

Preamble

Please read the whole document before ordering or specifying any hardware!

If you are not sure if you want to read the whole document, we offer preloaded Vicidial systems on our Website

<http://www.vicidial-hardware.com>

All Hardware used for Vicidial Systems has to be fully Linux compatible. This includes but is not limited to:

- Motherboard (Chipsets and BIOS)
- Network Card
- Graphics card
- Hard drive Controller (see Page 3)

Since OpenSUSE is one of our supported OS Platforms you can check their website for supported Hardware:

<http://en.opensuse.org/Hardware>

Vicidial Suggested Hardware

- All-In-One Server (Database, Web Server, and Dialer)
 - ♦ Processor: 2.4 Ghz Quad-Core
 - ♦ Memory: 4 GB ECC
 - ♦ Hard Drives: >70 GB SCSI drives in Hardware Raid-1
 - ♦ Network: 10/100 Ethernet
 - ♦ CD-Rom: Any (only needed for installation)
- Core Server (Database and Web Server or medium Database-Only)
 - ♦ Processor: 2.4 Ghz Quad-Core
 - ♦ Memory: 4 GB ECC
 - ♦ Hard Drives: 2 * >70 GB 10K rpm class SCSI drives Hardware Raid-1
 - ♦ Network: 10/100 Ethernet
 - ♦ CD-Rom: Any (only needed for installation)
- Larger Database Server
 - ♦ Processor: 2 * > 2.0 Ghz Quad-Core
 - ♦ Memory: 16 GB ECC
 - ♦ Hard Drives: 4 * >70 GB 15K rpm SCSI drives Caching Hardware Raid-10 for higher load
 - ♦ Network: 10/100 Ethernet
 - ♦ CD-Rom: Any (only needed for installation)
- Dialer Server or Web server
 - ♦ Processor: 2+ Ghz Dual-Core
 - ♦ Memory: 4 GB ECC
 - ♦ Hard Drive: >70 GB Raid-1
 - ♦ Network: 10/100 Ethernet
 - ♦ CD-Rom: Any (only needed for installation)

Vicidial Minimal Hardware¹

- All-In-One Server (Database, Web Server, and Dialer) with at most 5 Agents
 - Processor: 1.8 Ghz Single-Core
 - Memory: 1GB
 - Hard Drives: 18 GB UDMA IDE, SATA or SCSI
 - Network: 10 or 10/100 Ethernet
 - CD-Rom: Any (only needed for installation)

- Core Server (Database and Web Server) with at most 10 Agents
 - Processor: 1.8 Ghz Single-Core
 - Memory: 512 GB
 - Hard Drives: 18 GB UDMA IDE, SATA or SCSI (Raid-1 strongly recommended)
 - Network: 10 or 10/100 Ethernet
 - CD-Rom: Any (only needed for installation)

- Dialer Server with at most 10 Agents
 - Processor: 1.8 Ghz Single-Core
 - Memory: 1 GB (or 512MB when not recording)
 - Hard Drive: 18 GB UDMA IDE/ATA, SATA or SCSI
 - Network: 10 or 10/100 Ethernet
 - CD-Rom: Any (only needed for installation)

Clarifications**Single Server / All-in-One**

An all-in-one server is a single server installation of Vicidial where all of the application components (database, web server, dialer) run on the same system. An All-In-One system should only be used by call centers with less than 10 seats and not exceeding 50 active calls. Under certain conditions more Agents can be connected to a all-in-one server however we would not want to make it a general rule.

When I need more than one Server and which do I need?

- The Core server is the heart of a multi-server installation of Vicidial and depending on the number of seats or active calls can house database server and/or web server. The Vicidial Group recommends splitting the database and web server when the number of agents in the call center is over 100 or when the number of active calls is over 500. It may however be necessary to split the database and web server with a lower number of agents or active calls depending on the load on the core server.

¹ This is no guarantee in any way that all systems that meet these specifications will be able to run Vicidial, however only that we have seen Systems that are running Vicidial successful on hardware that matches these standards. We however also have seen systems that match these settings but were not running satisfactory, frequently because their setup was not correct for vicidial, they were not optimized for the hardware, the hardware was not properly supported in Linux or they used substandard components or faulty BIOS's.

- The Dialer and Web server is part of a multi-server installation of Vicidial and is responsible for handling the web and voice connection to the agent as well as sending or receiving calls. The Vicidial Group recommends having no more than 25 agents or handling more than 125 active calls on a single dialer server. In order to handle more agents than this multiple dialer servers should be added to the installation. Depending on the nature of the call center a single dialer system may handle less or more agents or active calls. It is really dependent on the load on the dialer server.
- A faster dedicated Database Server is usually needed for over 200 Agents, for systems with over 300 Agents it is strongly recommended that you get a specific hardware profile for your installation done. The Vicidial Group is happy to offer this as a service since we feel that at this size over the thumb estimates do not suffice.

Warnings

Higher requirements when using TDM Cards

When using TDM Cards (T1 / E1 / J1 and alike) your machine benefits from a faster multi-core processor greatly, it usually increases stability and can prevent dropped calls and malfunctions of the system. We usually recommend to put at most a 4 Port TDM Card in a dialer. We have however, even so we would not recommend it, successfully installed systems with up to 12 T1s in a specially optimized single high powered dialer server. Systems with TDM cards are more critical when using Software Raids, a Hardware Raid controller is strongly recommended.

Database performance in clustered setups

The Database is used as synchronization point in a multi system setup, for this it should be as fast as affordable and properly configured. Latency for all queries beside lead or hopper loads should be under 1sec. Database Servers should use battery buffered caching RAID controllers with the fastest affordable drives. At least 4 same batch 15K rpm SCSI/SAS are strongly recommended, one or two hot stand-by drives are a good idea. The more and faster the cores the better. When you operate a Dialer with over 100 seats this is one of the last places where you want to save money. Most problems that you can get from underpowered servers (and flaky hardware) are bad to diagnose, it is usually easiest to prove that they disappear once proper hardware is in place.

Software Raid

Linux software RAIDs are not recommended with Vicidial Dialers and Database Servers. Linux software RAID mirroring (RAID 1) can be used as a cheaper alternative when used with two identical SCSI or SATA drives which support NCQ, it requires certain kernel parameters to be set, but otherwise works under low to medium load. Under higher load a hardware controller is required.

Fake Hardware Raid Controller

Do not under any circumstances use “fake” hardware RAID controllers. We call them fake hardware RAID, because they will usually claim or suggest that they are hardware based RAID controllers, but in reality they provide a special driver with the controller that does the work that on a real hardware RAID controller is off-loaded from the CPU. To make things worse, these drivers are usually optimized to deliver best hard drive performance on the cost of other processes running on the system, this is particularly bad in machines that run realtime critical applications like Asterisk, or in some cases the

database server. The total performance of a web or database server in a vicidial setup can be reduced to less than half when using these controllers². In a Dialer they can cause audio problems and dropped calls! Especially deadly are these controllers when used in combination with TDM Cards that do not provide echo cancellation.

Consumer vs. Enterprise grade Hardware

Vicidial puts very high stress on the hard drives, it is strongly recommended to only use enterprise grade hardware. Especially the hard drives in dialer and database servers are critical. Even so some consumer drives now show way better numbers than several years ago, you can not compare those numbers directly to any enterprise grade drive, consumer drives usually expect a workload of less than 20% some under 10% and most are designed to be regularly powered off, while enterprise drives are designed to operate constantly under a load of 80% or more. Which results in many consumer drives failing within 2 years or less when used in a server. To make things worse, vicidial puts a very high load on drives all of the time. We have seen consumer drives failing within weeks when used with vicidial, we even see enterprise grade drives fail, just usually not as fast and not as often. Because of this it is recommended to use RAID 1 or 10 for all systems as well as to regularly perform backups.

² We have seen practical examples where we replaced a Highpoint Rocket Raid controller with a 3ware hardware raid controller and the system load on idle (IDLE!) dropped from around 2.4 to 0.3 on a Quad Core processor.