Direcway DW6000/DW70000 User Reference Guide
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<u>Rebates?</u>
Bought a Direcway system? Check <u>http://rebate.direcway.com/</u> to see if you can get a rebate on your purchase.

Background

Direcway is a high speed satellite internet service that is used by those of us lucky few who can not get high speed internet service from any other provider. Direcway is a wholly owned product of Hughes Network Services which in turn, is wholly owned by a partnership between SkyTerra Communications and the DirecTV Group.

Probably the hardest thing to teach new customers is that Direcway is not like your local phone and cable companies. Direcway is a marketing product line from Hughes Network Services. Hughes Network Services is an international satellite communications company. They do not see themselves as being an Internet Service Provider. This is an important distinction from Insight, Comcast, or South Central Bell. Hughes has no desire to directly deal with small individual consumers or businesses. They want to concern themselves with the transport of communications via satellite. For this reason they have outsourced their help desks, manufacturing, distribution, and installation of all products and services related to the Direcway system. They have gone to great lengths to distance themselves from the actual users of the Direcway system. One would think that this structure is a recipe for disaster. It would be if the Direcway product did not maintain such a monopolistic hold over the consumer VSAT industry.

For the consumer and small business to receive the level of service they would expect from a "normal" ISP they must learn to deal with schisms. First they have to learn when to deal with Direcway and when they have to deal with a local support organization. Then, within Direcway they have to learn which group to deal with internally, and externally, to Hughes Network Systems to involve for each problem they may encounter. Some small business have elected to simply pay their local technical provider, such as CPE Labs, to handle all of their support issues in dealing with the multiple personalities that Direcway can have.

Direcway is a service we love to hate. Internally to Hughes it is treated like an interesting step child to the much larger VSAT business they control. Hughes provides commercial VSAT services for Chevron stations, hotel chains, and other major corporations. If you see a VSAT dish on a business it is a good chance that it is a Hughes VSAT client. The number of Direcway clients is roughly 225,000 as of January 1, 2005 while the number of commercial VSAT clients is 650,000. In the first quarter of 2005 2.6 million subscribers were added to the cable and DSL ranks.

There is a growing digital divide being erected between the number of city and town dwellers with effectively very cheap broadband access and the rural dwellers with few but expensive broadband access. Most rural citizens are forced to buy infrastructure facilities while their urban brethren are able to spread the costs of such infrastructure over a wide population.

The FCC reports as of 2005 that there is at least one wired broadband product offering in 95% of all U.S. zip codes. Also, this covers 99% of the country's population in those zip codes.

The satellite internet business as a whole is rather small. Direcway is the largest at 250,000 subscribers. This number pales to the number of subscribers for DSL and cable modems. A 2005 survey put the number of Americans with broadband access in their homes to the internet at 57 million. It took 6 years for Direcway to get 1/4 of a million subscribers while a cable company such as Comcast adds more than 400,000 broadband subscribers in a single 3 month quarter.

There are other satellite providers such as Starband, Galileo, Tachyon, and soon – someday – WildBlue. Starband seems to be doing OK now that they have emerged from chapter 11 bankruptcy and they are pricing their systems above Direcway but it is obvious they are still a very unsteady company. Galileo and Tachyon are not for consumers but for businesses only; finally, WildBlue will launch someday, hopefully, to compete with Direcway on price and speed.

Without any real competition the pricing structure for Direcway has not changed from the time of its inception around 1998. This is extremely rare in the technology sector as input costs continue to decrease it would be expected that hardware or services would become cheaper. It is very probable that any cost savings seen by Direcway, past their initial start up, has been absorbed into Hughes itself as increased profits. It will take a concerted effort by WildBlue to force any price changes by Direcway as they have such a commanding lead of the marketplace.

Believe it or not, Direcway is priced at the low end of the VSAT services industry. Two way satellite communications is the most expensive method of communications for the bandwidth received. It is only viable because it is available anywhere there is a clear view to the southern sky.

Direcway is priced and supported by Hughes just as if it were any one of their other VSAT services. They view the residential users as small business users that have the financial and technical ability to support their usage of a Hughes provided service. They have made some allowance by having a first level support desk located in India that is staffed with people conversant in Microsoft Windows and the configuration of a DW6000 to a single PC. Otherwise the user is expected to behave like a business client. When they purchase the service they buy the equipment out right, they have access to non-Direcway networking technicians that can assist them in building networks and providing on site support. Any on site maintenance, service, and configuration work will be performed by such technicians at added cost to the user.

Hughes does not maintain any field personnel. The installers for all of their VSAT products are subcontracted by national distributors. This means that the installer that arrives at your door is an independent contractor probably from a small dish satellite company or even better from a data communication company that does satellite communications as well. A computerized system assigns your install/repair to one of two distributors that then further computer assigns the service order to one of many subcontractors that handle work in a given area. Hughes, the Federal Communications

Commission, and other local government agencies list the requirements and specifications for the work to be done but Hughes is not directly involved in the specific site installation.

Satellite communications must deal with latency. The satellites that Direcway uses orbit in the Van Allen Belt 22,300 miles above the earth. Even with radio waves traveling at the speed of light takes 240 milliseconds to go from earth to satellite to earth. With return trips and other dealys we expect a normal "ping" time to be in the 700-1100ms time range. This is not much in human terms but it can wreck havoc with gaming and VOIP applications that require small acknowledgment times.

Each satellite transponder is capable of 45Mbps of bandwidth. Each transponder is shared with all other Direcway users on that transponder. The DW6000 filters out all communications not directed to it even though it sees all from a given satellite transponder. Since satellite communications are multicast in nature you will never encounter an Ethernet collision on receive. All problems will be with transmit.

Direcway is dependent upon KU band satellites. A review of the frequencies is in order.
L Band 950-1450Mhz
Big Dish C-Band 3.7-42.Ghz
Small Dish KU-Band 10.95-12.75Ghz
Spaceway and WildBlue KA-Band 19.7-20.2Ghz

Hughes does not generally provide a great deal of information on their products. It appears to be their corporate culture that all information should be held as tightly as possible, even from some internal departments. If you desire to learn about some of their products and design information then it has been suggested that the best place to go is the US Patent office and review Hughes Direcway product offerings there. For there all must be fully disclosed. Also Hughes is trying to standardize their communications protocol IPoS (IP over Satellite) and some information may be found along those lines.

The New In Door Unit (IDU) DW7000

On September 1st 2005 Direcway announced, and started selling, the replacement for the DW6000. The new unit is the Direcway DW7000 network termination interface (NTI). For all intents and purposes the two products are virtually the same. They look the same from the outside. They behave the same in the residential and commercial local area network. The biggest difference is in internal clock speed of the DW7000 over the DW6000. For single PC users not much performance enhancement will be gained. For users with multiple hosts and any single user doing a large download while others are browsing; then, upgrading to a DW7000 may be of interest. Also, with the new price plans a residential user paying $59.99/month can upgrade to a DW7000 and a professional service without a static IP address for $69.99/month. This pricing structure may be the most valid reason for an upgrade.

September 1st also saw changes in Direcway's service offerings and pricing structures based on upload/download speeds. Direcway's price and throughput plans now mirrors WildBlue's pricing structure.

In the remainder of this document if a statement refers to the DW6000 and DW7000 as being the same then the unit will be referred to as a DWx0000.

DW6000 versus DW7000 comparison:

	DW6000	DW7000
Transmit Format	DVB-S	DVB-S, DVB-S2
Transmit Rate	64, 128, 256 Kbps	Up to 1.6 Mbps
Receive Rate	Up to 48Mbps	Up to 90Mbps (DVB-S2)
Frequency Range	KU Band	KU, C, Extended C, Ka Band
Radio	1-2 Watts	1-2 Watts KU, 2 Watt C, 1-3.5 Watts Ka Band
Receive Modulation	QPSK	QPSK, 8PSK (DVB-S2)
Transmit Modulation	OQPSK	OQPSK
Throughput	Up to 16Mbps multicast streaming, up to 2Mbps TCP/http spoofed traffic	Up to 45Mbps multicast streaming, up to 4Mbps FTP, up to 2Mbps accelerated http, up to 2Mbps UDP
Router Services	NAT/PAT DHCP Simple Firewall DNS Caching, Performance Enhancing Proxy (PEP)	NAT/PAT DHCP, Relay Firewall through ACL DNS Caching Performance Enhancing Proxy (PEP) RIPv2 VLAN tagging TurboPage HTTP Acceleration

Site Preparation

The customer should perform a few prepatory steps prior to the certified installer's arrival. First, they should check all of their PCs/workstations for a valid and working Ethernet connection. Second, they should obtain the landlord's written permission for the installation – if applicable.

Direcway does provide a rather old online PC test at www.getdway.com . It gives data for DW4000 systems but at least it will verify the functionality of the PCs Ethernet card and drivers. Follow the steps to "Test your PC" to execute the system test.

At CPE Labs we use a free software tool from Belarc that can be downloaded from their web site located at www.belarc.com/free_download.html . It gives a more complete system configuration detail using their Belarc Advisor product. But, it is for windows systems only. All that is really needed is a 10BaseT Ethernet connection on the back of the PC or workstation. Operating system type, versions, disk drive space, RAM available, etc. does not really matter. The only real requirement is that the PC or workstation be able to execute a web browser or any internet related access software.

If the customer is not the owner of the property where the installation is to occur they should get written permission for the installation before the installer arrives. CPE Labs has a form online at http://www.cpe-labs.com/PDFs/LandlordApproval.pdf .

The customer should also review the Direcway "Terms and Conditions" located on the www.getdway.com website (http://legal.direcway.com/index.html). During the installation they will be required to agree to these terms. It is best to discover during pre-install that there is something in the agreement that will be unacceptable rather than after the install has started and a rather substantial installation fee is assessed.

Direcway does offer a "DW6000 User Guide"; but, you have to know where to find it: www.mydirecway.com/mydw/common/Guides/Dw6000 User Guide.pdf

<u>Installation Guidelines</u>

Direcway, Federal Communications Commission, and National Electric Code dictate the guidelines used for the installation of a Direcway system. Many of the same guidelines are effective for the entire satellite installation industry inclusive of DirecTV. But, many installers perform a lot of cost cutting measures that install systems below code. Since the Direcway system is a two way system – we are broadcasting to a shared resource satellite – it is imperative that all guidelines be followed. The same satellite that handles a Direcway transponder could also have a transponder used by emergency services or another broadcast company. It is in the best interests of all that any transmissions sent to a satellite are properly done.

The FCC requires that an installing technician be certified for the installation. This certification is a combination of Direcway specific information and an industry sponsored training organization, SBCA. I have included some of the installation guideline pages for the readers information at the end of this guide.

Grounding the Direcway system to NEC and federal guidelines is a constant topic among installers on several bulletin boards. For Direcway systems there are two grounds that are being effected. One for static and electrical discharge and one for routing spurious radio frequency signals to the ground and away from the DW6000. Grounding is not understood by many in the industry and some will argue one method to avoid "ground loops" and another to send electrical discharges (lightning) into the earth.
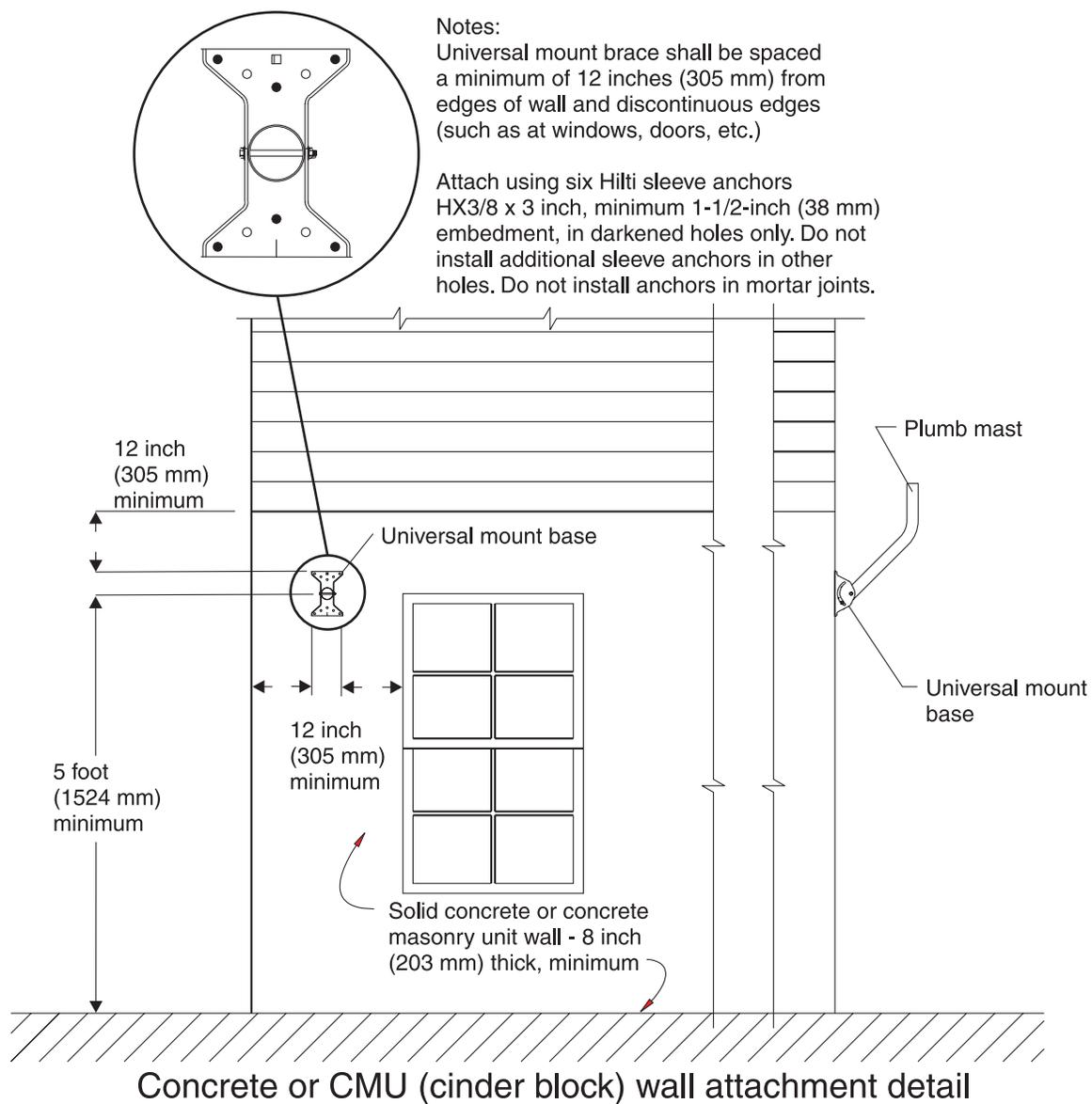
At present we install a ground from the transmitter to the shortest ground run possible. This will be a "signal ground" and not an electrical ground. In this isolated ground we are trying to shunt any signals picked up by the connectors, cable cross over interference, or the RF environment, and the positive charges built through transmitting. For non-metal pole installations we run a copper wire to the coax grounding rod. For metal pole installations we install a ground strap on the metal pole and connect the transmitter to the pole as a partial ground and then continue the ground run to the coax ground rod.

Next we ground the coax at the grounding block prior to entry into the home. This ground shunts any RF signal bleeding from the twin coax cables. This grounding run needs to connect to a 5/8" x 8' copper ground rod that is bonded to the house utility ground.. If this ground run is longer than 20 feet then a separate ground rod must be installed close to (under 20 feet) the coax ground block and further connected to the house ground with a bare copper dissipative run. This ground is important to provide a short run path to ground for the indoor unit. We do not want any spikes to travel through the coax and across the indoor unit into the house ground wire of the 110 volt plug. Bonding to the house ground zeros all potential differences between the 110 volt plug ground and the outdoor unit ground. This bonding step is very important and should be done if at all possible.

Last we ground the dish metal hardware in a separate ground circuit. If the dish is mounted on a metal pole then the pole serves as a static discharge ground. This ground
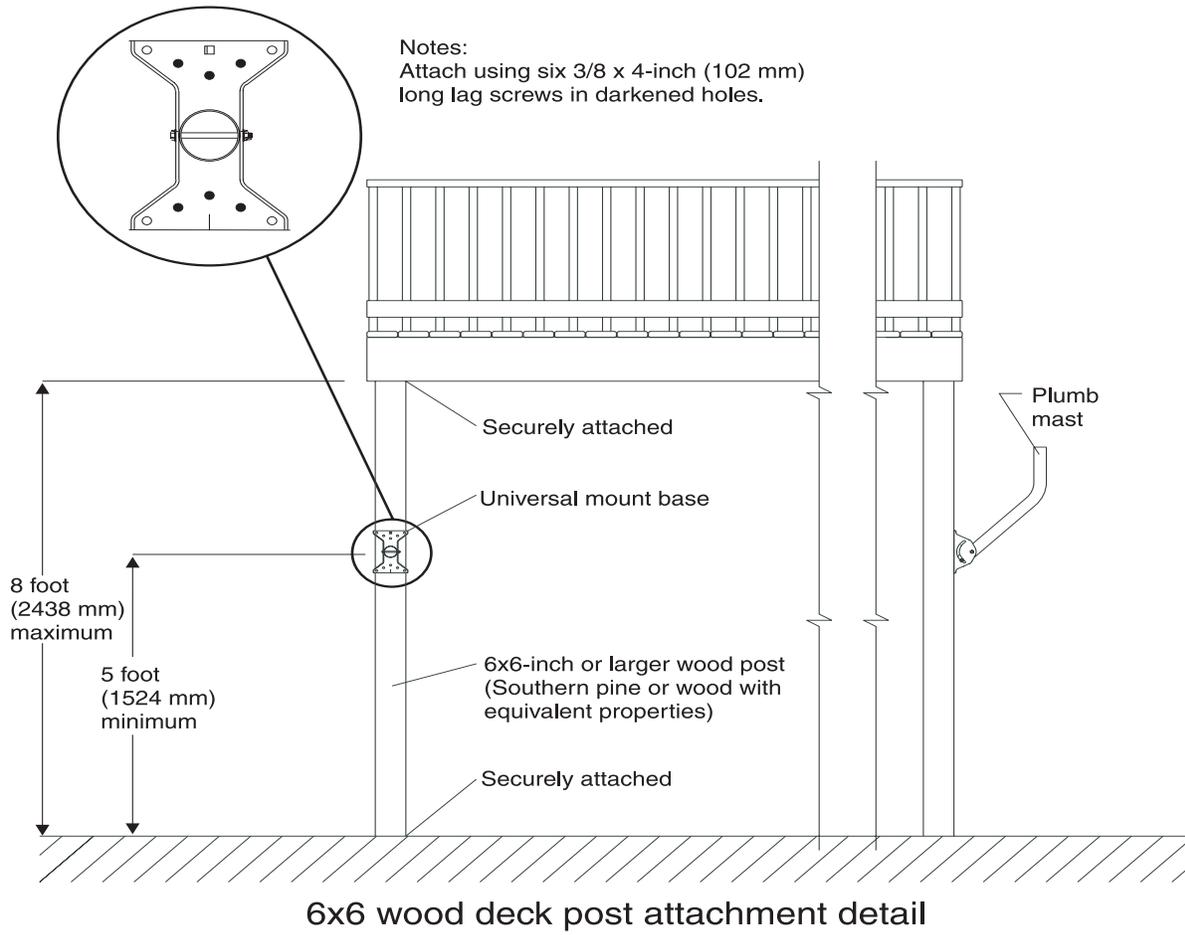
run is for electrical discharge alone. Non pole mounts will have a separate ground cable going to the coax ground rod.

NOTE: The following pages are for residential installs of the .74 meter dish. The commercial .98 meter dish can only be mounted on a metal pole or a non-penetrating roof mount on a flat roof surface.
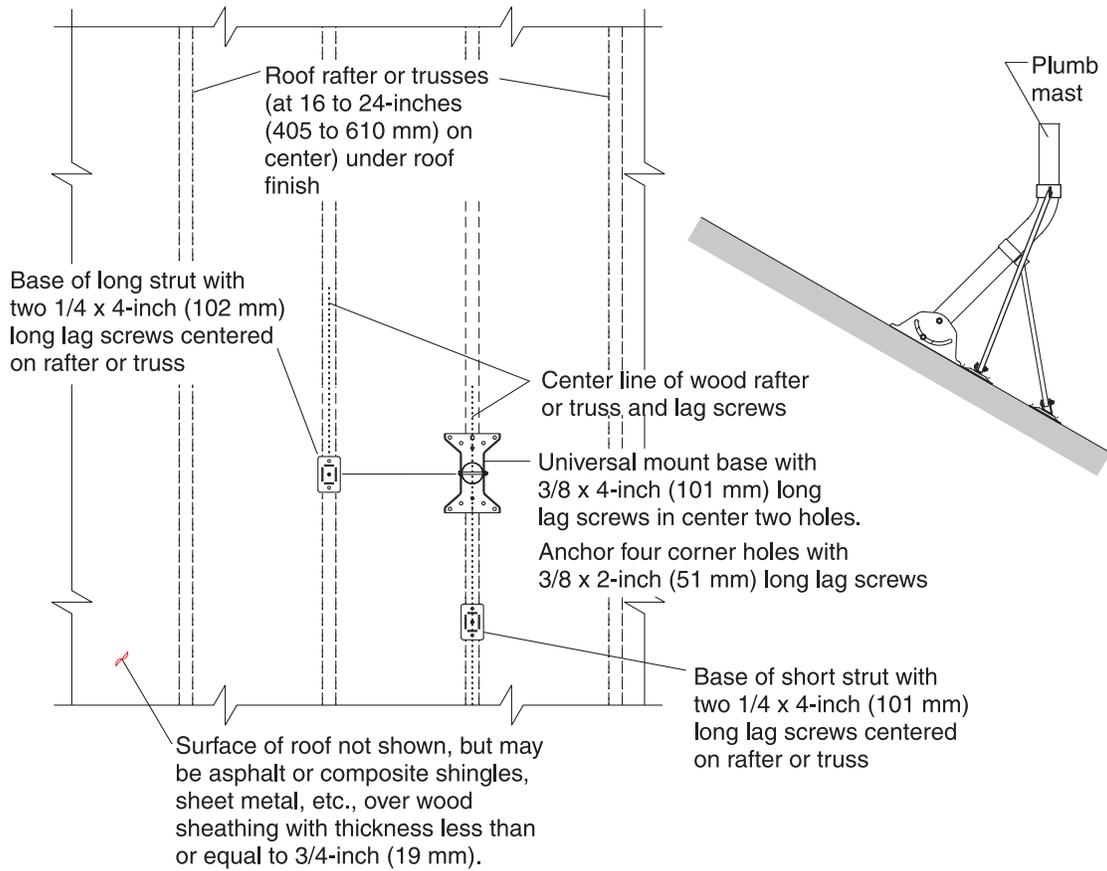
Notes:
Universal mount brace shall be spaced a minimum of 12 inches (305 mm) from edges of wall and discontinuous edges (such as at windows, doors, etc.)

Attach using six Hilti sleeve anchors HX3/8 x 3 inch, minimum 1-1/2-inch (38 mm) embedment, in darkened holes only. Do not install additional sleeve anchors in other holes. Do not install anchors in mortar joints.

Plumb mast

12 inch (305 mm) minimum

Universal mount base

Universal mount base

12 inch (305 mm) minimum

5 foot (1524 mm) minimum

Solid concrete or concrete masonry unit wall - 8 inch (203 mm) thick, minimum

Concrete or CMU (cinder block) wall attachment detail

T0057107

Compliant Installation of Two-way DIRECWAY Permanent Wall Mount Antenna

October 30, 2002

Notes:
Attach using six 3/8 x 4-inch (102 mm) long lag screws in darkened holes.

Plumb mast

Securely attached

Universal mount base

8 foot (2438 mm) maximum

5 foot (1524 mm) minimum

6x6-inch or larger wood post (Southern pine or wood with equivalent properties)

Securely attached

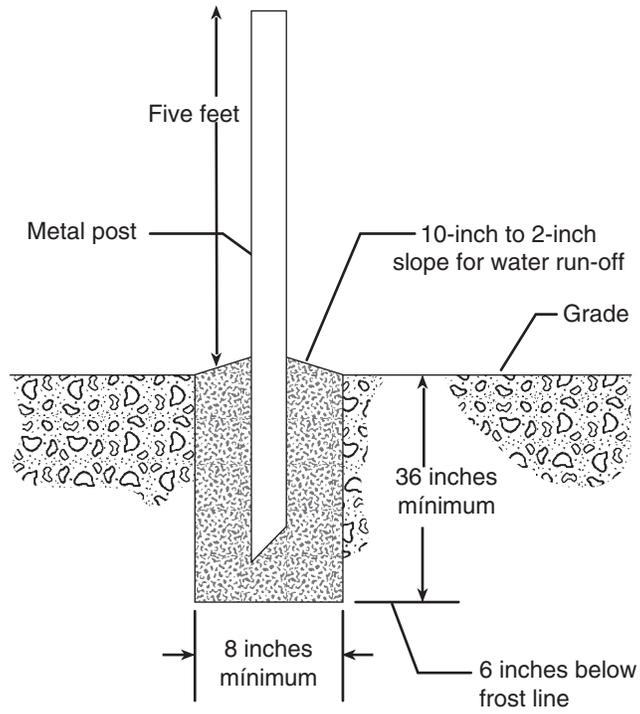6x6 wood deck post attachment detail

Compliant Installation of Two-way DIRECWAY Permanent Deck Mount Antenna

October 30, 2002

Notes:
Success of attachment relies on installation of all lag screws in center of wood wall studs (±1/16 inch or 1.6 mm).

Plumb mast

Roof rafter or trusses (at 16 to 24-inches (405 to 610 mm) on center) under roof finish

Base of long strut with two 1/4 x 4-inch (102 mm) long lag screws centered on rafter or truss

Center line of wood rafter or truss and lag screws

Universal mount base with 3/8 x 4-inch (101 mm) long lag screws in center two holes.

Anchor four corner holes with 3/8 x 2-inch (51 mm) long lag screws

Base of short strut with two 1/4 x 4-inch (101 mm) long lag screws centered on rafter or truss

Surface of roof not shown, but may be asphalt or composite shingles, sheet metal, etc., over wood sheathing with thickness less than or equal to 3/4-inch (19 mm).

T0054011

Compliant Installation of Two-way DIRECWAY Permanent Roof Mount Antenna

Five feet

Metal post ———

10-inch to 2-inch
slope for water run-off

Grade

36 inches
mínimum

8 inches
mínimum
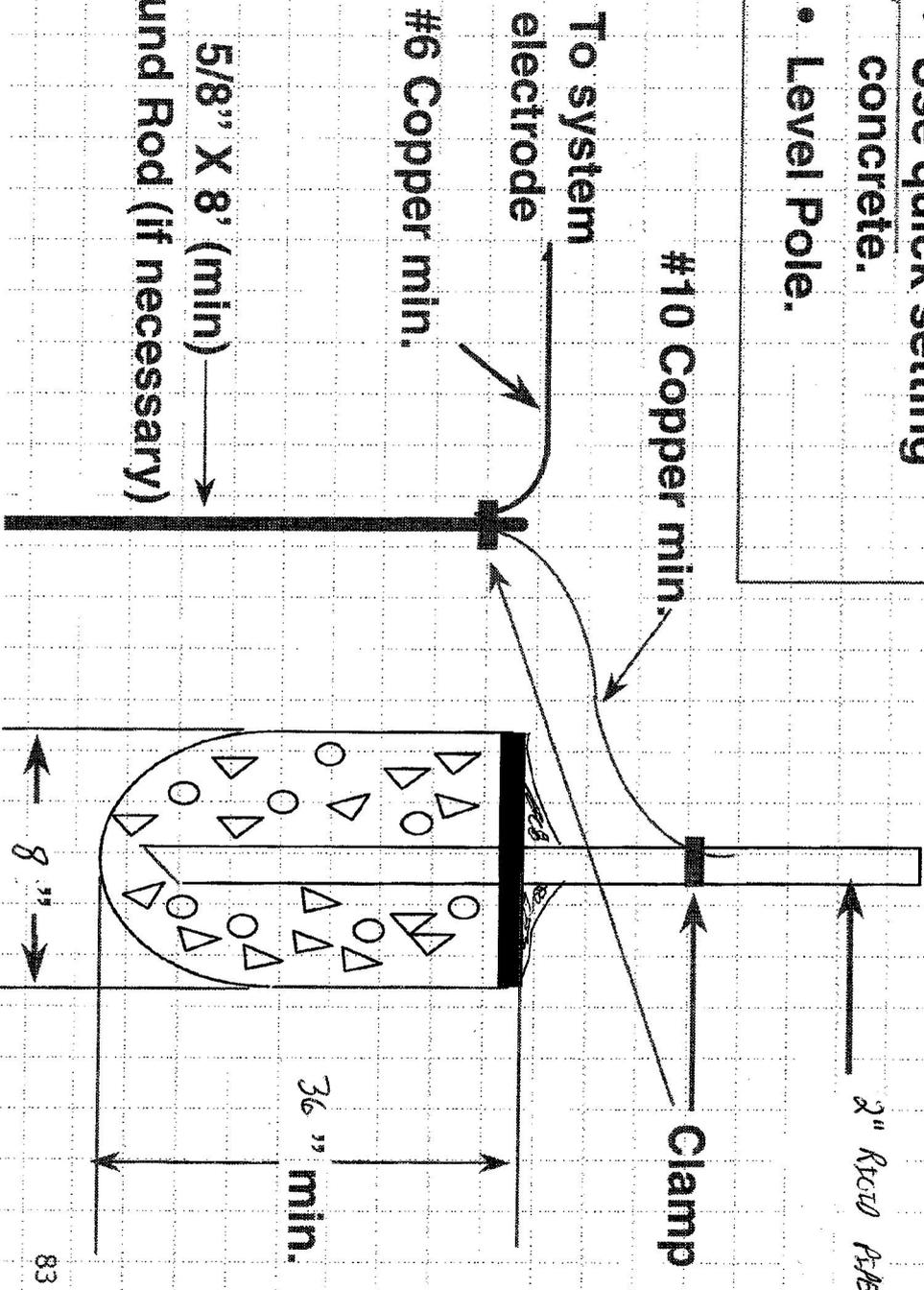
6 inches below
frost line

Compliant Installation for Two-way DIRECWAY Permanent Pole Mount Antenna

Mounting Choices
-Pole Mount-

- Use quick setting concrete.
- Level Pole.

To system electrode

#6 Copper min.

#10 Copper min.

5/8" X 8' (min)
Ground Rod (if necessary)

Clamp

2" RIGID Pole

5' BOTTOM EDGE OF DISH TO SURFACE

8"

36" min.

83

System Protection

Coil Cable
(In Attic or basement)

#10 Min. COPPER
#6 ALUMINUM

TRANSMIT GROUND

(3) 4" LOOPS
TRANSITION

Receiver

Surge Protector

MAIN 50¢ GROUND LINE

 # 6 bare wire

20' max   TO GROUND BACK
FROM UTILITY GROUND

5/8" X 8-10'
Ground Rod
(if necessary)
NO MORE THAN 20' FROM UTILITY GROUND

Utility
Ground

Note:

Shortest cable run
must exceed length
of ground/bonding
wire

Contact Numbers

First Call….

Hughes Direcway Support : 866-Direcway (347-3292) – Free help desk located in India. Go to this help desk for assistance with setting up your PC/MAC to use the Direcway router. This group can access some information from Hughes corporate resources and can explain satellite outages or that you may have a cable disconnected. Do not look to this group for help with local area networks (LANs) or to have any knowledge outside of Direcway and windows configurations.

There is a level 2 support that the user may be transferred to. They are located in Florida and work for a company called "The Answer Group" or TAG. This is the same help desk that installers call as their first level of support. Again, the employees in this group are not Direcway (Hughes Network Systems) employees. Hughes technical support is located in Germantown, Maryland. Aside from the NOC staff the Germantown engineers are not available for direct call other than from the TAG team.

Do not hope for the help desk situation to improve. If you wish that the help desk were in the U.S. rather than India you may have to go on wishing. At least three of the top executives in Hughes from the CEO down have direct familial links to India. Hughes also has a major international presence throughout the world, headquartered in India.

When discussing any problem with one of the outsourced support groups always be sure to get a case id number (also known as a field service order number) from the phone representative. Use this same number each time you call in and are transferred to the different support groups just to keep everyone on the same page. This will also reduce your time explaining the problem to each person you talk to in your Direcway support odyssey.

Next Call…

CPE Labs Technical Support : 866-267-0245 x2 – This is a technical support number for customers of CPE Labs. We can help with inside wiring issues and data communications of which Direcway may only be a part of the entire picture. The technicians available at this location can fix any problems but will do so at a cost to the end user. They also have access to level 2 and level 3 support technicians at Direcway, Netgear, Zyxel, etc.

Also…

MyDirecway.com : 866-772-9467 – For assistance with maintenance of your email accounts.

Direcway Sales : 866-639-2021 – Direcway direct sales line and a place to go for upgrade orders from a DW4000 or DW6000 to a DW7000 system.

Keep the following information available for your support calls:

Site ID _____

SAN   _____   PIN _____ (last 4 digits of phone number)

Serial Number _____   _____
                 (both string of digits from router rear housing)

NAT IP Address _____

Router Address   _____

Satellite Longitude _____ West

Receive Frequency _____ Mhz

Receive Symbol Rate _____ Msps

Receive Polorization   _____

Transmit Polorization _____

Service Offerings

Direcway offers four service offerings. The residential offering is the smallest FAP bucket and quality of service offering. The other three offerings are all dispatched at a higher service level than the residential service through higher throughput gateways at the NOC. In essence, residential customers are serviced on a satellite transponder after the other three service offerings have been serviced. Basically, those who pay more per month for an offering are allowed to the top of the dispatch stack. Taken another way, Direcway preserves the capacity of a satellites transponder for its professional and commercial users and oversells the transponder capacity to the residential users. Quality of service has more to do with the speed of your internet connection than the FAP bucket. FAP only specifies how much you can use in a given time period.

The four service offerings are:
1) Home (Residential),   .74m dish,   Rate Code 1 128Ksps inroute gateway
1) Professional,   .74m dish,   Rate Code >1 256Ksps inroute gateway
            Commercial Offerings:
1) Small Office,   .98m dish,   Rate Code 10 256-512Ksps inroute gateway
1) Business Internet,   .98m dish,   Rate Code 10 256-1024Ksps inroute gateway

The introduction of "Ksps" (Kilo symbols per second) and "inroute gateway" can be confusing. In satellite or cable communications single bits are not transmitted but rather whole blocks of data are transmitted at once in a symbol pattern. An inroute gateway is located at the NOC and services the traffic to a specific satellite transponder. The DW6000 was assigned to transponders serviced by 128Ksps gateways even though it could not make full use of them. With the DW7000 Hughes can now make use of gateways of 128, 256, 512, or 1024Ksps. The DW6000 had a receive rate maximum of 48Mbps and transmit maximum of 64, 128, or 256Kbps. The DW7000 can receive up to 90Mbps and transmit up to 1.6Mbps.

The Direcway Network Operations Center (NOC) controls the inner functioning of the DW6000/DW7000. Based upon a service offering NAT (network address translation) may be enabled or disabled. For a residential, or professional service without static IP, NAPT (network address port translation) is enabled thus blocking Wide Area Network (WAN) access to any device local to the DW6000/DW7000. For all other offerings with a static IP address NAT is disabled to allow WAN access to the LAN. Also, DHCP functions for a residential, or entry professional, service is different than the other service offerings. For residential DHCP fully functions servicing all hosts attached to the LAN. For the non-residential service DHCP only hands out a single IP address to the first host. This single address is the static IP address of the LAN on the internet.

You can reference the subscriber agreement through the web site:
http://legal.direcway.com.

A static IP offering actually has two WAN addresses. The first address is the address assigned by NOC for the DWx000. This is the LAN gateway address. The second address assigned by NOC is 1 address increment above the DWx000 – the static host address on the installation's LAN. For example,

DW6000 IP address: 67.46.28.1   (LAN gateway address)
First host on LAN: 67.46.28.2   (This will be a single PC or a host)
Subnet mask: 255.255.255.252

In a non-residental installation the DWx000 functions like a cable/DSL Network Termination Interface (NTI) or "modem" as they refer to it. As such the user will have to acquire a separate router to service the LAN for NAT, DHCP, and firewall functions.

The subnet mask would hint that more than one static address could be used. In fact the business offerings have (5) additional static IP addresses available at an additional monthly charge. The DWx000 DHCP would hand out the static IP addresses to the first hosts that requested them. This could be used to set up a DMZ.

Dial backup is offered in all plans except the residential plan. For such plans the DWx000 is exchanged for a DW6002. The DW6002 has an additional telephone POTS RJ11 port on the rear panel.

When selecting rate plans remember that for every 1Mbps of network traffic a PC has to process roughly requires 1Ghz of its processing cycles. To truly process 100Mbps would require 100Ghz of dedicated on board processing. It is easy to over size the network to what is actually required. Use of switches instead of hubs, or proxy servers instead of the broadband connection can have greater performance gains than installing CAT6 wiring instead of CAT5e.

Bulletin Boards and Newsgroups

One of the best speed test sites that includes moderated discussion groups is the site www.testmy.net. This site has the ability to truthfully measure the speed of your Direcway system – both upload and download. There is also a moderated forum for Direcway users.

The newsgroup for Direcway users is alt.satellite.direcpc. Amazingly, Direcway does not allow for newsgroups in their service plan and you will have to locate a pay for service that provides newsgroup services.

Another site is www.copperhead.cc which is solely dedicated to Direcway satellite systems. For instance, the DW6000 User Manual can be found on this web site in the Downloads section under manuals. You have to know the specific link on MyDirecway to get to the manual there: http://www.mydirecway.com/mydw/common/Guides/DW6000 User Guide.pdf. Copperhead.com has recently gone to a for fee service so it may not be the most desirable site at this time.

The DW7000 User Guide is not generally available for users at this time. It is located on the CPE Labs web site in the Online Documentation section. Once Hughes places the manual in a spot for general availability we will provide that information.

Another site is www.dslreports.com which covers the entire broadband industry and has large moderated forum areas. You will also find many FAQ (Frequently Asked Questions) pages arranged into a type of hyper manual for users looking for more detailed information.

As you read through the forums you will come across many references to tweaking the performance of a Direcway system to increase downloads/uploads. Many of these references are dated and refer to the older generation DW4000 systems. The DWx000 system is a self-hosted system while the DW4000 required a USB connection to a Windows PC to function. Since the DWx000 is a dedicated device it is tuned to the desired performance that Direcway desires. The user has almost no way to tweak their Windows or Macintosh systems to improve their system responsiveness in such a way as to effect the designed functioning of the DWx000. Except – to point your web browser to the DWx000 proxy and DNS onboard function. I have included an article from DSL reports with the instructions on pointing browsers to the DW6000.

General satellite location information can be found from the following sources.
- Lyngsat.com   General satellite and transponder information.
- Satcodx.com/usa   detailed satellite and transponder information.
- Web-radio.com   streaming audio.
- Macromedia.com   streaming video.

If Direcway FAP just gets your goat then you might turn to FAPGUARD.com for some assistance.

System Control Center

The DW6000 has an internal web server that answers to the address:
http://192.168.0.1   or to the DNS intercepted names:
http://www.direcwaysupport.com/   for DW6000
http://www.systemcontrolcenter.com/   for DW7000
or to the NAT IP Address of the DWx000:
http://69.35.225.x   Find this address from the System Info globe as the
NAT IP address, or LAN1 IP address on DW7000 systems.
For static IP service offerings the static IP address of the DWx000 can also be used to
connect to the System Control Center screens.

The address 192.168.0.1 is also referred to as the gateway address for the residential
service offering. To be precise, the NAT IP address and not 192.168.0.1 should be used
as the first hop router address and the satellite router address 66.82.157.x is the next hop
router address.

Normally the subnet mask will be 255.255.255.0 except during commissioning when it
can be 255.255.255.255 or …252 so that only 1 host can connect to the non-
commissioned NTI.

Direcway's first level help desk will always ask you to refer here for site specific
information and primary problem determination.

Bring up this web page to make sure the System Status is Green. If not then click on the
System Status indicator to determine where the failure resides. The System Status screen
will have a red flag next to the item that is causing the failure.

The System Status screen has a very misunderstood number that is simply referred to as
the Signal Strength. This number is really the Signal Quality Factor (SQF) and was
labeled Signal Strength to not confuse end users. This number is really a factor of several
items not the least of which is the satellite commissioned to, the receive transponder
frequency, isolation factor, etc. Any indication above 30 should mean that the system is
usable. But a reading at one site system of 74 does not mean that they have a better, faster
connection then another user that may be on a different satellite and commissioned to a
different receive transponder frequency with a 56 reading. Direcway technicians have
charts that translate these numbers into more meaningful information. For the normal
user they are only a guideline.

One question that arises is why is the receive frequency only listed. What about the
transmit frequency. All satellites are the same. For every Receive frequency they have a
matching transmit frequency. Remember what a satellite does. It takes everything sent to
it on its receive frequencies and retransmits them on their matching transmit frequencies.
The satellites function is rather simple.

Also, there is more translation going on. RG6 coax that connects the DWx000 to the dish LNBF receiver and transmitter is a very efficient and wide band capable medium. It can not transmit the Gigahertz frequencies required for satellites any great distance though. The LNBF and DWx000 communicate in the L-Band. This is the normal RF band around 960Mhz. The LNBF steps down the Gigahertz received signal to the L-Band and transmits it to the DWx000 satellite in port. The DWx000 transmits through the satellite out port using the L-Band to the dish mounted transmitter. The transmitter steps up the transmitted signal to the Gigahertz frequency required and then broadcasts it down the long square tube that wraps from under the LNBF arm up to the focal point lens. This is an interesting point because microwave signals are reflected and bent from the transmitter to the focal point through air – no wire carries such a high frequency signal in this set up.

The System Status screen has two important indicators. TxCode and RxCode. Normal indication is TxCode=8 and RxCode=5. Transmit status is the key indicator for Direcway systems. They are designed to shut down at the first indication that there is any problem in the transmit portion of the satellite connection. This is critical because the system can not be allowed to transmit to the incorrect satellite or to the correct satellite in such a manner as to corrupt other data traffic to the satellite.

The System Info screen will give support centers the information needed for them to isolate your data traffic on their intranet for problem tracking.

We have run into only two TxCode (s) that are of special note. First, a TxCode of 17 may be a signal that the DW6000 has entered a deadly embrace condition. There seems to be a know software glitch that if the DW6000 locks on Tx17 it will require two actions to correct. The first is to reset to factory defaults and the second is to replace the DW6000 so that its PRAM can be blasted. With a Tx17 lock a technician will have to be dispatched to possibly replace the DW6000. Thankfully, this condition normally occurs only during registration and a power interruption of the DW6000 during registration. But, a Tx17 lock may occur for reasons unknown as of this writing. Unknown if this will occur for DW7000 systems.

The second is a TxCode of 10 – Can not communicate with the NOC. This error can occur if the transmitter is not properly grounded. It can be caused by the buildup of static electricity at the transmitter. If you encounter a TxCode 10 then pull the power cable from the back of the DWx000 and then touch the power cable's outer metal jacketed connector to each coax outer jacket of the RG6 cables plugged into Satellite IN and Out. This will shunt the electrical buildup across the house ground. Next plug in the power cable to the DWx000 and see if the TxCode 10 is alleviated. If it is, and if you have to do this periodically you may be best served if you call a technician to properly ground the satellite transmitter. If your area is suffering from a drought then you may just have to live with the problem until water returns to your ground soil. Soil without water content is a poor conductor for a ground.

WWW.MyDirecWay.Com

MyDirecway.com is your portal to the control of your Direcway resources. Most notably the email accounts that come with the Direcway satellite system.

Before we start first collect the Site Id and Serial Number from the System Control Center screens Site Info menu. These will be needed to register your control id and administer your email ids.

The first time you browse to www.mydirecway.com you will take the "If this is your time here, Please Join" button. Choose the DWx000 from the next screen then enter your site id information collected earlier. The remaining dialogs will take you through the process of setting up your site administrator's account. This is not an email account but the account you will use to administrate the email accounts that you have available.

Direcway does provide a satellite speed test site: http://satspeedtest.diecpc.com or it can be reached via the speed test button after you sign in to your myDirecway account. But it is prone to not work under some circumstances.

Once your administrator's account is set up then you can use the following steps to control the email ids.

How to create a DIRECWAY E-mail address:
1. Go to www.mydirecway.com and login.
2. Click E-mail Options in the Help Center under Account Info.
3. The system will display all email accounts associated with your DIRECWAY account.
4. Click Create New Account.
5. Enter the email username and password you wish to use. The e-mail username and password can be the same as or different from your mydirecway.com username/password as long as it is not already in use by another user.
6. Click Submit. Your new email account will be created and a confirmation page will be displayed.

How to delete an E-mail address through mydirecway.com:
1. 1. Go to www.mydirecway.com and login.
2. Click E-mail Options in the Help Center under Account Info.
3. The system will display the list of all email accounts associated with your DIRECWAY account.
4. Click Delete next to the email account you wish to remove.
5. Click Confirm on the deletion confirmation screen.

How to change your E-mail account password:
1. Go to www.mydirecway.com and login.
2. Click Email Options in the Help Center under Account Info.
3. Click Change Password next to the email account you wish to modify.
4. Enter the new password information as requested.
5. Click Submit. Your email password has now been changed.
6. Click Logout.

How to send and receive E-mail using DIRECWAY Webmail:
1. Open a browser
2. Type http://webmail.mydirecway.com (you can also open DIRECWAY Webmail by clicking the Webmail icon on myDIRECWAY.com)
3. Log in by typing the username and password associated with the email account you want to use.

Email Clients

Setting up your PC email client, such as Outlook Express, Microsoft Outlook, Eudora, or Netscape, is explained in the help screens available from http://www.direcwaysupport.com/ if you follow the Help to Frequently Asked Questions and How do I setup my DIRECWAY mail. These help screens are kept up to date by Direcway support.

The specifics are as follows:
Direcway mail server is a POP3 type.
Host Name: pop3.direcway.com   {incoming mail
        Port 110 is used . SSL through port 995 is not used
SMTP host: smtp.direcway.com   {outgoing mail
        The SMTP host will require authentication (email userid/password) to send email.
        Port 25 is used

Fair Access Policy (FAP)

Qulaity of Service (QOS) is provided to all users by limiting the heavy users of a shared resource. Direcway limits the heavy users through their Fair Access Policy (FAP). Under the many service plans think of each one as a bucket. If you have a full 5 gallon bucket and you add another teaspoon of something to it then a teaspoon of the something will flow off the side and be lost. Consumers have a 300MB bucket. Every second Direcway adds 56Kbps to this 300MB bucket. If the bucket is full you loose the added 56Kbps and you have a full 300MB bucket. Let us say you start downloading a 500MB file. You will start a process that drains your bucket at 400Kbps. Since only 56Kbps is being added we can see that very soon your bucket will become empty. Once it does empty you will only be able to download at 56Kbps refresh rate. This situation is called FAPed by Direcway users. You will continue at 56Kbps until the file completes the download and your bucket begins to fill back up again to the 300MB limit.

People that download a lot of videos and music have turned to products such as FAPGUARD to control this flow of information and avoid the FAP penalty.
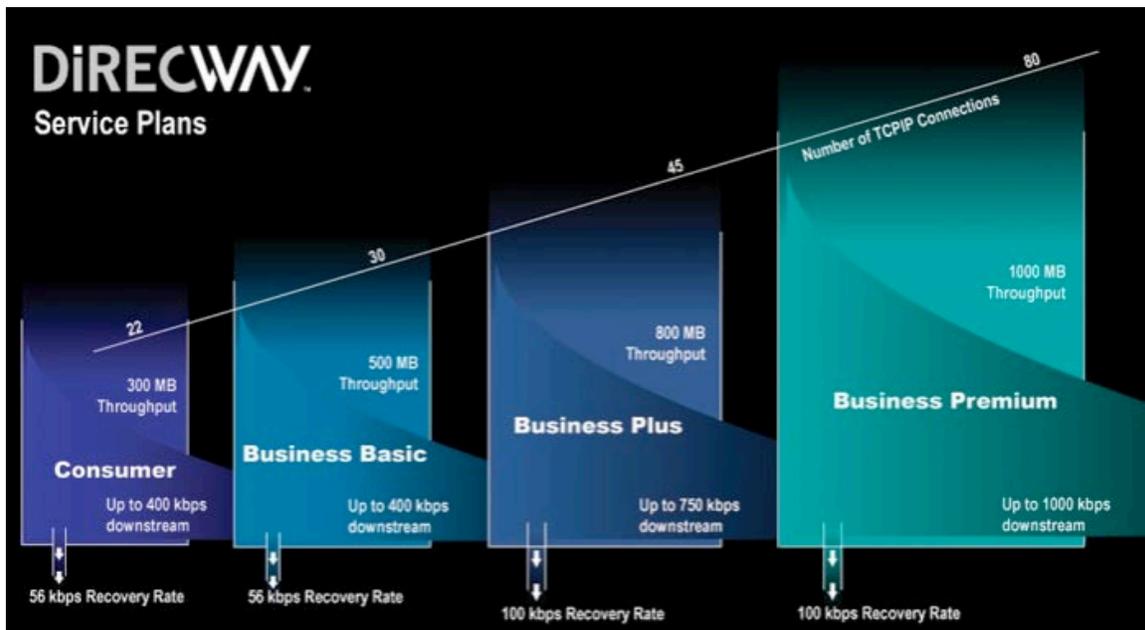
To determine if you have been FAP'ed you can go to the http://www.mydirecay.com web site and select the "CHECK MY USAGE" item in the "HELP CENTER". The resultant report will contain a column of "SUBJECT TO FAP".

http://192.168.0.1/fs/registration/setup.html

This screen is the installers dialog screen. The Registration-Installer section will take an installer through peaking the dish, manual and automatic cross pol tests (ACP), and registration.

Registration-User will allow a user to manually register a system that has already been installed by a certified technician. This dialog is used by a user to upgrade their system from a DW4000 to a DW6000. They will be supplied with a rather long registration key to enter during the upgrade process.

Antenna Pointing is normally used by a licensed technician to re-point and test a dish that has been disturbed and is no longer pointing to its commissioned satellite.

The installer can point the Direcway satellite dish to a transponder on one of many satellites. A chart is provided that shows the satellite pointing data used by the installers.

Satellite based commissioning can be done with the dish pointed to any valid Direcway satellite and transponder. Once the IDU (DWx000) is commissioned it will only work on the satellite and transponder pair it was commissioned to.
Steps taken during satellite based commissioning:
1) Power on Self test of DWx000 and boot FALLBACK.BIN. Power Light will flash upon successful start up.
2) Installer will tune and perform Automatic Cross Pol (ACP).
3) Establish connection with NOC Registration Server.
4) Force ranging to adjust transmitter power.
5) Download encryption keys for secure registration processing.
6) Upload unit serial number.
7) Display User Agreement
8) Retrieve SAN/PIN numbers for registration and commissioning servers.
9) Download SiteID from Commissioning Server.
10) Download satellite and transponder information in MAIN.BIN.
11) Power restart IDU. If MAIN.BIN fails then will try FALLBACK.BIN. If MAIN.BIN works then all lights will display steady state.
12) Remaining configuration files downloaded from NOC.

DirecwaySatellites.xls

G11 @ 91º West

Satellite Frequency In MHz	990	1330	1350	1410	1050
Receive Polorization	V	H	V	H	H
Symbol Rate Msps	30	30	30	30	10
Viterbi Mode	5/6	3/4	1/2	2/3	5/6
Isolation	33	33	33	33	33
ACP	0	66	0	66	0

G10R @ 123º West

Satellite Frequency In MHz	1272
Receive Polorization	H
Symbol Rate Msps	10
Viterbi Mode	1/2
Isolation	
ACP	

G4R @ 99º West

Satellite Frequency In MHz	1110	1250	1350	1370	1230	970
Receive Polorization	V	H	V	H	V	H
Symbol Rate Msps	30	30	30	30	30	30
Viterbi Mode	3/4	5/6	5/6	7/8	2/3	7/8
Isolation	30	30	30	30	30	30
ACP	62	62	62	62	62	62

G3C @ 95º West

Satellite Frequency In MHz	1120	1307	1360
Receive Polorization	H	H	H
Symbol Rate Msps	21.5	30	21.5
Viterbi Mode	3/4	3/4	3/4
Isolation	32	32	32
ACP	64	64	64

SatMex 5 @ 117º West

Satellite Frequency In MHz	1250	1070	990	1090	1130	1050	1230	970	1270	1170
Receive Polorization	H	V	V	H	H	H	V	H	V	H
Symbol Rate Msps	30	30	30	30	30	30	30	30	30	30
Viterbi Mode	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Isolation	34	34	34	34	34	34	34	34	34	34
ACP	81	81	81	81	81	81	81	81	81	81

AMC 3 @ 87º West

Satellite Frequency In MHz	1050	1070	1150	1250	1290
Receive Polorization	H	V	V	H	H
Symbol Rate Msps	30	30	30	30	30
Viterbi Mode	5/6	3/4	2/3	7/8	7/8
Isolation	30	30	30	30	30
ACP	66	66	66	66	66

Satellite	**Horizons 1 @ 127º West**		
Frequency In MHz	1270	1390	1410
Receive Polorization	V	V	H
Symbol Rate Msps	30	30	30
Viterbi Mode	5/6	3/4	5/6
Isolation	30	30	30
ACP	60	60	60

Satellite	**AMC 9 @ 83º West**			
Frequency In MHz	1430	1390	1410	1310
Receive Polorization	V	V	H	V
Symbol Rate Msps	30	30	30	30
Viterbi Mode	3/4	7/8	7/8	7/8
Isolation	30	30	30	30
ACP	60	60	60	60

Satellite	**IA8 @ 89º West**
Frequency In MHz	1390
Receive Polorization	H
Symbol Rate Msps	30
Viterbi Mode	7/8
Isolation	30
ACP	60

Transmit Polarity is always Horizontal
Minimum signal is always SQF 31
KU Band Modulation Type is QPSK, DVB-S
Frame Mode is HDLC

Viterbi Forward Error Correction (FEC) of 1/2 means for every 2 bytes transmitted 1 byte is error correction.
        Viterbi of 7/8 means that for every 8 bytes transmitted 1 byte is error correction.
        A transponder with Viterbi 7/8 is highly reliable.
        Starting with DW7000 it is no longer required to enter Viterbi settings.

http://192.168.0.1/fs/advanced/advanced.html

The screens of this dialog are used by second level support and on site technicians. There is nothing in these screens that can be invoked to harm the functioning of your system with the exception of Force Ranging described below. All of the screens are informational only.

Configuration Parameters: This screen gives all of the commissioned information that your satellite system is configured for. It provides all information, including Viterbi Rate which is not available from the System Console. The gateway IP address is the public address of the DW6000 router.

ACP Statistics: The important number on this screen is the isolation numbers. A strong SQF (signal level) may still not result in good browsing. The system must be tuned for the best isolation of receive and transmit. This is the ACP test that the licensed technician performs after getting the peak signal on the dish. To pass ACP may mean that the peak signal may not be the best signal and the technician has to move the dish slightly off peak so that transmit and receive are isolated. This is not understood by most users who play with their dishes later to get the "peak" signal then loose all reception because the system then fails isolation. In other words, do not touch that dish unless you are licensed to do so or you may cause an outage.

Force Ranging: This is the manual way to set the transmitter power and skew settings. This task is normally done during registration. Since each satellite dish is located at a different spot on the earth each transmitter has to adjust itself for maximum transmit power and skew so that any one does not overpower all others sharing the satellite. Over time due to wind drift or other considerations it may be helpful to perform this transmitter readjustment to improve transmitter performance. This task is usually performed by a licensed technician and is considered a fine adjustment to improve a functional system. If your system is not receiving signal today then this will not help. Consider it a fine tuning tool that is used in certain circumstances at the discretion of second level support.

The DWx000 is programmed to perform a Forced Ranging operation, XPOL Revalidation, at programmed intervals. Because of this function a manual Forced Ranging should never be required. If the Direcway NOC XPOL server is down while the DWx000 attempts an automated Ranging then your system will be out of service until the NOC corrects this problem.

Turbo Page Statistics: Look here to determine your Upstream proxy IP address which is the same as your public IP address. This is your address that another public IP user can use to contact you.

DNS caching Statistics: The DWx000 does maintain a local DNS cache. This is how www.Direcwaysupport.com is translated to 192.168.0.1 on the DW6000. It is not extremely large but it can increase the speed of browsing look ups for many users. It is

also another reason why an out of the box DWx000 seems slow and the installers tell users to use it for a week and let it download all of its files and populate the DNS cache.

Direcway DNS server addresses are as follows:
66.82.4.8
66.82.4.12
198.77.116.8   <= This is the preferred DNS server address.
198.77.116.12

Reset History is a log kept of the number of times, and reasons, that the DWx000 system was reset either by the NOC or because of an internal error. The reset history screen records around 6-10 events for review.

Address Resolution Protocol is the TCP/IP function that resolves a hardware MAC address to a level 2 IP address. DHCP uses ARP in its process function. The advanced screen has the function ARPTABSHOW() under the more commands tab.

The NAT Statistics page maps the internal internet addresses to the remote IP addresses and port assignments.

DW6000 VSAT Install Console

I hesitate to put this information in a User Guide but I have seen to many references to this function on to many bulletin boards to not at least cover the topic if for no other reason to issue a stiff warning about going there.

The VSAT console is a non-browser interface to the configuration of the DW6000. You reach it by using telnet:
telnet 192.168.0.1 1953
Later in this guide there is a chart that lists the open ports that the DW6000 host has open. Port 1953 is the open port for this purpose.

Now that I have told you about it I must sternly ask that you not go there. In the field we use this access to tell the DW6000 to Reset (rr command) or to reset to factory defaults (rf command). The rf command is how we clean the clock of a troubled DW6000. Once done we have to completely re-register the DW6000 from the beginning just as if it came from the box new.

If you go there get ready to dispatch a technician to fix your system.

Generally all installation tasks and tests are available through the web interface. There is one test that is useful, the ODU voltage test. This test will report the voltage being delivered to the outdoor transmitter. From the VSAT console choose option "i" for installation. Respond to the questions for installer ID and OPI signal simply enter a null return. Next select option "e" for ODU Connectivity Test. The ODU voltage should be between 60-70. If not then one of three problems could be present: 1) power supply should be replaced, 2) ground block could be shorted out, 3) cable could be broken.

Firewall

Many users wish to activate a firewall for protection. A firewall is an effective way to block certain port attacks into a site through an internet connection. Most of the new releases of Microsoft Windows,as do all Macintosh OS X systems, have a built in software firewall. These are only good if a single PC is connected to the DW6000. If the DW6000 is servicing a network a hardware firewall is the recommended way to go and not a software version of a firewall from Microsoft or any other vendor.

The DWx000 operates in two modes. A consumers edition mode of NAPT (Network Address Port Translation) and a professional mode where a static IP address can be assigned to a DWx000.

In the normal consumer edition the DWx000 does not get an exposed address on the internet at large. They get an address on the Direcway Intranet and NAPT is used to translate the DWx000's single intranet address into the multiple TCP/IP sessions that request an address from the DHCP host in the DWx000. The ability for an outside person to be able to address a consumers session is extremely limited. Indeed, the NAPT ability of the DWx000 would make one surprised if any outside connection attempt to a port ever made it to the correct place. NAPT hides the port and/or protocol numbers used by your computers connected to the DWx000.

NAPT can be considered as a one way valve for conversations, permitting only those which are initiated by the computers behind it. The only inbound traffic which can traverse NAPT is that which is part of an internally initiated conversation ('solicited traffic'). This is similar to the effect of a stateful firewall. –DSL Reports, FAQs Security NAT Routers.

The professional version, and the commercial versions, are provided with a static IP address to the DWx000. This address is reachable by the internet at large. It also turns the DWx000 into something akin to the cable and DSL modems (network termination interface) that are widely available today. For a little more monthly money expenditure the DWx000 NAT functions can be removed such that a true stateful packet inspection firewall can be installed directly behind the DWx000 and before the local LAN.

At their simplest a firewall simply blocks specified TCP/IP ports from entering through the firewall. For instance, if you do not want any FTP requests to enter your LAN you simply block the FTP service by specifying to the firewall to block all TCP/IP FTP port requests. More advanced firewalls not only block specific ports but they also block valid port requests that come in the wrong state. These firewalls are called stateful firewalls and they remember the state each session is in by examining the traffic from each TCP/IP session and blocking unsolicited packets to valid ports when there are no sessions that are in the proper state to receive them. The stateful firewall has the ability to block TCP/IP storms from the internet.

The Direcway 6000 unit had a firewall as part of the built in hardware function. You used to be able to modify the firewall by going to :
http://192.168.0.1/fs/dynaform/firewallconfig.html
We had recommended users make use of this firewall in their residential networks. It blocked port attacks but did not block storms or performed statefull packet inspections. As it turns out the screens had been there but the underlying functionality was never completed. A recent DW6000 software upgrade has removed this function from user modification all together.

It is unknown but it appears that with the DW7000 some attempts may be made to fulfill the firewall capabilities of this NTI.

For the consumer version we today disable the software firewall on the workstation. For the Professional Version a hardware firewall should be placed between the DWx000 and the LAN on the users intranet. The problem is that for a hardware firewall to function it generally must control the DHCP and NAT functions to perform the statefull packet inspections and protect the underlying network. The residential service plan for a DWx000 does not allow the user to modify the base function of the DWx000 to turn off DHCP and NAT. A user must subscribe to the Professional Direcway service to get a static IP address causing the DWx000 to be configured with NAT off. Once this is done then the DWx000 functions like a "cable modem" or "DSL modem" network termination interface and allows the consumer to purchase a separate router with the firewall, DHCP, and NAT function built in.

NOTE: Hughes has signed an agreement with McAfee software for their firewall and virus protection. We still maintain that a software firewall is worthless, especially since there may be multiple computers on the LAN and each one would have to have firewalls installed and maintained. We realize that firewalls are of limited security viability and are only a single step in an overall security plan. If viruses plague you that much then maybe you should investigate a migration from Windows or Microsoft versioned software to a UNIX variant such as the Macintosh.

Web Content Filtering

Associated with the topic of firewalls is the topic of web content filtering. A firewall functions to block specific TCP/IP port level traffic into and out of a Local Area Network (LAN) to the Wide Area Network (WAN). A web content filter examines the packets being sent and blocks out the content of the packet. For instance, if you do not want anyone in your LAN to browse www.playboy.com then you can set up your content filter to stop all traffic to that site.

CPE Labs markets the ZyXEL firewall and web content filter product line. This product line can block not only specific sites but also block instant messaging, gaming, etc. based upon time of day or specific LAN user.

These products have the ability to function based upon a web characterization service from Cerberian. This service characterizes and rates web sites such that the web content filter can make decisions upon who should be able to access a site: adult, teenager, child, etc.

The ZyXEL Parental Control Gateway Router can enforce study habits for your children. For example, no instant messaging from 7PM to 9PM as this is homework time.

As a side benefit, you can also block advertisement sites. This one benefit can speed up your browsing experience noticeably.

Proxy Servers

A proxy server is a server that sits on an intranet and takes requests for TCP/IP port 80 (World Wide Web HTML) and serves the pages from its internal cache back to the requesting host.

Proxy servers speed up the internet perceived by the user by servicing the requests much closer to the user than possibly can be done over the internet at large. If one or more users on an intranet constantly refer to a web server located on the internet at large then their aggregate response times can be greatly reduced through the use of a proxy server. The proxy server would download the web site pages once per refresh interval and then present them to all intranet users as they demanded them at local intranet speeds (10Mbps, 100 Mbs or higher).

Hardware proxy servers generally have the ability to pre-fetch certain web sites as requested by a local administrator. Pre-fetching can also load balance requests by doing such pre-fetches off hours.

Proxy Servers are used by Internet Service Providers and large corporations to greatly increase the speeds of their internet services and allow them to use a slower, less costly communications carrier to achieve the same throughput. Today the prices of small office proxy servers are approaching what even some residential and small office user can afford. For instance, CPE Labs markets the Swell Technology Tsunami Pi Linux based proxy server for around $1,200. This unit is self contained and can be administrated through a browser interface thus not requiring the local user to understand or administer a Linux host.

The DWx000 does have an internal DNS (Dynamic Named System) cache on board. It can hold roughly 200 name resolutions for sites you browse to but not any pages or images like a true proxy server would. Nevertheless it can certainly help speed up a users response time by resolving host names to IP addresses locally rather than sending such requests over the satellite link.

Virtual Private Network (VPN)

A Virtual Private Network opens a secure communications path through the internet to a closed secure intranet. If your intranet has VPN capabilities then you could access your closed secure local area network (LAN) from anywhere in the world that you could establish a session with the internet and your PC or workstation given that you have the proper matching VPN software loaded on your PC or workstation.

In instances where the target system is at the end of a satellite link one should not expect blazing fast performance from the tunneled VPN packets. Also, because of NAPT on the residential service VPN can not function. One must have a static IP address the be able to communicate with the VPN server target on the secure LAN.

Hughes Direcway does offer a VPN service for companies by allowing them to place a VPN host at the Direcway NOC. This is doable since the satellite network is a closed and trusted network. It is generally not cost effective for small businesses to consider.

Voice over IP (VOIP)

Digitization of voice phone calls has been around for some time and is a mature science at the Ma Bell level. It is a rather new addition at the residential and small business level.

Satellite systems do not lend themselves well to VOIP due to the terrestrial delay indicative of the time it takes for a packet to make a round trip from host to satellite to NOC to internet and back. Some services do not function at all as they falsely assume that since it took so long for the packet to traverse the network that the link must be down. Those that do function produce calls and conversations reminiscent of turn of the century transmissions form Eurpoe with built in 3 second delays between query and response.

Vonage, Skype, and Packet8 are some service providers.

Backup Considerations

Most businesses consider the internet connection to be of such vital importance that additional hardware and communications services are installed to serve as a backup, but slower, link to the internet if the primary communications path should ever be disrupted.

If the DWx000 is the sites primary access to the internet considerations should be given to a backup alternative. Direcway offers a dial backup capable DW6000 model called the DW6002. This model is only available for non-residential users. It has an additional POTS RJ11 port on the rear panel to allow the connection of the DW6002 to a modular phone jack. The commercial DW7700 also has allowance for a dial backup in reference to their VPN offering.

Other than the DW6002 or DW7700 another method is through the use of more sophisticated, and expensive, communications hardware that create "multi-homed networks". A multi-homed network is multiple connection paths to the internet through more than one service provider. All connections are routed through a device that either parcels out traffic among all connections, spreading out traffic and aggregating bandwidth, or providing the hard failover if a single internet connection link were to be severed. Such services are performed without disrupting the users on an internal intranet.

Please contact CPE Labs sales for more information.

DW6000/7000 is a server

The DWx000 is a server that like any other computer or host has software communication ports that are open for users to connect to. If you are interested the internal server runs the VxWorks Real Time Operating System (RTOS).

```
The following ports are open:
21        ftp
23        telnet
80        http, www-http, www
87        ttylink (Web Proxy
1953       DW6000 VSAT install console
```

Telnet 192.168.0.1 1953
Will allow you to connect to the Direcway 6000 VSAT Install Console using telnet to port 1953. This is not a place for the uninitiated. It used is used by installers and 2nd to 3rd level support to do unnatural acts to the DW6000, such as reset to factory defaults and restart a unit at the beginning of the registration process.

Even though ports 21 and 23 are open They are there for the VxWorks developers at Hughes. You will not find anything there that is usable from a users standpoint. We do not use them at second or third level support as no one knows the passwords to gain access. Take my word for it, I have seen what is available at both of these ports and it is simply a waste of time to try and hack them.

DHCP and NAT – Residential Service Offering
The DW6000 function as a server will serve as the main DHCP and NAT server on the customers intranet. We know of no way to instruct the DWx000 to not perform these functions or to configure these functions to meet a site's requirements. Such as, specifying that DHCP is to hand out addresses in a range other than 192.168.0.x.

What this means is that the DWx000 server is a LAN unfriendly router. The customer is unable to use a cable modem or DSL modem router they may have purchased before as there will be conflicts in DHCP servers. The DWx000 must be king of the local intranet and the customer necessarily must buy hubs/switches and access points instead of routers.

What do I do when it breaks?

If all 5 lights are not lit on the DWx000 then the system is not functioning. You have to determine why it is not functioning and then make an appropriate action to call in the correct support personnel.

Keep in mind that Direcway is there to support the satellites and the transponders on those satellites that provide you with service. They also are responsible for the land line connection between their Network Operations Center (NOC) and the internet proper. They are not responsible for your hardware (DWx000, satellite dish, transmitter, etc) or your internal network. Even though your Direcway branded hardware may be under warranty that warranty covers the hardware replacement but not the service calls or technician's time and mileage to repair the unit(s).

This level of service placed upon the consumer is not what most consider as acceptable. It is a level of service that is normal for business users. Most businesses will sign a data communications service contract to cover maintenance issues. Such contracts are not offered in the consumer market. And, most consumers consider that the monthly service fee covers such periodic maintenance. With Direcway – it does not.

If you suspect a satellite outage due to a satellite falling from space, or a wind storm that nudges your dish off the satellite where it was pointed to or you need help setting up Microsoft Windows to use the Direcway system then you should call the Direcway support desk in India.

For any other problem you should contact your networking installer, or local service provider, to help with the problem.

If you do call Direcway and they dispatch a repair person please understand that the repair person is an independent contractor not employed by Direcway. They are paid a fixed fee to perform a simple dish realignment. If the dish, or any hardware is damaged they will not repair anything but provide you with a quote for repair. The hardware costs may be free but the service charges will not be.

What is the resell value?

I occasionally get a call from people who have purchased a system on ebay or another source. They generally pay several hundred dollars for the system that includes the dish, transmitter arm, and indoor unit – and a large freight bill to have it delivered to them. What they do not realize is that the cost of the hardware is insignificant in value to having an FCC certified installer install said system on a time and materials basis. Most installation charges run between $250-550 dollars. Given that, if the system was not given to you it makes very little sense not to purchase a new system from a qualified dealer.

I have suggested to customers that if they move, and their initial period of 15 months has been fulfilled, they should contact us for a movers special. We would price a new system for the old owner at a discount and discount the new owner installation. We can only do this since we will have two customers instead of one. In other words, do not attempt to move the dish, transmitter arm, or indoor DWx000 unit. Sell them with the house. Have the new owner work with CPE Labs to re-commission the system once they move in.

What if I really want to sell the system? CPE Labs will offer a fair market value for the equipment. Still, most will try to sell on ebay or another method for a better price. Caveat emptor.

Satellite Forum FAQ» 8. Self-Hosted Systems (DW4020/DW6000)

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Satellite Forum FAQ» 8. Self-Hosted Systems (DW4020/DW6000)

Q: What browser proxy settings should I use with the DW6000? (#8522)

A: Unlike the computer hosted systems like the DW4000, the DW6000 **always** uses the DirecWay "Turbo Page" proxy to enhance browsing performance, regardless of your browser proxy settings. However by enabling the proxy in your browser, you will gain the use of the DW6000's DNS caching capability that you would otherwise be missing. This capability can significantly improve the speed of browsing to sites you have visited previously. For this reason, we strongly recommend pointing your browser to the DW6000 proxy.

Notes:

1. In all cases, the **only** protocol that should use the proxy is HTTP. Pointing any other protocols to the proxy will disable those protocols.

2. **DirecWay 6000 Pro users:** The instructions below assume that the address you are using for the DW6000 is 192.168.0.1. This will work under the majority of circumstances *unless* you are using the "Pro" version of the DW6000 *and* the DW6000 is behind a router. Your router <u>may not</u> pass local addresses through the WAN port, in which case that address will not work. If that is the case, use the DirecWay IP of the DW6000. This IP address will be one less than the unique, static IP assigned to your network, and is the same address that your router is using for its default gateway. For example, if the static IP assigned to your network is 69.35.40.50, then the IP address for your DW6000 is 69.35.40.49. Use that address as the proxy address and in the proxy exceptions list, <u>instead</u> of 192.168.0.1.

For Internet Explorer:

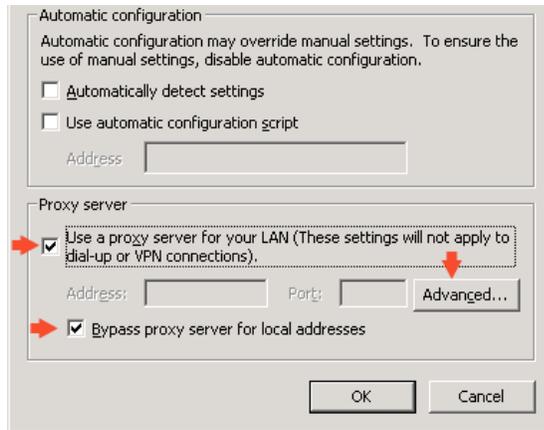In Internet Explorer, click on Tools => Internet Options => Connections => LAN Settings. See image below.
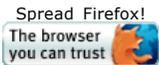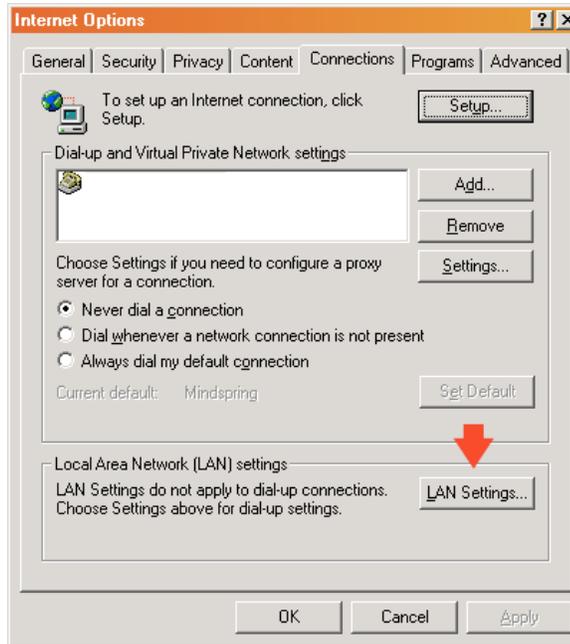

Click the LAN Settings button to open the LAN Settings screen. In the lower section, check the check box that says "use a proxy server for your LAN", and fill the check box for "bypass proxy server for local addresses". See image below.

Click the "Advanced" button which opens the "Proxy Settings" window. Under "HTTP:" enter **192.168.0.1** and Port **87**. The rest of the fields in this area should be left blank.
In the Exceptions box, enter the following: **www.direcwaysupport.com;192.168.0.***
Use a semicolon between the two entries. See image below.
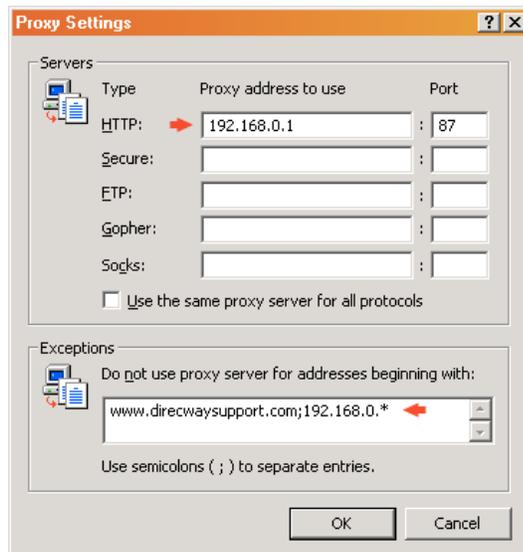
That's it - close out of all the windows, and close your browser. When you open your browser again your new settings should be in effect.

For Firebird, Netscape or other Mozilla based browsers :

Each browser has a slightly different user interface to set up proxy connections. However this method will work with any and all of the Mozilla-based browsers like Firebird, Netscape or Mozilla.

Type in **about:config** as the URL in your browser's address window.
Scroll down to **network.proxy.http**. Enter the LAN IP of your DW6000.
Next, scroll to **network.proxy.http_port** and enter **87**.
Finally go to **network.proxy.no_proxies_on** and enter **192.168.0.1,www.direcwaysupport.com**
See image below:
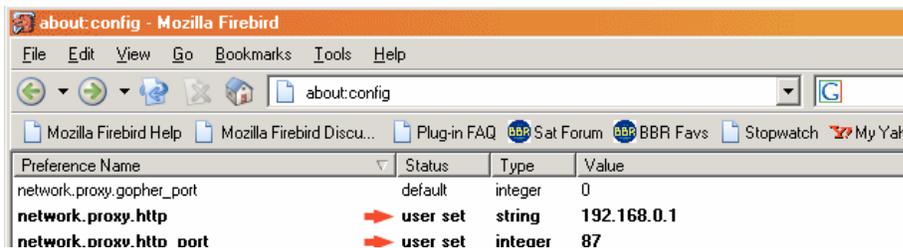
network.proxy.news	default	string	
network.proxy.news_port	default	integer	0
network.proxy.no_proxies_on	**user set**	**string**	**192.168.0.1,www.direcwaysupport.com**
network.proxy.socks	default	string	
network.proxy.socks_port	default	integer	0

by **snowman** ☷? edited by **PetDude** ☷?
(login to leave feedback on this)

**feedback for
broadbandreports**

Direcway Service Plans   Ku Band   DW6000 NTI

	Residential	**Professional**	**Small Office**	**Business Internet**
Commercial	no	no	yes	yes
Monthly Charge	$59.99	$89.99	99.99	129.99
Hardware	$399.99	$399.99	999.98	999.98
Installation Fee	$199.99	$199.99	included	included
Activation Fee	waived	$100.00	included	included
Other Fees				
Term Commitment	15 months	15 months	24 months	24 months
Early Termination Fee	$300.00	$300.00	$300.00	$300.00
Refunds	30 days equipment only	30 days equipment only	30 days equipment only	30 days equipment only
Extended Warranty	Optional $100 OTC	Optional $100 OTC	Optional $100 OTC	Optional $100 OTC
Billing	credit card only	credit card only	Invoice or Credit Card	Invoice or Credit Card
Downstream	Up to 500Kbps	Up to 500Kbps	Up to 1Mbps	Up to 1.5Mbps
Upstream	Up to 50Kbps	Up to 50Kbps	Up to 100Kbps	Up to 100Kbps
Active Users	1	1-2	1-3	1-5
FAP Bucket	169MB	350MB	500MB	800MB
FAP Refresh	56Kbps	56Kbps	56Kbps	100Kbps
Email accounts	5	5	5	10
Email storage	10MB each	10MB each	10MB each	10MB each
Addl Dial up	no	Optional/ $15/month	Optional/ $15/month	Optional/ $15/month
Static IP	no	1	1 Std Optional 5 for $30/month	1 Std Optional 5 for $30/month
Dish	.74 meter	.74 meter	.98 meter	.98 meter
NTI (Router)	DW6000	DW6000	DW6000	DW6000
NAT (NAPT)	yes	no	no	no
Tech Support	1-866-DIRECWAY	1-866-DIRECWAY	1-866-DIRECWAY	1-866-DIRECWAY
Maintenance	no service offered	no service offered	Optional $28/month	Optional $28/month

Direcway Service Plans   Ku Band   DW7000 NTI

	Residential	Professional	Small Office	Business Internet
Commercial	no	no	yes	yes
Monthly Charge	$59.99	$69.99	99.99	129.99
Hardware	$399.99	$399.99	999.98	999.98
Installation Fee	$199.99	$199.99	included	included
Activation Fee	waived	included	included	included
Other Fees		$20/mo for Static IP		
Term Commitment	15 months	15 months	24 months	24 months
Early Termination Fee	$300.00	$300.00	$300.00	$300.00
Refunds	30 days equipment only	30 days equipment only	30 days equipment only	30 days equipment only
Extended Warranty	Optional $100 OTC	Optional $100 OTC	Optional $100 OTC	Optional $100 OTC
Billing	credit card only	credit card only	Invoice or Credit Card	Invoice or Credit Card
Downstream	Up to 700Kbps	Up to 1Mbps	Up to 1.5Mbps	Up to 2Mbps
Upstream	Up to 128Kbps	Up to 200Kbps	Up to 300Kbps	Up to 500Kbps
Active Users	1	1-2	1-3	1-5
FAP Bucket	175MB	350MB	500MB	1,250MB
FAP Refresh	50Kbps	56Kbps	150Kbps	400Kbps
Email accounts	5	5	5	10
Email storage	10MB each	10MB each	10MB each	10MB each
Addl Dial up	Optional/ $15/month	Optional/ $15/month	Optional/ $15/month	Optional/ $15/month
Static IP	no	1	1 Std Optional 5 for $30/month	1 Std Optional 5 for $30/month
Dish	.74 meter	.74 meter	.98 meter	.98 meter
NTI (Router)	DW7000	DW7000	DW7000	DW7000
NAT (NAPT)	yes	yes/no with S.IP	no	no
Tech Support	1-866-DIRECWAY	1-866-DIRECWAY	1-866-DIRECWAY	1-866-DIRECWAY
Maintenance	no service offered	no service offered	Optional $28/month	Optional $28/month

WildBlue Service Plans   Ka Band

	Value Pak	Select Pak	Pro Pak	
Commercial	no	no	no	
Monthly Charge	$49.95	$69.95	79.95	
Hardware	$299.00	$299.00	$299.00	
Installation Fee	$179.00	$179.00	$179.00	
Activation Fee	no	no	no	
Other Fees	freight	freight	freight	
Term Commitment	15 months	15 months	24 months	
Early Termination Fee	$150.00	$150.00	$150.00	From Installation Company
Refunds	30 days equipment only	30 days equipment only	30 days equipment only	
Extended Warranty	Optional $4.95/month	Optional $4.95/month	Optional $4.95/month	
Billing	credit card only	credit card only	credit card only	
Downstream	Up to 512Kbps	Up to 1Mbps	Up to 1.5Mbps	
Upstream	Minimum 128Kbps	Minimum 128Kbps	Minimum 128Kbps	
Active Users	1	1-2	1-3	
FAP Bucket	n/a	n/a	n/a	
FAP Refresh	n/a	n/a	n/a	
Email accounts	5	5	10	
Email storage	10MB each	10MB each	10MB each	
Addl Dial up	Optional/ $4.95/month	Optional/ $4.95/month	Optional/ $4.95/month	
Static IP	no	no	no	
Dish	26"	26"	26"	
NTI (Not Router)	WB Viasat DOCSIS	WB Viasat DOCSIS	WB Viasat DOCSIS	
NAT (NAPT)	no	no	no	
Tech Support	1-866-WILDBLUE	1-866-WILDBLUE	1-866-WILDBLUE	
Maintenance	no service offered	no service offered	no service offered	