Connected Home
12:30-13:30

Josip Zimet

Connected Home, Connected Life
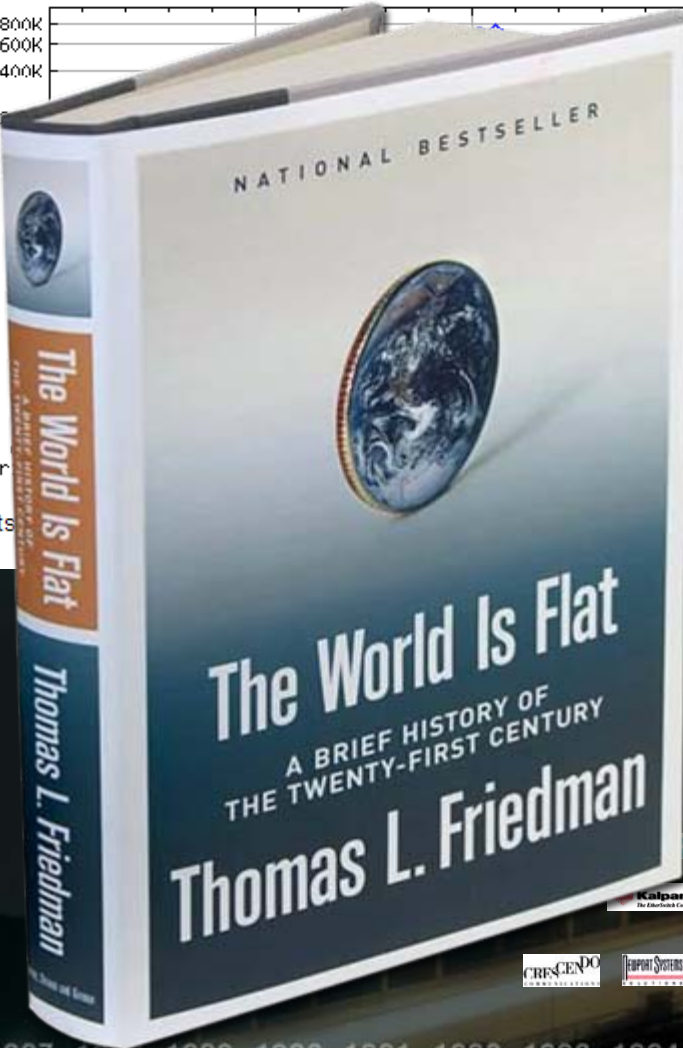## 12:30-13:30

Josip Zimet

Top 5 Gadgets 2007

1 **Apple iPhone**

2 **Nikon Coolpix S51c**

3 **Netgear SPH200W Wi-Fi**

4 **Palm Centro**

5 **Sony Handycam HDR-CX7**
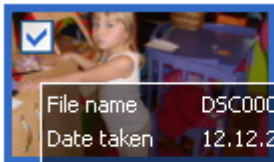
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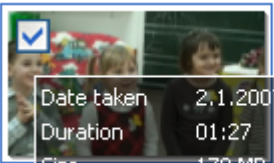
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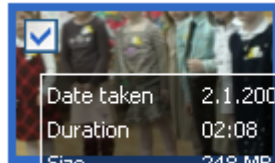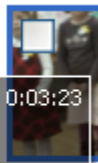
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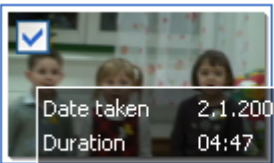
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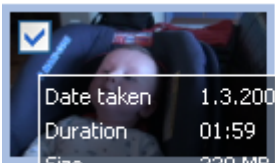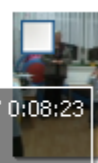
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Duration	01:59
Size	229 MB

iPhone Software Roadmap

See what's ahead for developers, enterprise users, and you.

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iPhone Software Development Kit

Get the tools you need to build your own iPhone applications.

Learn more ▸

iPhone Enterprise Beta Program

Test pre-release iPhone software with enterprise features in your workplace.

Apply now ▸

Microsoft Exchange ActiveSync support.

If your office uses Microsoft Exchange Server 2003 or 2007, iPhone 2.0 software will allow you to wirelessly push company email, calendar events, and contacts over Wi-Fi or EDGE networks to iPhones. With secure push email and over-the-air contacts and calendar features, users will stay up to date wherever they go. And thanks to the iPhone Multi-Touch display, users will find it easier to perform common tasks such as accepting meeting invitations and finding contacts in the company directory or Global Address List (GAL).

IT administrators can securely manage any iPhone that contains confidential company information with remote wipe and enforced security and password policies. These device configuration and remote management capabilities allow IT departments to quickly and seamlessly deploy iPhone throughout their companies.

Enterprise-grade networking.

iPhone 2.0 software supports Cisco IPsec VPN to ensure the highest level of IP-based encryption for transmission of sensitive company information. Employees will be able to authenticate via password, two-factor token, or digital certificate. iPhone will also support WPA2 Enterprise with 802.1x authentication — the standard for Wi-Fi network protection. These features help provide safe access to sensitive company information on iPhone.

Boosting Apple's New iPhone Capabilities—and the Power of the Network

CEC Posting Date: 2008-Mar-12

Apple recently announced that it will incorporate Cisco IPsec VPN technology in its iPhone 2.0 software release.

Workers are becoming more mobile, demanding greater access to their company's critical business applications and sensitive information wherever they are in the world. Smartphones have become an increasingly important business tool for accessing this information any place, any time.

Apple Inc. recently announced that it will incorporate Cisco IPsec VPN technology in its iPhone 2.0 software release to address this growing need. Cisco IPsec VPN builds secure connections between mobile corporate employees and their corporate networks by creating end-to-end, encrypted VPN tunnels.

While the level of VPN services on the existing iPhone provides basic services, it does not meet the connectivity, scale, and flexibility needed by customers in the enterprise market. Cisco IPsec VPN enhances the iPhone by providing "enterprise-class" VPN services, enabling integration into existing corporate security policies and, therefore, easing iPhone integration into the network.

iPhone Enterprise Customer Beta Program
If you have a customer that expresses interest in the iPhone Enterprise Beta Program, please refer them here to the Apple Website ⬈. All customers will be required to fill out an online application. Currently, only U.S.-based companies are eligible to apply for the program.

This technology integration by Apple and Cisco is the result of a nine-month collaboration between the companies. This integration will help Apple enter the enterprise, which is a new market for Apple—and will help Cisco boost the awareness of the power of the network worldwide.

Increasing the Value of the Network

Apple last week released beta software loaded with Cisco IPsec VPN and other enterprise features that are specifically intended for enterprise customers and application developers. The move into the enterprise market could propel Apple past its goal of selling 10 million iPhones by 2009.

"This move will benefit Cisco as well," says Richard Palmer, SVP of Cisco's Security Business Unit. "Cisco's 1.5 million VPN gateways are the most highly deployed VPN solution in the world, and provide seamless and secure access to critical applications and data worldwide. Our presence in iPhone 2.0 is an opportunity to increase the value and power of the network through millions of new iPhone users."

The Cisco logo will be a soft key on the iPhone screen in its secure enterprise access menu and, according to Palmer, could create greater brand awareness and recognition for Cisco among iPhone users.

Corporate Support and Trials of the iPhone

Cisco IT Analyst Alan Kauth (right) tests the early enterprise iPhone code with an Apple iPhone product developer pre-launch.

Will Cisco IT support the iPhone for employees now? Not right away, says Chuck Trent, vice president of IT Global Client Services and Operations. However, Cisco and Apple are discussing the requirements for Cisco IT to participate in customer trials.

"It's exciting to see Cisco and Apple working closely together and embedding technology for the enterprise natively into smartphones," Trent says. "We know the release of enterprise functionality will be greeted enthusiastically by many iPhone owners in Cisco, and we are keen to understand its potential use within our enterprise."

When the Apple beta trials are completed in late June, Cisco IT and the business units will assess the service provider cost impact and value of the iPhone functionality, and will determine the best deployment strategy at Cisco. Trent says the assessment should be completed by June 30, and the trial results will be posted on Cisco's IT Mobility Website when they are under way. Until the evaluation is complete, he cautions, iPhones will continue to be an unsupported, out-of-policy device for Cisco employees.

"Long term, this sort of industry collaboration definitely makes our jobs easier in IT," Trent says. "And it moves us closer to the Cisco vision of being able to use any device."

More Collaboration Ahead
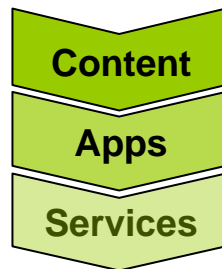
This is not the first time Apple and Cisco have collaborated. Cisco VPN technology resides in Apple platforms such as the Macintosh. After the iPhone trademark issue of February 2007 was resolved, Palmer says, Cisco and Apple regained mutual trust and began to explore new opportunities. "We continue to explore opportunities in security and in consumer and enterprise communications," he adds.
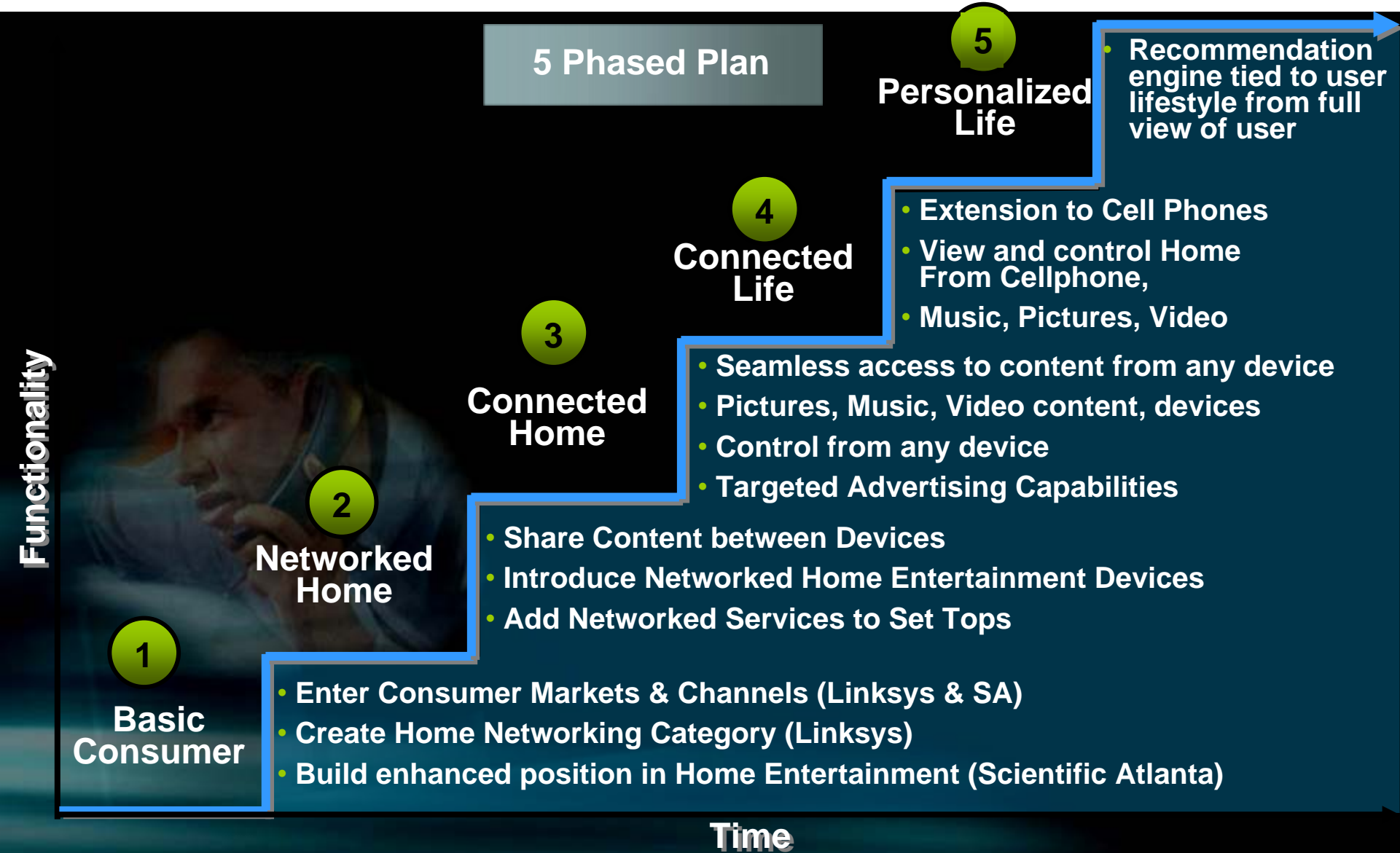
Need for the Connected Home

- **Consumers are migrating to digital applications to enjoy new experiences and benefits**
  - Digital photos, music, video, communications (IM, VoIP)
- **Migration creates new usability challenges**
  - Content stored on many, isolated devices
  - Devices are difficult to setup and connect together
  - Key challenge: find, share, and play content wherever you want it – usually on a different device than where it's stored
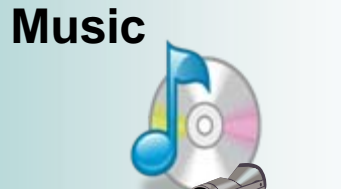
Device-Centric Experiences

Content	Photos	Video	Music	Chat	Calls
Apps	View	Edit	Listen	IM/Email	Talk
Services	Online album	YouTube	Internet Radio	Internet	VoIP

Consumer 5 Phase Plan

5 Phased Plan

Functionality

5 Personalized Life
- Recommendation engine tied to user lifestyle from full view of user

4 Connected Life
- Extension to Cell Phones
- View and control Home From Cellphone,
- Music, Pictures, Video

3 Connected Home
- Seamless access to content from any device
- Pictures, Music, Video content, devices
- Control from any device
- Targeted Advertising Capabilities

2 Networked Home
- Share Content between Devices
- Introduce Networked Home Entertainment Devices
- Add Networked Services to Set Tops

1 Basic Consumer
- Enter Consumer Markets & Channels (Linksys & SA)
- Create Home Networking Category (Linksys)
- Build enhanced position in Home Entertainment (Scientific Atlanta)

Time

Consumer Connected Life Experiences

Phase 1 Personal Media Sharing 2008	Phase 2 Whole Home Sharing 2009	Phase 3 Connected Life 2010

Phase 1
Personal Media Sharing
2008

Photos

Music

Movies

Phase 2
Whole Home Sharing
2009

MR-DVR

Integrated Triple Play

Phase 3
Connected Life
2010

Outside the Home Content Sharing

Integrated Quad Play

Technologies

| DLNA | SIP | QOS | UPnP | Resource Pooling |
| MoCA | HPNA | PowerLine | UWB | Transcoding |

EGHN

Resource Management

Connected Home Architecture

SERVICES APPLICATOINS & CONTENT

- Remote Access
- Storage/Backup
- Home Monitor
- Premium Video
- Communications
- Music
- Photos
- IP Cameras
- Video
- Voice

SERVICES AND MIDDLEWARE

Management

	Network Services and Middleware	
Discovery		uPnP / DLNA 1.5
Security		DRM
QoS		Content Indexing
Admission Control		Remote Access

NETWORK

Layer 3 Routing Services & Advanced Network Features (IPv6, QoS, Multicast)

xDSL	DOCSIS	Fiber	Ethernet	Wireless	802.11x	MoCA	HomePlug	Ethernet	HPNA

Access Network	In-Home Distribution Network

End to end IP-TV & connected home solution
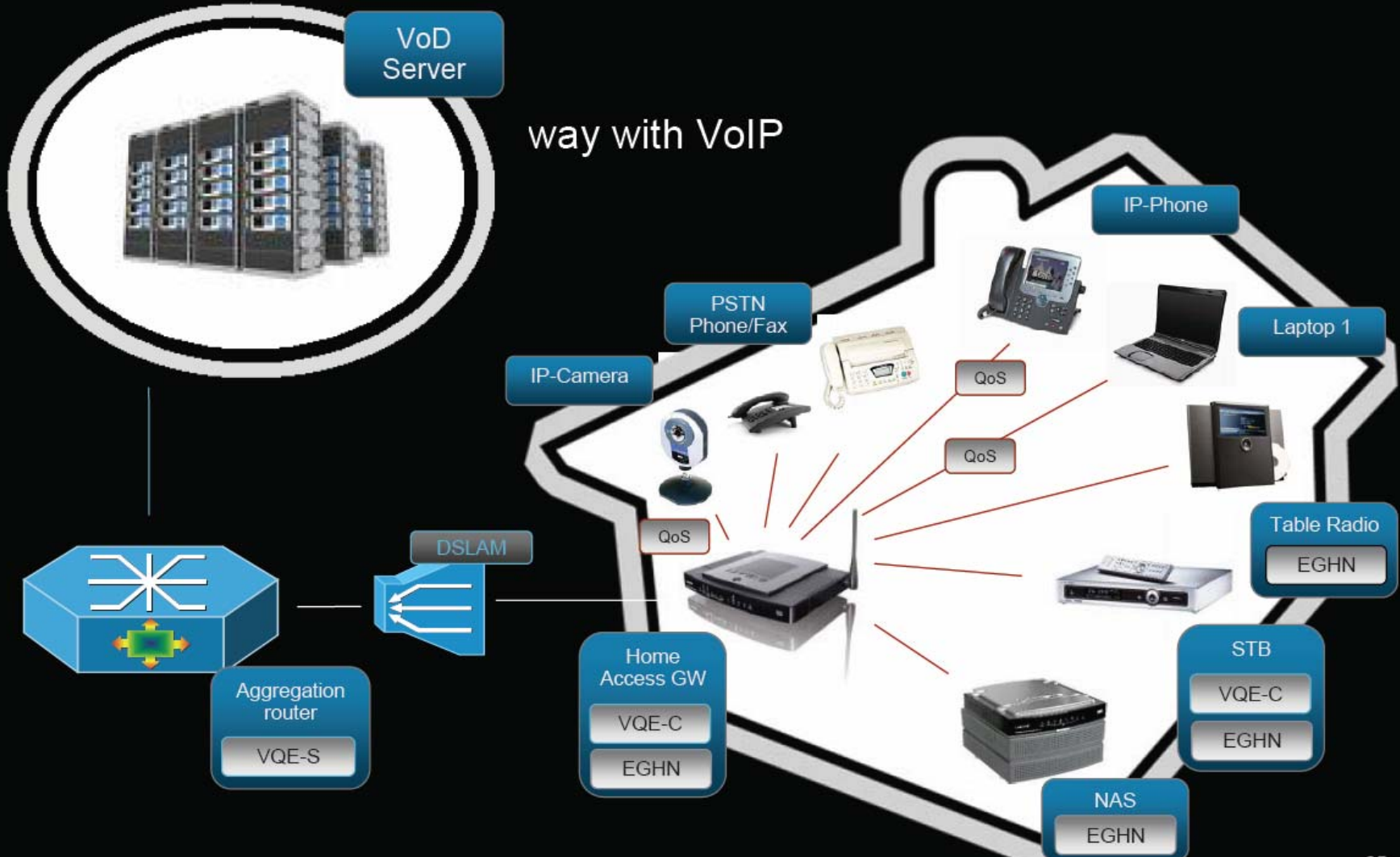
SP Concerns in Quality of IPTV Services

1% packet Loss

5% packet Loss

Packet Loss example for Telepresence

- *One-Way, End-to-End* Service Level Targets
  - Latency ≤ 150 ms
  - Jitter ≤ 10 ms
  - Loss ≤ 0.05%

- *Average* Packet Size / Packets per Second
  - Average 1100 bytes / packet
    - CTS-1000 @ 5.5 Mbps = average 655 pps
    - CTS-3000 @ 15.3 Mbps = average 1,740 pps

	1080p	CTMS at 1080p (32x)	720p	CTMS at 720p (32x)
CTS-1000	4,3-5,5 Mbps	198 Mbps	2-4,3 Mbps	154,8 Mbps
CTS-3000	11,7-15,3 Mbps	550,8 Mbps	4,5-11,7 Mbps	421,2 mbps

Displays   **Microphones**   **Environmentals**

Camera   **Codec**   **Furniture**

My Inbox over the years
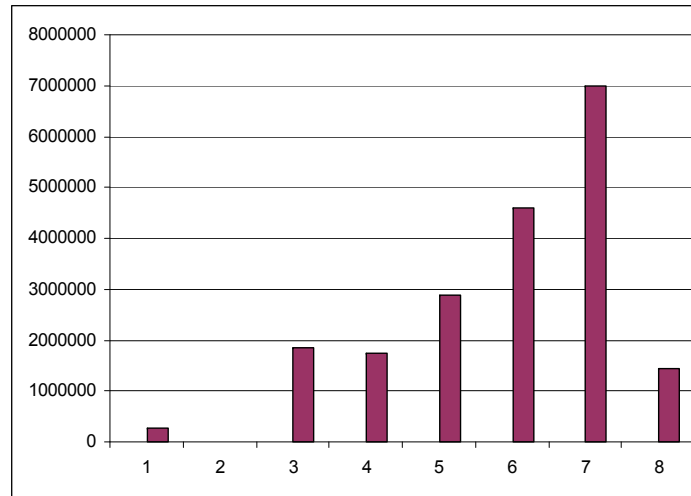
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2002.pst	1 KB	Office Data File	1.12.2007 0:42
2003.pst	1.841.169 KB	Office Data File	26.3.2008 10:37
2004.pst	1.728.081 KB	Office Data File	26.3.2008 10:37
2005.pst	2.894.673 KB	Office Data File	26.3.2008 11:07
2006-1.pst	2.799.441 KB	Office Data File	26.3.2008 10:37
2006-2.pst	1.815.377 KB	Office Data File	26.3.2008 10:37
2007-1.pst	2.388.753 KB	Office Data File	26.3.2008 10:37
2007-2.pst	2.303.441 KB	Office Data File	26.3.2008 10:37
2007-3.pst	1.279.697 KB	Office Data File	26.3.2008 11:13
2007-4.pst	1.013.841 KB	Office Data File	26.3.2008 10:37
2007.pst	265 KB	Office Data File	2.6.2007 23:02
2008.pst	1.434.449 KB	Office Data File	26.3.2008 11:22

4594818

6985997

VSEARCH … 16 Virtual teams/2 events per year

Connected Home

Internet Audio Center

Digital Picture Frame

Home Phone System

Internet Media Server

Linksys NAS 200
Linksys NMS200

WAG 325N

LINKSYS KISS DP1600 £200

IP STB

Universal Plug And Play

Garage Device Scenario

Upon clicking a garage door opener remote when returning home, all related devices including heating and cooling, entertainment, appliances and others are automatically set to "house occupied" status.

UPnP™ is a certification mark of the UPnP™ Implementers Corp.

Master Bedroom Device Scenario

At bedtime the blinds close, the lights turn off, and the security system is set.

UPnP™ is a certification mark of the UPnP™ Implementers Corp.

Living Room/Dining Room Device Scenario

Watch videos on a home theater system or enjoy digital music played through a home audio system with content stored elsewhere in the home or streamed across the Internet. In preparation for dinner, the blinds are closed, the lights adjusted to a preset level, the phone is set to do-not-disturb and favorite digital photographs of family or friends are queued on an electronic picture frame.

UPnP™ is a certification mark of the UPnP™ Implementers Corp.

Kid's Bedroom Device Scenario

After completing homework, the kids enjoy voice, video and text instant message conversations and multi-player games with friends on their PC over a shared Internet connection across the home network.

UPnP™ is a certification mark of the UPnP™ Implementers Corp.

Kitchen Device Scenario

Listen to a collection of digital streamed music while preparing a meal, run the dishwasher when electricity prices are lowest, and track grocery needs on the refrigerator control panel then download the list to a wireless PDA.

UPnP™ is a certification mark of the UPnP™ Implementers Corp.

Home Office Device Scenario

Automatically download the new photos from a digital camera to a PC, then print favorites with the touch of a button on a shared printer attached to the home network. Use the PC to control any UPnP™ certified device in the home and enable these devices to access digital music, video, or photo content stored on the PC.

UPnP™ is a certification mark of the UPnP™ Implementers Corp.

uPnP Expanded Services

New End-User Features (Require uPnP extensions)

- Playlist distribution
  - Ability share playlist w/ community of interest, and have home network serve up the content
- A/V stream splitting
  - Ability to split the music from AV stream e.g. Music Video and send to music-only devices
- Follow me services
  - Pause content on in-home device and continue watching on portable device
- Mobile content synchronization
  - Offload pictures from mobile to home network when you are at home (or even in hotspot, or 3G)

New Network Capabilities (Require uPnP extensions)

- Ability to create home network resource pools for
  - Tuners
  - Transcoding, Transrating, Transcrypting
- Resource could be on any device e.g. STB, DMA, PC, and be available to any other device in the home

Watching home movies	Watching home movies	Watching home movies
Listening to music	Listening to music	Listening to music
Watching photo slideshows	Watching photo slideshows	Watching photo slideshows
Enjoying music on-the-go	Enjoying music on-the-go	Enjoying music on-the-go
Watching TV shows	Watching TV shows	Watching TV shows
Printing photos	Printing photos	Printing photos

Watching photo slideshows

You can't wait to show everyone the shot of your son's game-winning goal captured on your mobile phone. With a DLNA Certified phone, just send the pictures to your DLNA Certified TV to relive the goal in all its triumphant detail. Then send the photo over to your DLNA Certified network attached storage (NAS) for safe keeping.

Before DLNA: You would've been out of luck if you wanted to show your photo on anything other than your mobile phone's tiny screen.

Watching home movies	Watching home movies	Watching home movies
Listening to music	Listening to music	Listening to music
Watching photo slideshows	Watching photo slideshows	Watching photo slideshows
Enjoying music on-the-go	Enjoying music on-the-go	Enjoying music on-the-go
Watching TV shows	Watching TV shows	Watching TV shows
Printing photos	Printing photos	Printing photos

Printing photos

Your coworker just sent your phone a hilarious multimedia message photo of himself in Las Vegas. After sending the photo to your DLNA Certified TV to view it on a large screen, you know you have to share it with everyone at work. With DLNA Certified devices, just print the photo to your DLNA Certified printer, with a few simple clicks from your phone, and you can make copies for the whole office.

Before DLNA: The only way to print photos was to get them to the PC first. And good luck figuring out how to do that from your phone.

Vertical Integration Is the Key to Successful Internet–Television Convergence

Digital Media Research Service | Home Networking Research Service | Digital Video Adapters in the Living Room

▸ **email this page**

NEW YORK - January 25, 2008

Contact: Nicole Fabris
Contact PR
www.abiresearch.com

Early attempts to bring networked video to consumers' television screens have fallen far short of success, but that may change soon with the arrival of new vertically integrated solutions and business models, according to a recent study from ABI Research. Thus far, initial product offerings have been centered on a computing and home networking model; but vendors are learning that they need to provide end-to-end solutions in order to attract new consumers.

The Digital Living Network Alliance (DLNA) supports broad communication between networked devices and even handset manufacturers such as Nokia have shown how a Wi-Fi–enabled handset plays a role in the connected living room. Microsoft has been busy with its Media Center Extender technology, now repositioned as "Extender" technology for the Windows Media Center. Extender technology can be embedded in any suitable consumer electronics device, in addition to standalone DMA (Digital Media Adapter) clients, and is featured in products from both Linksys and D-Link, as well as the HP MediaSmart TV.

"While Extender defines a specific implementation, the more generic DLNA devices continue to gain widespread industry support," says ABI Research principal analyst Steve Wilson. "Today, however, these have less visibility at the consumer level."

But ABI Research believes that video is the big fish – and home networked–based approaches are beginning to take a back seat to efforts being made by companies that directly link Internet services with television. Leveraging their strong brands, companies such as Apple, Netflix, and TiVo are providing more vertically integrated solutions. At Macworld, Apple announced an upgrade for Apple TV, which allows consumers to rent movies directly from iTunes without going through a PC. The TiVo PVR now supports Amazon Unbox, allowing consumers to buy or rent from Amazon. In addition, Netflix and LG announced an agreement to work together – bringing Netflix movies directly to the living room via an LG client. In all probability, this client will be embedded in an existing LG product such as a TV, DVD player, or PVR.

Anywhere, Anytime Access and Sharing

- Remote Access to Content
- Content Distribution to Ecosystem of Devices
- EGHN to Ensure Quality of Experience

Linksys NAS

App	
HDD	Net Mgmt
EGHN Middleware	
Ethernet	

SA Cable-IP STB

Application			
HDD	DRM	GUI	Net Mgmt
UPnP AV- QoS 2.0-DLNA 1.5			
Wireless	Ethernet	MoCA	HPAV

Linksys DMA

Application		
DRM	GUI	Net Mgmt
EGHN Middleware		
Wireless		Ethernet

Linksys EGHN Router

Application
Net Mgmt
EGHN Middleware
Routing
Wireless / Ethernet

xDSL Modem

	SIP
Ethernet	xDSL
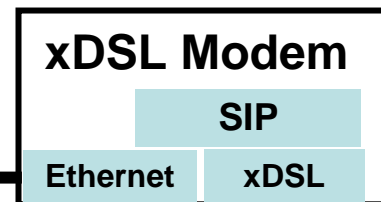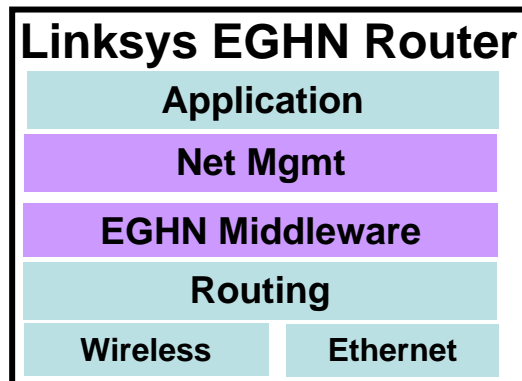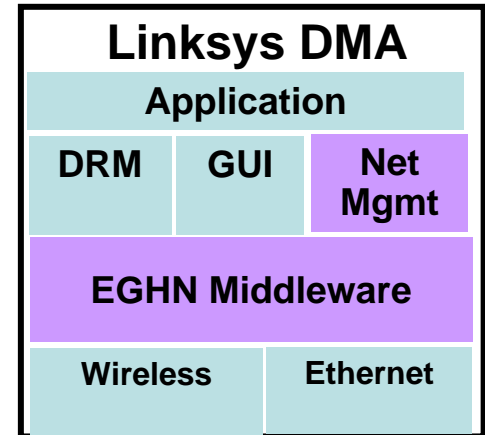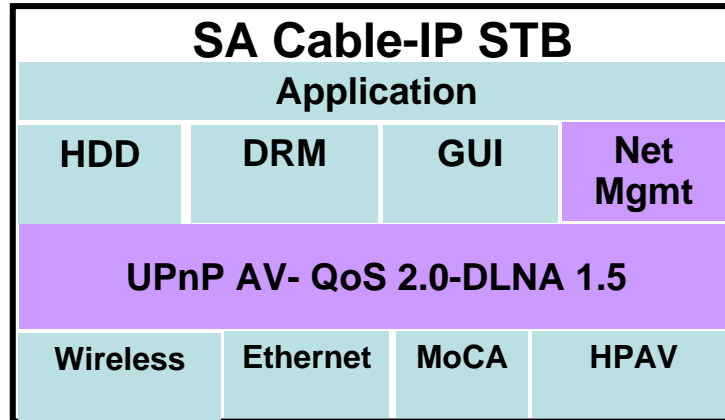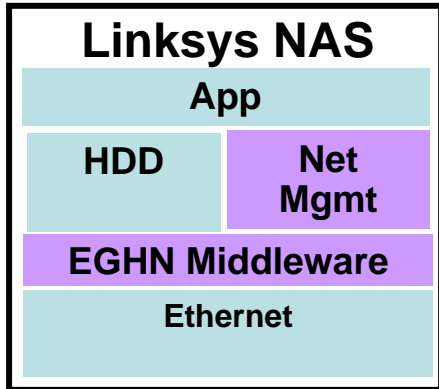
Nokia

Remote Access with Nokia Mobile Phones

- Nokia phones connects to your home network
- Via VPN or our Datacenter solution
- Via UPnP AV/DLNA 1.5 the phone will be able to gain access to you content on your devices
- We are now working on sync.
-Transcode –Transrate home content and more.
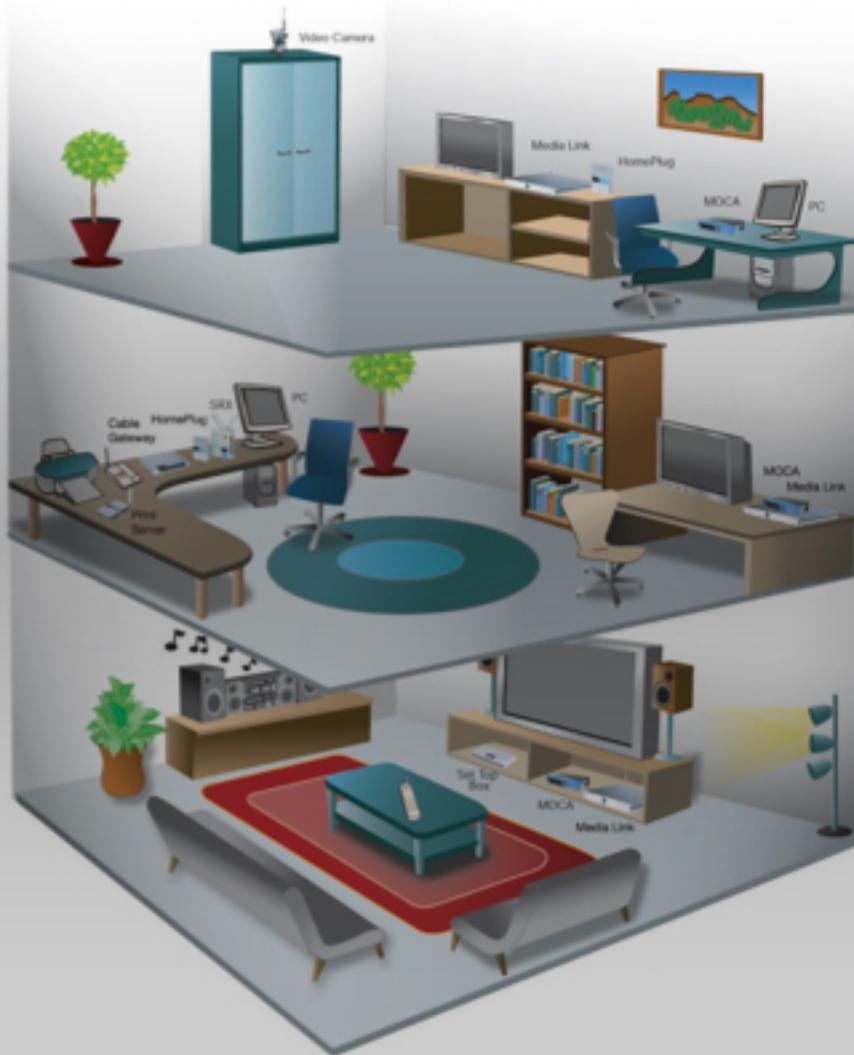
8%
power savings a unified fabric and I/O will deliver in the data center.

And this is how we built it

http://www._____tacenter/dcap

Other "Connected Home" Media devices

Internet Audio Center
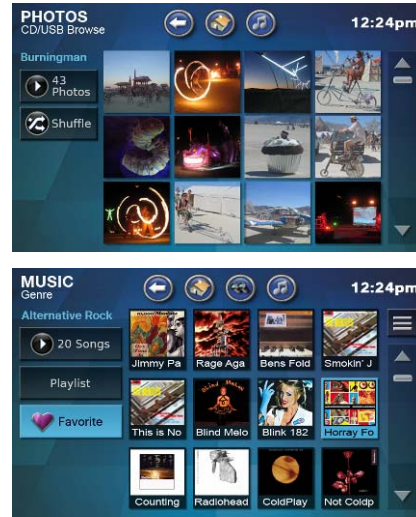
Internet Media Server

Digital Picture Frame

Home Phone System

Linksys NAS

- *n* configuration, single drive, dual, embedded disks, USB
- Scales > 1TB
- Security & Redundancy,
  - Raid 0,1
  - Client BackUp SW
- Media & Content Intelligence,
  - UPNP AV 2.0 Server
  - DLNA 1.5 Compliant

Release 2
- EGHN
- LLTD Server
- Microsoft DRM Server "Elvis"
- P2P download manager
- Transcode/ transrate in hardware

	Linksys NAS200	Linksys NMS 200 Release 1
Drive Bays	x2	x2
Drives	not included	320GB
Remote Access	HTTP, FTP	HTTP, FTP, Remote Access s/w
Setup Software	✓	✓
UPnP AV Server	DLNA 1.5	DLNA 1.5
Memory	32MB Flash 8MB	DDR2 128MB, Flash 8MB
10/100 (Ethernet)	✓	✓
1000 (GigE)		✓
USB	x2	x2
Backup Software	✓	✓
OS	Linux	Linux
JBOD	✓	✓
RAID0	✓ (2 Drives min.)	✓ (2 Drives min.)
RAID1	✓ (2 Drives min.)	✓ (2 Drives min.)
ASIC	**RDC 3210 150MHz**	Marvell 5182 400 MHz

- **WiFi**
  - IEEE 802.11b/g
  - 802.1x Authentication
  - External RADIUS Authentication
  - WPA2 and WPA Access
  - WEP, AES and TKIP Encryption
  - WPA/WEP Mixed Mode
  - Wi-Fi Multimedia Support (WMM)
  - Multiple SSIDs
  - MAC Address Filtering
  - WPS (Pushbutton and PIN Entry)
  - U-APSD

- **Device Characteristics**
  - 110-240VAC 50/60 Hz Switching Power-Supply; 12VDC, 2A Output
  - LEDs: Power, Ethernet, WLAN, Phone, Line, DSL, Internet, USB
  - Dimensions : 8.7" x 6.9" x 1.7" W x L x H (220mm x 175mm x 42mm)
  - Unit Weight 0.9 lb. (0.4kg)
  - Operating Temperature: 0 to +40C
  - Desktop, wall mount
  - Omni Directional External Antenna

- **ADSL Annex A**
  - ADSL [ITU 992.1]; ADSL2 [ITU 992.3]; ADSL2+ [ITU 992.5] ANSI T1.413 Issue 2.
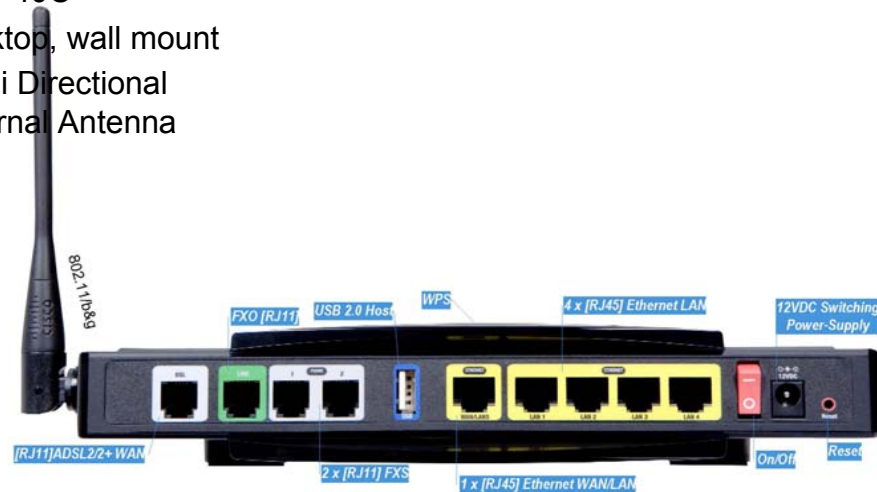
Linksys is building DSL platforms to meet ISP's requirements

Internet Video Camera Market Segments

High End Professional Segment

- Professional surveillance.
- Key vendors: Canon, Panasonic, Sony, Axis.
- D-Link has 1 model DSC6620G in this segment.

- CCD Sensor
- Optical Zoom Lens
- Pan & Tilt
- Price: $700 +

Middle End Surveillance Segment

- Surveillance and monitoring are the major applications.
- Key vendors: Axis, Toshiba, Sony
- Pan & Tilt are requested/required.

- CCD Sensor
- Fixed Focus Lens
- Digital Zoom, Pan & Tilt
- Price: $300 ~ $700

Middle End SOHO Segment

- Home and Store Monitoring are major applications.
- Major channels are retail and DIY markets.
- Low cost network DVR trend.

- CMOS Sensor
- Fixed Focus Lens
- Digital Zoom
- Price: $150 ~ $300

Low End Consumer Segment

- Home Monitoring
- Major channels are retail and DIY markets.
- Mobile Phone support is a new development.

- CMOS Sensor
- Fixed Focus Lens
- Price: Under $150

Z-wave: home control and monitoring technology

- Cisco is investor in Zensys, and influenced TCP/IP as transport
- Zensys has developed Z-Wave™, a low-cost RF-based control and monitoring technology
- Z-Wave enables embedded intelligence and wireless communication for applications such as
  - lighting and appliance control
  - meter reading
  - thermostat and ventilation control
  - Security
  - residential gateway connectivity
- Z-Wave transforms stand-alone device into an intelligent networked device that can be controlled and monitored wirelessly

Stand alone control subsystems
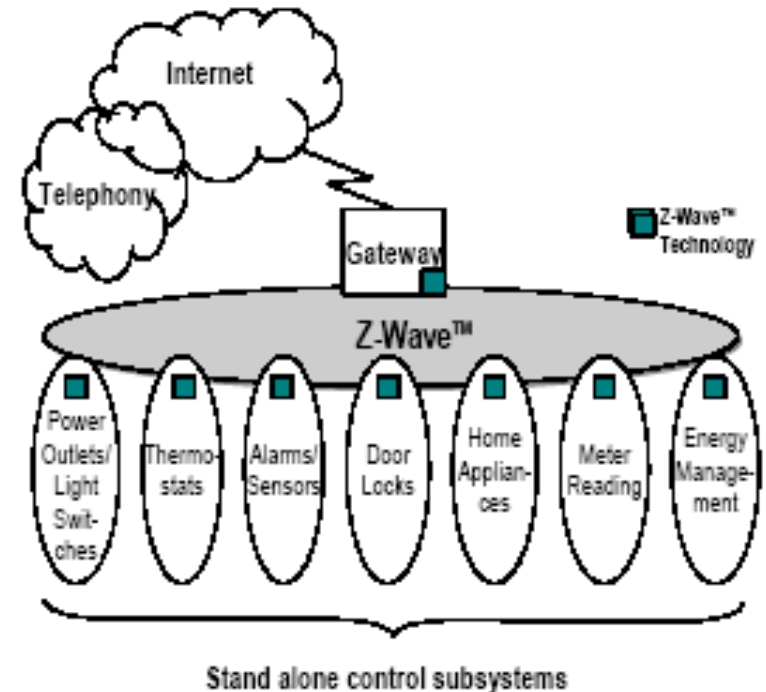
Zen-sys home automation

Z-Wave World of Home Control Solutions

Average # of Nodes per Home

Simple Home Control	Homes	Appts
1 / 2 / 3-way switches	~ 10	~ 5
Light / lamp dimmers	~ 12	~ 5
Universal remote control	~ 3	~ 1
Appliances	~10	~ 5
Smoke sensors	~8	~ 3
Remote Home Monitoring		
Door / window sensors	~ 15	~ 5
Door locks	~ 3	~ 1
PIR / IP cameras	~ 5	~ 2
Gateway & Management SW	~ 1	~ 1
Energy Conservation		
Thermostats	~ 3	~ 1
Smart appliances	~10	~ 4
Entertainment Control		
Media Center PC	~2	~ 1
TV / STB / DMA / PVRs	~8	~ 3
Drape control	~8	~ 4
Home Health Care		
Smart gateway / USB	~2	~ 1
Pressure sensors	~8	~ 4
Medical sensors	~12	~ 6
Gas / Co2 sensors	~5	~ 3
Other		
Ceiling fans		
Garage door openers		
Door locks		
Total Number of Nodes	**~ 125**	**~ 55**

Energy Conservation

Entertainment Control

@ Work

On the Road

Home HealthCare

Remote Home Monitoring

Internet Media Server

- **New class of Media Server – Store and access all of your Music, Photo and Home movies with or without a PC**

- **Free space UI and remote that makes discovering your content a fun experience**

- **Easily create your Music Playlists and Custom channels**

- **Wireless connection to all your content stored on your PC and networked devices**

- Major Functionality (C-series)
  - CD/DVD Player
  - AV Server
  - Audio/Video/Photo DMA
  - Online Info and Content
  - HC ZUI with Ring Remote
- Video Outputs
  - Component, HDMI
  - Video Scaling (1080p)
- Audio Outputs
  - Stereo Analog, SPDIF Coax, Toslink

- Miscellaneous
  - 200+GB HDD
  - 2 IR outputs for SI control
  - Audio Encode (MP3, WMA, AAC, FLAC)
- Connectivity
  - USB2.0
  - 10/100 Ethernet and 802.11n (DB) with EGHN
- Interoperability
  - UPnP and DLNA 1.5

Media Server Sample UI

Internet Audio Center

- **Bring your digital music experience to new locations in the home such as your kitchen**

- **Enjoy premium music and Internet Radio services w/ or w/o PC**

- **Easily find your music on a Hi-res. LCD Touch-screen with a rich graphical User Interface**

- Major Functionality (C-series)
  - CD Player (optional)
  - AM/FM Tuner (optional)
  - Audio/Photo DMA
  - Online Info and Streaming Content
  - HC ZUI with Touch screen
- A/V
  - 2.1 Internal speakers and amps
  - 2 Analog audio inputs
  - Headphone output

- Connectivity
  - USB2.0
  - 10/100 Ethernet
  - 802.11n (dual band) with EGHN
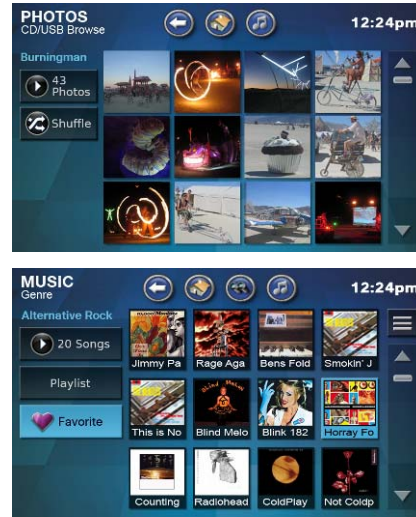- Interoperability
  - UPnP and DLNA 1.5

Audio Center Sample UI

Other "Connected Home" Media devices

Internet Audio Center

Internet Media Server

Digital Picture Frame

Home Phone System