



Digi Cellular Routers

打造全球LTE无线互联网接入

Robin Tu

Sr System Engineer

Nov 2020

Digi

全系列产品和服务



LTE 无线路由器
串口服务器/USB网关终
端服务器/带外管理设备



物联网设备管理
云平台



无线设计服务

硬件

软件

服务



嵌入式硬件
无线模块/核心板
单板计算机



SMARTSENSE
端到端应用



全球专业服务
团队

正确选择无线路由器

IX

工业

连接工业设备和仪器
应对复杂环境和需求



TX

交通

极恶劣的环境下使用
车载和交通领域特殊需求



EX

企业

室内商用环境
高速高可用无线连接方案





Digi路由器产品特性

- 双SIM卡，隐藏卡罩设计
- Remote Management (Digi远程管理云平台)
- 可编程
 - Python脚本程序
 - Linux Shell脚本(DAL)
 - 编译您自己的代码 (DAL)
- 安全:
 - 状态防火墙
 - 集成VPN
 - 企业级认证和加密
- 可靠:
 - Digi SureLink™ 监视并能重建失效连接
 - 高级路由协议实现网络故障切换



企业无线路由器



FEATURES	6310-DX	EX15	EX12
Ethernet Ports	2 (10/100)	2 (GbE)	2 (10/100)
Power over Ethernet (PoE)	Yes	Yes	Yes
Wi-Fi Option	No	Yes	No
CORE LTE Plug-In Modem	Cat-4, Cat-6	Cat-6, Cat 7, Cat-11, Cat 18 	No (Cat 4 embedded) 
Serial Port	No	Yes	Yes
Mounting Options	Drop ceiling, dry wall, Velcro, zip tie	Drop ceiling, dry wall, Velcro, zip tie	Drop ceiling, dry wall, zip tie
Remote Mounting Kit (RMK)	Optional	Included	Included
Cloud Managed	Yes	Yes	Yes
MSRP	<ul style="list-style-type: none"> • LTE \$309 • LTE-A \$419 • RMK Optional (\$30) 	<ul style="list-style-type: none"> • LTE \$469 (no Wi-Fi) \$519 (Wi-Fi) • LTE-A \$519 (no Wi-Fi) \$579 (WiFi) 	<ul style="list-style-type: none"> • LTE \$319 with RMK • LTE \$289 without RMK • Remote Mounting Kit option (\$30)

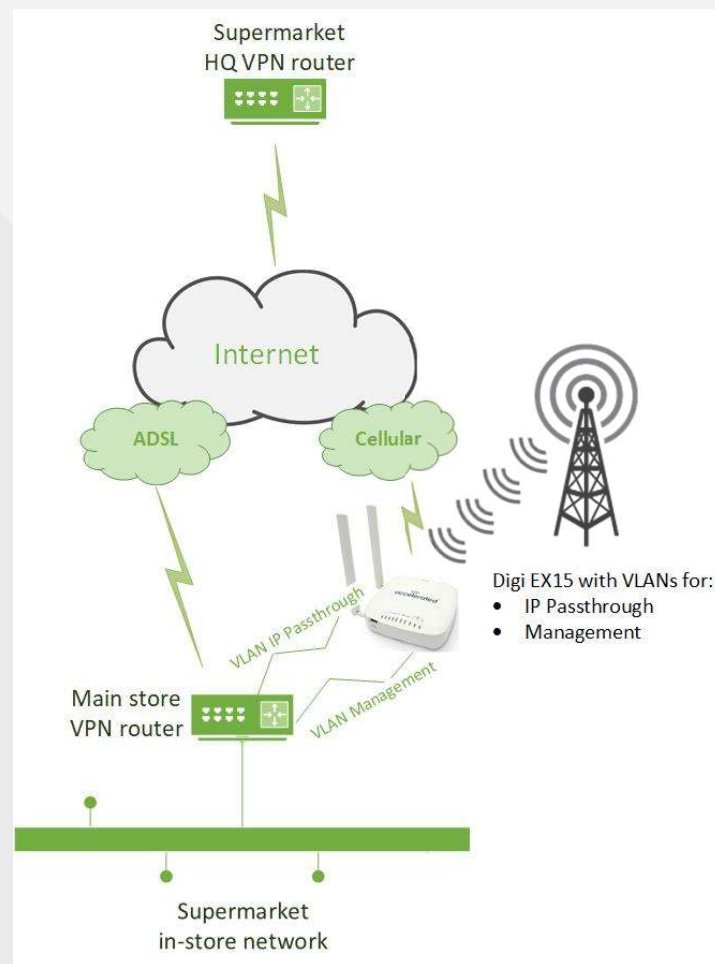
企业路由器典型应用

- 分店/分公司接入总部

- 作为有线备份冗余或用在有线不可达地方
- 千兆带宽，可选wifi
- 支持安全VPN和总部连成内网
- 设备无接触安装和管理(收银，门禁，机器等)
- 支持全球统一型号部署
- 极简易用性
- POE支持无需插座



DIGI



工业无线路由器

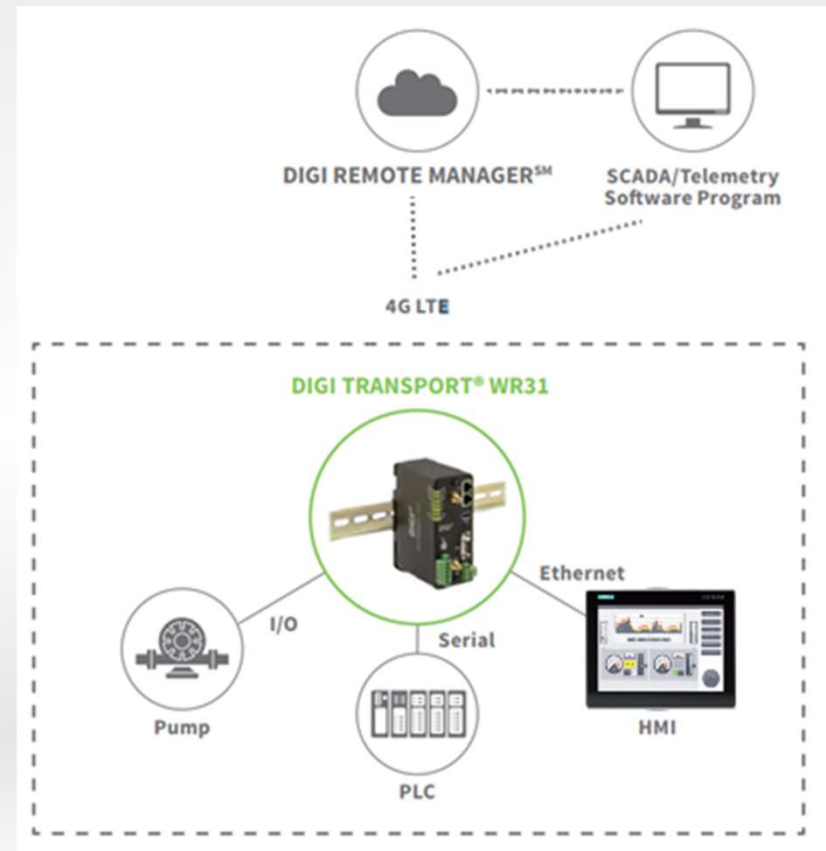


FEATURES	IX14 (2019新品, 取代WR21)	WR31 (预计2022为IX30取代)	IX20 (新上市, 可部分取代WR31)
Ethernet Ports	1 (10/100)	2 (10/100)	2 (10/100)
Core LTE Plug-In Modem	no	no	Yes
Wi-Fi Option	No	no	yes
USB/IO	no	yes	No
Serial Port	RS-232 (DB9)	RS-232/422/485 (DB9)	RS-232 (DB9)
Mounting Options	Flange	DIN	Flange, DIN option
GPS/GNSS	no	optional	no
OS	DAL	SarOS	DAL
Operating Temp	-34° C to +74° C	-34° C to +74° C	-40 °C to +70 °C -20 °C to +70 °C (Wi-Fi)

工业无线路由器典型应用 - 工业自动化

- 工业温宽，高可靠，长期供应保证
- 灵活的网络和I/O选项
 - 串口 (DNP3 pass through, 虚拟串口, 串口转IP)
 - 485 Modbus RTU/IP
 - Digital and Analog (Sensing/Alarming)
 - Ethernet
 - Multi-path networking (Security)
 - Security (Firewall, VPN,..)
 - Edge logic to adopt protocols (e.g. Python™)
- Remote management

<https://www.digi.com/pdf/wr31-water-wastewater.pdf>



<https://www.digi.com/pdf/wr31-water-wastewater.pdf>

交通无线路由器

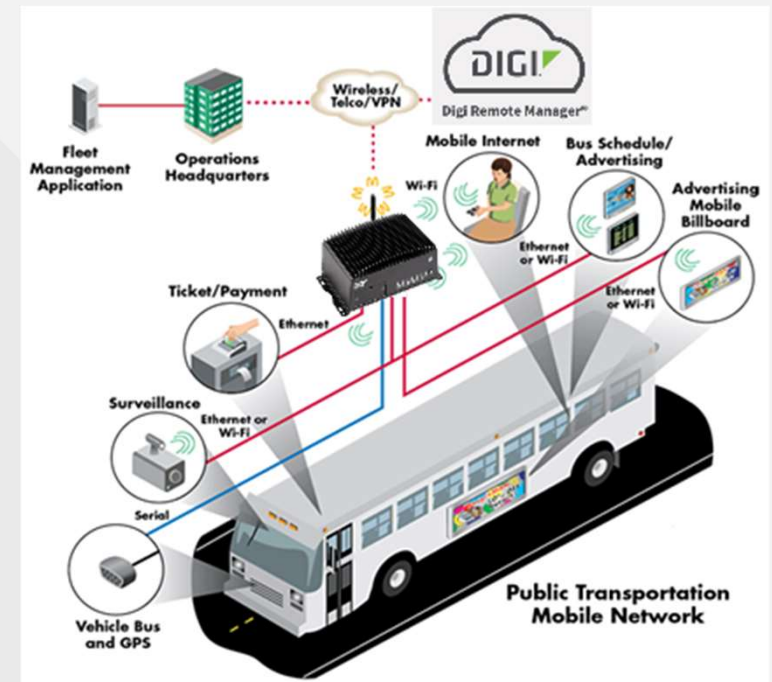
可选双模双待双wifi



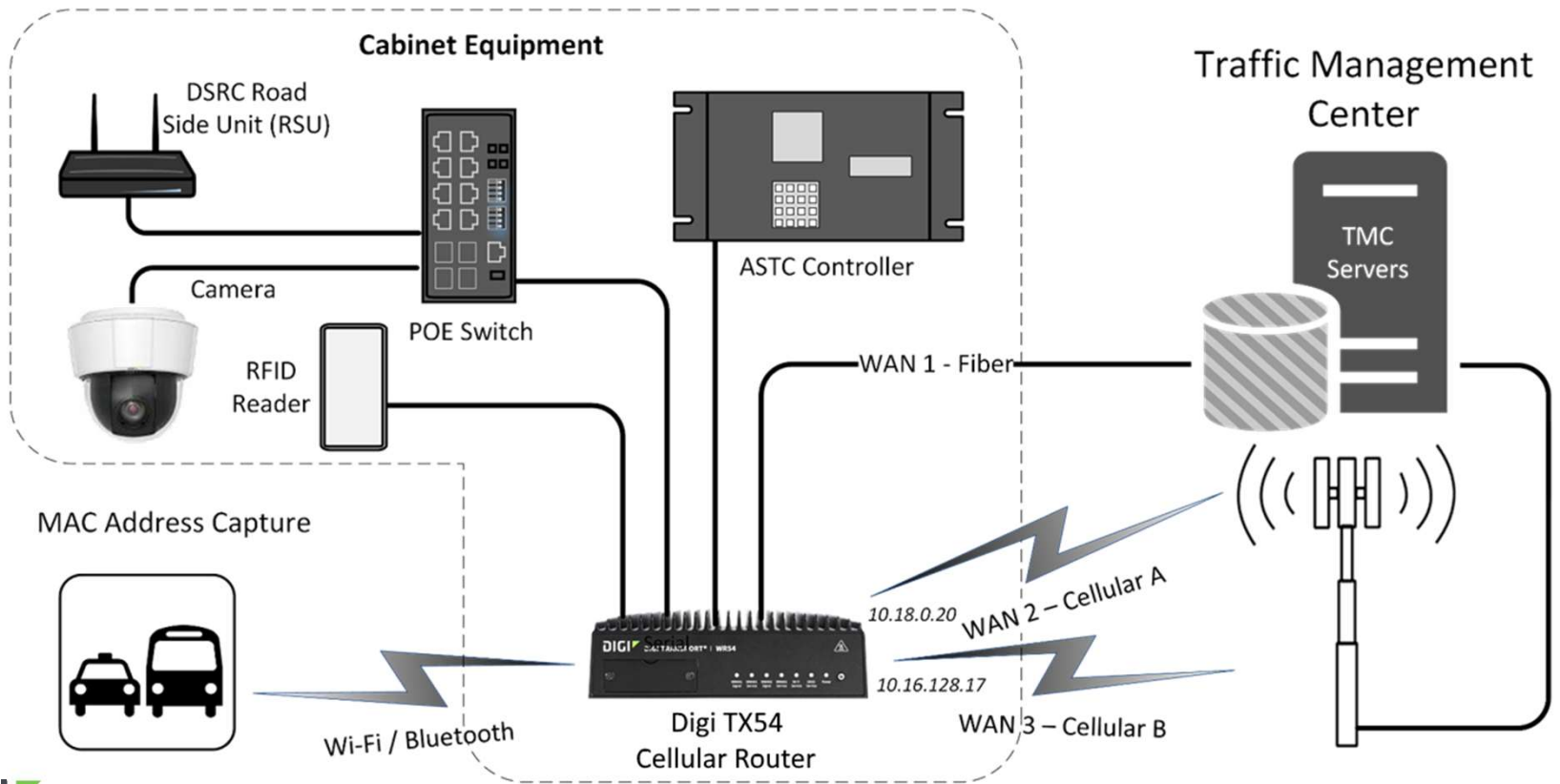
FEATURES	TX40 (预计2022上市)	TX54	TX64
Cellular	CAT11/CAT12,upgradable	CAT11/CAT12	CAT11/CAT12/CAT18
Core LTE Plug-In Modem	Yes	no	Yes
Ethernet	2	4	4
IO	4D/4A	1USB	3USB/1VGA
Serial Port	RS-232 /485(DB9)	RS-232 (DB9)	RS-232 (DB9)
LCD	yes	no	no
Wifi	Optional	optional	optional
Operating Temp	-30° C to +70° C	-30° C to +70° C	-30° C to +70° C
Certification	EN60950 MIL-STD 810G EN50155 E-Mark ISO7637-2 SAE J1455 CE, FCC Part 15 Class B, AS/NZS CISPR 22, EN55024, EN55032	EN60950, EN62368 MIL-STD 810G E-Mark ISO7637-2/3 ISO10605 ISO16750-2/4/5a/5b SAE J1455/J1113 CE, FCC Part 15 Class B, AS/NZS CISPR 22, EN55024, EN55032	EN60950, EN62368, CSA 22.2 No. 60950 MIL-STD 810G E-Mark ISO7637-2/3 ISO10605 ISO16750-2/4/5a/5b SAE J1455/J1113 CE, FCC Part 15 Class B, AS/NZS CISPR 22, EN55024, EN55032, EN301489-1/-17

交通级路由器典型应用

- Strong demand for our purpose-built router
- Typical requirements are:
 - Single or Dual Cellular - up to Cat 12 performance
 - Single or Dual Wi-Fi - up to 1.7 Gbps
 - 4 Gigabit Ethernet ports
 - Serial and USB
 - GNSS (GPS, Galileo, GLONASS, BeiDou)
 - Power management including ignition sense
 - Environment: -34° to +74°C and IP54
 - E-Mark and railway certs: EN50155, EN45545-2, EN50121-3-2



Architecture – Intersection communications



Digi Core LTE Plug-In Modems



哪些路由器支持？

- EX系列企业级无线路由器
- 今后主流的工业无线路由器 IX10,IX20,IX30
- 未来部分TX型号

1002-CMM1 (FY21Q2):LTE (Cat-M1/NB-IoT); [Global](#), AT&T, Verizon, Canada, Europe

1002-CMG4 (移远EG25-G全球版):LTE (Cat 4); [Global](#), AT&T, Verizon, Canada, Europe, Colombia

1002-CMF4(移远EC25-AF北美版): LTE (Cat 4); AT&T, FirstNet, Verizon, T-Mobile and Canada

1002-CM06(MC7455全球版): LTE (Cat 6); AT&T, Verizon, T-Mobile, Sprint, Canada and Europe

1002-CM11(Telit LM940全球版): LTE (Cat 11); AT&T, Verizon, T-Mobile, Sprint, Canada and Europe

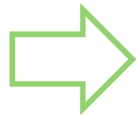
1002-CM18 (CAT18全球版)

1002-CM50(5G支持全球版)

国内应用，首选1002-CMG4相关型号产品

Technology	Bands
4G LTE FDD	B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28
4G LTE TDD	B38/B39/B40/B41
3G WCDMA	B1/B2/B4/B5/B6/B8/B19
2G GSM	B2/B3/B5/B8

全新一代工业路由器IX10/IX20



固件系统升级至Digi统一DAL平台



全球统一型号，高速 CAT4，运营商认证、
代工厂在中国



支持可插拔升级更换的LTE模块，快速5G 升级

DIGI卡槽式可插拨LTE模组

可延展性，企业级性能

- 可用于大部分Digi Box产品间相互切换，如同USB无线网卡
- 双SIM卡支持(网络冗余互备)
- 牢靠的工业级设计

用户受惠于先进的理念设计

- 降低成本，减缓技术淘汰影响
 - 可配合LTE快速升级演进而保留稳定可靠的路由器固件
 - 故障无需整个产品更替和重新配置
- 提供多种运营商级认证的可选模块：
 - 经济型 LTE (CAT4) – with 3G & 2G Fallback: 1002-CME4
 - 高速(CAT6) – with 3G Fallback: 1002-CM06
 - 超高速(CAT11) – with 3G Fallback: 1002-CM11
 - 全球LTE CAT4 (1002-CMG4) 和 Cat-M1/NB-IoT (1002-CMM1)

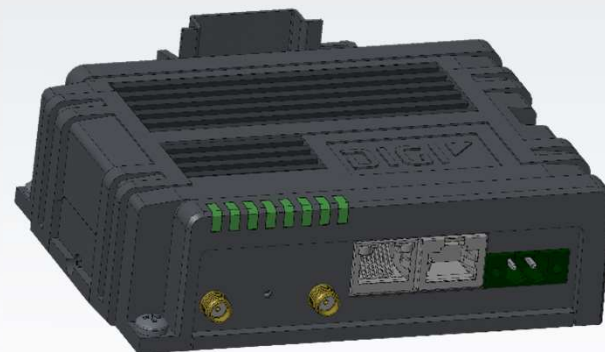


Digi® IX10

- 全球 LTE CAT 4 (2G/3G fallback)
- 单个以太网口 (10/100)
- 1个串口(RS232/485/RJ-45)
- 工作温宽: -40°C to +70°C
- 宽电压输入: 9 – 30VDC
- 安装选项: DIN导轨, 壳体法兰安装孔
- TrustFence®安全框架
- 全球认证: U.S., Canada, Europe, Australia, New Zealand, Colombia, Brazil, Mexico, Malaysia, Singapore, Japan



DAL



结构精巧牢固
功能多样化

Digi® IX20

- 全球 LTE CAT 4 (2G/3G fallback)
 - IX20-WAG4
1x1 SISO 802.11ac, accessories
 - IX20-00G4
- 双以太网口
- 可选Wi-Fi (1x1 SISO ac, 2.4 GHz/5GHz)
- 1x RS232串口 (DB9M)
- 工作温宽:
-40°C to +70°C (-20°C to +70°C 带Wi-Fi型号)
- 宽电压输入: 9 – 30VDC
- TrustFence®安全框架
- 全球认证: U.S., Canada, Europe, Australia, New Zealand, Colombia, Brazil, Mexico, Malaysia, Singapore, Japan



DAL



SALES PROPOSITION

**Integrated, wire-line Failover for
“always up” connections**

**Dual SIMs and Digi SureLink for
redundant connectivity**

**Versatile workhorse with high
reliability for everyday applications**

Digi IX30 – Release TBD (2021)

The industrial future

- Update PCB with faster processor and increased memory
- Cat 7 module – fast upstream and downstream
- 2x GB Ethernet ports
- 1x Serial DB9 – RS-232 / 485
- GNSS + GPIO
- Wi-Fi option
- Bluetooth option
- DAL Operating System
 - SureLink to monitor and maintain cellular connection
 - Support for IPv6
 - No VPN tunnel limits
 - Edge computing capabilities with:
 - Python
 - BASH scripting
 - Native Linux applications
 - Docker (pending)



DIGI REMOTE MANAGER®

Rapid deployment
Maintain firmware centrally
Remote config & device recovery



Replaces
WR31


AT-A-GLANCE

- ✓ Industrial Hardened
- ✓ Integrated, convenient DIN Rail Mounting
- ✓ Optional WiFi



IX15 XBee 网关和无线路由器

• Connectivity

- Digi XBee 3 2.4GHz/900MHz/868MHz
- Global CAT 4 LTE, 3G + 2G, Dual SIM
- Bluetooth 5.0 (BLE) 
- Serial: RS485/232 (RJ-45)
- 1x Ethernet (10/100)



• Software

- Full routing/networking
- Digi TrustFence Security
- Python Programmability
- Bluetooth Mobile SDK
- Cloud Connectivity



Microsoft Azure



Digi DRM 3.0



• Mechanical

- C1D2, IP30, -30°C to +74°C
- DIN-Rail Clip Option

• Certifications

- U.S, Canada, Europe (CE), AUS/NZ, Japan, Mexico, Brazil



AT&T



INDUSTRIAL ROUTERS



	WR11XT	IX14	WR21	IX20	IX10	WR31	IX30
Industry	Retail, Medical, Industrial	Industrial, Energy, Gov't	Industrial, Energy, Gov't	Retail, Industrial, Critical Assets	Industrial, Energy, Gov't	Industrial, Utilities	Industrial, Utilities
Mounting	Flange, DIN option	Flange	DIN option	Flange, DIN option	Flange and/or DIN	DIN, Wall option	DIN, Wall option
Interface variants		Bluetooth	1 x USB	Wi-Fi 802.11ac optional		Analog/Digital I/O, 1 USB	Analog/Digital I/O, 1 USB
Serial Ports (232/485)	None	RS232	RS232 included RS485 optional	RS232	RS232 + RS485	RS232/485	RS232/485
Ethernet Ports	1 (10/100)	1 (10/100)	2 (10/100)	2 (10/100)	1 (10/100)	2 (10/100)	2 (GbE)
Power	5VDC	9 – 30VDC	9 – 30VDC	9 – 30VDC	9 – 30VDC	9 – 30VDC	9~30VDC
CORE Modem	No	No	No	Yes	No	No	tbd
Cell module (Mbps)	Cat 1 (10/5) Cat 3 (100/50) +\$60	Cat 1 (10/5)	Cat 4 (150/50)	Cat 4 (150/50)	Cat1/Cat 4 (150/50)	Cat 4 (150/50) Cat 6 (300/50) +\$100	Cat 7 (300/100)
“Real life” speed (Mbps) (Customer Info)	9.8/3.5 or 25/25	9.8/3.5	25/25	tbd	tbd	25/25	TBD
OS	SarOS	DAL	SarOS	DAL	DAL	SarOS	DAL
MSRP	M3(CAT1)=\$289	M3-BDL=\$379	M7(CAT4)=\$495	CMG4=\$499	TBD	M7(CAT4)=\$595	TBD

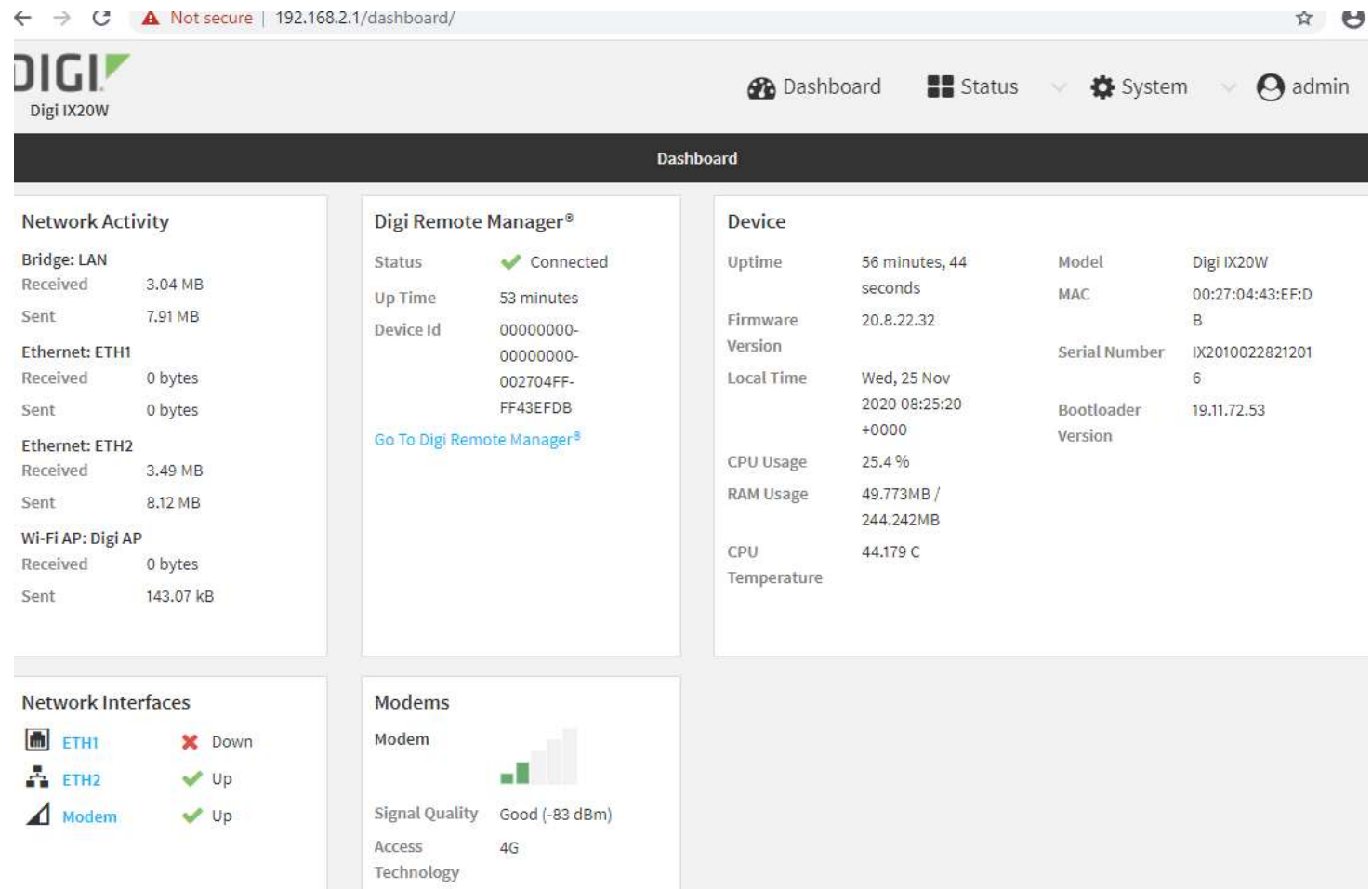


软件功能

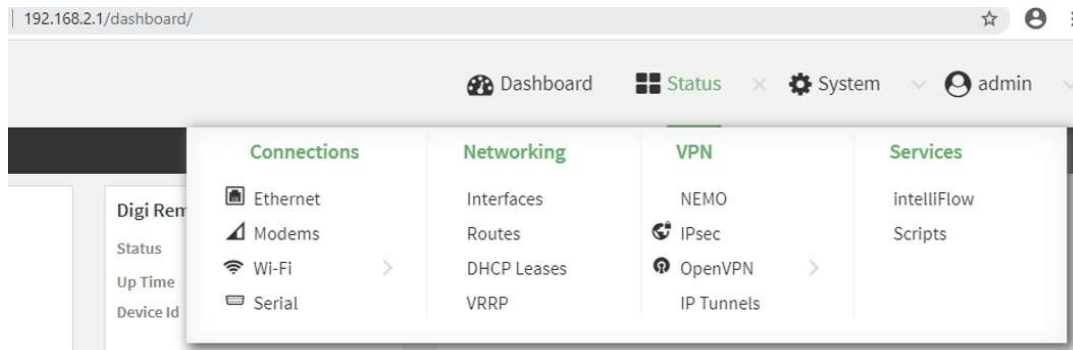
DAL 路由器UI

admin@unique-p/w
登录192.168.2.1

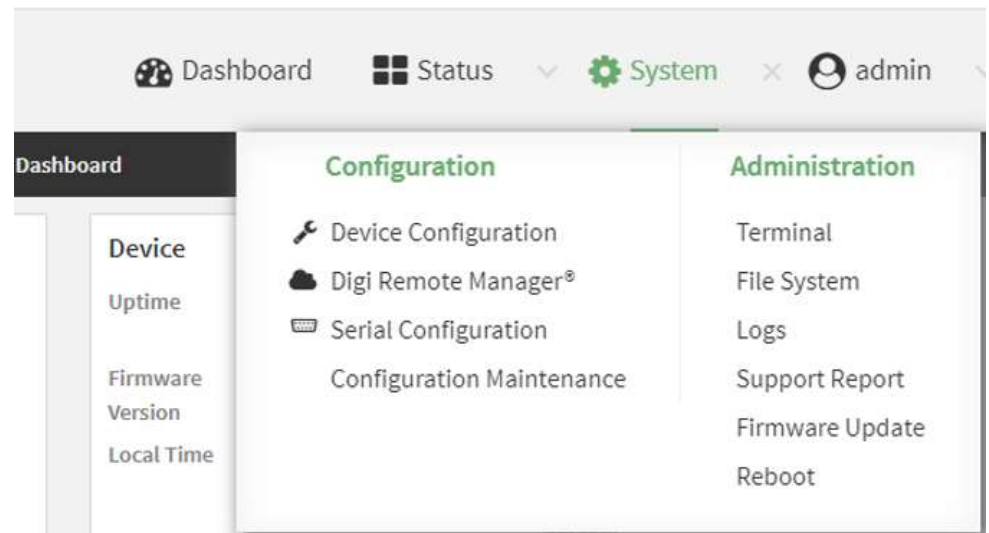
或用
Remote Manager
App来配置

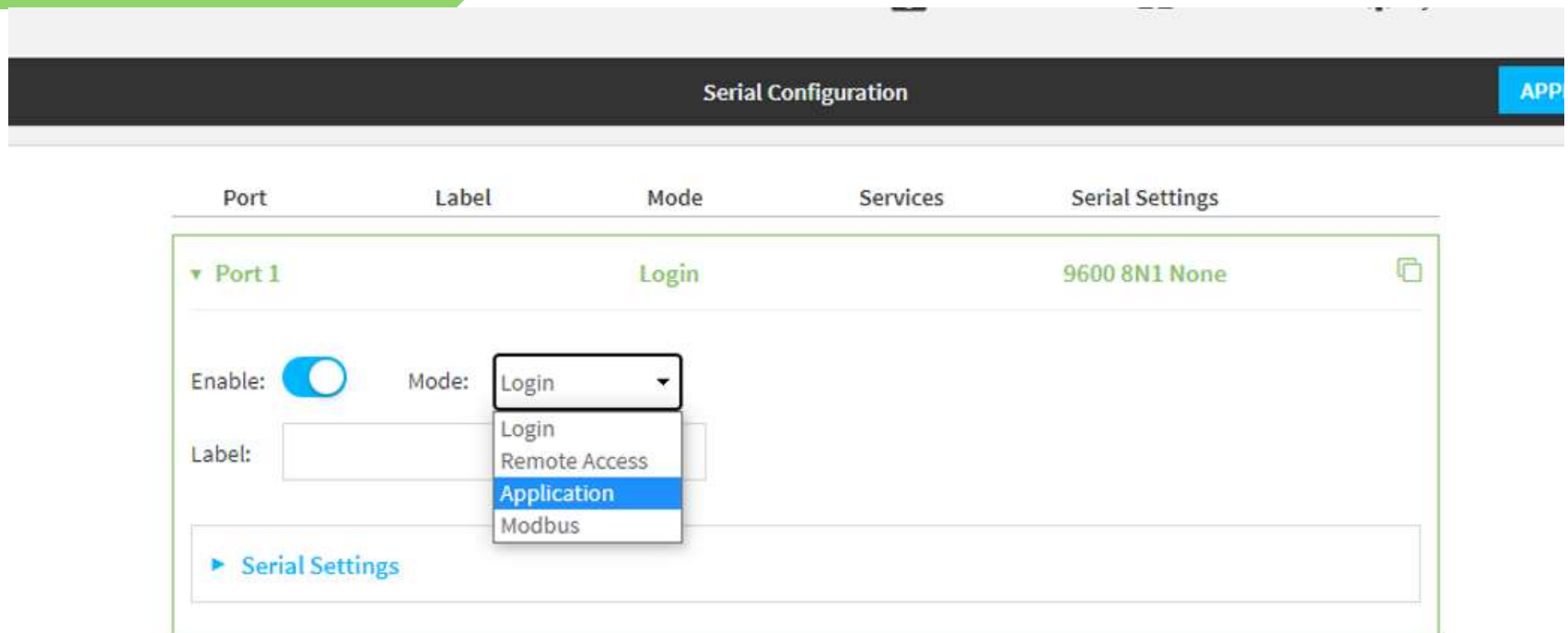


Status and System



- 提供众多企业级路由配置和VPN选项
- 远程管理和python程序控制
- Shell访问,pip安装支持
- SNMP,以太网聚合
- Iperf支持, 一键生成技术支持报告





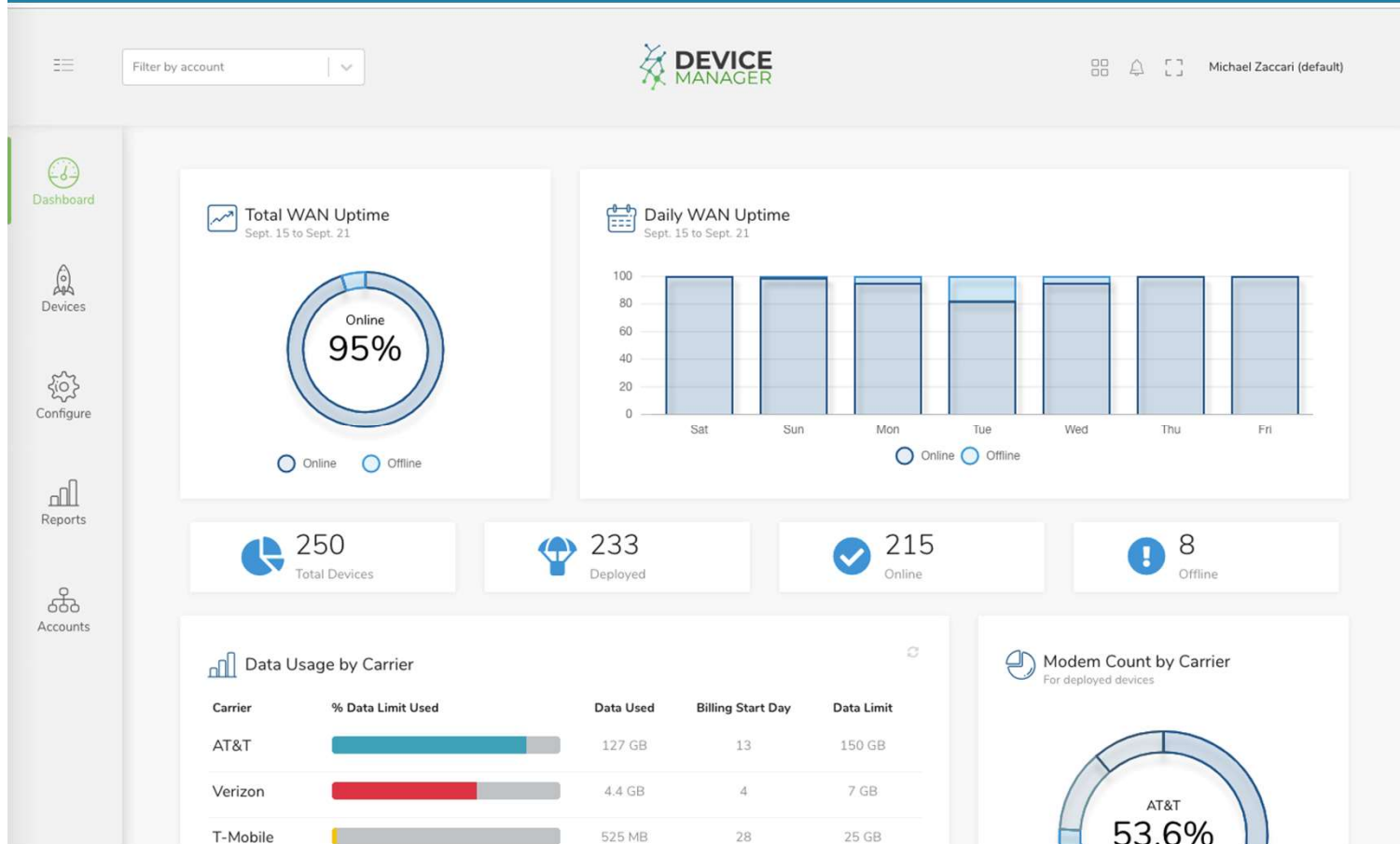
Realport 计划在20.11固件版本实现
当前可用python程序实现类似realport功能

Digi Remote Manager



- Digi业界领先的设备云平台，用于设备和设备数据的远程部署，配置和管理，状态查询。
- 既是SaaS管理工具，也是PaaS云平台，提供对设备的控制和数据管理等各种API，方便用户管理设备和开发设备上的应用程序

DRM3.0



DRM3.0

Dashboard

Devices

Configure

Reports

Accounts

Filter by account

DEVICE
MANAGER

Michael Zaccari (default)

Devices

Home | Devices

List

Map

Order By : Status

cellular

1-8 of 8

10


Commands

Firmware


0027042965CA	online	10.0.47.82	Cellular	6300-CX	Accelerated	16.11.142	HQ Demo	<input checked="" type="checkbox"/>
0027042B6D82	online	10.145.3.10	Cellular	6350-SR	Hilton Worldwide, INC.	18.1.29.0	Store #8991	<input checked="" type="checkbox"/>
0027042B6D83	online	192.168.6.17	Cellular	6350-SR	Hilton Worldwide, INC.	18.3.24	Demo New York	<input checked="" type="checkbox"/>
0027042B6D85	online	10.34.1.13	Cellular	IX14	Purdue Farms, INC.	18.3.24	Tampa Office #12	<input type="checkbox"/>
0027042B6D86	online	10.10.34.12	Cellular	6300-LX	Panasonic Europe, LTD	18.5.17	AT&T Demo	<input type="checkbox"/>
0027042B6D87	online	10.10.154.2	Cellular	6335-MX	Michael Kors	18.5.17	Default	<input type="checkbox"/>
0027042B6D88	online	35.12.213.12	Cellular	6335-MX	DollarTree	18.5.17	Default	<input type="checkbox"/>
0027042B6D89	online	10.56.1.12	Cellular	6335-MX	DollarTree	18.6.11	Default	<input type="checkbox"/>


DRM3.0


Filter by account


 **DEVICE
MANAGER**


Michael Zaccari (default)

 Dashboard

 Devices

 Configure

 Reports

 Accounts

Devices

Home | Devices

List

Map

Order By : Status

cellular

1-8 of 8

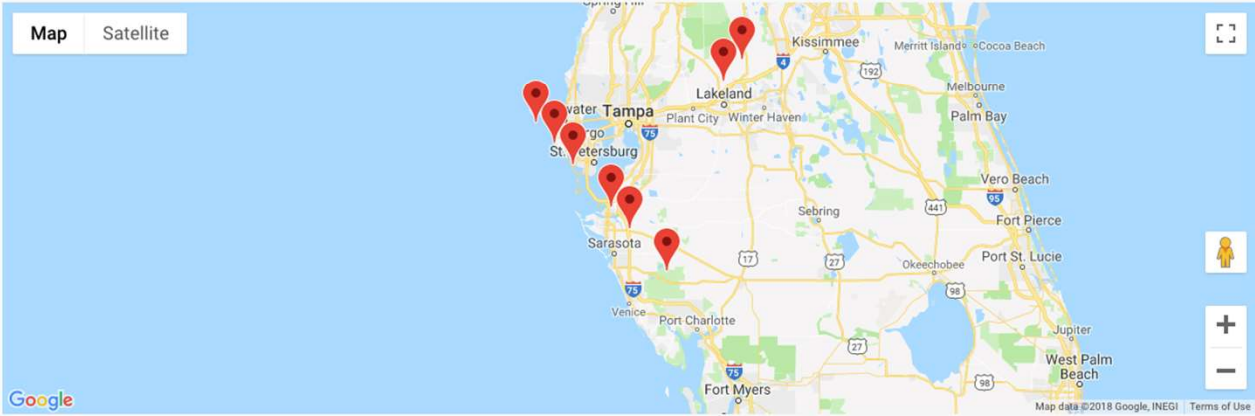
10

Commands

Firmware

Map

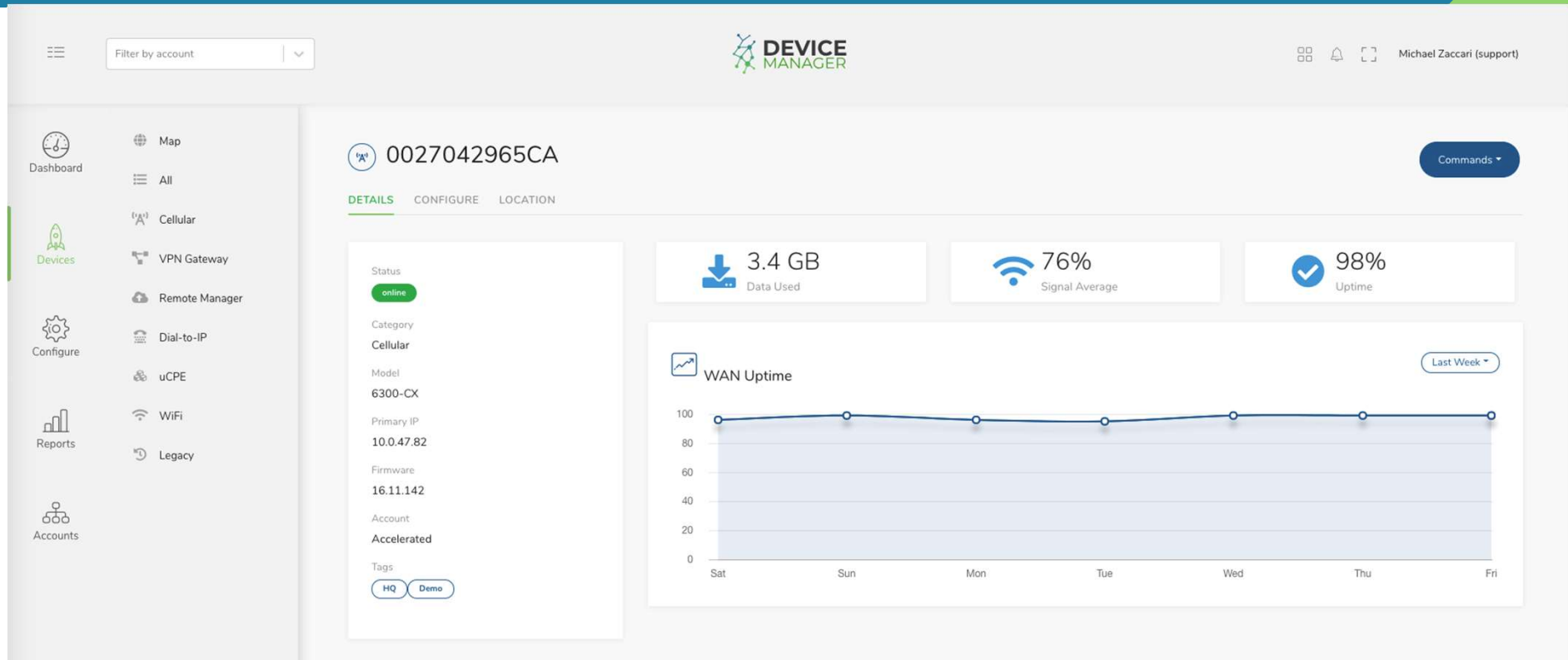
Satellite



Google

Map data ©2018 Google, INEGI | Terms of Use

DRM3.0





Digi 中文文档库

<http://digiwiki.eccee.com>

Digi Technical Contact:

Robin Tu

Robin.tu@digi.com

Digi Sales:

South China: Bin Zhang

North China: Bi Hai

DIGI!