards must be identical for each server and an A/B switch maybe required. ABM recommends Digi-port Servers for port expansion. A Digi-port Server must be installed on the network and requires a separate IP address.*

***** To meet redundant requirements, server MUST be duplicated or fault tolerant.***

2. Workstation

- Pentium class single processor or equivalent
- 2 GB RAM
- 10 GB Hard Drive or better
- CD ROM Drive
- 2 USB Ports
- 17" Color monitor (1024x768 resolution) Mouse/Keyboard
- 2 Serial Ports
- 1 PCI Card Slot
- Ethernet Network Card
- Internal Speaker or Sound Card with Speakers
- TCP/IP Network
- As of this publication date - Windows OS: Windows XP Professional or Windows 7

3. Alarm Software

- Phoenix Alarm Automation Software (Version 3.X.X.X) – Part number depends on size of accounts monitoring.
    a. PHX-100
    b. PHX-500
    c. PHX-DE<1500
    d. PHX-CS
- Phoenix UL Module (PHX-UL-MOD)

4. Printer

- Any UL compliant receiver printer or ABM's Signal Safe.

B. Automation Types

Defining Active System; an active system is a panel that will be sending more than one (1) signal per day into the central station. Depending on the number of Active accounts will determine which Automation will need to be used, Non-Redundant or Redundant. To get a count of active/inactive accounts, use the UL Transmitter Usage Report in Phoenix Reporting. ***See UL 1981, Section 3.2.***

1. Non-Redundant Automation

The maximum number of accounts that may be monitored with the non-redundant automation system must be in accordance with UL 1981, Central Station Automation systems. The automation system relies on the manual mode of operation through the receiver(s).
See UL 1981, Section 13.1 (a)-(e).

2. Redundant Automation

The maximum number of accounts that may be monitored with the on-line redundant automation system (dual server warm/hot backup) is unlimited if the automation system is completely duplicated and switch over occurs within the guidelines established by UL 1981.
See UL 1981, Section 13.2(all), 13.3(all) and 13.5(all).

C. Automation Area

The automation system, as outlined, is intended to be housed within an area that meets UL requirements for a central station operations area. In the event of a power failure in the central station, personnel would be alerted by both a visual and audible indication that emergency power is currently being utilized. This is accomplished through monitoring equipment attached to the standby generator.

D. Installation

The automation system is intended to be installed in accordance with the manufacturer's installation wiring diagram and the latest editions of UL 1981, the Standard for Central Station Automation Systems. For a copy of UL 1981, call 408-985-2400, ask for the Publications Department.

E. Receivers

Receivers are to be located in the same room or area as the operators. A partition made of glass or other durable, transparent material may separate the operators from the receivers, but this partition shall not prevent operator access to the receivers. ***See UL 1981, Section 13.2c***.

1. Printerless Environment

A central station is not prohibited from using computer equipment (event loggers) to record signals received on receiver, in lieu of printers that are connected to or are part of receiving equipment when the following conditions are met, ***See UL 1981, Section 12 all parts***:

- Computers used for this purpose shall be redundant
- In the event of failure of either the primary or backup computer, there shall be an audible or visual indication within 90 seconds of the failure. The signal shall be obvious to the operator/responsible central station staff. In addition, the central station staff shall be capable of and the backup computer shall be ready for switching over ***within 30 seconds*** so that the backup computer is energized and connected to the affected receivers.
- The primary and backup computers shall be isolated from the automation system computer(s)

2. Alarm Receivers

A combination utilizing any or all of the following receivers:

- AES Corp. -- Model 7000, Model 7705i, Model MULTINET
- DCX

- Digital Monitoring Products (DMP) -- Model SCS-1, Model SCS-105, Model SCS-1R, Model SCS-VR
- Fire-Burglary Instruments (FBI) -- Model CP220
- Honeywell (ADEMCO) -- Model 685, Model MX8000
- Honeywell -- Model Teldat VisorALARM PLUS IP receiver
- Honeywell -- Model AlarmNet 7810iR-ENT
- Honeywell/Silent Knight -- Model 9000, Model 9500, Model 9800
- Interactive Technologies Inc.(ITI) -- Model CS-4000, Model CS-5000
- Keltron – Model DMP 7001, Model DMP703, Model DMP704
- Napco – Model NetLink
- Osborne Hoffman Inc. (OH)-- Model Quick Alert!, Model OH 2000, Model OH 2000E
- Procom Radio
- Radionics/Bosch-- Model D6000, Model D6500, Model D6600, Model D6100ie
- Safecom – Model SC9000 Radio
- Sescoa – Model 300C, Model 3000R
- DSC/Sur-Gard -- Model SG-MLR2-DG, Model System I, Model System III, Model Systems IV

NOTE: *Check the computer equipment, peripherals, printers and receivers to determine if they bear an appropriate UL Listing Mark.*

F. Phoenix Automation

Make sure that the Phoenix automation system is operating using a version number no less that version 3.X.X.X. The software version reference is located on the Help – About menu.

G. Database

The alarm processing database shall be saved on removable media daily.

H. Automation System

1) An automation system (redundant and non-redundant) is to be provided with necessary spare parts and personnel with the necessary expertise so it can be placed back into service within 24 hours of failure. A maintenance contract that places the automation system back in operation within 24 hours complies with the above. ***See UL 1981, Section 13***.

2) If the automation system does not have a hot backup configuration, the backup computer shall be energized, and a diagnostic conducted, on a weekly basis. A log documenting this energization and diagnostic testing shall be maintained at the central station. ***See UL 1981, Section 13.2e.***

3) All network equipment that has signals pass through must be redundant. Redundancy is capable of being achieved by having backup network equipment placed near the on-line unit so that connection to the network is accomplished in under 6 minutes. ***See UL 1981, Section 13.2f***.

4) When the automation system serves more than 25,000 active accounts or more than 125,000 inactive accounts, the primary and backup computers shall be configured in a hot backup mode. ***See UL 1981, Section 13.5a & b***.

5) When using a second backup computer it needs to have its own UPS which meets all of the requirements specified in this standard or is configured in such a way that it is capable of being connected to the primary or 1st backup computers UPS in time to meet the requirements of 13.5b. ***See UL 1981, Section 13.5c***.

6) The alarm system database on the back-up computer shall be updated not less than once every 24 hours. ***See UL 1981, Section 13.5d.***

I. Permanent Data

1) The most recent record of the permanent data file reports or the equivalent information is to be maintained and readily available for all accounts in the event that the computer ceases to operate and the receivers must be manually operated. This record includes, as appropriate, dispatch instructions, opening and closing schedules, pass card data, holiday schedule dates and the time and date that the report was recorded. ***See UL 1981, Section 15***.

2) The system must be able to access a minimum of three (3) months of data on the system. The central station must keep a minimum of 1 year of data, either on the system or as a backup. ***See UL 1981, Section 17.3***.

J. Database Copies

Recent system copies of the database shall be maintained on site and off site in case problems develop with the system's database copy operating at the time. ***See UL 1981, Section 16***.

K. Operator Tests

1) Verify that periodic operator tests are performed and documented to show that the operators are capable of manually operating the receivers. ***See UL 1981, Sections 12.1b and 12.2b.***

2) Also the Central Station operators and supervisor(s) shall be trained monthly in making the switchover and bringing the backup computer online. When the automation system is configured in a hot backup mode, the backup computer shall have its own watchdog timer. ***See UL 1981, Section 13.2a.*** When ***Exception No 2, UL 1981, Section 13.2a*** applies; if no watchdog is used, then power down of secondary should be done verifying if supervised. Then do the same test on the primary.

3) The Central Station operators and supervisor(s) are trained for a period of not less than one hour per month and tested in the use of receivers, UPS units, printers, backup procedures, emergency call lists, and other procedures in preparation for an automation system failure. Sufficient current documentation shall be kept on hand to process signals directly from the receivers. A log documenting such training shall be available at the Central Station. ***See UL 1981, Section 13.2b.***

Always refer to UL 1981, the standard for Central Station Automation Systems, for more detail.

IV. Operation

A. Alarm

1) An operator logs in and requests an event.
2) Next, the system displays all information relevant to the event such as: transmitter and site information, notes, address, signal data, instructions, and a contact list.
3) The system displays the contacts to the right of the instructions. The contact classes are arranged in call order – that is, the sequence in which they should be called. Within each class, the contact's phone numbers are arranged in call sequence as well. When an operator clicks on a different call class, the instructions automatically change to the associated instruction for that call class.
4) The instructions direct the operator in what to say to the answering party. The instruction box also provides a general notation for expanded guidance to the operator.
5) To begin processing an alarm, the operator selects the first contact class and the first contact phone number for that class. This action invokes a Call Process dialog box.
6) The operator then calls the provided phone number. Depending on the response to the call, an appropriate button (Answered, No Answer, Busy, or Machine) is selected. If the Answered selection is activated, the time, date, operator id, phone number and contact are all stamped into the Action Log. The cursor moves automatically into the comment sections of the dialog box for the operator to type in any additional comments concerning the call transaction.
7) There is a list of standard comments displayed in the bottom portion of the screen that the operator may chose rather than typing in other information.
8) The system will log and timestamp each action the operator takes.
9) If the contact requires verification, after the Answered button is selected, the system will initiate the verification dialog box. A contact may be verified using a request/response scenario or a password. The message at the top of the box entitled "Request" is the operator's script (that is, the comment or question to be read to the person answering the phone).
10) The instructions may direct the operator to ask for a password. If the operator has a question regarding the password, they may view the password list by pressing the Password button.
11) The operator enters the password response and presses the OK button to exit the Verification dialog box.
12) After each of the contact classes have been called and the instructions followed to completion, the operator can close the event.
13) When an operator closes an event, the system initiates the Close Event dialog box. At this time, an operator may choose to resolve the event, return the event to the pending queue, place the event in wait, or assign the event to another operator.
14) To finalize the event, the operator should choose the Resolve Event button, choose the appropriate resolution code, and press the OK button. A description of each resolution code appears in the box below the resolution code list.
15) After the event is finalized, the operator may choose another event to process or may log out. If there are no other events to be processed, the system will inform the operator when another event is available.
16) Central Station staffing shall be such that all presented alarm signals are acknowledged and verification and/or dispatch actions initiated within 45 seconds of receiver kiss-off to the alarm panel.
17) The system prioritizes alarm events in the case of more than one incident waiting for the next available operator.
18) You must set up the system to prioritize in this manner: ***See UL 1981, Section 18***.

1st Priority:	Fire Alarm
2nd Priority:	Hold-Up or Panic
3rd Priority:	Medical
4th Priority:	Industrial Supervision if a danger can result (Critical Process Alarm)
5th Priority:	Burglar Alarm
6th Priority:	Other

19) Whether the alarm automation system is in degraded mode or working, a manual signal can be sent to test an account. It will show that is a manual signal by the receiver saying "Manual" and the color of blue will show on the browser screen. ***See UL 1981, Section 21.2a.***

B. Trouble

1) When the automation system becomes inoperable, due to a fault on the interconnecting communications wiring or loss of power, alarms are received on the receiver and are annunciated audibly, indicated visually and printed by the on-board printer or external printer.
2) The audible device on the receiver remains energized until manually acknowledged.

NOTE: *Once your install is complete, ABM will send the letter on the following page to initiate the site certification process.*

V. Sample UL Site Certification Letter

ABM DATA SYSTEMS

AMERICAN BUSINESS MONITORING SYSTEMS, LLC

Date

Underwriters Laboratories, Inc.
1655 Scott Boulevard
Santa Clara, CA. 95050-4169

Subject: Request for UL Site Certificate

Dear Sirs:

We certify that the following system has been tested in accordance with the requirements of UL 1981 for use at _____, located at _____ and the site complies with all requirements.

	Manufacturer	Quantity	Model
Server No. 1	_____	_____	_____
Server No. 1	_____	_____	_____
Receivers'	_____	_____	_____
Printers'	_____	_____	_____
Phoenix Version	_____	_____	_____

Respectfully,

Representative Name
ABM Systems, LLC
dba ABM Data Systems

VI. Installation and Training Schedule

When equipment arrives at the installation site, ABM's technician will follow to install the equipment. Following installation, ABM will conduct a training session. Normally, ABM's installer will contact you 2 to 3 weeks prior to the installation date. It is a good idea to establish this contact to make certain that your site is ready for the install and that ABM is ready for your particular needs.

All training sessions should have a minimum of three key personnel in attendance, unless otherwise stated. Provisions should be made for their duties to be handled by someone else during training. This is important for smoother operation of your system for several reasons:

1) Many aspects of the overall operation of the system are enhanced by having information input from various levels of personnel, including management, supervisory, technical, data entry and central station personnel. Information regarding receiver output, policies for alarm response and reports needed all affect the way that data should be entered.

2) Future personnel changes should never affect the continuing operation of the system. If there is additional personnel training required by ABM, then appropriate training fees will be charged.

The key personnel should have read the following manuals which comprises of the ABM UL Manual, Phoenix Data Entry, Phoenix Operator, and Phoenix System Manuals prior to training for the purpose of overall understanding of the system. Basic knowledge of key phrases, terms, language and goals will aid personnel during the training sessions. A brief question and answer period will address any remaining questions not covered in the training session.

A. Training Guide Outline

Day 1

I. Introduction
- A. Phoenix Overview
- B. Life of a Signal
- C. Hierarchy of Phoenix

II. Alarm Processing
- A. Alarm Processing Overview
- B. Screen Layout
- C. Selecting an Event
- D. Close Event Tool
- E. Alarm Processing Event Scenarios
- F. Hands on work with Alarm Processing

III. Browser
- A. Browser Overview
- B. Screen Layout
- C. Shared Memory Queues
- D. Sorting & Printing Queues
- E. Hands on Work with Browser

Day 2

I. Review

II. Data Entry
- A. Data Entry Overview
- B. Screen Layout
- C. Creating Users
  - i. Understanding Authorization Level Permissions
- D. Understanding & Creating the Hierarchy
  - i. Importance of Planning
  - ii. Data Manager
    1. Dealer Table
    2. Organization Table
    3. Subscriber Table
    4. Site Table
    5. Transmitter Table
    6. Zone Table
  - iii. Hands on entering Accounts
- E. Resolution Table

Day 3

I. Review

II. Data Entry -- Signal Management
- A. Sigcat Table
- B. Sigtypes Table
- C. Sigcontrol Table
  - i. Purpose of each Control Type option
  - ii. Control Type: Convert records
- D. Hands on entering signal management record
- E. Send Signals to test & troubleshoot Records

III. Data Entry – Response Plan
- A. Class Table
- B. Instructions
- C. Contacts
- D. Contact links
- E. Hands on entering Response Plan

		records F. Send Signals to test & troubleshoot Records IV. Data Entry – Viewing Reference Table A. Signal Table B. Signal History Table C. Action Table D. Event Table E. False Alarm History
Day 4 I. Data Entry – Wizards A. Schedule i. Schedule Types ii. Different Uses of Schedules iii. Hands on entering Schedule records iv. Range Table B. No Action i. Hands on entering No Action records C. Temp Data D. Reminders E. Comments F. Service Ticket II. Data Entry – Tools A. Change Hierarchy Tool i. Rename, Copy, Delete B. Area Code Changes III. Data Entry – Other Tables A. Preference Records B. Sigcontrol Table– Control Type: Delay, Rwait, Redundant, Test C. Permit Table D. Inventory Table E. Receiver Table	**Day 5** I. Producing Reports A. Setting up Recurring Reports II. Viewing Log Files A. Appsrv.log, User.log, Login.log, receiver log files III. Basic (*.ini) File Setting IV. Database Backup Options V. Services Associated with Phoenix VI. Question & Answer Session	

B. Customer Support

As our customer base is ever-growing, we are increasingly concerned about maintaining the quality and efficiency level of our support system.

1) When you place a call to our Customer Support group, identify yourself with your company name, your name, phone number to be reached and brief description of problem. The dispatcher will log your call in our automated response system and the next available Support Specialist will return your call.

2) It is extremely important that all employees who call ABM for support are authorized and have administrative access to the server, especially when calling after hours. When they call after-hours the following information will need to be given so the technician on-call will not have

difficulty reaching the proper person. They need to provide: company name, their name, phone number and brief description of the problem.

3) Customer Support is offered during regular business hours, 08:00 am to 05:00 pm Central Time, Monday through Friday, excluding holidays. Afterhours support for Phoenix users is available in cases of emergency only. For example, system crashes, not receiving signals, inability to process alarms and collect locking up. Reporting, data entry, or printer problems are not covered as an afterhours call. Please save general questions for regular business hours.

4) To contact support:
   Toll Free Number: (800) 729-4226
   Direct Number: (512) 388-3250
   Email: support@abmsystemsllc.com

   It is our pleasure to be of service to you. We appreciate any comments you would like to share with us regarding this or any other matter.

5) If you do not have a current service agreement with ABM, please call (800) 767-7067 and ask for the accounting department to setup arrangements to reinstate your service agreement.

C. Backups

Depending upon your system hardware, you may need to purchase some type of removable media.

1) Backups need to be done on a daily basis and transferred to one of the media types mentioned above. There also needs to be one copy taken off site bi-weekly. ***See UL 1981, Section 16.1***.

2) Manual records such as paper records or digital image of records shall be kept in the operating area for reference in the event of loss of the automation system. These records shall be updated biweekly. ***See UL 1981, Section 16.3***.

D. Preventative Maintenance

The customer shall be responsible for preventive maintenance.

1) Keep area around system free from any materials that obstruct airflow.
2) Keep area free from dirt, dust, and moisture.
3) Assure and maintain proper AC electric grounding as specified.
4) Eliminate static electric buildup in carpeting with the use of properly grounded static mats and/or the application of antistatic carpet spray as frequently as required.
5) Provide AC outlets, and assure that any other electrical devices such as fluorescent and/or blinking lights are not plugged into the same outlet/circuit.
6) Cleaning and maintaining proper maintenance on tape/diskette drive heads.
7) Keep fans and/or fan filters clean and free of dust and lint as this will prevent excessive heat buildup.

E. Basic System Testing Procedures

If you have a method of generating a test to each receiver, it is recommended that someone generate such tests at the beginning of each shift. This way, the communication between each receiver and Phoenix is verified at least three times a day.

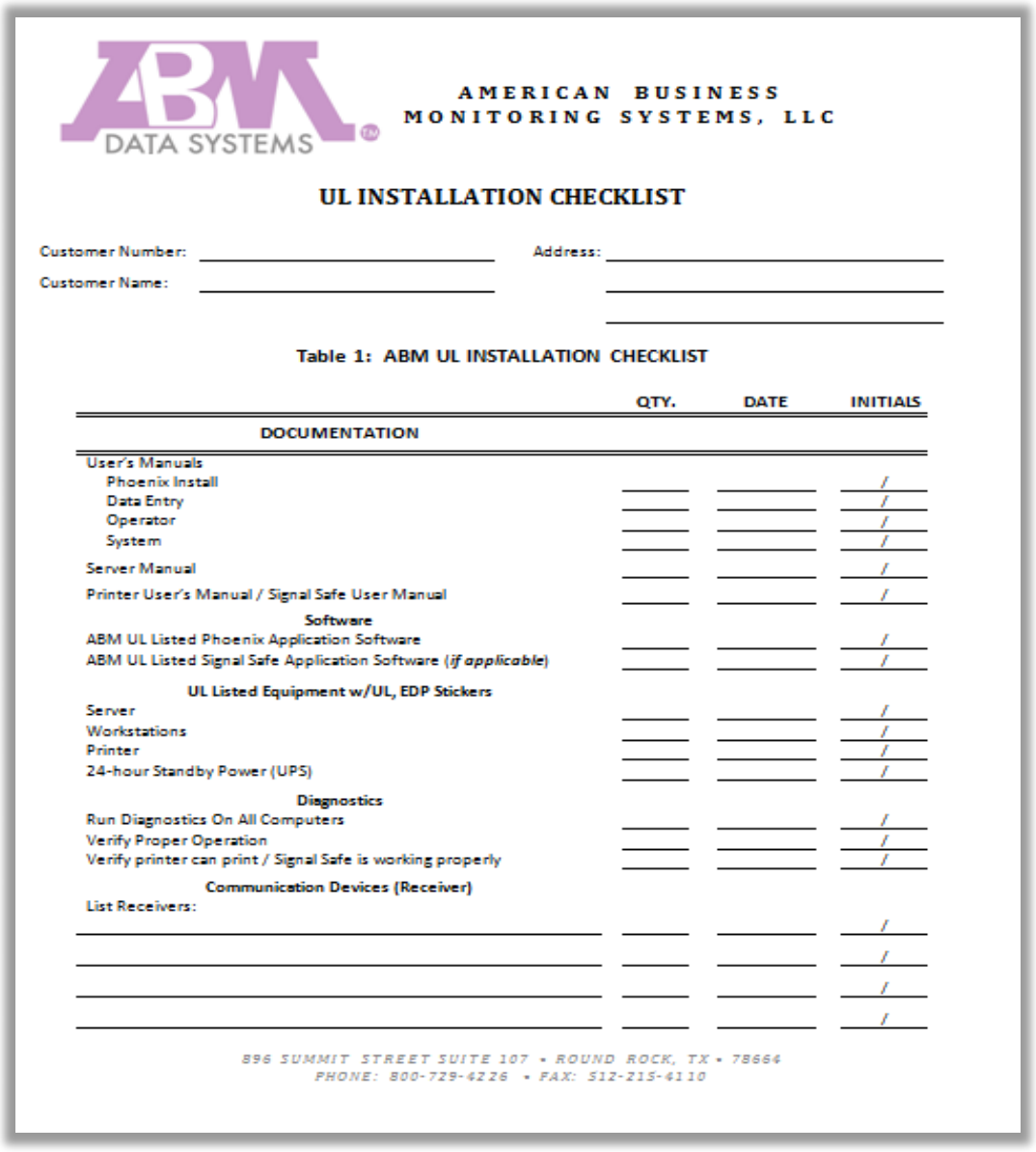
In addition, occasionally check (or train your operators to check) that the following functions are operational:

1) New signals are being added to the History Signal Queue (viewable through the Browser User Interface).

   If not, the collection of an individual receiver may have been interrupted. If possible, generate a test signal through the receiver in question to see if the signal is processed. If the system is not collecting the signal, start the collect through Services found in the Windows Administrative Tools. Choose the collect service then press the Start.

2) Current date and time on the Server is accurate.
   Have operators check this when they logon. If it is not accurate, set it correctly.

F. ABM UL Installation Checklist



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UL INSTALLATION CHECKLIST

Customer Number: _____ Address: _____

Customer Name: _____ _____

_____

Table 1: ABM UL INSTALLATION CHECKLIST

	QTY.	DATE	INITIALS
DOCUMENTATION			
User's Manuals			
Phoenix Install	_____	_____	_____/
Data Entry	_____	_____	_____/
Operator	_____	_____	_____/
System	_____	_____	_____/
Server Manual	_____	_____	_____/
Printer User's Manual / Signal Safe User Manual	_____	_____	_____/
Software			
ABM UL Listed Phoenix Application Software	_____	_____	_____/
ABM UL Listed Signal Safe Application Software (*if applicable*)	_____	_____	_____/
UL Listed Equipment w/UL, EDP Stickers			
Server	_____	_____	_____/
Workstations	_____	_____	_____/
Printer	_____	_____	_____/
24-hour Standby Power (UPS)	_____	_____	_____/
Diagnostics			
Run Diagnostics On All Computers	_____	_____	_____/
Verify Proper Operation	_____	_____	_____/
Verify printer can print / Signal Safe is working properly	_____	_____	_____/
Communication Devices (Receiver)			
List Receivers:			
_____	_____	_____	_____/
_____	_____	_____	_____/
_____	_____	_____	_____/
_____	_____	_____	_____/

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Table 1: ABM UL INSTALLATION CHECKLIST (continued)

	QTY.	DATE	INITIALS
DOCUMENTATION			
Normal Operations			
All Receivers	____	____	____/
All Workstations	____	____	____/
Training			
Training Guide	____	____	____/

Comments:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Customer _____ Date _____ Installer _____ Date _____

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VII. Sizing Your Automation Station UPS

Sizing a UPS is easy. All you really need to know is the total VA (volt-Ampere) rating of all the hardware you want to connect to the UPS.

A sample calculation and form for calculating your protected equipment power requirement are provided on the next page.

A. Sizing Calculations

1) List all equipment to be protected by the UPS in the "Automation Related Equipment" column of the worksheet.

2) Read the nameplate on each of the pieces listed in step 1, in the "Volts" and "amperes" columns.

3) Multiply the voltage and the amperage of each piece of equipment and enter the results in the "VA" column. Some equipment, such as a microcomputer, may be marked with a power consumption figure measured in watts. To convert this figure to VA, simply divide by 0.7 (for a power factor = 0.7), or multiply by 1.43.

4) Total the "VA" column and enter it in the "Subtotal" space provided.

5) Multiply the subtotal found in Step d by 0.25 and enter it in the "Growth Factor" space. This calculation takes into account room for future growth. Modern computer systems are designed for expansion and this step is recommended to make allowances for that. It is recommended that you allow a 5/5 rate of growth for each year over five years, or a total of 25%. Your actual plans for computer system growth may require a larger allowance.

6) Add the "Growth Factor" entry to the "Subtotal" figure to get the "Required VA".

7) Now select an appropriate UPS by choosing a model that has a VA rating at least as large as the "Required VA" you found in Step 6.

B. Sample Sizing Calculations Worksheet Example

Automation Related Equipment	Volts	Amperes	VA (Volts X Amperes)
Server	120 V	2.0 A	240 VA
Workstation	120 V	2.0 A	240 VA
Receiver	120 V	2.0 A	240 VA
Printer	120 V	2.0 A	240 VA
Subtotal			900 VA
		Growth Factor (25% of Subtotal)	225 VA
		Required VA	1125 or 1.125 VA
Appropriate Model (Based on Calculations)			1200 VA

C. Blank Sizing Worksheet

Automation Related Equipment	Volts	Amperes	VA (Volts X Amperes)
Subtotal			
		Growth Factor (25% of Subtotal)	
		Required VA	
Appropriate Model (Based on Calculations)			

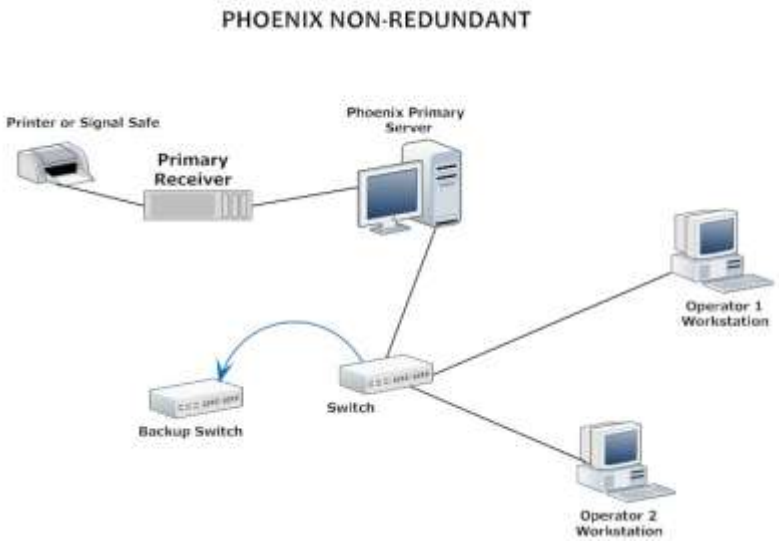
VIII. Phoenix System Configurations

There are many different ways you can setup your Phoenix Alarm Automation. Below are examples of both Non-Redundant and Redundant Configurations.

A. Minimum Non-Redundant System Configuration

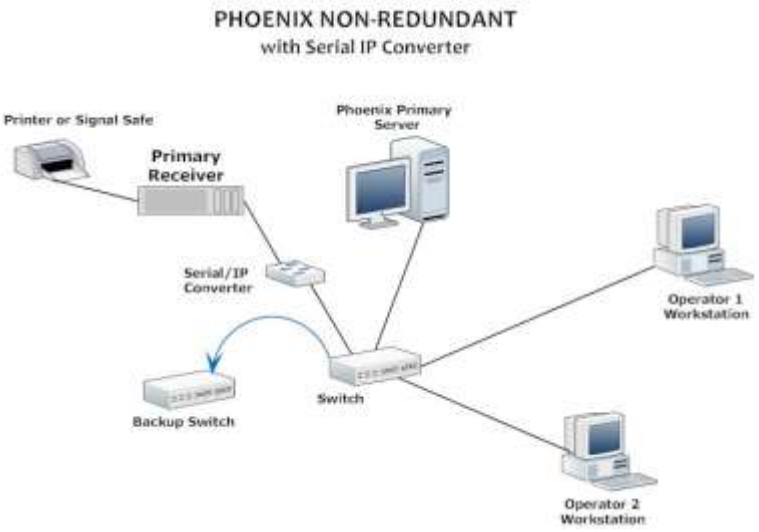
Consists of: 1 - Server
Client(s)
Receiver
Receiver Printer/Signal Safe (Signal Safe can be purchased from ABM)
2 – Hubs
Network Printer

1. Phoenix Non-Redundant with Serial Connection



2. Phoenix Non-Redundant with Serial to IP Converter

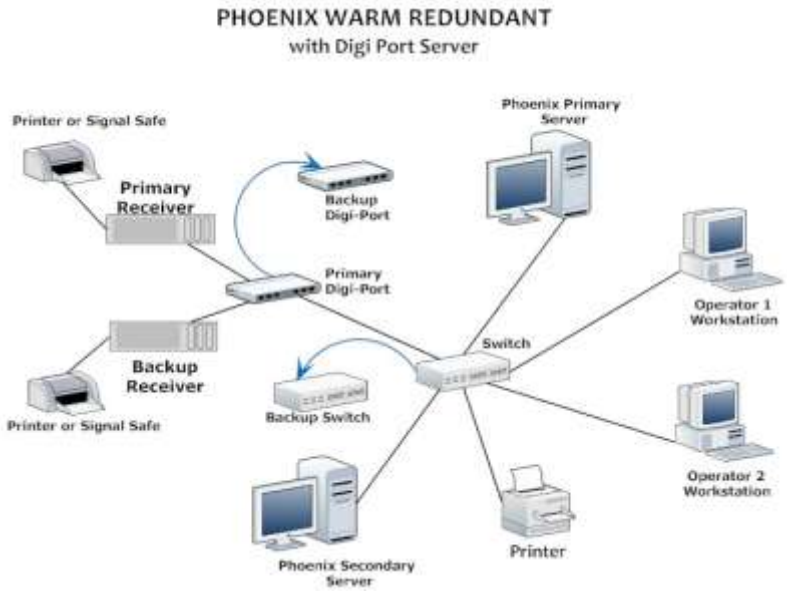
A Digi Port Server can also be used in place of the Serial/IP Converter.



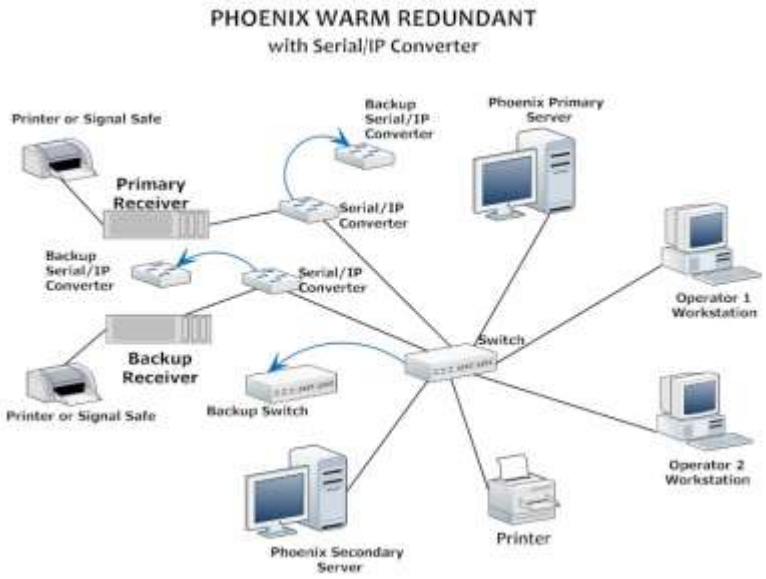
B. Warm Redundant System Configuration

Consists of: 2 – Servers (the second server must be powered on and ready to bring on line)
Client(s)
2 – Receivers of same kind (1 programmed and ready to be used when needed)
2 - Receiver Printer/Signal Safe (Signal Safe can be purchased from ABM)
2 – Network Hubs/Switches
2 – Network Port Servers
Network Printer

A. Phoenix Warm Redundant with Digi Port Server



B. Phoenix Warm Redundant with Serial/IP Converter



C. Redundant System Configuration

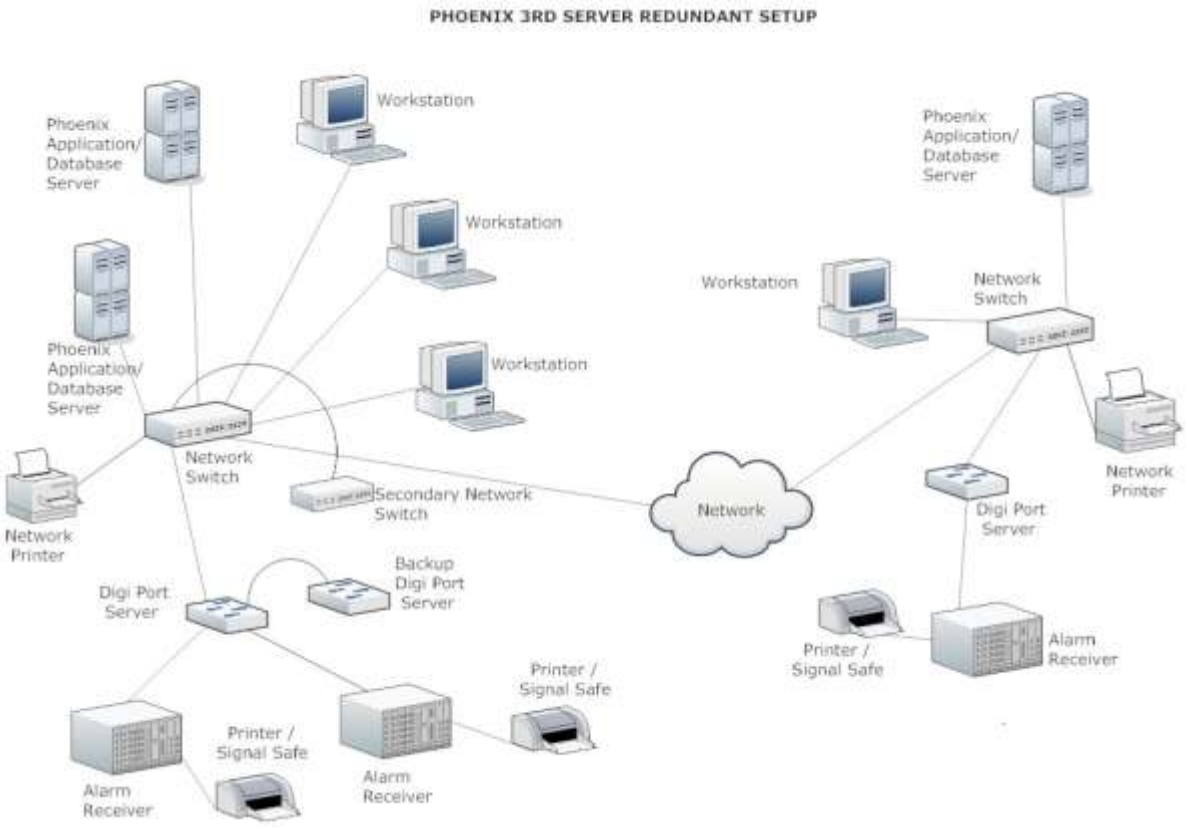
Consists of: 3 Servers
(1 Server being the tertiary / disaster recovery)

— This setup must have its own

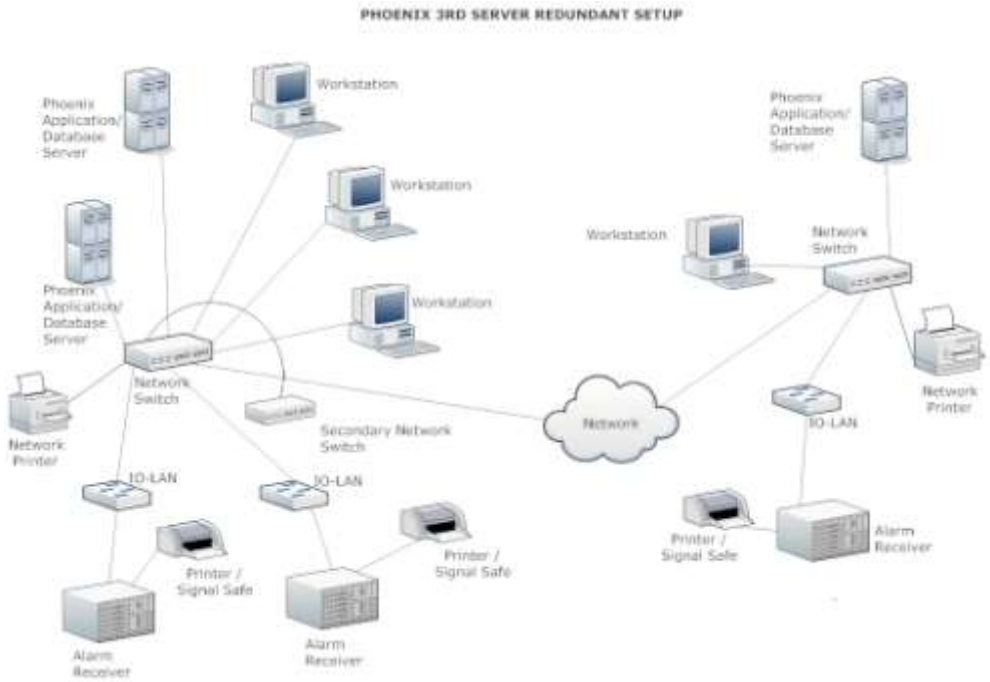
- SPD/UPS setup
- Client
- Hub
- Receiver
- Port Server
- Printer/Signal Safe (from ABM)

Client(s)
2 – Receivers of same kind (both hot)
2 – Receiver Printer/Signal Safe (Signal Safe can be purchased from ABM)
2 – Network Hubs/Switches
2 – Network Port Server
Network Printer

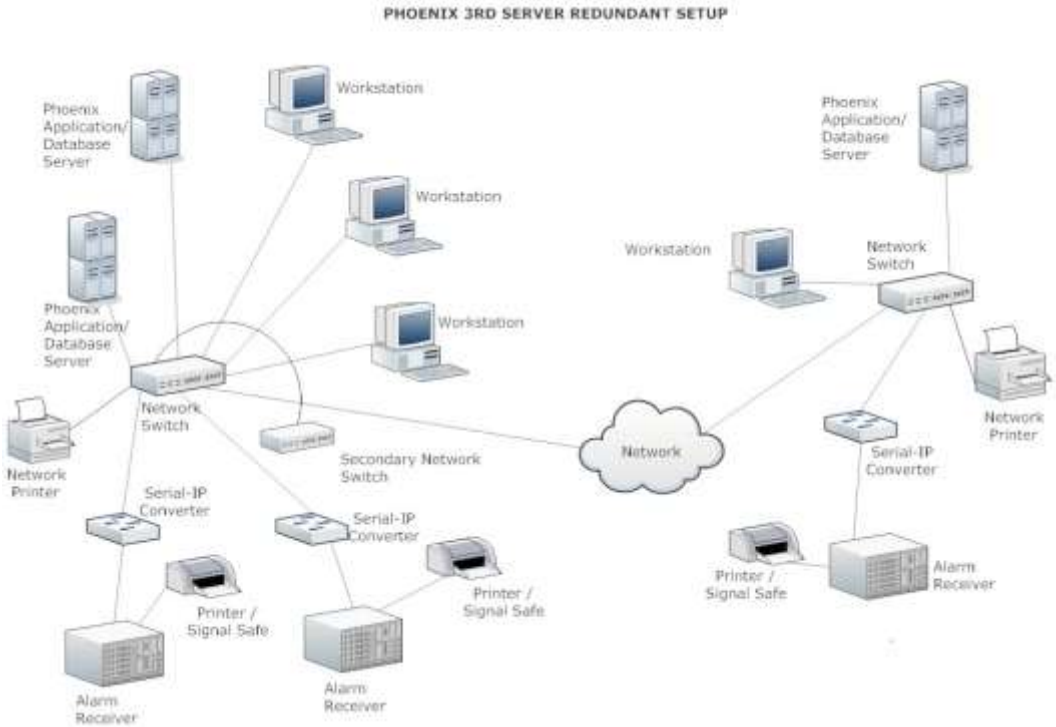
1. 3rd Server with Digi-Port Servers



2. 3rd Server with IO-LAN Board



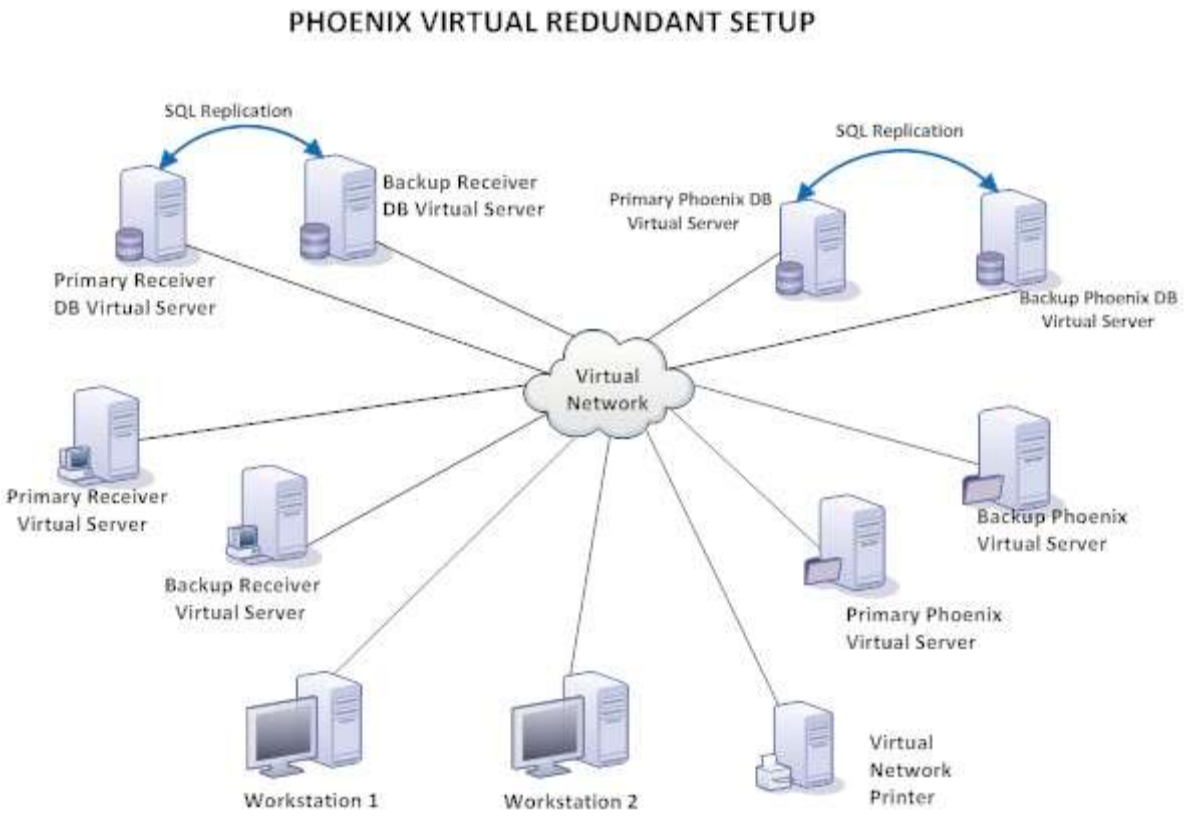
3. 3rd Server with Serial-IP Convertor



D. Virtual Redundant System Configuration

Consists of: 2 Servers running Windows VMware with Striped Raid
** Optional – 2 Database Servers with Windows VM Running SQL Replication
2 Virtual Receiver Servers
** Optional – 2 Database Servers with Window VM Running Network Printer/Virtual Network Printer

NOTE: *All servers can talk to all DB servers, and all servers are hot and ready to go when needed. All clients can connect to either the Primary or Backup Server.*



IX. Signal Safe UL Section

This section will go over what is needed to setup the Signal Safe Printer Replacement Software at your site. What this software does is take the place of the printer for the receiver. This software eliminates continuous use of paper, paper jams, storage space, ribbon replacement and man hours looking for data. There is search capability, archives can be done to a hard drive or any removable media, storage space is next to nothing and can print only what is needed.

A. Hardware Specifications

1. Server

- Pentium class dual or quad processor (Must perform at 2.0 GHz or higher)
- 4 GB RAM (Higher is better)
- (2) 80 GB or higher Hard Drives
- CD/DVD RW Drive
- 6 USB Ports or 4 USB with 2 Serial Ports or Port Expansion Card/Server (As required**)
- 17" Color monitor (1024x768 resolutions)
- Mouse/Keyboard
- Internal or Sound Card with external Speakers
- Internet Connection
- Ethernet Network Card
- TCP/IP Network
- ***As of this publication date*** - Windows OS: Windows Server 2003/2008 with latest Service Pack, Windows XP/ Win 7 Pro with latest Service Pack
- ***As of this publication date*** - Database: Microsoft SQL 2005/2008 Server with the latest Service Pack.
- Redundant Setup uses Double Take Software

2. Printer Replacement Software

- ABM's Printer Replacement Software Signal Safe version 4.X.X.X.

3. Network Printer

- Any UL compliant network printer that can be used to print from Signal Safe when needed.

*** Servers must have a serial/network port for each receiver connected. For redundant systems, PCI port cards may be used. PCI cards must be identical for each server and an A/B switch maybe required. ABM recommends Digi-port Servers for port expansion. A Digi-port Server must be installed on the network and requires a separate IP address. Another use can be serial/IP converter that is hooked directly to the network.*

***** To meet redundant requirements, server MUST be duplicated or fault tolerant.***

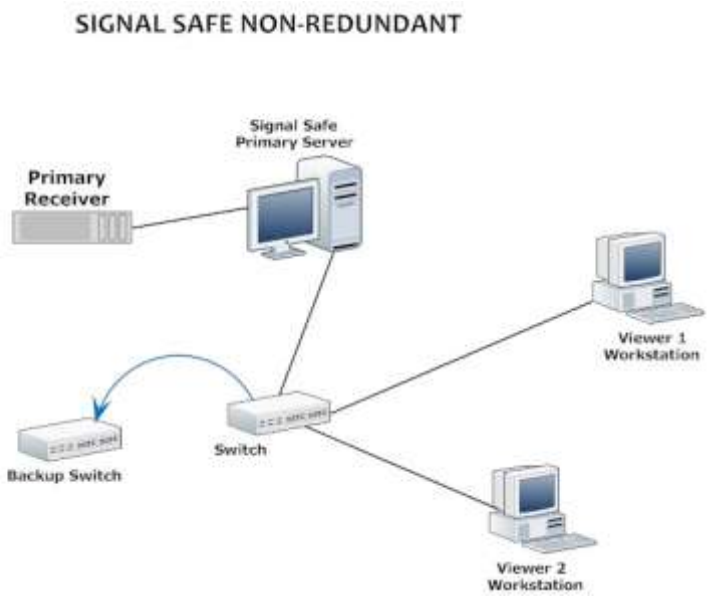
X. Signal Safe System Configurations

Listed below are a few network setups that can be used to configure the Signal Safe Printer Replacement Software. ***** For Virtual Setup, see Page 31 for the sample *****

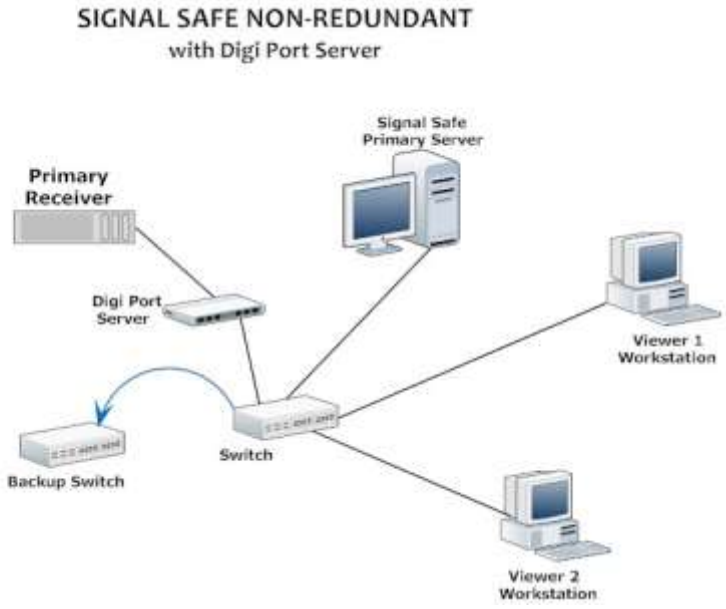
A. Non-Redundant

Consists of: 1 Server
1 Receiver
2 Network Switches

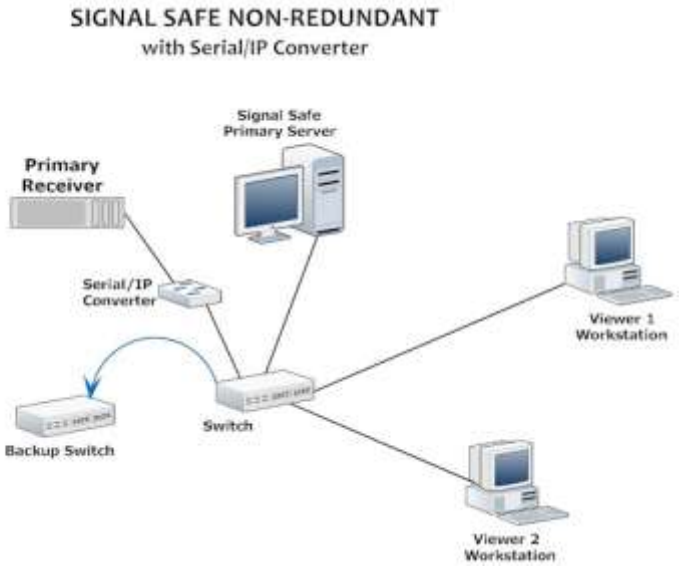
1. Using Serial Connection



2. Using Digi-Port Server



3. Using Serial/IP Converter

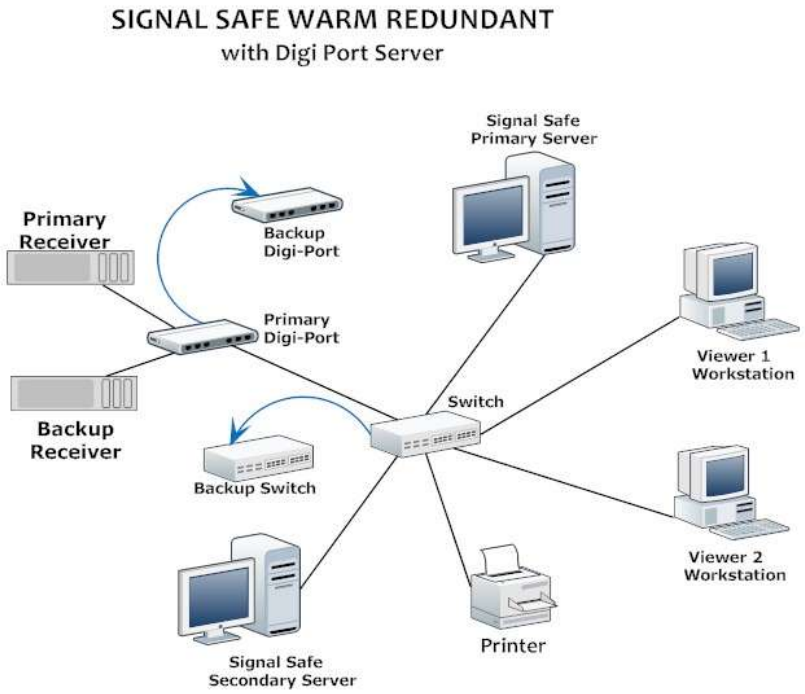


B. Warm Redundant

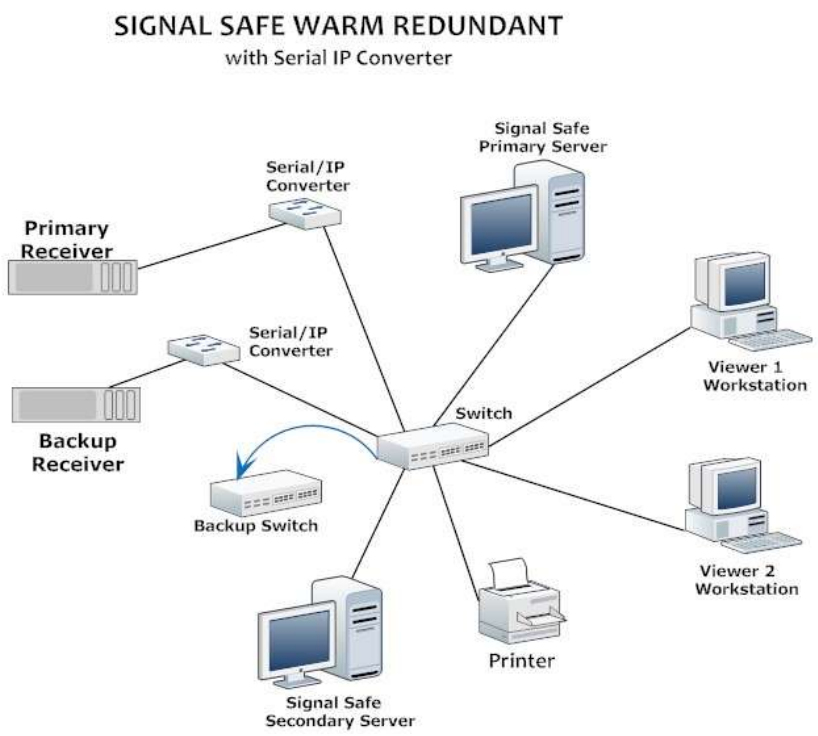
Consists of: 2 – Servers (the second server must be powered on and ready to bring on line)
2 – Network Hubs/Switches
2 – Network Port Servers
Network Printer
SPD Device (***See UL 1981, Section 12.1d***)

1. Using Digi-Port Server (UL 1981, Section 12.1c)

(Dated April 30, 2012)



2. Using Serial/IP Converter



XI. Sizing Your Signal Safe UPS

See ***Section VII Sizing Your Automation Station UPS*** starting on ***Page 25*** for directions on how to fill in the worksheet provided below.

Automation Related Equipment	Volts	Amperes	VA (Volts X Amperes)
Subtotal			
		Growth Factor (25% of Subtotal)	
		Required VA	
		Appropriate Model (Based on Calculations)	

XII. NOTES: