

Hardware Echo Cancellation

In the early days of telephone systems, echo during a call was not much of a problem. It was more likely that your grandma may have gotten a tad of reverb, or heard what her ears perceived merely as side-tone. As telephone systems have become more modern, they have also become prone to more frequent and bothersome echo.

Echo is most common when you are utilizing a VoIP system. Why? Because a VoIP system often introduces latency, which analog systems do not have, and frequently attempts conversion between a 2-wire and 4-wire system. The result of this is an echo in your conversation so that when you talk on the phone it sounds as if you are throwing messages across the Grand Canyon. That may be mildly amusing to everyone inside the IT department, but is extremely frustrating to everyone else.

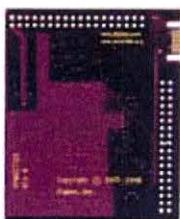
Even though echo may be present, you should never have to experience it when making a call. There are two primary ways with which you can combat this problem: software and hardware. Asterisk® does the best job possible utilizing several free echo cancellation tools. While they can do a decent job eliminating minor echoes, they can also do a bad job when the echoes are anything but minor. The best software solution is provided by Digium's High Performance Echo Cancellation (HPEC) software, provided at no-cost to in-warranty Digium® analog hardware customers, and at \$10 per channel for non-Digium customers. If your interface card is not equipped with the capability to use a hardware module, this is your best bet!

Fortunately, Digium's latest telephony card offerings have the ability to use hardware echo cancellation modules. **Hardware echo cancellation can be more successful, because it removes the burden of echo cancellation from the PC. Hardware echo cancellation is also advantageous when handling large call volumes or a high number of channels that would otherwise stress the CPU and result in the potential for poor audio quality.** What makes the hardware echo cancellation so great? Well, how about this:

- Octasic DSP-based (all modules)
- 128ms (1024 taps) of Echo Cancellation across all channels
- AT&T certified Toll-Quality G.168 compliant algorithm
- Dynamic Nonlinear Processor
- Comfort Noise Generator
- Automatic Tail Search
- Cancel Multiple Reflections
- Double-talk Detection

What all this means is that your call has less chance of sounding like you've stepped into a canyon, canyon, canyon or empty concert hall, hall, hall because the hardware echo cancellation module is standards compliant and certified to perform.

There are three hardware echo cancellation modules available to you: the VPMOCT256, VPMOCT128, the VPMOCT064, and the VPMOCT032. The modules support Digium cards currently available, as well as future offerings.

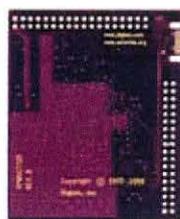


VPMOCT256

Up to 256 channels

Compatible with the following digital card:

- TE820F (bundled as TE820BF)

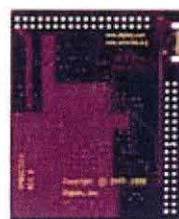


VPMOCT128

Up to 128 channels

Compatible with the following digital card:

- TE410P (bundled as TE412P)
- TE405P (bundled as TE407P)
- TE420 (bundled as TE420B)

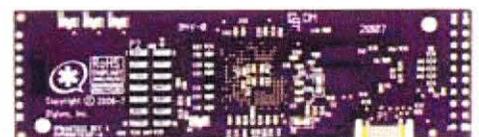


VPMOCT064

Up to 64 channels

Compatible with the following digital card:

- TE210P (bundled as TE212P)
- TE205P (bundled as TE207P)
- TE220 (bundled as TE220B)



VPMOCT032

Up to 32 channels

Compatible with the following digital card:

- TDM410 and AEX410
- TDM800 and AEX800
- TDM2400 and AEX2400
- TE121 (bundled as TE121B)
- TE122 (bundled as TE122B)