IDALLOGY
QTR★MASTER

TRACK
YOUR
VALUABLE
ASSETS

With **QTRMaster**
RFID Solution

Troubleshooting

The Basics   2024-02-01

QTRMaster Trouble-Shooting

In this guide we will look at the most common symptoms as well as fixes, to inaccurate or non existing reads from your QTRMaster RFID Inventory system.

If you experience:

-no reads, intermittent reads
-'Nobody' or 'animated' display for borrower, or no tag read
-delayed transactions
-segmented transactions or 'double' transactions
-items incorrectly recorded 'in' or 'out'

The first stage to ensuring accurate reads is to have a **proper set-up and environment of the hardware. System LICENSING, Proper Tag placement** (on the item) as well **as proper tag orientation** (according to the tag specifications) is also required for accurate and efficient reads.
Once that is confirmed, the **settings** can be addressed.

As a general overview, the scanner settings are your last resort when trouble shooting. **We recommend focusing on the last two* settings fields, when troubleshooting** as they most affect read behaviour.

Algorithm Settings

The four main scanner settings are:

'Ignore List Duration' (we recommend starting at 1 second)
-How quickly the system re-establishes a 'new' 'possible transaction' starting point.

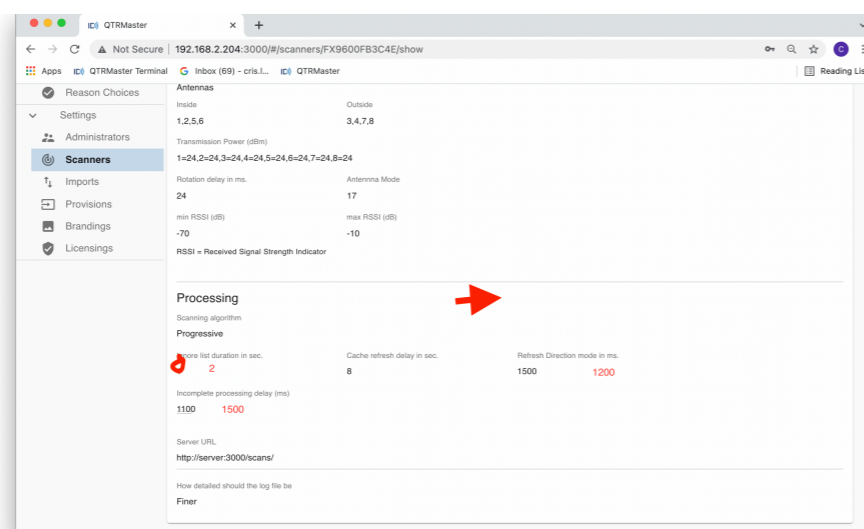**'Cache Refresh Delay'** (we recommend starting at 8 sec)
-How long the system remembers a potential transaction in progress\

'Refresh Direction' (800 ms recommended as a start point)*
-How quickly a transaction is completed to allow for a new transaction

'Incomplete Processing' (875 ms recommended as a start point)*
-How long to allow for a minimum process time

Caption

Example:

Ignore List Delay: In the below example we generally don't adjust this field and leave it at 1 sec. This field is adjusted to "2" in the example below simulating a very large equipment room setting where the reader sees the item and every 2 seconds searches for a new transaction for tags

Cache Refresh Delay: Here we have it set at 8 seconds. A good rule of thumb is to estimate the time it takes a user to enter the room, select an item and leave the room.

Refresh Direction Mode: This allows for quicker turnaround in read completion. System will decide 'faster' so that new and or 'opposite direction' transactions are readily discerned. (800 ms is the recommended start point)

Incomplete Processing: We extend or reduce time allotted to transactions by adding to or reducing this field. (A recommended setting to start is 875 ms)

Set-up

Upon setting up your choke-point for automated RFID inventory tracking there are a number of factors that MUST be in place in order for the QTRMaster software to properly log transactions. They are as follows:

A) **The system hardware must be properly connected**. (Antennas to reader, reader to server via Ethernet). QTRMaster software must in turn be **licensed, running and reachable**.

B) **The environment must be such that the divider (usually a wall) between the outside and inside antennas is completely 'impermeable' to RF signal.**

That may include painting the wall with RF blocking paint, using metal, RF blocking window tint or mesh.

C) **The set-up MUST be 'CALIBRATED'**. QTRMaster has a 'Calibration' tool located in the 'Scanner' page under 'Processing' that converts the functionality from 'reading and displaying transactions' to calibration mode, displaying the 4 zones of RFID coverage. (Outside the room-right side and left side of the doorway, and Inside the room- right and left side).

The calibration tool displays '**what**' tags are being read, in '**which zones**', at **what power tags are seen**, and additionally can show **if there is signal bleed from outside antennas to the inside antennas** or the reverse, should the insulation between the 2 sides be insufficient to prevent cross reading.

D) **The antennas must be properly positioned**. A good starter point is to mark the floor approximately 3 feet on both sides of the opening (from the centre divider line) and then set the antennas facing that point- at a 45 degree angle.

Ensuring that your QTRMaster RFID system set-up conforms to the above parameters, and with properly functioning reader and antennas, you will be seeing reads.

If you have checked all boxes above and are seeing inconsistencies still, we will next address specific errors in 'reads' that may be experienced.
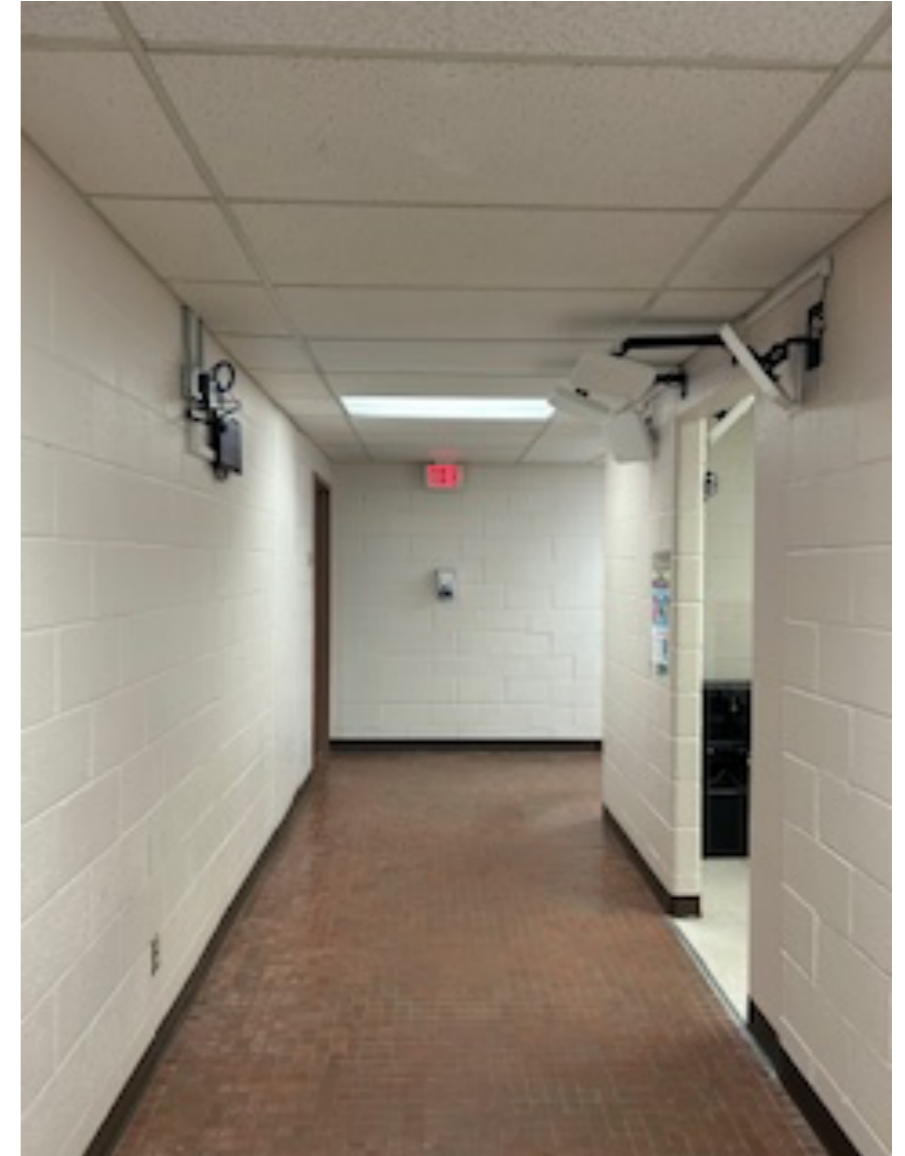
Nobody Display

'Nobody' or 'no tag read' results from no information on the tag or person returning to the server.

Type to enter text

Common problems are:

-person or borrower is **NOT wearing a tag**, or the tag is not properly oriented on their person

-**item is not tagged**

-**tag number is incorrectly recorded** into the QTRMaster database. RFID tags are notorious for having many characters (often '0's) and misjudging the proper count of characters or zero's will result in the tag not matching up with the actual tag number on the item or person

-**tag is 'covered'** when passing through the portal set-up

-**antennas are not properly positioned** for optimum coverage

-the **tag is too close to the human body** to read

-**tag selection is not powerful enough/ tag is not properly positioned or oriented on item.**

-the scanner **settings may be processing too fast** if you see an accurate transaction followed by a 'Nobody' transaction when a single borrower passes through the chokepoint. Address the 'Incomplete processing' time on the scanner settings page to add time to the transaction.

Delayed transactions.

Often the cause here relates to either **the strength of tag reads**, RF signal **cross reading** (poor insulation between front and back antenna's) or the **scanner settings**.

To rule out the possibility of signal leaks or cross reads, use the calibration tool and select 'cross reads' in the centre of the screen to see if items are prematurely crossing the outside/inside thresh-hold.

At the same time while examining the Calibration information, take note the individual tag read 'strengths'. If a tag is too weak for the environment OR is misplaced on an item/incorrectly oriented, it may have a weaker signal read, and as such read too late in the transaction.

If the tags are correct and the signal is not bleeding between the outer and inner antenna's (not a 'cross-read' situation) then the scanner's 'timing' (located in scanner settings) is allowing for too much time to lapse before confirming a transaction. The algorithm can be adjusted to speed up the allowable time allotment for the actual transactions. Depending on the distance between the outside antennas and the inside ones, you may need to trial and error your way to finding the sweet spot. Check:

-**tags strength, orientation, placement**
-**that antennas are properly positioned** for coverage
-**ensure the scanner (reader) settings are correct for your environment**.

For Algorithm changes: Go To 'settings','scanners',STOP the scanner, select 'Edit' on the upper right, then adjust the **Refresh direction** OR **Incomplete Processing** values depending on your specific symptoms.

Lowering the values on either of the algorithm settings above will speed up the transactions. If you aren't sure which to adjust- see the brief overview of the settings functions above.

Segmented/Double Transactions.

By 'segmented', we are refering to the situation where a single transaction is completed, yet the display and loan record show two separate transactions. **An example may be the display shows a person carrying 5 items as two separate transactions, the person and 4 items, then 'Nobody' with the remaining item.**

Common Causes:
Tags that are 'Too weak' are shown on the terminal display as follows:
-"a number of items from the actual transaction are properly associated to the borrower during the actual transaction, followed by a secondary display of the remaining items associated to the 'Nobody' symbol on the display screen.

Tags that are 'Too strong' are shown on the terminal display as follows:
"a number of items from the actual transaction are associated to the 'Nobody' symbol in advance of the transaction on the display screen, followed by the remaining items properly associated to the actual borrower.

-borrowers are **following too closely** (mitigated with the 'one person only' zone on each side of doorway)
-**cross reads**: the system is processing what it sees from each antenna and sees a mix of inside and outside reads when it should only see a single direction. This is addressed using proper shielding material between inside and outside antenna 'sets'.

-**the speed allotted to the scanner settings is too fast**. Essentially the actual transaction is not 'finished' and yet the QTRMaster system cuts off the data a 'completed' transaction, then logs the next grouping of tags, creating a 'second' transaction.

For Algorithm changes: Go To Settings, Scanners, STOP scanner, EDIT, and add time to the 'Incomplete Processing' field

False Transactions-Tags incorrectly logging 'In or Out'

Examples of this may include situations where persons or items on one side of an equipment room are being 'logged into' or 'out of' the opposite side of the equipment room displaying a false 'transaction.

This may occur while passing by the outside of an equipment area, or standing close to, but not traversing the threshold from out to in (or reverse) The false transaction will be displayed on the terminal screen and can easily be corrected.

Common Causes:

-often this again relates to a **poor insulation between the outside or inside antennas**. (Use the calibration tool to show that items on the outside are ONLY visible from OUTSIDE antennas -or inside).

-**antenna angles may be the issue**. Ensure that they are facing away from each other approximately 45 degrees into the room if inside, and outwards at 45 degrees if outside the room.

-**tags too powerful/too many tags on asset (relating to double-tagged items)** for the scanner settings. It's very important to have all tags fall within a consistent range I.e. 2-5 meters (bookends)