LAN-Cell 2

3G Cellular Router + VPN + Firewall

Quick Start Guide



Version 4.02



The REALLY QUICK Start Guide

- 1. Power off the LAN-Cell 2. Insert an activated 3G Cellular PC-Card modem.
- 2. Power on the LAN-Cell 2. Wait 60 sec. for the PWR LED to stop flashing.
- 3. Connect a DHCP-enabled PC to one of the LAN ports.
- 4. Browse to http://192.168.1.1 Password is: 1234
- 5. Select **Wireless > Cellular** from the left side menu on the Home screen.
- 6. If required, enter your APN, PIN, Username, and Password.
- 7. Enter your ISP access phone number (#777 for CDMA, *99# for GSM) and enable "Always On".
- 8. Click "Apply".

The LAN-Cell will now attempt to initialize your 3G PC-Card modem and make a connection to the Internet. Return to the Home screen to check the connection status. If the card fails to fully initialize, power-cycle the LAN-Cell to reset the 3G modem card. The LAN-Cell will make a cellular connection once it restarts.

I. Introducing the LAN-Cell 2

The LAN-Cell 2 is the most advanced and secure way to provide cellular Internet access to Ethernet-based devices. Use the LAN-Cell 2 to provide access to remote equipment, gather telemetry or other M2M data, establish Internet service in temporary locations, or back-up Internet service with a cellular connection.

Beyond cellular Internet connectivity, the LAN-Cell 2 provides an integrated fullfeatured IP router, 802.11 a/b/g access point, automatic WAN fail-over, policy-based routing, bandwidth management, and special features to intelligently control your cellular data costs and maximize up-time. Security features include a built-in IPsec VPN client & server, 3DES & AES encryption, X.509 certificates, DMZ and VLAN support, an SPI firewall and NAT/PAT services. The LAN-Cell's platform independent embedded web configurator makes setup easy and allows you to manage the LAN-Cell from the LAN or remotely over the Internet with no software on your PC.



Figure 1: Typical LAN-Cell 2 Network Configuration

This guide covers the initial configuration needed to start using the LAN-Cell 2. Please see the *User's Guide* for more information on all of the LAN-Cell 2's features. Also refer to the included LAN-Cell 2 Documentation CD and Proxicast's Support Web Site (http://support.proxicast.com) for technical notes, application configuration examples and knowledgebase articles.

Figure 2: LAN-Cell 2 Front Panel

LABEL	LED STATE	DESCRIPTION
PWR	Flashing Green	Power-on Self Test is in progress. (approximately 60 sec)
	Solid Green	Powered on and running.
	Solid Red	Supplied voltage is too low.
LAN / DMZ 1-4	Solid Green (10 Mbps) Solid Orange (100 Mbps)	Link Status on the corresponding wired LAN/DMZ Ethernet ports.
	Flashing Green (10 Mbps) Flashing Orange (100 Mbps)	Data activity on the corresponding LAN/DMZ Ethernet ports.
WAN	Solid Green (10 Mbps) Solid Orange (100 Mbps)	Link Status on the wired WAN Ethernet port.
	Flashing Green (10 Mbps) Flashing Orange (100 Mbps)	Data activity on the wired WAN Ethernet port.
AUX	Solid Green	Dial-Backup port is Enabled & connected to a remote server.
	Flashing Green	Data activity on the Dial-Backup port.
WLAN	Solid Green	The LAN-Cell's internal WLAN Access Point is Enabled.
	Flashing Green	Data activity between the LAN-Cell and a WLAN client device.
CELL	Flashing Green	3G Cellular Card is initializing <u>OR</u> not registered on the carrier network <u>OR</u> there is no compatible cellular service available at the current location.
	Solid Green	3G Cellular Card is ready to make a connection.
	Solid Orange	3G Cellular Card has made a connection to the carrier's network.
	Flashing Orange	Data activity between the LAN-Cell and the 3G Cellular carrier's network.
	Flashing Green/Orange	Signal strength or quality is Poor. Connections may be unreliable.

II. Hardware Indicators & Connections



Figure 3: LAN-Cell 2 Rear Panel

LABEL	DESCRIPTION
PWR	Connect the included 12V DC power adapter to this power jack.
Reset	To erase all user-entered settings, press & hold the reset button with a small object such as a paperclip for approximately 10 seconds until the PWR LED begins to flash. This returns the LAN-Cell to its factory default settings (LAN IP = 192.168.1.1 Password = 1234).
LAN/DMZ 1-4	Connect computer equipment to these ports with Ethernet cables. These ports are auto-negotiating (can connect at 10 or 100 Mbps) and auto-sensing (automatically adjust to the type of Ethernet cable you use, straight-through or crossover). Set the ports as LAN or DMZ in the web configurator.
WAN	Connect a cable/DSL modem or other 10/100 Ethernet-based WAN equipment to this port.
AUX	Connect an analog modem's RS-232 interface to the AUX port using the <u>Black</u> dial backup cable. The AUX port is used <u>only</u> to provide modem dial-backup support for the wired WAN and Cellular Modem interfaces. The default AUX port communica- tion parameters are: 115200 bps, no parity, 8 data bits, 1 stop bit, hardware flow control.
Console	Use the <u>Blue</u> serial cable to connect a terminal or PC-terminal emulation program to the LAN-Cell for diagnostic access. The default Console Port communication parameters are: 9600 bps, no parity, 8 data bits, 1 stop bit, no flow control.
WLAN	Attach the supplied cylindrical Wi-Fi antenna to this SMA-RP (reverse polarity) connector if you will be using the LAN-Cell's integrated 802.11 a/b/g/ access point. Attaching other types of antennas (such antennas with standard SMA, TNC or FME connectors) to this jack may damage the antennas and/or WLAN antenna jack!
3G Card Slot	Insert an activated 3G PC-Card cellular modem into the slot on the right side of the LAN-Cell. Always power off the LAN-Cell before inserting or removing PC-Cards, otherwise damage to the LAN-Cell or the PC-Card may result.

III. LAN-Cell 2 Default Settings

The factory default settings for the LAN-Cell's key parameters are:

LAN-Cell's LAN IP Address	192.168.1.1
Management Access Password	1234
TCP Management Ports	HTTP (80), HTTPS (443),
	Telnet (23), SSH (22)
LAN DHCP Server	On
LAN DHCP Settings	192.168.1.33 to .160 Subnet mask 255.255.255.0
WAN DHCP Client	On
Cellular Modem Interface	Enabled, Dial on Demand, Cell-Sentry Off
WLAN Access Point	Disabled
WLAN Country Code	255 – U.S. / North America
Firewall	Enabled
Serial Console Port	9600 bps, no parity, 8 data bits, 1 stop bit, no flow control.

Press the Reset button for 10 seconds to return the LAN-Cell to these settings.

IV. Using the Internal Web Configurator

NOTE: You can use either the embedded web configurator or the System Management Terminal to access and configure the LAN-Cell. This Quick Start Guide shows you how to use the web configurator only. See the User's Guide for more information on all of the LAN-Cell's configuration options.

Click the web configurator's help icon 1 for screen-specific assistance.

Step 1: Enter http://192.168.1.1 as the web site address in your browser.

Step 2: The default password ("1234") is already in the password field (in non-readable format). Click **Login** to proceed to the Change Password screen.

Step 3: It is highly recommended that you change the default password! Enter a new password, retype it to confirm and click **Apply**. The LAN-Cell will then request that you log in again. Alternatively, click **Ignore** to proceed if you do not want to change the password.

Step 4: Click **OK** to create a unique security certificate for this LAN-Cell or click **Ignore** to later import your own certificate.

Step 5: You should now see the LAN-Cell's Home (System Status) screen (see Figure 4).

V. Configuring the LAN-Cell 2

The Home screen provides a snapshot look at your LAN-Cell's configuration and operational status including:

- 1. Overall system information & resource utilization
- 2. The operational status and IP address of each network interface
- 3. Detailed status of the Cellular Modem interface
- 4. Detailed status of the Wi-Fi access point
- 5. A list of the latest system alert messages



Figure 4: LAN-Cell 2 Home Screen

The expandable menus in the left-side frame provide access to the LAN-Cell's advanced configuration screens. In addition, many of the Home screen field labels are "hot linked" to their corresponding configuration pages. Some items you may need to configure for your specific application include:

Network > LAN	Use the screens in this area to change the LAN-Cell's IP address and its DHCP server settings.
Network > WAN	The screens in this area configure the Wired and Cellular WAN settings. Refer to your ISP's documentation regarding their requirements.
Wireless > Cellular	After activating the PC-Card modem with your cellular carrier and inserting it into the PC-Card slot, you must also configure the 3G interface using this screen (see below). The PC-Card modem must complete initialization and registration on your carrier's network – this process may take up to several minutes each time the PC-Card is reset. The Connection Status on the Home Screen will show READY when dialing attempts can commence.

- Wireless > Wi-Fi The LAN-Cell's integrated 802.11 a/b/g access point is DISABLED by default. Use the screens in this area to enable and configure your Wi-Fi settings.
- Security > Firewall You can use the LAN-Cell without configuring the firewall. The LAN-Cell's firewall is ENABLED by default and is set to block inbound initiated packets to LAN devices. You may need to change the default firewall rules to suit your specific application.
- Security > VPN The LAN-Cell 2 includes a Wizard to step you through the process of creating a basic IPSec VPN. Use the VPN Config screens to adjust any settings as necessary for connection to your other VPN equipment.
- Advanced > DNS Use the DDNS tab to configure a DNS hostname for your LAN-Cell if your Cellular or WAN ISP assigns dynamic IP addresses. You must set up an account with one of the supported Dynamic DNS Service Providers before configuring the LAN-Cell.
- Advanced > NAT To access devices attached to the LAN-Cell's LAN ports from the Internet, configure the necessary port translation/redirections on this screen. You may also need to change the LAN-Cell's **Remote Management** ports and **VPN Rules** if they conflict with your application.
- Maint > Time & Date The LAN-Cell 2 has a battery-backed real-time clock. Set the current date & time on this screen and configure a time-server to periodically adjust the LAN-Cell's clock.

Consult the *User's Guide* for more detailed information on how to configure all of the LAN-Cell's features.

Note for Wi-Fi Users:

If deploying the LAN-Cell 2 outside of North America, you <u>must</u> change the firmware's Country Code to enable the appropriate 802.11 channels for the country of operation. Failure to change the Country Code may cause unintended interference or prevent other 802.11 equipment from connecting to the LAN-Cell and may violate local communication regulations. See the *Wireless LAN* section of the *User's Guide* for more information.

Once the LAN-Cell is functioning to your satisfaction, we strongly recommend that you backup the device configuration to your PC. See: Maintenance > Backup & Restore

VI. Setting Up 3G Cellular PC-Card Modems

Please refer to the *Release Notes* on the LAN-Cell Documentation CD or the Proxicast web site for a list of the specific 3G modem cards supported by the LAN-Cell 2 in each firmware release.

Your 3G cellular PC-Card modem may need to be activated with your cellular service provider before it can used in the LAN-Cell 2 Follow your carrier or card manufacturer's instructions for activating, testing, and updating the firmware on your 3G card using a Windows PC before attempting to use it in the LAN-Cell 2.

To configure the LAN-Cell 2 for operation on your specific cellular carrier's network, you will need the following information:

Parameter	Your Cellular Carrier's Settings
APN [†]	
Authorization Type	
Username	
Password	
ISP Access #	(#777 for CDMA, *99# for GSM)
PIN Code [‡]	

† APN applies only to GSM carriers. Many GSM carriers operate different APNs for different types of data service plans.

‡ The 4 digit PIN code field is displayed and required only if your SIM/RUIM is locked by the carrier.

These settings are entered on the **Wireless > Cellular** screen (**Figure 5**).

- 1. Make sure that the Cellular interface is **Enabled**.
- For GSM networks, enter the APN (Access Point Name) that was provided by your service provider. For CDMA networks, the APN field is not required or displayed.
- 3. Select the **Authentication Type** used by your service provider. If it was not given, leave the field at the default (None).
- 4. If required by your network operator, also enter the **User Name**, **Password**, and **PIN** code used for network access.
- 5. Enter the **ISP Access Phone Number** provided by your carrier (typically #777 for CDMA and *99# for GSM).
- To keep the Cellular WAN connected at all times, select "Always On", otherwise indicate how long to wait before the LAN-Cell drops the 3G connection when no data activity is detected.

- 7. For WAN IP Address Assignment, select **Get Automatically from ISP**. This is the correct setting in most situations, even if your carrier has assigned a "static" IP address to your 3G card.
- 8. Click Apply, then return to the Home screen to see the 3G status.

Figure 5a: Cellular Modem Configuration Screen (GSM)

AT Commend to Well Online	
AT Command Initial String	
Authentication Type	None
User Name	
Password	
Retype to Confirm	
ISP Access Phone Number	#777
🗹 Always On	
Idle Timeout	0 (Seconds)

Figure 5b: Cellular Modem Configuration Screen (CDMA)

Common settings for some carriers are shown below. Contact your carrier or Proxicast Support if settings for your carrier are not shown.

CDMA Carriers

	Auth. Type	Username	Password
Verizon Wireless	NONE	{blank}	{blank}
Sprint PCS	NONE	{blank}	{blank}
Alltel	CHAP/PAP	MDN@alltel.net	alltel
Bell Mobility	CHAP/PAP	MDN@1x.bell.ca	{voicemail password}
Telus	PAP/CHAP	MDN@1X.telusmobility.com	{11 digit ESN}

MDN is the "Mobile Directory Number" (phone #) assigned to your cellular card.

GSM Carriers

	APN	Auth. Type	Username	Password
AT&T Mobility (Cingular)	isp.cingular	CHAP/PAP	ISP@CING ULARGPRS .COM	CINGULAR1
AT&T Mobility (Cingular) with Mobile Terminated Data Service	internet	NONE	{blank}	{blank}
T-Mobile USA	internet3. voicestream. com	NONE	{blank}	{blank}
Rogers AT&T	vpn.com	NONE	{blank}	{blank}
Vodaphone (UK)	Internet	CHAP/PAP	web	web
Orange (UK)	orangeinternet	PAP	{blank}	{blank}

Carrier network access parameters are subject to change.

VII. Cell-Sentry™: Cellular Budget Control

The LAN-Cell 2 has a unique feature called Cell-Sentry which monitors and/or limits the amount of traffic that passes through the cellular interface. This feature enables you to utilize a carrier's lower cost data service plans and ensures that you do not exceed your plan allowance.*

At the bottom of the **Wireless > Cellular** screen, enable Cell-Sentry and specify either a time-based or data-based budget for the month.

Cell-Sentry
🔽 Enable Cell-Sentry
Time Budget: 0
🔽 Data Budget: 20 Mbytes Download/Upload 💌 per month
Restart budget counter on last 💌 day of each month
Actions when over budget
🔽 Log 🔽 Alert 🔽 recurring every 15 minute(s)
Allow Constant New Cellular connection
💿 Keep 🔍 DropCurrent Cellular connection
Actions when over 0 % of time budget or 80 % of data budget
🔽 Log 🔽 Alert 🔽 recurring every 360 minute(s)

Figure 6: Example Cell-Sentry Data Budget Configuration

The LAN-Cell keeps a running total of your cellular account usage, even after system restarts and power-cycles. Specify when the monthly counters are reset (for example, to coincide with your monthly carrier billing cycle). You can also specify whether or not to allow the LAN-Cell to exceed your allocated budget and when to notify you that your budget limit is approaching.

To receive E-mails when the budget thresholds are reached, select "Alert" and configure the LAN-Cell's alert E-mail feature on the **Logs > Log Settings** screen.



Figure 7: Log & Alert E-Mail Configuration

^{*} Actual usage statistics on the carrier's network may differ from the LAN-Cell's counters. Set your budget limits lower than the maximum allowed on your plan.

VIII.Card-Lock™

The LAN-Cell 2's Card-Lock system provides a mechanism for securing the PC-Card modem to prevent it from coming loose in mobile applications.

Simply insert a cable-tie through the two Card-Lock brackets above and below the PC-Card slot **(Figure 8)** leaving enough slack to accommodate the portion of the PC-Card that extends outside of the LAN-Cell. Rotate the loop toward the front of the LAN-Cell (**Figure 9**).



Figure 8

Figure 9

Insert the PC-Card modem fully into the LAN-Cell, keeping the cable-tie loop toward the front of the unit (**Figure 10**). Once the PC-Card is inserted, slide the loop over the protruding end of the card and pull the bottom of the cable-tie straight down to tighten the loop against the card. Then bring the bottom of the cable-tie up to secure it with the cable-tie lock, tightening it against the PC-Card (**Figure 11**).

You may also wish to lock the PC-Card's external antenna "pig-tail" cable inside the cable-tie loop to minimize movement of the antenna cable.





Figure 10

Figure 11

Troubleshooting

PROBLEM	CORRECTIVE ACTION
None of the LEDs turn on	Ensure that the correct power adapter is connected to the LAN-Cell and have plugged it into an appropriate power source. If the LEDs still do not turn on, there may be a hardware problem – contact your vendor.
Cannot access the LAN-Cell from a PC on the LAN	Check the cable connection between your computer (or hub) and the LAN-Cell. Check that the corresponding LAN port LED is ON.
	Confirm that your PC's default gateway is the LAN-Cell's IP address.
	Confirm that any other network interfaces on the PC (such as Wi-Fi) are disabled. You cannot use Wi-Fi for the initial configuration of the LAN-Cell, as the internal Wi-Fi Access Point is disabled by default.
	Configure your PC to receive its IP settings via DHCP.
Cannot ping any computer on the	If the LAN LEDs are off, check the cable connections.
LAN	Verify that the IP address and subnet of the LAN-Cell is in the same range as the computers on the LAN and that the LAN-Cell is the default gateway for all LAN devices.
Cellular modem card does not initialize	Confirm that the PC-Card modem has been activated by your cellular carrier. Follow their instructions for activating the card using a Windows PC.
(Cell LED continues to flash)	If your cellular modem card requires a SIM/RUIM card, ensure that it is properly inserted.
	Network registration may take several minutes.
	Confirm that your 3G cellular modem card is supported by the LAN-Cell's firmware version (see the Release Notes).

Troubleshooting

PROBLEM	CORRECTIVE ACTION
Cannot make (or maintain) a cellular data connection when cellular signal is present (i.e. no Cellular WAN IP address)	Confirm that the Cellular modem's APN, Username, Password, Authentication Type, PIN and ISP Access Phone Number settings are correct for your carrier.
	Confirm that the 3G cellular modem card has been provisioned with the correct type of Internet access data service by your carrier.
	Confirm that the 3G cellular modem card has been activated by your carrier and/or by using a Windows PC.
Wrong type of WAN IP address is assigned (i.e. dynamic instead of static or private instead of public)	The IP address assigned to the LAN-Cell's WAN interfaces is controlled by your ISP. Confirm that your account has been provisioned for the proper type of IP address and that your connection parameters match those required by your service provider.
	For most 3G carriers, the correct setting is "Get Automatically from ISP" even if your card has a "static" IP address assigned by the carrier.
Cellular Signal Strength is low	Check that the proper 3G antenna is securely attached to the 3G card and/or LAN-Cell's external 3G antenna jack.
	Cellular data connections may be unreliable if the signal strength/quality is reported as Poor.
	Move the LAN-Cell to a location when the carrier's signal is stronger or use a higher-gain antenna or amplifier.
Cannot get a WAN IP address from the Wired WAN ISP	The WAN IP address is provided after the ISP verifies the MAC address, host name or User ID. Confirm the verification method used by your ISP and configure the corresponding fields. Try using PAP-only authentication with no PPP compression.
	Check the LAN-Cell's connection to the wired WAN (cable/DSL modem). Check whether your Ethernet WAN connection requires a crossover or straight cable.
	Check the settings in the WAN screens, especially the routing priority and fail-over/load balancing parameters.

Troubleshooting

PROBLEM	CORRECTIVE ACTION
Wi-Fi clients periodically disconnect, esp. when LAN-Cell configuration parameters are updated	Some updates to the LAN-Cell's configuration require that the Wi-Fi Access Point be reinitialized, causing client connections to drop. Configure Wi-Fi clients to automatically reconnect to the LAN-Cell. Upgrade the firmware and driver software on your Wi-Fi client devices to the latest version.
After pressing RESET, cannot make a cellular connection	The RESET button returns the LAN-Cell to its factory default settings including clearing any cellular modem parameters. You must reconfigure the necessary 3G connection parameters.

Common Carrier-Specific Issues

CARRIER	COMMENT
Alltel	By default, Alltel blocks <u>all</u> packets originating from the Internet. Contact Alltel technical support to unblock the necessary ports for your application.
	Alltel's default gateways do not respond to ICMP (ping) packets. Do not select the "Ping Default Gateway" option under Cellular Connectivity Check; select another public IP address or DNS name.
AT&T Mobility	The APN "isp.cingular" blocks <u>all</u> packets originating from the Internet. If you must access the LAN-Cell or other equipment remotely, request that AT&T give you access to the "internet" APN (mobile terminated data service).
Sprint PCS	Sprint blocks access to ports 80 & 5000 (and perhaps others) from Internet addresses. Move your servers to a different port number or use the LAN-Cell's NAT Port Forwarding & Redirection feature to map to open ports.
Verizon Wireless	Verizon Wireless' default gateways do not respond to ICMP (ping) packets. Do not select the "Ping Default Gateway" option under Cellular Connectivity Check; select another public IP address or DNS name.

Also see our online Knowledge Base at http://support.proxicast.com for more troubleshooting tips, documentation, TechNotes and configuration examples.

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- 8. Click "Apply".

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