

## DRIVE YOUR BUSINESS FORWARD WITH DIGI MOBILE-ACCESS ROUTERS

ALWAYS-ON INTERNET CONNECTIVITY THAT IMPROVES RIDER SATISFACTION, AUTOMATES FARE COLLECTION AND GIVES YOU REAL-TIME MOBILE ASSET TRACKING

### Transit Agency Communications Connectivity Requirements

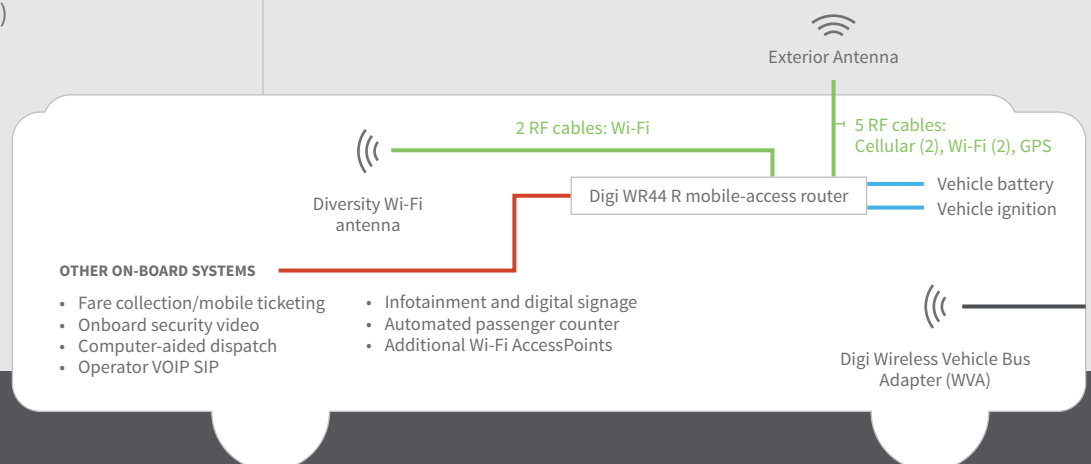
Agencies often deploy Digi mobile-access routers (MAR) as vehicle gateways for passenger Wi-Fi service and to connect a variety of onboard communications systems over cellular and Wi-Fi networks:

- ✓ Computer-aided dispatch/automated vehicle location (CAD/AVL)
- ✓ Video management system (VMS)
- ✓ Automated fare collection (AFC)
- ✓ Automated voice annunciation system (AVAS)
- ✓ Advanced traveler information system (ATIS)
- ✓ Global positioning system (GPS)

### Communications System Architecture

Each bus is equipped with a Digi mobile-access router and appropriate antennas. Each router includes an embedded cellular transceiver with 4G service as well as two embedded Wi-Fi modules and a 50-channel GPS receiver. The cellular transceiver employs Gobi LTE technology for use on any major North American cellular carrier, either by configuration command or automatically through activation of either of two SIMs. One Wi-Fi interface provides high-speed backhaul when the vehicle is in either a transit agency or contractor depot; the other provides Internet service to riders.

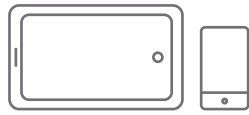
- RF cable
- Ethernet cable
- 18 AWG wire
- J1939/1708 bus





### PASSENGER WI-FI 192.168.2.2+

Wi-Fi mode: AccessPoint  
SSID: Rider-Wi-Fi  
Security: None



### LAW ENFORCEMENT DISPLAY DEVICES 192.168.0.2+

Wi-Fi mode: AccessPoint  
SSID: OnB-video  
Security: WPA2-PSK

## DIGI WR44 R CELLULAR ROUTER

192.168.2.1

10.25.34.72

192.168.0.1

112.144.131.120



CAMERA/DVR

CAD/AVL

FARE  
COLLECTION

Wi-Fi mode: Client  
SSID: Depot-Wi-Fi  
Security: WPA2-802.1x

3G/4G cellular link



### AUTHORIZED WI-FI HOTSPOT



### LTE CELLULAR SERVICE PROVIDER

## DATA TRAFFIC MANAGEMENT

Using open systems Differentiated Services (RFC 2474), critical data traffic receives priority over non-essential or less time-sensitive data traffic. The method involves setting the importance in the IP header, specifically the 6-bit differentiated services code point (DSCP) value. This gives data traffic from onboard systems the lowest latency and highest priority over Wi-Fi traffic, for example. The method is universal, so an IP packet receives priority throughout its journey beyond the cellular network to routers/switches in private or public networks, as need be. Differentiated Services (RFC 2474) is used today across the Internet for VOIP and streaming video traffic.

## PASSENGER WI-FI

Internet access for passengers is managed securely and without impact to onboard systems. A captive portal and splash page capture terms acceptance and deliver agency branding. Potentially objectionable content and video streaming is blocked by web protection services such as SafeDNS, through a DNS redirect established in the Digi router. Onboard systems retain priority and any remaining bandwidth is made available to passenger traffic. Internet users must re-authenticate after an adjustable time limit and are blocked from onboard systems by the stateful firewall.

## DIGITAL VIDEO BACKHAUL

The video management system (VMS) server connects to onboard video recorders to retrieve stored digital video and to initiate live video streaming during safety/security incidents. At a network level, this can be complicated because the bus connects at each depot with a different IP address (DHCP protocol), and when en route with possibly a dynamic cellular IP address. The Digi router simplifies this with its DNS update implementation, where every IP address change is automatically re-associated with the router's singularly unique hostname. The VMS is shielded from this complexity and simply accesses the onboard video recorder using the router hostname and port forwarding.

To learn more about Digi transportation solutions, visit [www.digi.com/industries/smart-cities](http://www.digi.com/industries/smart-cities)

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