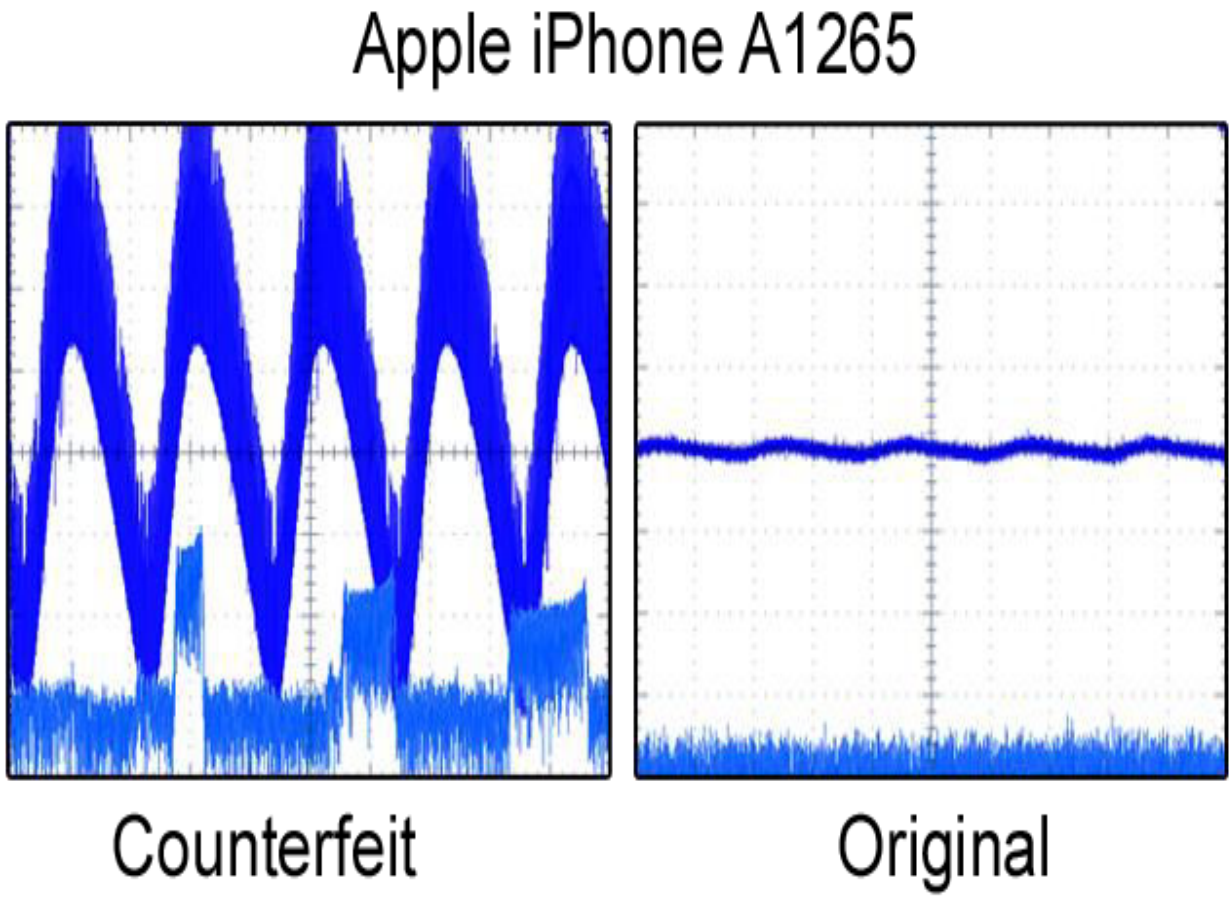
Chapter 1: Getting Started with the Raspberry Pi



FAKE GENUINE

CLASS 10
40MB/s Read

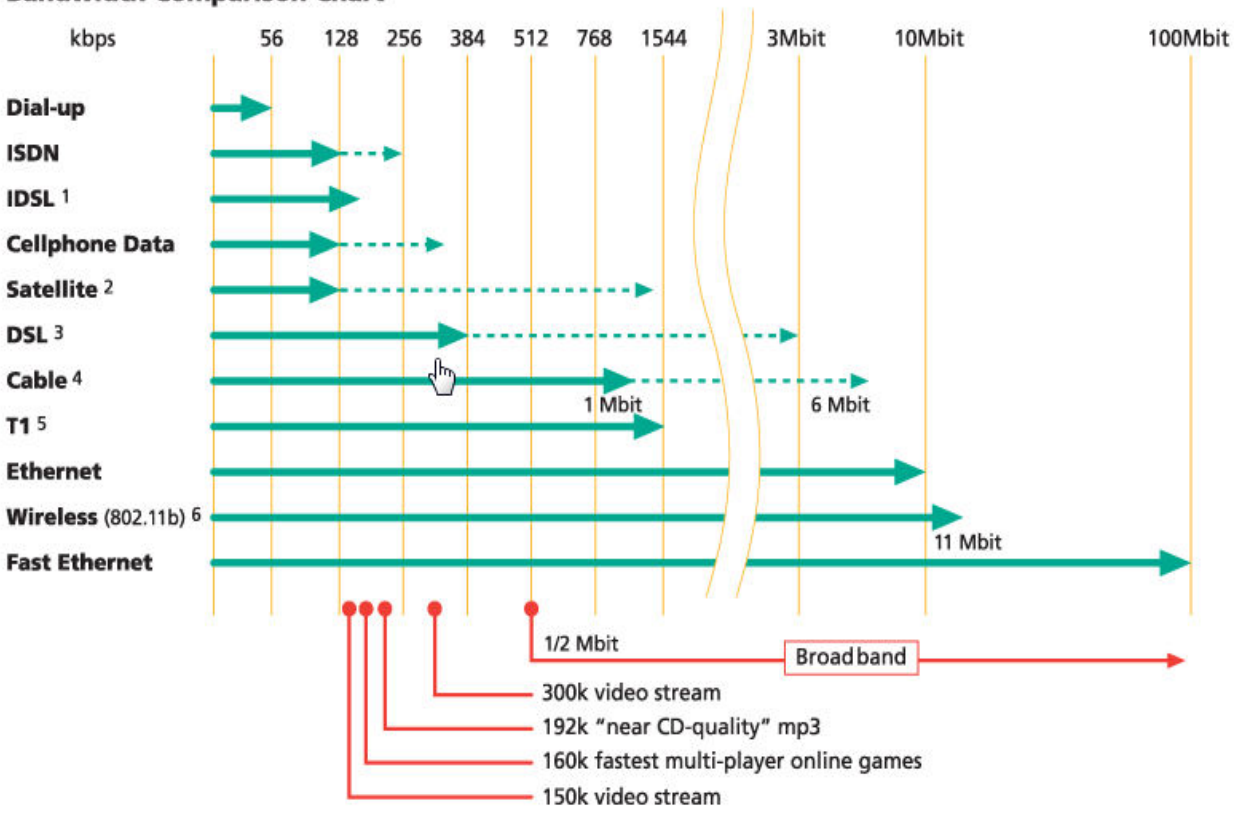
Chapter 2: Preparing a Network

```
eth0      Link encap:Ethernet  HWaddr b8:27:eb:45:bb:fa
          inet addr:192.168.1.135  Bcast:192.168.1.255  Mask:255.255.255.0
          inet6 addr: fe80::ba27:ebff:fe45:bbfa/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:89 errors:0 dropped:0 overruns:0 frame:0
          TX packets:96 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:7943 (7.7 KiB)  TX bytes:14104 (13.7 KiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
```

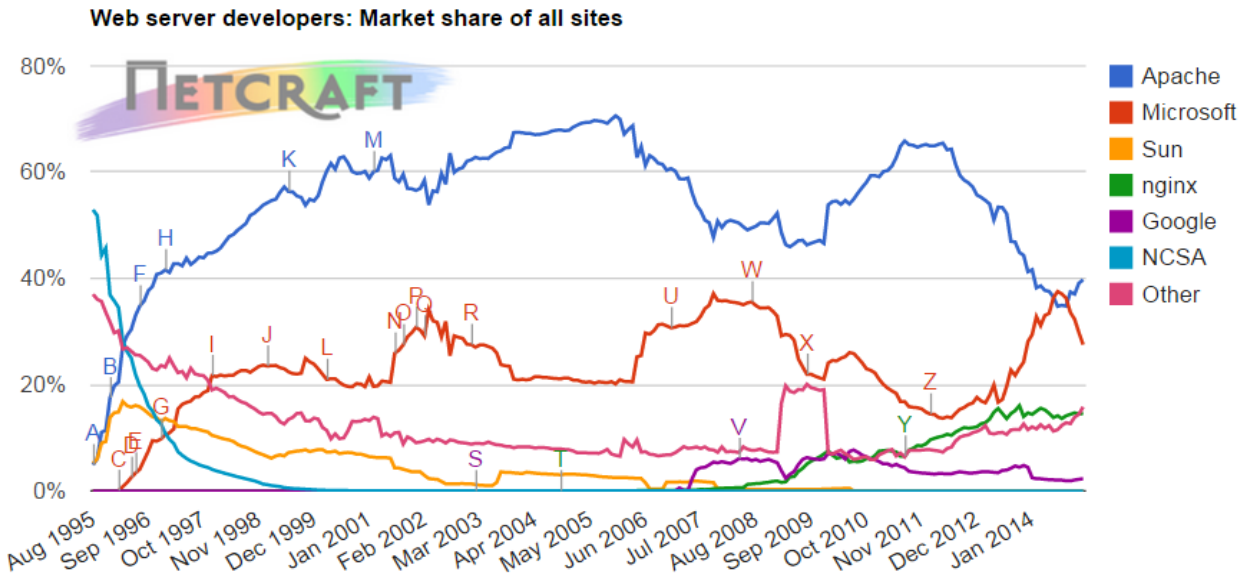
```
root@nas:~# ping -c 1 www.google.com
PING www.google.com (31.55.166.217) 56(84) bytes of data.
64 bytes from 31.55.166.217: icmp_req=1 ttl=57 time=16.7 ms

--- www.google.com ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 16.720/16.720/16.720/0.000 ms
root@nas:~#
root@nas:~#
root@nas:~# ping -c 1 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_req=1 ttl=43 time=31.1 ms

--- 8.8.8.8 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 31.118/31.118/31.118/0.000 ms
root@nas:~#
```

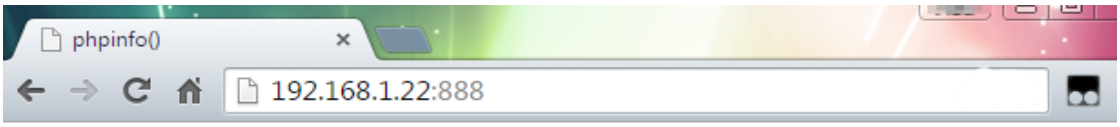
```
root@nas:~# wget --output-document=/dev/null http://speedtest.wdc01.softlayer.com/downloads/test500.zip
--2013-09-02 22:38:56--  http://speedtest.wdc01.softlayer.com/downloads/test500.zip
Resolving speedtest.wdc01.softlayer.com (speedtest.wdc01.softlayer.com)... 208.43.102.250
Connecting to speedtest.wdc01.softlayer.com (speedtest.wdc01.softlayer.com)|208.43.102.250|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 524288000 (500M) [application/zip]
Saving to: `/dev/null'

 2% [>                                                                    ] 14,135,558  4.27M/s  eta 2m 21s
```

Bandwidth Comparison Chart



Chapter 4: Using Fast Web Servers and Databases

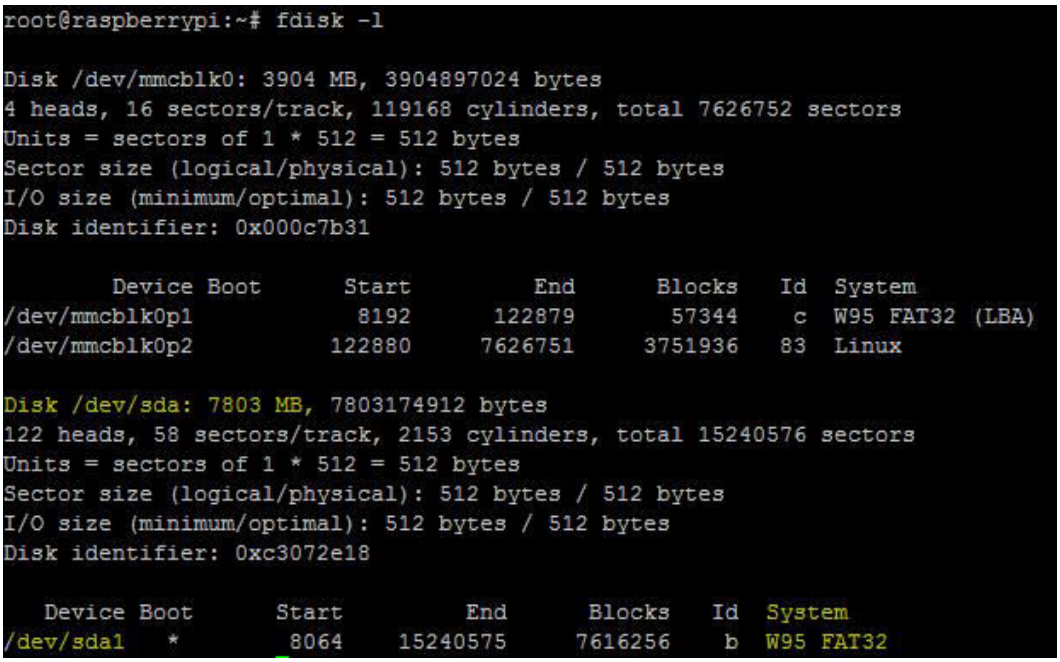


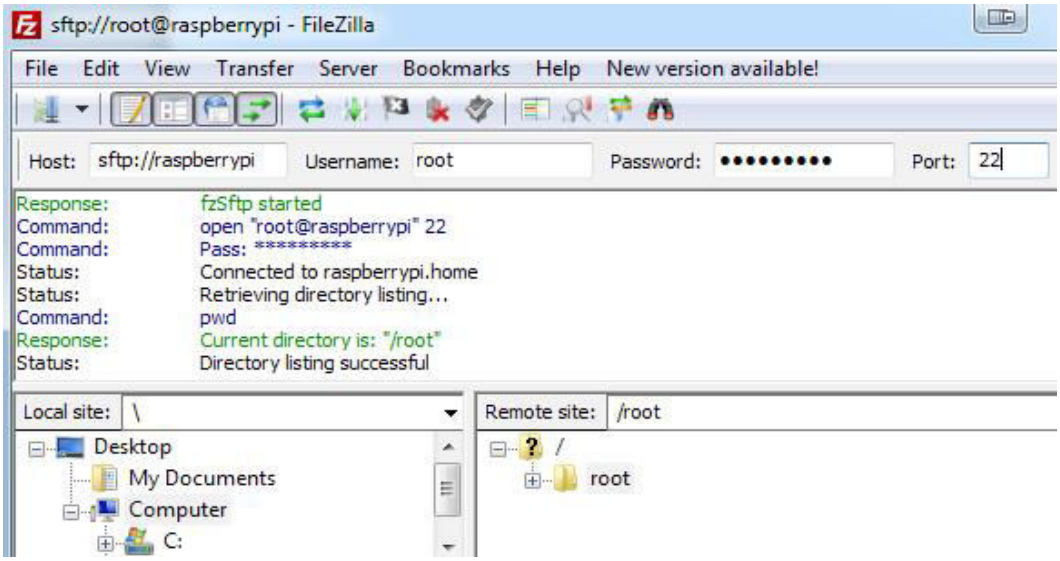


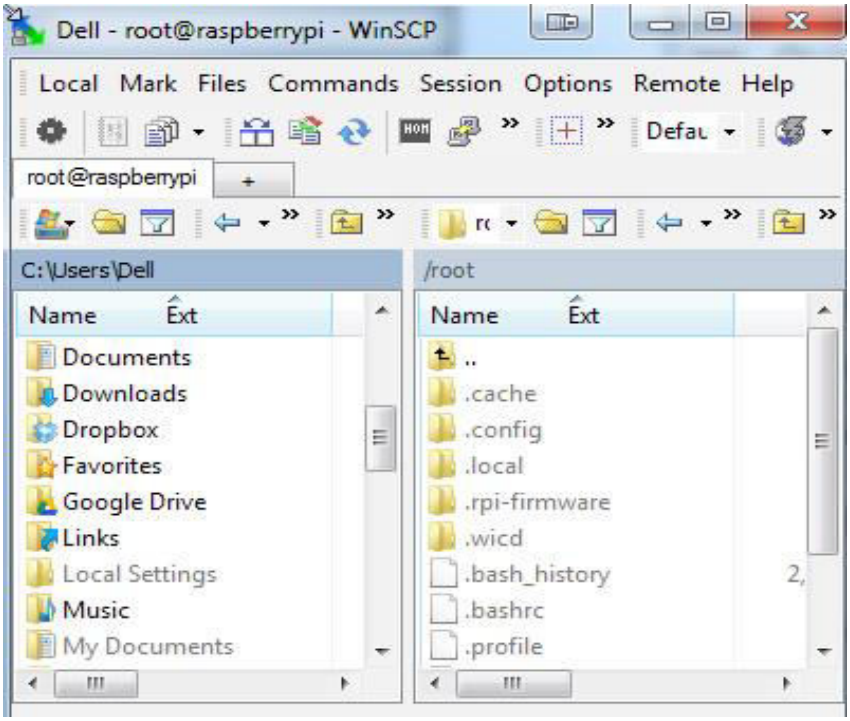
PHP Version 5.4.39-0+deb7u2

System	Linux raspberrypi 3.18.10-v7+ #774 SMP PREEMPT Wed Mar 25 14:10:30 GMT 2015 armv7l
Build Date	Mar 29 2015 15:10:21
Server API	FPM/FastCGI
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php5/fpm
Loaded Configuration File	/etc/php5/fpm/php.ini
Scan this dir for additional .ini files	/etc/php5/fpm/conf.d
Additional .ini files parsed	/etc/php5/fpm/conf.d/10-pdo.ini, /etc/php5/fpm/conf.d/20-apc.ini

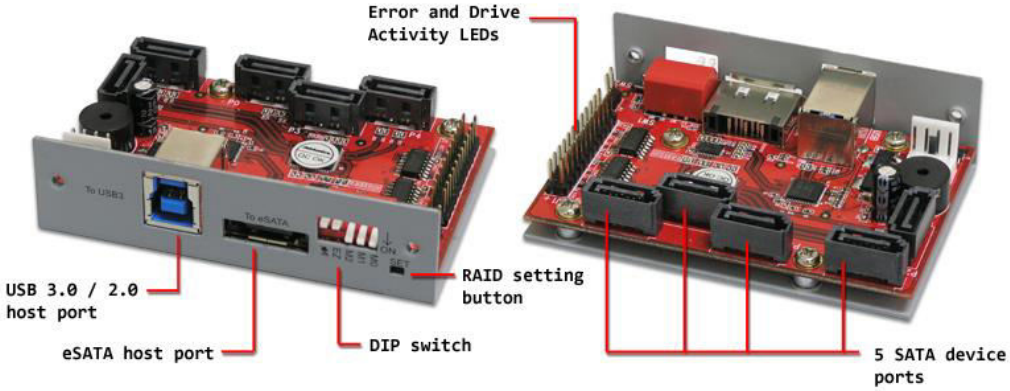
Chapter 5: Setting Up the Raspberry Pi as a File Server




sftp://root@raspberrypi - FileZilla
File Edit View Transfer Server Bookmarks Help New version available!
Host: sftp://raspberrypi Username: root Password: ••••••••• Port: 22
Response: fzSftp started
Command: open "root@raspberrypi" 22
Command: Pass: *********
Status: Connected to raspberrypi.home
Status: Retrieving directory listing...
Command: pwd
Response: Current directory is: "/root"
Status: Directory listing successful
Local site: \
Desktop
My Documents
Computer
C:
Remote site: /root
/
root


Dell - root@raspberrypi - WinSCP
Local Mark Files Commands Session Options Remote Help
root@raspberrypi
C:\Users\Dell
Name Ext
Documents
Downloads
Dropbox
Favorites
Google Drive
Links
Local Settings
Music
My Documents
/root
Name Ext
..
.cache
.config
.local
.rpi-firmware
.wicd
.bash_history
.bashrc
.profile


RAID
RAID


Error and Drive Activity LEDs
USB 3.0 / 2.0 host port
eSATA host port
DIP switch
RAID setting button
5 SATA device ports

Chapter 7: Streaming Live HD Video

UV4L HTTP/WebRTC Streaming Server

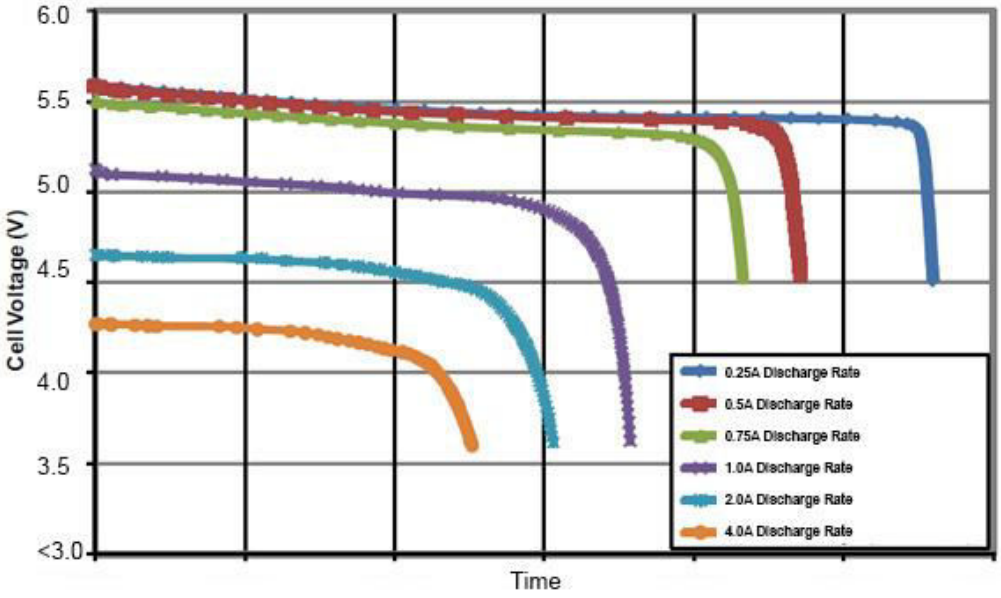
- edit configuration file
- camera control panel
- audio/video stream via WebRTC
- video stream in MJPEG or JPEG (still captures)
- multi peer-to-peer audio/video conferencing
- stream audio/video to a Jitsi Meet Web Conference (what is Jitsi Meet?)

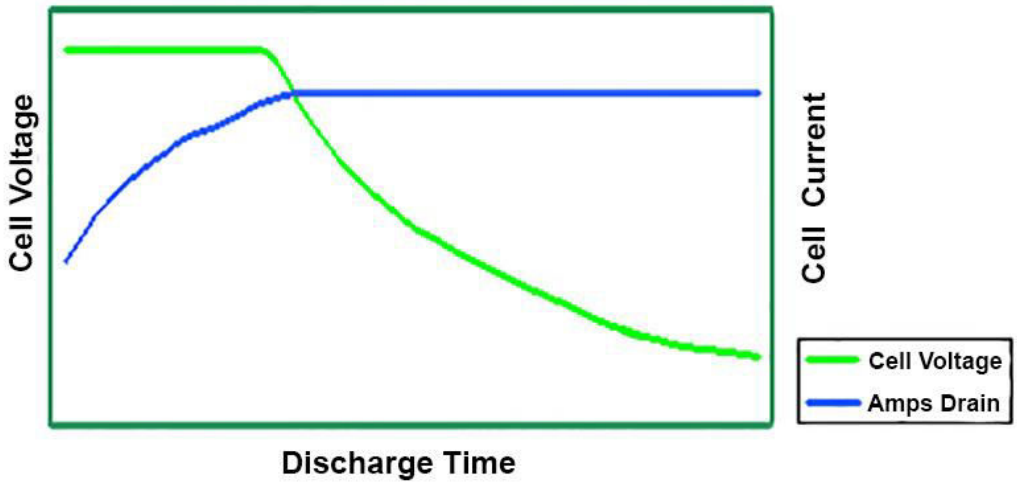
device: /dev/video0
current connections: 2, queued: 0, total handled: 2
max. simultaneous streams allowed: 3, max. threads: 5

---

contact donate!

Chapter 9: Running Your Pi from a Battery's Power Source


6.0
5.5
5.0
4.5
4.0
3.5
<3.0
Cell Voltage (V)
Time
0.25A Discharge Rate
0.5A Discharge Rate
0.75A Discharge Rate
1.0A Discharge Rate
2.0A Discharge Rate
4.0A Discharge Rate


Cell Voltage
Cell Current
Discharge Time
Cell Voltage
Amps Drain

VOLTS

$$\text{VOLTS} = \sqrt{\text{WATTS} \times \text{OHMS}}$$

$$\text{VOLTS} = \frac{\text{WATTS}}{\text{AMPERES}}$$

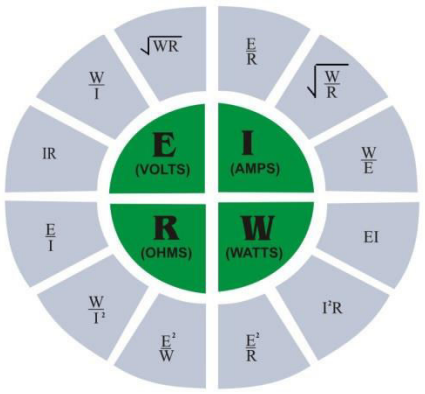
$$\text{VOLTS} = \text{AMPERES} \times \text{OHMS}$$

OHMS

$$\text{OHMS} = \frac{\text{VOLTS}}{\text{AMPERES}}$$

$$\text{OHMS} = \frac{\text{VOLTS}^2}{\text{WATTS}}$$

$$\text{OHMS} = \frac{\text{WATTS}}{\text{AMPERES}^2}$$



AMPERES

$$\text{AMPERES} = \frac{\text{VOLTS}}{\text{OHMS}}$$

$$\text{AMPERES} = \frac{\text{WATTS}}{\text{VOLTS}}$$

$$\text{AMPERES} = \sqrt{\frac{\text{WATTS}}{\text{OHMS}}}$$

WATTS

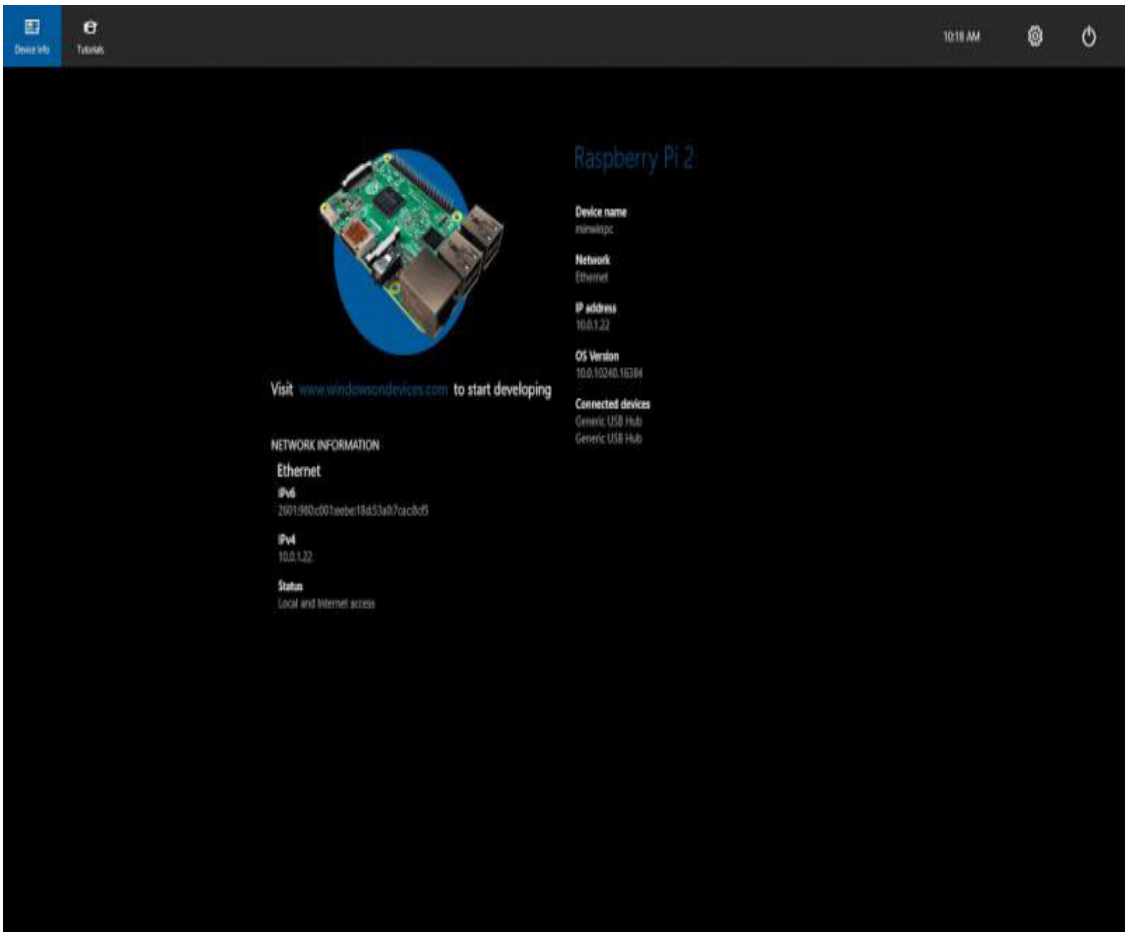
$$\text{WATTS} = \frac{\text{VOLTS}^2}{\text{OHMS}}$$

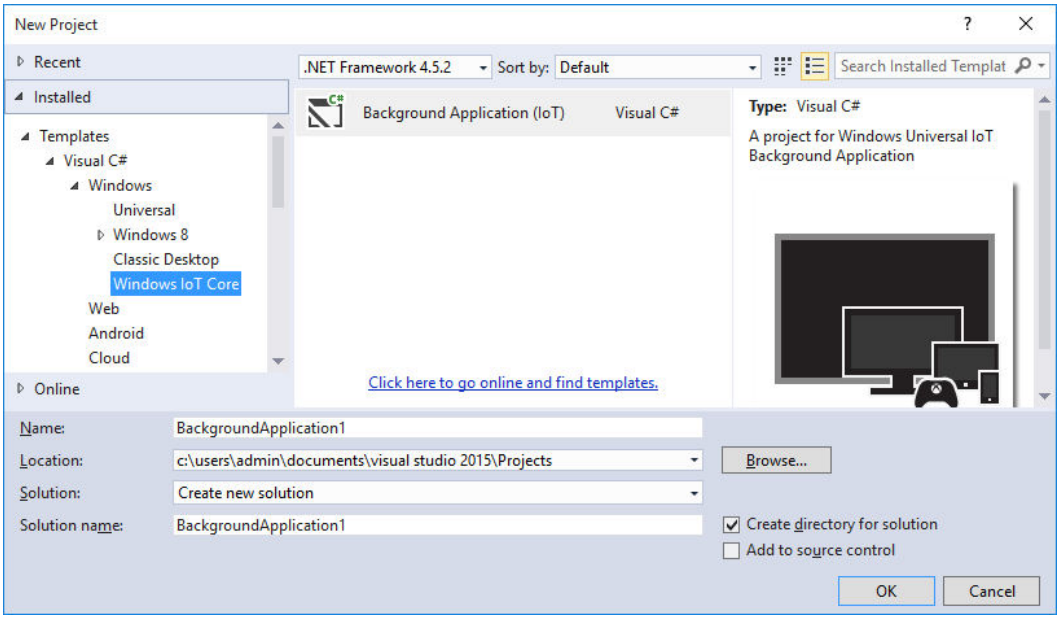
$$\text{WATTS} = \text{AMPERES}^2 \times \text{OHMS}$$

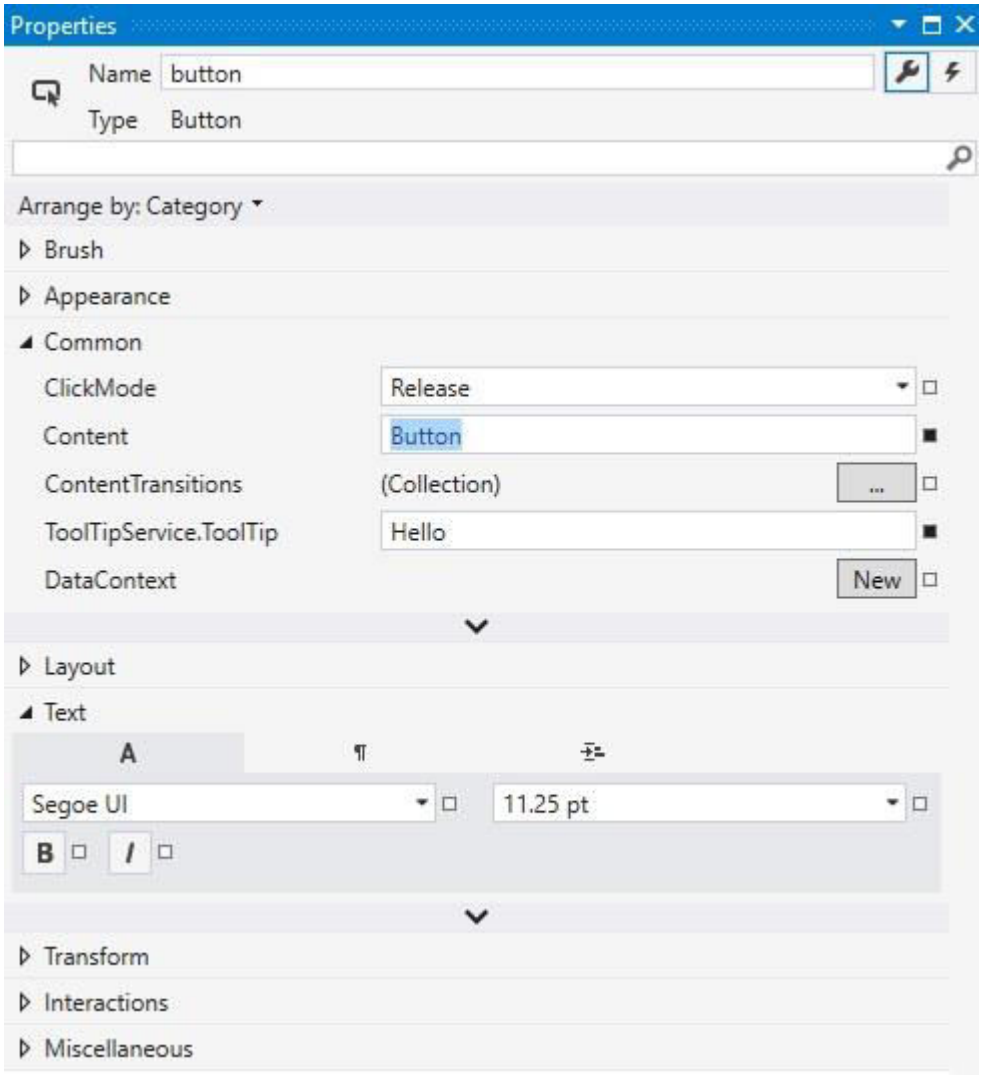
$$\text{WATTS} = \text{VOLTS} \times \text{AMPERES}$$


UBEC
U3 PRO
IN
5V/3.5A
OUT

Chapter 10: Windows IoT Core

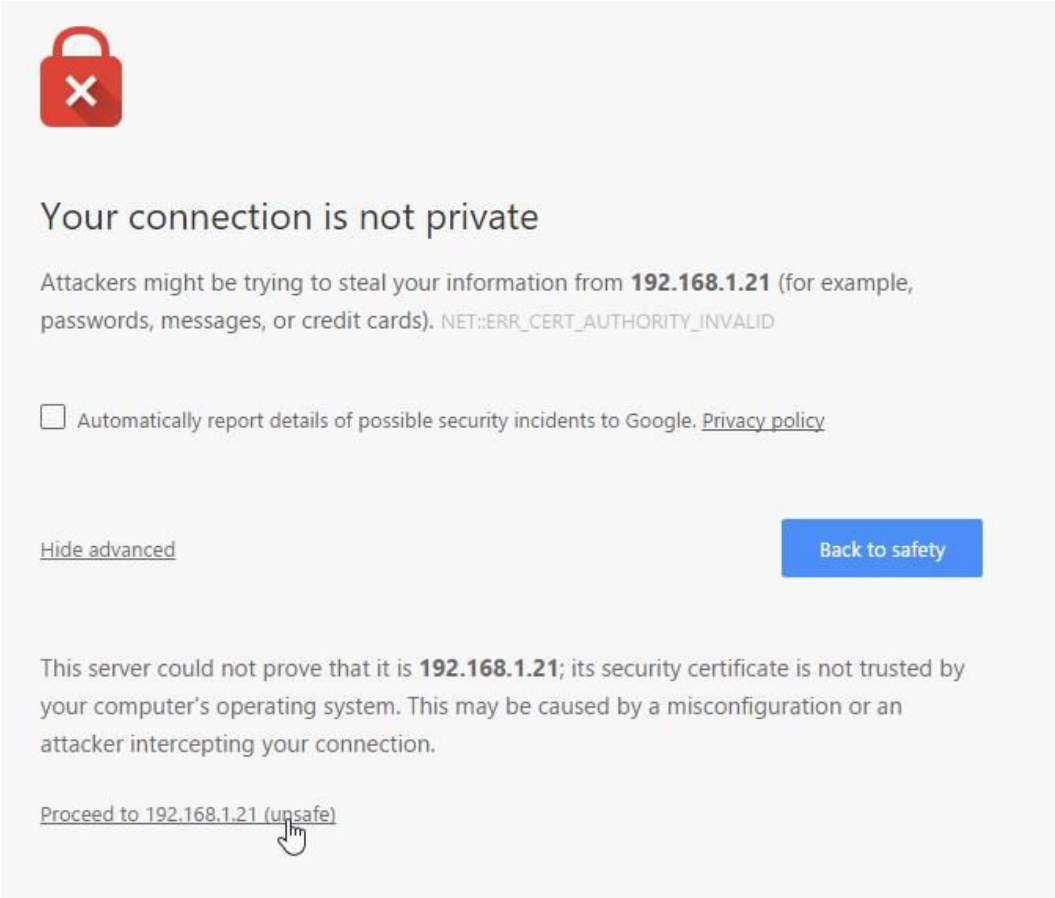


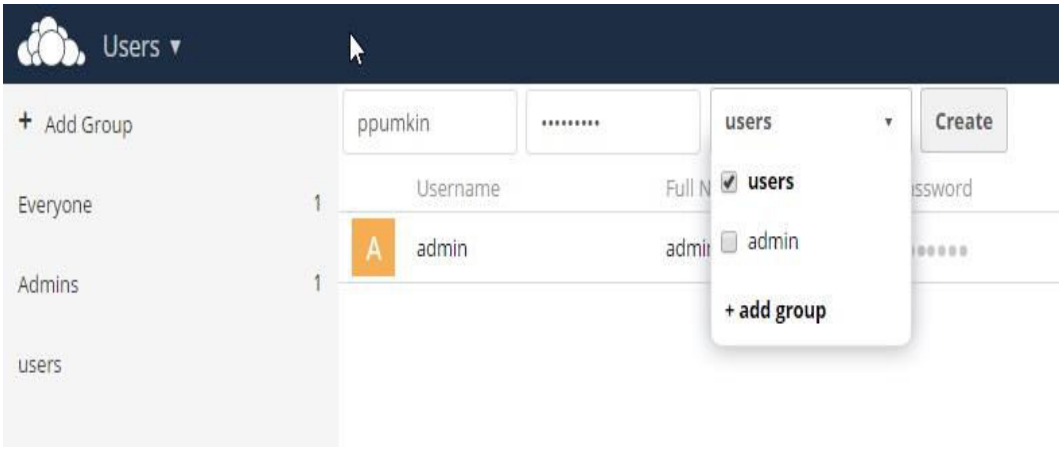

New Project
Recent
Installed
Templates
Visual C#
Windows
Universal
Windows 8
Classic Desktop
Windows IoT Core
Web
Android
Cloud
Online
.NET Framework 4.5.2
Sort by:
Default
Search Installed Templat
Background Application (IoT)
Visual C#
Click here to go online and find templates.
Type: Visual C#
A project for Windows Universal IoT Background Application
Name:
BackgroundApplication1
Location:
c:\users\admin\documents\visual studio 2015\Projects
Browse...
Solution:
Create new solution
Solution name:
BackgroundApplication1
Create directory for solution
Add to source control
OK
Cancel

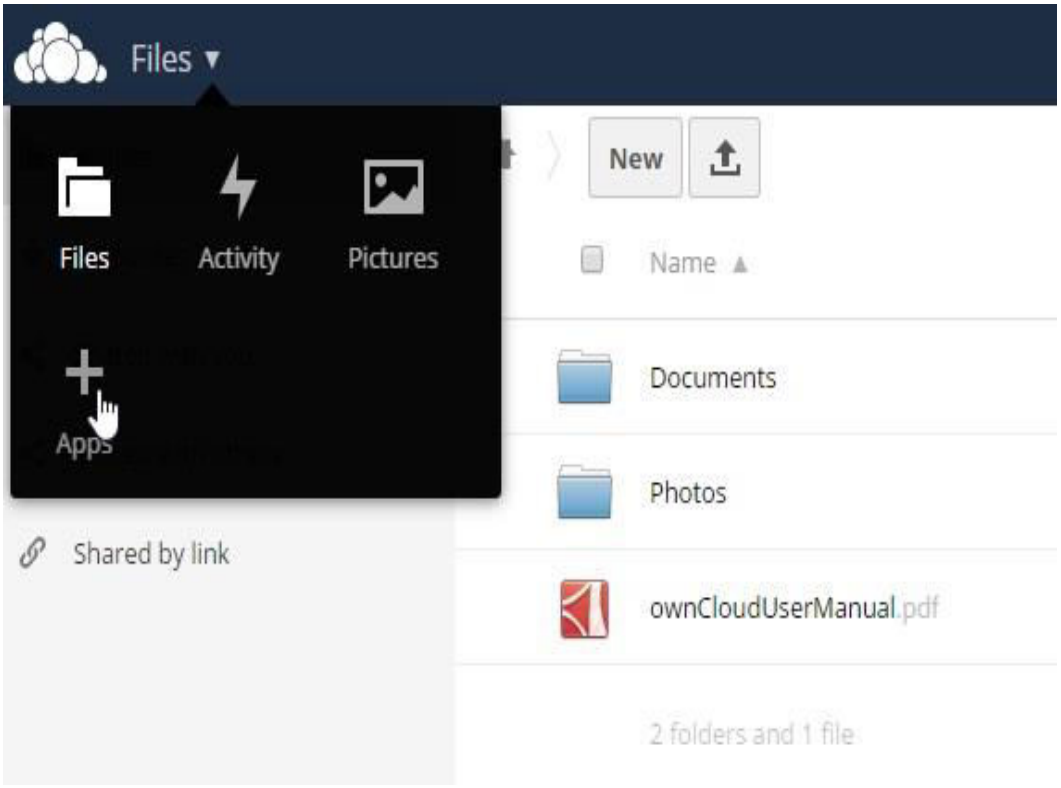

Properties
Name button
Type Button
Arrange by: Category
Brush
Appearance
Common
ClickMode Release
Content Button
ContentTransitions (Collection) ...
ToolTipService.ToolTip Hello
DataContext New
Layout
Text
A
¶
Segoe UI
11.25 pt
B
I
Transform
Interactions
Miscellaneous

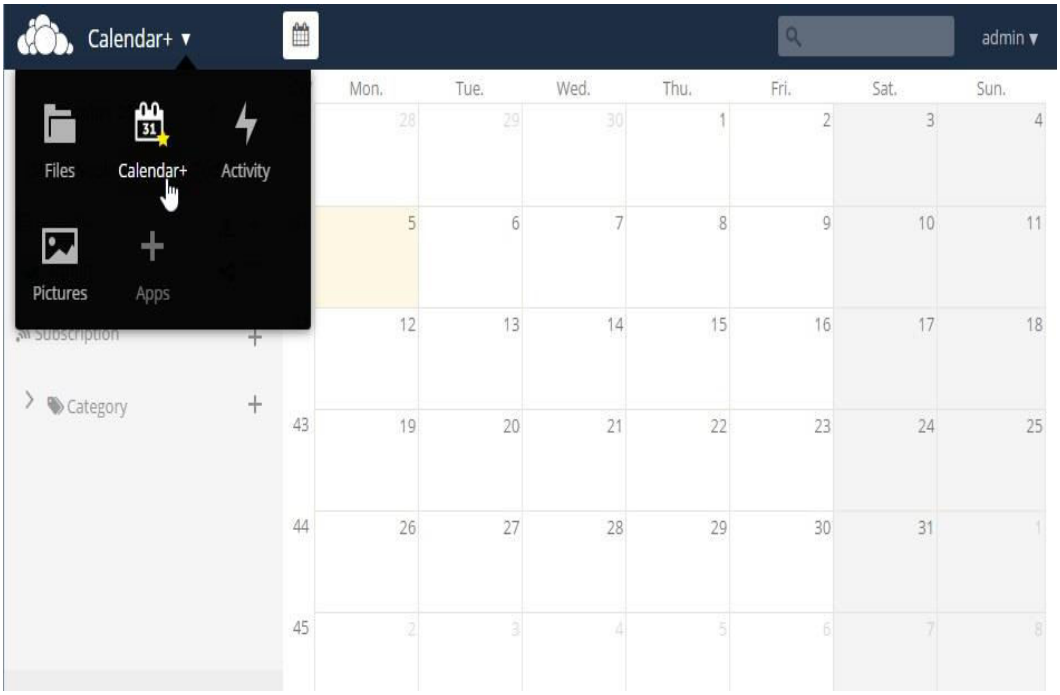
```
    {
        public MainPage()
        {
            this.InitializeComponent();
        }

        private void button_Click(object sender, RoutedEventArgs e)
        {
            this.textBlock.Text = "Hello World!";
        }
    }
}
```

Chapter 11: Running Your ownCloud

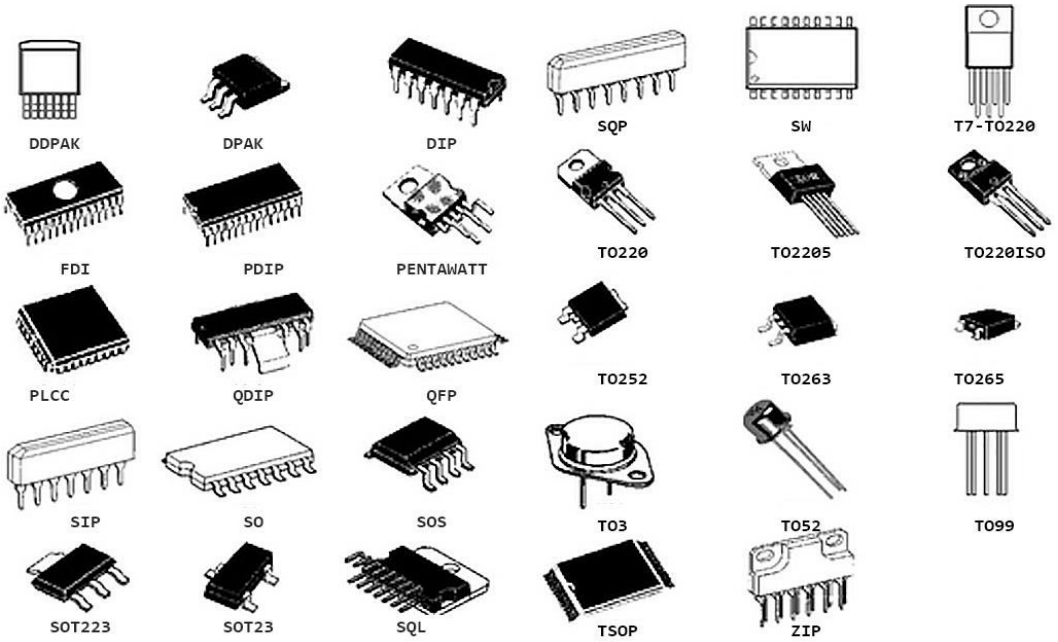



Users
Add Group
Everyone 1
Admins 1
users
ppumkin
users
Create
Username
admin
users
admin
+ add group


Files
Files
Activity
Pictures
Apps
Shared by link
New
Name
Documents
Photos
ownCloudUserManual.pdf
2 folders and 1 file


Calendar+
admin
Files
Calendar+
Activity
Pictures
Apps
Category
Mon.
Tue.
Wed.
Thu.
Fri.
Sat.
Sun.

Chapter 12: The Internet of Things – Sensors in the Cloud



VOLTS

$\text{VOLTS} = \sqrt{\text{WATTS} \times \text{OHMS}}$

$\text{VOLTS} = \frac{\text{WATTS}}{\text{AMPERES}}$

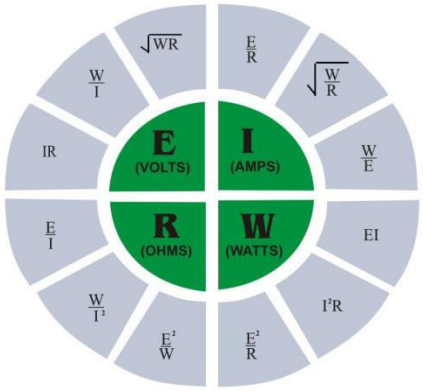
$\text{VOLTS} = \text{AMPERES} \times \text{OHMS}$

OHMS

$\text{OHMS} = \frac{\text{VOLTS}}{\text{AMPERES}}$

$\text{OHMS} = \frac{\text{VOLTS}^2}{\text{WATTS}}$

$\text{OHMS} = \frac{\text{WATTS}}{\text{AMPERES}^2}$



AMPERES

$\text{AMPERES} = \frac{\text{VOLTS}}{\text{OHMS}}$

$\text{AMPERES} = \frac{\text{WATTS}}{\text{VOLTS}}$

$\text{AMPERES} = \sqrt{\frac{\text{WATTS}}{\text{OHMS}}}$

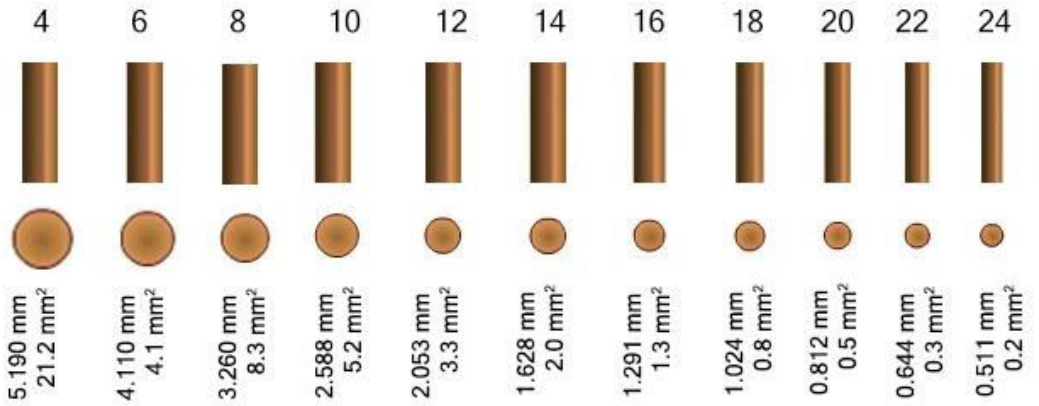
WATTS

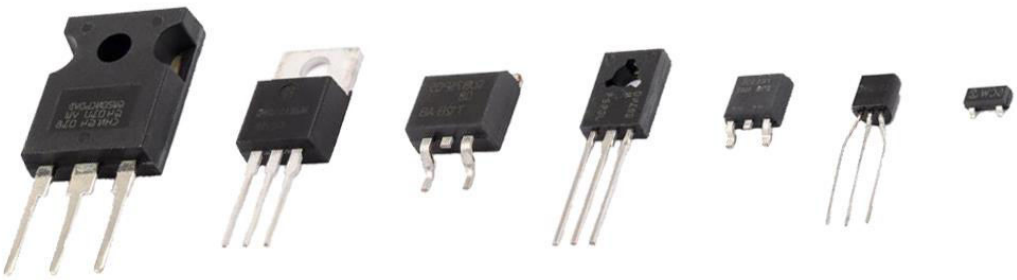
$\text{WATTS} = \frac{\text{VOLTS}^2}{\text{OHMS}}$

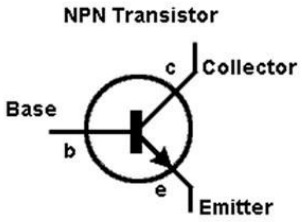
$\text{WATTS} = \text{AMPERES}^2 \times \text{OHMS}$

$\text{WATTS} = \text{VOLTS} \times \text{AMPERES}$

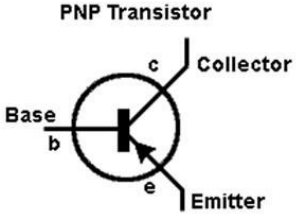
American Wire Guage (AWG)											
Length (feet)	Length (meters)	Current (amps)									
		5	10	15	20	25	30	40	50	60	70
3	1	18	18	18	18	16	16	16	12	12	12
15	4	16	12	10	10	8	8	6	6	4	4
20	6	14	12	10	8	8	6	6	4	4	4
25	7	14	10	8	8	6	6	4	4	2	2
30	9	12	10	8	6	6	4	4	2	2	2
40	12	12	8	6	6	4	4	2	2	1	1/0
50	15	10	8	6	4	4	2	2	1	1/0	1/0
60	18	10	6	6	4	2	2	1	1/0	2/0	2/0
70	21	10	6	4	2	2	2	1/0	2/0	2/0	3/0
80	24	8	6	4	2	2	1	1/0	2/0	3/0	3/0
90	27	8	4	4	2	1	1/0	2/0	3/0	3/0	4/0







N Never
P Points
N iN



P Points
N iN
P Permanently