# Interview with Micha Risling from the HDBaseT Alliance

Micha Risling is the vice president of Sales and Marketing at Valens Semiconductor and an HDBaseT Alliance representative. Risling brings 12 years of expertise in marketing and R&D executive roles in established NASDAQ and startup companies, plus vast experience in the global mobile and telecommunications industry. Micha received an executive MBA from the Kellogg School of Business through Northwestern University in Chicago and the Recanati Business School at Tel Aviv University. He also holds a bachelor's degree in electrical engineering from Tel Aviv University.
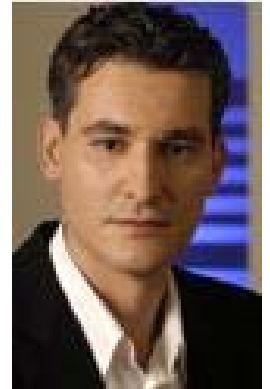
Please give us some background information about the HDBaseT Alliance. The HDBaseT Alliance is a cross-industry alliance formed to promote and standardize HDBaseT technology for whole-home distribution of uncompressed HD multimedia content. HDBaseT is optimized for video applications and can connect all the entertainment devices at home through its 5Play feature set, converging uncompressed full HD digital video, audio, 100BaseT Ethernet, power over cable and various control signals through a single CAT5e/6 cable. The Alliance and its member companies will unite to create a global standard for advanced digital media distribution. The Alliance's standardization activities will cover the entire value chain of the digital media ecosystem and the various market segments: TV sets, projectors, professional AV equipment, PC, portable devices, home theater, content providers, IT companies and more. Some of the top consumer electronics and content companies are leading the Alliance and driving the technology. Founding members are LG Electronics, Samsung Electronics, Sony Pictures Entertainment and Valens Semiconductor.

What exactly do you mean by 5Play Convergence? 5Play is the cornerstone of HDBaseT technology. This feature set is a convergence of uncompressed full HD digital video (1080P), audio, 100BaseT Ethernet, power over cable (70 watt), and various control signals over a single 100m/328ft CAT5e/6 cable. Each individual element of 5Play convergence is crucial to delivering multimedia in the home, but it doesn't make sense to require one cable for video and audio, one cable for Internet, another cable for power and an additional cable for the different controls. HDBaseT technology is the market solution providing all-in-one connectivity. HDBaseT offers each element for every CE device, replacing multiple cables with a single LAN cable that saves money, provides higher reliability, and enables longer distances.

What is the ultimate goal of the HDBaseT standard? HDBaseT Alliance is working to establish HDBaseT as the new digital connectivity standard for multimedia distribution. With support from leading consumer electronics manufacturers, content providers, and other industry organizations, HDBaseT aims to change the multimedia distribution of uncompressed HD multimedia content in the whole-home entertainment environment. The technology overcomes the limitations of existing wired connectivity technologies and emerging wireless technologies.

Are there any special requirements related to either the connector or cabling solutions that differ from existing Ethernet LAN products? No, and that is what makes HDBaseT so unique and easy to deploy. HDBaseT utilizes the existing Ethernet infrastructure meaning you can use the existing CAT5e/6 LAN cables, Ethernet in-wall passive connectors and RJ45 Ethernet jacks.

What about within each of the devices – are there special HDBaseT transmitters/receivers required? External accessories, such as dongles with HDBaseT technology, are already available in the market to connect CE devices. Consumer products with embedded HDBaseT technology are expected to become available in the near future. Here's how it works: Chips transfer uncompressed HD video, audio, HDCP encryption, controls, power and Ethernet via a low-cost LAN cable, with a standard RJ45 connector, up to 100m/328ft. This enables both point-to-point connectivity and full multimedia distribution with higher reliability, longer distance, and lower cost cable.

Do you ultimately see HDBaseT as a replacement interface to HDMI, an additional interface solution, or will HDBaseT happily co-exist with existing interface options like HDMI? It is almost impossible to define one connectivity technology that can perfectly address all the different usage cases. In the foreseeable future, HDBaseT and HDMI will coexist in the connectivity market. HDBaseT is the first technology to enable long-reach wired connectivity of uncompressed full HD multimedia content via a single CAT5e/6 cable. HDMI is still a valid technology when it comes to providing video and audio point-to-point connectivity over a few meters. However, HDMI can be quite expensive even at the very shortest cable length and especially when using cables of three meters or more. Moreover, it's difficult to install due to its thickness and soldered connectors. It forces users to put up with thick, unsightly HDMI cables dangling down from the TV. The Alliance recognizes HDBaseT as the ideal interface in the whole-home distribution setting. The market has evolved rapidly as consumers now demand a higher-quality, easy to install, easy to distribute, theater-like experience when viewing premium entertainment content at home. HDBaseT is designed specifically to meet new market requirements of today and tomorrow.

> *"Unlike other HD distribution technologies current available in the market, HDBaseT is the only technology to enable true long-reach wired connectivity of uncompressed full HD multimedia content via a single cable".*

With digital interfaces like HDMI 1.4 and DiiVA now supporting Ethernet communication capabilities, how does HDBaseT plan to differentiate itself? HDBaseT will increase the distance that uncompressed HD multimedia content can transfer, expanding distribution, simplifying installation and ultimately lowering overall system cost. The Alliance believes this technology will set the bar as the most technologically advanced, unmatched solution for optimum digital media distribution.

Considering future enhancements that will increase demands upon the video system, (such as 3D, dual-view, 4K, 24-bit color, etc.), are there any bandwidth concerns related to the HDBaseT? No, HDBaseT can already support similar bandwidth to HDMI 1.4 and can be further improved to double the existing bandwidth to support future ultra high video resolution. Unlike other technologies that are already limited in terms of cable reach, HDBaseT will be able to support all future 3D/2Kx4K 240Hz video formats over extremely long cables.

There are literally billions of legacy products that will not be displaced quickly. If a buyer wants to incorporate HDBaseT solutions, do they need to replace all associated products or is there some sort of transition? The current option is to incorporate external accessories, such as dongles with HDBaseT technology. These devices are already available, offering a way to connect CE devices until devices with embedded HDBaseT become available. In the future, we envision HDBaseT switches that will have a mix of HDBaseT ports and legacy ports, which should simplify home installations.

I can't help but envision some variation on a situation where you have a computer with a min-DisplayPort connection, to which you want to alternatively show data from an external Blu-ray player with an HDMI

port and a PowerPoint presentation – and you want the video to be simultaneously transmitted to a projector
with a single DVI port and an LCD screen with a DiiVA port. This seems like a nightmare of dongles and
HDCP handshakes. Will you support such a scenario, or do you suggest simply forgetting about the
alternative interface options and incorporate an all-HDBaseT solution from the start?** Eventually we see
HDBaseT as the connectivity of choice for all CE/PC devices. In the mid-term, dongles may be used.

**During what is likely to be a long transition period, existing interfaces, (video, audio, power, etc), will
certainly need to still be supported. What is the reaction of consumer electronics makers when you ask them
to add an additional connector to their products?** In fact, this is one of the most exciting features of HDBaseT: It
does NOT require a new connector. HDBaseT utilizes the existing RJ45 connector which is present on all new
TV's. Competing standards and solutions on the market require a specific cable and/or a new proprietary connector.
Indeed, consumer electronics manufacturers are interested in HDBaseT primarily because it's so simple to
implement and uses the existing connector.

**Will HDBaseT reduce overall costs, or will adding the HDBaseT connector and associated electronics simply
replace costs of other components?** As said above, HDBaseT utilizes the existing, standard RJ45 connector.
Although purchasing new electronic devises is a cost factor in building a whole-home entertainment network, the
installation and cables are the primary area of budget-related anxiety. Using a home's existing LAN connections, a
100m/328ft CAT5e/6 cable supporting HDBaseT technology travels distances which would otherwise be extremely
costly with other available
cables. Not only is the added
reach a cost-saving factor, but
HDBaseT technology cuts down
the number of cables required in
all. Rather than having an
installer route one cable for
video and audio, another cable
for internet, and one for controls
throughout the home, HDBaseT
is a single-cable solution.
Furthermore, in the longer run,
since HDBaseT supports power
as part of 5Play, the consumer
electronics device can be sources
directly over the HDBaseT link,
with no need to plug the device
into the wall. Eliminating the
power supply will significantly
reduce the cost of the device.

What are the cable-length advantages offered by HDBaseT? HDBaseT can support 100m/328f at the minimum,
enabling much longer distances than other alternatives. HDBaseT technology seamlessly travels distances which
would otherwise be extremely costly when using other available cables. Not only is the added reach a cost-saving
factor, but HDBaseT technology cuts down the number of cables required in all.

Are there other in-home installation advantages? HDBaseT can leverage an existing Ethernet installation. It can
use the same cable, connectors and in-wall passive connectors. We envision HDBaseT switches replacing Ethernet
switches to extend the existing distribution from Ethernet only to full 5Play, making HDBaseT technology easier to
deploy, control and use.

Will manufacturers of peripheral devices, such as Blu-ray players, be able to eliminate a power supply from the bill of materials – relying entirely on the TV for power? Absolutely. When it comes to installing CE devices, it is essential to have the flexibility of placing equipment without worry over the power source. HDBaseT uses existing Power over Ethernet (PoE) technology and the next generation PoE+ to source low consuming CE devices, such as low-power Blu-ray players or low power monitors, and eliminate the need for external power cables.

Is there a net power savings gained if you run peripheral devices from a single power source versus running each device separately? In theory, there shouldn't be any difference but in reality power saving can be achieved by improving the utilization factor of the DC-to-DC and AC-to-DC convertors. HDBaseT helps to centralize most of the power components and makes the use of high utilization factor parts cheaper.

Will I be able to power my TV? Definitely. Today you can power a 40-inch LCD TV with 70W, and in the near future the TV size you can power with HDBaseT will dramatically increase. This is what makes HDBaseT so attractive to TV manufacturers. TVs are getting thinner and lighter, suitable for hanging on the wall like a picture; however, TV manufacturers find it extremely hard to help consumers understand how to connect the power jack and how to find the place for all the AC-to-DC and DC-to-DC power circuitry. For the first time, HDBaseT enables all-in-one connectivity that helps manufacturers in their quest to design thinner devices that can be connected with a single cable/connector, thereby eliminating the AC-to-DC elements.

Tell us about how HDBaseT plays with the various wireless solutions being introduced into the market today. Wireless was and still is a kind of a dream. Wi-Fi was a huge success in the PC world mainly because devices are portable and, in these applications, no cables are necessary. When it comes to CE devices, which are not battery powered, you still need at least one cable for power even for "wireless" applications. Like wireless devices, HDBaseT, needs only one cable; however, unlike wireless solutions, HDBaseT wired connectivity is not susceptible to environmental magnetic interference from cell phones and home appliances that can distort the home entertainment experience. HDBaseT supports whole-home multimedia distribution where distance is critical. Today HDBaseT can support higher video resolution than any other wireless solution, a gap that will only increase in the future.

Utilizing the Existing Infrastructure
5Play Distribution
HDBaseT Media Hub & Star Topology

Interface solutions like HDMI include numerous features, such as content protection, closed captioning, 3D support, lip-synch protocols, etc... How will HDBaseT incorporate these many features? HDBaseT supports the same features as HDMI including HDCP for content protection.

Specifically, tell us about content protection with regard to HDBaseT. HDBaseT is an approved generic HDCP output. This means HDBaseT has been approved by the HDCP authority (DCP LLC) at the identical level as HDMI. Contrary to Approved Retransmission Technologies (ART) approvals, HDBaseT is a full, generic approved output. This was a pre-requisite for any Hollywood studio to support HDBaseT, which is supported by the MPAA generally and specifically by Sony Pictures Entertainment, one of the founders of HDBaseT Alliance.

When will we able to buy HDBaseT-enabled products? Products incorporating HDBaseT technology will be available in both embedded and external/accessory forms. External implementations, such as dongles, are already available on the market. Consumer products with embedded HDBaseT technology are expected to come to market throughout 2010, picking up dramatically in 2011.

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Have you established some sort of compliance and interoperability verification program? A core component of the Alliance's work will be to develop certification and compliance guidelines and processes for HDBaseT products, including associated plug fest and certification programs.

Describe for us the contributions by each of your founding members, (LG Electronics, Samsung Electronics, Sony Pictures Entertainment, and Valens Semiconductor). The HDBaseT Alliance feels the current representation of the founding companies sufficiently addresses the needs of our respective members. LG Electronics and Samsung Electronics are two of the largest consumer electronics companies. They supply devices across the full value chain of content display, broadcast and distribution. Additionally, they manufacture computers and phones, which are additional markets applicable to HDBaseT technology. The second and critical pillar supporting HDBaseT is the support of the content industry, particularly premium content. HDBaseT is a major enabler of connectivity within the home. It enables a user to connect multiple TVs and distribute content freely and simultaneously over the single 5Play infrastructure. As such, it enables unique new business models which allow the content industry – especially Hollywood – to sell more content and have it viewed on more displays within the home. Sony Pictures Entertainment is the ideal partner as they are also a top content provider and part of a consumer electronics company that stands poised to enjoy the enhanced features HDBaseT can bring to their products. Valens Semiconductor is the inventor and driver of HDBaseT technology.

Is the HDBaseT technology proprietary? The HDBaseT technology has been in development over the past three years by Valens Semiconductor. Its quick acceptance and the fact that silicon is already shipping, are strong indications of the market need for this innovative technology. Given the high market demand, the specification is already in mature development and is anticipated to be available during the first half of 2010. As the Alliance already has all of the necessary building blocks in place, we expect this standard to see wide adoption across the market.

Can other companies join the Alliance to work on the development of future enhancements to the specifications? What are the fees associated with membership? Yes, members supporting HDBaseT technology will play an important part in defining the future of multimedia transmission and data communication for the consumer electronics and content provider industries. The goal of the HDBaseT Alliance is to offer opportunities for members to take an active role in developing future versions and use cases as they shape and define specifications for HDBaseT technology to meet the evolving needs of the marketplace.

What should we be looking forward to as a next step from the HDBaseT Alliance? The Alliance anticipates that the 1.0 version of its specification will be available for licensing during the first half of 2010. In the future, HDBaseT is looking to address additional features, such as higher wattage and longer Ethernet length.