

**Eliminates costly power  
and network cabling  
infrastructure**

# WIRELESS V-TAG RFID

## for Automated Vehicle ID, Location and Inventory

- ✓ Multi-Story Indoor & Outdoor
- ✓ Includes Integrated Key ID
- ✓ Single or Multi-Site Network
- ✓ Complete Integrated Solution



*Car Dealers and Car Rental sites with large inventories with single or multiple lots can significantly benefit from operational visibility of Vehicle ID, zone location and automated inventory status*



## The Business Issues:

***Vehicles continually entering, exiting and being moved presents a very dynamic management challenge to accurately confirm the vehicle inventory on site, service-readiness status and its location. Another obvious obstacle in running a multi-story indoor or large outdoor carpark is the potential lost time in locating and retrieving requested vehicles in a timely fashion. The identification of which set of keys belonging to which vehicle is another operational issue.***

***Significant cost reductions and increases in efficiency can be achieved by having real-time or near real-time operational visibility of this data via a wireless, cablefree infrastructure.***

FALKEN Secure Network's (FSN) RFID technology provides Automated, Wireless, Near Real-Time, non-stop systems for vehicle zone location for large multi-story indoor and outdoor lots including automated inventory status and management reports

***Our complete industry-leading, wireless vehicle location and inventory management systems consist of Active RFID V-Tags, Fixed Location Reference V-Tags , AssetWprx! RFID Application and Database Software , integrated with Cradlepoint Routers for wireless transmission of tag read data to a central Server.***

## How It Works:

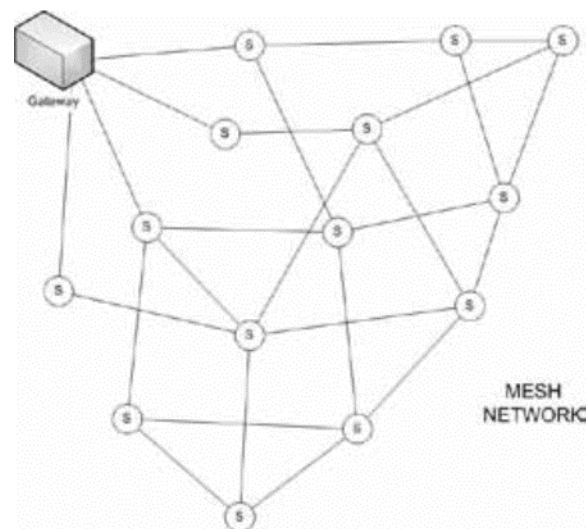
Determining asset location is accomplished by setting up a virtual boundary of permanent, fixed location reference V-Tags attached to walls, fences and posts around the location being monitored. The moveable vehicle or asset V-Tags then automatically associate their location with the nearest Fixed Reference Location V-Tag.. Tags may be configured as either fixed or moveable using AssetWorx! software commands. Removable and Re-Usable, battery powered Active V-Tags affixed to each vehicle (magnet or Velcro supplied). Permanent Active Location Reference tags affixed to each desired parking zone (wall or ceiling mount as appropriate). Tags are ruggedized version IP67. One 'Gateway' tag per parking level connects to the Router for power and network connectivity to the on-site Server via wireless WIFI, USB or CAT5-cabled Ethernet. Asset V-Tags™ will automatically assign themselves to the nearest fixed position tag, letting you know where your inventory is at all times.

Granularity of location resolution is a function of the number of Fixed Reference Tags deployed. Identification of each parking space status would require a Fixed Reference Tag per parking space or deploy the cost-effective mobile V-TAG FINDER UNIT. Visual display and reports are then accessible with a web interface for authorized users.

with zone based location requiring correspondingly fewer location tags. Visual display and reports are then accessible with a web interface for authorized users.

The V-Tag™ is an ad-hoc networked tag (self generating mesh network) for RFID that requires very little infrastructure. V-Tag™ networks are unique in that they utilize a mesh network, allowing them to communicate among each other. Contrast this with a costly traditional RFID tracking solution which requires portals and antennas with power and network cabling wherever tag reads need to take place.

V-Tag™ networks allow you to create zones for specific tags. If the tags leave their designated zones, alarms can be defined and triggered.



**The V-Tag Model VT100** is a compact ruggedized IP67 active RFID tag that generates its own wireless mesh network and offers features such as:

- Location and Tracking System (LTS)
- Accelerometer
- Temperature Sensing
- Dimensions: 3.25in x 2.50in x 1.60in
- IP67 rated
- 6 year field replaceable battery

Fixed Position V-Tags can be assigned values in the database such as name, floor, zone, room #, etc. The tag-to-tag networking creates an ad hoc wireless network that is robust, reliable and reduces the amount of infrastructure needed for deployment; the hop distance between V-Tag's™ can be up to 300 feet under ideal conditions outdoors. The Admin module also provides a map screen which will show the location of every V-Tag™ asset within the enterprise. Moving the vehicles will automatically update the location map and reports. System latency for database location updates is approximately 2 to 4 minutes after the vehicle has been moved or parked. The business impact of this breakthrough technology is to manage assets more cost effectively thereby providing bottom line savings to companies and government agencies.

Each V-Tag™ Vehicle Tag associates with the nearest V-Tag Location Reference Tag. Which in turn wirelessly connects to other V-Tags™ Location Reference Tags to form a network of tags that are able to pass messages, such as location, Time and Date Stamp and sensor data, ultimately to a Gateway Tag and Router which wirelessly transmits the data securely back to a centralized Server and Database.

**Optional Neodymium Magnets** are provisioned with ruggedized adhesive to permanently affix to the tags. The tags are then placed on the vehicle roof with a 3 to 5 lb. pull-force for removal and redeployment. This tag positioning provides optimum visibility and tag read performance for ceiling, wall or pole mounted Fixed Location Reference V-TAGs. These great magnets are coated with a durable layer of plastic. The 1/2" x 1/4" dimensions are the finished dimensions of the plastic coating. They won't mark or scratch surfaces they come in contact with. Various colors are available and they are also completely weatherproof and operate up to 80°C.



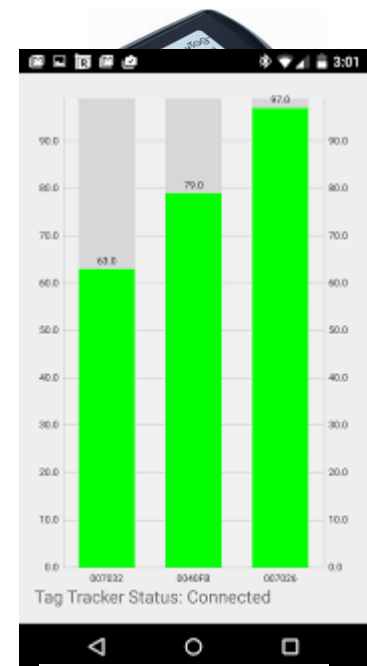
### V-Tag Finder Unit:



Vehicle and other tagged Asset locations are reported to the granularity of "nearest fixed position location reference V-Tag." Precise location, such as specific parking space, can be achieved with the use of the handy V-TAG FINDER UNIT. The Finder is paired with a smartphone, tablet or laptop using Bluetooth and uses the mobile device for display purposes. To find the precise location of an asset to within inches, the procedure is as follows:

1. The V-Tag asset tag is activated by selecting the asset tag on the V-Tag Command Center web-enabled map display and pushing the "Activate" button.
2. Once activated, the asset tag sends out ping messages once a second for 20 minutes.
3. The Finder unit shows the signal strength of the ping messages on the mobile device display.

As the user turns while holding the Finder unit, the signal will get stronger or weaker allowing the user to quickly pinpoint the direction of the asset. As the user approaches the asset, the signal will get stronger. When the user is within a foot of the asset, the signal will register at full scale.



[Download the Mobile App](#)



The V-Tag Finder could be useful for quickly locating assets in the following scenarios:

- When many assets appear identical without close inspection
- When fixed position tags are widely spaced
- When there is a large number of assets stored in a small storage area



### Smart Gateway: V-Tag Model INF-VT100-G



The V-Tag Gateway Unit and Router receives messages from individual V-Tag tags and forwards them to the user's network for storage in a database or display to a user. One gateway is needed for each 1000 tags or one per floor indoors in a building site. It does require power which can be via USB or PoE and network connectivity to the Router wirelessly via WIFI or via USB or PoE or Ethernet.

### Integrated Identification of Vehicle Keys

Verifying the identification and retrieving the associated keys in a timely fashion is a related function to efficiently locating and retrieving vehicles in a timely fashion. This simple solution involves sequencing and pre-printing the same unique 6 digit V-TAG ID on a Key Fob. The same barcode as on each V-Tag could also be pre-printed along with a company logo. Users simply enter in the 6 digit ID on the key fob or scan the barcode with an attached barcode scanner. The AssetWorx software application would show exactly where the V-Tag is on the site map. A carabiner key chain loop is also included to make the process of continually attaching and removing keys as quick and easy as possible.



### Network Router::Manufactured by Cradlepoint

The semi-ruggedized Enterprise Router receives the tag read data from the V-TAG GATEWAY and pushes the data wirelessly to the central Server via the customer preferred cellular network.

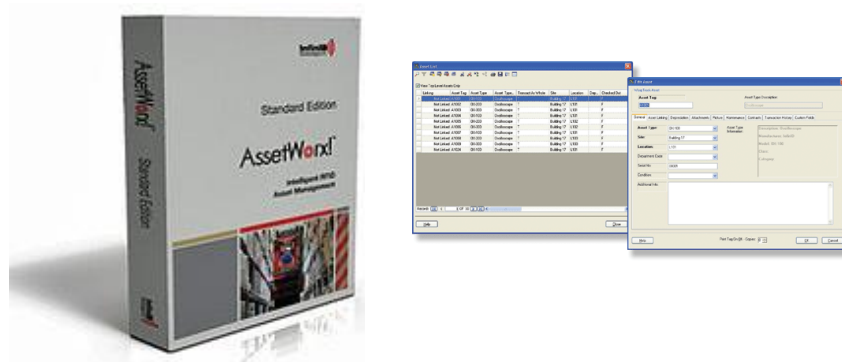


COR IBR600B Router shown with WAN /Cellular and WIFI antennas installed

The COR Extensibility Dock attaches under the COR IBR600B Router to provide 2 additional 10/100 Ethernet ports needed for V-TAG Gateways, redundant power, additional GPIO's



## Software:



**AssetWorx!**™ Enterprise Application and Database software is a very flexible, configurable, multi-application, multi-RFID technology enterprise platform built on industry standards such as Microsoft.NET, SQL and Microsoft Report Writer. As a result, it offers the flexibility and scalability to accommodate future business requirement changes.

AssetWorx! is licensed based on number of Concurrent Users accessing the database.....not the number of Assets tracked. Customer -Provided Server at a central location is required.

Video Links: <https://www.youtube.com/watch?v=VCegVftdsZ8>

<https://www.youtube.com/watch?v=DSFc-CZ58TI>



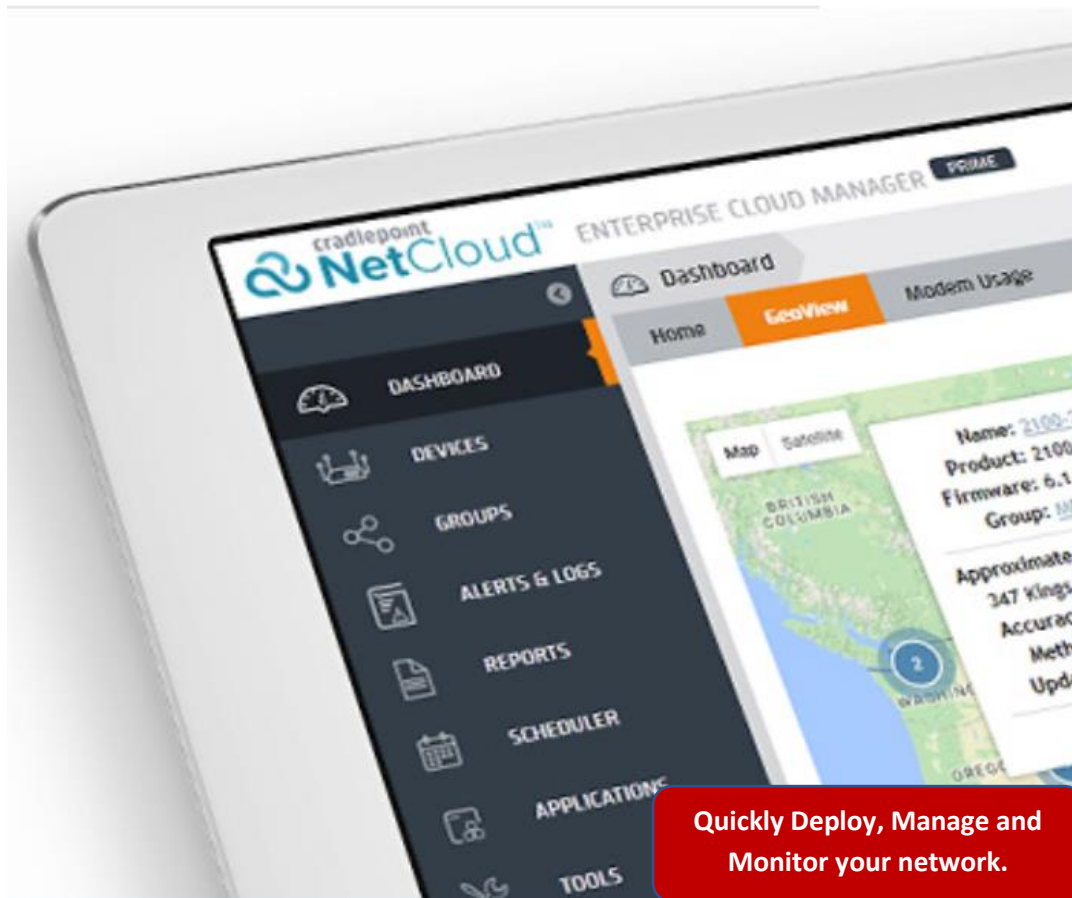
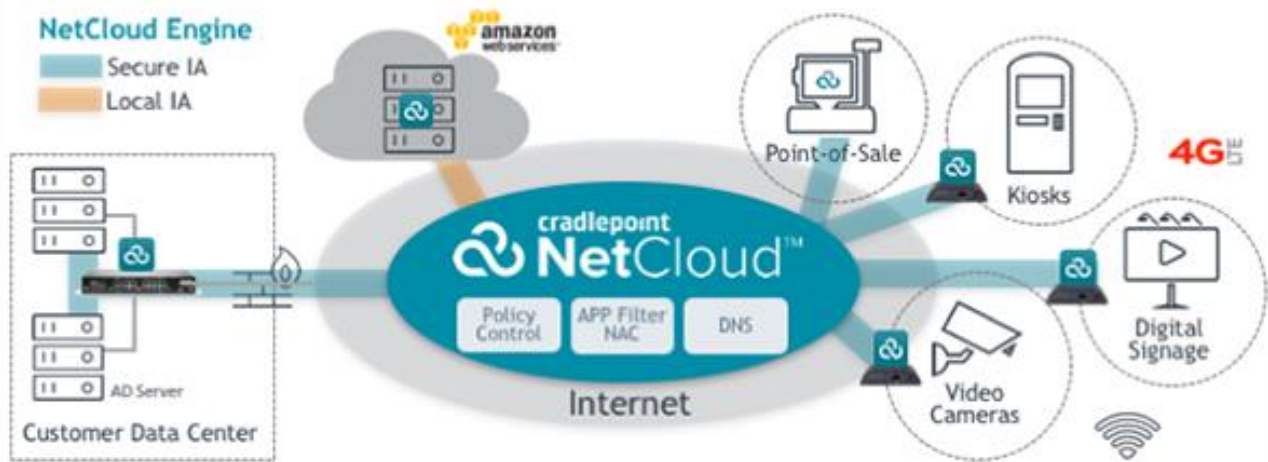
Software Defined Networking (SDN) with NetCloud Orchestrates Seamless Configuration, Deployment, Secure Data Transmission & Network Management with Network-As-A-Service.

Rapidly deploy and dynamically manage networks at geographically distributed locations with Enterprise Cloud Manager, Cradlepoint's network management service within the Cradlepoint NetCloud platform. Improve productivity, reduce costs, and enhance the intelligence of your network and business operations.



RFID

## Use Case — Secure, Global M2M / IoT Connectivity





cradlepoint NetCloud™

Welcome, Cradle Inc. Search

Groups

Add Delete Configuration Firmware Commands Settings Export

Name	Online	Firmware	Synced	Suspended	FW Pending	FW Errors	Account	Routers
<input checked="" type="checkbox"/> IBR600 Toys Kiosk Deploy...	1 of 1	5.3.0 (2014-11-28)						
<input type="checkbox"/> West Coast Stores 2100s	1 of 1	5.2.4 (2014-10-17)	2.4 (2014-1...	1 of 1	0 of 1	0 of 1	Cradle Inc.	1
<input type="checkbox"/> MBR1200 Series 2	1 of 1	5.2.3 (2014-09-16)	3.0 (2014-1...	1 of 1	0 of 1	0 of 1	Cradle Inc.	1
<input type="checkbox"/> test 1400	1 of 1	5.2.2 (2014-08-14)	2.1 (2013-0...	1 of 1	0 of 1	0 of 1	Cradle Inc.	1
<input type="checkbox"/> 2100 5.3.0	1 of 1	5.2.0 (2014-06-23)	3.0 (2014-1...	1 of 1	0 of 1	0 of 1	Cradle Inc.	1
<input type="checkbox"/> Test	1 of 1	5.1.2 (2014-05-09)	3.0 (2014-1...	1 of 1	0 of 1	0 of 1	Cradle Inc.	1
<input type="checkbox"/> MBR1400 VRRP Master (West)	0 of 1	5.1.1 (2014-04-10)	3.0 (2014-1...	1 of 1	0 of 1	0 of 1	Cradle Inc.	1
<input type="checkbox"/> 2100 with Threat Management	0 of 1	5.1.0 (2014-02-28)	3.1 (2014-1...	1 of 1	0 of 1	0 of 1	Cradle Inc.	1
<input type="checkbox"/> MBR1200B	0 of 1	5.0.2 (2014-01-09)	1.2 (2014-0...	1 of 1	0 of 1	0 of 1	West Coast	1
<input type="checkbox"/> westcoast2100	0 of 0	5.0.1 (2013-12-06)	3.0 (2014-1...	1 of 1	0 of 1	0 of 1	Cradle Inc.	1
		5.0.0 (2013-11-14)	2.3 (2014-0...	1 of 1	0 of 1	0 of 1	Cradle Inc.	1
		4.4.2 (2013-10-07)	2.3 (2014-0...	1 of 1	0 of 1	0 of 1	Cradle Inc.	1
		4.4.0 (2013-08-12)	2.3 (2014-0...	0 of 0	0 of 0	0 of 0	Cradle Inc.	0

The Authorized Admin or Installer would upload a unique map for each site or area. V-TAG Gateways are assigned to each site which allow the system to understand which V-Tag assets to show for each map. In the admin Assets screen would be a list of all of the assets for all of the sites.

## Multi Site Networked Systems

The Centralized AssetWorx Application Server and Database with Cloud-Managed Networking for multi-site M2M Applications is ideal for automated wireless vehicle location and inventory systems, Kiosks, Surveillance Cameras, Digital Signs and Parallel Networks.

A Centralized AssetWorx Application Server and Database is installed at one customer location. All other sites push all tag read data to this central server via Internet or wirelessly via Cellular Network with a VPN which we provide via a pre-configured rugged Cradlepoint Router from each remote site. With the wireless cellular alternative, no remote site cabling or other PC equipment is required, thereby lowering infrastructure costs and simplifying installation, and maintenance.



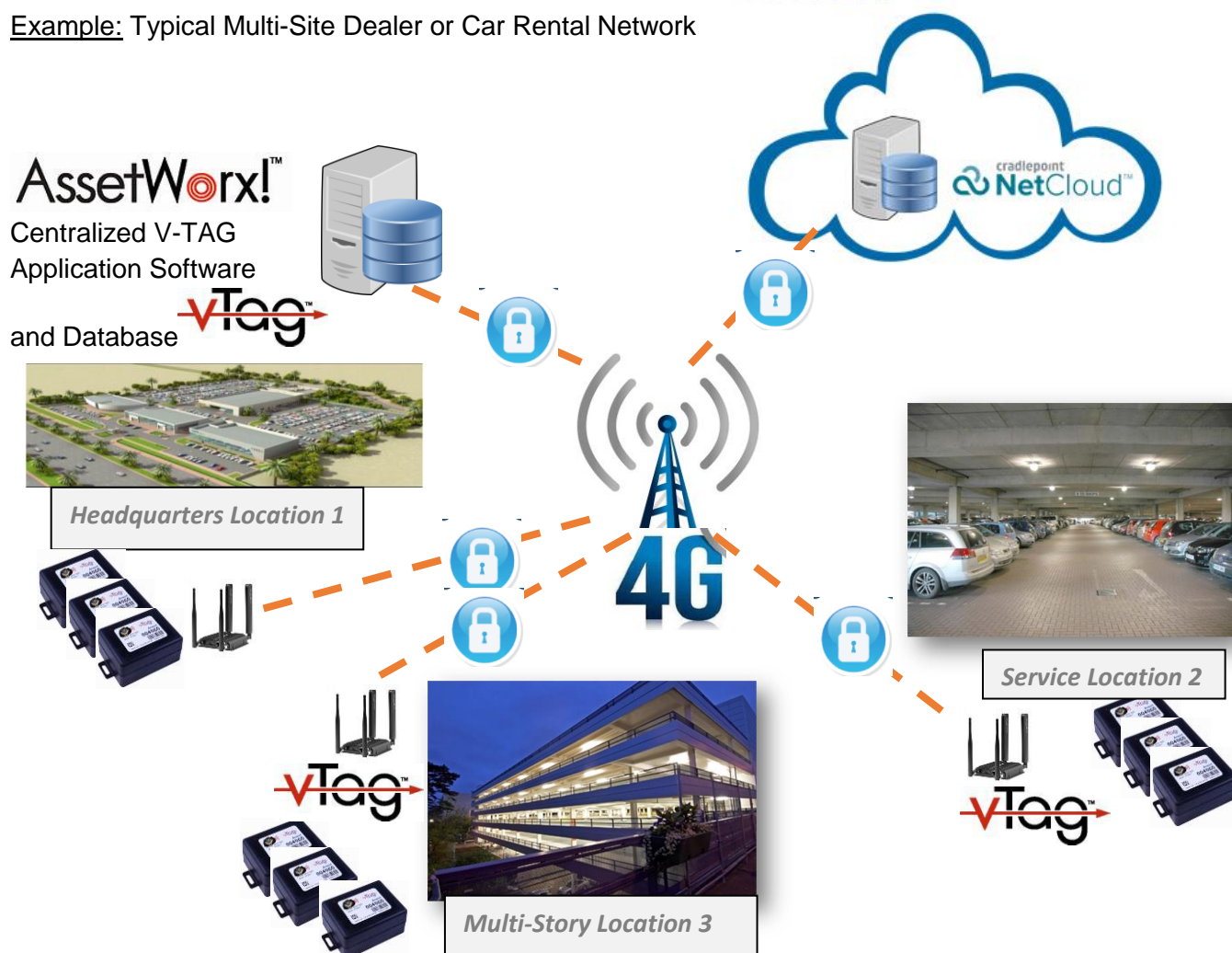


## RFID

Our integration of AssetWorx and NetCloud includes a multi-site capability which is ideal for car dealers and car rental agencies with multiple lot sites. Rather than install and maintain servers at every lot site, a centralized Server and Database is deployed. Tag read data is transmitted from each Router over a customer selected cellular carrier network. All Router and Gateway devices are then deployed, configured and managed centrally. End-to-End Network Security is assured via the IPsec VPN Tunnel which is created and managed automatically from each Router back to the Server along with state-of-the-art AES 256 bit encryption and IP Address Cloaking. Data plan usage is minimized to 6 to 8 MB per month using Cradlepoint's innovative 'Stream Protocol' compared to hundreds of MB if SNMP Network Mgmt. was used.

Cradlepoint NetCloud is a software and services platform that extends the company's 4G LTE-enabled multi-function routers and ruggedized M2M/IoT gateways with cloud-based management and software-defined network services. More than 15,000 enterprise and government organizations around the world—including 75 percent of the world's top retailers, 50 percent of the Fortune 100, and 25 of the largest U.S. cities—rely on Cradlepoint industry-leading products to keep critical sites, workforces, vehicles, and devices always connected and protected.

### Example: Typical Multi-Site Dealer or Car Rental Network



## Cellular Carrier Selection

Data Usage Plans and SIM Cards are client provided based on client carrier preference.

## Country and Carrier Certification

The Cradlepoint Router portfolio includes FCC, Industry Canada and CE Certifications as appropriate for specific country requirements. The (COR IBR600LP3-EU) proposed herein is approved for sale in the Middle East Region in the following countries: Saudi Arabia, Kuwait, U.A.E., Qatar and Bahrain. Cellular Industry Certification includes PTCRB and GCF-CC(req'd for EU).

## Extended Warranty and Support

Hardware and Software Warranty, Help Desk and On-Line Tech Support are provided for full coverage of all system components for the service plan period. 24 x 7 qualified phone support + 12 x 5 email/chat support for Cradlepoint Routers, Enterprise Cloud Manager and NetCloud Gateway software platform. Hardware repair/replacement-extends standard one year warranty to 5 years.

## We Make It Simple to Implement Now

**-NO UP FRONT CAPITAL IS REQUIRED** ... For installations in Canada and USA, pay monthly like a utility bill over the Plan period.

## Further Leveraging This Enterprise RFID Platform:

FSN's AssetWorx RFID Software is a very flexible, customizable, multi-application, multi-RFID technology enterprise platform built on industry standards such as Microsoft.NET, SQL and Microsoft Report Writer. As a result, it offers the flexibility and scalability to accommodate future business requirement changes.

**Integration of IP Video Surveillance:** Simultaneously, upon an alert being initiated due to vehicle movement (from Accelerometer Sensor in the tag), the software can send a signal to trigger the video recorder to begin recording. If it is a PTZ (Pan, Tilt, Zoom) camera, the system can direct it to focus on the tag location which initiated the alert. In this way, significant savings in storage, bandwidth and security reviewing time are accrued while avoiding recording most of the time while nothing is happening. The Network Router pushes that data wirelessly to a central server via customer preferred cellular network.

**Zone Alerts:** Specific Zones may be created similar to 'geo-fencing' with GPS along with business rules in the business rules engine with conditional alerts for areas such as the lot entry/exit area as well as unauthorized movement. The direction of travel(enter or exit) could also be reported. This is especially valuable as an additional layer of security if no entry/exit gate barrier exists or as confirmation of vehicle arrivals and departures, or approaching

vehicles, to alert lot officers to affix new tags and register newly arrived vehicles or retrieve tags from those vehicles departing.

#### **Other Fixed V-TAG Reference Tag locations:**

V-Tags may be installed in Maintenance Service Bays to indicate the indoor location of the vehicle. Also receivers can also be installed in third party service dealers if vehicles are temporarily moved for detailing, washing, windshield treatment, etc.



**Personnel Tags:** The V-TAG may also function as a Personnel ID Tag which report on-site Personnel such as Car Jockey location within the site, credential verification and may be integrated with conditional business rules associated with access control, movement of vehicles, time of day, etc.

**Start selling the vehicles via the web:** With a real time inventory along with vehicle photos, its only a short web site development step to giving your customers a user-friendly search tool and access to on-line shopping. The future of auto advertising is web based and more specifically mobile based. Today more and more people make buying decisions while sitting in restaurants, their car or on their couch. Dealership Management Services companies could host this web site as an additional revenue stream and make it available for other dealers to have their inventory appear along with directions on their locations.

**'Meet & Greet' Service Customers:** Greeting a customer by name is an easy way to boost your service level and create a positive first impression and continuing customer loyalty. Add a Passive UHF RFID Windshield sticker to sold vehicles along with Fixed Passive UHF Readers at the customer service entrance. By integrating Passive UHF RFID with AssetWorx customers arriving for service are welcomed by name from a digital display which simultaneously presents the customer history file to the Service Manager, thereby accelerating the process.

**Overlay Addition of NFC (Near Field Communications) RFID:** New combination Passive UHF/NFC Labels are now available. The NFC functionality enables the customer to read the NFC portion of the tag from any Smartphone which automatically launches to a customer-defined website where the customer can receive additional information.

Post-sale vehicle Service and Maintenance revenue streams can potentially exceed the margin of the initial vehicle sale. Permanent NFC 'sticker' tags on the vehicle provide a continuous, B2C post-sale communication and marketing link to that product and customer. Messaging could be for loyalty programs, discount coupon incentives, product and brand authentication, customer satisfaction survey forms, re-order forms, sale of complementary accessory products and services, maintenance reminders, warranty notices, recall information, etc.

## What is NFC?

NFC (Near-Field Communications) is a clever wireless RFID technology operating in the unlicensed HF frequency band (13.56MHz) that requires no battery. It is a very small chip with a looped antenna that can be housed in a host of products for example stickers, wristbands, key fobs, table tents, business cards. Information, for instance URL details, contact information, marketing/asset/stock details can easily be encoded onto the chip (see our links page) by an NFC enabled device, typically a mobile phone.

## How it Works

Simply tap a NFC tag with a NFC-Enabled smartphone and it will immediately launch connectivity to a pre-programmed URL(Manufacturer or Dealer Web Site). Each NFC tag has a factory-programmed, locked and non-changeable unique ID and on-board user memory for URL and text.

The Consumer act of tapping their smartphone on the NFC tag implicitly shows a request and approval to receive such information which overcomes the Spam and Privacy issues surrounding the pushing unsolicited emails to clients to promote products and service reminders.

NFC stickers can be unobtrusively applied to the inside of a windshield or on a dashboard. Separate NFC and UHF tags can be applied with an association created in software to avoid duplicate identity or combination Passive UHF/NFC tags are also available which have a common unique identifier.

NFC Tags and Self-Adhesive(Peel and Stick) Labels have a NFC integrated circuit and antenna. Various IC's are available to accommodate differing memory, text and URL length requirements. Our highest security NFC chip is the NXP DESfire with 4KB or 8KB User Memory which is used in our NFC Trusted Tag and includes cryptography for tag authentication and anti-cloning for consumer applications such as product and brand authentication as an effective measure against counterfeiting.

## NFC-Enabled Smartphones (as at Sept. 2017)

Over 50% of the smartphones in service globally are NFC-enabled. All Smartphones and devices Android 4.2 and later(such as Samsung, Motorola, Sony, LG, HTC, Google, Acer). Blackberry (some NFC tags such as NTAG). Apple iPhone has announced they will have NFC available with the planned Fall 2017 release of IOS 11 for other than their Apple Pay(mobile wallet) application. With that development the NFC availability will be universal on all Smartphones.

## Printing and Encoding Service

*The NFC Key Fob form factor offers flexibility and can be used as a Hang Tag from a rear-view mirror or on the vehicle key chain*





FSN can print and encode your tags for you so that you can use them as soon as you receive them.

Standard custom print products have a minimum order quantity of 1000 for NFC tags and 5000 for NFC Labels. Smaller quantities are possible but with an additional printing charge.

The encoded URL and Text Message can be supplied as locked and not changeable or unlocked with NFC chip and encoding selected for universal compatibility to NFC Forum standards to ensure the tags can be read by all NFC-enabled smartphones. To encode we charge \$0.25 per item. Alternatively, you may wish to encode the tags yourself. This can be quite straightforward however if you are ordering a large quantity of tags it may be easier for you if we encode them for you as we have the necessary encoding equipment to allow a quick and efficient service. Think about the possibilities, you can put any website information, marketing information, offers, discounts, Wi-Fi links, e-mail addresses, telephone numbers, reminders, instructions..... on the sticker/tag for all to see and use as you choose. Easy!



*Example: 38mm round, white film face stickers with NTAG203 or NTAG213 NFC chip. Supplied on roll. Available for custom printing and encoding.*



*Custom Preprinted 'Tap Here' peel and stick label with your logo with NTAG213 chip . Colour options available. Can be affixed to vehicle windshield or used on posters or mailouts such as 'Tap to receive your special promotional offer.....'*



Automatic launch to a website

**SPECIAL OFFER**

**BUY ONE**  
LUBE AND FILTER CHANGE  
for only **BD39**  
and get the next  
**TWO FREE\***

Offer is only applicable  
on Chrysler, Jeep and  
Dodge vehicles

**OFFER FOR LIMITED-  
PERIOD SO BOOK NOW**

Terms and Conditions apply.

**ATTENTION OWNER:  
IS YOUR CAR 5 YEARS  
OR OLDER?**

*Promotion incentive offers such as this one can be presented to the customer with a simple tap of his/her smartphone. The unique identifier in the NFC vehicle tag enables a more targeted and more effective marketing message since the exact age of the car is known, the specific buyer, as well as warranty expiry, service due dates, etc.*

Contact us to register for a free educational webinar to learn more about our RFID solutions and for a specific proposal for your business requirement.



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*Headquartered in the Greater Toronto Area, FALKEN Secure Networks Inc. (FSN) is the leading System Integrator, Consultant Solution Architect and Value-Added Reseller for advanced Active/Passive Unified RFID, GPS and Wireless Sensor networks, Integrated Video Surveillance, Wireless LAN networks and Secure Enterprise Communications that leverage 'Best-In-Class' standards-based technologies. FSN integrates RF technologies for asset tracking, vehicle fleet and parking management, library, document, people and Manufacturing Work-In-Process visibility, for cost-effective design, and turn-key project implementation for enterprises globally. FSN's domain expertise, especially for complex and harsh operational environments, and breadth of FSN's RFID solution portfolio is unsurpassed.*