



GARS
Glenn Amateur Radio Society

KJ6HCG



GARS REPEATER

DECEMBER, 2017

Second edition

.The Prez Says:

Firstly, I wish and bless each and everyone of our club members, and their families, a Merry Christmas and Holiday Season, and a forth coming Happy New Year.

Secondly, our next club membership meeting is on the 14th of December. Location of meet will be at the Lutheran Fellowship Hall in Artois, CA. This last meeting of the year will start at 6:30pm (1830 hours). The tentative plan is to have a quick update of club business, followed by a Holiday party with eyeball QSOs. Bring your favorite holiday treats, drink, and stories to share with all. This season we have much to be thankful for!

In a recent, slightly premature, publication of the GARS Repeater newsletter, December edition, there was a second page article about Serval Mesh. This mesh system has some promises but is a long way in actual practical use. Having done some due-diligence, I post here elsewhere in this newsletter some important information from the Serval WIKI; a more complete picture.

This mesh system is not yet in production and seems to have stalled a bit. The latest version 0.93 was released in April 2016. The previous version 0.92 was released October 2014. Now is there a reason to have such a system to fall back on? Yes there is! Many of us have some outdated handheld devices, cell phones, that could be put to very good use in times when the cellular system is down in a specific area.

(con't page 2)



The Prez Says:

(continued from page 1)

This system is much like the Family Radio System (FRS) in that it is local communications only. However, being mesh, it has the ability to expand the area of reach, within reason.

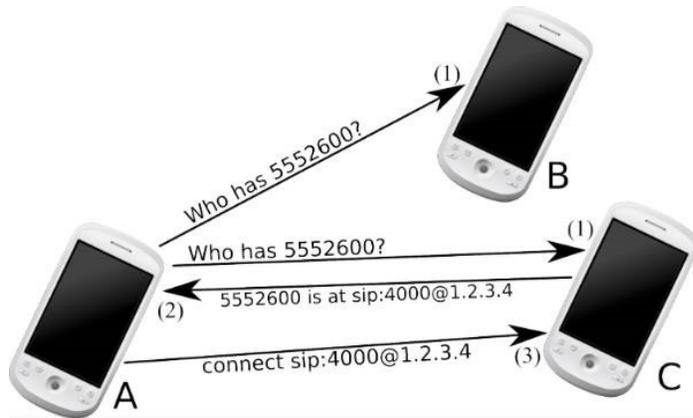
I have downloaded the application to my everyday cell but have not activated it as of yet. The plan is to side load the application to at least three out of service cells in an exercise of edification. If this works and the mesh functions then a demo will be forth coming in 2018.

With that all be blessed and please be safe in your travels. See you on the 14th for some glad times!

**Mike Ellithorpe-kf6obi
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Serval Mesh – Promising New Disaster Communication Method



Communicate in a disaster even without a mobile network using [Serval Mesh](#)

According to [The Serval Project](#):

Mobile phones normally can't be used when cellular networks fail, for example during a disaster. This means that millions of vulnerable people around the world are deprived of the ability to communicate, when they need it most.

We have spent the past four years working with the New Zealand Red Cross to create a solution. We call it the Serval Mesh, and it is free software that allows smart-phones to communicate, even in the face of catastrophic failure of cellular networks.

It works by using your phone's Wi-Fi to communicate with other phones on the same network. Or even by forming impromptu networks consisting only of mobile phones. Mesh communications is an appropriate technology for complementing cellular networks. Think of it like two-way radio or CB radio that has been propelled into the 21st century. For long-range communications you will still need to make use of cellular or fixed telephone networks or the internet.

This software allows you to easily make private phone calls, send secure text messages and share files in caves, in subways, in the Outback, in Australia or Africa, in Europe or the United States — even when cellular networks fail or are unavailable.

You can also keep using your existing phone number on the mesh, which is really important in a disaster when people are trying to get back in contact with each other.

(From Survival Life: 9 Ways to communicate in a disaster)

Release Notes for Serval Mesh 0.93

Serval Project, May 2016

These notes accompany the release in April 2016 of version 0.93 of the Serval Mesh app for Android 2.2 “Froyo” and above.

What is Serval Mesh?

Serval Mesh is an app for Android 2.2 “Froyo” and above. It provides free, secure phone-to-phone voice calling, SMS and file sharing over Wi-Fi or [Bluetooth][], without the need for a SIM card or a commercial mobile telephone carrier. In other words, it lets your Android phone call other Android phones running Serval Mesh within Wi-Fi range.

The Serval Mesh Privacy Policy describes how Serval Mesh handles your personal and other sensitive information.

Warnings

Serval Mesh is **EXPERIMENTAL SOFTWARE**. It has not yet reached version 1.0, and is intended for pre-production, demonstration purposes only. It may not work as advertised, it may lose or alter messages and files that it carries, it may consume a lot of space, speed and battery, and it may crash unexpectedly.

On the Serval Mesh "Connect" screen, connecting to "Ad Hoc Mesh" will request root permission (super-user) on your Android device in order to put Wi-Fi into Ad-Hoc mode. If you grant super-user permission to Serval Mesh, it will attempt to reinstall the Wi-Fi driver software on your device, which **could result in YOUR DEVICE BECOMING PERMANENTLY DISABLED ("BRICKED")**.

On the Serval Mesh "Connect" screen, selecting "Portable Wi-Fi Hotspot" will put your device's Wi-Fi into Access Point mode. If you have a mobile data plan, **this will give nearby devices access to your mobile data plan, and COULD COST YOU MONEY**.

The Serval Mesh "Connect" screen allows you to connect to other Serval Mesh devices that act as Access Points (Hotspots) or Ad Hoc peers. If you do so, **this will cut off normal Wi-Fi network access** while Serval Mesh is running, and services like Google Updates, E-mail, social media and other notifications may not work.

Serval Mesh telephony is a “best effort” service, primarily intended for when conventional telephony is not possible or cost effective, and **MUST NOT BE RELIED UPON** for emergencies in place of carrier-grade communications systems. The Serval Project cannot be held responsible for any performance or non-performance of the technologies that they provide in good will, and if you use these technologies you must agree to indemnify the Serval Project from any such claims.

The Serval Mesh software copies all files shared using the Rhizome file distribution service to other phones and devices running the Serval Mesh software, regardless of size, content or intended recipient. The Serval Project cannot be held responsible for the legality or propriety of any files received via Rhizome, nor for any loss, damage or offence caused by the transmission or receipt of any content via Rhizome.

See the disclaimers below.

What's new since 0.92

Greatly reduced power usage, particularly when no peers are present. In previous versions of the software, a CPU lock would be held whenever the software was enabled and connected to a viable Wi-Fi network. This would completely prevent the CPU from suspending, draining the battery in a matter of hours. In this release, Android alarms are used to wake up the CPU, holding a CPU lock for only a short time. While there are still improvements to be made in this area, the software may be able to remain enabled and connected to a Wi-Fi network without significantly impacting battery life.

Bluetooth has been added as a usable network transport. The addition of bluetooth support has the potential to greatly simplify the process of discovering and connecting to other phones.

Better support for more recent versions of Android. Android 5.0 requires that native binaries are compiled in a way that isn't supported on version before 4.1. So we must now include 2 sets of compiled binaries.

Improved user feedback while networks are turning on and off.

Supported Devices

This release of Serval Mesh has been tested on a variety of Android devices, and is expected to run on almost any Android phone. It does NOT require root.

Prior releases of Serval Mesh are known to work on the following devices, which is included for historical purposes, as many of the following devices support ad-hoc Wi-Fi mode for those for whom that is interesting:

Huawei IDEOS X1 u8180, running Android 2.2.2 (rooted) and CyanogenMod 2.3.7

HTC Sensation, running Android 2.3.4 (rooted) and HTC Sense 3.0

HTC One S

Motorola Milestone

Huawei IDEOS u8150

Samsung Galaxy Tab 7 inch

Samsung Galaxy Gio S5660, running Android 2.3.6 (rooted)

Samsung Vitality SCH-R720

ZTE Score X500

HTC/Google G1 ("Dream")

Previous releases of Serval Mesh were known to work on the following devices with minor problems:

Samsung Galaxy S2 GT-I9100, running Android 2.3 (rooted): Ad-Hoc Wi-Fi is not completely compatible with the Ad-Hoc Wi-Fi on other devices, specifically the Huawei IDEOS phones listed above. If the Galaxy S2 is the first device to join the mesh, then IDEOS phones cannot join. However, if an IDEOS phone is the first device, then the Galaxy S2 *does* join okay.

Google Nexus 1: does not interoperate well with HTC/Google G1.

The following devices have major known problems when attempting to use ad-hoc Wi-Fi in this or prior releases:

HTC Wildfire A3335

Samsung Galaxy Nexus: Wi-Fi Ad-Hoc mode does not start; Wi-Fi mode reverts to Off.

Motorola Razr i XT890: Wi-Fi control does not work.

Samsung Galaxy Note 2: does not detect peers. Possibly the same problem as the Galaxy S2 described above, but not tested.

See the Mobile Device Compatibility Table for more details and devices.

Known Issues

While Serval Mesh services are enabled and you are connected to a Wi-Fi network with active peers, Android may be prevented from sleeping. This may drain the battery quickly -- see batphone issue #91.

Voice call quality degrades whenever Rhizome or MeshMS operations or transfers are in progress. Rhizome can worsen network congestion, transfers are not throttled and can lead to additional network latency and packet loss due to a problem known as Bufferbloat. -- see serval-dna issue #1.

Voice call quality is variable. We try to enable echo cancellation, if supported by the handset. However some echo may have to be controlled by lowering speaker volume or using earphones. Audio latency (delay) can exceed one second in some situations -- see batphone issue #93.

Voice call audio has been observed to be missing on a Nexus 4 running 4.2.1, and upgrading to a 4.2.2 custom ROM restored audio -- see batphone issue #77 and batphone issue #96.

VoMP does not play a "ringing" sound while placing a call, nor a "hangup" sound when the other party hangs up, nor any other indicator of networking failures -- see batphone issue #76.

Every new MeshMS message increases the size of the Rhizome payload that contains all the messages in that conversation ply. So every MeshMS conversation will consume more network bandwidth and SD Card space as it grows -- see `serval-dna` issue #28. This cannot be worked around.

If a user starts a Serval Hotspot on the "Connect" screen, then the application overwrites the user's own personal hotspot name (and settings) with "ap.servalproject.org". When the Serval Hotspot is turned off, Serval Mesh restores the user's own personal hotspot settings, which involves turning the user's Wi-Fi hotspot on and off briefly. This could cause some concern or confusion, but is the only way that Android provides to restore hotspot settings.

There are more known bugs and issues listed under the GitHub Issues page for batphone issues and `serval-dna` issues.

Copyright and licensing

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The Java/XML source code of Serval Mesh is licensed to the public under the GNU General Public License version 3. The `serval-dna` component of Serval Mesh is licensed to the public under the GNU General Public License version 2.

All technical documentation is licensed to the public under the Creative Commons Attribution 4.0 International license.

All source code and technical documentation is freely available from the Serval Project's batphone and `serval-dna` Git repositories on GitHub.

Acknowledgements

This release would not have been possible without the support of United States Agency for International Development and Radio Free Asia.

Earlier development of Serval Mesh has been funded by the New America Foundation's Open Technology Institute, the Shuttleworth Foundation, Nlnet Foundation, OpenITP, and our "True Believers":

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Andrew G. Morgan, California, USA
Fred Fisher

The Serval Project was founded by Dr Paul Gardner-Stephen and Romana Challans, both academic staff at the School of Computer Science, Engineering and Mathematics at Flinders

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SERVAL MESH COMES WITH NO WARRANTY, EXPRESSED OR IMPLIED, AND IS NOT FIT FOR MERCHANTABILITY FOR ANY PURPOSE. USE AT YOUR SOLE RISK.

SERVAL MESH WILL REDUCE THE BATTERY LIFE OF DEVICES ON WHICH IT RUNS.

SERVAL MESH MAY CONSUME ALL STORAGE, both LOCAL and EXTERNAL (eg, MICRO SD CARD) ON THE DEVICES ON WHICH IT RUNS.

SERVAL MESH SHOULD NOT BE INSTALLED ON DEVICES WHICH ARE DEPEND-ED UPON FOR EMERGENCY COMMUNICATION.

SERVAL MESH MAY TRANSMIT SOME DATA IN THE CLEAR.

SERVAL MESH PROTECTIONS against IMPERSONATION or OTHER MISAPPROPRIATION of IDENTITY ESTABLISHING FACTORS MAY BE DEFECTIVE and MAY NOT PERFORM AS EXPECTED.

SERVAL MESH SHOULD NOT BE RELIED UPON IN AN EMERGENCY as it is an IN-COMplete PROTOTYPE and BEST EFFORT in nature, and may FAIL TO OPERATE.

SERVAL MESH may COST YOU MONEY if you have a MOBILE DATA PLAN by TURNING OFF WI-FI NETWORK ACCESS or by allowing NEARBY DEVICES TO USE YOUR DATA PLAN WITHOUT YOUR KNOWLEDGE OR CONSENT.

SERVAL MESH may REVEAL AND/OR BROADCAST YOUR LOCATION, IDENTITY OR OTHER INFORMATION through its normal operation.

SERVAL MESH is an INCOMPLETE, PRE-PRODUCTION software, experimental in nature and is not to be considered fit for merchantability for any purpose. It has many defects, omissions and errors that will hamper its fulfilling of its intended purposes.

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Club Officers: (Board of Directors)

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Vice President..... Tracy Pitts—ki6uqd
Secretary /Treasurer*..... Phil Zabell—ki6smn
Past President..... Albert Leyva—n6yck
Board John Post—ag7j
Board Bob Wirth—kc6uis
Training.....Bob Wirth—kc6uis
Publications..... Rick Hubbard—ki6vos
Radio Officer Phil Zabell—ki6smn

**Club Meetings: Lutheran Church Hall
565 Main St., Artois CA**

**General Meeting 2nd Thursday 6:30 PM
Board Meeting 2nd Thursday 6:30 PM**

**GARS Net: Monday, 7:00 p.m. Primary 147.105
(+110.9 PL); secondary: 146.850 MHz-PL 110.9**

**GEARS Club Net
Tuesday, 7:30 PM 146.850 MHz-PL 110.9**

**Sacramento Valley Traffic Net
Nightly 9:00 PM 146.850 MHz-PL 110.9**

**ARES Nets:
Butte Mondays 20:00 146.850 MHz-PL 110.9
Yuba Sutter Thursdays 19:00 146.085+MHz PL 127.3**

**Other Nets:
Sac Valley Section Net—7:00 PM 2nd Wed of the month
146.085 MHz+PL 127.3**

440 Wed. Night 8:00 PM Wednesday 440.650 MHz

Golden Bear 7:00 PM Daily 3975 kHz

Willie Net 8:00 PM Mondays 1930 kHz

**Western Public Service System (WPSS)
7:30 PM 3952 kHz**

**ARISS (*International Space Station*) Uplink 144.490
MHz Downlink 145.800 MHz**

**Hope-1 satellite: all uplinks are in 145Mhz band:
All downlinks are in 435Mhz band**

**...California Traffic Net: 3906 KHz nightly @6:00 pm
For traffic listing & @6:30 p.m. for roll call.**

**EditorDorothy Post
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565 Main street
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