# BrukerS1 Connectivity Server support

###### Revision History

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| --- | --- | --- | --- | --- |
| Revision | Editor | Description | Software Versions | Date |
| 01 | KDW | Initial release |  | 6/11/2018 |
|  |  | BrukerS1 | 2.54.54.305 Beta |  |
|  |  | Bruker Instrument Tools (BIT) | 1.7.0.113 |  |
|  |  | XRFConnectProtocol Module | 1.0.\* |  |

**Overview**

**BrukerS1 – The Titan, Tracer 5i, XMS and CTX instrument software has been enhanced to support interaction with the Bruker Connectivity Server. The enhancements include improved networking configuration, addition of limited file transfer capabilities and changes in UDP broadcast packet transmission.**

**Specific Changes:**

1. **Assignment of an IP address to the instrument side of the USB RNDIS interface via a DHCP server has been added. This change makes it possible to incorporate the instrument into larger subnets via USB than was possible before.**

**Supporting changes include:**

* 1. **A “unique” MAC address is assigned to the RNDIS network interface of each instrument**
     1. **This was not the case in prior versions of the instrument software**
     2. **The software performs this operation automatically the during the first boot up subsequent to installation of this version of BrukerS1**
     3. **This new MAC is displayed on the USB connection configuration form**
  2. **If DHCP address assignment is active but no server can be contacted the instrument defaults to use of a “link local” address.**
     1. **Link local addresses fall into the 169.254.0.0/16 subnet**
     2. **The connected PC will be assigned an address in the same subnet on its RNDIS interface**
     3. **These addresses are not configurable by the user**
  3. **Use of the static 192.168.137.139 instrument address is fully supported when DHCP is disabled.**

1. **Broadcast of UDP packets on port 55000 used by BIT and Artax to “sense” the presence of instruments on a visible network has changed as follows:**
   1. **The broadcast of UDP packets continues after BIT or Artax connect to the instrument**
      1. **A side effect of this change is it’s now possible to connect to an instrument with both applications regardless of which is connected first.**
      2. **Live spectrum display during acquisition can be a bit squirrelly, I suggest use of Artax be preferred for this if both applications are connected.**
   2. **Packet broadcasts are limited to the interface that’s marked as active on the instrument Utilities->System Setup->Connections form.**
      1. **For instance if “Enable USB” is selected then UDP packets will not be broadcast on the Wi-Fi interface even if it’s connected.**
      2. **This is a fix to a long standing problem**
   3. **The frequency is one packet every 2 seconds**
2. **UDP broadcast packets are transmitted on port 55001 as a separate stream to support interaction with the Connectivity Server**
   1. **Broadcast of these packets continues after a server connects to an instrument.**
   2. **The frequency is one packet every 2 seconds**
3. **Limited file transfer support has been added via connection on TCP port 55205**
   1. **This functionality was specifically implemented to support transmission of spectra (PDZ) and results (CSV and TSV) files.**
   2. **One or more file(s) are simultaneously transmitted using a MIME format encapsulation scheme**
   3. **Transmission of the file(s) in question is initiated by the instrument at the completion of an assay.**
   4. **Transmission is enabled/disabled by the same flag(s) that control transmission of raw/cooked spectrum packets and element concentrations via the XRFConnect protocol**
4. **The instrument’s ability to “repair” a broken network connection has been enhanced.**
   1. **This ability is limited by a short coming in the RNDIS driver incorporated into Windows CE**
      1. **Removal of the USB cable before closing all network connections from PC based applications results in the RNDIS stack not “knowing” the hardware layer is disconnected**
      2. **Plugging the cable back in will usually “eventually” result in a working connection**
         1. **This can take several minutes**
         2. **Sometimes it never happens**
      3. **Strongly recommend close all connections from the PC side first if possible**
         1. **May require quitting the PC based program**
      4. **The other option is rebooting the instrument**
   2. **The Wi-Fi subsystem does not appear to suffer from the same issues**