ARRAKIS AARC-NET

AUDIO NETWORKING MADE SIMPLE

NEW... Arrakis announces the introduction of AARC-NET, (Arrakis.Advanced.Radio.Console.Network). It is a seamless integration of Arrakis consoles & automation, 'Cobranet' audio networking products, and Arrakis software. Cobranet is THE world standard in audio networking with over 1,000,000 nodes installed. All Cobranet products from different manufacturers work together to form a powerful audio network. The core of the AARC-NET network are Cobranet products from AudioScience. Plug-in compatible with the Arrakis ARC & MARC & X-MIXER consoles, installation & setup takes minutes. No more punchblocks or multipair cables. Changing a wiring connection is a simple software choice. AARC-NET is fast, easy, and inexpensive.

One of the important features of AARCNET is that it integrates standard analog and digital consoles onto the network instead of using expensive network based digital mix engines. You can therefore integrate consoles that you already own into the system. This makes repair and maintenance easy, and your console doesn't fail when the network crashes. Most importantly, AARC-NET is world standard Cobranet, not a custom one-of-a-kind network.

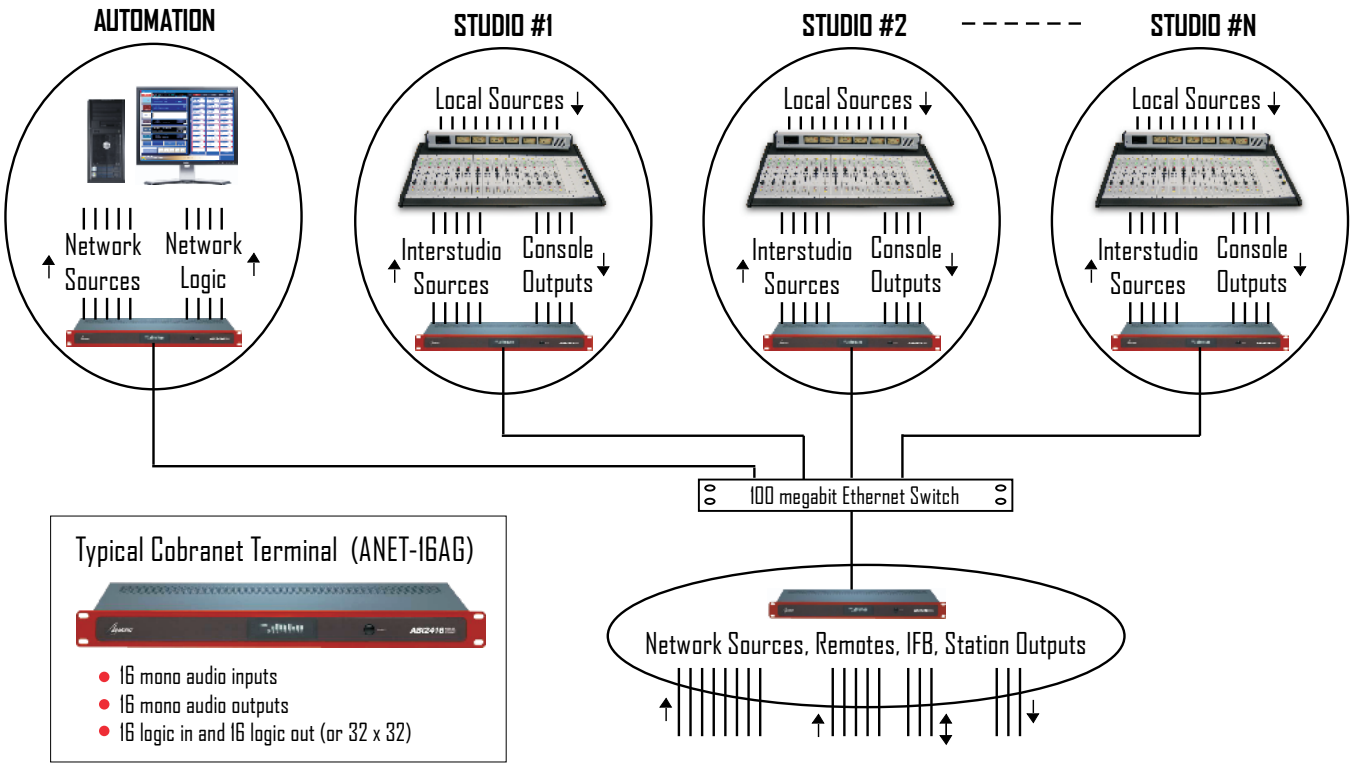
Inexpensive... a standard AARC-NET system is 1/3rd to 1/2 the price of competing systems, thus bringing networked audio within the reach of the entire radio market.

AARC-NET ethernet audio distribution system

- Ethernet Audio networking for Arrakis ARC & MARC & X-MIXER series consoles & Xtreme Automation
- Replaces cables and punch blocks with one CAT-5 cable
- Uses world-standard 'Cobranet' (~ 1 million nodes installed)
- Inexpensive, easy to install, easy to set up, easy to use

'AARC-NET' is the Arrakis solution for easily and inexpensively linking Arrakis ARC & MARC & X-MIXER series consoles and Xtreme Automation systems into a powerful audio network. It replaces multipair cables & punchblocks with a single CAT-5 network cable. Therefore, 'AARC-NET' dramatically simplifies audio management. It altogether eliminates or reduces the need for stand-alone routers, distribution systems, and long multi-pair cables, as well as the time and expense for configuration, maintenance and installation for traditional wiring. 'AARC-NET' even supports Arrakis Digilink-Xtreme automation systems by distributing BOTH audio AND logic over the ethernet network. The Arrakis ARC and MARC series consoles use the same RJ45 CAT5 cables as the AARC-NET Terminals. The X-MIXER has an optional cabling kit. Installation is plug and play.

Basic Block Diagram



AARC-NET links audio and logic between studios, replacing cable and punch blocks. Network sources & remotes can be distributed to all studios. Studio outputs are linked to other studios and to the station On Air output chain. AARC-NET distributes both audio and logic for full broadcast functionality.

Why Cobranet is the Best Choice for Audio Networking

- Cobranet was the first major audio over ethernet product in the world
- Cobranet is owned by CIRRUS LOGIC, not a small custom radio manufacturer
- Cobranet is supported by many different engineering and manufacturing companies
- Cobranet is a growing technology because of its open technology design
- Cobranet works on 100Mbit networks which are far more common than Gigabit networks
- Ultra-high analog audio performance of <0.0015% THD and >105dB dynamic range
- Low 1.33 millisecond latency is standard
- Over 1,000,000 nodes installed and growing

History of Cobranet

CobraNet was developed in 1996 by Boulder, Colorado-based Peak Audio. CobraNet was first introduced as a standard in collaboration with manufacturer QSC Audio Products. The first major commercial use of CobraNet was during the half-time show at Super Bowl XXXI in 1997. CobraNet was subsequently enhanced to support a switched Ethernet network. An SNMP agent was added for remote control and monitoring. Support for higher sample rates, increased bit resolutions and lowered latency capabilities were later introduced in an incremental and backwards-compatible manner. In May 2001, Cirrus Logic acquired Peak Audio. CobraNet has been widely licensed by commercial audio equipment manufacturers.

How Cobranet Works

CobraNet is transmitted using standard Ethernet packets. Instead of using TCP/IP packets, CobraNet transfers data using link layer packets, which travel quickly through hubs, bridges and switches, and are not as susceptible to the latency and QoS problems commonly found in streaming protocols using a higher transport layer. Since CobraNet does not use an IP protocol, its packets do not travel through routers. CobraNet is therefore used on local area networks (LANs), not the Internet. The network over which CobraNet is transmitted is 100 Mbit/s (also known as Fast Ethernet).

Cobranet versus 'Custom Network Digital Mixing Engines'

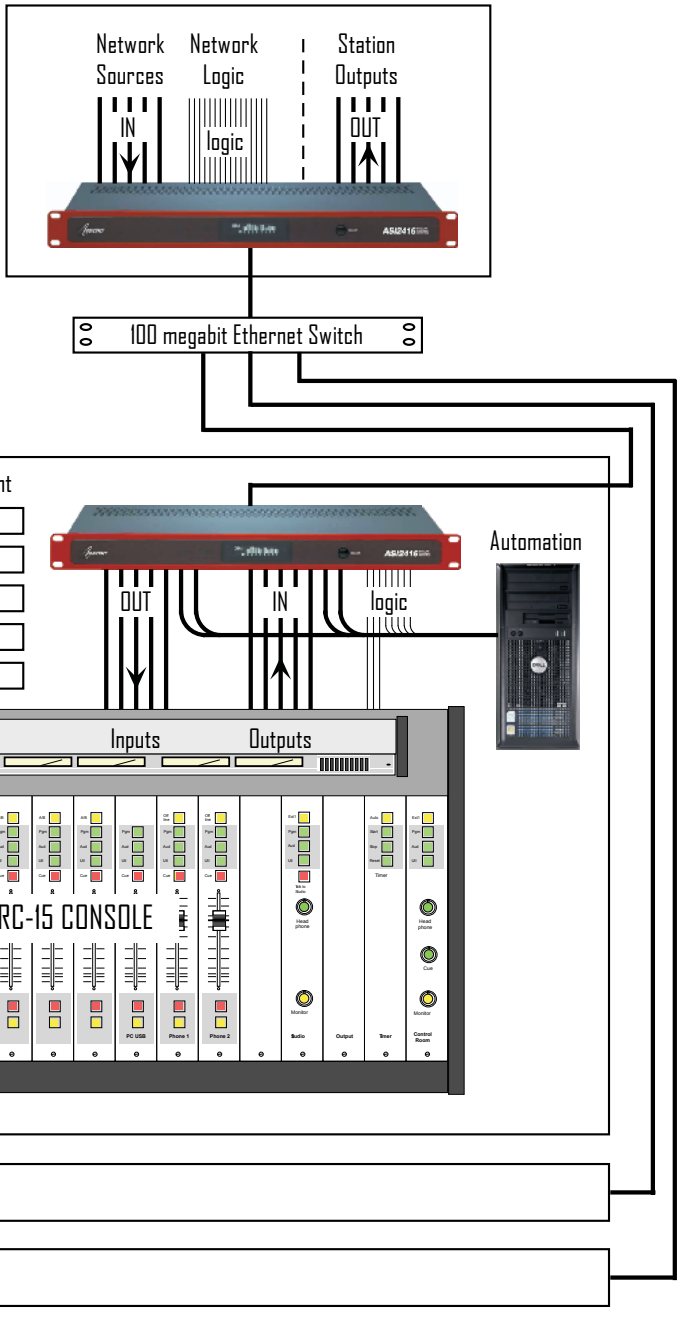
Cobranet is a high quality digital audio distribution system over ethernet. It replaces multipair audio cables and works with standard technology analog and digital audio products. It provides all of the advantages of digital audio distribution to traditional radio studio designs. Some new systems replace the traditional stand-alone analog or digital console with a 'digital mixing engine' that resides on the ethernet network. This new type of console requires every audio source to be digitized onto the network (at great expense) and an ultra-low latency (low delay) Gigabit network. A Cobranet implementation using standard consoles only digitizes sources that require multipoint distribution, has at least equal audio performance specifications, has no latency issues, is far more reliable, is easier to repair, and is far less costly.

AARC-NET easily Integrates with Arrakis ARC & MARC & X-MIXER series Consoles

The Arrakis ARC and MARC analog console lines are specifically designed for easy integration in AARC-NET systems. These consoles utilize the same RJ45 audio cable IO as the Audio Science Cobranet Terminals. Prewired CAT-5 cables (supplied with the ARC & MARC consoles) can therefore be used to link ARC and MARC consoles to the Cobranet terminals without building custom audio cables. The X-MIXER digital console has a different connector so Arrakis supplies an optional cabling kit for plug and play installation.

AARC-NET and Other Consoles

AARC-NET systems can also be integrated with other Arrakis analog and digital console models as well as with consoles from other manufacturers. The cables from the console to the AARC-NET terminal are then custom wired to match the specific connector IO of the console. Only one end of the cable requires custom wiring however since the other end is a prewired RJ45 on a CAT5 cable.



one of the strengths of using AARC-NET with traditional analog and digital consoles is that only the inter-studio audio connections need to be digitized onto the network.

Using Analog or Digital consoles with digital Cobranet

Cobranet is virtually transparent to either analog or digital input sources. Analog THD is under 0.0015% with over 105dB of dynamic range while digital dynamic range is over 140dB. Because analog consoles and [high quality] digital consoles feature nearly identical audio performance, it is not important whether the consoles used with AARC-NET are analog or digital. Also, Cobranet digital audio is uncompressed so there are no transcoding artifacts due to multiple compression/decompression cycles.

ARC & MARC series analog consoles

To reduce cost and speed installation, the ARC and MARC series analog consoles have been designed with the same RJ45 connectors and CAT5 cables as the AARC-NET terminal boxes. Because analog consoles are much less expensive than digital and much easier to repair, the Arrakis ARC and MARC series analog radio consoles are an excellent choice for use with AARC-NET systems.

X-MIXER digital console

Digital consoles are also a good choice for AARC-NET since the audio signal remains digital once it has been digitized. A special AARC-NET prewiring kit is supplied as an option for the Arrakis X-Mixer digital console to connect it to the AARC-NET terminal.

AARC-NET Specifications

1) Cobranet system specifications

- Connectors: RJ45
- Cable CAT-5e
- Network 100BASE-T ethernet
- Reference level 0dBFS=+4dBu
- Sample rate: 48kHz
- 16, 20, or 24 bit PCM (over 140dB dynamic range for 24 bit)
- Latency: 1.33, 2.66 or 5.33ms
- Capacity 32 simultaneous stereo audio feeds per switch leg

2) AARC-NET Terminals (analog)

- Connectors RJ45 (Arrakis console pinout)
- Inputs active balanced 10kohm, Max input +24dBu
- Input and Output levels software adjustable from -10 to +24dBu in 1dBu steps
- Outputs active balanced < 100 ohm, Max output +24dBu
- Freq response ±0.5dB, 20Hz-20kHz
- Dynamic range > 105dB, Nominal level +4dBu, Headroom +20dB above nominal level, , A-wtd
- Noise -85dB below +4dBu nominal level
- THD+n 0.002%, 20Hz-20kHz, ref +20dBu, A-wtd

Basic System Configuration

Scalability

One of the greatest strengths of ethernet audio is that the system is easily scalable, without adding any addition wiring just plug in more Cobranet terminals.

Initial Configuration

Initial configuration is very simple. There will be one or more terminals in your central equipment room to interface to your networks, remotes, and the station audio output chain. There will also be usually one terminal in each studio for connecting the console to the interstudio audio feeds.

Choice of Cobranet Terminal

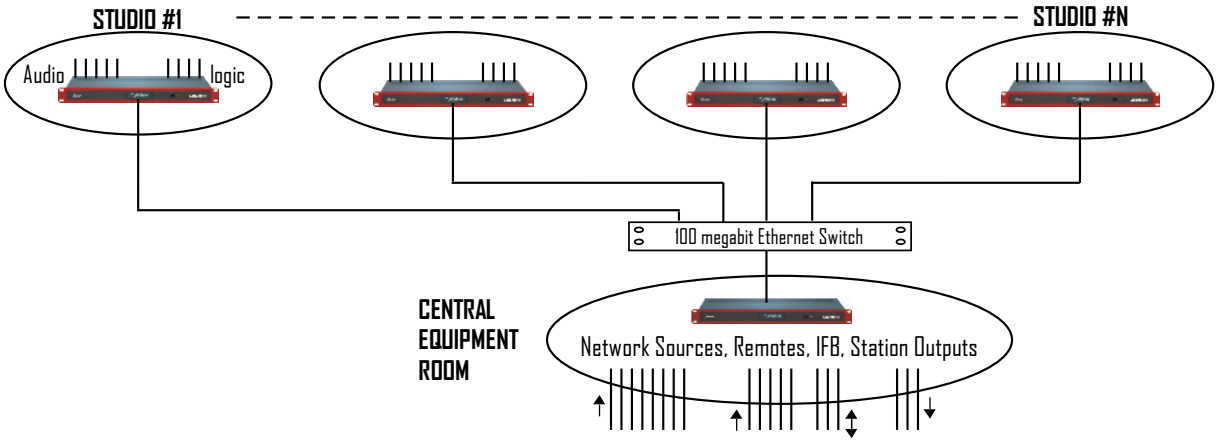
The choice of the terminal depends on the number of audio channels and the number of logic lines (if any) that are used. The smallest terminal is 8 mono (4 stereo) inputs with 8 mono (4 stereo) outputs. The largest terminal is 16 mono (8 stereo) inputs with 16 mono (8 stereo) outputs. If more than 16 x 16 mono is required in the studio then a second terminal is added.

Central Equipment Room

The central equipment room is typically where the network feeds (satellite and otherwise) and remote equipment is located. It is also where the station output audio chain (with processing etc) is located. The largest 16 mono in and 16 mono out terminal may be sufficient or a second terminal may be required. Mono channels are paired to become stereo channels. If satellite automation is used, then the GPIO (relay) option may be required in the terminal. 16 optoisolators in and 16 relays out (or 32 x 32) are the options in a single terminal. If more GPIO lines are required then a second teminal is needed. For most applications, one or two terminals are required in the Central Equipment room.

Studios

In many studios, the smallest terminal is ideal (4 stereo interstudio inputs to the console). For larger studios, the largest terminal meets most needs (8 stereo interstudio inputs to the console). If satellite automation is located in this studio, then the GPIO (logic) option is probably required. 16 optoisolators in and 16 relays out (or 32 x 32) are the options in a single terminal. If more GPIO lines are required then a second terminal is needed. For most applications, a single terminal is all that is required in a studio.



PRICE LIST 6/26/2009

Cobranet for ARC and MARC series consoles & Xtreme Automation Systems

Model #s	Description	List Price
ANET-8A	Cobranet Terminal- analog audio, 8 mono in, 8 mono out, without GPIO logic	$1,969
ANET-8AG	Cobranet Terminal- analog audio, 8 mono in, 8 mono out, with 16 in & 16 out GPIO logic	$2,613
ANET-16A	Cobranet Terminal- analog audio, 16 mono in, 16 mono out, without GPIO logic	$2,663
ANET-16AG	Cobranet Terminal- analog audio, 16 mono in, 16 mono out, with 16 in & 16 out GPIO logic	$3,307
ANET-16AGG	Cobranet Terminal- analog audio, 16 mono in, 16 mono out, with 32 in & 32 out GPIO logic	$3,951
ANET-XTR-CB1	optional audio & logic cables for Xtreme Bridge & ANET-16AG, 10ft long	$500
ANET-XTR-CB2	optional audio & logic cables for Xtreme Bridge & ANET-16AGG, 10ft long	$700

Note: the GPIO logic configurations are most often used when distributing logic for satellite network sources

Cobranet for X-MIXER series consoles (X-MIX-14-22)

Model #s	Description	List Price
ANET-16DG	Cobranet Terminal- digital audio, 8 stereo in, 8 stereo out, with 16 in & 16 out GPIO logic	$3,307
ANET-16DGG	Cobranet Terminal- digital audio, 8 stereo in, 8 stereo out, with 32 in & 32 out GPIO logic	$3,951
ANET-XMIX-CB1	optional audio cables for X-MIX-14-22, RJ45 to X-MIX connectors, 10ft long	$300

NOTES ON TERMINALS:

1) each Terminal is a 1RU rack mounted cabinet
2) analog & digital connectors are RJ45
3) GPIO logic connectors are terminal block
4) Dimensions 1 RU, 19"(482mm) W x 8"(203mm) L x 1.75"(44mm) H
5) Weight 7 lb (3.2kg) max, with 16 analog inputs/outputs and terminal block connectors
6) Operating Temperature 0C to 60C
7) Power Requirements 100-240VAC, 47-63Hz, 25W max.
8) These Terminals are based on AudioScience ASI2416 Cobranet systems

Contact the Factory for pricing on specific configurations or using other consoles in the system

Important: for factory support of Cobranet systems which include Arrakis consoles, all Cobranet products on the network must have been purchased from or approved by Arrakis Systems inc.

Prices and specifications are subject to change without notice