

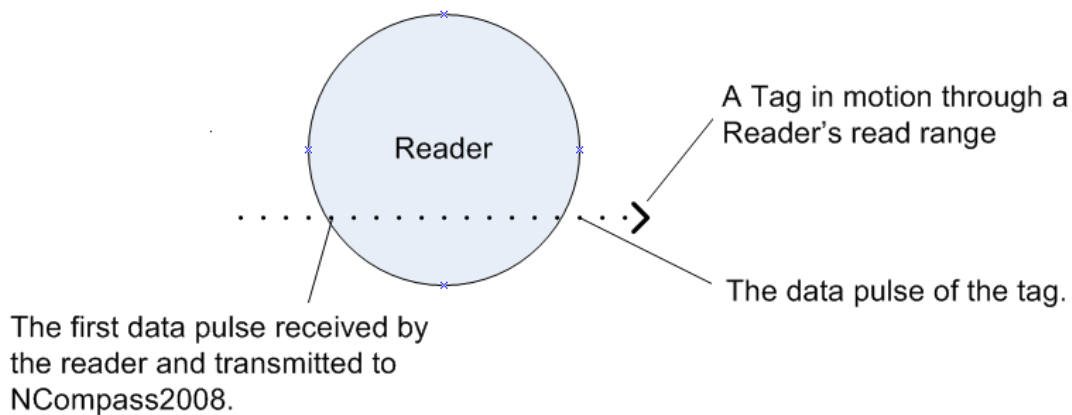
NControl Enterprise Asset Tracking RFID Solution Application Suite



Asset Tracking Introduction

This guide discusses the basics of Asset Tracking. There are many different aspects of Asset Tracking and this document will cover just a portion of the opportunities available.

First, let's discuss the overall concept of Asset Tracking. Asset Tracking uses two different groups of components to track and display movement. The First group, Asset Tracking Hardware is the physical device that monitors asset movement. This hardware includes an asset tracking tag (tag) and a tag reading device (reader). The reader will monitor a defined area and look for the presence of asset tags. See below:



As the tag(s) enter the reader zone, the asset tag is seen by the hardware and the tag information is forwarded to the Second group, the NEAT software applications. The NEAT application takes the tag information, stores it in an ODBC compliant database, and manipulates the information based on the customers' needs.

In designing a complete Asset Tracking solution, readers will be placed in designated areas that require tracking. The placement is based on the type of tracking required by the customer. This document contains some standard asset tracking formats and a general description of the reader layout along with some detailed examples. More than one type of tracking can be incorporated in a single installation.

This is just a guide; contact NControl for additional information on system layout.

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Asset Tracking Introduction

Emergency Mustering

Description

OSHA and state organizations are beginning to require employers to provide an emergency evacuation plan that includes the ability to account for the location of all employees. Asset tracking for employees with emergency mustering can give the employer real time location of all employees in the event of an emergency.

Solution

This solution requires that the employees carry an asset tag, and that the readers be located in the designed safe areas. Additional readers can be placed throughout the facility to pinpoint location of missing employees.

Design

System design begins by reviewing the current emergency evacuation plan and indentifying the designated safe areas within the facility. Readers will need to be placed at these safe areas and will be set in a way that the reader range will cover the entire safe area. This way when an emergency situation occurs and the employees move to these areas, they can be seen by the reader. The NEAT software can compare the employees seen in the safe areas against an employee list and determine if any employees are missing. Additional readers can be placed throughout the facility to assist in tracking the employee located within the facility.

Reader Layout

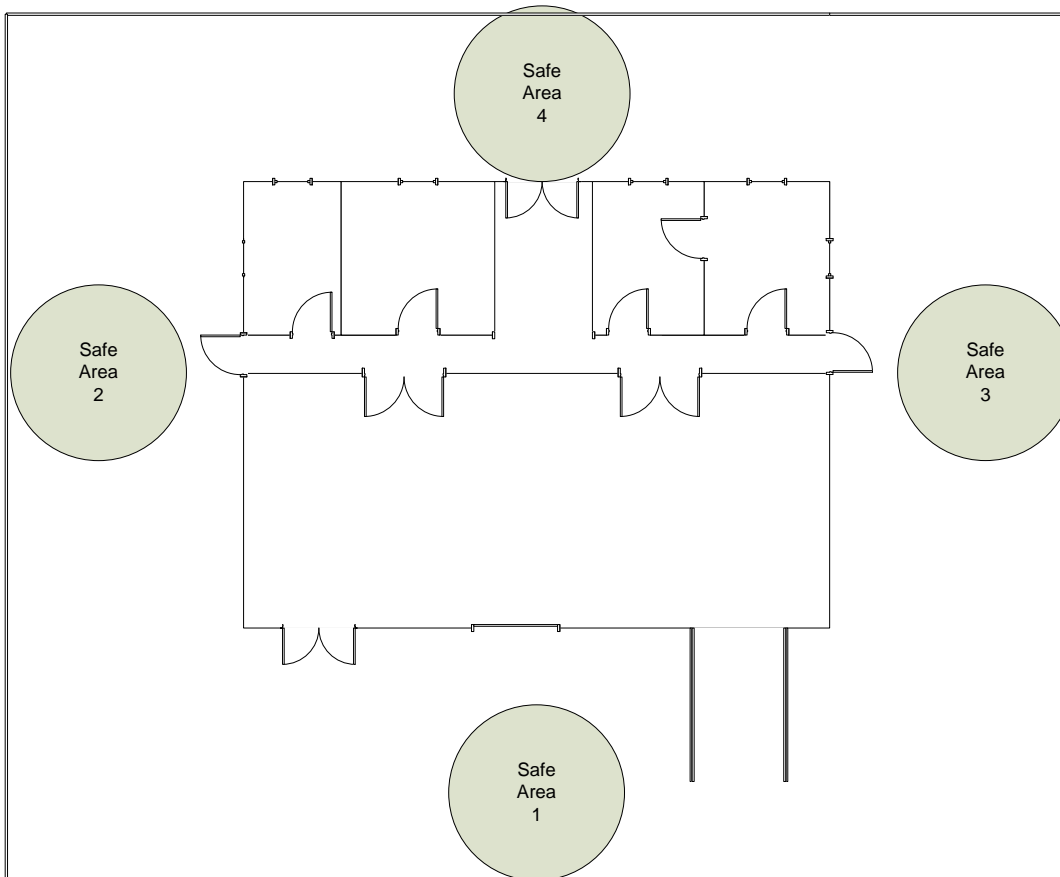
Below is an example of a facility evacuation map. This facility has 4 different Safe Areas that are located outside of the facility on the grounds. Asset tag readers would be located within the designated Safe Areas. When the employees evacuated the facility and went to the designed areas, the readers would see the employees and their location would be recorded in the software. Additional readers could be located in the building to give further information of employees still in the building.

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Asset Tracking Introduction

Emergency Mustering Reader Layout Diagram



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Asset Tracking Introduction

Employee Location

Description

Asset tracking can provide employee location so the employer can find employees faster, adjust staffing in certain areas to meet needs and determine if employees have left the facility. All of these options can increase productivity. Asset tracking for employees can also be used as a time clock check or as the time clock itself.

Solution

This solution requires that the employees carry an asset tag and the readers are placed in all locations where employees can occupy. Additional readers will be placed at all entrance/exit points of the facility to determine if the employee has left the facility.

Design

System design begins with a review of the facility layout. A determination must be made with the customer in regards to the areas where employees are and the movement patterns for the facility. Also, the level of focus needs to be determined; otherwise does the customer require room location (city view on a map) or area within a room (street view on a map). Use caution in regards to granularity. Smaller reader areas will require more readers, and the more readers that are in one area, the harder they are to set properly. In larger areas, multiple readers can be used to designate a single area.

Reader Layout

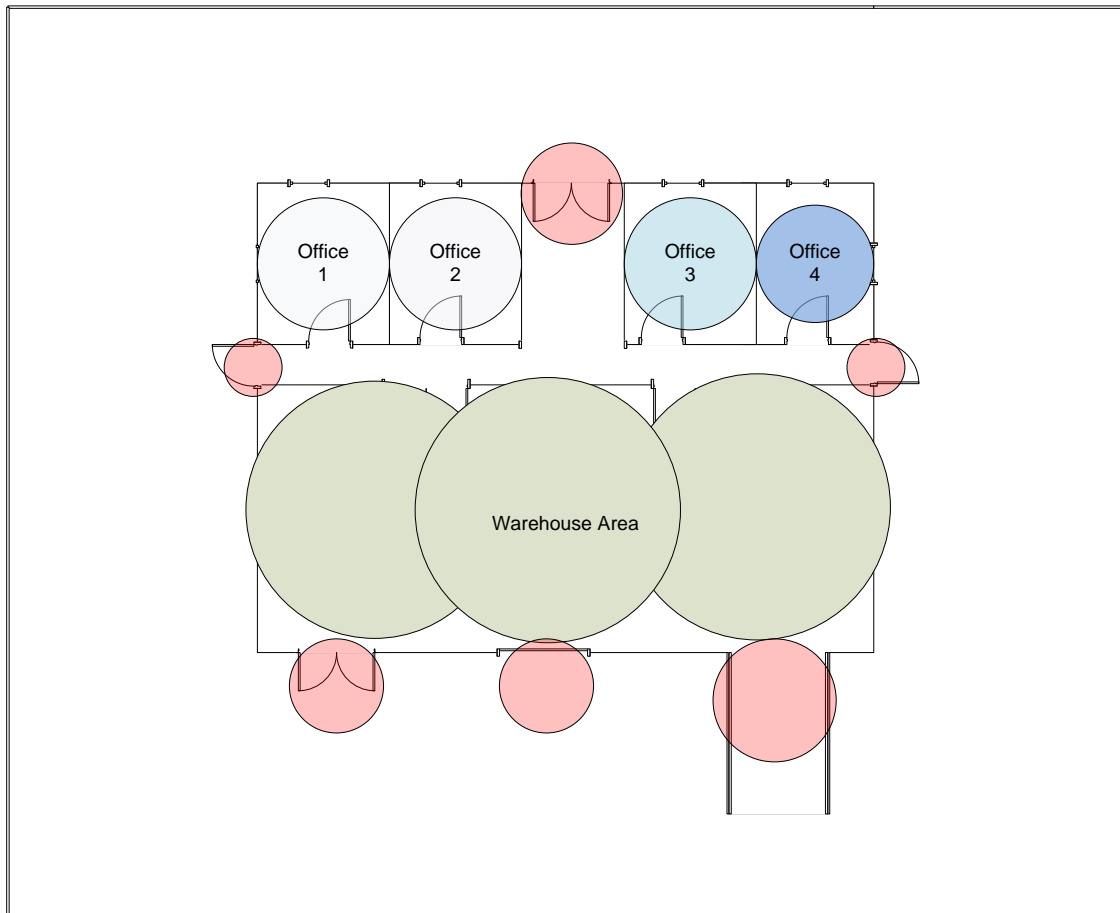
Below is a facility map that contains a solution for Employee Location. The top of the map contains a group of offices and the bottom contains a warehouse area. The map shows a single reader in each office location to cover each office. The warehouse contains a group of readers that will comprise the warehouse area. Additional readers can be located in the hallways and main foyer area to get better granularity. The warehouse readers can be also be designated as areas within the warehouse. The red shaded readers indicate the readers that are located at the entrance/exit points to monitor if employees have left or entered the facility.

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Asset Tracking Introduction

Employee Location Reader Layout Diagram



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Asset Tracking Introduction

Equipment Location

Description

Asset tracking can be used to monitor the location of specific equipment and supplies used by the employer. Equipment inventory can be done on a real-time basis and equipment can be relocated to where it is needed. Find misplaced equipment quickly, see previous locations, and control theft.

Solution

This solution requires that all required equipment and supplies be tagged with an asset tag and readers are placed in all equipment areas. Additional readers will be placed at all entrance/exit points to determine if the equipment is been taken from the facility.

Design

System design begins with a review of the facility layout. A determination must be made with the customer in regards to the areas were equipment is located in and if that equipment is moved within the facility. Also, the level of focus needs to be determined; otherwise does the customer require room location (city view on a map) or area within a room (street view on a map). Use caution in regards to granularity. Smaller reader areas will require more readers, and the more readers that are in one area, the harder they are to set properly. In larger areas, multiple readers can be used to designate a single area.

Reader Layout

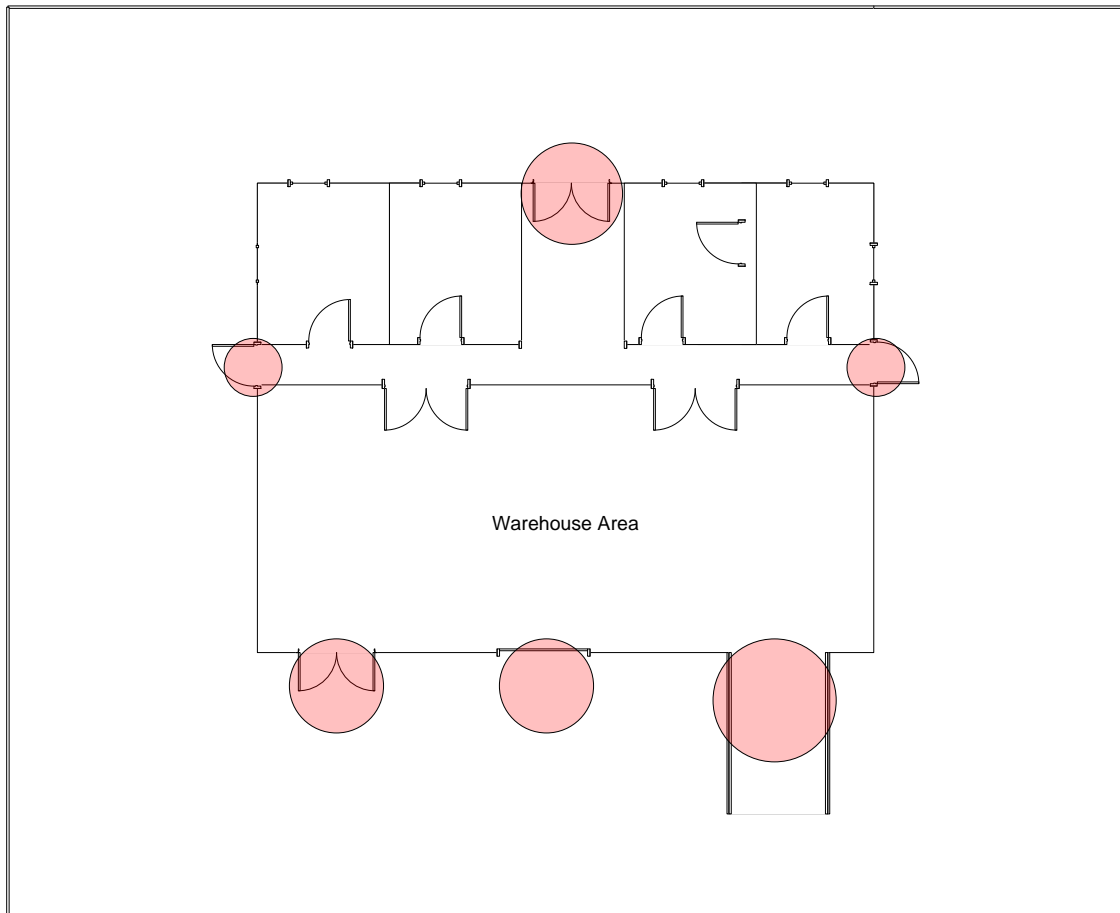
Below are two facility maps that contain solutions for Equipment Location. The first facility map is the layout that would be used in an equipment theft prevention scenario. The readers are located at each of the entrance/exit points and monitor the area for the presence of asset tags. The NEAT software would generate an alarm if any equipment tags were seen at the reader areas by the entrance/exit doors.

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Asset Tracking Introduction

Equipment Location Theft Prevention Reader Layout Diagram



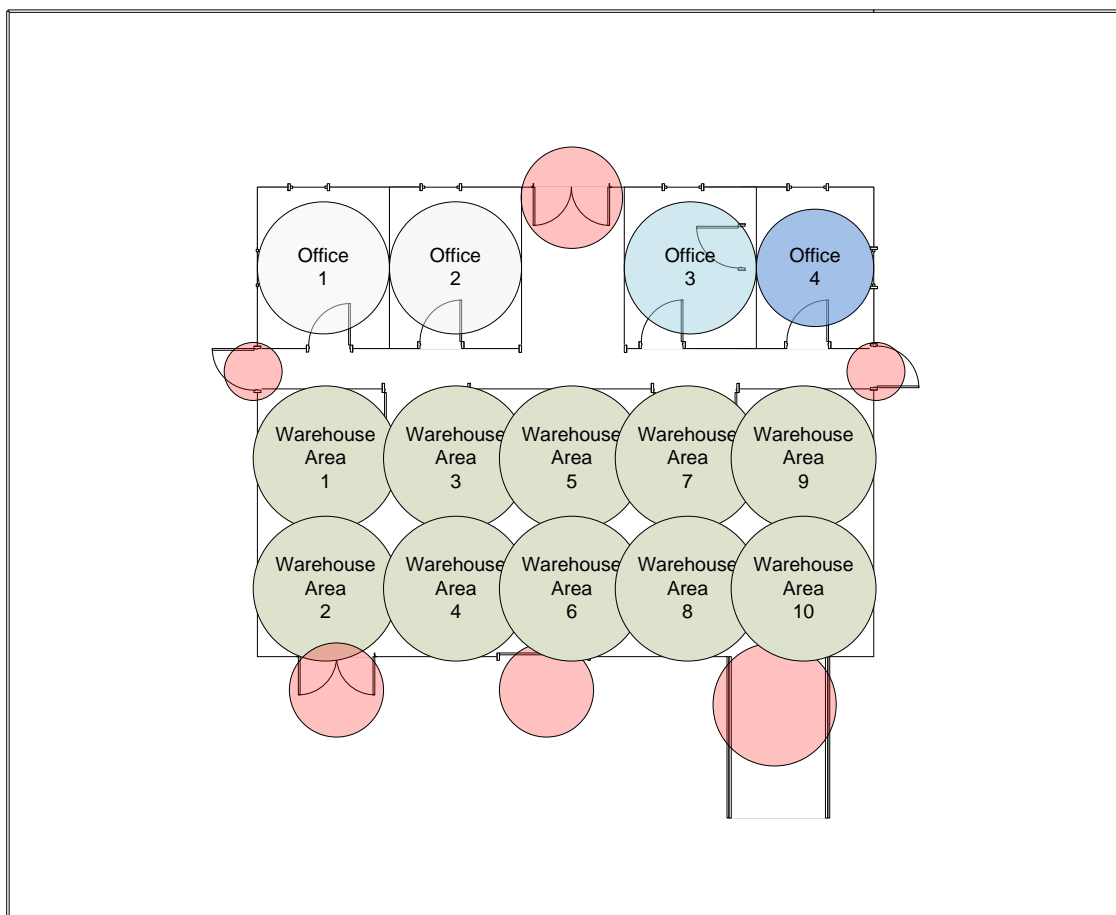
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Asset Tracking Introduction

The second facility map contains a theft prevention scenario along with the equipment location option. The top of the map contains a group of offices and the bottom contains a warehouse area. The map shows a single reader in each office location to cover each office. The warehouse contains a group of readers that will indicate where the equipment is located within the warehouse area. Additional readers can be located in the hallways and main foyer area to get better granularity. The warehouse readers can be also be designated as areas within the warehouse.

Equipment Location Reader Layout Diagram



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Asset Tracking Introduction

Inventory Control

Description

Asset Tracking can be used to monitor and located inventory within a facility. By tagging inventory, the Asset Tracking system can show inventory location within a facility. This allows the user to locate inventory quickly, which increase employee productivity. Inventory Control can also show previous inventory locations and movement.

Solution

This solution requires that asset tags be placed on all required inventory and readers are placed in two different locations. The first location would be in all inventory areas and would monitor the area for inventory location. The second location would be at the entrance/exit points of the facility to determine if the inventory has been taken from the facility.

Design

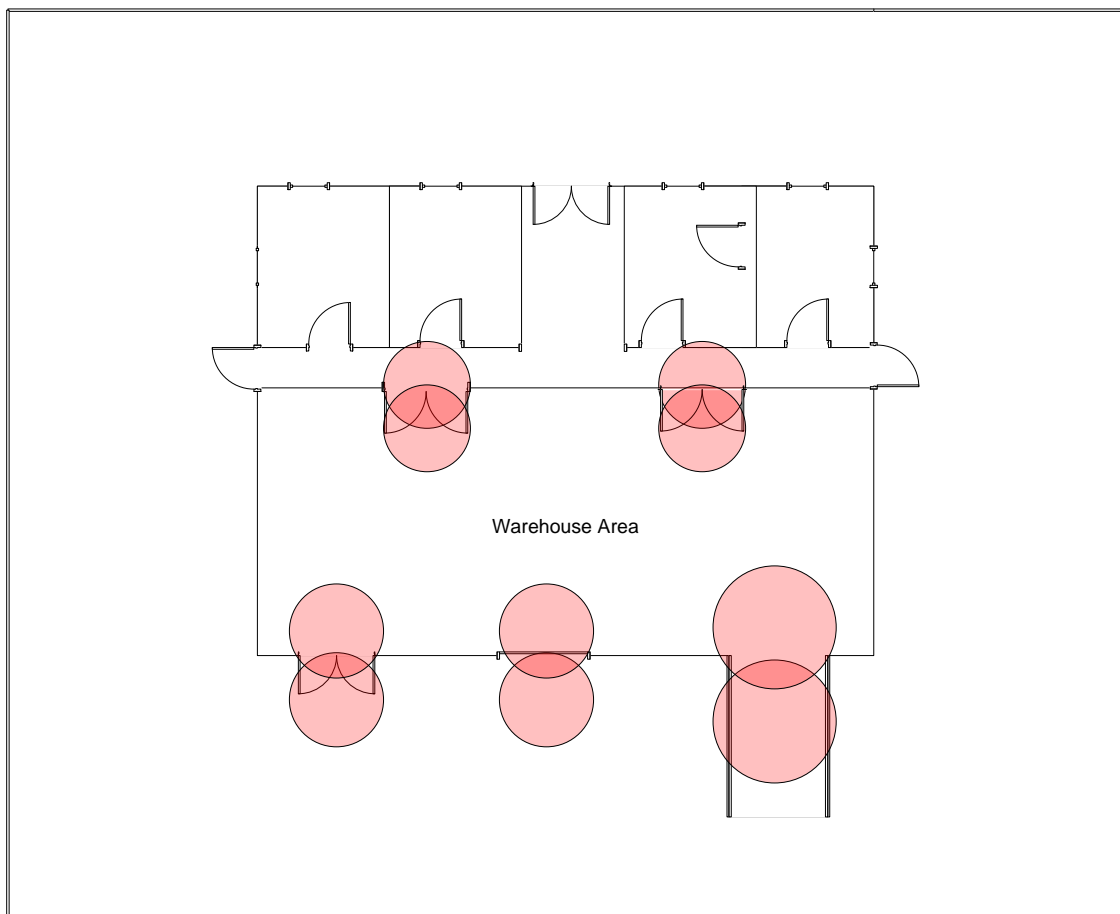
System design begins with a review of the facility layout. A determination must be made with the customer in regards to the location of inventory, how the inventory moves through the facility, and in this case, if any inventory moves through or is located in the office area. Further discussion is required as to the granularity required for the installation. Will in the warehouse suffice, or are they looking for a specific area within the warehouse. Use caution in regards to granularity. Smaller reader areas will require more readers, and the more readers that are in one area, the harder they are to set properly. In larger areas, multiple readers can be used to designate a single area.

Reader Layout

Three different scenarios are discussed below. The first is a general location of inventory within the warehouse. Dual readers are located at each portal in the warehouse area. The determination of whether or not the inventory is in the warehouse is made within the NEAT applications. Based on directionality, the NEAT software can determine of the inventory has entered or left the warehouse area. This method is used in situations where the only information required is if the inventory is in the warehouse or not.

Asset Tracking Introduction

Inventory Location General Reader Layout Diagram



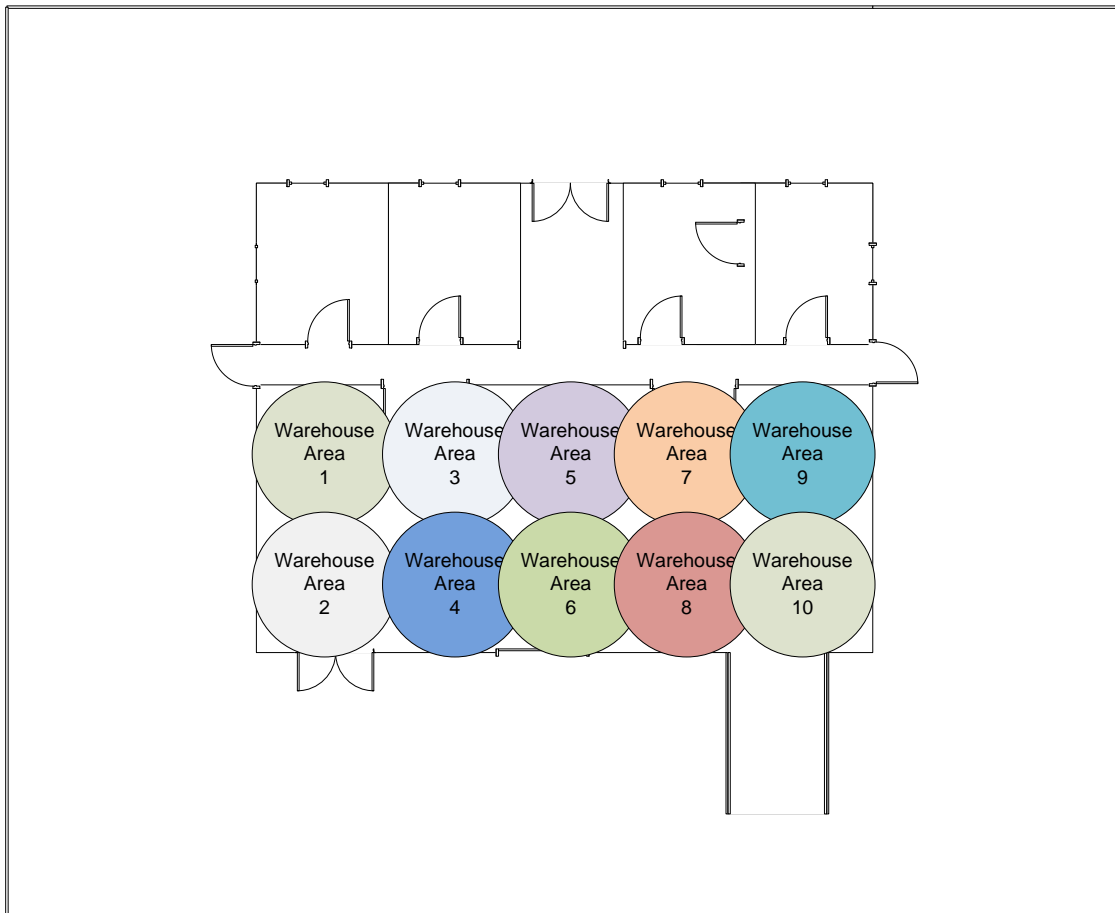
The second scenario is used to pinpoint the location of inventory within the warehouse. This scenario uses a group of readers with the warehouse area to focus on specific smaller areas within the warehouse. Use caution in regards to granularity. Smaller reader areas will require more readers, and the more readers that are in one area, the harder they are to set properly.

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Asset Tracking Introduction

Inventory Location Reader Layout Diagram



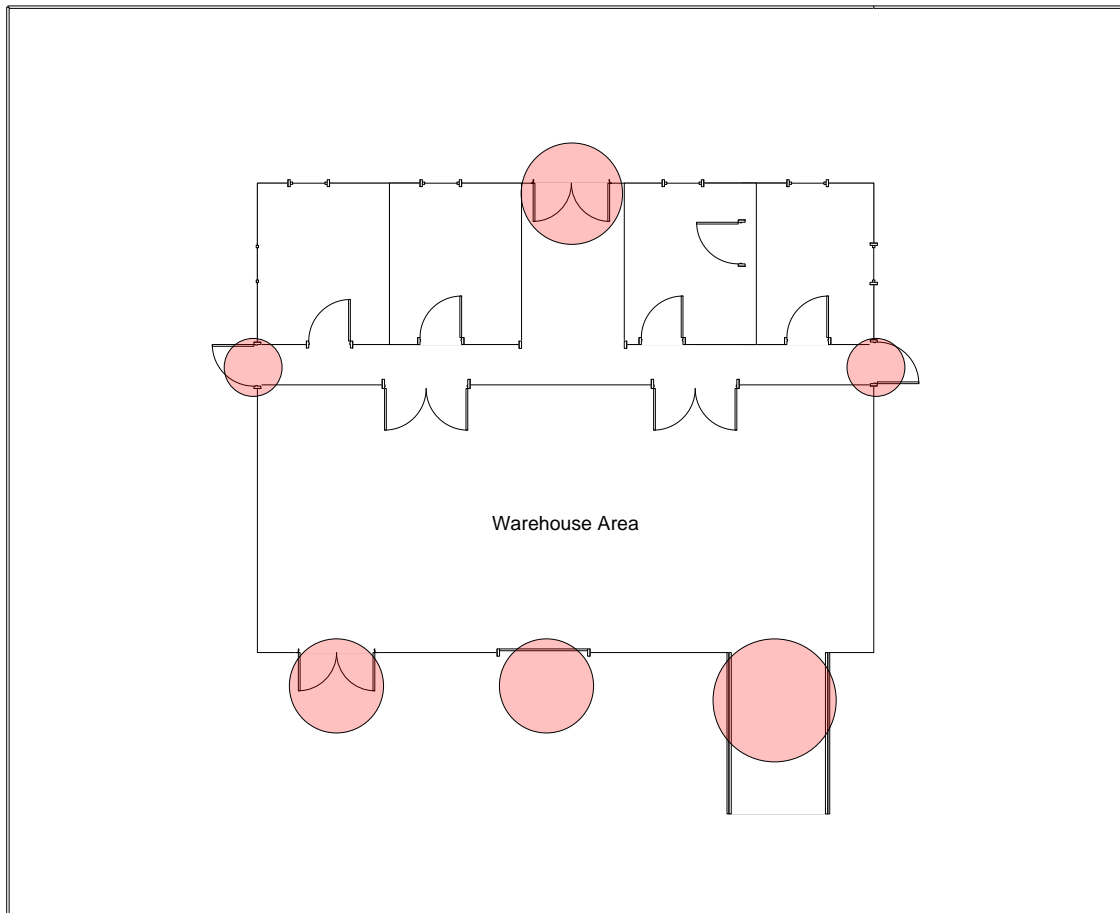
The third scenario would be used in an Inventory theft prevention scenario. The readers are located at each of the entrance/exit points and monitor the area for the presence of asset tags. The NEAT software would generate an alarm if any inventory tags were seen at the reader areas by the entrance/exit doors.

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Asset Tracking Introduction

Inventory Location Theft Prevention Reader Layout Diagram



Each of these scenarios can be used within the same installation based on the customer requirements. The general layout scenario could be used for the entire facility, the specific location could be used in the warehouse area, and the theft prevention could be used for the entire facility.

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Asset Tracking Introduction

Manufacturing Control

Description

Asset Tracking can be used by manufacturers to monitor a product as it moves through the manufacturing process. By tagging a product at the beginning of the assembly process, the product could be monitored through the entire assembly process. This gives the user the ability to see in what stage of assembly the product is in.

Solution

This solution will require that the asset tags be placed on the product at the earliest point possible. Readers would be placed at different points in the assembly line. Additional readers could be placed at all entrance/exit points determine if the product has been taken from the facility.

Design

System design begins with a review of the manufacturing process and facility layout. A determination must be made with the customer in regards to the flow of the product, the steps of the assembly process that need to be monitored, and the location of finished product. Use caution in regards to granularity. Smaller reader areas will require more readers, and the more readers that are in one area, the harder they are to set properly. In larger areas, multiple readers can be used to designate a single area.

Reader Layout

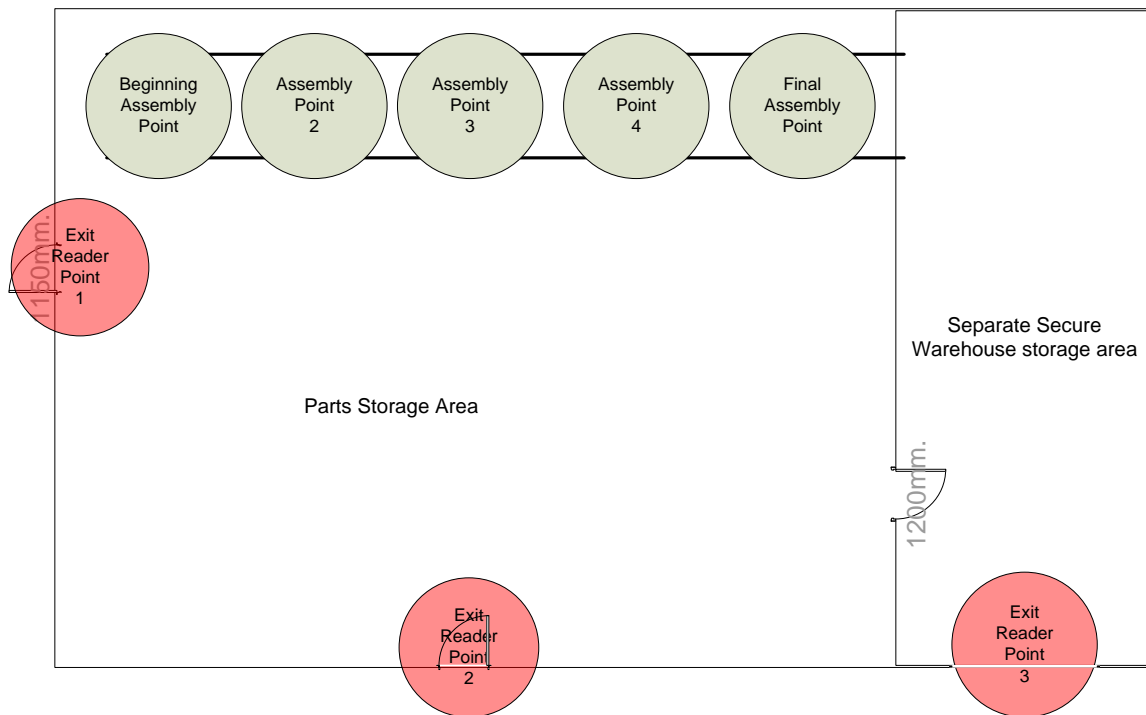
Two different scenarios are discussed below. The first scenario indicates installation in a straight line assembly process where the assembly process is performed in a standard assembly line. The asset tag is placed on the product at the first station and the location is updated at each station along the line. Finished product is located in a separate warehouse area.

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Asset Tracking Introduction

Assembly Line Manufacturing Control Reader Layout Diagram



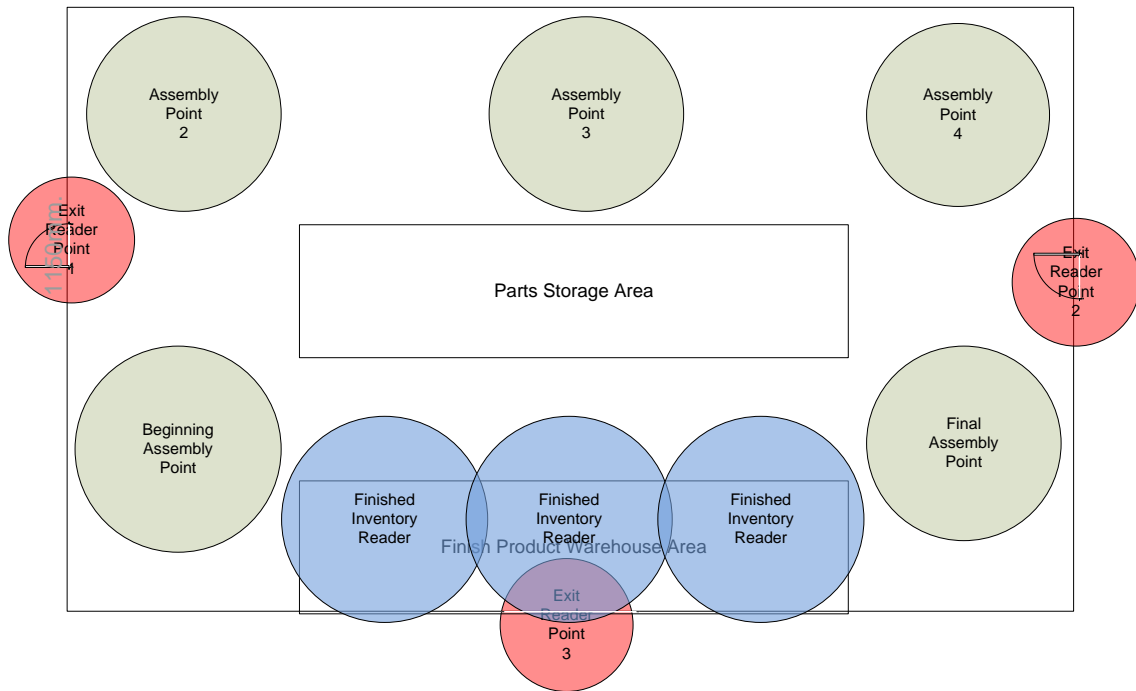
The second scenario is an assembly process that is done in a single warehouse and the finished product is stored within the same warehouse area. When setting up this type of installation it is important to try to get separation between the assembly area and the finished product storage area. The green shaded area designate the assembly areas within the facility, the red shaded areas are entrance/exit points where theft prevention readers are placed, and the blue shaded areas is where the completed product is located.

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Asset Tracking Introduction

General Area Reader Layout Diagram



Manufacturing Inventory Control can be very beneficial to the customer, but it is very important to review the layout before discussing customer options. There needs to be defined areas where the assembly process is completed. If the areas are not properly defined and area separation cannot be accomplished, an alternate inventory control method may be necessary. Contact NControl with any concerns regarding Manufacture Control.

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Asset Tracking Introduction

Vehicle/Truck Control

Description

Asset Tracking can be used to monitor vehicle movement in or out of a facility. Vehicles can be tagged and tracked as they enter or leave a facility. This can be used to ensure deliveries are leaving the facility on a timely basis, what vehicles are at the facility, if any are missing, and when they entered or exited. Additional NEAT applications can forward this tracking information to third party applications such as yard management systems.

Solution

This solution requires that all vehicles be tagged and the readers be placed at each entrance/exit point of the facility. Additional readers can be located in the vehicle parking areas to track the location of assets in these areas.

Design

System design begins with a review of the exterior facility map that shows all facility entrance/exits and vehicle parking areas. A determination must be made with the customer in regards to the design of the system, where to track portals only or if they require vehicle location within the facility.

Reader Layout

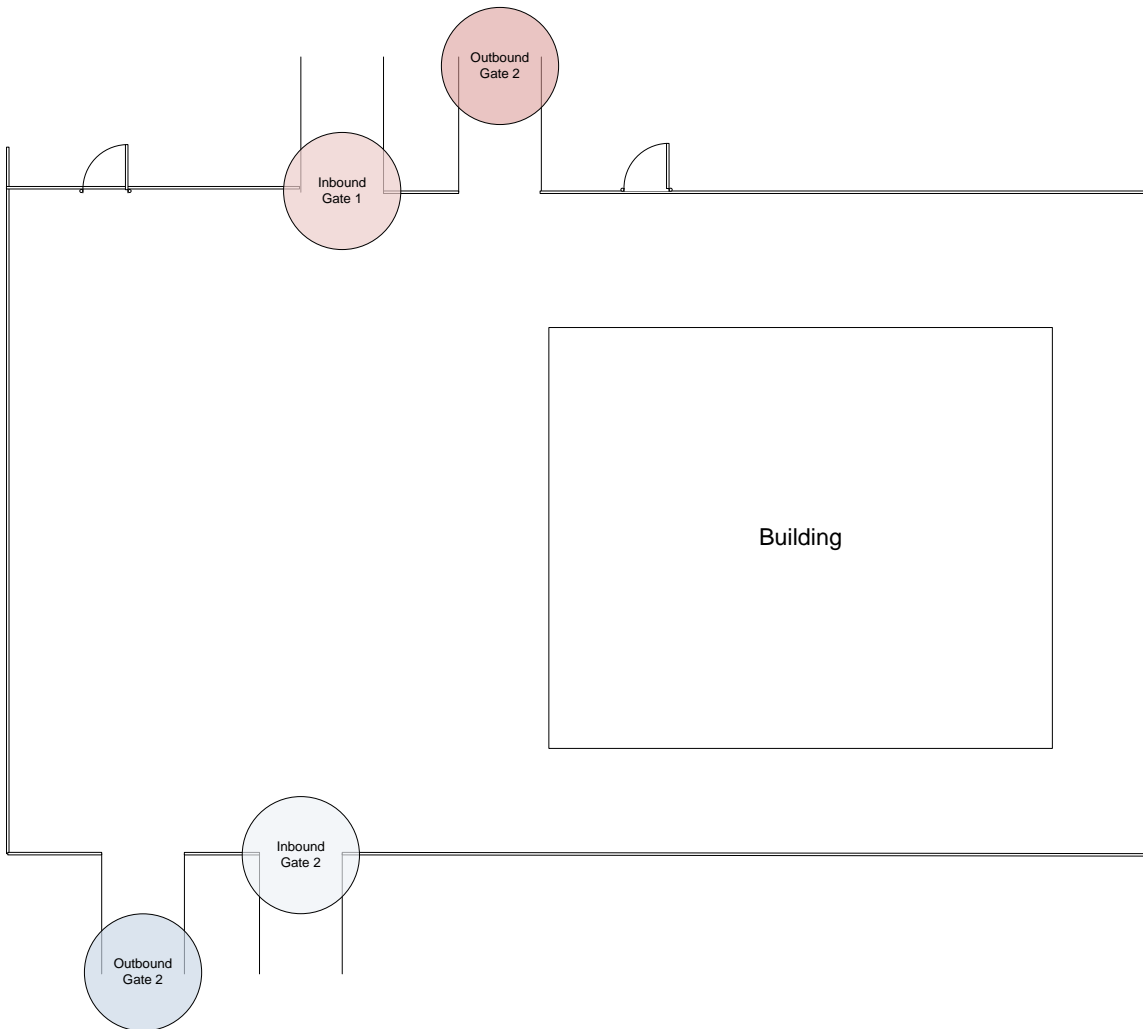
Two different scenarios are discussed below. The first scenario indicates an installation of a vehicle control system that only records vehicle entry and exit from the facility. The readers would be located at each entrance/exit point in the facility. Location would be based on which reader saw the tag last. The asset tag needs to be located on the outside of the vehicle in a standard location, and the readers must be able to see the tag as the vehicles pass through the portal.

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Asset Tracking Introduction

Vehicle Control Gate Movement Only Reader Layout Diagram



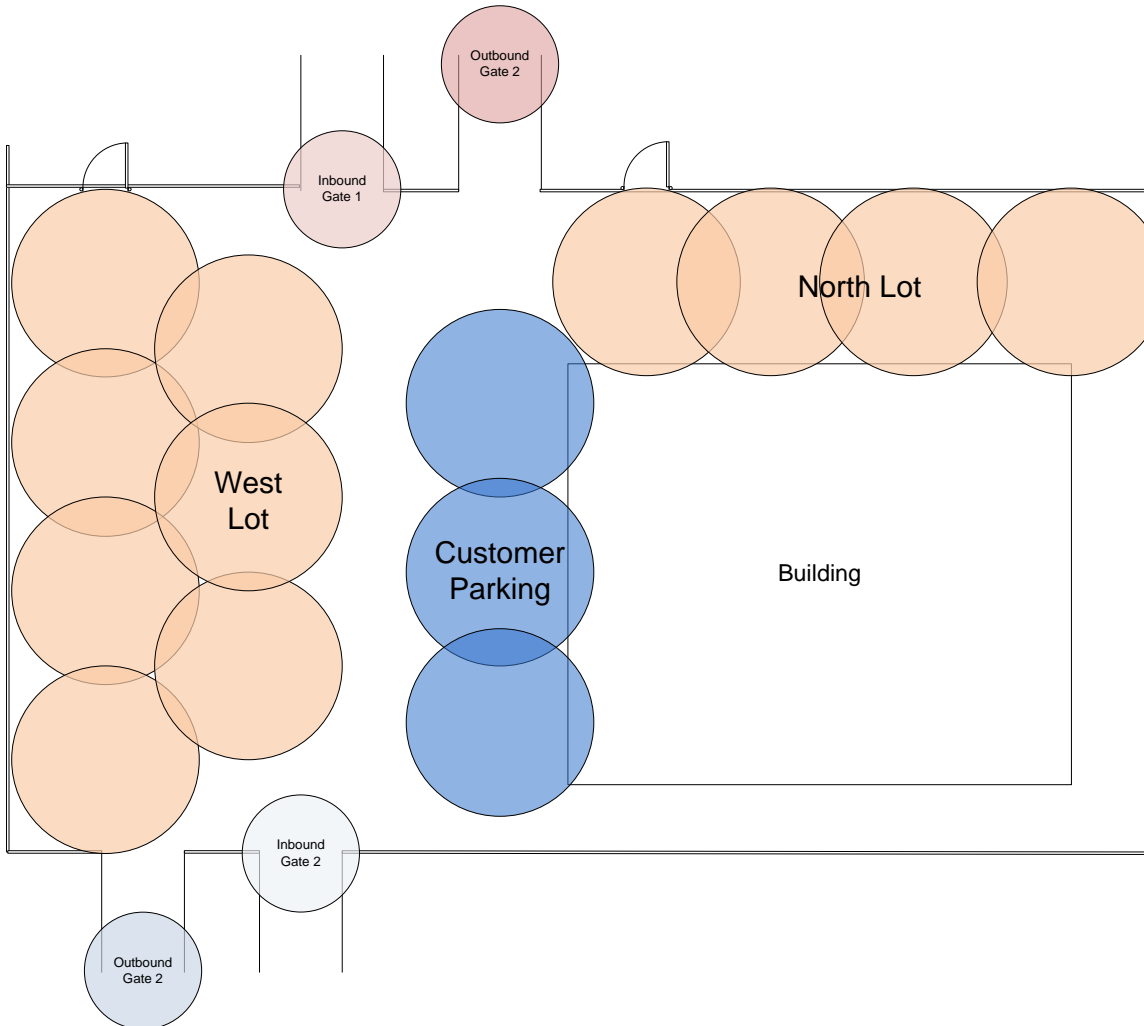
The second scenario would incorporate vehicle location along with vehicle gate activity. Use this scenario, when a vehicle entered the facility and parking, the readers would see the tag in an area of the parking lot based on the reader locations. Remember that smaller reader areas will require more readers, and the more readers that are in one area, the harder they are to set properly. In larger areas, multiple readers can be used to designate a single area.

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Asset Tracking Introduction

Vehicle Control Gate and Lot Location Reader Layout Diagram



This scenario shows groups of readers defined as one area. It is possible to segregate the readers into separate locations within the lot. For example the three readers for Customer Parking could become Customer Parking North, Customer Parking Center, and Customer Parking South.

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Asset Tracking Introduction

Theft Prevention

Description

Asset Tracking can be used to prevent theft of product or equipment. Facility entrances and exits could be monitored by the Asset Tracking system. As a tag is seen at the entrance/exit, an alarm could be sounded, or a door could be locked, preventing exit.

Solution

This solution requires that all product and equipment be tagged and the readers would be located at each entrance/exit point of the facility including public, employee and vehicle entrances.

Design

System design begins with a review of the interior and exterior facility map that shows all facility entrance/exits. A determination must be made with the customer in regards to the design of the system, if the theft protection system is just for the building, or if the grounds are to be protected as well. It is recommended that both are done especially if product is stored in the building as well as on the grounds. The customer also needs to determine what action will transpire if the product/equipment reaches a portal.

Reader Layout

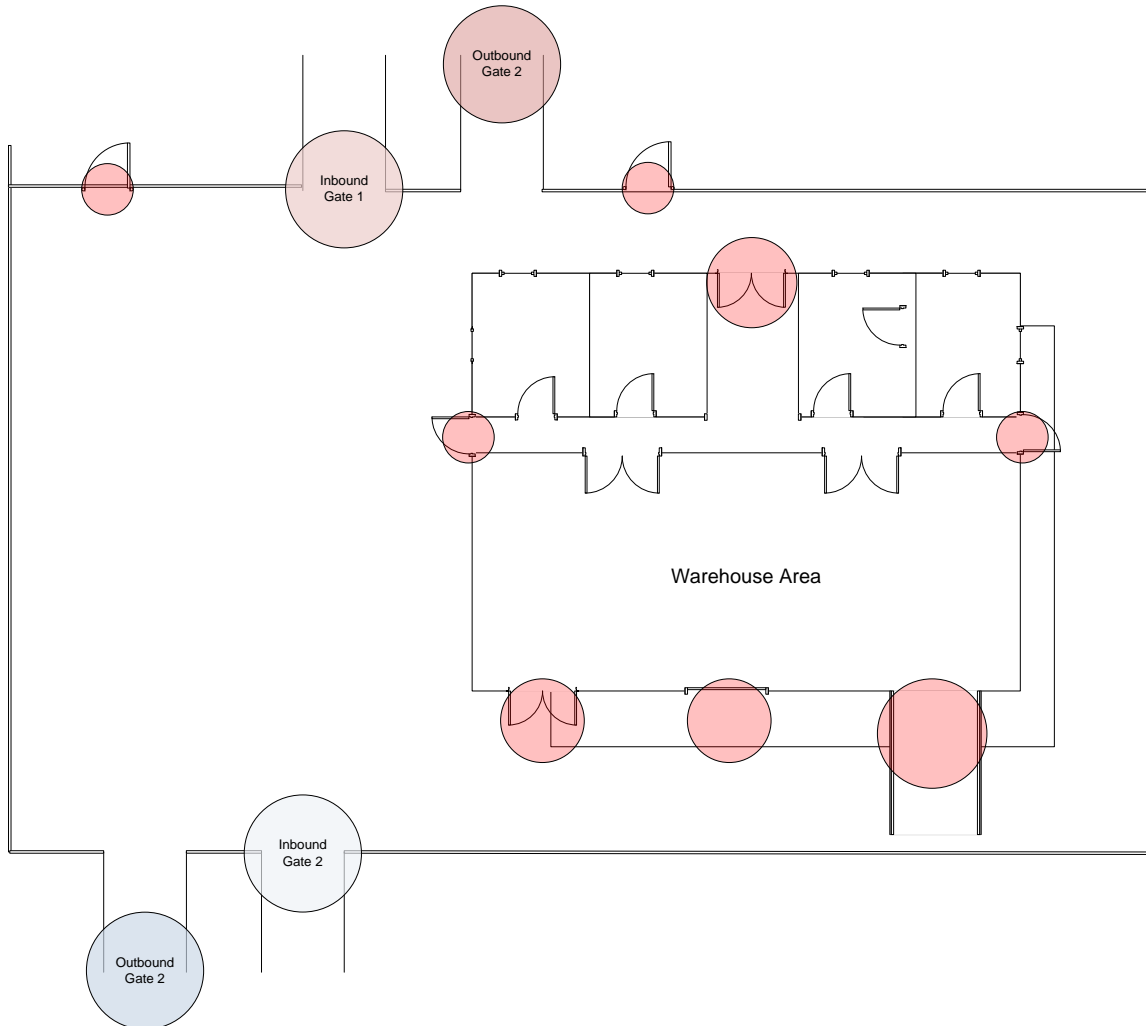
Single readers would be placed at every entrance/exit point of the building. Additional readers would be placed at each entrance/exit point of the facility grounds. Additional readers could be located within the facility to track movement of the equipment/product as it moves around the facility.

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Asset Tracking Introduction

Theft Prevention Reader Layout Diagram



When a tag is seen by any of these readers, a predefined event will occur such as an alarm or other action.

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Asset Tracking Introduction

Controlling Secondary Equipment

Description

Asset tracking hardware can be used to control other equipment such as Control Gates, Security Cameras, and Access Control Systems. The assets tags can trigger a secondary function when they are seen in a certain area.

Solution

This solution is more entailed and requires input from NControl in regards to asset tags and reader locations. Contact NControl for further information.

NControl Enterprise Asset Tracking Software Applications

As discussed previously, these tracking formats can be combined into a single solution. The intelligence of the solution lies with the NEAT application suite. NControl's NCompass2008 application collects and stores the reader/tag information. Other NEAT applications will display or perform actions based on the customers' needs and the information collected by the NCompass2008 application. Below is a description of the software applications and the purpose for each. One benefit of the NEAT applications suite is that each supplementary software applications work independently of each other. This allows the customer to select only the applications required.

NCompass2008™ is the foundation of the NEAT™ application suite. It continually monitors connected hardware for the presence of RFID tags. Once it detects a tag, NCompass gathers information from the RFID reader about the tag and reader: date, time, tag number, battery age, signal strength and reader number. It also allows users to designate readers as part of specific groups related to reader location, position, relationship to each other, and enhanced functionality groups. Event transaction information is stored in an ODBC (Open Database Connectivity) database. Many of these same features are available using legacy non RFID hardware.

NControl Enterprise Asset Tracking RFID Solution Application Suite



Asset Tracking Introduction

NCounter™ is the display and enrollment application for the NEAT software suite. NCounter tracks the entry and exit of tagged assets or personnel from the facility and provides and displays these events in an easy-to-use format. Additional features of NCounter allow the user to tie detailed asset information to asset tags, define different asset groups (which allow the application to monitor and report activity on different types of assets), archive asset movement information and reassign asset tags to different assets.

NVision™, NEAT's interactive graphical display tool, is a user-friendly, visual summary of all readers and tags. Upload a facility map. Place reader icons and watch assets move in real time. NVision enables you to view a detailed history of activity and movement. Any associated data (names, photos, stock numbers, employee numbers, etc.) displays through user functions.

NABLE™ is the intelligence behind the design of the NEAT™ suite of applications. As a multi-threaded, binary decision processing engine, NABLE can accept rules either imported from other applications or designed ad hoc by the user. The capacity to make decisions regarding events as they occur and the ability to perform a wide variety of operations based upon conditions surrounding those events is what gives NABLE its power.

NCapture™ is the Event Tracking application of NEAT's suite of software options. Perfect for situations requiring debris removal, truck weight scaling and other entry/exit tracking, this user-friendly application adds user information to tagged assets or personnel as they enter or exit a facility. It generates pop-up windows prompting the user for additional information, where needed. These prompts can be tailored to the needs of the user with items such as vehicle number, driver information and more!

NForm™ is the NEAT™ reporting system which filters, transforms and runs reports on a regular schedule or on demand. The use of filters allows database subsets to be derived from date ranges and events occurring at or with specific hardware. NForm provides full flexibility in reporting design and output specifications, including HTML, text, Excel, PDFs, RFT and XML formats. Once the reports have been generated, the file can then be archived or distributed to individuals or groups via email.

NCase™ is a sophisticated transfer engine, passing collected data to 3rd party systems or legacy databases. It continuously monitors the NCompass database looking for new events, such as a truck entering a portal to reload inventory. When a new event occurs, NCase determines if the event matches preset criteria, formats the data based on preset configurations and then passes

NControl Enterprise Asset Tracking RFID Solution Application Suite



Asset Tracking Introduction

the transformed data to a 3rd party application. For example, NCase could merge data about truck mileage, weight and destination and send it to the driver's screen so he/she knows where to park.

NAct™ is the control application of NEAT's software suite. When NCompass encounters a predefined event, such as a tag being seen at an entrance, NAct send a command to control or activate configured devices. These devices can include gate controllers, access control systems, and integrated camera systems. NAct can forward information event information to an access control system to control access, or can be used as part of a stand-alone system to control activity. NAct allows your asset tracking system to become an integral part of your security system.

This is a short introduction of asset tracking and how standard asset tracking systems are designed and installed. NControl offer this information in an effort to help you present the concept of asset tracking to your current customers. Our website www.ncontrolsi.com offers additional information on asset tracking and further describes our NEAT software suite. If you need any additional information contact NControl by using the Contact Us link on the website or call at 877-603-0333 during our business hours of 8AM to 5PM CST.