



SETUP AND SOFTWARE INSTALLATION INSTRUCTIONS FOR THE KTX WIRELESS SYSTEM

SPECIAL NOTE

**READ THIS ENTIRE BOOKLET
BEFORE PROCEEDING WITH
THE INSTALLATION**

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The following instructions will explain how to set up the Gateway (Connectport X2D) with the wireless radio(s) (BRX-KTX#(s)) on a computer and using it with the BCS Grain software.

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1. THINGS YOU MUST DO FIRST

- 1.1 You must be logged on to Windows as the Computer Administrator (see glossary below)
 - 1.1.1. To check this, open 'Control Panel'.
 - 1.1.2. Open User Accounts, you will see a list of accounts that have Administrator privileges.
- 1.2 Make sure the computer is fully updated through Windows Update, Hardware, and Software. Also check for updates through the computer's manufacturer's website.
- 1.3 Close all other programs prior to installation.
- 1.4 When using a stand-alone computer, set the Local Area Connection to IP address: 169.254.1.50, with Subnet mask: 255.255.0.0.
- 1.5 If the stand-alone computer has a wireless connection, disable it first, then change the Local Area Connection.
For Windows XP; go to Start -> Control Panel -> Network Connections -> right click the Wireless Adapter -> Disable.
For Windows 7; go to Start -> Control Panel -> Network and Internet -> Network and Sharing Center -> Change Adapter Settings (top left corner) -> right click the Wireless Adapter -> Disable.
- 1.6 The Gateway (Connectport X2D) uses UDP port 7650. The BRX radios use UPD ports 7661 and up, depending on how many BRX units are used. Verify with your IT administrator that these ports are available on the network.

2. DIGI DEVICE DISCOVERY

- 2.1 Insert the BCSGrain software disk or USB drive into the computer.
- 2.2 Make sure the AutoPlay window appears, like the picture below:

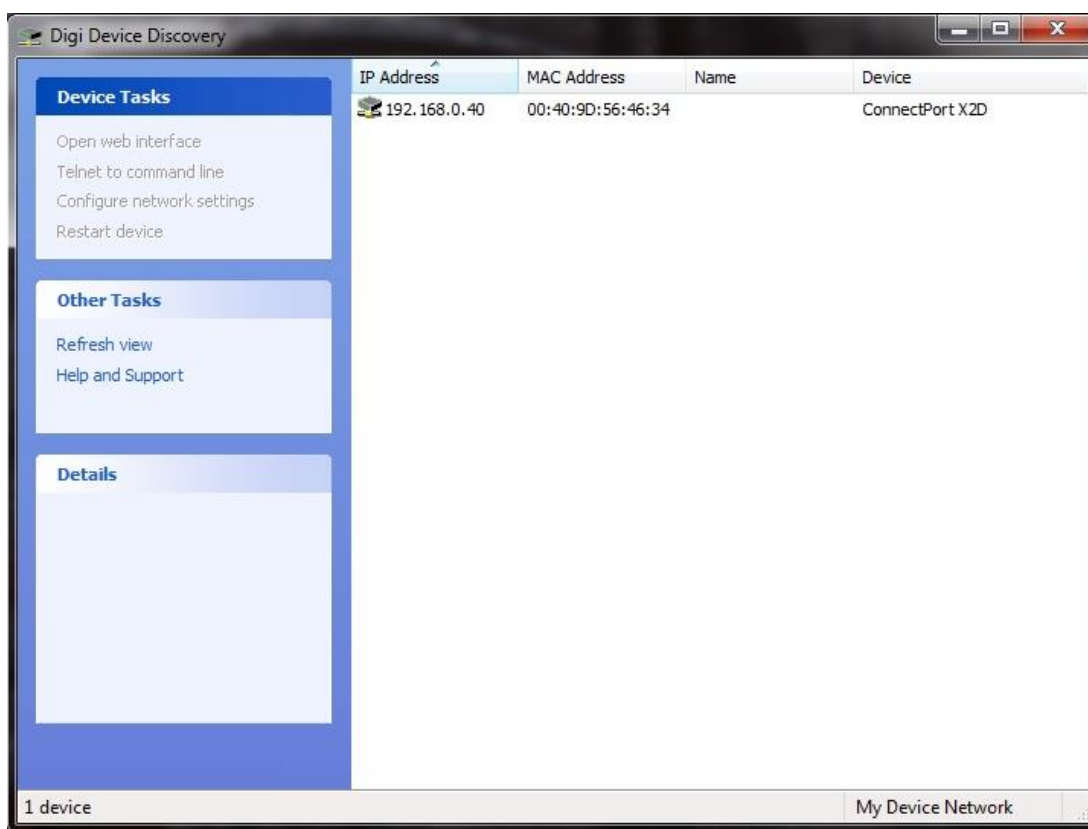


- 2.3 Select "Open folder to view files".
- 2.4 If the window above does not appear, double click on "computer", right click on the DVD/CD or USB Drive, and select open.
- 2.4 Double click the "Digi Device Utility" folder.
- 2.5 Right click the Digi Device Discovery application and select "Copy".
- 2.6 Close the window and right click the desktop and select "Paste". The Digi Device Discovery icon should now be on the desktop.

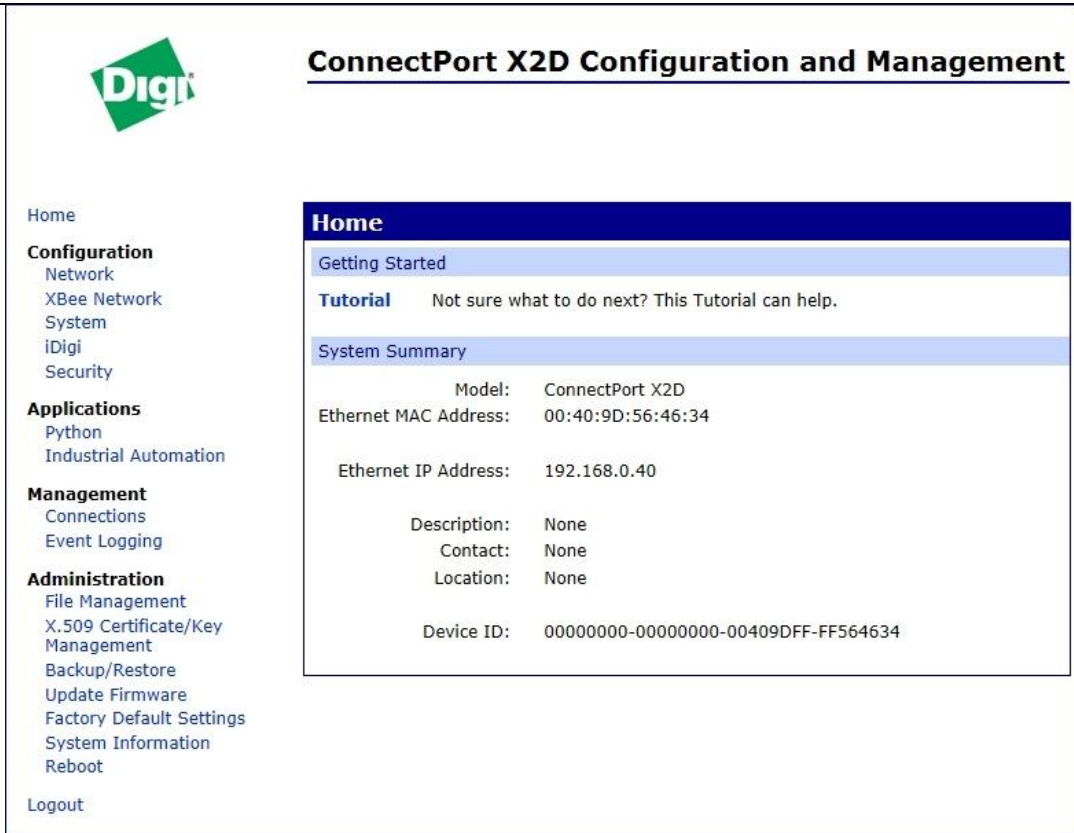
3. CONFIGURING THE GATEWAY

The Gateway uses DHCP to identify itself on the Network. It will create a random address available on the Network. If you wish to use your own IP address, you can change it afterwards.

- 3.1 Make sure the Gateway, the radio(s) (BRX-KTX#), and the KTX Mux(s) are hooked up and powered on.
- 3.2 When using a stand-alone computer, set the Local Area Connection to IP address: 169.254.1.50, with Subnet mask: 255.255.0.0.
- 3.3 Run the Digi Device Discovery and make sure the Gateway (ConnectPort X2D) shows up in the list with an IP and MAC address.



- 3.3 Highlight the IP address and select 'Open web interface' at the top left or double click the IP address.
- 3.4 The Configuration and Management window should open in your web browser.



Home

Getting Started

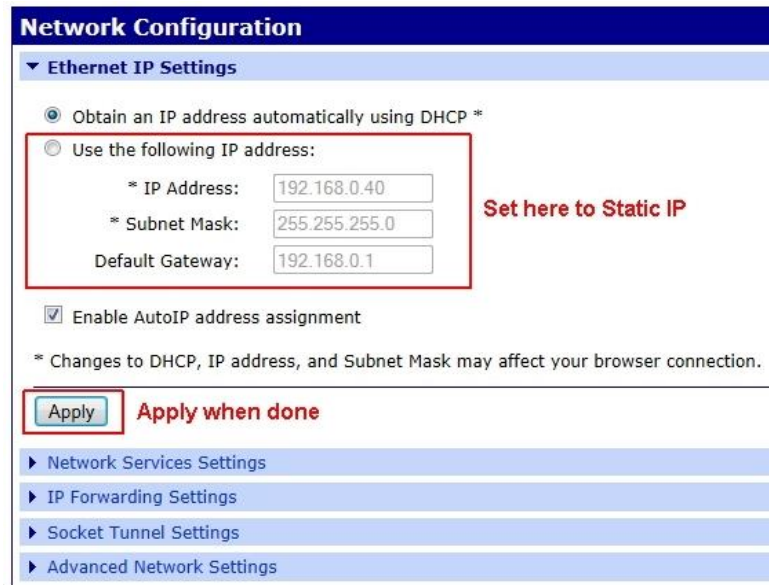
Tutorial Not sure what to do next? This Tutorial can help.

System Summary

Model:	ConnectPort X2D
Ethernet MAC Address:	00:40:9D:56:46:34
Ethernet IP Address:	192.168.0.40
Description:	None
Contact:	None
Location:	None
Device ID:	00000000-00000000-00409DFF-FF564634

3.5 To change the DHCP settings of the Gateway, select 'Network' at the top left.

3.6 Select 'Use the following IP address' to either change the IP address or use the current IP address. Apply when done.



Network Configuration

Ethernet IP Settings

Obtain an IP address automatically using DHCP *

Use the following IP address:

* IP Address:

* Subnet Mask:

Default Gateway:

Set here to Static IP

Enable AutoIP address assignment

* Changes to DHCP, IP address, and Subnet Mask may affect your browser connection.

Apply when done

▶ Network Services Settings

▶ IP Forwarding Settings

▶ Socket Tunnel Settings

▶ Advanced Network Settings

- 3.7 To setup the radio(s) or KTX(s), select 'XBee Network' at the top left.
- 3.8 Select 'Discover Xbee Device' to refresh the list. Make sure you check-mark the "Clear list before discovery". The Gateway will show up as the coordinator. The radio(s) will show up as router(s).



ConnectPort X2D Configuration and Management

- Home
- Configuration**
 - Network
 - XBee Network
 - System
 - iDigi
 - Security
- Applications**
 - Python
 - Industrial Automation
- Management**
 - Connections
 - Event Logging
- Administration**
 - File Management
 - X.509 Certificate/Key Management
 - Backup/Restore
 - Update Firmware
 - Factory Default Settings
 - System Information
 - Reboot
- Logout

XBee Configuration

▼ **XBee Devices**

Gateway Device Details

PAN ID: 0x5b67 - 0x3f4a21c2067556e0
 Channel: 0x0b (2405 MHz)
 Gateway Address: 00:13:a2:00:40:a8:e5:4d!
 Gateway Firmware: 0x21a7

Network View of the XBee Devices

Select a device to configure:

Node ID ▲	Network Address	Extended Address	Node Type	Product Type
GateWay	[0000]!	00:13:a2:00:40:a8:e5:4d!	coordinator	X2 Gateway
KTX01	[9296]!	00:13:a2:00:40:9f:3f:e1!	router	Unspecified
KTX02	[ee78]!	00:13:a2:00:40:9f:40:8c!	router	Unspecified
KTX03	[9a3a]!	00:13:a2:00:40:9f:40:7c!	router	Unspecified
KTX04	[c58e]!	00:13:a2:00:40:9f:3f:c2!	router	Unspecified
KTX05	[9b17]!	00:13:a2:00:40:9f:40:b9!	router	Unspecified
KTX06	[87fb]!	00:13:a2:00:40:9f:3f:de!	router	Unspecified

1 coordinator, 6 routers

Discover XBee Devices

Clear list before discovery

▶ Gateway Access

▶ Gateway Firmware Update

▶ OTA Firmware Update Setup

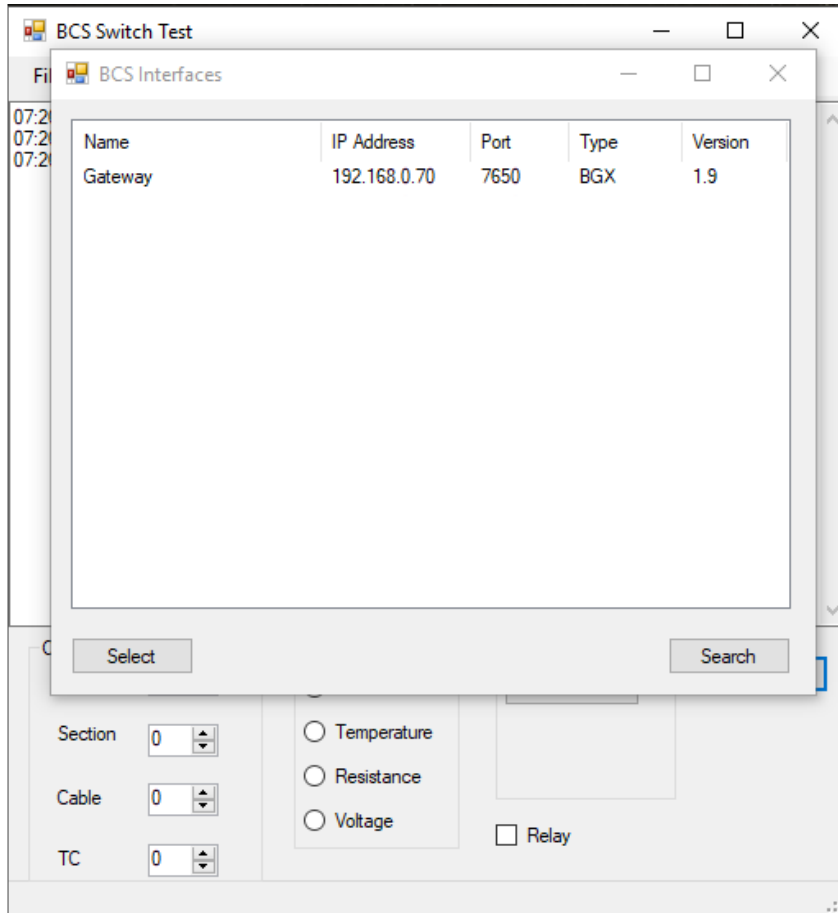
▶ OTA Firmware Update Status

3.9 If the KTX(s) don't show up or some of them do not show up in the list, verify connections to the radio(s) (BRX-KTX#(s)). Once everything has been verified, select "Reboot" from the Administration section on the left and click the reboot button. This should take about a minute.

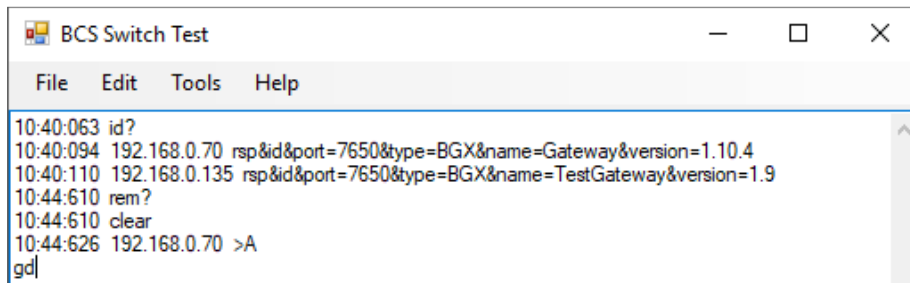
3.10 After reboot, it should return to the home screen. Close the windows and proceed to step number 4, Switch test.

4 SWITCH TEST

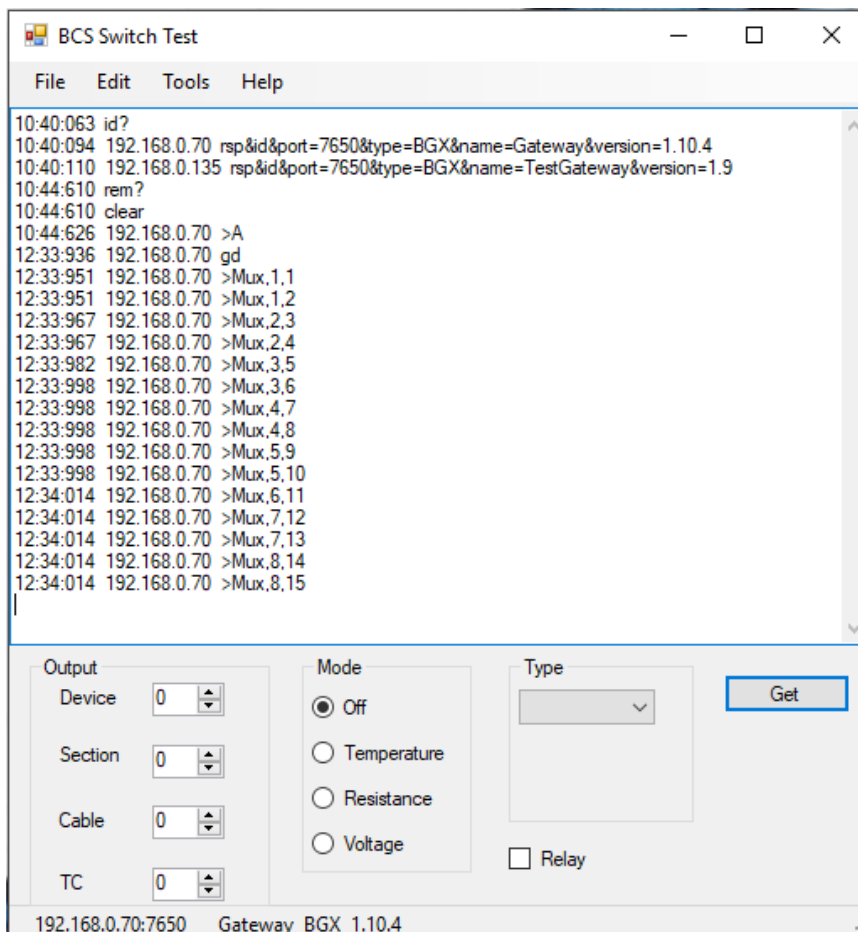
- 4.1 Return to the CDRom/USB drive and run setup.exe from the Switch test folder.
- 4.2 The 2 Switch test windows will appear. The BCS Interfaces window will have the Gateway with an IP address and Port#.



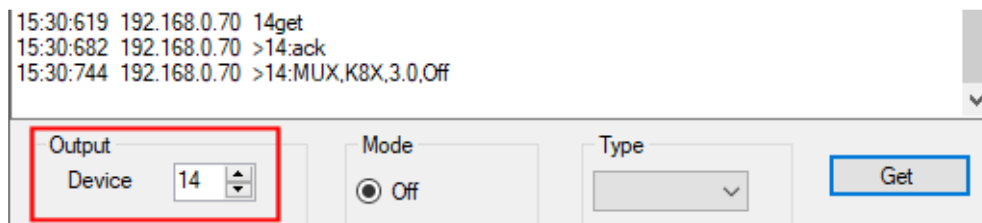
- 4.3 Highlight the Gateway and click on the “Select” button. The Interfaces window will disappear.
- 4.4 On the BCS Switch Test window, underneath the last line put the cursor in the window and type “gd”.



4.5 A list will appear of all the switches (Mux) out in the field.



4.6 To verify each switch or Mux is working, set the Device output to the individual Mux's. For each Mux it should give a 3-line output (see picture below).



4.7 When an "Xbee not found" message appears on one of the Mux's, check the power to the BRX board associated with the Mux.

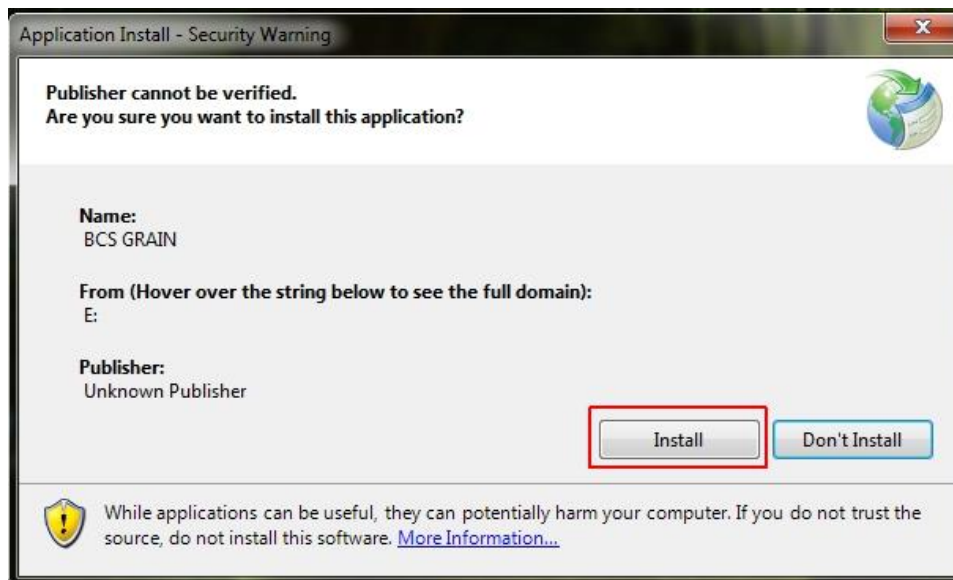
4.8 When only an ">ack" appears, check the connections from the radio to the KTX Mux and power to the Mux (lights on the K8X board).

5 BCSGRAIN SOFTWARE INSTALLATION AND SETUP

5.1 Re-insert the CD or USB drive in the computer. Select, "Run setup.exe".



5.2 Select "Install" when prompted.



5.3 After the program installs it will ask for the Site file. Select "OK".

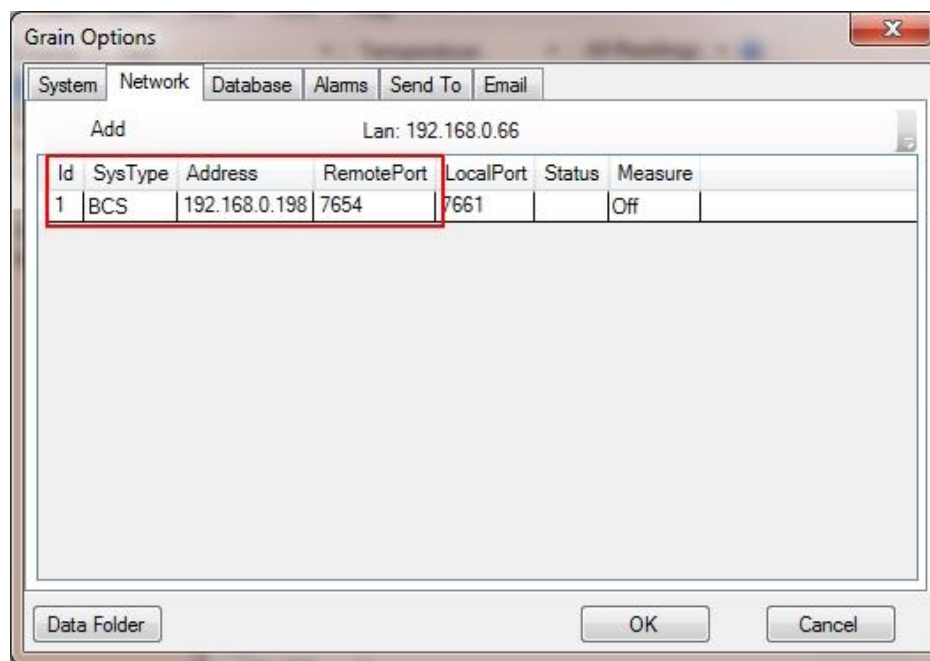


5.4 A new window will open. Make sure it's at the CD or USB Drive location. If not, go to that location.

5.5 Double click the "Site" file or "GrainSite" file. This will start the BCSGrain software.

5.6 Go to Tools -> Options and select the Network tab. The Lan Address is the Computer's IP address.

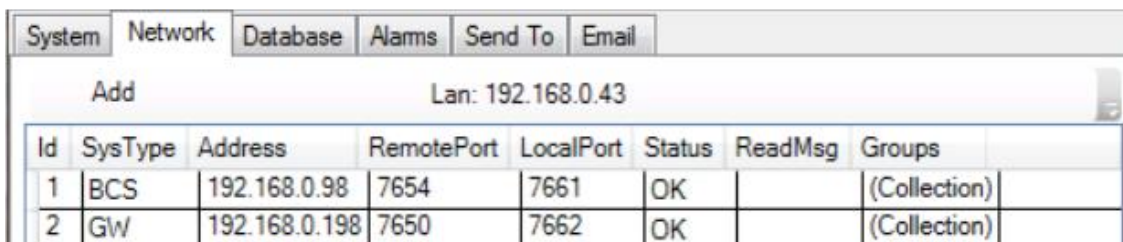
5.7 Click on "Add", to add the Gateway. ID #1 will be added to the list with the default SysType (BCS), the default IP address (192.168.0.198), and default Remote port# (7654).



- 5.8 Change the SysType to GW by double clicking "BCS". A drop-down arrow will appear to change it.
- 5.9 Change the Address from 192.168.0.198 to IP address of the Gateway listed in Switch Test and/or Digi Discovery. Double click the address to change it.
- 5.10 Change the Remote port from 7654 to 7650 as was listed in Switch Test. Double click to change it.



- 5.11 When it's done, select "OK" and restart the BCSGrain program. Select Read and begin a read.
- 5.12 In the case where there is already a BCSE1000 instrument in place, set the BCS to ID 1 with its IP address, RemotePort to 7654, and LocalPort to 7661. The Gateway will be ID 2 with RemotePort 7650 and LocalPort 7662.



- 5.13 In case of a great number of BRX radios on one Gateway, it can read 20 BRX Radios at a time, before it reads the rest of them.

6 TROUBLE SHOOTING

6.1 When all the radios are powered up and a “Fail Interface Check” error message appears, check the list under Tools -> Options -> Network and make sure the settings match the ones found in Switch Test. If they are, close the program, reopen Digi Device Discovery and reboot the Gateway.

6.2 To check the Signal Strength of each radio, do the following:

6.2.1 Open Digi Device Discovery and double click the Gateway.

6.2.2 Select XBee Network from the Configuration section and do a ‘Discover Xbee Devices’ (check-mark “clear list”).

6.2.3 Select the first KTX (or closest radio to the Gateway) and go to the “Device Status” at the bottom.

XBee Configuration

Extended Address: 00:13:a2:00:40:9f:3f:e1!
 Product Type: Unspecified
 Firmware Version: 0x22a7

▶ Basic Settings

▶ Advanced Settings

▼ Device Status

XBee Node

Node Type:	router
Profile ID:	0xc105
Manufacturer ID:	0x101e

RF Module

PAN identifier (OI):	0x5b67
Extended PAN identifier (OP):	0x3f4a21c2067556e0
Operating channel (CH):	0xb
Network address (MY):	0x9296
Parent address (MP):	0xfffe
Association indication (AI):	0x0
Firmware version (VR):	0x22a7
Hardware version (HV):	0x1e46
Device type identifier (DD):	0x30000
ACK failures (EA):	1
Number of remaining children (NC):	12
Maximum RF payload (NP):	84 bytes
Received signal strength (DB):	51 -dBm
Supply voltage (%V):	3275 mvolts
Temperature (TP):	26 degrees C
Transmit power at PL4 (PP):	18 dBm

Refresh

▶ Device Operations

6.2.4 Make sure the “Received signal strength (DB)” is as low as possible. Anything over 90 –dbm for the radio closest to the Gateway is not acceptable. Adjust the position of the radio to get better signal strength.

- 6.3 If only one of the KTX Mux’s is not responding, instead of going to “Device Status’, select “Advanced Settings” and make sure the “DIO7 Configuration (D&7)” is set to “7”. If not, change it and select “Apply” at the bottom of the screen. Reboot the Gateway.

XBee Configuration

Extended Address: 00:13:a2:00:40:9f:3f:e1!
Product Type: Unspecified
Firmware Version: 0x22a7

Basic Settings

Advanced Settings

The following are advanced settings. Use caution - modifying some settings can make remote

Aggregation route notification (AR): x 10 sec (0-255)
Associate LED blink time (LT): x 10 msec (0-255)
Broadcast radius (BH): (0-32)
Command sequence character (CC): (char)
Cluster identifier (CI): (0x0-0xffff)
Command mode timeout (CT): x 100 msec (2-655)
PAN conflict threshold (CR): (1-63)
Destination address (DH/DL): (address)
Destination endpoint (DE): (0x1-0xf0)
AD0/DIO0 configuration (D0): (0-5)
AD1/DIO1 configuration (D1): (0-6)
AD2/DIO2 configuration (D2): (0-5)
AD3/DIO3 configuration (D3): (0-5)
AD4/DIO4 configuration (D4): (0-5)
DIO5/Assoc configuration (D5): (0-5)
DIO6 configuration (D6): (0-5)
DIO7 configuration (D7): (0-7)

- 6.4 To restart the Gateway, right click the Gateway in the Digi Device Discovery program and select “Restart Device”. Be aware, If DHCP is still selected in the Gateway, the IP address might change.
- 6.5 If the date and time doesn’t want to match up with the actual date and time, go back to the “Date and Time Settings” described in item 4. Under the “Time Source Settings”, select “1” and change the “FQDN” to ‘time.devicecloud.com. Select “Apply” and make sure the date and time is correct.
- 6.6 If there are problems installing this software or any other issues, please contact Boone Cable Works & Electronics at (515) 432-2010 or 1-800-265-2010 or visit our website: <http://www.rolfesatboone.com>.