Apple iPad Remote Control for Broadcasting T&M Instruments
Application Note

Products:

| R&S®DVMS1 / DVMS4

| R&S®DVSG

| R&S®ETL

| R&S®SFU / SFE / SFE100 / SFC

| R&S®VTC / VTE / VTS

When installed on an Apple iPad*, a remote desktop app provides a convenient way to remotely control measuring instruments over a WLAN connection.

This is especially helpful when using measuring instruments that do not have their own display such as the R&S®VTS or R&S®SFC.

The remote desktop app also gives users a detached way to control the instrument if, for example, the actual measuring instrument is installed in a place that is difficult to access.

* Apple and iPad are trademarks of Apple Inc.

ROHDE & SCHWARZ

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1 Introduction

Remote desktop access is a convenient way to remotely control Rohde & Schwarz measuring instruments over a network. When using WLAN, this function can also be used with an Apple iPad running a remote desktop app.

One particularly appealing possibility is to set up a measuring instrument with a USB WLAN adapter. In addition to standard "infrastructure" mode for use with a dedicated access point, these adapters also support "ad hoc" mode, making it possible to connect to an iPad, without needing any additional external devices. The connection only has to be configured once. The settings are then saved so that the connection is started directly after switching on the instrument. This simplifies access to instruments without dedicated displays and offers a simple, detached solution for operating measuring instruments installed in places that are difficult to reach.
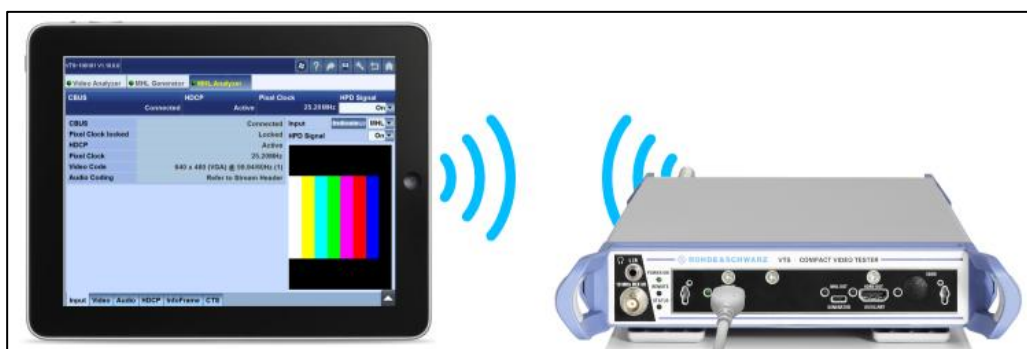
Fig. 1: Apple iPad with remote desktop app for controlling the R&S®VTS equipped with USB WLAN adapter.

This application note explains the setup and operation of the instruments with the example of the Remote Desktop – RDP app from MochaSoft [1] and the WL0049A USB WLAN adapter from LogiLink[1].

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[1] The order number for R&S Sales is PD 0002.8673.00.

2 Setup

Because all settings are saved, the following configuration steps only have to be performed once on each measuring instrument and Apple iPad.

2.1 Configuring the measuring instrument

The different configuration steps depend on the operating system.

	Windows 7	Windows XP
R&S®DVMS1 / DVMS4		☑
R&S®DVSG		☑
R&S®ETL		☑
R&S®SFU / SFE / SFE100 / SFC		☑
R&S®VTC / VTE / VTS	☑	

*Table 1: Operating systems of the various measuring instruments.*

2.1.1 Windows XP

2.1.1.1 Installing the USB WLAN adapter

The LogiLink "WL0049A" driver is provided as part of this application note. Step-by-step installation:

1. Unpack the Setup.exe file, copy it to the measuring instrument and run the file there

2. Accept the licensing terms

3. Select the "Install driver only" option

4. Quit the installer program after the installation has completed successfully

5. Plug in the USB WLAN adapter

If the driver is not found automatically after plugging in the USB WLAN adapter, you can manually enter the correct path "C:\windows\system\DRVSTORE\...\".
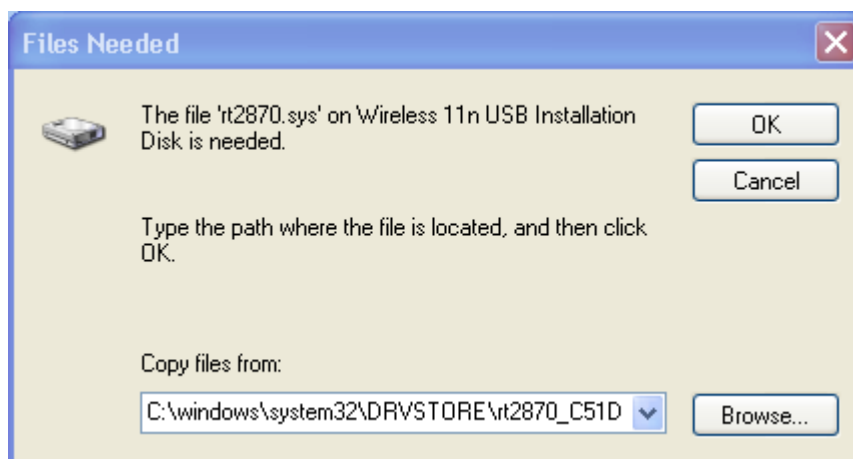
Fig. 2: Manually entering the driver path.

2.1.1.2 Checking the "Wireless Zero Configuration" service status

Under "Control Panel/Administrative Tools/Computer Management", select the "Services and Applications/Services" view to ensure the "Wireless Zero Configuration" service status is "Started" and that its startup type is "Automatic".
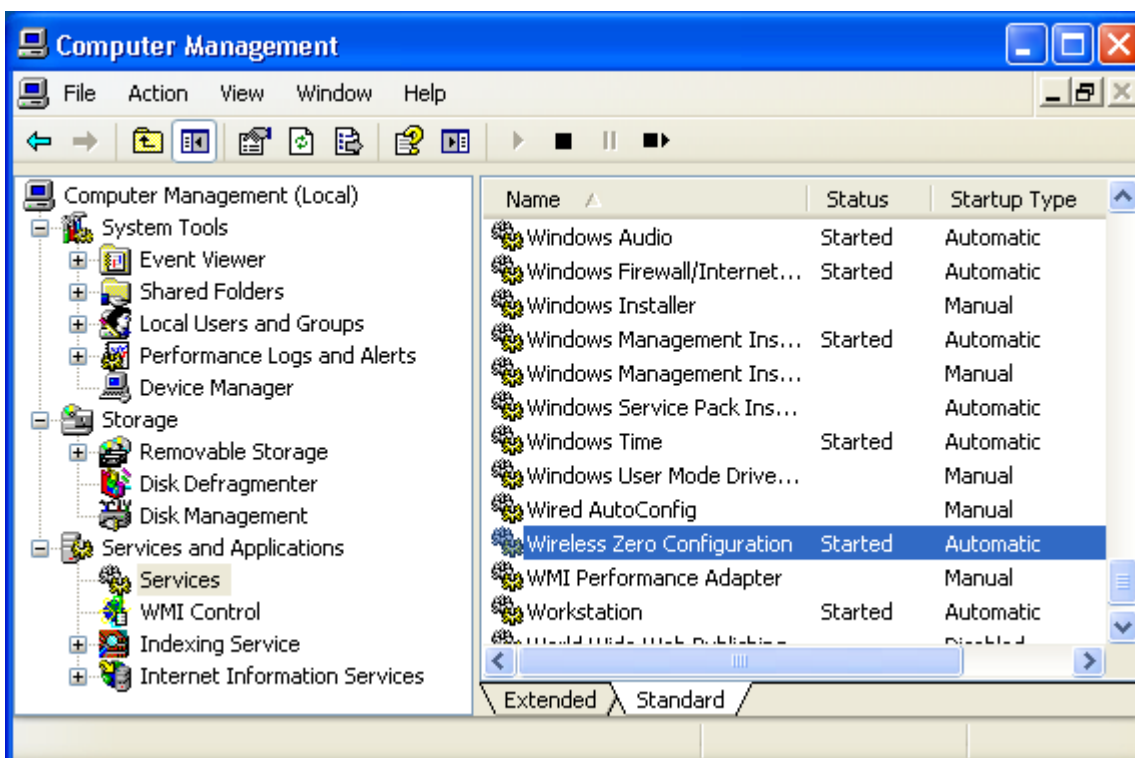

Fig. 3: Checking the "Wireless Zero Configuration" service status.

### 2.1.1.3 Auto-starting the "ad hoc" WLAN network

To configure the "Wireless Network Connection" settings found under "Control Panel/Network Connections", right-click and open the "Properties" window.

There you will see the "General" tab where you must first select the item "Internet Protocol (TCP/IP)". Then click on "Properties" to define the static IP address as shown in Fig. 4.
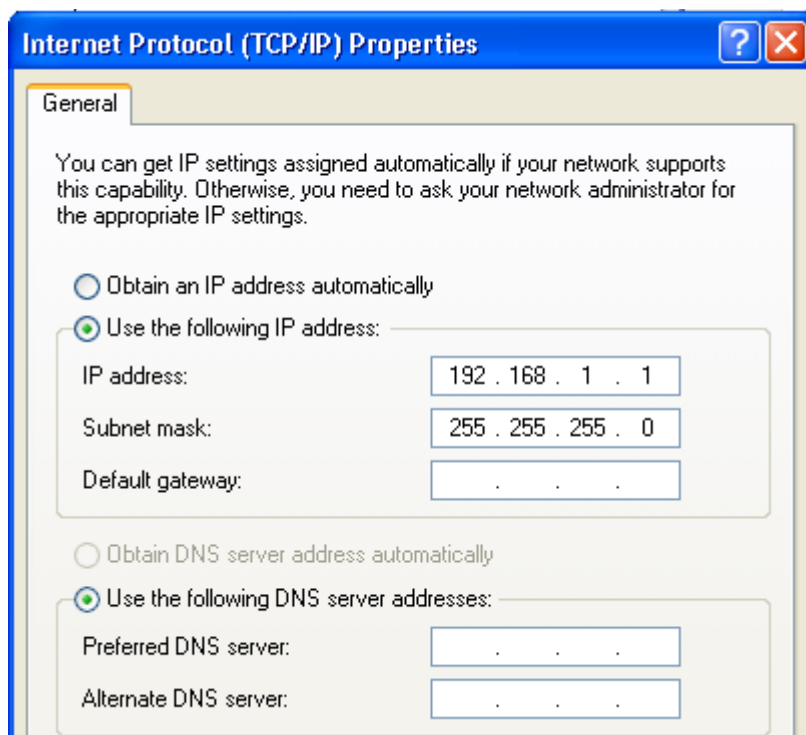

Fig. 4: Configuring the static IP address.

The other settings are configured on the "Wireless Networks" tab.
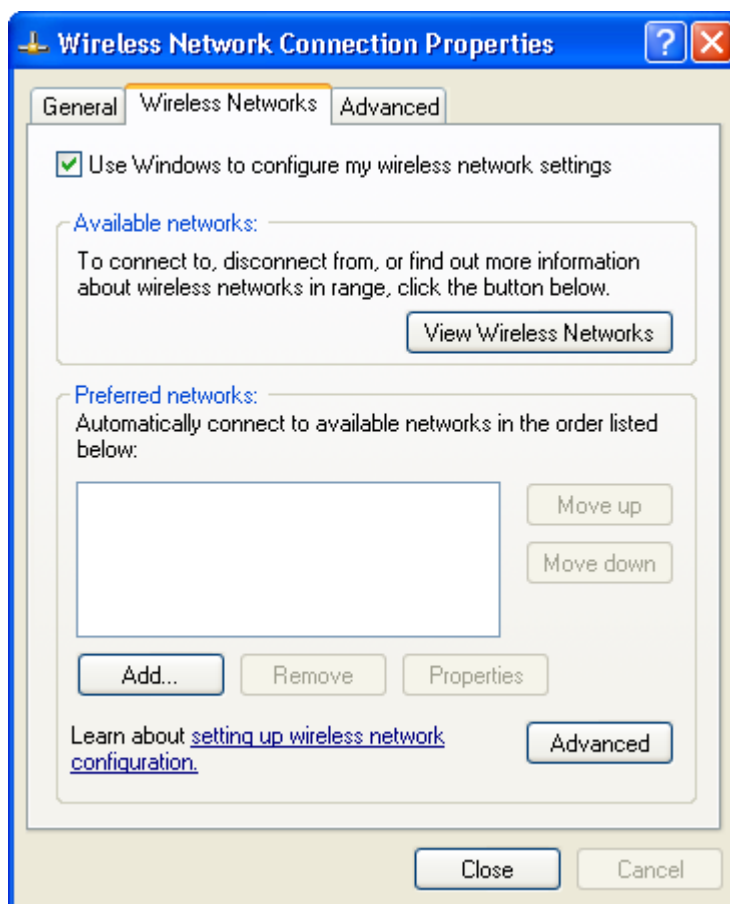
Fig. 5: Configuring the "Wireless Networks" settings.

1. Make sure the top box is checked
   ("Use Windows to configure my wireless network settings")

2. Click "Advanced" to select "Computer-to-computer (ad hoc) networks only"
   mode and then close the window

3. Click "Add" to configure the "Wireless network properties" on the "Association"
   tab as shown in Fig. 6 and then close the window

   a. Enter the desired network name in (e.g. "SFC-100234") in the "SSID"
      field. Later, this network will appear in the list of options on the
      Apple iPad

   b. Check "Connect even this network is not broadcasting"

   c. Uncheck "The key is provided for me automatically"

   d. Select the appropriate encryption method for the connection, e.g.
      "Open/WEP" and enter a password consisting of exactly 13 characters
      in the "Network key" field
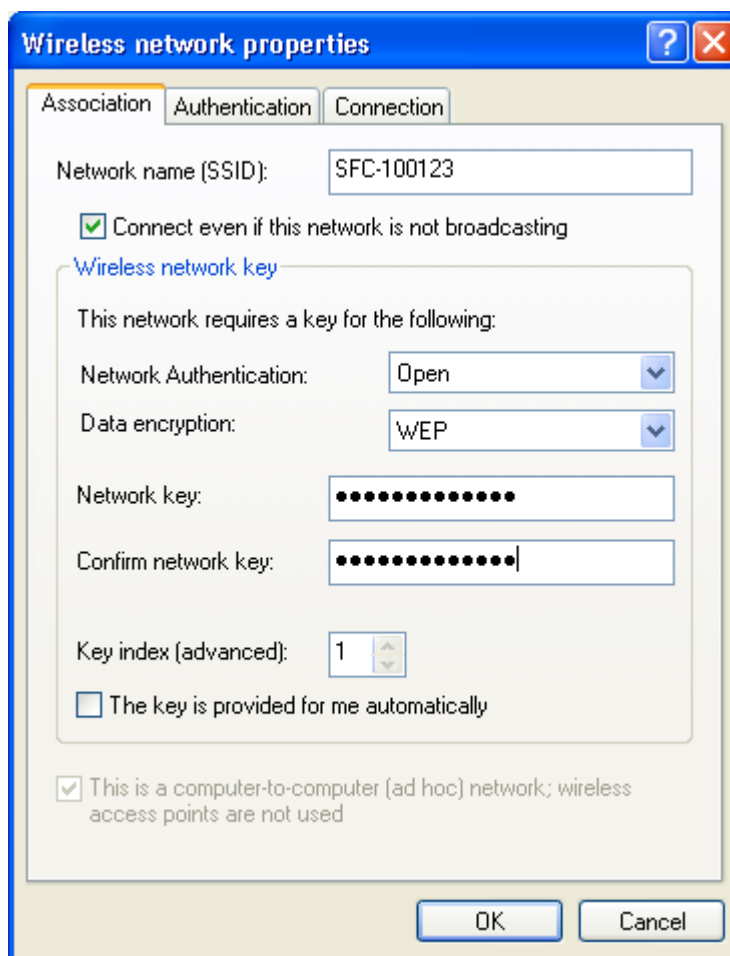
*Fig. 6: "Wireless network properties" configuration.*

Close all of the windows you have opened to complete the configuration.

2.1.2   Windows 7

2.1.2.1   Checking the driver for the virtual WiFi bus

To provide automatic availability of an "ad hoc" WLAN connection after starting up the measuring instrument, the files "netwifibus.inf" and "vwifibus.sys" must be located in the "C:\Windows\inf" directory.
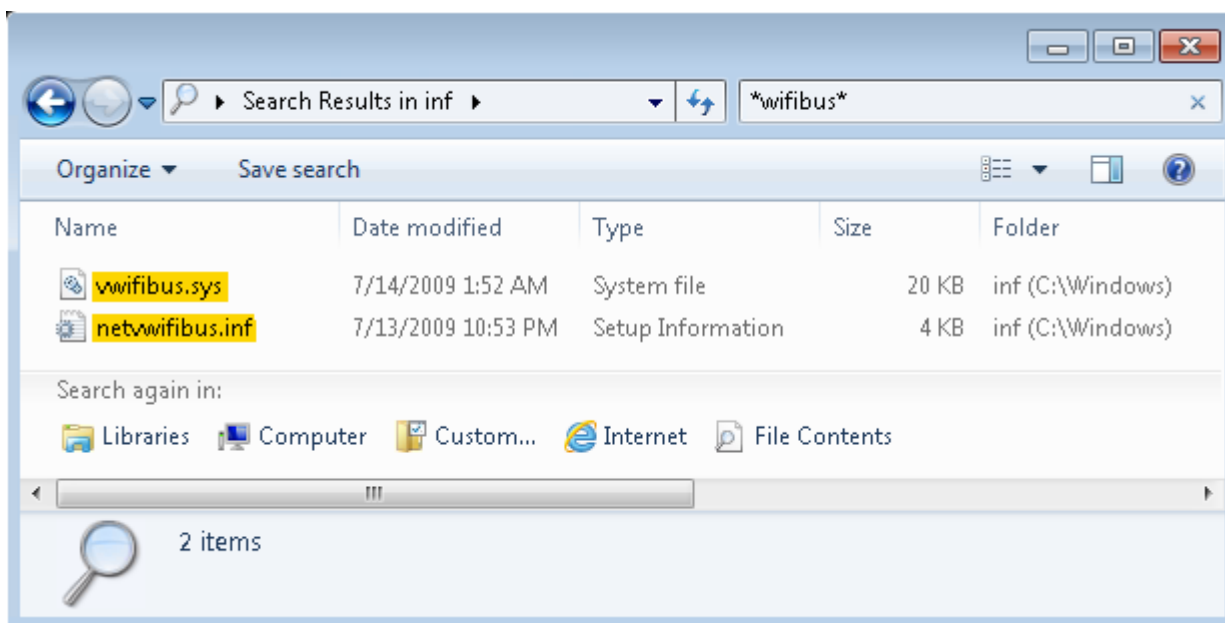
Fig. 7: Checking whether driver for virtual WiFi bus is installed.

The two files are provided as part of this application note. If these files are not yet installed on the measuring instrument, you can simply copy them manually into the "C:\Windows\inf" folder.

2.1.2.2   Checking the "WLAN AutoConfig" service status

Under "Control Panel/Administrative Tools/Computer Management", select the "Services and Applications/Services" view to ensure the "WLAN AutoConfig" service status is "Started" and that its startup type is "Automatic".
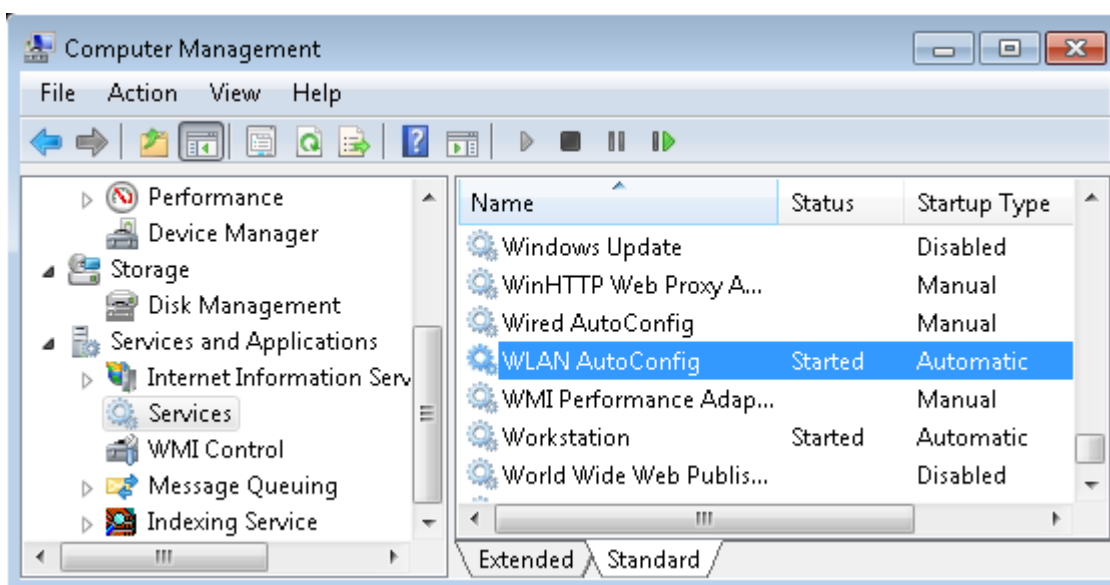

Fig. 8: Checking the "WLAN AutoConfig" service status.

2.1.2.3 Installing the USB WLAN adapter

See section 2.1.1.1.

2.1.2.4 Auto-starting the "ad hoc" WLAN network

The required "start wlan adhoc network.bat" configuration file is provided as part of this application note. After you have saved the file on the measuring instrument in the "Start menu/All Programs/Startup" directory, you can configure it by right-clicking and selecting "Edit".
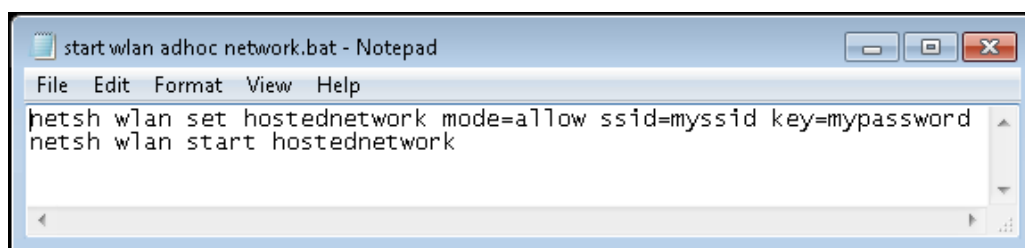
Fig. 9: Configuring the "ad hoc" WLAN network.

- Enter the desired network name (e.g. "SFC-100234") in the "myssid" field. This network can then be selected later from the list of available networks on the Apple iPad

- "mypassword" is used to secure the connection

To activate the connection, run the configuration file or restart the measuring instrument.

2.2 Configuring the Apple iPad

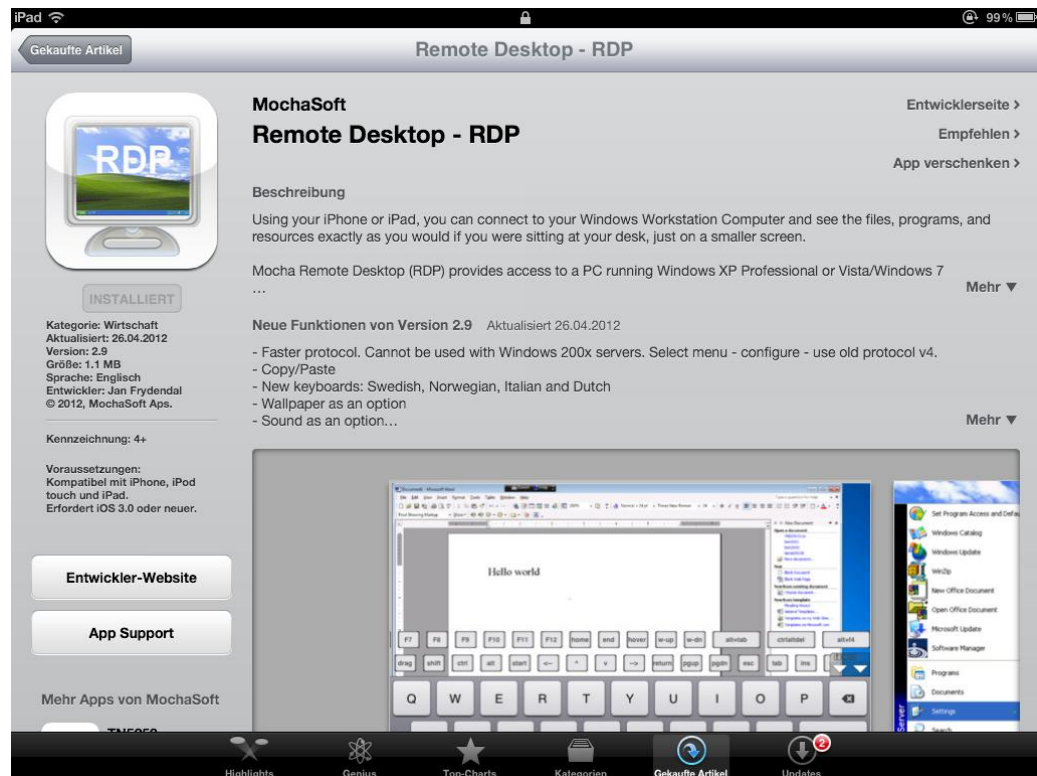### 2.2.1 Installing the Remote Desktop – RDP app

Fig. 10: The app can be installed directly from the Apple App Store [1].

2.2.2 Connecting to the measuring instrument via WLAN

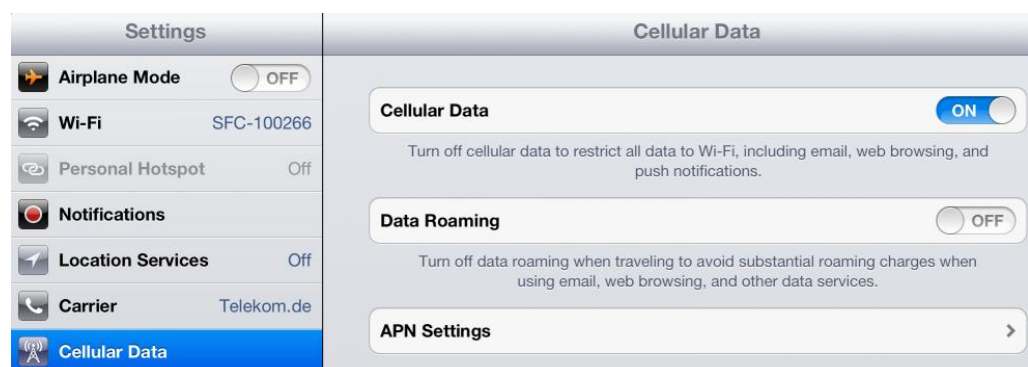#### 2.2.2.1 Temporarily disable the "Cellular Data" setting

Fig. 11: Disabling the "Cellular Data" setting causes the Apple iPad to use only WLAN for data traffic.

2.2.2.2 Selecting the WLAN connection to the measuring instrument

Fig. 12: Selecting the WLAN connection to the measuring instrument.

If the measuring instrument is running Windows XP (see 2.1), a static IP address must also be assigned (once) in the connection settings of the Apple iPad as shown in Fig. 13.

Fig. 13: Configuring the static IP address.

2.2.3 Configuring the Remote Desktop – RDP app

After starting the app, select "New...." to create a connection profile for a new measuring instrument.
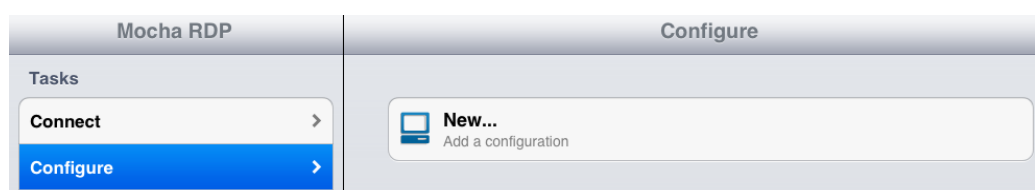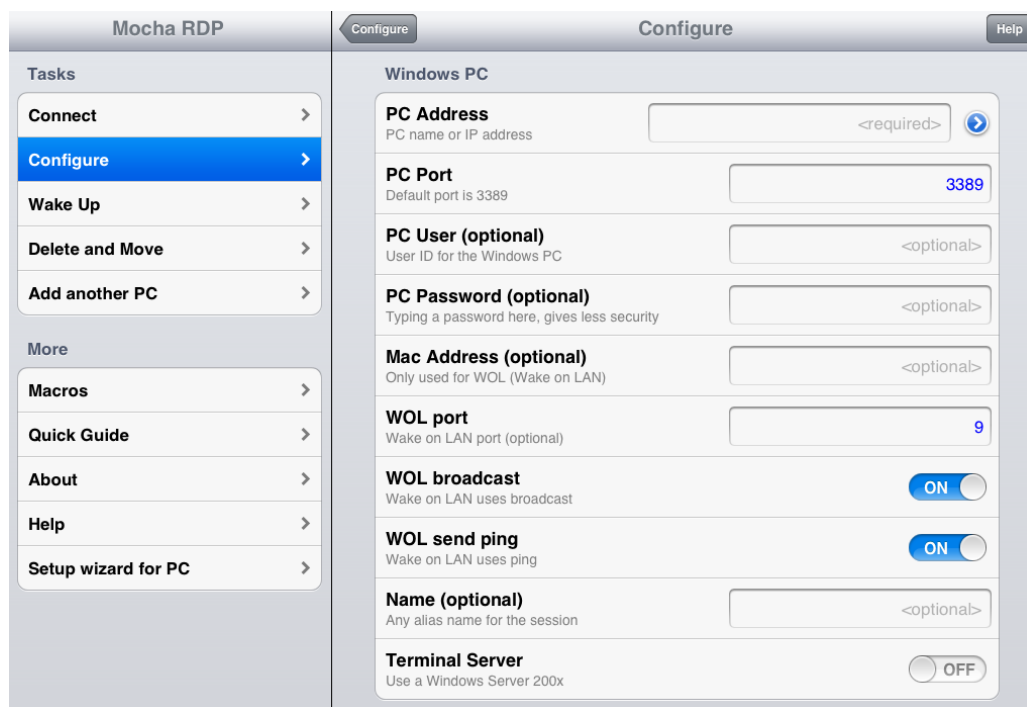

Fig. 14: Creating a new connection profile.

Next, the following screen appears:

Fig. 15: Configuration screen for a new connection profile.

The following settings must be configured:

1. The "PC Address" field can be filled in automatically with the currently active WLAN connection by clicking the blue button

2. The "PC User" is "instrument" and is the same for all measuring instruments

3. The "PC Password" is found in the manual of the particular measuring instrument

4. The default value of "800 x 600" for "Screen size" is appropriate for most measuring instruments. Exceptions are listed in the following table:

	Horizontal	Vertical
R&S®DVMS1 / DVMS4	1024	768
R&S®ETL	1024	768
R&S®VTC	1368	1026

Table 2: Recommended remote desktop resolution for different measuring instruments.
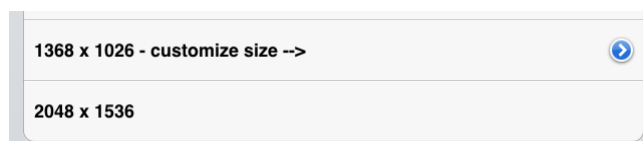
Fig. 16: The "customize size" function supports custom resolutions.

3 Operation

3.1 Connecting to the measuring instrument via WLAN

See section 2.2.2.

3.2 Remote desktop access to the measuring instrument

1. Select landscape format and use the multitasking bar to lock this format:

Fig. 17: The icon on the left in the multitasking bar enables the rotation lock for the view.

2. Start the Remote Desktop – RDP app

3. Select the measuring instrument from the "Connect" list

Fig. 18: "Connect" list for connecting to a previously configured measuring instrument.

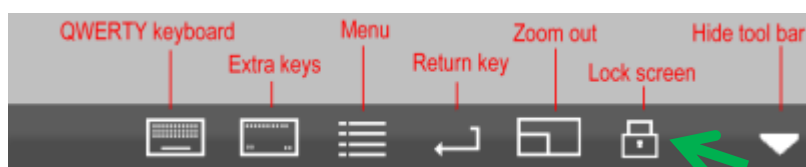4. Disable screen scrolling by tapping the "Lock screen" icon:

Fig. 19: Menu bar during the remote desktop connection

5. If you are remotely controlling an R&S®ETL, press the "F6" key once to emulate the soft keys in the remote desktop app

If you are using the WLAN connection in "ad hoc" mode as described in Chapter 2, the Apple iPad should not be more than ten meters away from the measuring instrument. Otherwise, the connection will be dropped automatically. For larger ranges, it is recommended to use "Infrastructure" mode with an additional access point.

4 References

[1]   "Remote Desktop – RDP" by MochaSoft
http://itunes.apple.com/app/remote-desktop-rdp/id288362053?mt=8

5 Additional Information

Our Application Notes are regularly revised and updated. Check for any changes at http://www.rohde-schwarz.com.

Please send any comments and suggestions about this Application Note to Broadcasting-TM-Applications@rohde-schwarz.com.

About Rohde & Schwarz

Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established more than 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

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- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system

Certified Quality System
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