



INDIA'S LARGEST MAGAZINE EXCLUSIVELY FOR SATELLITE & CABLE TV

ANALOGUE ADDRESSABILITY IS TODAY'S CHOICE FOR INDIAN CATV SYSTEMS

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Why is analogue technology preferable to digital technology for today's Indian CAS market? This article will explain the facts and dispel the myths and will make it easier for you to come to the right solution for your systems.

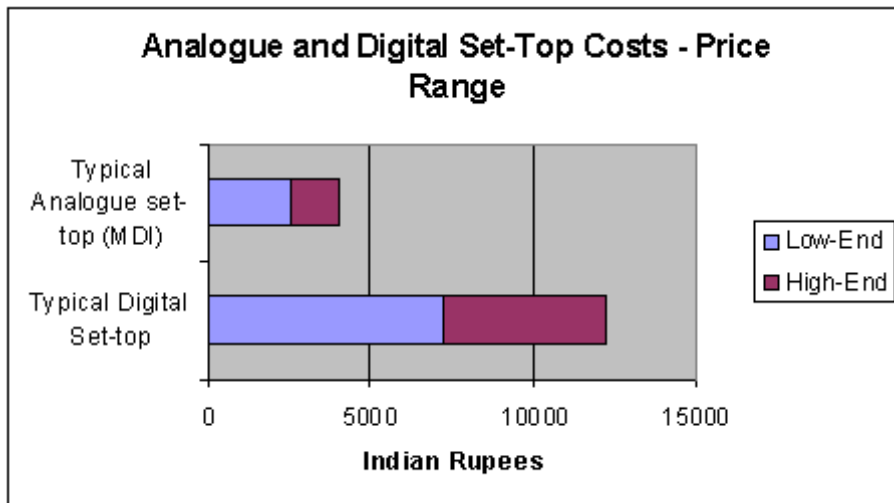
ANALOGUE VERSUS DIGITAL - PICTURE QUALITY IS THE SAME

For CAS, one of the first questions that must be answered is whether networks should use digital or analogue technology. Stepping back from the debate for a moment, this question can really be posed as- "What modulation format should be used to transmit video from the headend to the input of the STB?" - because for both analogue and digital, the STB output is analogue. Should you use what you know, what you are trained for, and what you have test equipment for - or do the benefits of using digital modulation for transmission warrant changing everything? This question obviously has to be answered before making any decision on equipment. The subscriber just wants to watch television, they do not care which technology is used, they will judge a service by its cost and its desirability. Whether the technology is analogue or digital, the picture will look the same on the subscriber analogue television receiver.

ANALOGUE VERSUS DIGITAL - THE FEATURES ARE NOT AS DIFFERENT AS YOU MAY HAVE HEARD

To assist in the analysis of the benefits of digital modulation versus analogue, we have developed the table shown below. The table shows the analogue and digital comparison of the major functions required for a secure, addressable CATV system and the availability of these functions. You will notice that there are only two areas where analogue and digital diverge in offering a function: compression for more than 117 channels in 860 MHz, and Video on Demand (VOD). All other functions are available in both analogue and digital, so what does digital really buy you? If you're not going to use compression and/or VOD then we believe digital modulation brings you nothing except a more costly, complicated, and unfamiliar solution. Why pay for something you don't need? Why pay for something when you can get the same functionality for far less money?

ANALOGUE VERSUS DIGITAL - PRICE FAVORS ANALOGUE



Set-top box: The graph below shows that when it comes to the box price there's no comparison. Again, do the benefits of digital modulation warrant the extra cost? We have shown that two features (VOD and compression) can be offered by digital and not by analogue. It is very important to note that these features are only available in the digital boxes on the higher end of the price range. A lower end digital box buys you no features that are not available in an analogue box.

Headend: Headend costs for addressability show an even greater price differential, a 40 channel digital head-end can cost up to \$2million. By comparison, a 40 channel headend for an analogue system ranges from \$40,000 to approximately \$100,000. These

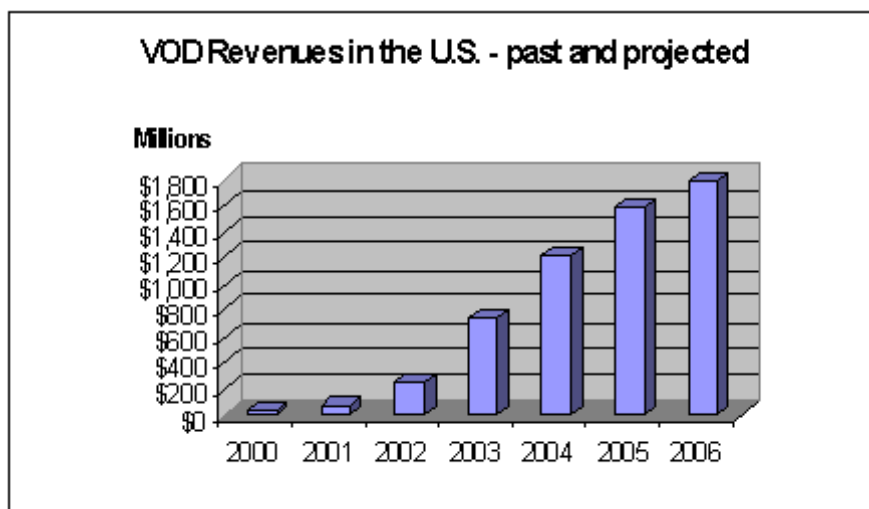
price comparisons should be horrifying to the operator.

	Available In Analogue Solution	Available In Digital Solution
STB that conforms to BIS specs	Yes	Yes

Good quality descrambled pictures	Yes	Yes
Non-viewable scrambled picture	Yes	Yes
Audio scrambling/masking	Yes	Yes
Bulletproof unbreakable security	No	No
Reasonably difficult to defeat security	Yes	Yes
Able to use electronic countermeasures if a breach occurs	Yes	Yes
Two-way capable	Optional	Optional
STB with 870 MHz bandwidth	Yes	Yes
Compression to offer more than 117 channels in 870 MHz	No	High end box only
Pay per View (buy movies or events one at a time)	Yes	Yes
VOD (movie streamed to individual subscribers)	No	high end box only
State-of-the-art modern STB for consumer acceptance	Yes	Yes

Subscriber Cost: The concept of the subscriber owning the addressable converter - as envisaged for India - pushes the financial burden of the converter cost down stream to the subscriber. This may reduce the financial outlay of the CATV operator or MSO but it also creates some unique problems that have no precedent or historical reference elsewhere in the CATV industry. The question is therefore raised, what can the subscriber afford? It may be that the additional cost associated with digital boxes is prohibitive to all but the more financially well off subscribers. This will greatly reduce the penetration levels of pay channels and will have ramifications that will eventually ripple through the entire industry. A penetration level of ten percent may be all that can be expected with digital boxes, whereas a cheaper analogue solution may offer many times this penetration level.

VOD REVENUE COMPARISION - THE REAL STORY

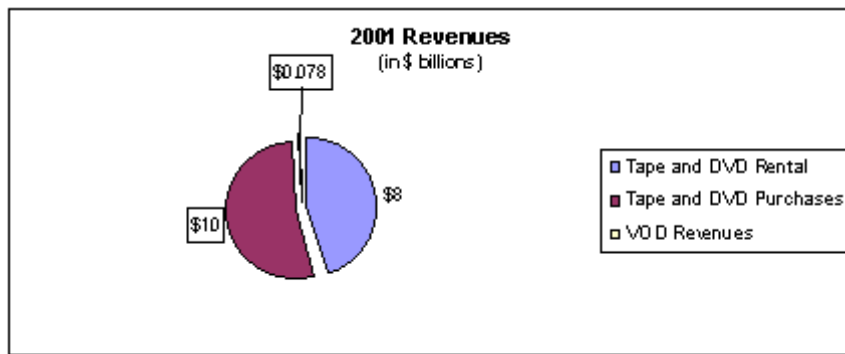


The digital addressability scenario is continually misrepresented in the current debate. Lower end digital boxes cannot offer VOD or other advanced services. If you believe the business opportunities of VOD are compelling, remember that you must use a high end digital box at twice the price of a low end digital set-top box. This significantly changes the business model. Experiences in other parts of the world show that VOD does not bring in enough revenue to justify its cost. The graph below shows a projection of VOD as a business with growth. While a projected \$1.75 billion US for 2006 VOD revenue in the USA seems enormous, it must be put in context. There are over 66 million US subscribers already generating 40 billion US dollars in regular cable subscription revenue. Even projected 2006 VOD revenue only represents 4.4% of total US

CATV revenue but still requires the massive investment in VOD. Remember these are projected numbers, current VOD revenues are 0.25% of cable revenues, hardly a compelling business case.

Looking at these numbers as a segment of the US video entertainment industry puts VOD in a different perspective. The home video rental/purchase industry had revenues of \$18 billion in 2001, compared to \$78 million for VOD. The overall cable industry had \$50 billion of revenue in 2001. VOD is merely \$78 million, or just above one tenth of a percent of cable industry revenue. VOD is not a significant player in the CATV game.

After cinema distribution, movies go to home video distribution next and are then put out for bid to cable programmers. Major pay services pay large amounts of money for exclusive rights to their time slot on pay cable. That VOD is not a major business is directly related to the window/time frame to acquire rights to movies. Operators need to get rights to movies, but they're not big enough businesses to compete with theater, video rental or traditional pay services and distribution industries. What will cause this to change and give VOD a more positive future? In our opinion - Nothing. In India this model is even worse because of the popularity of cinema. How many good movies are available that people have not seen in the cinema and /or have not seen on video - not many, and certainly not enough to build a business on. VOD will be a non event in India. If VOD is a driver in the decision to choose either digital or analog, then we respectfully suggest that you closely look at the economics of the business model.



The reason that VOD gets press in the United States is because cable operators need something to hype and to differentiate themselves so they can compete against the DTH competitors. VOD is something that DTH cannot offer.

To sum up the analysis of digital technology in addressability, yes it works, but it is expensive. The question at hand is, what can you sell the subscriber that justifies the investment and where do you get additional programming? A basic digital box with limited compression and NO interactive or VOD features will cost approximately Rs. 7000 to

8000. Additional compression, extra security options and VOD capability may double the cost. Modem and hard drive recording capability will further drive up the cost. This is all additional money that has to be recovered by revenue. These features cannot be added to a low end digital box retroactively. In some cases the base price of a digital box does not include conditional access, which is added on as a monthly charge.

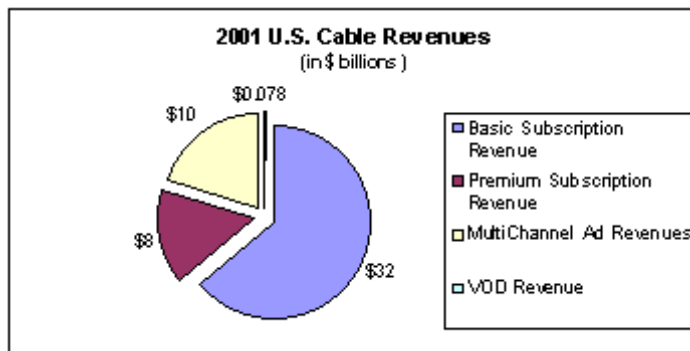
THERE IS ONLY ONE DIGITAL MARKET DRIVER

There is a great deal of misinformation about why digital has been widely deployed in other parts of the world. Companies with digital interests point to other countries, offer self-serving "stale bread" analogies about how analogue is obsolete, yet offer nothing substantive about the realities of the market. It is worth repeating here that advanced digital features cannot be added retroactively to low-end digital boxes without major modifications to the box.

The reason digital STB's have been implemented in other markets is simple. In North America digital boxes are a competitive reaction to the two Direct-to-Home (DTH) satellite providers, DirecTV and Echostar. Cable operators had been offering 300 MHz of services when DTH began to offer many more channels and better programming. DTH took subscribers from CATV, and now has 18.7 million subscribers, almost 20% of all multichannel homes. If DTH was a cable operator, it would be the 2nd largest cable MSO - this is a huge and very real competitive threat to cable MSO's.

DTH is the only significant driver of the digital set-top market. Potential revenue from VOD is something operators talk about, but it's not because of the revenue or profit, it is because VOD is something DTH doesn't have. It is likely if there were no DTH in North America, there would be no digital cable. The market forces in India are unique to India. Each operator in India must answer for himself whether or not DTH will become a competitive force in the Indian market, and whether the time is appropriate to mount a competitive reaction. We think the answer is obvious.

DEBUNKING DIGITAL MYTHS



Myth #1 - The Digital Picture Quality is Better

There is NO DIFFERENCE in picture quality between analogue and digital. The analogue signal will be actually be more robust, especially in noisy end-of-line situations, and will degrade gracefully. A digital signal will simply "drop-off and disappear" in a noisy end-of-line application. Trouble shooting will be difficult because there is no picture to look at. In analogue, a trained technician can use the television to analyze critical system parameters such as S/N, hum, and distortion. In digital, sophisticated and expensive test equipment must be used. At the end of the day the television is analogue!

Myth #2 - Digital Technology Provides Better Security

Despite speculation that digital technology is completely secure, digital DTH piracy continues to be a nightmare to the operators and recent events indicate digital CATV boxes are following the same path. History has proved there is no unbreakable security; high end digital STB's from multiple manufacturers are currently being broken in the United States. The longer a security technique is on the market, the more time there is for pirates to develop a method of defeating it. Advanced sync suppression techniques and proprietary ASICs in silicon not commercially available have made analogue security as difficult to defeat as digital.

SUMMARY

Analogue addressability is THE affordable solution for both large and small CATV systems. Limited additional content is not a motive for either the operator or the subscriber to pay significantly higher prices for CAS products. Except for the items noted in this article, analogue will offer a more affordable solution, and for technical reasons the performance of the system will be better in the last mile to that of the digital system.

The real question you must ask yourself is: HOW DO I MAKE THE MOST PROFIT from my investment?

