

TC400B & TCE400B vs. Howler Screamer

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Revision History

Revision	Date	By	Notes
0.1	November 30, 2009	Malcolm Davenport	Begin Initial Draft
0.2	December 3, 2009	Malcolm Davenport	Complete Initial Draft
0.3	December 7, 2009	Malcolm Davenport	Minor Updates to Summary
0.4	December 7, 2009	Malcolm Davenport	Correct spacing and typos
1.0	December 7, 2009	Malcolm Davenport	Initial Release



Notice to Digium Partners:

The information in this document uses published suggested retail pricing and currency conversion calculations provided by XE.com and is accurate of November 30, 2009 at 12:35pm GMT -6.

Executive Summary

Howler's Screamer solution is a more costly solution than Digium's TC(E)400B solution, both in terms of ongoing licensing costs as well as operating expenses. The Screamer maintains inferior warranty and return policies compared to Digium's offering. Digium's TC(E)400B cards are supported by a wider-range of Linux distributions and processor types. And, further, Howler's solution is more prone to operational failure due to dependence on moving parts and external power as compared to Digium's fanless bus-powered TC(E)400B cards.

This document provides an analysis between the Digium TC(E)400B and Howler Screamer transcoding solutions. Following an introductory statement detailing the products capabilities, the analysis is broken down into three sections:

1. Pricing, Initial and Ongoing Costs
2. Hardware Warranty and Reliability
3. Power Consumption / "Green"-ness
4. Usability and Compatibility

Introduction

Howler Product Synopsis:

Howler Technology's Screamer is a packet telephony interface card designed to allow applications, including Asterisk, to offload computationally complex tasks, such as codec translation, to its dedicated Cell-processor-based resource. The Screamer solution is a combination of the Leadtek low-profile, half-length PCI-Express x1 PxVC100 processing card and Howler's proprietary software for the card.

Howler's proprietary software provides codec compression of G.711 u-law or a-law into G.729a as well as decompression of G.729a into G.711 u-law or a-law. The Howler Screamer solution is capable of 425 concurrent G.729a translations, variable via software licensing.



Digium Product Synopsis:

Digium's TC400B and TCE400B are packet telephony interface cards designed to allow Asterisk to offload, from the CPU into dedicated DSP resources, the complex task of codec translation. The TC400B combines the TC400P low-profile, half-length 3.3/5.0V 32-bit PCI 2.2+ base-card with the TC400M codec translation module. The TCE400B combines the low-profile, half-length TCE400P PCI-Express x1 base-card with the TC400M codec translation module.

The TC400M codec translation module provides compression of G.711 u-law or a-law into G.729a or G.723.1 (5.3kbit) as well as corresponding decompression of G.729a or G.723.1 (5.3/6.3kbit) into G.711 u-law or a-law. The TC400M supports 120 concurrent translations of G.729a in a G.729a "only" mode or 92 concurrent translations of G.729a or G.723.1 in a "mixed" mode, fixed in hardware.

Howler Product Pricing (converted from GBP to USD; 1 GBP == 1.64225 USD):

The Screamer base PCI-E card is priced at \$408.92 USD and remains the same for all Screamer offerings up to 425 channels. Codec licensing is performed on an annualized basis, with recurring charges each year. The Screamer solution combines the base PCI-E card with numbers of licensed codec translation channels and is offered in three standard configurations as well as a custom configuration. The standard configurations, with per-channel pricing are Base (150 channels, \$6.03/channel/year), Plus (300 channels, \$5.75/channel/year) and Max (425 channels, \$5.22/channel/year). The Howler Screamer also offers custom channel counts at \$6.55/channel/year.

Digium Product Pricing:

Digium's TC(E)400B cards are priced at \$1295 USD MSRP. This price includes all codec indemnification for both G.729a as well as G.723.1 codecs for up to 120 G.729a or 92 G.723.1 transformations. No ongoing charges are made for use of the card – the pricing is one-time-only.

Analysis

1 - Digium's TC(E)400B cards are a better value than the Howler Screamer -

The following chart represents the Digium TC(E)400B solution pricing as a percentage of the price of the Howler Screamer solution for various channel configurations. Howler achieves a lower first-year price than Digium in all channel configurations; however,



Howler's annual charges for G.729a licensing, between \$5.22 and \$6.55 per channel annually, results in a much higher cost of ownership for the Howler Screamer than Digium's TC(E)400B cards, which have no per-channel or annual licensing fees.

Digium Solution Pricing as a % of Howler Screamer Pricing

	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
120 Channels	-8.35%	34.65%	53.21%	63.56%	70.16%
150 Channels	-97.26%	-16.82%	17.02%	35.65%	47.46%
240 Channels	-30.71%	27.13%	49.48%	61.34%	68.69%
300 Channels	-82.11%	-0.71%	30.40%	46.83%	56.98%
360 Channels	-40.36%	24.22%	48.10%	60.54%	68.17%
425 Channels	-97.08%	-6.85%	26.71%	44.22%	54.98%
480 Channels	-40.57%	16.34%	40.45%	53.77%	62.22%

Digium achieves a pricing advantage in the second year of operation for the TC(E)400B native channel densities of 120, 240, 360, and 480 while Howler maintains an advantage for its native densities of 150, 300, and 425 channels. Beginning in the third year of operation, Digium maintains an advantage in all channel densities. By the fifth year of operation, the Digium solution proves to be anywhere between 47.46% and 70.16% the price of the Howler Screamer solution. In Dollars, this savings is between \$3,000 and \$8500 USD, depending on the channel configuration.

Considering a five-year life cycle and using the Howler Screamer pricing as a benchmark, one could purchase the following numbers of G.729a transcoding channels based on Digium TC(E)400B cards:

Digium Channels Possible based on 5 year TCO of Howler Screamer

Howler Screamer Channels Purchased and Operated for 5 Years	Digium TC(E)400B Channels Afforded at Same Price
120 Channels	360
150 Channels	360
240 Channels	720
300 Channels	720
360 Channels	1080
425 Channels	960
480 Channels	1200

2 – Digium offers superior warranty and reliability –

Digium, an ISO9001 certified company and the original manufacturer of the TC(E)400B cards, offers a five year hardware warranty in addition to a 30-day refund policy through its Exceptional Satisfaction Program. Under this program, and because Digium’s G.729a licensing is an integral part of the TC(E)400B cards, Digium can provide a full refund in the event of customer dissatisfaction.

Howler’s Screamer depends on the third-party Leadtek PxVC1100 video processing card. Howler offers a 14 month hardware warranty on the Leadtek card, which is 2 months in addition to Leadtek’s own 12 month hardware warranty. In the event of customer dissatisfaction, Howler’s warranty policy can refund the purchase of hardware (\$408.92);



but, because their G.729a licensing is separate from the hardware, Howler cannot refund software licensing purchases (between \$786.31 and \$2219.50 per card).

Digium’s TC(E)400B cards are fanless, operating at capacity in the ambient temperature of the PC, and require no external power; thus, providing maximum reliability.

The Leadtek PxVC1100 used by the Howler Screamer solution has an onboard fan for cooling during operation and a 4-pin external power connector; thus, providing two additional points of failure not shared by the Digium solution.

3 – Digium offers a Greener solution –

Digium’s TC400B card consumes 4W at capacity. Digium’s TCE400B card consumes 5W at capacity.

Howler’s Screamer PCI-E card consumes 35W.

The following chart represents the yearly costs of operation assuming full-time operation and an electrical rate of \$0.08 per kilowatt hour.

Yearly Cost of Operation

	Consumption	% of kW	Hours / Year	kWh / Year	\$ / kWh	Yearly Operating Cost
TC400B	4W	0.4	8760	35.04	\$0.08	\$2.80
TCE400B	5W	0.5	8760	43.80	\$0.08	\$3.50
Howler Screamer	35W	3.5	8760	306.60	\$0.08	\$24.53

With the cost directed towards operating one Howler Screamer, one could power 8.75 TC400B cards or 7 TC400B cards.



4 – Digium offers a more compatible solution –

For customers whose servers maintain PCI type slots, Digium offers the TC400B. For customers whose servers maintain PCI-Express type slots, Digium offers the TCE400B.

Howler's Screamer solution is compatible only with PCI-Express slots. No PCI-based offering is available.

Digium's TC(E)400B cards are supported by both 32-bit and 64-bit versions of all standard Linux distributions and do not require public Internet access in order to operate.

Howler's Screamer solution supports only 32-bit versions of RedHat Enterprise Linux 5 and CentOS 5.2+. Users of Debian-based or other distributions, or those requiring 64-bit support cannot use Howler's Screamer solution. The Howler Screamer also requires public Internet access in order for its codecs to be registered and licensed to the system.

The following pricing tables served as a basis for calculations:

Pricing Tables:

Pricing tables comparing Digium offerings with Howler offerings are listed below. Howler’s Screamer and Digium’s TC(E)400B offerings do not match in their standard channel density offerings, so blended offerings have been made assuming custom channel counts (Howler) or use of multiple cards (Howler and Digium) to achieve like-solution channel counts. For example, in the 150 channel scenario, one Howler Screamer Base is used while two Digium TC(E)400B cards (maximum capacity of 240 channels) are used; and, in the 480 channel scenario, two Howler Screamer cards (one Max at 425 channels and one Custom at 55 channels) and four TC(E)400B cards are used.

Base Unit, First Year Costs, and Annual/Ongoing Fees

	Channels	PCI-E Base Card	G.729a Licensing /Channel	1 st Year Total	1 st Year Total / Channel	Annual Licensing
4x E1 Equivalent						
Howler Custom	120	\$408.92	\$6.55	\$1195.23	\$9.96	\$786.31
Digium TC(E)400B	120	\$1295.00	\$0.00	\$1295.00	\$10.79	\$0.00
5x E1 Equivalent						
Howler Base	150	\$408.92	\$6.03	\$1312.98	\$8.75	\$904.06
2x Digium TC(E)400B	150	\$2590.00	\$0.00	\$2590.00	\$17.27	\$0.00
8x E1 Equivalent						
Howler Custom	240	\$408.92	\$6.55	\$1981.54	\$8.26	\$1572.62
2x Digium TC(E)400B	240	\$2590.00	\$0.00	\$2590.00	\$10.79	\$0.00



Base Unit, First Year Costs, and Annual/Ongoing Fees

	Channels	PCI-E Base Card	G.729a Licensing /Channel	1 st Year Total	1 st Year Total / Channel	Annual Licensing
10x E1 Equivalent						
Howler Plus	300	\$408.92	\$5.75	\$2133.28	\$7.11	\$1724.36
3x Digium TC(E)400B	300	\$3885.00	\$0.00	\$3885.00	\$12.95	\$0.00
12x E1 Equivalent						
Howler Custom	360	\$408.92	\$6.55	\$2767.85	\$7.69	\$2358.93
3x Digium TC(E)400B	360	\$3885.00	\$0.00	\$3885.00	\$10.79	\$0.00
14+x E1 Equivalent						
Howler Max	425	\$408.92	\$5.22	\$2628.42	\$6.18	\$2219.50
4x Digium TC(E)400B	425	\$5180.00	\$0.00	\$5180.00	\$12.19	\$0.00
16x E1 Equivalent						
Howler Custom	480	\$817.84	\$5.22/ea for 425 + \$6.55/ea for 55	\$3684.96	\$7.68	\$2506.73
4x Digium TC(E)400B	480	\$5180.00	\$0.00	\$5180.00	\$10.79	\$0.00

In a first year scenario, the Howler Screamer solution is a more affordable offering than Digium's TC(E)400B card offering.



Below are the 2-year and 3-year scenarios.

Second and Third Year Ongoing Costs

	1 st Year Total	1 st Year Total / Channel	Annual Licensin g	2 nd Year Total	2 nd Year Total / Channel	3 rd Year Total	3 rd Year Total / Channel
4x E1 Equivalent							
Howler Custom	\$1195.23	\$9.96	\$786.31	\$1981.54	\$16.51	\$2767.85	\$23.07
Digium TC(E)400B	\$1295.00	\$10.79	\$0.00	\$1295.00	\$10.79	\$1295.00	\$10.79
5x E1 Equivalent							
Howler Base	\$1312.98	\$8.75	\$904.06	\$2217.04	\$14.78	\$3121.10	\$20.81
2x Digium TC(E)400B	\$2590.00	\$17.27	\$0.00	\$2590.00	\$17.27	\$2590.00	\$17.27
8x E1 Equivalent							
Howler Custom	\$1981.54	\$8.26	\$1572.62	\$3554.16	\$14.81	\$5126.78	\$21.36
2x Digium TC(E)400B	\$2590.00	\$10.79	\$0.00	\$2590.00	\$10.79	\$2590.00	\$10.79
10x E1 Equivalent							
Howler Plus	\$2133.28	\$7.11	\$1724.36	\$3857.65	\$12.86	\$5581.02	\$18.61
3x Digium TC(E)400B	\$3885.00	\$12.95	\$0.00	\$3885.00	\$12.95	\$3885.00	\$12.95
12x E1 Equivalent							
Howler Custom	\$2767.85	\$7.69	\$2358.93	\$5126.78	\$14.24	\$7485.70	\$20.79
3x Digium TC(E)400B	\$3885.00	\$10.79	\$0.00	\$3885.00	\$10.79	\$3885.00	\$10.79



Second and Third Year Ongoing Costs

	1 st Year Total	1 st Year Total / Channel	Annual Licensin g	2 nd Year Total	2 nd Year Total / Channel	3 rd Year Total	3 rd Year Total / Channel
14+x E1 Equivalent							
Howler Max	\$2628.42	\$6.18	\$2219.50	\$4847.92	\$11.41	\$7067.42	\$16.63
4x Digium TC(E)400B	\$5180.00	\$12.19	\$0.00	\$5180.00	\$12.19	\$5180.00	\$12.19
16x E1 Equivalent							
Howler Custom	\$3684.96	\$7.68	\$2506.73	\$6191.69	\$12.90	\$8698.42	\$18.12
4x Digium TC(E)400B	\$5180.00	\$10.79	\$0.00	\$5180.00	\$10.79	\$5180.00	\$10.79

In the year two scenario, the Howler solution is less expensive in its standard channel offerings: 150, 300, and 425 and the Digium solution is less expensive in its native channel offerings 120, 240, 360, and 480.

At the third year, the Digium solution is less expensive in all channel offerings.

Below are the four and five-year scenarios.

Fourth and Fifth Year Ongoing Costs

	1 st Year Total	1 st Year Total / Channel	Annual Licensin g	4 th Year Total	4 th Year Total / Channel	5 th Year Total	5 th Year Total / Channel
4x E1 Equivalent							
Howler Custom	\$1195.23	\$9.96	\$786.31	\$3554.16	\$29.62	\$4340.47	\$36.17

Fourth and Fifth Year Ongoing Costs

	1 st Year Total	1st Year Total / Channel	Annual Licensin g	4 th Year Total	4 th Year Total / Channel	5 th Year Total	5 th Year Total / Channel
Digium TC(E)400B	\$1295.00	\$10.79	\$0.00	\$1295.00	\$10.79	\$1295.00	\$10.79
5x E1 Equivalent							
Howler Base	\$1312.98	\$8.75	\$904.06	\$4025.15	\$26.83	\$4929.21	\$32.86
2x Digium TC(E)400B	\$2590.00	\$17.27	\$0.00	\$2590.00	\$17.27	\$2590.00	\$17.27
8x E1 Equivalent							
Howler Custom	\$1981.54	\$8.26	\$1572.62	\$6699.39	\$27.91	\$8271.01	\$34.47
2x Digium TC(E)400B	\$2590.00	\$10.79	\$0.00	\$2590.00	\$10.79	\$2590.00	\$10.79
10x E1 Equivalent							
Howler Plus	\$2133.28	\$7.11	\$1724.36	\$7306.37	\$24.35	\$9030.73	\$30.10
3x Digium TC(E)400B	\$3885.00	\$12.95	\$0.00	\$3885.00	\$12.95	\$3885.00	\$12.95
12x E1 Equivalent							
Howler Custom	\$2767.85	\$7.69	\$2358.93	\$9844.63	\$27.35	\$12203.56	\$33.90
3x Digium TC(E)400B	\$3885.00	\$10.79	\$0.00	\$3885.00	\$10.79	\$3885.00	\$10.79
14+x E1 Equivalent							
Howler Max	\$2628.42	\$6.18	\$2219.50	\$9286.92	\$21.85	\$11506.42	\$27.07



Fourth and Fifth Year Ongoing Costs

	1 st Year Total	1st Year Total / Channel	Annual Licensin g	4 th Year Total	4 th Year Total / Channel	5 th Year Total	5 th Year Total / Channel
4x Digium TC(E)400B	\$5180.00	\$12.19	\$0.00	\$5180.00	\$12.19	\$5180.00	\$12.19
16x E1 Equivalent							
Howler Custom	\$3684.96	\$7.68	\$2506.73	\$11205.15	\$23.34	\$13711.88	\$28.57
4x Digium TC(E)400B	\$5180.00	\$10.79	\$0.00	\$5180.00	\$10.79	\$5180.00	\$10.79

In both the fourth and fifth year, the Digium solution is less expensive than the Howler solution in all channel configurations.

