



Technical Support Engineering

Frequently Asked Questions

Prepared by Engineering Dept.

General BreezeACCESS and BreezeNET questions:

- Q. Is there a source for information on the Internet where wireless white papers are compiled?
- A. Yes. The website www.itpapers.com is a good source of information, as Alvarion (formerly BreezeCOM) has submitted many papers there.
- Q. I am using a BreezeNET PRO.11 AP-10-D (Firmware version 5.1.36) at my central site. Should there be any problems using BreezeACCESS SU-x-BD (Firmware version 3.0.31) at my remote site?
- A. Alvarion does not recommend mixing BreezeNET Pro.11 and BreezeACCESS II on the same sector or cell. BreezeACCESS version 3.x.x and BreezeNET 5.x.x firmware will communicate with each other at a very basic level, but none of the advanced features of either system will work. There are some very subtle differences in both units internal timing, and future version of BreezeACCESS may not communicate with BreezeNET at all.

Installation

- Q. What is the best place to find a variety of antenna Mounting solutions?
- A. A variety of antenna mounting solutions can be found by contacting ROHN Towers. This company carries everything from non-penetrating roof mounts to side building mounts and eave mounts.
- Q. Where can the TNC and N-Type male connectors be purchased?
- A. These connectors can be obtained by calling a distributor for RF Industries or Times Microwave. The manufacturers part numbers for these connectors are listed below.

TNC Male for LMR400 – Manufacturer RF Industries – PN# RFT-1201-SI
N-Type Male for LMR400 – Manufacturer Times Microwave – PN# EZ-400-NMH

Other cable types and sizes can also be accommodated using either of the aforementioned manufacturers.

Maintenance

- Q. I have a BreezeACCESS AU – SU in a point-to-point configuration, and is performing badly. How do I tell which unit is causing the problem without replacing both units?
- A. You need to perform a test that we call “close proximity” test. When performed on AU-I, and SU-I on a test bench, this test is also known as the stack test. When possible, perform this test with the AU-I and SU-I cabled together with a known attenuator inserted inline the cable between the antenna ports. Now that we have both indoor (AU /SU-I) and outdoor units (AU-E / SU-A), testing for the ability to associate, and getting some kind of calibrated RSSI reading can be considerably more difficult, but not impossible.

For AU-I and SU-I ‘s the test is quite simple:

- Restore both units to factory default – this makes the ESSID be “ESSID1”, and reset each radio.
- Configure IP address on the SU to 10.0.0.2 / 8 bit subnet.
- Set the SU on top of the AU with no antenna connected.
- Connect SU-x-1d or –8d to a computer NIC to complete the association process. Make sure computer has a static IP address within the subnet of the radios.
- Use a monitor session to each unit to determine that association has occurred, and ping each radio to be sure data can pass.
- Use Q-Check or other applications to pass data between 2 computers to be sure both units are fine.

For testing AU-E’s and SU-A’s the procedure is slightly more complex. For testing units that are not yet installed, simply place them side-by-side on a bench, and perform the procedure as above.

For testing an AU already installed, use the procedure detailed below:

- Use an SU-I-D with a Uni-9, or equivalent, antenna connected of a known good quality.
- Configure the SU’s ESSID to the same as the AU’s ESSID.
- Configure a laptop to an IP address in the same range as the AU.
- Set up the SU at a location that has CLOS to the AU antenna, at a known distance.
- Using a link budget calculator, and the AU antenna polar charts as required, predict what the SU’s RSSI should be.
- Observe the actual RSSI on the SU. If the AU’s transmitter is OK, the RSSI will be within +1, -6 dB of your prediction.
- Use ping to verify that data can pass over the link, re-configure your computer to the correct subnet for the LAN behind the AU, if it is

different. Use Q-Check or some application to verify data transfer through the AU.

- Restore the AU to proper network configuration.

For testing an SU already installed, the procedure is similar.

- Set up a known good AU and Uni-9, or equivalent, antenna in a location with Clear Line of Sight to the SU antenna, and at a known distance from the SU's antenna.
- Change the ESSID of the SU to something different than the working network's.
- Configure the AU with the same ESSID.
- Configure your computer with an IP address in the SU's range.
- Verify association. Telnet into the SU and observe continuous RSSI. Compare this reading to the value calculated in a link budget, using the same procedure as above.
- Finally, use Q-Check or other application to transfer data across the link as above.
- Restore the SU to proper network configuration.

Use this procedure on all BreezeACCESS, BreezeNET DS.11 and BreezeNET Pro.11 point-to-point systems, substituting the correct units for the test. This procedure is also known as "Stack Test" when performed in a test bench situation.

Q. I would like to inquire if there is special test equipment for BA and BN products for first line (field) and second line (shop) maintenance?

A. We recommend only a minimal amount of test equipment for field maintenance of your BA or BN network. There is no specialized shop maintenance equipment required, as there are no field-serviceable components in either radio system. For field service, we recommend:

- Laptop computer equipped with 10baseT ethernet port, RS232 serial port, terminal emulation program, SNMP management program (configuration programs are provided by Alvarion on our website), throughput testing program such as Ganymede's Q-Check, an ethernet sniffer program such as Sniffer-Pro, and any other software that you may need for your network.
- Access point and station unit of your product line that are known to work. Alvarion supplies demonstration kits of each product line that will suffice.
- Anritsu Site-master RF network analyzer, or equivalent spectrum analyzer, tracking generator, and Return-loss Bridge.
- Various hand tools, including the proper crimpers for any coax cable that you may be using. Crimp-type RF connectors provide superior performance over manual solder type connectors.

Antennas, RF Transmission and Propagation

Q. How do I obtain the “Pigtail Cable” to install an antenna with the BreezeAccess II indoor or the BreezeNet Pro.11 radios?

A. The proprietary SMA to N-Type pigtail is only obtainable through the purchase of an Alvarion Antenna Kit. For details on these antenna kits, please visit the product section of our web site.

Q. What type of attenuation will occur @ 2.4 Gig for various types of coaxial cable?

A. Refer to table below.

Cable Type	Attenuation @ 2.4 GHz
RG-58	30dB/100 ft
LMR 200	17dB/100 ft.
LMR 400	6.8dB/100 ft.
LMR 600	3.9dB/100 ft.
LMR 900	2.9 dB/100 ft.
LMR 1200	2.2 dB/100 ft.
LMR 1700	1.7 dB/100 ft.
1/4" Superflex	9.8 dB/100 ft.
1/2" LDF	3.9 dB/100 ft.
1/2" Superflex	6.1 dB/100 ft.
3/8" LDF	5.9 dB/100 ft.
3/8" Superflex	6.8 dB/100 ft.
1/2" Helix	3.9 dB/100 ft.
7/8" Helix	2.2 dB/100 ft.

Q. I have just installed 6 AU-E’s and sectoral antennas on my tower, and when I use best AU feature, some of my SU’s can “see” 2 or 3 antennas, and some can see all 6. Why? I thought the sectoral antennas did not receive and transmit through the back of the antenna!

A. All antennas radiate transmitted energy in all directions around the antenna, but the design of any directional antenna is such that more of the energy is “focused” in the designed direction. Even a solid “dish” antenna will radiate some energy behind the antenna. This characteristic is also the same for the received signal – that is, the unit with the directional antenna on it will receive a signal from a transmitter behind the antenna. The ratio of how well the antenna works toward the rear compared to the signal out the front is called “Front to back ratio”, and is expressed in dB.

As an example, we have an AU with a SECT-17 antenna installed. An SU that is 1 mile away in front of the antenna receives a signal at –55 dBm. If that same SU

were moved around to the rear of the antenna, it would receive a signal at -77 dBm, indicating that the front to back ratio of this antenna is 22 dB.

- Q. My local AM radio station will rent me space on one of their towers. Is there any issue I should watch out for?
- A. Alvarion does not recommend using an active AM tower as your site. The tower itself is the AM radiator, and there is no way you can predict what your actual carrier to noise ratio may be. AM transmitters operate in the hundreds or thousands of watts of radiated power, which can cause the 2.4 GHz receivers to be overloaded by this large power source. Also, since the tower is the AM radiator, the tower is not grounded – a large ceramic insulator at the base and at the guy lines isolates it, so you will not be able to ground the equipment using Alvarion's standards.
- Q. As there is more 2.4 GHz ISM equipment installed, especially in urban areas, how do we combat the threat of interference?
- A. All ISM band communications are time based – that is the transmitters are only on the air for the time required for the data frame to be transmitted, then they turn off, and the unit goes into receive mode, and when any data system is idle, all the units involved normally are in receive mode, listening for a transmitter to send data. In the USA and Canada, synchronization of any kind is not allowed, so data always is transmitted quite randomly. The FCC and Industry Canada both state in the articles that govern all the ISM bands that all equipment must not cause interference to other communications equipment, and the same equipment must accept any interference from any other ISM systems. To make sure you are using this shared frequency band most efficiently, check the following:
- Be sure that your collision-avoidance mechanism is working properly. In both BreezeNET and BreezeACCESS, this means that RTS is enabled, and the carrier sense level is properly set (too low will cause noise to disable your system, too high and you will not be able to tell when another device is transmitting in your coverage area).
 - Be sure that all devices directly connected to your BreezeNET or BreezeACCESS system has their ethernet ports configured to 10 Mb/s, half-duplex only. This will ensure that the back-off mechanisms in 802.3 ethernet are operating properly.
 - Use the highest gain antennas and lowest transmit power at both the cell site and subscriber unit that you can.
 - Make your coverage areas small. 2 or 3 small cells will always outperform one large cell for total transferred data in the whole area covered. This will enable you to design your network using higher fade margins as well, which is your principal weapon against off-site, in-band interference.
 - Configure your system to allow for 2 or 3 re-transmissions. It takes much less time to resend a frame or a fragment from the bridge in the BA or BN unit than it does to discard the frame and have the application resend the frame.

- Minimize Near Line of Sight installations. Try to obtain line of sight as much as possible. This will allow you to make better use of higher fade margins and let the network perform at a consistently higher level.
- Be sure that your BA or BN radios are configured to the highest data rate over the air that the path can support. Use multi-rate support, so that units that can communicate at the highest data rate are allowed to do so, without penalizing the units that can only communicate at the basic data rate.

Q. I need to install a long link over water, from the mainland to an island. What do I need to consider making sure the path will work?

A. For a path over water at 2.4Ghz, you only need to make sure that you have 100% first fresnel zone clearance over the entire path, and that you have a minimum of 10 dB fade margin, plus approximately 0.5 dB of added margin per km. of path length. Use Alvarion link budget calculation spreadsheets, which will recommend the correct fade margin based on the distance entered. You may need to increase the fade margin even more if very heavy rain is often encountered over the link.

Ethernet and Network

Q. I have a switch that connects my router to my Access Units at my tower site. Can I let the switch auto-negotiate?

A. Always use a hub, which is half duplex only, or a switch that each port connecting to a Breeze device can be configured to 10 Mb/s, half duplex only. The radio system needs to have the ethernet flow control and back-off mechanisms work correctly. Setting a switch port to full duplex will result in erratic performance under high load. Auto-negotiation often will set a port to 10Mb/s, full duplex.

Q. How long can my PI-CAT-5 cable be?

A. The total length of the PI-CAT-5 plus any other CAT-5 cable, including patch cords cannot be longer than 328 ft (100m). The PI-CAT-5 is not an ethernet repeater, just passes the data through.

Q. We are seeing some MAC addresses appear on the Breeze management screens that begin with 00-30. Have any of the newer radios been given a MAC address other than the 00-20 range?

A. For a full listing of registered MAC's please see:
<http://standards.ieee.org/regauth/oui/oui.txt>

Here are the MAC addresses registered to our company:

00-04-94	(hex)	Breezecom, Ltd.
000494	(base 16)	Atidim Technology Park Bldg. 1, P.O.B. 13139 Tel-Aviv 61131 ISRAEL
00-10-E7	(hex)	BREEZECOM
0010E7	(base 16)	ATIDIM TECHNOLOGICAL PARK BLDG. 1, P.O. BOX 13139 TEL-AVIV ISRAEL
00-20-D6	(hex)	BREEZECOM
0020D6	(base 16)	ATIDIM TECHNOLOGICAL PK-BLDG.3 TEL-AVIV 61131 ISRAEL

- Q. Our client has an IP telephone system linked to a traditional PBX. The IP system is spread around their site through wireless links. The IP system is connected to an AP-10, which transmits through a Uni-24 antenna to a Water tank tower with a receiving Uni-24 and into a WB-10. This WB-10 is connected directly to a switch, and from there 4 more AP-10's are connected to this switch and then through other antennas, transmitted about the site. There are 5 remote locations that are receiving these signals; three of them are experiencing absolutely no issues. The other two are getting all kinds of weird noises on their phones only when the signal has been brought from the analog PBX and converted through the IP system and transmitted up the hill. An all IP call (internal extensions and dial tone) has no symptoms. I have replaced each radio with a known good radio (one at a time) and no change. I have used other switches and no change. The symptoms are clicks pops, and loss of volume.
- A. When designing a Voice over IP network, special care must be taken to insure that the latency of the frames from any part of the network to any single phone device on the network must have very low jitter, that is the difference in the latency between frames must be low – less than 50 ms, but the overall latency can be high – 200 to 500 ms is OK. VoIP frames are typically quite small (64 bytes to 256 bytes). When running over a wireless network, or a hybrid network (combination copper, wireless, and fiber-optic), the wireless links must be running at high efficiency – that is, the retransmission rates must be very low, RTS/CTS should be enabled, and all RF links should have adequate fade margin so that the RF propagation is very predictable. Ethernet frames arriving late at the decoder cause the symptoms listed in the question, and there is a gap in the recovered audio.
- Q. What TCP ports does SNMP communicate over?
- A. SNMP manageable devices listen on IP port 162 and send on IP port 161.

BreezeACCESS

- Q. Can the BreezeAccess II indoor products be amplified?
A. No. These products do not support the use of amplifiers. The hardware will not support implementation with amplification, as there is no mechanism built in to adjust for the added delay of the amplifier as the BreezeNET Pro.11 line has..
- Q. What is the recommended position to mount the Outdoor Unit?
A. Make sure that the Outdoor Unit is mounted with the LEDs facing downward.
- Q. Are the connections for the AU-I-D and all of the SU-I-D models the same as BreezeNET Pro.11?
A. Yes, the connectors for the Indoor BreezeAccess II product line are identical to that of the BreezeNet Pro.11 equipment. That standard antenna connector is the 90 degree collared SMA.
- Q. Where should I mount the Outdoor Unit of the AU-E?
A. It is recommended to mount the Outdoor Unit as close to the antenna as possible. This will allow for a short cable run from the Outdoor Unit to the antenna and will limit the amount of signal loss, or “attenuation” through the cable.
- Q. Can I hot swap IF cables from one Base Station Indoor Unit to another?
A. No. Always power off the Base Station Indoor Unit before you remove or swap the IF cables.
- Q. What type of connectors will need to be on my coaxial cable if I want to connect it to the Indoor piece and the IF interface on the transverter of the BreezeAccess II IF system?
A. The coaxial connectors on the indoor unit and on the IF interface of the transverter are standard TNC female connector. The cable must have standard TNC male connectors properly terminated on both ends of the cable.
- Q. What does the WLINK LED on the Indoor Units of the AU and SU represent?
A. When blinking ON, the devices are receiving packets from the wireless link.
- Q. What type of connector needs to be used to interface an antenna to the transverter of an AU-E or a SU-E?
A. The coaxial cable needs to have a standard N-Type male connector properly terminated in order to interface with the transverter.

- Q. What type of coaxial cable can be used for the IF transmission between an indoor unit and the transverter of the BreezeAccess IF system?
- A. Refer to the following table.

Cable Type	Distance	Attenuation @ 440 Mhz
RG- 58	30 meters	10.4 dBm
RG- 213	100 meters	5.1 dBm
LMR- 240	65 meters	5.2 dBm
LMR -400	150 meters	2.7 dBm
LMR- 600	167 meters	1.7 dBm

- Q. What factors need to be considered when choosing an IF coaxial cable replacement for the cable shipped with the BreezeAccess II IF system?
- A. Any coaxial cable can be used for the IF transmission from the indoor unit to the transverter as long as the cable is a 50 ohm cable, the IF frequency of 440 Mhz is not attenuated more than 15 dBm over the length of the chosen cable, and the DC resistance does not exceed 1.5 ohms round trip over the cable.
- Q. What do the 2 LEDs on the Ethernet port of the Indoor Units of the AU and SU represent?
- A. When ETH connector (green) = ON, good receive/transmit on the Ethernet port. When ETH connector (orange) = ON, good physical connection to Ethernet segment.
- Q. Is the BreezeACCESS II system a full duplex product?
- A. No, it is half duplex. The units do not transmit and receive simultaneously. The radio and the ethernet port are both half duplex only.
- Q. Does BreezeACCESS support Spanning Tree Protocol?
- A. No.
- Q. What is the Username and password for access to the BreezeACCESS technical support section of the Alvarion websites?
- A. Username = BRZEtech
Password = brzetechnsupp.
- Q. Every time I configure a radio via the local monitor session, and then try to TELNET into the same radio remotely, I get a “Session to Host Lost” message. What’s going on?
- A. Every time you quit your local monitor session, you must Ctrl “x” to log-out and exit the monitor session. Once you have logged out this way you should be able to TELNET in to the radio

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- Q. What security features are offered in BreezeACCESS II?
- A. WEP, VLAN support, ESSID, IP User filtering, Broadcast filtering (PPPoE, ARP, DHCP), Network Management filtering.
- Q. Do you have any configuration assistance documents for configuring Cisco VoIP equipment?
- A. Yes, we have some documentation on integrating our SU-x-xx1V with Cisco 36xx routing equipment. We also have documentation available on some other gateways. Contact Alvarion Technical Support via email – support@alvarion.com for details and information.
- Q. How can I shut off the ethernet port without loosing management of a SU-x unit?
- A. On the SU that you want to deny customer access to, turn on IP filtering, and simply filter out the address or subnet that the customer is using. Configure the “User Defined IP Address” table to an IP range that is not in the range or subnet that the customer is using.
- Q. My AU started acting up tonight. I noticed that the unit wasn’t responding to SNMP polls, so I went to check on it. I reset it and it lost all its configuration information. No biggy right? Well, I put all the info back in, IP, subnet, ESSID, etc. I hooked it back up to see if it would work again, and it didn’t. And it didn’t respond to a telnet request. I pinged it, and it replied fine. So I hooked the monitor cable up and began a serial session into the unit, and I noticed that the country code changed. What can I do?
- A. When configuration changes seemingly by itself, this indicates there is a hardware problem with the unit. If warranty still applies, contact Alvarion tech support to RMA the unit. If the unit is out of warranty please follow Alvarion’s “Out of Warranty” process.
- Q. I am trying to use both the Raylink CPE & the Breeze Access together. I guess the older Breezecom APs work with the Raylink CPE but as best as I can tell this is not the case for the Breeze Access. Do you have a solution for this?
- A. BreezeACCESS is not fully 802.11 compatible, but uses 802.11-transmission and collision avoidance algorithm only. BreezeNET Pro.11 is more nearly 802.11 compliant, but the 802.11 standard only recognizes data rates up to 2 Mb/s, not the 3 Mb/s our units can communicate at. BreezeACCESS II will not communicate with any other manufacturer’s known frequency hopping products at present. This may change in the future, however.
- Q. I have some BreezeACCESS units running firmware 1.x.x. Can I upgrade them to the current version?
- A. No, you cannot. The hardware was changed when BreezeACCESS II was released (Oct.2000), and so BA cannot be upgraded beyond Version 1.5.15.

- Q. I think I am suffering 440 Mhz IF interference in my BA II system. Can I install a band pass filter to stop it?
- A. On BA II xx-A/E units, there are 3 signals present – 440 Mhz IF, 20 Mhz, and 12 VDC. We do not recommend using any type of filtering on the IF. To eliminate IF interference, use 50 ohm solid sheath cabling, which provides the highest level of protection. If the interference level is extremely high, and the interference cannot be eliminated, then moving to another site may be considered.
- Q. I have installed our BreezeACCESS II AU-E-BS-2.4 in a site with a lot of 2-way radio and 900 Mhz cellular also installed in the site. Performance is poor, and I'd like to know how I might find out if I have 440-MHz I.F. interference.
- A. Intermediate Frequency interference is very hard to detect with data running over the system. The best method of testing is as follows:
- Disconnect the IDU and ODU from the IF cable.
 - Install a 50-ohm precision termination on the IF cable at the ODU.
 - Using a spectrum analyzer capable of –100dBm sensitivity at 440 Mhz, measure the energy received through the cable between 338 and 440 Mhz. There should be no energy higher than –91 dBm. Measure the level of all energy detected from 200 MHz to 1 Ghz. There should be no energy higher than –60 dBm at any frequency higher than 800 MHz. If energy levels near or higher than these levels are detected, then a better quality IF cable will need to be installed, as the interfering signal induction is from poor isolation in the cable sheath. Foil and braid shielded coax (Times Microwave LMR or equivalent) is better than single braided cable, and corrugated solid shield is the best (Andrew LDF cable or equivalent).
- Q. I have an SU-A that is associated to an AU-E on a 5-mile path. I believe that I have Line of Sight, but the clearance is very close – there are quite a few trees along the path as I look from the AU site toward the SU site. Before I put customer traffic on the link, “Continuous RSSI” in the SU reported a constant 10% error rate with an RSSI of 102. When the customer puts traffic on the link, the error rate jumps as high as 80%. What might be wrong here?
- A. The error rate that the SU reports with “Continuous RSSI” is simply a percentage derived from the number of frames transmitted by the SU divided by the number of frames re-transmitted during the interval between the last reading and this reading- an interval of about 1 second. When there is no traffic, there are no frames to error, so the rate may be high, or it may be low – the reading is unreliable. When there is traffic on the link, the reading is based on more frames per second, so the result is much more accurate. In this case in the question, there is not enough fade margin to support a 3 Mb/s transmit rate between the SU and AU – this RSSI value barely supports a 1 Mb/s data rate so many frames the SU transmits are not received properly by the AU, and the SU is forced to re-transmit the frame often. 80% is the real error rate - 10% was calculated under no traffic conditions, so the result cannot be believed. To troubleshoot this situation, first

calculate what the received signal should be, assuming clear line of sight. Then compare the receive signal calculated in the link budget to the signal that is actually received (use the table in the administration manual to convert RSSI units to dBm if necessary). If the actual signal is lower than the expected signal, then either the path is not CLOS, or there is an antenna problem on one of the units. If the SU reports an RSSI of 102, then the AU probably would see a signal level of about 102 as well.

Q. I have a question regarding the voice capabilities of the BreezeAccess II product line. I see that the voice capable SU's have a voice jack that takes a standard telephone if I read the documentation right. How does the AU end interface to the telephone network? Is there another add-on piece of hardware?

A. To implement VoIP over a BreezeACCESS network, you need a regular telephone connected at the SU. The SU can supply a ringer equivalency load of 0.2, which roughly equates to one digital ringer in a single phone device. The SU cannot be used to drive multiple telephones, or long cabling between the SU and the telephone device. At the AU's end of the network, a gateway is needed to interface to the analogue telephone network. The gateway needs to have the correct interface to terminate the telephone "trunks", and the network connection is an RJ-45 ethernet jack. H.323 protocol is used to convert the telephone network signaling to IP format. The IP frames generated by the gateway can be bridged within the same subnet, or routed to other IP subnets as required by your network architecture. Both the gateway and the SU require correct configuration to recognize each other, and pass IP correctly.

Q. What I would like to know is how can I give a dedicated 64 kbps link to a client with BreezeAccess 2.4 AU/SU sets? Is it that I set CIR and MIR to 64? In that case, what happens when I give the similar link to more than one when the modems sync at 1 Mbps? Do my clients get dedicated 64 kbps?

A. The Maximum Information Rate and Committed Information Rate algorithm is designed to accomplish two objectives:

- Make sure that the AU has enough bandwidth to give the committed rate of service to each SU associated with it in both the upstream and downstream data transfers.
- Make sure that no single SU communicates at an overall data rate higher than the maximum information rate in either the upstream or downstream data flow.

The algorithm operates such that any SU may have a MIR in either direction up to 2096 Kbits/second. Values closer to 0 act to provide a throttle mechanism for all the data flowing through that particular AU in either the upstream or downstream direction. MIR should not be configured to 0. CIR acts to make sure that the AU has enough time available to handle the committed rate of traffic from and to the SU. When CIR is configured to 0, that is the equivalent of no dedicated commitment to that SU in that particular direction from the AU. Since it is possible for the AU to be communicating with its associated SU's at only 1 Mb/s, the maximum CIR is 1048 Kbits/second.

If MIR/CIR is to be utilized, the following conditions must be met:

- When all the MIR's and CIR's are summed in both directions, the total CIR must not exceed 104kbits.second, and the summed MIR must not exceed the actual throughput that the AU can achieve to all of it's associated SU's.
- CIR must be: 0 is less than or equal to CIR rate is less than 1048 kb/sec.
- MIR must be greater than 0, less than 2096 kb/s, and greater than or equal to the CIR.
- All SU's associated with an AU must have MIR/CIR enabled if one unit has.
- There cannot be any BreezeNET Pro.11 station adapter or workgroup bridge units associated with that particular AU. Only SU's may be installed if one SU in a sector has the feature enabled.
- The AU must be operating in an interference free RF environment. MIR/CIR will not work if either the AU or some of the SU's are experiencing a high number of re-transmissions.

In the case described in the question, for the operator to commit 64 kb/s to each of his client's, CIR would have to be set to 64 kb/s in each direction at each SU. To fully utilize this AU, that is, to be able to associate, with as many SU's as possible, MIR would also have to be set to 64 kb/s. If the installed SU's were scattered throughout the sector, some communicating at 3 Mb/s most of the time, some 2 Mb/s, and some only 1 Mb/s, this operator would only be able to associate a maximum of 15 SU's to this AU. If he tried to associate more SU's, the AU would always try to throttle back to the point where each SU has an equal amount of access to the AU. When this happens, the AU's overall throughput falls way off, as the algorithm is trying to operate out of its defined limits. When an operator wishes to implement MIR/CIR, the options of configurations are nearly endless.

Q. I am attempting to update the firmware to 3.0.31 but the documentation says to use tftp to transfer the file, but as stated, the ethernet port is not responding. How can I update the firmware over the serial cable instead of the ethernet port?

A. The only way to upgrade the firmware is to use "tftp" (Trivial File Transfer Protocol) to load the required files into the unit. There is no other method available.

Q. We have two customers in the same little strip mall. They don't "get along" and therefore we need to do two installs. Both units will run "Best AU Support" though will both be accessing the same AU. Since BAI is polling...I assume CPE antenna separation is irrelevant in this case?

A. BreezeACCESS does not "poll" the subscriber units associated to a particular access unit, but "learns" that the subscriber unit is out there by monitoring the

BreezeNET Pro.11

- Q. What CE devices does Alvarion have SA-PCx driver support for?
A. Refer to the table below.

Devices Supported	Processors Supported
NEC Mobile Pro 800	MIPS 4100
Sharp PV-6000	NECVr4111
Vadem Clio	Hitachi SH4
Compaq Aero 8000	MIPS 3000 Japanese
Sharp Telios	Hitachi SH3
Cassiopeia 2400 W ver. 2.11	
Hitachi HPW-600ET	
HP Jornada 680 w/patch from HP	

- Q. What are the adverse affects of having a BreezeAccess II AU communicating with BreezeAccess II SU's and BreezeNet PCMCIA cards and SA 10's?
A. When this occurs, the entire set of advanced features of each product line become inoperable. Only the feature sets common to both product lines will function. In the BreezeAccess II product line, capabilities such as PPPoE filtering, DCHP filtering, MIR/CIR, and VLAN support will not function. In the BreezeNet Pro.11 products, features such as high speed roaming, load sharing, and preferred AP will cease to function as well.
- Q. I have some old BreezeNET Pro equipment. Can I upgrade it to Pro.11?
A. In the technical support section of www.alvarion-usa.com, all of the upgradeable firmware versions are listed in the format 3.x.x – 4.1.1. If your version of firmware is not listed, then there is no upgrade path.
- Q. Which MIB variable gives me a good overall view of my WLAN performance?
A. If you monitor “brzWlanQuality”, you can see the quality of the link. It returns a number between 0 and 4, with 4 being highest quality. RSSI alone cannot determine overall link quality.

- Q. What are the dimensions of the ODB-1 box?
A. The ODB-1 is 11.5" high, 9" wide, and 4.5" deep.
- Q. If I am trying to upgrade a WB from Pro to Pro.11, and the upgrade fails, can I replace the flash PROM to get the unit back?
A. The PROMS are surface mounted, not mounted in a socket. If you cannot establish a monitor session, or TFTP to a unit, you must RMA the unit, as there is no field repairs that can be made.
- Q. Do you have a PCI bus adapter for your SA-PCR card?
A. No, we do not have a PCI-PCMCIA adapter in our parts list.
- Q. I have a BreezeNET Pro.11 system, and I wish to implement WEP. How do I do that?
A. Units before firmware 5.1.36 required the system operator to call Alvarion sales @ 760-517-3100 and obtain a password to enable WEP. Versions after 5.1.36 can have WEP enabled (Shared Key) in Installer mode.
- Q. I've got a problem with an access point stopping passing traffic to radios in one sector. It has 14 stations associated with it, and it will drop its connections to these stations one at a time. If I reset the access point it will start passing traffic to the station again. I have replaced the access point with another access point and the problem appears to be isolated to this one sector. What could cause an issue of this type?
A. One of the features of the BreezeNET and BreezeACCESS system is that it ages out MAC addresses that have not communicated in some time. It seems to me that since you can still manage the SA's and SU's even in this state where no traffic can pass, that the problem is an ethernet-bridging problem. The AP uses an algorithm based on the numbers of entries in it's Forwarding Data Base (FDB)- that is the MAC's it has learned, and the length of time since that MAC last transmitted a frame. This aging period could be quite short, or it could be up to 10 minutes or more in length. It seems to me that the devices connected to the SA's, WB's and SU's you have out there seem to lose track of where certain addresses reside, and then refuse to communicate with them until the location of any destination address is found. This bridging process is used to make the best use of the radio system - frames that are not destined for a CPE device are filtered out, and not sent needlessly wasting time over the air.

When one of the computers connected to the wired port of any SA / WB or SU loses connection, start a slow continuous ping to a device that is behind the wired port on the AP-10 (not to any of the radios themselves). If this restores the communication to that computer, then you know that this particular MAC was aged out, and now has been re-discovered by the radio network. Switches operate in this very same manner, so you need to find out what components do work, and what does not work during one of these disconnections.

- Q. I have set my SNMP write community string to a string value longer than 8 characters. How do I recover the string so that I can configure the unit using the Pro.11 configuration utility?
- A. To recover a unit from any “out of limits” configuration, the best method is to establish a serial session to the unit in question, and do a reset to complete factory defaults. This will reset the read only community string to “public”, and the write community string to “private”.
- Q. How can I recover a unit if I loose the Installer password?
- A. There are two ways to recover an installer password. The first method is to establish an SNMP session to the unit in question, and set the “ResetFactoryDefaultComplete” variable to 1. Then reset the unit, and the installer password will return to “user”. The second way is to establish a read only monitor session to the unit, set the unit into technician mode, then execute a complete reset to factory defaults. Power the unit down, and restore power, and the unit will have a installer password “user”.
- Q. How do I obtain the technician password for BreezeNET Pro.11 units?
- A. Alvarion requires a technical non-disclosure form to be filled out before the password is released to a company or individual. Email or call Alvarion technical support and the form will be emailed or faxed to you.
- Q. In the past, if I programmed a BreezeNET device into installer or technician mode, the unit stayed in that mode until I set it to another mode. I upgraded to version 5.1.36 and now I can't change any configuration after a short while. What is happening?
- A. As a function of security, the 5.1.36 software changes the user mode access to user automatically after 1 hour. The only way to get back to the radios with the configuration utility will be to change the user mode by selecting the radio then selecting access rights and change THAT setting to Installer. Then you will be able to use the write community string to change the settings in the radio.
- Q. I have an AP-10 and an SA-10. The AP-10 is currently hooked to a PC server; we would like to get a new Macintosh server. Will your system work with the Mac?
- A. If your network protocol is currently TCP/IP, or IPX and you have a mix of PC and Mac's on the network, no problem. If you want to switch to Appletalk, we support Appletalk tunneling as well.
- Q. I have version 4.4.1 firmware in my network and I wish to implement WEP. How do I change the radio from open key to shared key?
- A. The RC4 algorithm, which WEP is based on, used to have a “per copy” licensing fee in RSA's agreement with BreezeCOM. WEP is implemented in all firmware versions from 4.4.1 to 5.0.211 using a password generated from a tool that Alvarion tech support and sales support personnel have access to. The

BreezeNET wireless system operator needs to call Alvarion at 760-517-3100, and speak to a tech support engineer or sales support representative. They will ask for the serial number of the Pro.11 device, and a password will be generated. Enter the password in the Access Control menu where required, and then the operator will be able to switch from open key to shared key. First, enter your 4 shared keys, which you make up, then switch the unit from open to shared key, then reset the unit. After the reset, the unit will only associate with a device that has the exact shared key set as the default shared key. The keys may be changed by SNMP as well as a serial session later, but the keys must be configured first in a serial monitor session.

- Q. I have set up an AP-10 Access Point in our test environment at work and am attempting to connect to it using an SA-PCR connected to a PII 300 MHz PC. The yellow light continues to flash on the card indicating that it is scanning for an access point. The access point reports a request for authentication and association have been received however the SA-PCR continues to request authentication and association and I get an error message that states that the unit is making duplicate requests for association. I was wondering whether there might be a hardware issue with the PCMCIA card itself in that it is not receiving the acknowledgement or whether I have incorrectly configured either piece of equipment?
- A. This condition is an indication that the 2 devices are on different country standards. For example, if the AP-10 is configured to the Canadian hopping standard, and the SA-PCR is configured to the FCC hopping standard, this is the behavior you will observe. Check which device is on the wrong code, and change the country code by entering “technician mode”, and changing the standard. To receive the “technician mode” password, contact Alvarion technical support, and request the non-disclosure document for release of the password. Alvarion changes the password every year or so in new feature releases of firmware.
- Q. I have a BreezeNET Pro.11 network consisting of many AP-10’s with their coverage areas overlapping to provide redundant continuous coverage. I am concerned that if one of the ethernet links to an AP-10 goes bad, how can I force all the SA’s and WB’s over to another AP-10
- A. The answer to the problem of the AP not telling the SA's to go away when there is no ethernet link is a feature called AP Redundancy. In technician mode, you can set the feature on - by default it is off, and when enabled, and the ethernet link is broke, the AP will not allow any associations, and it will stop sending beacons so that all SA's associated will go away somewhere else.
- Q. We have a Pro.11 system that has SA-10’s mounted in vehicles. Our site survey data analysis is based on static (fixed location) measurements. Should we expect throughput degradation with the unit traveling running at say 60 KM/hour? As the unit gets closer to the associated AP, the throughput should increase?
- A. When a broadband wireless device is moving, the likelihood of multipath goes up, as well as the effects of “Rayleigh fading”, which is a phenomenon of the physics of RF propagation. BreezeNET as a delay equalizer that can compensate for

some fading due to a dynamic RF environment, but you will have to design your system with added fade margin (that is the actual level of the received signal needs to be higher than the minimum level required to support a certain data rate). For fixed wireless applications, we recommend 10 dB of fade margin, but for mobile applications, you should use 16 to 20 dB as your fade margin calculations.

BreezeNET DS.11

- Q. Where can I get longer lengths of the shielded outdoor CAT-5 cable, and the shielded crimp-on RJ-45 plugs?
- A. The outdoor shielded Cat-5 cable is manufactured by Teldor, part # 8393204101 4x2x24# FTP EIA/TIA 568A-5 Category 5E Outdoor UV/FR Communication cable, UL 444 Listed. Contact information is available on Teldor's website, <http://www.teldor.com>. The shielded RJ-45 plugs are also available from Teldor, and are available as an AMP part.
- Q. How much shielded CAT-5 cable can I use between the Indoor and Outdoor units?
- A. The answer to this question depends on how much CAT-5 cable is used to get from the network device (hub, or switch) to the DS.11 indoor unit. The total length of all the cables, including patch cords can only be 328 ft (100m).
- Q. I want to power my site with solar power. What is the DC power consumption of the RB and BU-DS.11?
- A. We recommend inverting the DC power the solar / battery system produces to 110VAC, using the indoor and outdoor unit as designed. The AC Power supply is rated at 45 watts, and the power draw measured is 15 watts continuous duty.
- Q. Can an RB-DS.11 connect to an RB-DS.11 or PC-DS-11 card?
- A. No we do not support Ad-hoc wireless networks.
- Q. Does Alvarion manufacture an EMI filter for the CAT-5 cable between the indoor and outdoor unit?
- A. No, Alvarion does not manufacture an Electro-magnetic Interference filter for the CAT-5 ethernet cable. We recommend that the installer ground the shield of the cable at the building entry point as required by the local electrical codes.
- Q. Does Alvarion sell a lightning protection device for the outdoor CAT-5 cable used in the RB and BU-DS.1?
- A. Alvarion does not have a lightning protection unit designed to protect the outdoor DS.11 products. Alvarion does recommend that the shield of the CAT-5 cable be

grounded at the location the cable enters the building, as per your local electrical code.

- Q. I am working with a client who currently is using two WBS-DS.11 devices to connect two buildings together. Can you offer any recommendations or documentation on how I can tighten up security on these devices?
- A. You can enhance security from the point of preventing unauthorized associations by enabling WEP. WEP does not encrypt payload data over the air, so optimum security would be obtained by using external encryption protocols or hardware devices, especially in this case where the system is only a point to point. For some reading on 802.11b protocol and security issues, you can go to www.itpapers.com, and peruse the white papers on Wireless LAN security available there.
- Q. We are constantly being asked to compare the Breezecom solution to other manufacturer's 802.11b equipment. Intel's 2011 series base station acts as a bridge as well and is half the price of the Alvarion solution (BU-DS.11 and RB-DS.11). Could you please send me some information so that we can respond back to our customers?
- A. The difference in Alvarion's outdoor DS.11 solution and other manufacturer's is the radio itself. Our RF specifications allow for the highest link budget in the marketplace right now, and so we can support very long-range communication links. Also, our ethernet bridge is second to none in the industry, as we outperform many other wireless bridges that claim to be in the same class. Since we are 802.11b compliant, a very common use of our BU-DS.11 is to install the unit in indoor applications, then use PCMCIA cards in the client laptop and desktops, thus providing much more range than other manufacturer's own indoor access units.
- Q. I was told by Alvarion sales support that the RB-DS.11D would associate with the WBS-DS.11 without problem - no upgrades or anything else required. Is this true?
- A. Both units comply with 802.11b standard, so they should not have any problems working together.
- Q. I have enabled a log file on my DS.11 units, and I need to know what the numbers mean!
- A. The log file is saved under the name \BreezeLog, in the directory that the BrzMngr is installed in. Counter values are recorded in this log file for troubleshooting. As you read left to right across the text file, the values are:
- TransmitFragmentCount – All frames transmitted;
MulticastTransmitFrameCount – Number of multicast frames transmitted and will be at the lowest data rate;
FailedCount – Frames internally discarded for any reason;

RetryCount – unicast frames that did not receive an acknowledgement from the far end;

MultipleRetryCount – frames that did not receive an acknowledgement at all;

FameDupCount – frames received more than once, as the far end did not hear the ACK from this unit;

RTSSuccessCount – RTS frame answered by CTS properly;

RTSFailedCount – RTS frame transmitted, no CTS was received;

ACKFailedCount – frame transmitted by this unit received a corrupt ACK from the far end – frame is re-transmitted;

RxFragmentCount – number of unicast frames received;

MulticastRxFrame – number of multicast frames received;

TransmitFrameCount - number of complete ethernet frames transmitted from this unit. If fragmentation is off, this number should equal TransmitFragmentCount plus MulticastTransmitFrameCount;

FCSErrorCount – Frame check sequence byte of the ethernet frame is checked for accuracy. Low traffic or no traffic on the wireless link will cause this value to be very high;

BreezeLINK