

N I L E S A U D I O C O R P O R A T I O N

IntelliControl[®]ICS

I N T E G R A T E D C O N T R O L S O L U T I O N S

SYSTEM DESIGN GUIDE

VOLUME 2

I N C L U D E S :

- INTEGRATING A NILES HT-MSU WITH AN INTELLICONTROL ICS SYSTEM
 - DESIGNING SYSTEMS WITH AN HT-MSU ASSIGNED TO A ZONE
 - DESIGNING SYSTEMS WITH TWO TO FOUR HOME THEATER SYSTEMS
 - DESIGNING SYSTEMS WITH ONE OR MORE HOME THEATER ZONE AND AN IR ONLY CONTROLLED HOME THEATER ROOM
- INTELLIFILE[®]3 PROGRAMMING OVERVIEW

E N G I N E E R E D B Y



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INTRODUCTION

The following information simplifies and optimizes the design and implementation of a Home Theater System into an IntelliControl ICS system. In addition, you'll learn how to integrate up to four home theaters into a single system using multiple HT-MSUs (Home Theater Main System Units).

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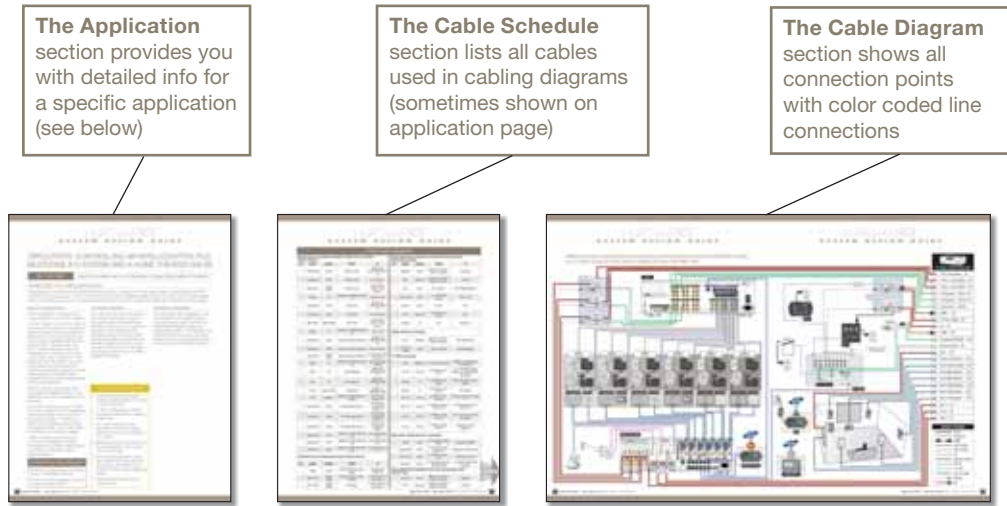
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HOW TO USE THIS SYSTEM DESIGN GUIDE

Each chapter in the System Design Guide is broken up into sections to make comprehension easier. Each section contains specific information that is presented with graphic examples to further aid in understanding. Below is a description of what information is contained within each section.



Do This First
Installation instructions on what you need to know before you begin

What Does this Application Do?
Description of application

Key Considerations
Important information that you need to consider when planning your design

Installation Requirements
Specific installation details that you need to know

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APPLICATION: CONTROLLING AN INTELLICONTROLICS MULTIZONE A/V SYSTEM AND A HOME THEATER (VIA IP)

DO THIS FIRST Read the complete section on Designing A Robust Video ZigBee RF Network

WHAT DOES THIS APPLICATION DO?
This application covers the use of an iPhonem2 as the primary controller of a home theater system and an IntelliControlICS Multizone audio/video system. In this scenario all of the systems are independent between the ICS system and the home theater receiver the sharing of sources. In this scenario the iPhonem2 is used in a single room which also contains the home theater.

Key Considerations
In this configuration, there are some unique situations you need to consider. First, the "Master" and "Slave" roles of the speakers will control two independent systems that are not interconnected at any level. This means that the only connection is an optional hard through the New ICS A/V Switcher. One ICS A/V will be required for each pair of speakers you wish to switch to the home theater with a maximum of two pairs in a home and being. The home music system will automatically be limited to the speakers unless the home theater receiver is activated. When activated the home theater always takes control of the speakers.

Second, although each system will be controlled as intended there is one detail that the user has to explain to the customer.

Any time the customer wants to switch from home theater to the ICS Multizone audio/video system, they must press the button of choice. They will also know that home theater receiver which will trigger the ICS A/V to switch back to the ICS audio distribution system.

Finally, we highly recommend that you use an IP-enabled IP system consisting of an IP source, IP system LAN (MPLS), and Switch to ensure reliable operation.

INSTALLATION REQUIREMENTS
iPhonem2 Capable Tablet and latest version of IntelliControlICS software.
IP control should be placed in the line of sight of the iPhonem2.

Customer Benefits
The customer will have full access to all sources whether they are part of the home theater or the audio/video distribution system from an wireless remote and later to use wireless remote. Additionally, optional switching is fully implemented through such-based benefits otherwise. Finally, this control can be used to control any zone in the house as long as it is within range of a Video ZigBee RF network.

Installation Benefits
The application allows systems to be home theater to be shared between the home theater system and the ICS audio/video distribution system by adding a New ICS A/V Switcher. The iPhonem2 will have control of a home theater system via and separate control of the home audio distribution system.

CRITICAL KNOWLEDGE

- The iPhonem2 must be within range of a Video ZigBee RF network in order to function.
- A ICS A/V Switcher must be specified for each pair of speakers (if not used).
- IPV power supply must be specified for the home theater receiver (not included IntelliControlICS).
- Media from the ICS system will only be displayed on the "Music" side of the remote.
- The customer will need to press the "System Off" button only when they want to switch from home theater to the ICS audio distribution system.
- IP-enabled IP system highly recommended.

Customer Benefits
What this application does for your customer

Installer Benefits
What the application does for you

Critical Knowledge
These are "must know" details that you need to know

OVERVIEW: DESIGNING AND INTEGRATING MULTIPLE HOME THEATER SYSTEMS WITH AN INTELLICONTROL ICS DISTRIBUTED AUDIO/VIDEO SYSTEM

WHAT IS A HOME THEATER SYSTEM AND HOW DOES IT INTEGRATE WITH AN INTELLICONTROL ICS DISTRIBUTED AUDIO/VIDEO SYSTEM?

In today's electronic age, a home theater system is an ambiguous term. Typically, a home theater system is a gathering of sources, to be shown and used with a display device (flat panel TVs are popular). Sources may be as simple as a DVD or Blu-ray player and a cable or satellite tuner. In the typical home theater system, there is a surround sound receiver to take advantage of the multi-speaker theatrical soundtracks available from these sources. Consumers have embraced and accepted the concept of home theater systems and wish to have multiple theater systems in the house such as the Family Room and the Master Bedroom. Some of these theater rooms are also doing double-duty by allowing access to sources that would be available in a multi-zone distributed audio/video system. Additionally, the client wants to have these theater systems easy to operate even if the products used in the theater systems are different. Ideally they would like to learn only one remote or have one remote to seamlessly operate these independent systems. This Advanced System Design Guide will illustrate the different ways an IntelliControl ICS dealer can integrate single or multiple home theater systems with the IntelliControl ICS distributed audio/video system.

DEFINITION OF TERMS

HOME THEATER SYSTEM – A room with at least a display device and/or a home theater receiver where the sound that comes through the speakers is provided by the home theater receiver or display device. (Sometimes also referred to as a standalone theater, see **Figure 1**) This home theater can be connected to the GXR2 by using the Phantom Theater Zone connections (CAT-5 from HT-MSU to GXR2 or HT IR In and HT Sync if using an original IntelliControl) and can share the sources installed in the GXR2.

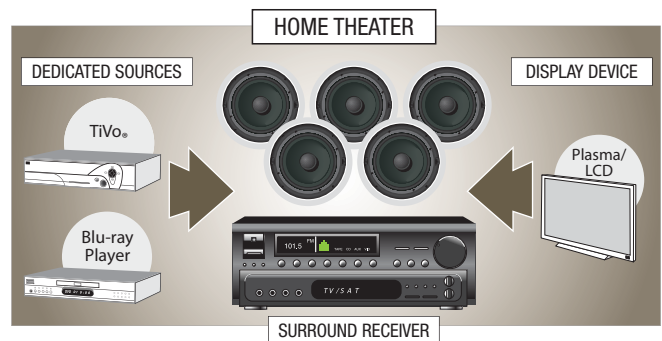


Figure 1

SHARED (OR SHARING SOURCES) – When a home theater system is connected to the GXR2 Modular MultiZone Receiver via the phantom zone connections and source audio is sent one source at a time to the home theater receiver via the card cascade outputs. This requires the home theater system to switch its input every time a different source is requested from ICS. It also increases the number of inputs required and cabling by a factor of six maximum. This allows one home theater to share sources with ICS without sacrificing a real zone (see **Figure 2**). This is covered in the first application on pages 9-10 of this design guide.

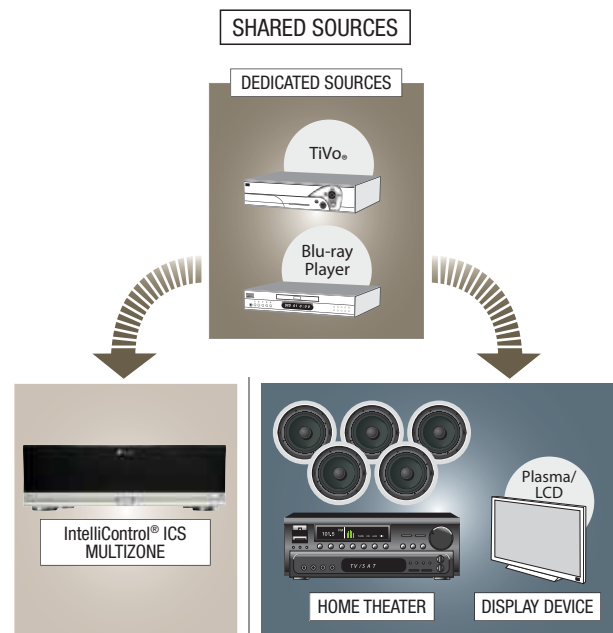


Figure 2 Sharing Sources

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HOUSE ZONE – House zones come in three forms:

- 1) Audio Only Zone: A zone that has the sound provided by the GXR2 Modular MultiZone Receiver.
- 2) Audio/Video Zone: Any zone on an IntelliControl ICS System that is getting an audio feed from a GXR2 and video feed from a VS-6. In addition, an IRG is used to automate power and source input of the display device in that zone. No local source or home theater receiver is involved in an Audio/Video Zone
- 3) Theater Zone: A room with at least a display device and one or more local sources. Local theater zone components must be HT-MSU controlled. Additionally, a theater zone may or may not include a home theater receiver. A theater zone takes up a zone on a GXR2 chassis, making every GXR2 source available for the theater zone.

ZONE SOURCE UTILIZATION – When a theater zone is connected to the GXR2 Modular MultiZone Receiver via a fixed pre-amp output, the audio from that zone can be sent to the home theater receiver over one pair of cables connected to a single input. The speaker outputs of the theater zones of the GXR2 are unused (see **Figure 3**). This is detailed in the application on pages 11-14.

THEATER ZONE CONTROL – Is defined as anything that must be done to provide local audio and control in a Theater Zone through a TV and/or a home theater receiver. This includes but is not limited to volume, mute, power, input, surround mode, etc. (Up to four Theater Zones can be configured on an IntelliControl ICS system).

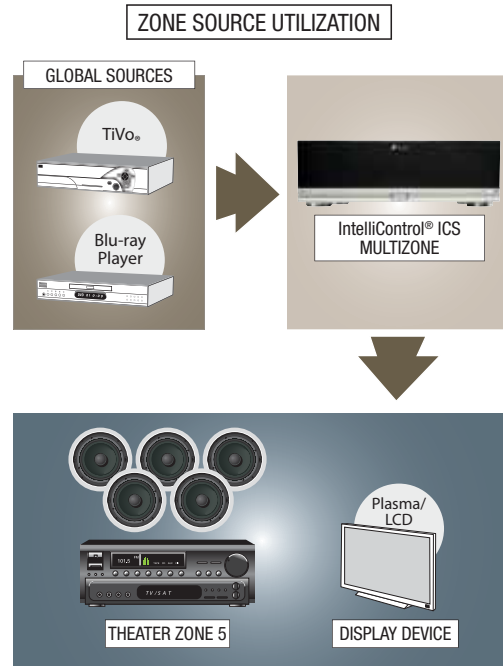




Figure 3 Zone Source Utilization

IR-ONLY THEATER ROOM – Is defined as a room with a local display and sources that are not connected to the IntelliControl ICS system, yet are to be controlled by the iRemoteTS handset via direct line-of-sight IR. Typically this is a guest bedroom and the clients wish to include the operation of the local TV with the iRemoteTS and only have to learn one remote. This is detailed in the application on pages 19-22.

OVERVIEW: NILES HOME THEATER PRODUCTS

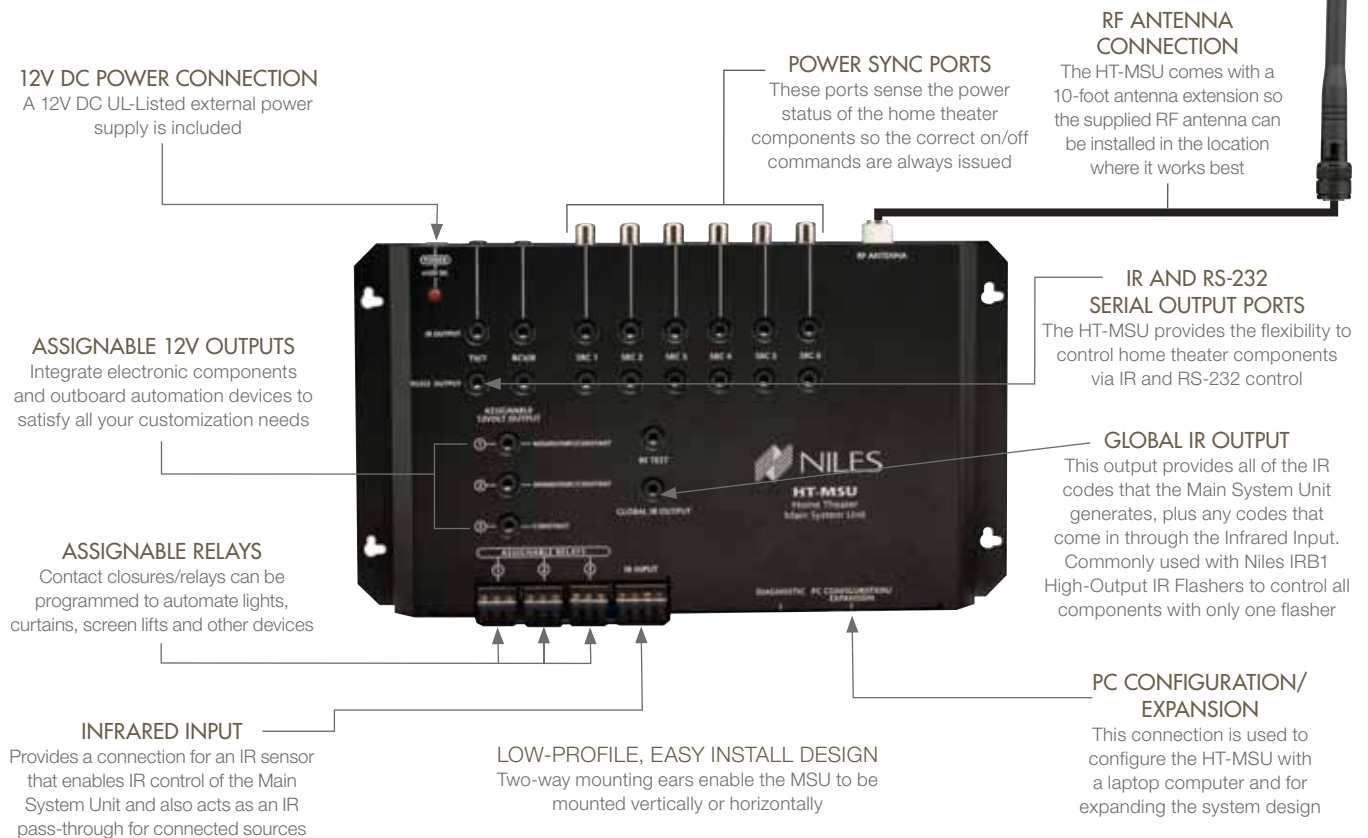
Below are the available Niles Home Theater products and the ZigBee RF nodes they are able to function as. As you can see, some devices are dedicated as End-Points (i.e., iRemoteTS). Other devices can be configured to operate as a Master RF Base, or an RF Repeater Base (i.e., HT-MSU). Unlike the iRemote, the iRemoteTS DOES NOT contain a ZigBee RF radio in its charging base.

Product	Model	Stock No.	Description	Master RF Base	RF Repeater Base	End-Point
	iRemoteTS	FG01341	Wireless Color Touchscreen			X
	HT-MSU	FG01343	Home Theater Main System Unit	X ¹	X ²	

¹ The HT-MSU functions as a Master RF Base when used in a stand-alone application (no connections to GXR2).

² Build 140 or greater of IntelliFile 3 allows the HT-MSU to function as an RF Repeater Base.

OVERVIEW: HT-MSU



OVERVIEW: HT-MSU

ONE TOUCH TO ENTERTAINMENT® OFFERS SIMPLE CONTROL OF COMPLEX SYSTEMS

The Niles HT-MSU Home Theater Main System Unit simplifies entertainment by allowing one-touch control of home theater components. Ordinary home theater system controllers require users to turn on (and off) multiple components, resulting in a confusing situation of hunting down the fugitive component that is “off,” when it really should be “on.”

The HT-MSU eliminates the confusion by shifting control to an interface box. The remote initiates commands to the HT-MSU, so whether you’re playing a DVD or watching a program recorded on your DVR, the HT-MSU provides one-touch access to all your entertainment.

ASSIGNABLE RELAYS AND 12V OUTPUTS

Three dry contact closures and three 12V DC trigger outputs can be independently programmed to give installers greater control of mechanical devices or voltage-triggered power strips and dispersion controlled home theater loudspeakers.

INTELLIGENT INTEGRATION WITH MULTI-ZONE SYSTEMS

The HT-MSU includes control ports that allow it to “share” sources with whole-house distributed audio systems. The power state of these “shared” sources can be completely managed so that sources are always powered-on when they need to be and powered-off when both whole-house and home theater systems are turned off.

PROGRAM MEMORY PROTECTION

The entire system profile is stored in non-volatile memory within the HT-MSU. This safeguards against accidental loss of the configuration programming for the entire life of the product.

IR CONTROL

The HT-MSU has 8 IR output ports allowing for control of 8 sources local to the theater system.

RS-232 CONTROL

The HT-MSU has 8 RS-232 output ports allowing for control of 8 sources local to the theater system.

ZIGBEE RADIO

Hide Away Your Equipment – The HT-MSU’s ZigBee RF wireless technology can transmit through walls and ceilings. This opens up a whole new world of installation possibilities. Hang a flat panel TV on your living room wall and install all the other equipment in a closet, in another room, or even in the garage. The living room keeps its clean look and you get all the fun and excitement that a home theater delivers.

INTELLICONTROL ICS INTEGRATION

Configuration is accomplished quickly and easily using IntelliFile3 software program. A wizard guides the installer, step-by-step, through the configuration process. The software program archives customer and IR files for use with future installations.

APPLICATION: CONTROLLING AN ICS MULTIZONE A/V SYSTEM & HOME THEATER USING AN HT-MSU

DO THIS FIRST

Review *Designing a Niles ZigBee RF Network* in the IntelliControl ICS System Design Guide, Vol. 1 (See System Support Material at: www.intellicontrol.com/ICS/downloads.php)

WHAT DOES THIS APPLICATION DO?

This application covers the use of an iRemoteTS as the primary controller of a home theater system and an IntelliControl ICS audio/video system. In this scenario, some or all of the sources connected to the IntelliControl ICS system are shared with the home theater receiver, the home theater system does not take up a zone on the IntelliControl ICS system, and the iRemoteTS is used in a single room which also contains the home theater.

Key Considerations

When the iRemoteTS is configured with an HT-MSU and an IntelliControl ICS system, the sources can be shared between the audio distribution system and the home theater (e.g., an IM-iCARD2 card can be shared between the GXR2 and the home theater receiver). In this configuration, metadata will be displayed on the home theater side of the remote when these sources are selected. Additionally, the home theater can have dedicated sources that are not accessible from the audio/video distribution system (e.g., a DVR that is only connected to the home theater receiver).

You should think of the iRemoteTS as two separate remotes in one. The "House" side of the remote is accessed by pressing House and provides similar functionality with metadata to a Contact or Contact-TT. The "Theater" side of the remote is accessed by pressing Theater and includes the following:

- Up to 12 Master Keys which can be used to access dedicated sources of a home theater, sources shared with the IntelliControl ICS AV system, or can be used for tasks (e.g., a Master Key label "LiveTV" and a second one labeled "List" would access a single DVR).
- Each Master Key can access up to four touchscreen pages (transport, numeric, extra, and favorites) which are configured in the IntelliFile3 software.

- The favorites page can have up to 20 channel icons or generic labelled buttons. Each favorite page shows five favorites.
- When a Master Key for a source that is also shared with the IntelliControl ICS AV system is selected, metadata screens are automatically included in the pages for that Master Key (if available from the source).

When accessing the "House" side of the iRemoteTS, the hard button cursor keys can be programmed for use with devices connected to an IM-Audio card but cannot be used for controlling Niles audio sources, such as a TM-Sirius card. For Niles audio sources, the navigation soft keys on the touchscreen are used.

Customer Benefits

Your customer will have full access to all sources whether they are part of the home theater or the audio/video distribution system from an ergonomic and easy to use wireless remote. Additionally, channel surfing is further simplified through icon-based favorite channels. Finally, these controls can be used to control any zone in the house as long as it is within range of a Niles ZigBee network.

Installation Benefits

This application allows positive control of a home theater system via IR or RS-232, and the sharing of sources to the home theater that are available to the house audio distribution system. All sources with metadata can be easily controlled via the color touchscreen.

CRITICAL KNOWLEDGE

1. An HT-MSU is required in order to have metadata screens displayed on the "Theater" side of the remote.
2. The iRemoteTS must be within range of a Niles ZigBee network in all areas where the customer desires control. (Please read the *How to Design and Implement a Niles ZigBee RF Network* from *System Design Guide, Vol. 1* section thoroughly to understand how to deploy a ZigBee network in order to provide coverage in all desired areas).
3. The ZigBee transmitter in the HT-MSU is disabled when connected to the GXR2, unless configured to be an RF Repeater Base using IntelliFile3.

INSTALLATION REQUIREMENTS

- IntelliFile3 Capture Station and latest version of IntelliFile3 software

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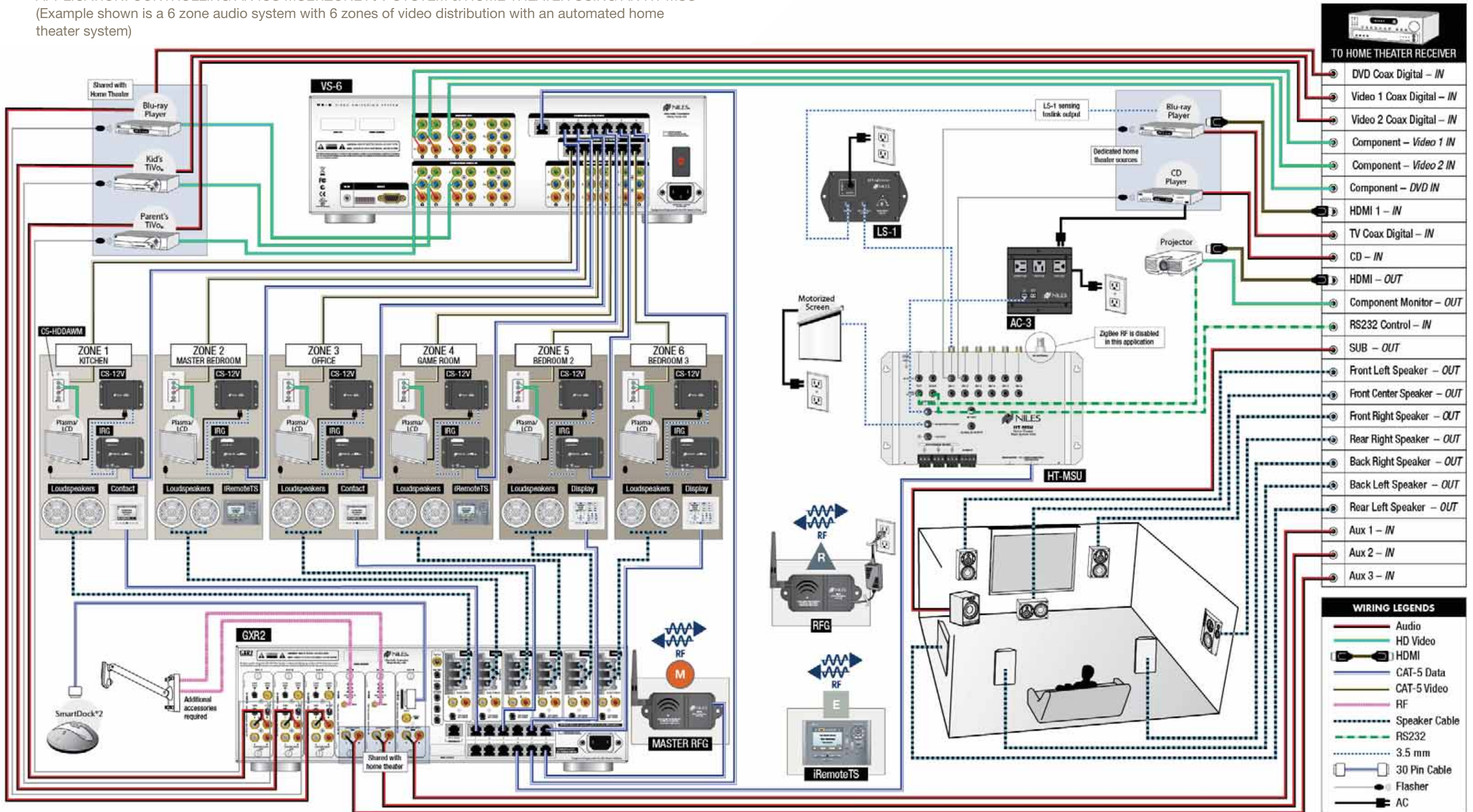
SYSTEM DESIGN GUIDE

CABLE SCHEDULE

Shared source connections to Master GXR2, VS-6, and Home Theater Receiver					Room connections (needed for each area that accesses the audio/video sources)				
QTY	CABLE	SIGNAL	FROM	TO	QTY	CABLE	SIGNAL	FROM	TO
1	Stereo RCA	Audio	Parent's TiVo	Master GXR2/IM-AUDIO #1	1	Speaker	Audio	Master GXR2/Zone 1 Speaker	Speakers
1	Component	Video	Parent's TiVo	VS-6/Input 1	1	CAT-5	Network	Master GXR2/Network Switch	Contact
1	Mono RCA	Digital Audio	Parent's TiVo	HT Receiver/Video 2 Coax Dig. In	1	CAT-5	Video	VS-6/Zone 1	C5-HDDAWM Balun
1	Flasher	IR	Master GXR2/IM-AUDIO #1	Parent's TiVo	1	Component	Video	C5-HDDAWM Balun	Plasma TV
1	Stereo RCA	Audio	Kid's TiVo	Master GXR2/IM-AUDIO #2	1	3.5mm	Sync	CS-12V	IRG
1	Component	Video	Kid's TiVo	VS-6/Input #2	1	CAT-5	Network	VS-6/Network Switch	IRG
1	Mono RCA	Digital Audio	Kid's TiVo	HT Receiver/Video 1 Coax Dig. In	1	Flasher	IR	IRG	Plasma TV
1	Flasher	IR	Master GXR2/IM-AUDIO #2	Kid's TiVo	ZigBee network connections				
1	Stereo RCA	Audio	Blu-ray Player (shared)	Master GXR2/IM-AUDIO #3	1	CAT-5	Network	Master GXR2/Network Switch	RFG (Master RF Base)
1	Component	Video	Blu-ray Player (shared)	VS-6/Input #3	1	12V Power Supply	Power	Wall AC Outlet	RFG (RF Repeater Base)
1	Mono RCA	Digital Audio	Blu-ray Player (shared)	HT Receiver/DVD Coax Dig. In	HT-MSU connections				
1	Flasher	IR	Master GXR2/IM-AUDIO #3	Blu-ray Player (shared)	1	CAT-5	Network	HT-MSU/Expansion	Master GXR2/Network Switch
1	RG-6	RF	Sat. Radio Antenna	Master GXR2/TM-XM #1	1	3.5 mm	12V DC	HT-MSU/Src #1 Sync	LS-1 (sensing Toslink output on dedicated Blu-ray player)
1	RG-6	RF	Sat. Radio Antenna	Master GXR2/TM-XM #2	1	Flasher	IR	HT-MSU/Src #1 IR Out	Blu-ray Player (dedicated)
1	30 pin	Audio+Data	SmartDock2	Master GXR2/IM-iCARD2	1	Flasher	IR	HT-MSU/Src #2 IR Out	CD Player
1	CAT-5	Network	Master GXR2/Network Switch	VS-6/Out to Master GXR2	1	RS-232	Control	HT-MSU/TV RS-232 Out	Projector RS-232 Control In
1	Component	Video	VS-6/Cascade Out #1	HT Receiver/Component Video 1 In	1	RS-232	Control	HT-MSU/Receiver RS-232 Out	HT Receiver RS-232 Control In
1	Component	Video	VS-6/Cascade Out #2	HT Receiver/Component Video 2 In	1	3.5mm	12V DC	HT-MSU/Trigger #1 Out	AC-3 (Switch outlet for CD player)
1	Component	Video	VS-6/Cascade Out #3	HT Receiver/Component DVD In	1	3.5mm	12V DC	HT-MSU/Trigger #2 Out	Projection Screen Trigger In
1	Stereo RCA	Audio	Master GXR2/TM-XM Out #1	HT Receiver/Aux 3 In	Other Home Theater Receiver connections				
1	Stereo RCA	Audio	Master GXR2/TM-XM Out #2	HT Receiver/Aux 2 In	1	HDMI	Video	HT Receiver/HDMI Out	Projector HDMI In
1	Stereo RCA	Audio	Master GXR2/IM-iCARD2 Out	HT Receiver/Aux 1 In	1	Component	Video	HT Receiver/Component Out	Projector Component In
Dedicated source connections to Home Theater Receiver					1	Mono RCA	Audio	HT Receiver/Sub Out	Subwoofer LFE In
1	HDMI	Video	Blu-ray Player (dedicated)	HT Receiver/HDMI 1 In	1	Speaker	Audio	HT Receiver/L/C/R/SL/SR/RL/RR	L/C/R/SL/SR/RL/RR Speakers
1	Mono RCA	Digital Audio	Blu-ray Player (dedicated)	HT Receiver/TV Coax Dig. In	Room connections (needed for each area that accesses audio sources only)				
1	Mono RCA	Digital Audio	CD Player	HT Receiver/CD Coax Dig. In	1	Speaker	Audio	Master GXR2/Zone 1 Speaker	Speakers
					1	CAT-5	Network	Master GXR2/Network Switch	Contact

SEE NEXT PAGE FOR DIAGRAM

APPLICATION: CONTROLLING AN ICS MULTIZONE AV SYSTEM & HOME THEATER USING AN HT-MSU
 (Example shown is a 6 zone audio system with 6 zones of video distribution with an automated home theater system)



APPLICATION: ASSIGNING THE HT-MSU TO A ZONE OF AN INTELLICONTROL ICS MULTIZONE A/V SYSTEM

DO THIS FIRST

Review Designing a Niles RF Network in the *IntelliControl ICS System Design Guide, Vol. 1*

WHAT DOES THIS APPLICATION DO?

This application allows you to assign the Niles HT-MSU to a zone on an IntelliControl ICS Modular MultiZone Receiver, and gain the convenience of having the audio for all of the sources in the GXR2 Modular MultiZone Receiver provided over one set of RCA cables utilizing the GXR2 zone pre-amp output and connected to one input of the surround receiver for that theater zone.

Key Considerations

Assigning an HT-MSU to a zone means the home theater receiver is now the amplifier for that zone of the GXR2 Modular MultiZone Receiver the HT-MSU is assigned to. The speaker outputs (GXR2) of the zone the HT-MSU is assigned to are no longer adjustable from a keypad or remote. Any keypad or remote assigned to control the HT-MSU theater zone will control the volume control of the surround receiver for that Theater Zone

Customer Benefits

Your customer will now have the zone conveniences available to them such as Party Mode and Global Off from any User interface on the IntelliControl ICS system. Additionally, your customers will have the convenience of seamless control of the Theater Zone and its local sources as if it was just another zone on the GXR2 Modular MultiZone Receiver.

Installation Benefits

The system designer and installer gain the convenience of having the audio for all of the sources in the GXR2 Modular MultiZone Receiver provided over one set of RCA cables utilizing the GXR2 zone pre-amp output and connected to one input of the surround receiver for that theater zone. If the home theater receiver for that zone is located in the zone (not centrally located) the installer can use one set of RCA connections and/or extend one set of RCA connections using a pair of Niles CAT-5 audio baluns. The installer/system designer can choose to use any input on the surround receiver for all of the audio from the GXR2 sources. No longer do you have to split the sources and use many inputs on the surround receiver.

CRITICAL KNOWLEDGE

1. Once you assign an HT-MSU to a zone of the IntelliControl ICS Modular MultiZone Receiver, that zone's pre-amp outputs automatically become fixed
2. The speaker outputs of a theater zone are no longer controllable from any user interface (In effect, you cannot use them any longer)
3. Any user interface assigned to control the theater zone will control the volume on the surround receiver for that zone
4. The theater zone will now show up in order, on the zone listing for any user interface (keypad or remote)
5. The ZigBee radio of the HT-MSU connected to an IntelliControl ICS Modular MultiZone Receiver can only be a repeater or turned off and must communicate through a Master RF base assigned to the IntelliControl ICS Modular MultiZone Receiver.

INSTALLATION REQUIREMENTS

- IntelliFile3 Capture Station and the latest version of IntelliFile3 software. See page 23 for IntelliFile3 programming instructions.
- A CAT-5 connection from the IntelliControl ICS Modular MultiZone Receiver to the Niles HT-MSU
- An established RF network on the IntelliControl ICS Modular MultiZone Receiver in which the iRemoteTS can communicate

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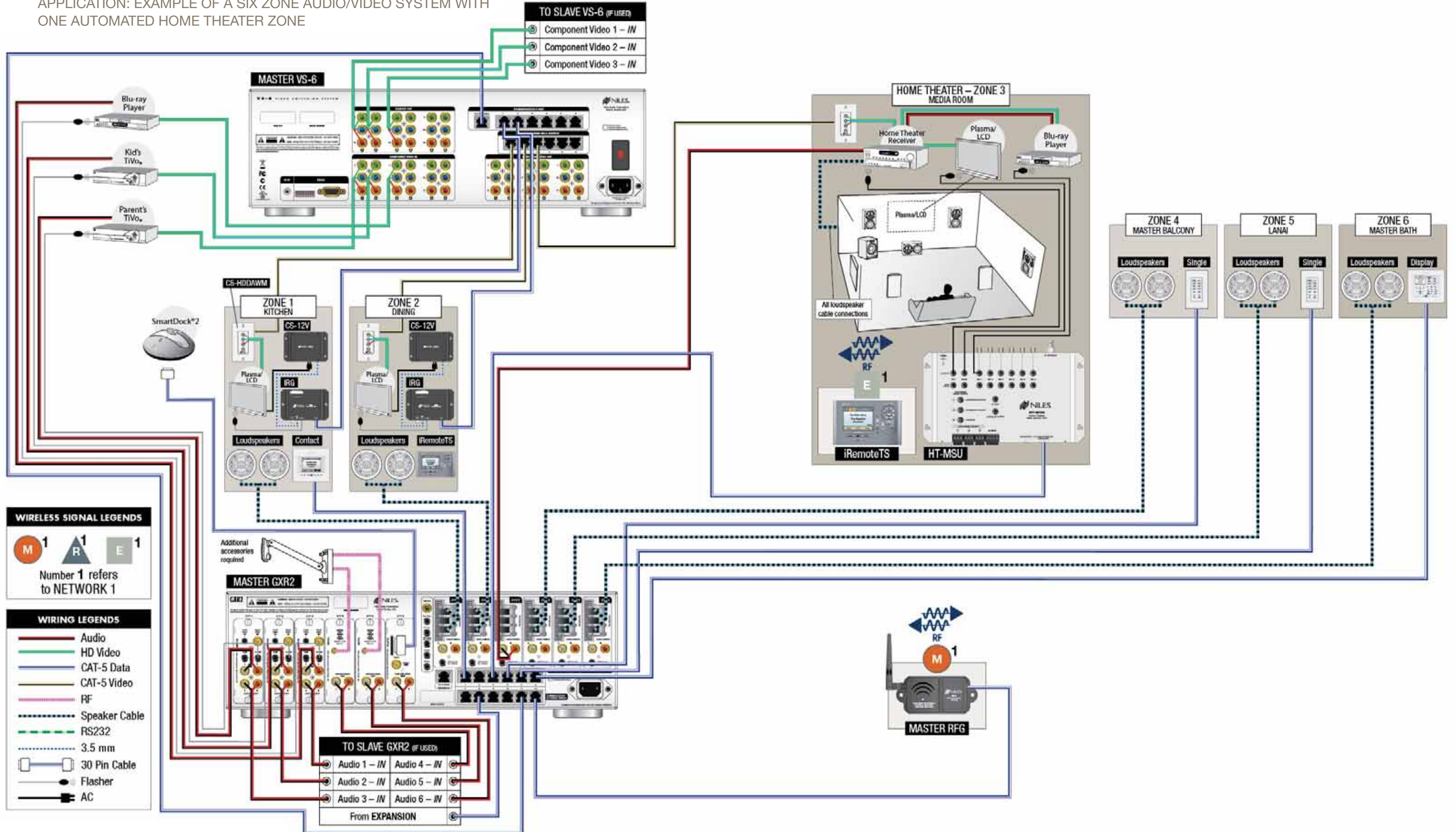
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1	Stereo RCA	Audio	Parent's TiVo	Master GXR2/IM-AUDIO #1	1	Speaker	Audio	Master GXR2/Zone 1 Speaker	Speakers
1	Component	Video	Parent's TiVo	VS-6/Input 1	1	CAT-5	Network	Master GXR2/Network Switch	Contact
1	Mono RCA	Digital Audio	Parent's TiVo	HT Receiver/Video 2 Coax Dig. In	1	CAT-5	Video	VS-6/Zone 1	C5-HDDAWM Balun
1	Flasher	IR	Master GXR2/IM-AUDIO #1	Parent's TiVo	1	Component	Video	C5-HDDAWM Balun	Plasma TV
1	Stereo RCA	Audio	Kid's TiVo	Master GXR2/IM-AUDIO #2	1	3.5mm	Sync	CS-12V	IRG
1	Component	Video	Kid's TiVo	VS-6/Input #2	1	CAT-5	Network	VS-6/Network Switch	IRG
1	Mono RCA	Digital Audio	Kid's TiVo	HT Receiver/Video 1 Coax Dig. In	1	Flasher	IR	IRG	Plasma TV
1	Flasher	IR	Master GXR2/IM-AUDIO #2	Kid's TiVo	ZigBee network connections				
1	Stereo RCA	Audio	Blu-ray Player (shared)	Master GXR2/IM-AUDIO #3	1	CAT-5	Network	Master GXR2/Network Switch	RFG (Master RF Base)
1	Component	Video	Blu-ray Player (shared)	VS-6/Input #3	Theater Zone HT-MSU connections				
1	Mono RCA	Digital Audio	Blu-ray Player (shared)	HT Receiver/DVD Coax Dig. In	1	CAT-5	Network	HT-MSU/Expansion	Master GXR2/Network Switch
1	Flasher	IR	Master GXR2/IM-AUDIO #3	Blu-ray Player (shared)	1	3.5 mm	12V DC	HT-MSU/Src #1 Sync	LS-1 (sensing Toslink output on dedicated Blu-ray player)
1	RG-6	RF	Sat. Radio Antenna	Master GXR2/TM-XM #1	1	Flasher	IR	HT-MSU/Src #1 IR Out	Blu-ray Player (dedicated)
1	RG-6	RF	Sat. Radio Antenna	Master GXR2/TM-XM #2	1	Flasher	IR	HT-MSU/Src #2 IR Out	CD Player
1	30 pin	Audio+Data	SmartDock2	Master GXR2/IM-iCARD2	1	Flasher	IR	IR Out	Plasma
1	CAT-5	Network	Master GXR2/Network Switch	VS-6/Out to Master GXR2	1	Flasher	IR	HT-MSU/Receiver IR Out	HT Receiver (dedicated)
1	Component	Video	VS-6/Cascade Out #1	HT Receiver/Component Video 1 In	Other Home Theater Receiver connections				
1	Component	Video	VS-6/Cascade Out #2	HT Receiver/Component Video 2 In	1	HDMI	Video	HT Receiver/HDMI Out	Plasma/LCD HDMI In
1	Component	Video	VS-6/Cascade Out #3	HT Receiver/Component DVD In	1	Component	Video	HT Receiver/Component Out	Plasma/LCD Component In
1	Stereo RCA	Audio	Master GXR2/TM-XM Out #1	HT Receiver/Aux 3 In	1	Mono RCA	Audio	HT Receiver/Sub Out	Subwoofer LFE In
1	Stereo RCA	Audio	Master GXR2/TM-XM Out #2	HT Receiver/Aux 2 In	1	Speaker	Audio	HT Receiver/L/C/R/SL/SR/RL/RR	L/C/R/SL/SR/RL/RR Speakers
1	Stereo RCA	Audio	Master GXR2/IM-iCARD2 Out	HT Receiver/Aux 1 In	Room connections (needed for each area that accesses audio sources only)				
Dedicated source connections to Home Theater Receiver					1	Speaker	Audio	Master GXR2/Zone 1 Speaker	Speakers
QTY	CABLE	SIGNAL	FROM	TO	1	CAT-5	Network	Master GXR2/Network Switch	Contact
1	HDMI	Video	Blu-ray Player (dedicated)	HT Receiver/HDMI 1 In					
1	Mono RCA	Digital Audio	Blu-ray Player (dedicated)	HT Receiver/TV Coax Dig. In					
1	Mono RCA	Digital Audio	CD Player	HT Receiver/CD Coax Dig. In					



APPLICATION: EXAMPLE OF A SIX ZONE AUDIO/VIDEO SYSTEM WITH ONE AUTOMATED HOME THEATER ZONE



APPLICATION: CREATING A SYSTEM DESIGN INCORPORATING TWO TO FOUR HOME THEATERS (MULTIPLE HT-MSU'S)

DO THIS FIRST

Review *Designing a Niles ZigBee RF Network* in the IntelliControl ICS System Design Guide, Vol. 1 (See System Support Material at: www.intellicontrol.com/ICS/downloads.php)

WHAT DOES THIS APPLICATION DO?

This application covers the use of an iRemoteTS as the primary home theater controller for two to four home theater zones. This application also details how a Niles HT-MSU is assigned to a zone of an IntelliControl ICS system. In this scenario, some or all of the sources connected to the IntelliControl ICS system are used with the zone's home theater receiver.

Key Considerations

A Theater Zone is an IntelliControl ICS system zone where a separate home theater receiver is used to amplify that zone's speakers. When an iRemoteTS is configured with multiple HT-MSU's, sources can be utilized for both the GXR2 and the home theater receiver. For example, an IM-iCARD2 can be shared between the GXR2 and the home theater receiver. In this configuration, metadata is displayed on the home theater side of the iRemoteTS when selected. Additionally, the home theater zone can have dedicated sources that are not accessible from the GXR2 (e.g., a DVR that is only connected to the home theater receiver). It is helpful to think of the iRemoteTS as two separate remotes in one. The "House" side of the remote is accessed by pressing House and provides similar functionality to a Contact or Contact-TT, including metadata. The "Theater" side of the remote is accessed by pressing Theater and includes the following:

- Up to 12 Master Keys that access dedicated home theater sources and IntelliControl ICS system sources. Master Keys can also be used to initiate tasks. For example, a Master Key labeled "LiveTV" and a second one labeled "List" would access a single DVR.

- Master Keys can access up to four touchscreen pages: transport, numeric, extra, and favorites. They are configured in the IntelliFile3 software.
- The favorites page contains up to 20 channel icons or generic labeled buttons, along with five favorites.

When a Master Key is selected for use as a source from the IntelliControl ICS system, metadata screens are automatically included in the pages for that Master Key (if available from the source). When accessing the "House" side of the iRemoteTS, the hard button cursor keys can be programmed for use with devices connected to an IM-Audio card. They cannot be used for controlling IntelliControl ICS audio sources such as a TM-Sirius® card. For IntelliControl ICS audio sources, the navigation soft keys on the touchscreen are used.

Customer Benefits

Using an easy-to-operate wireless remote, your customer gains full access to all sources—whether they are part of an audio and/or video zone or a home theater zone. Channel surfing is also simplified through icon-based favorite channels. A single iRemoteTS can be configured to control up to four theater zones. Any of these zones can be controlled by multiple iRemoteTS's. Finally, these controls can be used to operate any zone in the house, as long as it is within range of its respective Niles ZigBee network.

Installation Benefits

This application allows positive control of up to four home theater zones via IR or RS-232. It also allows the usage of IntelliControl ICS System sources with the home theater. All sources with metadata can be easily controlled via the color touchscreen.

INSTALLATION REQUIREMENTS

- IntelliFile3 Capture Station and latest version of IntelliFile3 software. See page 23 for IntelliFile3 programming instructions.

CRITICAL KNOWLEDGE

1. An HT-MSU is required in order to have metadata screens displayed on the "Theater" side of the remote.
2. The iRemoteTS must be within range of a Niles ZigBee network wherever the customer wants control. Review *Designing a Niles ZigBee RF Network* in the IntelliControl ICS System Design Guide, Vol. 1.
3. The ZigBee transmitter in the HT-MSU can be configured as an RF Repeater Base using IntelliFile3 software.
4. For each theater zone, the pre-amp audio outputs of the GXR2 cascade all sources to the home theater receiver over a single connection.

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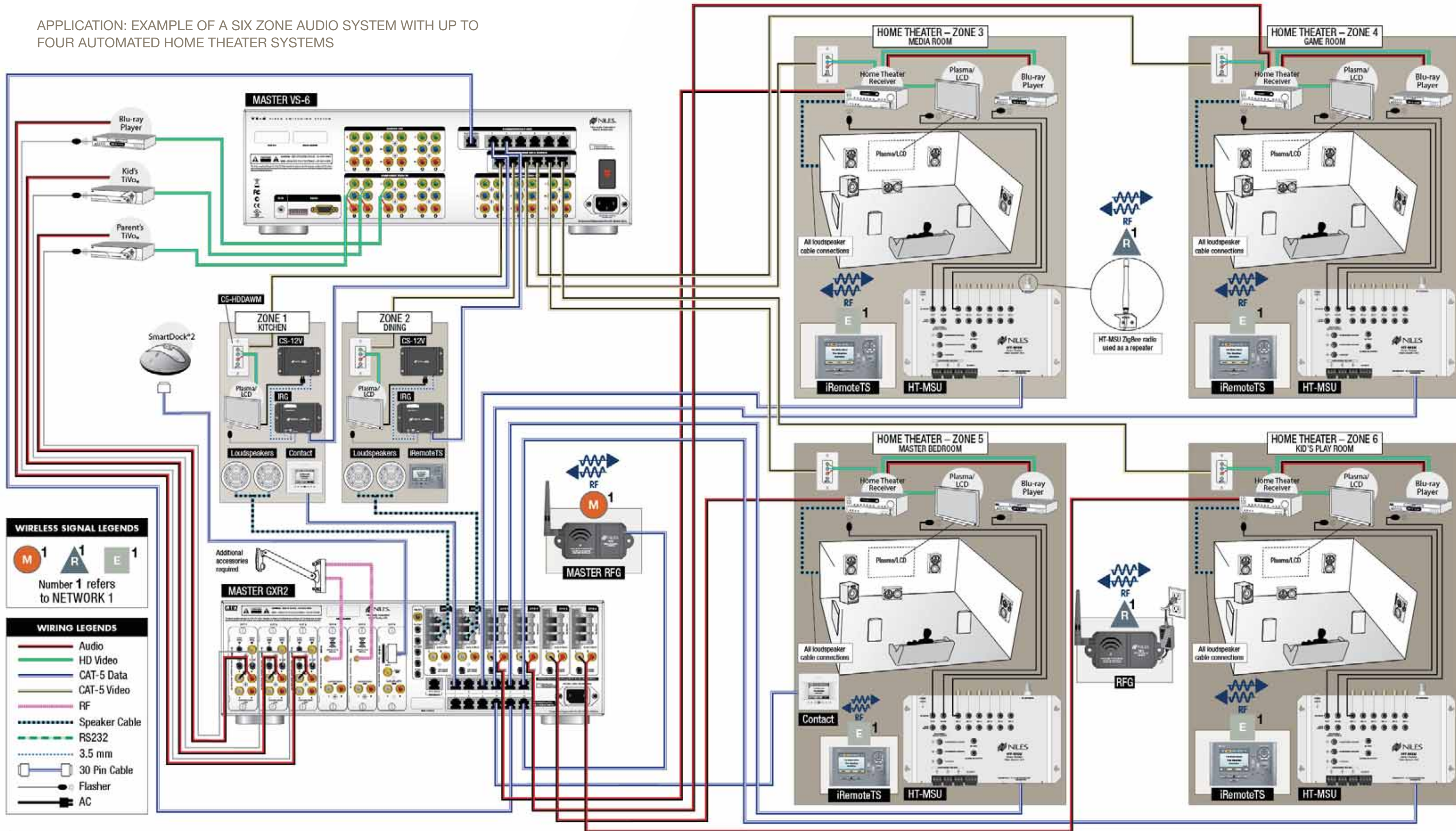
SYSTEM DESIGN GUIDE

CABLE SCHEDULE

Dedicated Sources to ICS System					Theater Zones (needed for each Theater Zone)				
QTY	CABLE	SIGNAL	FROM	TO	QTY	CABLE	SIGNAL	FROM	TO
1	Stereo Audio	Audio	Parent's Tivo	Master GXR2/IM-Audio # 1	1	Stereo Audio	Audio	Master GXR2/Zone 3 Line Out	Media Room/Receiver In
1	Component	Video	Parent's Tivo	VS-6/Input 1	1	CAT-5	Network	Master GXR2/Network Switch	Media Room/HT-MSU
1	Flasher	IR	Master GXR2/IM-Audio # 1	Parent's Tivo	1	CAT-5	Video	MasterVS-6/Zone 3	Media Room/C5-HDDAWM
1	Stereo Audio	Audio	Kid's Tivo	Master GXR2/IM-Audio # 2	1	Component	Video	Media Room/C5-HDDAWM	Media Room/Receiver In
1	Component	Video	Kid's Tivo	VS-6/Input 1	1	CAT-5	Network	Master GXR2/ Network Switch	Contact
1	Flasher	IR	Master GXR2/IM-Audio # 2	Kid's Tivo	Media Room/Theater Zone - #3				
1	Stereo Audio	Audio	Blu-ray	Master GXR2/IM-Audio # 3	1	Speaker	Audio	HT Receiver - L/C/R/RL/RR	Speakers
1	Component	Video	Blu-ray	VS-6/Input 1	1	Component	Video	Blu-ray Player	HT Receiver/DVD In
1	Flasher	IR	Master GXR2/IM-Audio # 3	Blu-ray	1	COAX	Digital Audio	Blu-ray Player	HT Receiver/DVD In
1	RG6	RF	Sat Radio Antenna	Master GXR2/TM-XM # 4	1	Component	Video	HT Receiver/ Monitor Out	Plasma TV
1	RG6	RF	Sat Radio Antenna	Master GXR2/TM-XM # 5	1	MF-1	IR	HT-MSU/ Receiver IR Out	HT- Receiver
1	30 Pin	Audio+Data	SmartDock2	Master GXR2/IM-iCARD2 # 6	1	MF-1	IR	HT-MSU/ TV IR Out	Plasma TV
Room Connections (needed for each area that accesses Audio/Video Sources)					1	MF-1	IR	HT-MSU/ SRC 1 IR Out	Blu-ray Player
1	Speaker	Audio	Master GXR2/Zone 1 Speaker	Zone 1 Speakers	ZigBee Network Connections				
1	CAT-5	Network	Master GXR2/Network Switch	Contact	1	CAT-5	Network	Master GXR2/Network switch	RFG/ (Master)
1	CAT-5	Video	VS-6/Zone 1 Output	C5-HDDAWM Balun	1	12V Power Supply	Power	Wall Outlet	RFG (Repeater Base)
1	Component	Video	C5-HDDAWM Balun	Plasma TV					
1	3.5mm	Sync	CS-12V	IRG					
1	CAT-5	Network	VS-6/ Network Switch	IRG					
1	Flasher	IR	IRG	Plasma TV					



APPLICATION: EXAMPLE OF A SIX ZONE AUDIO SYSTEM WITH UP TO FOUR AUTOMATED HOME THEATER SYSTEMS



IntelliControl ICS

SYSTEM DESIGN GUIDE

APPLICATION: INTEGRATING ONE OR MORE HT-MSU CONTROLLED THEATERS AND AN IR ONLY CONTROLLED THEATER WITH AN INTELLICONTROL ICS SYSTEM

DO THIS FIRST

Review Controlling a Stand-Alone Home Theater Via IR in the IntelliControl ICS System Design Guide, Vol. 1

WHAT DOES THIS APPLICATION DO?

This application allows you to integrate infrared control in the iRemoteTS of rooms that have dedicated sources and a display device and no integration with the IntelliControl ICS System. A primary example of this application is a Guest Bedroom that has no speakers (and is not a zone) of the GXR2 Modular MultiZone Receiver, but has its own TV and cable box

Key Considerations

A home theater zone is defined as a zone of the IntelliControl ICS System where a separate home theater receiver is used to amplify the zone's speakers. When the iRemoteTS is configured with multiple HT-MSU's, sources can be utilized for both the GXR2 and the home theater receiver. For example, an IM-iCARD2 can be shared between the two. Each iRemoteTS can be configured to control up to four theater zones.

Customer Benefits

Give your customers one remote that will control any zone on an GXR2 Modular MultiZone Receiver and control the components in a room that has no connection with an GXR2 at all.

Installation Benefits

This application allows control of a home theater system via IR, which creates opportunities to upgrade systems already wired for IR control.

CRITICAL KNOWLEDGE

1. The IR sensor of the IR repeater system should be placed high enough in order to avoid blockage of the IR commands by someone walking in between the iRemoteTS and the IR sensor, but low enough as to not be severely off axis from the customer's preferred seating location.
2. If an IR repeater system is not used then careful attention should be paid to making all sequences as short as possible. This will minimize the possibility of unreliable system operation due to the blockage of the IR commands by a person walking in front of the remote during operation.

INSTALLATION REQUIREMENTS

- IntelliFile3 Capture Station and the latest version of IntelliFile3 software. See page 23 for IntelliFile3 programming instructions.

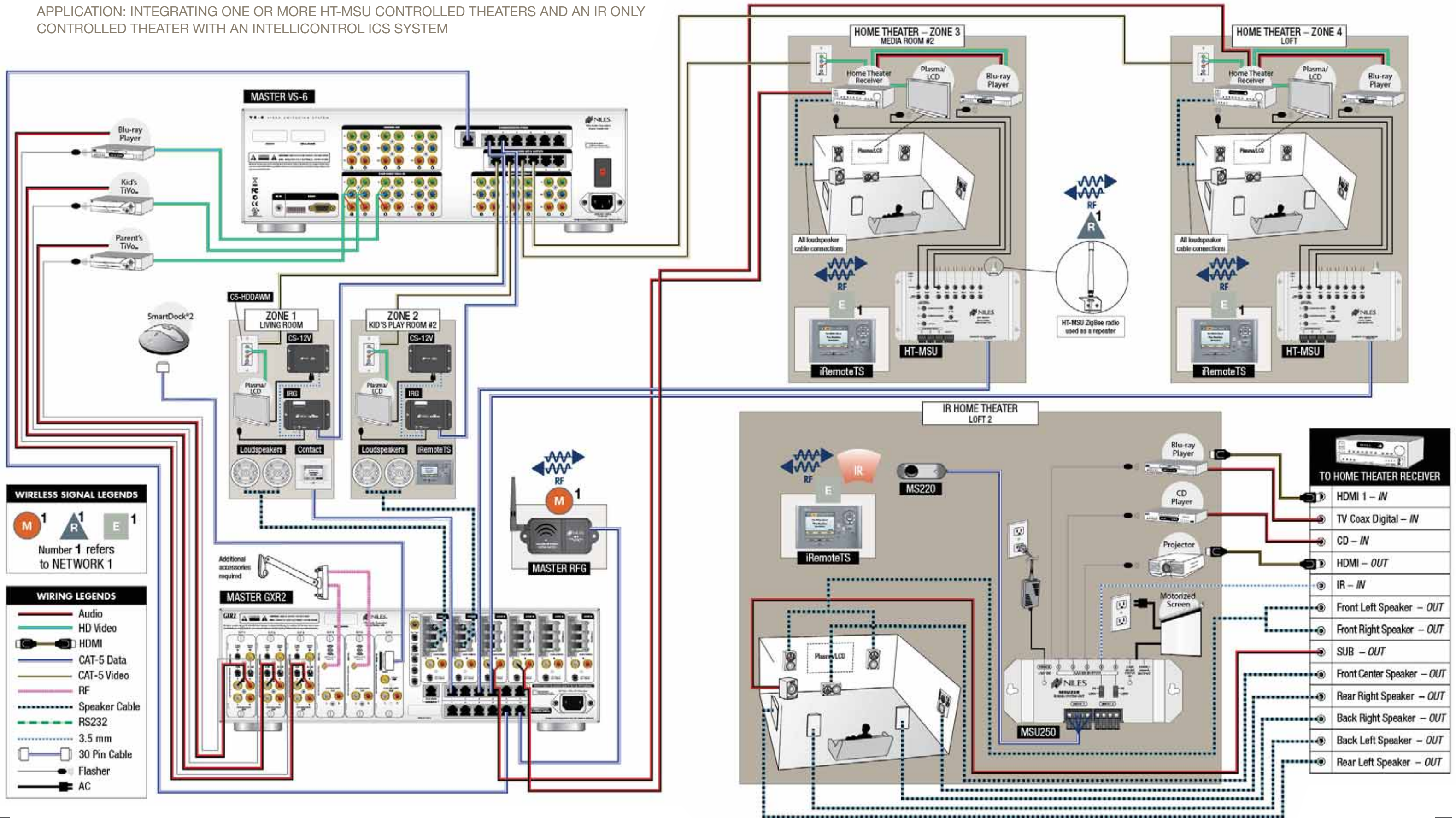
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SYSTEM DESIGN GUIDE

CABLE SCHEDULE

Global source connections to Master GXR2, VS-6					Room connections (needed for each area that accesses the audio/video sources)				
QTY	CABLE	SIGNAL	FROM	TO	QTY	CABLE	SIGNAL	FROM	TO
1	Stereo RCA	Audio	Parent's TiVo	Master GXR2/IM-AUDIO #1	1	Speaker	Audio	Master GXR2/Zone 1 Speaker	Speakers
1	Component	Video	Parent's TiVo	VS-6/Input 1	1	CAT-5	Network	Master GXR2/Network Switch	Contact
1	Flasher	IR	Master GXR2/IM-AUDIO #1	Parent's TiVo	1	CAT-5	Video	VS-6/Zone 1	C5-HDDAWM Balun
1	Stereo RCA	Audio	Kid's TiVo	Master GXR2/IM-AUDIO #2	1	Component	Video	C5-HDDAWM Balun	Plasma TV
1	Component	Video	Kid's TiVo	VS-6/Input #2	1	3.5mm	Sync	CS-12V	IRG
1	Flasher	IR	Master GXR2/IM-AUDIO #2	Kid's TiVo	1	CAT-5	Network	VS-6/Network Switch	IRG
1	Stereo RCA	Audio	Blu-ray Player (shared)	Master GXR2/IM-AUDIO #3	1	Flasher	IR	IRG	Plasma TV
1	Component	Video	Blu-ray Player (shared)	VS-6/Input #3	ZigBee network connections				
1	Flasher	IR	Master GXR2/IM-AUDIO #3	Blu-ray Player (shared)	1	CAT-5	Network	Master GXR2/Network Switch	RFG (Master RF Base)
1	RG-6	RF	Sat. Radio Antenna	Master GXR2/TM-XM #1	HT-MSU connections (Needed for each Theater Zone)				
1	RG-6	RF	Sat. Radio Antenna	Master GXR2/TM-XM #2	1	CAT-5	Network	HT-MSU/Expansion	Master GXR2/Network Switch
1	30 pin	Audio+Data	SmartDock2	Master GXR2/IM-ICARD2	1	3.5 mm	12V DC	HT-MSU/Src #1 Sync	LS-1 (sensing Toslink output on dedicated Blu-ray player)
1	CAT-5	Network	Master GXR2/Network Switch	VS-6/Out to Master GXR2	1	Flasher	IR	HT-MSU/Src #1 IR Out	Blu-ray Player (dedicated)
1	Stereo RCA	Audio	Master GXR2/ Zone 3 Pream Output	Media Room	1	Flasher	IR	HT-MSU/TV IR Out	Plasma/LCD (dedicated)
1	Stereo RCA	Audio	Master GXR2/ Zone 4 Pream Output	Loft	1	Flasher	IR	HT-MSU/Receiver IR Out	HT Receiver (dedicated)
Dedicated source connections to Home Theater Receiver (Needed for each Theater Zone)					Other Home Theater Receiver connections (Needed for each Theater Zone)				
QTY	CABLE	SIGNAL	FROM	TO	1	HDMI	Video	HT Receiver/HDMI Out	Plasma/LCD HDMI In
1	HDMI	Video	Blu-ray Player (dedicated)	HT Receiver/HDMI 1 In	1	Component	Video	HT Receiver/Component Out	Plasma/LCD Component In
1	Mono RCA	Digital Audio	Blu-ray Player (dedicated)	HT Receiver/TV Coax Dig. In	1	Mono RCA	Audio	HT Receiver/Sub Out	Subwoofer LFE In
1	Mono RCA	Digital Audio	CD Player	HT Receiver/CD Coax Dig. In	1	Speaker	Audio	HT Receiver/L/C/R/SL/SR/RL/RR	L/C/R/SL/SR/RL/RR Speakers
					Room connections (needed for each area that accesses audio sources only)				
					1	Speaker	Audio	Master GXR2/Zone 1 Speaker	Speakers
					1	CAT-5	Network	Master GXR2/Network Switch	Contact

APPLICATION: INTEGRATING ONE OR MORE HT-MSU CONTROLLED THEATERS AND AN IR ONLY CONTROLLED THEATER WITH AN INTELLICONTROL ICS SYSTEM



INTELLIFILE3 PROGRAMMING STEPS

UPDATE PROGRAMMING SOFTWARE

Always update your software to the latest version of IntelliFile3 before installing any products. IntelliFile3 can be downloaded at www.intellicontrol.com/techsupport

UPDATE FIRMWARE

All units must be hard-wire connected to the GXR2 during firmware update. Always perform a firmware update on all previously installed IntelliControl ICS products before adding new products. Follow this sequence:

1. Upload previous programming from the GXR2
2. Firmware update the current system
3. Unplug the GXR2
4. Connect the new products to the GXR2
5. Reconnect the power to the GXR2
6. Perform firmware update on the new products, including the HT-MSU and the iRemoteTS
7. Upload previous programming from the GXR2 again

PROGRAMMING SEQUENCE

ALL UNITS MUST BE HARD-WIRE CONNECTED TO THE GXR2 DURING PROGRAMMING:

1. Perform MultiZone programming first and upload to the Master GXR2 and iRemoteTS's



2. Perform home theater programming and upload to the HT-MSU's



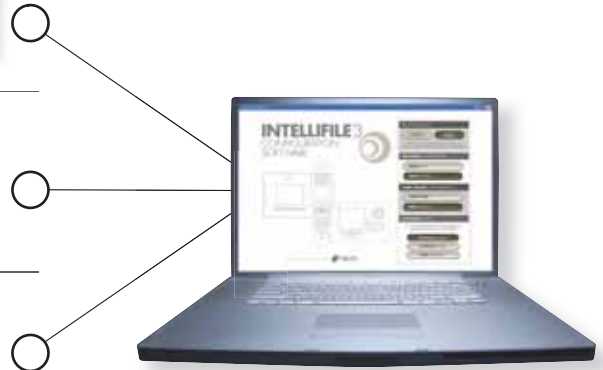
3. Upload the home theater programming to the iRemoteTS's



4. Locate all wireless devices to their final position in the installation



5. Perform a "Reset Net" from the installer screen of one of the End-Points (iRemote, iRemoteTS or wireless keypad)



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SYSTEM DESIGN GUIDE

NOTES:

ADDITIONAL INFORMATION

WARRANTY

All Niles products are manufactured with reliability in mind and backed by factory warranties against defects in materials or workmanship. For details, see warranty statement included with each product.


We are eager to hear your product suggestions.

Please e-mail your suggestions to: productsuggestions@nilesaudio.com

Niles strives to constantly improve our products,
all specifications may change without notice.

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BY PHONE (IN USA OR CANADA)
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www.nilesaudio.com
EMAIL TECHNICAL SUPPORT
techsupport@nilesaudio.com
EMAIL FOR PRODUCT SUGGESTIONS
productsuggestions@nilesaudio.com

E N G I N E E R E D B Y  NILES®

Niles Audio Corporation

12331 SW 130th Street, Miami FL 33186 Tel: 800-BUY-HIFI or 305-238-4373 – Fax: 305.238.0185 – www.nilesaudio.com