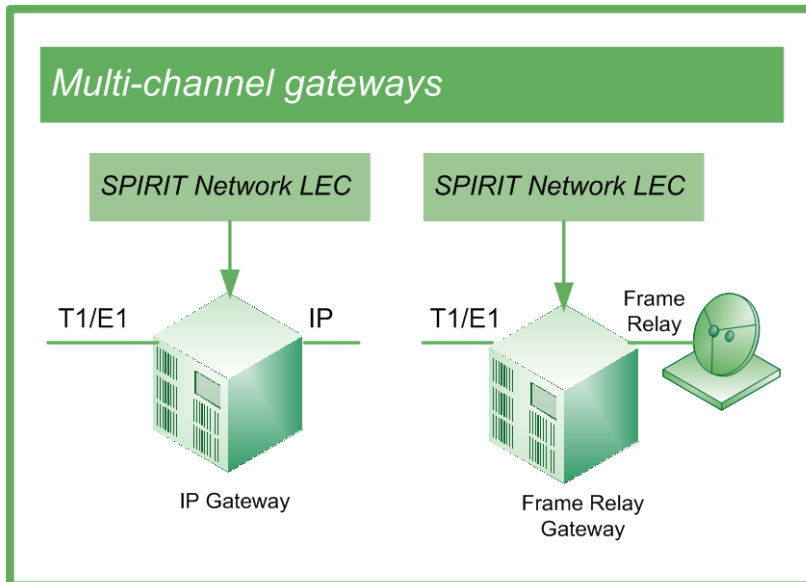


SPiRiT LEC (G.168-2004)

SPiRiT offers an ITU G.168-compliant Line Echo Canceller (LEC) designed to eliminate electric (also known as hybrid) echo created by the electrical circuitry connected to the wire lines.

SPiRiT LEC is to be embedded into multi-channel infrastructure hardware such as IP or Frame Relay gateways. Low MIPS consumption allows to increase the number of channels processed by one chip. SPiRiT LEC provides a considerable cost-effectiveness in comparison with the existing hardware solutions. The canceller's design makes it possible to independently set up the balance between MIPS consumption and echo path tail for each channel, without any code modification.



Benefits

- Low MIPS and memory consumption
- Automatic echo tail search
- Maximum compensated echo path: 16, 32, 64, or 128 ms
- Multiple channel operation

Key Features

- Very low MIPS and memory requirements

Applications

- IP gateways
- Telephony end-points
- ATA/IAD

Availability

- | | |
|-------------------|------|
| • ARM9E | Now |
| • TIC64xx | Now |
| • Tensilica HiFi2 | Now |
| • ARM11 | Call |
| • TIC54xx | Call |
| • TIC55xx | Call |
| • Blackfin | Call |

Features

- Fast convergence
- Maximum compensated echo path can be set to 16, 32, 64, 128, 256, 512 ms
- Direct interface with PCM 8 KHz sampled data. Both sample-by-sample and block based processing supported
- Dynamic range 42 dB (16-bit samples, seamlessly works with 16-bit vocoders G.723.1, G.729)
- Optional Tone Disabler (2100 Hz) as standalone eXpressDSP object configurable by the user
- Robust double talk detector and smooth non-linear processor
- Tone detector to prevent incorrect operation after convergence on tone or in case of tone signals on near-end (dial tone, ring-back tone, etc.)
- Comfort noise generator with adaptation to background noise level
- No divergence during double talk and narrow-band signals
- Passes ITU G.168-2004 tests 2A, 2B, 2C, 3A, 3B, 3C, 4, 5, 6, 7, 9
- Compliant with TI's eXpressDSP standard. Code is reentrant, supports multithreading and dynamic memory allocation.

Specifications*

PLATFORM	TI C64xx/ Echo Path		
	64 ms	128 ms	256 ms
Peak MIPS	5.3	6.0	6.9
Program Memory, Bytes	51 296	51 296	51 296
Constant Memory, Bytes	2 764	2 764	2 764
Dynamic Memory, Bytes	8 893	13 789	23 581

*LEC configuration: Tone Detector, NLP, CNG is ON, Noise Suppressor is OFF

PLATFORM	ARM9E/ Echo Path		
	64 ms	128 ms	256 ms
Peak MIPS	18.3	20.8	26.1
Program Memory, Bytes	43 684	43 684	43 684
Constant Memory, Bytes	3 138	3 138	3 138
Dynamic Memory, Bytes	9 937	15 601	26 929

*LEC configuration: Tone Detector, NLP, CNG is ON, Noise Suppressor is OFF

PLATFORM	Tensilica HiFi2/ Echo Path		
	64 ms	128 ms	256 ms
Peak MIPS	9.5	10.8	12.07
Average MIPS	8.5	9.6	10.6
Program Memory, Bytes	20 000	20 000	20 000
Data Memory, Bytes	2 800	2 800	2 800
Dynamic Memory, Bytes per Channel	8 480	13 380	23 170
Stack, Bytes	5 700	5 700	5 700

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