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# The IT Guide to RFID Solutions for Schools

## The Technology, Applications, and Benefits



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# The IT Guide to RFID Solutions for Schools

## The Technology, Applications, and Benefits

Radio frequency identification, or RFID, has become a leading technology in providing automated and reliable location and tracking information for schools and businesses. RFID represents a major leap forward in efficiency and automation, not just from manual or spreadsheet-based tracking but also compared to the limitations and manual labor required by barcode scanning and technology. For schools that need to track and manage important assets, provide seamless and more efficient transactions, and maximize campus security, RFID provides a next-generation solution. It is affordable and scalable, and, most importantly, it is the most effective technology for locating and tracking virtually anything that schools need to monitor and manage.

## UHF RFID Technology: The Basics

RFID technology uses radio waves to transmit and capture data between an RFID reader and an electronic RFID tag that is attached to an object, such as a desktop computer, laptop, tablet, library book, or even a student or staff photo ID. A microchip in the RFID tag contains the data. With read-write tags, the data can be captured, new data can be appended to the existing data set, or new data can completely overwrite the existing information on the tag. The antenna on the RFID

reader enables the communication between the tag and reader. Readers come in both handheld and fixed-location varieties. The distance that an RFID tag can be read depends on a number of factors, including the environment as well as the size and type of RFID tag.

Ultra High Frequency (UHF) RFID is especially exciting for schools because it offers long read ranges with low-cost RFID tags, allowing schools to tag and automatically track large quantities of assets with minimal effort. Typical read ranges for UHF passive tags are 6 to 15 feet and beyond, with battery-assisted UHF RFID tags extending ranges to 25 to 100 feet. Ranges of up to 10,000 feet are possible with other types of tags and radio frequencies, including pinpoint accuracy to within one cubic foot.

*...the most effective technology for locating and tracking virtually anything that schools need to monitor and manage.*

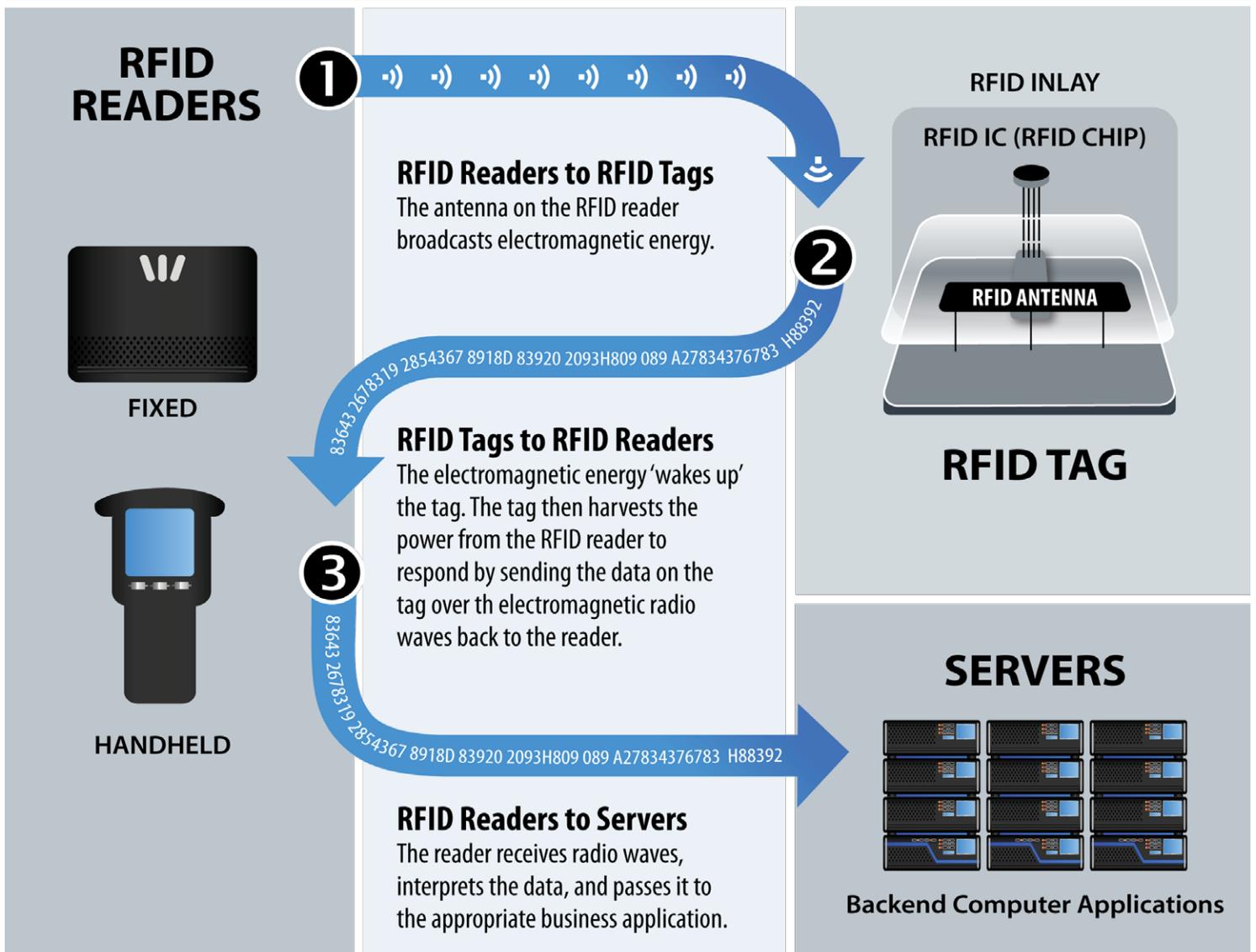
### Unique RFID Characteristics

- No line-of-sight required for scanning
- Can read many tags simultaneously
- Re-usable low-cost and flexible tags
- Rich data capacity
- High durability of tags
- Replication difficulty ensures security

### RFID Reader Types

- Fixed RFID readers automate data capture at key entry and exit points, such as building entrances or classroom doorways, and typically require external antennas above or on either side of the portal.
- Handheld RFID readers allow on-the-spot reading of RFID tags, allowing school staff to perform quick and accurate inventories or search for specific items in a classroom, storage room, office, or any other location, even outdoors.
- Presentation RFID readers are ideal wherever students, faculty or staff need to present RFID –enabled items to the reader, such as photo IDs, library books, audio/visual equipment, or other assets for checkouts and access controls.

# How it Works: The UHF RFID Communication Loop



## Application and Benefits of RFID for Private Schools

### Challenge: *Managing Valuable IT Assets and Preventing Losses and Theft*

For IT professionals in private schools and other K-12 institutions, setting up and managing wireless networks, maintaining computers and mobile devices, and meeting daily technology needs is a huge challenge in its own right. Increasing demands for connectivity, mobility, and technological resources make it a never-ending task to meet current and future requirements. But a contributing factor in this struggle is the need to manage and track valuable IT assets to prevent theft and losses. Research by Quality Education Data has shown that schools lose thousands of dollars per year in lost or damaged technology assets, with some districts facing losses that total in the millions.

The key to avoiding these losses is proper asset management, access controls, and protection, which can prevent losses and theft and achieve cost savings that free up more budget to fund IT resources and new technology investments. But many schools use manual processes, spreadsheets, or barcodes to track and manage their assets, creating further costs in unnecessary labor and missing a clear opportunity to deploy affordable solutions that can automate asset management and checkouts, save thousands per year in losses, and help schools ensure that IT resources are available whenever and wherever they are needed.

## **Solution: *RFID for Automated and Accurate Asset Tracking and Protection***

Using RFID tags, which are printed and applied to assets much like barcode labels, assets can easily be located, identified, and matched with your school databases and records using handheld readers or fixed readers. This allows your school to know where valuable IT and other assets are located on your campus, track their movement, and deploy optional hardware and software to generate alerts when assets are moved from their assigned or authorized locations. Thus, your school can be assured that assets are available wherever and whenever they are needed, and it can avoid damaging costs from theft and loss.

Importantly, both handheld and fixed scanning provide vastly greater efficiency compared to manual or barcode tracking because they can automatically identify multiple assets simultaneously and remotely, with long read ranges and no line-of-sight scanning required.

Both handheld and fixed readers route information back to your database through your Wi-Fi network, and they are typically used to detect the unique ID that is stored in the RFID tag for each asset. This ID is then matched with the same ID and the corresponding asset information in your database. Using asset management software, you can quickly and easily verify, update, and maintain asset location data and other critical data points.

***...a handheld device can be used to scan and locate an asset virtually anywhere on your campus, even if you are outside the range of your Wi-Fi network.***

Handheld scanners are fully mobile, and they can also be used to store information temporarily in batches, which can then be uploaded to your database at a later time. Thus, a handheld device can be used to scan and locate an asset virtually anywhere on your campus, even if you are outside the range of your Wi-Fi network.

Fixed readers are typically placed in specific locations, such as a space above a classroom doorway, where they are usually configured with one or more antennas so they can capture data automatically and route it through your Wi-Fi network. With fixed readers, there is no need for a person to be involved or to hold a scanner and bring it within range of assets. Instead, the fixed reader automatically reads the RFID tags from any assets that pass by the

reader and will send updates to your database. Thus, fixed readers are ideal when you want to track the movement of assets in and out of a particular classroom or location on your campus, or when you want to monitor movement of assets and be alerted whenever they are moved from their assigned locations or potentially off-campus.

### ***Overview: Benefits of RFID vs. Manual and Barcode Tracking***

- **RFID technology automates data collection and vastly reduces human effort and error**
- **RFID ensures that each asset is uniquely identified and location information is 100% accurate**
- **RFID supports remote, long-range tag reading with no line-of-site or item-by-item scanning required**
- **Scanners can read multiple RFID tags simultaneously, offering huge increases in efficiency**
- **All RFID tags within range can be detected in seconds and matched with information in your database**
- **Assets can be cross-referenced against assigned locations and recorded as present, missing, or relocated**
- **Available scanners support both RFID and barcoding so you can upgrade at your own pace**

# Is RFID Right for My School?

RFID may seem too advanced or sophisticated for some schools. If you only have particular assets that you need to manage and you do not have the budget or need to integrate RFID for better campus security and greater efficiency through electronic transactions, you can always stick with manual and barcode-based systems. Later, you can easily upgrade to flexible and scalable RFID solutions when your needs call for them or you have the available budget.

*...RFID offers options and scalability to start at any level and eventually build toward a wider integration ...*

But the tremendous savings that RFID can achieve in protecting your assets, its potentially huge impact on protecting your campus community, and its capacity to reduce the labor and manpower involved in asset management and school transactions make RFID a high-value consideration in private education. And RFID offers options and scalability to start at any level and eventually build toward a wider integration that can expand and evolve with your needs and requirements.

For example, an investment in RFID can begin with asset management, and the savings that it achieves can help fund further expansion of the technology into campus security and transactional efficiency. Or, schools might prioritize security and implement a smart ID program and later invest in other applications of RFID.

## Getting Free Consultation

Whatever the right approach may be for your school, our experts at American Barcode & RFID can provide free expert consultation to help you explore the benefits of RFID and develop a plan to integrate the latest solutions for the benefit of your entire campus community.

To learn more about RFID, get answers to your questions, and request more technical details for your consideration, please feel free to contact us. We would be happy to help you and your school!

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## About Us

At AB&R (American Barcode and RFID), we've been serving schools and businesses for 35 years, delivering the latest technology solutions and insights to meet ever-growing needs for greater security, efficiency, and cost-effectiveness. In partnership with Zebra, a world leader in RFID tracking, card printing, and wireless networking solutions, we would like to offer you free expert consultation to help you assess your school's technology needs and evaluate your best options. We would love to help you make your campus community safer, smarter, and more efficient.

**Contact us today to schedule a call or set up an appointment at your earliest convenience.**

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