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## Problem Statement

ArubaOS 5.0.1 and prior versions allowed the user to only use NICs that are previously known and whose configuration parameters are coded in ArubaOS. The requirement is to allow configuration of specific parameters by field engineers without requiring a controller code upgrade or reboot. RFE 1381 aims to ease this configuration process without requiring a controller reboot with ArubaOS 5.0.2 and newer.

## Description:

In order to enable cellular uplink for a RemoteAP (RAP), the RAP needs to have two main components- a device driver for the USB data card and the correct configuration parameters. ArubaOS code comes pre-loaded with device drivers for the most common hardware types. If the device driver is available but the provisioning parameters are unknown, this document would help configure those parameters on the controller and push them out to the RAPs.

## RFE 1381:

RFE 1381 provides an additional command called 'usb-modeswitch' to load configuration parameters hitherto unknown to the controller. Steps to configure cellular backhaul for a RAP are as follows:

- 1) Bring the RAP up on Ethernet backhaul for the first time with the USB modem plugged in. It would show up in the list under AP Provisioning.

Provisioning								
Provisioning Profile RAP Whitelist Campus AP Whitelist								
Search								
<input type="checkbox"/>	AP Name ^	AP Group ^	AP IP ^	AP Type ^	AP MAC Address ^	AP Serial Number ^	Flags ^	Status ^
<input type="checkbox"/>	00:0b:86:c7:31:32	default	9.9.9.55	70	00:0b:86:c7:31:32	A50172289	R	Up 1h:4m:41s
<input type="checkbox"/>	00:1a:1e:c0:55:0c	default	9.9.9.53	125	00:1a:1e:c0:55:0c	AD0011386	R	Up 3d:1h:56m:5s
1   1-2 of 2   10								
Flags: U = Unprovisioned; N = Duplicate name; G = No such group; L = Unlicensed; I = Inactive; H = Using 802.11n license; D = Dirty or no config; X = Maintenance Mode; P = PPPoE AP; B = Built-in AP; R = Remote AP; R- = Remote AP requires Auth; C = Cellular RAP; c = CERT-based RAP; M = Mesh node; Y = Mesh Recovery;								
Provision								

### Case 1)

- 2) Select the AP that requires provisioning. Check "USB parameters", and under 'Device' select the USB from the drop-down list. While having the USB modem still plugged in, click "Apply and Reboot".
- 3) When the AP comes back up, disconnect the Ethernet. Refresh the 'AP Provisioning' screen to ensure the RAP comes back with a 'C' flag, indicating cellular RAP.

### Case 2)

- 4) If the USB model does not appear in the drop-down list, select 'Other (Any)' for Device. Look for the configuration parameters for that modem in the table in Appendix 1. Fill those parameters in the corresponding fields under USB Parameters for that RAP. Click 'Apply and Reboot'. This should allow the RAPs to operate with most USB-cellular cards. Verify (3).

### Case 3)

**NOTE:** If the RAP still does not work, the USB cellular modem may require a mode-switch. Generic USB devices may be mass-storage or they may be modems. Ideally, USB cellular devices should register with the RAP as modems, but occasionally they register as a mass-storage device. In such cases, a modeswitch is required. This can be done on the controller CLI starting ArubaOS 5.0.2.

```
DefaultVendor= 0x106c  
DefaultProduct=0x3b06  
  
TargetVendor= 0x106c  
TargetProduct= 0x3717  
  
CheckSuccess=20  
  
MessageContent="55534243b82e238c24000000800008ff02000000000000000000000000000000"
```

## Appendix 1: Modem List

ISP	Model	Device Vendor & Product ID	Provisioning (console equivalents in brackets). Use the numbers if you are directly provisioning from console	Verified by	Comments
ATT	USBConnect 881 (Sierra 881U)	0x1199 6856	usb_type=sierra-gsm (4)	santa	
ATT	Mercury (Sierra Compass 885/N7NC885)	0x1199 6880	usb_type=sierra-gsm (4) usb_tty=ttyUSB4	santa	
ATT	Quicksilver (Globetrotter ICON 322)	0x0af0 d033	usb_type=hso (6) usb_init=AT+CGDCONT=1,'IP','wap.cingular' 'usb_dial=ATDT*99***1# usb_user=internet usb_passwd=internet (actually any usb_user and usb_passwd works. It just has to be present for ATT)	santa	
ATT	Huawei E272,E170, E220	0x12d1 1003	usb_type=option (2) usb_init=AT+CGDCONT=1,'IP','wap.cingular' 'usb_dial=ATDT*99***1#	apang 2008/08/19	This is a non-standard configuration. The modem is used by many Vodafone carriers. But using an AT&T GSM SIM card.
ATT	USBConnect 881 (Sierra 881U)	0x1199 6856	usb_type=sierra-gsm (4)	santa	
ATT	USBConnect Lightning	0x119968a3	usb_type=sierra-gsm (4) usb_dev=0x119968a3	Abu	
Cricket	UM100C (UTstarcom)	0x0d08 0300	usb_type=acm (3) usb_user=internet usb_passwd=internet	santa	
Cincinnati Bell	Icon 452	0x0af0 7901	usb_type=hso (6) usb_init=at+cgdcont=1,'wap','gocbw' usb_dial=*99#	santa	supported from 5.0, or rn-3.1.5
Sprint	Compass 597 (Sierra)	0x1199 0023	usb_type=sierra-evdo (5)	santa	

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Sprint	USB 598 (Sierra)	0x1199 0025	usb_type=sierra-evdo (5)	santa	Supported from rn-3.0. Else, also provision usb_dev=0x11990025
Sprint	Ovation U727 (Novatel)	0x1410 4100	usb_type=option (2)	santa	
Sprint	U300 (Franklin wireless)	0x16d8 6002	usb_type=option (2)	santa	From rn-3.1
Sprint	U301 (Franklin wireless)	0x16d8 6008	usb_type=option (2) usb_dev=0x16d86008 usb_tty=ttyUSB1	santa	
Sprint	USB U760(Novatel)	0x1410 6000	usb_type=option (2)	Abu	Needs usb_dev=0x14106000 in rn
Verizon	USB1000 (Novatel)	0x1410 a008	TODO: Not supported yet in linux		
Verizon	USB U727 (Novatel)	0x1410 4100	usb_type=option (2)	santa	
Verizon	USB U720 (Novatel/Qualcomm)	0x1410 2110	usb_type=option (2)		
Verizon	USB U760 (Novatel)	0x1410 6000	usb_type=option (2)	Santa	Needs usb_dev=0x14106000 in rn
Verizon	UM175 (Pantech)	0x106c 3714	usb_type=acm (3)	santa	
Verizon	UM150 (Pantech)	0x106c 3711	usb_type=acm (3)	santa	
Verizon	UMW190(Pantech)	0x106c 3716(3b05 originally)	usb_type=acm (3)	santa	
Verizon	U597 (Sierra)	0x1199 0023	usb_type=sierra-evdo (5)	santa	

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Telecom (New Zealand)	Tstick C597 (Sierra)	0x11990023	usb_type=sierra-evdo (5) usb_user=mobile@jamamobile usb_passwd=telecom	santa	
TataIndicom (india)	SXC-1080 (Qualcomm)	0x1b7d070a	usb_type=acm (3) usb_init=ATQ0V1E1S0=0&C1&D2 usb_user=internet usb_passwd=internet	santa	
Telenor (sweden)	Globetrotter ICON 225	0x0af06971	usb_type=hso (6) usb_init=AT+CGDCONT=1,'IP','telenor' usb_dial=ATDT*99***1# usb_user=internet usb_passwd=internet	santa	
Vodafone/Smar Tone (HK)	Huawei E169,E180,E220,E272	0x12d11003	usb_type=option (2) usb_init=AT+CGDCONT=1,'IP','internet' usb_dial=ATDT*99#	apang 2009/07/01	Tested this on both AP-70 and RAP-5WN. RN 3.1 is required. Also tested this with Telecom Italia and Vodafone in the NL with different APN.
Vodafone (UK)	Huawei K4505	0x12d11464 (1521 originally)	usb_type=option (2) usb_dev=0x12d11464 usb_dial=ATDT*99***1# usb_user=web usb_passwd=web	santa 11 may, 2010	Only in 6.0 for now
O2 in the UK	Huawei E160	0x12d11003	usb_user=O2web usb_passwd=password usb_type=option (2) usb_dev=0x12d11003 usb_dial=ATDT*99***1# usb_init=AT+CGDCONT=1,'IP','mobile.o2.co.uk'		
SFR in France	Huawei E160	0x12d11003	usb_type=option (2) usb_dev=0x12d11003 usb_dial=ATDT*99***1# usb_init=AT+CGDCONT=1,'IP','websfr'		
NZ and JP	Huawei E220	0x12d11003	usb_type=option (2) usb_init=AT+CGDCONT=1,'IP','internet' usb_dial=ATDT*99***1#	Kmataran glo 2008/10/20	
T-Mobile	UMG181	0x12d11414	usb_type=option (2) usb_dev=0x12d11414 usb_init=AT+CGDCONT=1,'IP','epc.tmobile.com' usb_dial=ATDT*99***1#	santa	

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HK CSL/1010	ZTE MF636	0x19d2003 1	usb_tty=ttyUSB2 usb_init=AT+COPS=0,0,0 usb_dial=ATDT*99# usb_type=2 (option)	apang 2010/01/2 2	tested with AOS 5.0 (build 16250) on RAP-5WN
Orange in Israel	ZTE MF 637	0x19d2003 1	usb_tty=ttyUSB3 usb_init=AT+COPS=0,0,0 usb_dial=ATDT*99# usb_type=2 (option)	partha 2010/04/2 8	sometimes usb_tty has to be ttyUSB2
	Sierra USB-306	0x119968a 3	usb_type=4 usb_tty=ttyUSB6 usb_dev=0x119968a3 usb_init=AT+CFUN=1;+CGDCONT=1,'IP','A PN_Name'	colus	
NTT	NTT DoCoMo L- 05A (LG FOMA L05A)	Pre- modeswit ch: 0x1004613 a Post modeswit ch: 0x1004612 4	usb_dial=ATDT*99***1# usb_init=AT+CGDCONT=1,'IP','mopera.flat.f oma.ne.jp' usb_type=3 usb_dev=0x10046124	apang 2010/02/1 0	tested with 5.0. Does not work with cold-boot. Needs a second warm-boot to get it to modeswitch properly
NTT	NTT DoCoMo L- 02A	0x1004610 9	usb_init=AT+CGDCONT=4,'IP','mopera.flat.f oma.ne.jp' usb_dev=0x10046109 usb_type=3 usb_dial=ATDT*99***4#	Santa (via Hideo Nishioka)	
Telstra (Aus)	Sierra 885 (Turbo 7+)	0x1199688 0	usb_dial=ATDT*99***1# usb_init=AT+CGDCONT=1,'IP','telstra.wap' usb_tty=ttyUSB4 usb_type=4 (sierra-gsm)	jgoff 2010/02/0 5	tested with RN317 and 5.0
Telstra (Aus)	Sierra 306	0x119968a 3	usb_dev=0x119968a3 usb_dial=ATDT*99***1# usb_init=AT+CGDCONT=1,'IP','telstra.wap' usb_tty=ttyUSB6 usb_type=4 (sierra-gsm)	jgoff 2010/03/0 8	needs RN318 or recent 5.0, may also need +CFUN=1 in init string to force radio on
Telstra (Aus)	Huawei E176G	0x12d1100 3	usb_type=2(option) usb_dial=ATDT*99# usb_tty=ttyUSB0 usb_init=AT+CGDCONT=1,'IP','telstra.wap'	jgoff 2010/02/0 5	tested in RN317
3/HUTCH (Aus)	Huawei E1553, E176	0x12d1100 3	usb_type=2(option) usb_dial=ATDT*99# usb_tty=ttyUSB0 usb_init=AT+CGDCONT=1,'IP','3netaccess'	jgoff 2010/02/0 5	tested in RN317

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Optus (Aus)	Huawei E180	0x12d1140 c	usb_dev=0x12d1140c usb_type=2(option) usb_dial=ATDT*99# usb_tty=ttyUSB0 usb_init=AT+CGDCONT=1,'IP','connect'	jgoff 2010/02/18	This is a strange E180, maybe a new hw version (same usb_dev as E1692)
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