

GENERAL QUESTIONS

Q1: Why would I want to migrate to DVB-S2? What are the technical advantages?

A: Our DVB-S2/ACM technology will deliver significant space segment savings to the Network Operators (NOs). This is of particular importance since the most expensive resource in every NO's business case is the space segment they are leasing from satellite operators. A straight DVB-S2 buys the NO about 15% better space segment efficiency over the existing iDirect system and about 30% over a standard DVB-S system. Integrated with iDirect's ACM feature the efficiency gain can exceed 50%.

Q2: What is ACM and what are the benefits of that technology?

A: Adaptive Coding and Modulation. iDirect's ACM technology enables each remote to operate at the most efficient coding and modulation scheme dependent upon their location within the satellite contour, antenna size, and current weather conditions providing the NO the flexibility to dramatically save on bandwidth, increase data throughput or expand their networks. The ACM feature adjusts the modulation scheme on the outbound carrier automatically to each remote individually based on feedback from the remote.

Q3: What markets are especially well suited for DVB-S2? Are there clear cases where DVB-S2 isn't a good fit?

A: DVB-S2/ACM is a good fit for just about any commercial or government market that iDirect serves today.

Q4: What are the markets our DVB-S2/ACM is being designed for?

A: The target market will be iDirect's traditional customers such as government/military as well as Network Operators serving enterprise markets. This is a natural progression from our existing product line, with more capability and larger outbound carrier sizes.

Q5: How does iDirect's DVB-S2/ACM differ from the "other" DVB-S2 solutions available today?

A: The unique integrated approach to ACM within the DVB-S2 platform being introduced by iDirect focuses on delivering the industry's leading implementation of Adaptive Coding and Modulation. This is being delivered from the perspective of data throughput performance, ease-of-use (network configuration during design phase), and most significantly, real-time site by site monitoring of the data throughput advantage (optimized for interactive IP data) provided by the ACM system within the network. iDirect took a different, "from the ground up" approach to ACM development, integrating the technology into every system component for the best possible results. iDirect's objective is to simplify ACM network design and configuration, while maximizing the bandwidth efficiency for the Network Operators.

Q6: Will DVB-S2 systems from other vendors integrate and work with iDirect?

A: No, since this is based on a two way system with iDirect's proprietary return MF-TDMA technology. However, we are introducing a DVB-RCS system sometime next year, with a RCS return carrier on a DVB-S2 outbound. This system will be interoperable up to a point, at least equivalent to competitive RCS systems on the market today.

Q7: Who else offers DVB-S2 platforms? And what is our competitive advantage?

A: Hubs with DVB-S2 modems are offered by HNS, Viasat, NEWTEC, ADVANTECH, RADYNE, ECC and EMS. Many of these vendors first implemented the DVB-S2 technology with Constant Coding and Modulation (CCM) or Variable Coding and Modulation (VCM) and are only now incorporating ACM on top. We believe our approach to DVB-S2/ ACM is superior because we designed the DVB-S2 with ACM from the ground up, and fully integrated it as a component of the Group QoS feature available today from iDirect. Every component of our solution is optimized for the highest ACM efficiency. We have developed a proprietary encapsulation scheme and frame format (allowed within the interactive data elements of the DVB-S2 standard) that optimizes ACM performance. Furthermore the ACM gain can be easily monitored through our powerful NMS with iMonitor, making it simple to deploy and operate. Lastly our solution offers a complete and seamless integration with the current iFINITI iDirect advanced encryption features.

Q8: When will the iDirect DVB-S2/ACM product be available for sale?

A: The iDirect DVB-S2/ACM suite of products is available for sale now with delivery starting in Q4, 2007.

Q9: When can I get more information on product specifications and pricing?

A: Our eVOLUTION product line will be pre-announced to the market at the IBC show in September. Product spec sheets and pricing will be available at that time.

Q10: Why has it taken so long for iDirect to bring the DVB-S2/ACM solution to market?

A: The gain of DVB-S2 without ACM over our proprietary TDMA system was only in the range of 10–15% so we didn't have the same urgency as others to adopt DVB-S2. However iDirect's advantage lies in the ACM with the DVB-S2 system realizing gains of 50% or more. ACM is a very complex system to develop and we wanted to have that available right from the start in order to integrate it from the ground up and optimize the operation of the ACM system to provide maximum efficiency gain to our customers.

Q11: Are there certain scenarios where DVB-S2/ACM does not offer an efficiency advantage?

A: No, but ACM offers no significant advantage (in any system) at symbol rates of less than 5 Msps.

TECHNICAL

Q1: At what data rates does DVB-S2/ACM provide the highest advantage?

A: At data rates higher than 5 Msps DVB-S2/ACM provides very high efficiency gains.

Q2: What FEC is DVB-S2/ACM using?

A: It is using the industry's most advanced error coding scheme — Low Density Parity Check (LDPC) codes.

Q3: What maximum size outbound carrier and data rates will be supported?

A: The outbound carrier sizes range from: 16 ksps–45 Msps. A 45 Msps carrier can support up to 140 Mbps of user data throughput at 16 APSK modulation.

Q4: What code rates and modulation types does the iDirect DVB-S2/ACM solution support?

A: It supports all modulation types: QPSK, 8PSK, 16APSK and (future release) 32APSK as well as support for all FEC Code rates.

Q5: What is the value of GQoS in an eVOLUTION (DVB-S2/ACM) environment?

A: GQoS makes our eVOLUTION solution incredibly powerful and scalable by allowing the segmentation of DVB-S2's very large outbound channel into a series of independent private networks, each with its own private bandwidth pool.

Q6: What advances does iDirect's DVB-S2/ACM platform have in a high rain fade region?

A: When engineering the link for a DVB-S2/ACM system, the traditional 6–9 db of rain fade margin that is typically used (or higher for a tropical environment) in a ku-band network to account for rain fade can be drastically reduced (normally to 1–2 db, depending on how conservative the network design approach is by the Network Operator). Therefore, this margin translates into higher data rate efficiency on the satellite, allowing more paying customers on the same bandwidth as a traditional CCM system or a combination of both depending on the priorities set by the Network Operator for the business plan for the specific network being deployed.

INTEGRATING WITH EXISTING iDIRECT EQUIPMENT

Q1: What new equipment components and enhancements are part of iDirect's DVB-S2/ACM offering?

A: The new hardware components are:

- eVOLUTION hub line card
- eVOLUTION series satellite routers
- iDS 9.0

iDirect DVB-S2 will work with the following hubs and product lines:

- Series 15000 universal 5IF hub with enhanced GigE interfaces
- Series 12000 universal 4 slot hub

Enhancements have also been done for the following components:

- Data System Architecture
- Downstream Data Rate now 16 kbps–45 Mbps
- Simultaneously carries multiple protocol types
- Protocol Processor
- ACM Controller
- ACM integration with QoS
- NMS Configuration
- DVB-S2 and ACM Configuration Tools
- ACM Performance Gain Monitoring Tools

Q2: What will the customer need to integrate with existing iDirect equipment?

A: The upgrade path is very simple; our solution is hardware-compatible with our existing hub product family. To upgrade to DVB-S2/ACM, the customer only needs to buy the new eVOLUTION hub line card, the iDS 9.0 software upgrade, and the eVOLUTION routers for the remote sites.

Q3: Can a network consist of both eVOLUTION and iNFINITI remotes?

A: Yes. You can use the same hub infrastructure such as hub chassis, NMS and Protocol processor. What needs to be added is a new eVOLUTION hub line card and eVOLUTION remotes in order to segment the DVB-S2/ACM network from the iNFINITI network.

Q4: Can an eVOLUTION remote interoperate with our current iNFINITI line cards?

A: In general, the answer is no. All but one eVOLUTION remote will be eVOLUTION specific. The only exception will be the u2000 FUSION remote, which supports both modes.

Q5: Can DVB-S2 remotes be upgraded or reconfigured from the centralized NMS?

A: Yes, everything will be centrally upgradeable as it is today.

Q6: Will our DVB-S2 implementation be integrated into our NMS such that both systems can be managed in the same NMS client?

A: Yes.

Q7: How will this effect Mesh? Will we be able to do DVB-S2 Mesh?

A: DVB-S2 is not available for Mesh yet, but we are planning to add this capability in a future release.

Q8: Can I use the forthcoming eVOLUTION line card with a current iNFINITI remote, such as the 3100?

A: Yes. The new eVOLUTION line card is universal and will operate with either the iNFINITI or eVOLUTION remotes.