



# **Server-based Routing of Video Calls**

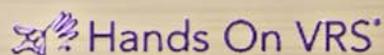
***Presentation to FCC***

***Purple Communications, Inc.***

**October 19, 2009**

# Purple Introductions

- **Mark Stern**, VP of Technical Program Management
- **David C. Rein**, Director of Development
- **Russ Albright**, VP of Product Design & Engineering
- **George Sutcliffe**, VP of Product Marketing
- **Kelby Brick**, VP of Regulatory and Strategic Policy
- **George Lyon**, Director of Regulatory Compliance



# Agenda

- Introductions
- Desired Outcomes
- Challenges with Direct IP Routing
- Scenarios
- Benefits of Server-Based Routing
- Discussion
- Next Steps



# Desired Outcomes: *Why We're Here*

- **Clarify FCC rules:**
  - Allow Server-based Routing for VRS calls
  - Allow for more flexible URIs in the iTRS directory
- **Gain your support for Server-based Routing**

# Challenges with Direct IP Addressing

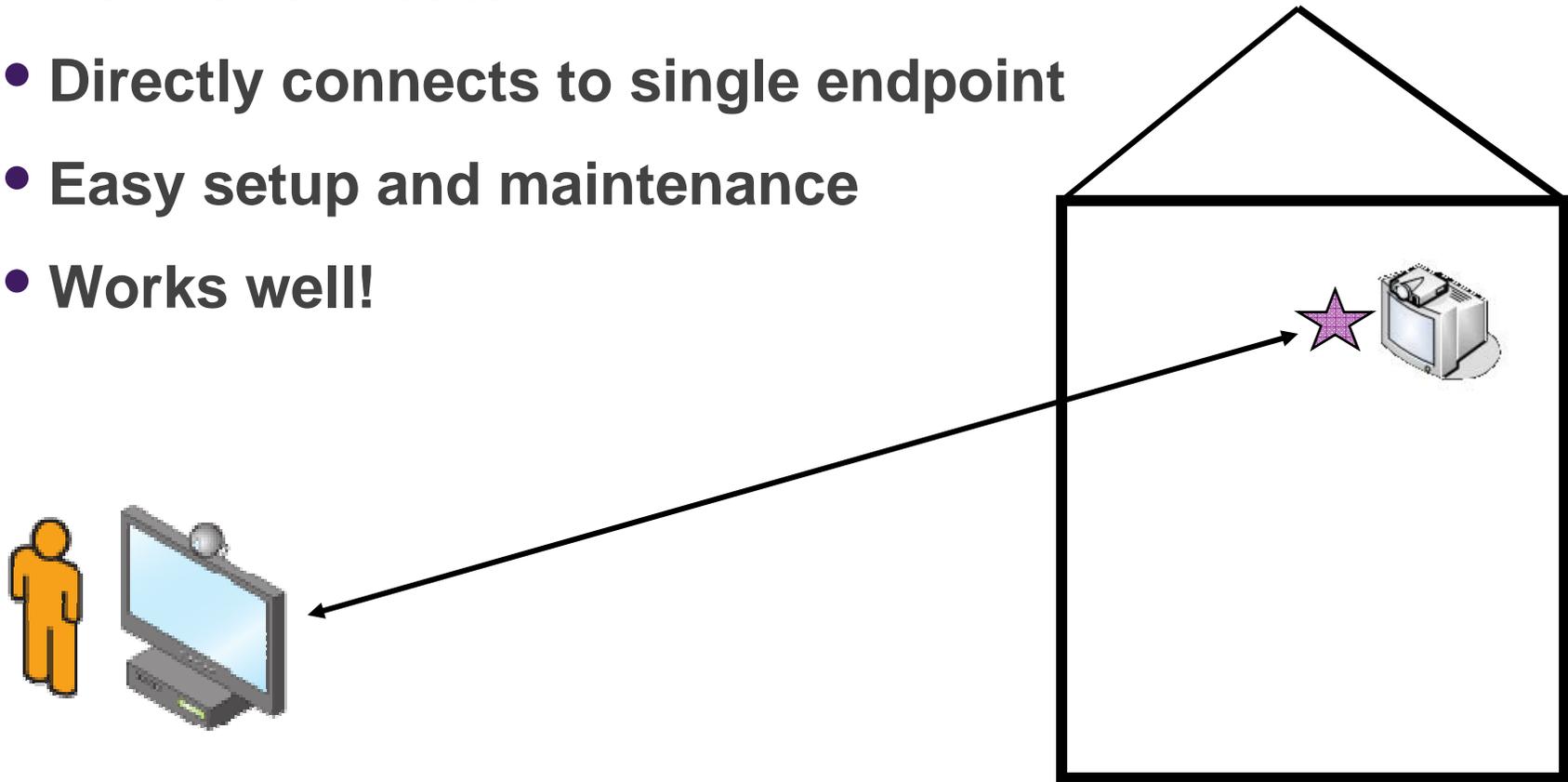
- For telephone numbers in the iTRS Numbering Directory connected to video endpoints, FCC rules *appear to require only* a direct IP address
- What we're learning:
  - a) One device per IP address/Port; not flexible "as is"
  - b) Firewalls & routers must be manually configured, especially when customizing ports
  - c) Impedes migration to other protocols; assumes H.323 which has many proprietary implementations
  - d) Impedes use of software-based endpoints; assumes hardware solutions where one device = one IP address

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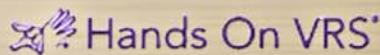
**Home Scenarios**

# Home Single Endpoint Setup

- Static IP address
- No firewall/router
- Directly connects to single endpoint
- Easy setup and maintenance
- Works well!

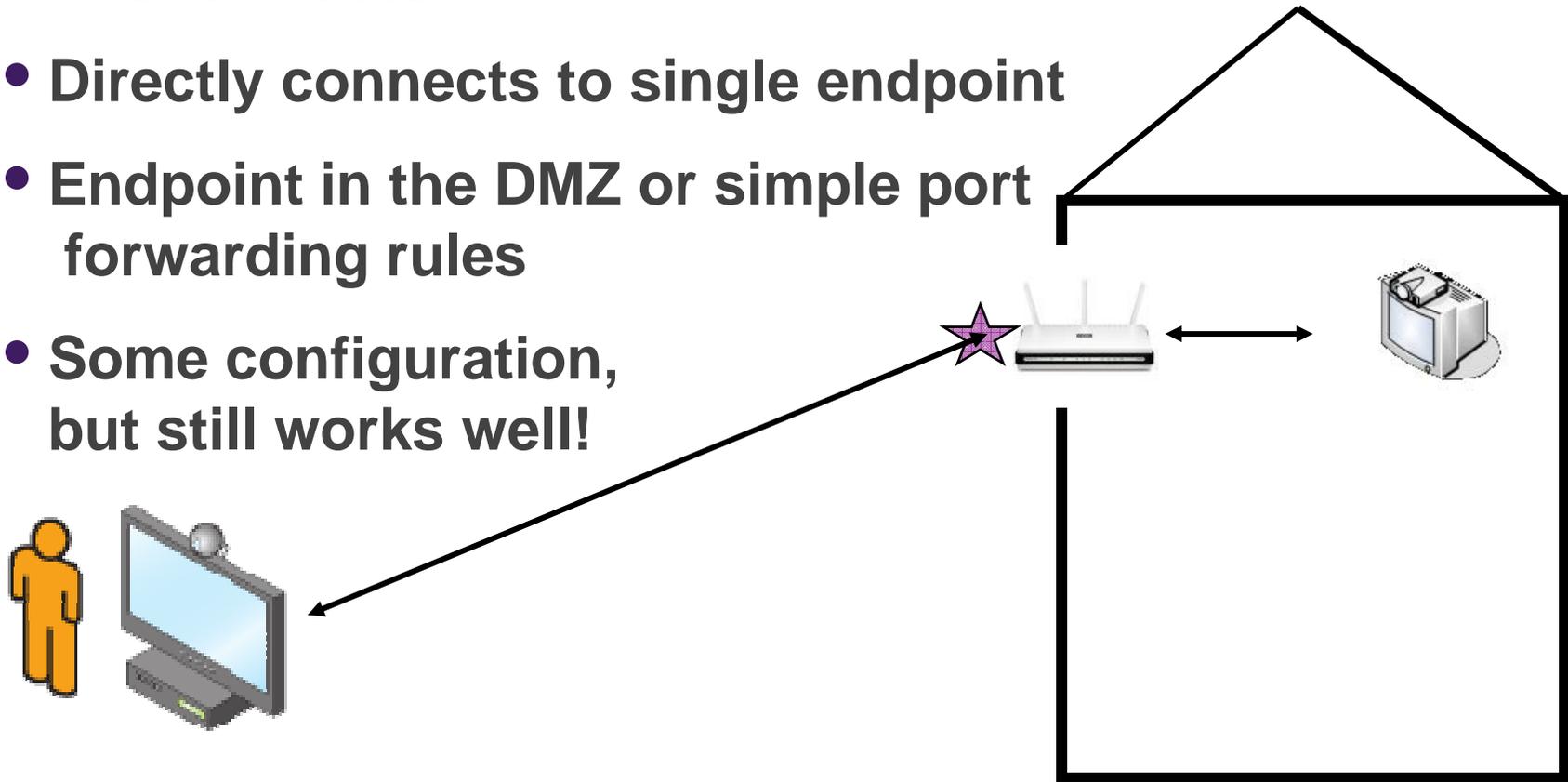


- User's Internet Presence Point

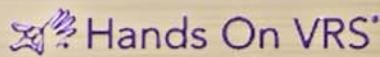


# Home Single Endpoint Setup

- Dynamic IP address
- Firewall/router
- Directly connects to single endpoint
- Endpoint in the DMZ or simple port forwarding rules
- Some configuration, but still works well!

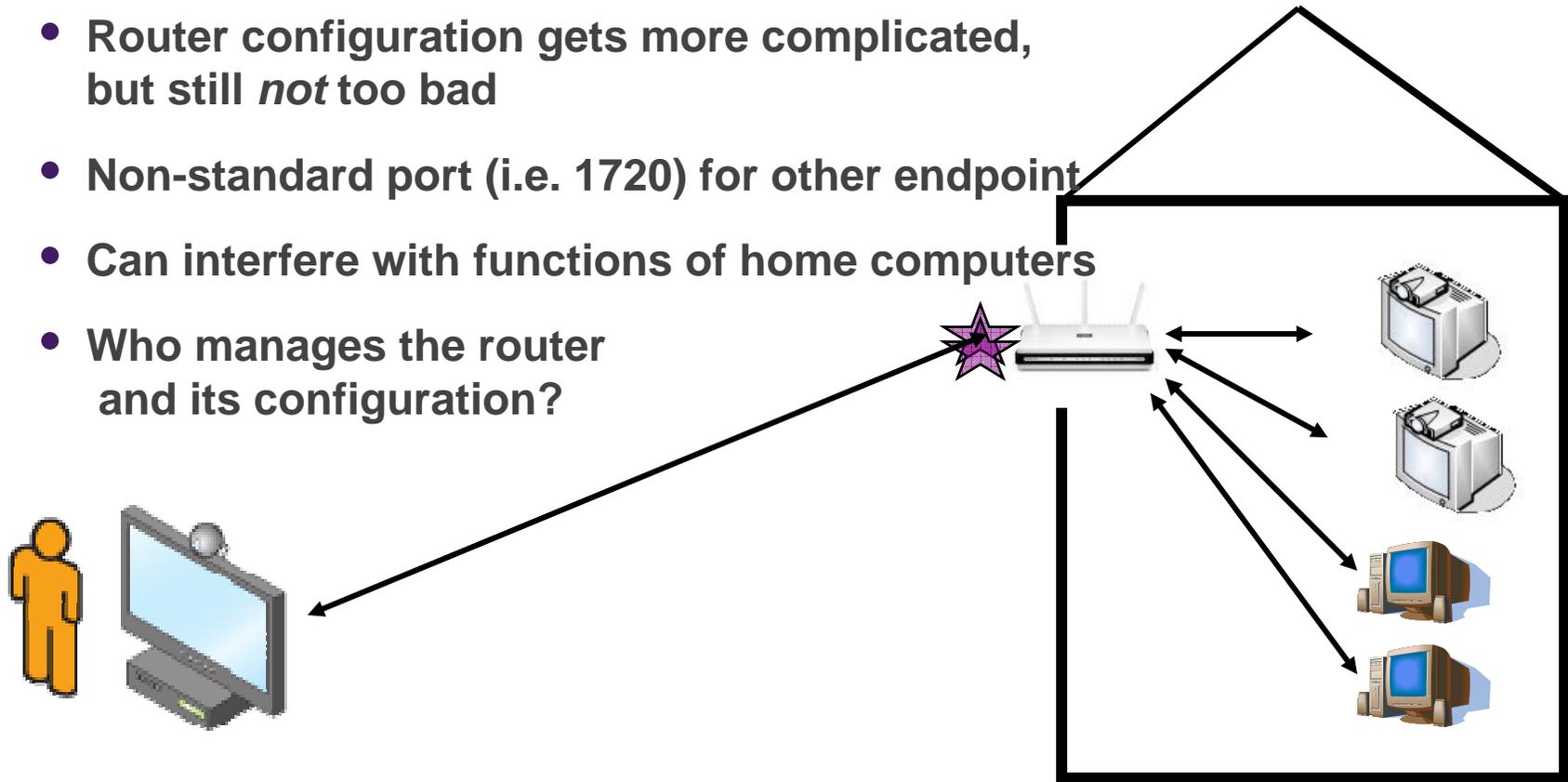


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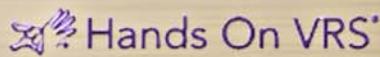


# Home Multiple Endpoint Setup

- Dynamic IP address
- Firewall/router
- Router configuration gets more complicated, but still *not* too bad
- Non-standard port (i.e. 1720) for other endpoint
- Can interfere with functions of home computers
- Who manages the router and its configuration?

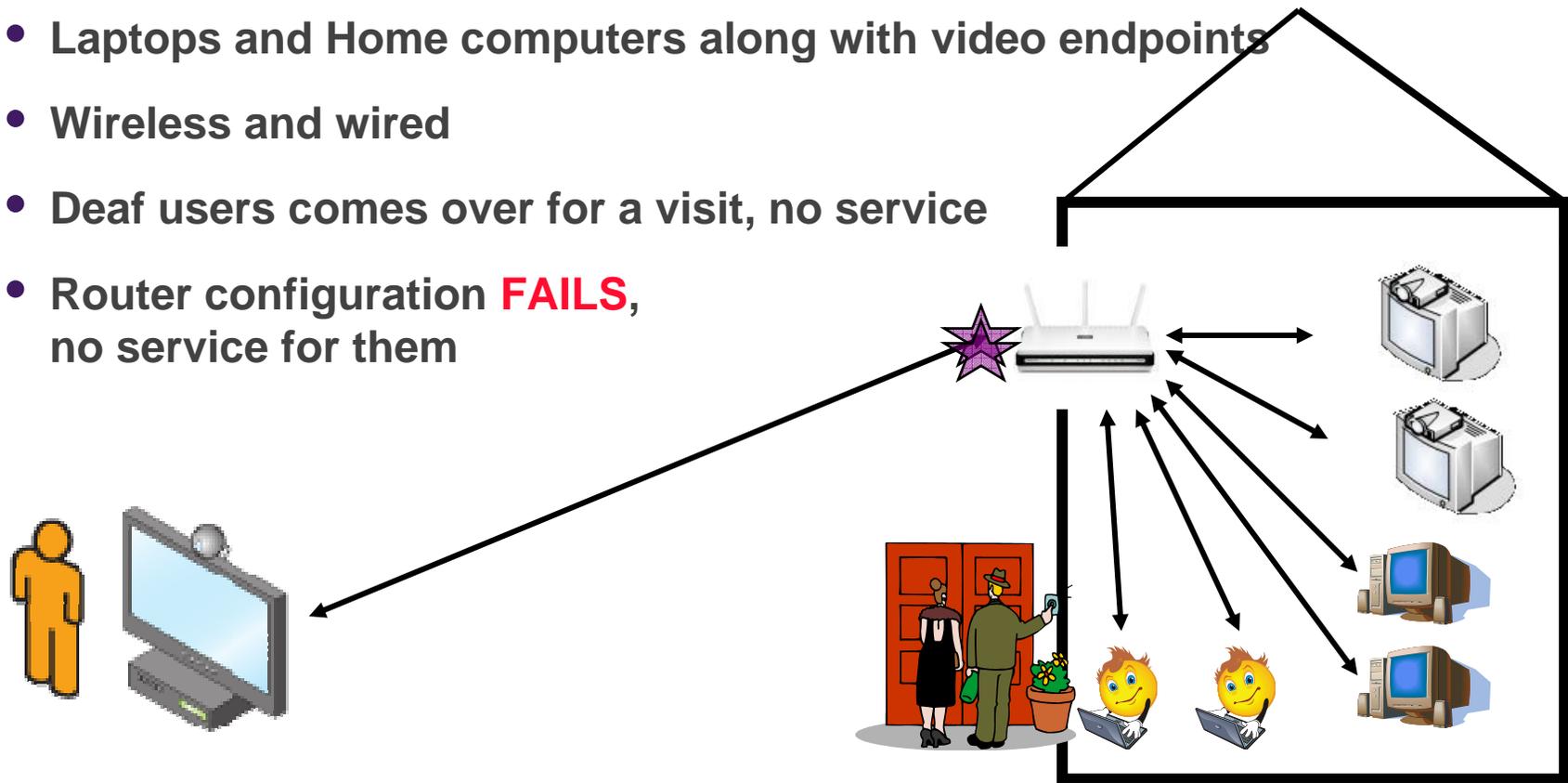


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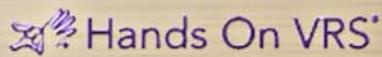


# Home Multiple Endpoint/Computer Setup

- Dynamic IP address
- Firewall/router
- Laptops and Home computers along with video endpoints
- Wireless and wired
- Deaf users comes over for a visit, no service
- Router configuration **FAILS**, no service for them

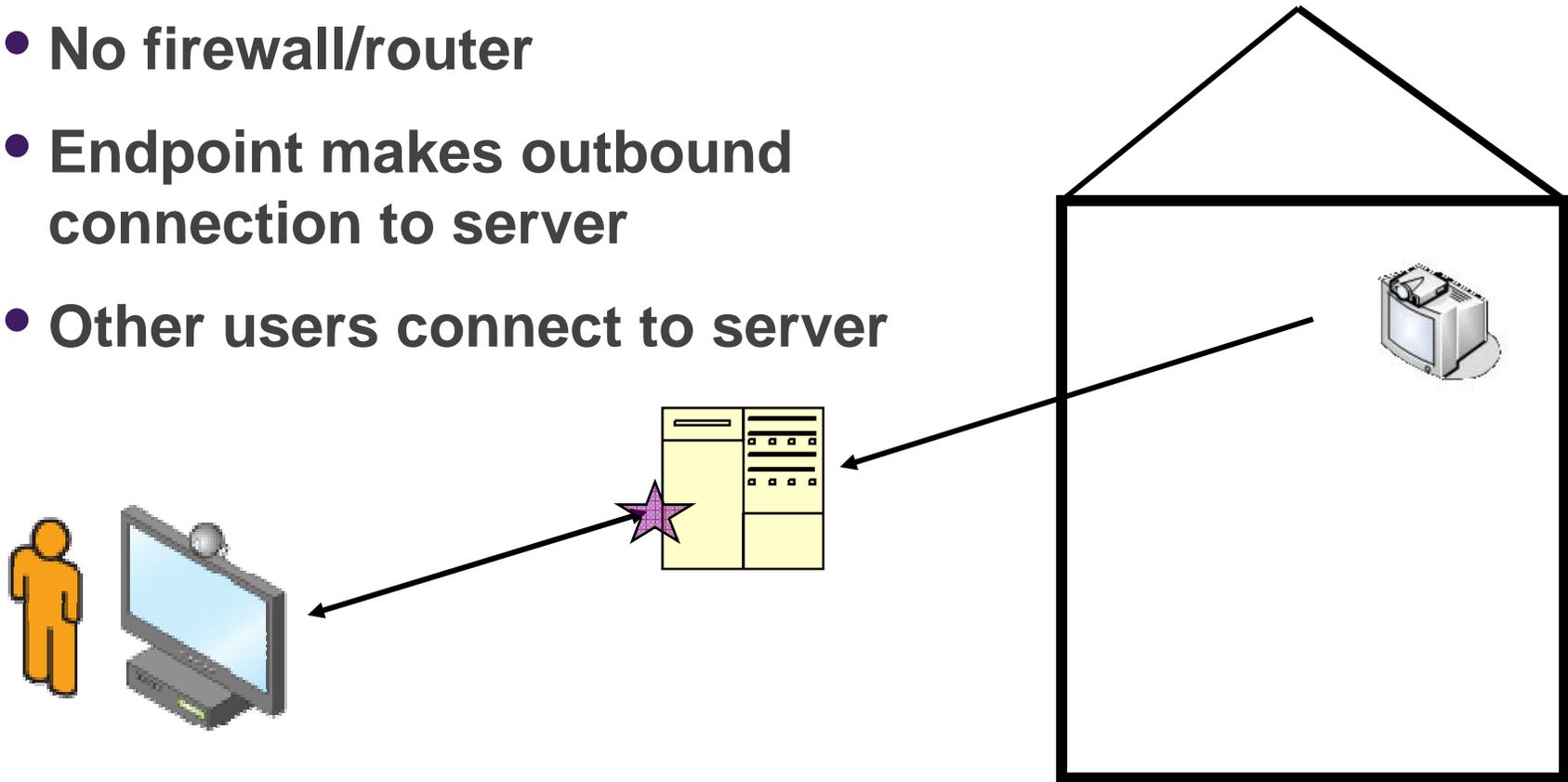


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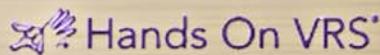


# Server-based Home Single Endpoint Setup

- Can be static or Dynamic IP address
- No firewall/router
- Endpoint makes outbound connection to server
- Other users connect to server

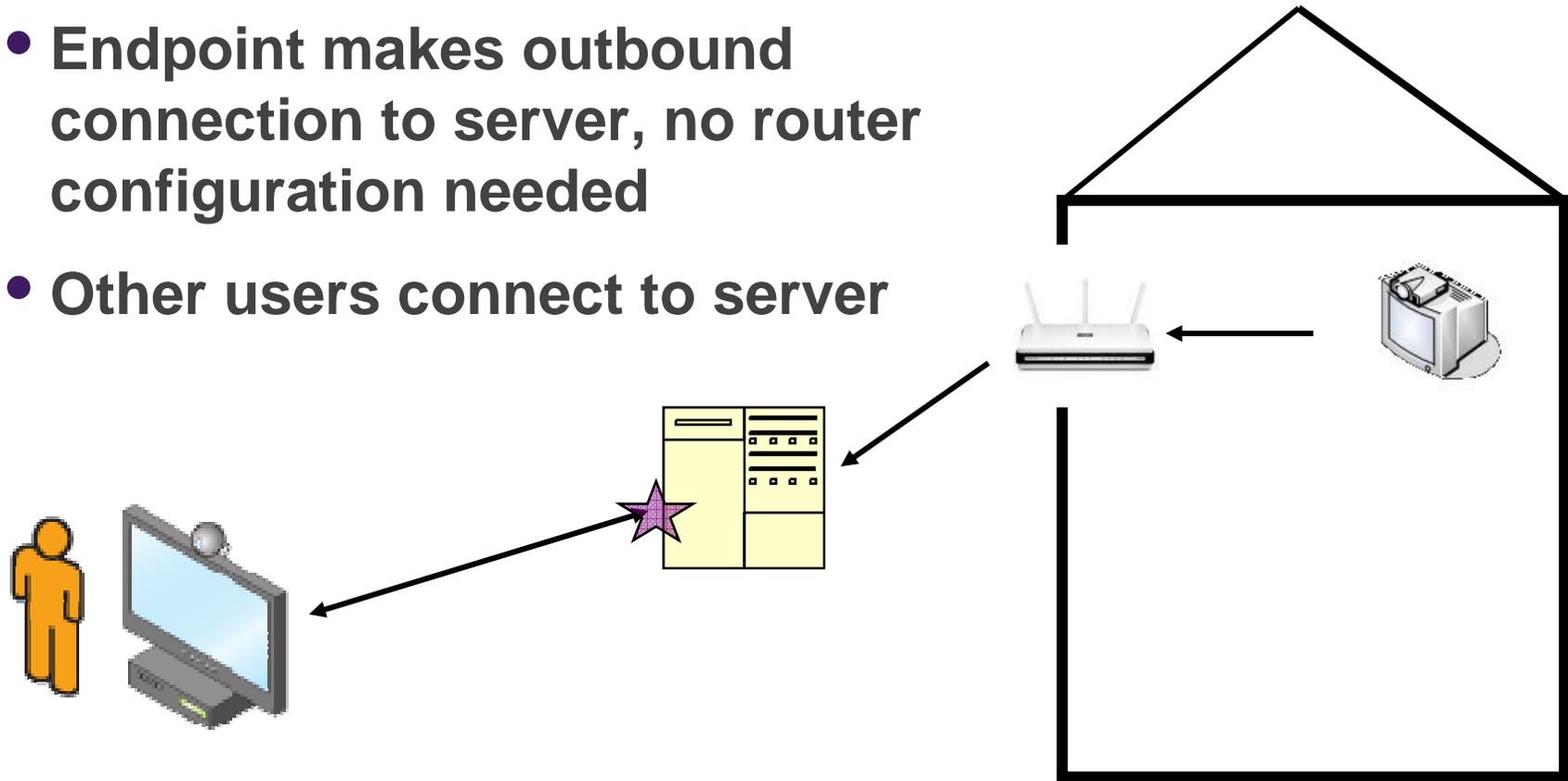


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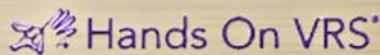


# Server-based Home Single Endpoint Setup

- Can be static or Dynamic IP address
- Endpoint makes outbound connection to server, no router configuration needed
- Other users connect to server

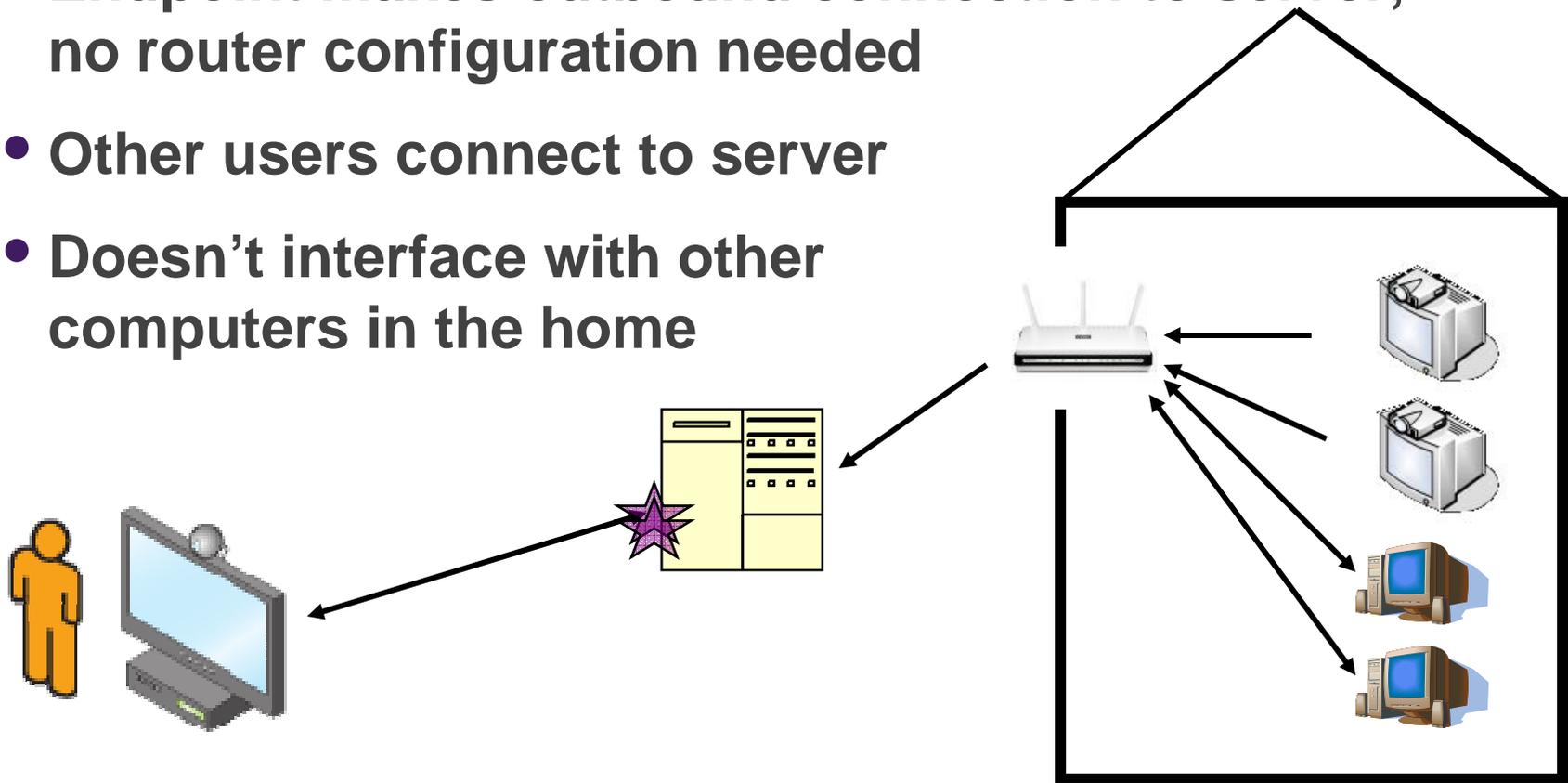


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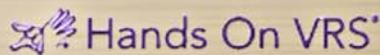


# Server-based Home Video Endpoint Setup

- Can be static or Dynamic IP address
- Endpoint makes outbound connection to server, no router configuration needed
- Other users connect to server
- Doesn't interface with other computers in the home

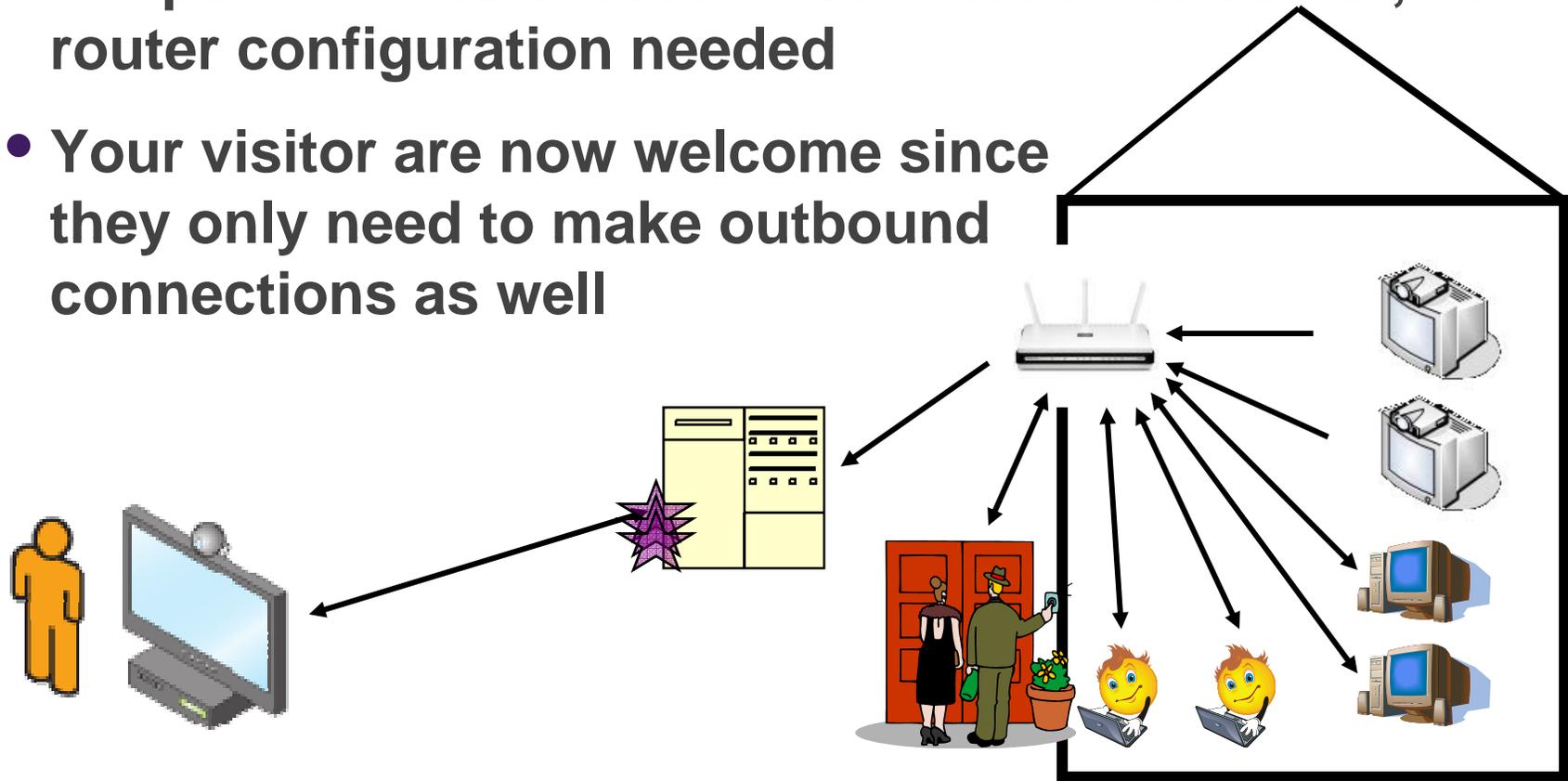


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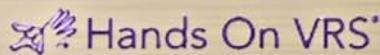


# Server-based Home Video Endpoint Setup

- Can be static or Dynamic IP address
- Endpoint makes outbound connection to server, no router configuration needed
- Your visitor are now welcome since they only need to make outbound connections as well



- User's Internet Presence Point



# Home Scenarios

## Multiple phones in a single home

- Multiple family phones in the home (TV room, kitchen, home office) all sharing the same phone number
- Multiple phones in a home, each with different numbers

### Direct IP Addressing User Experience

- On outbound calls, incoming video blocked (“black screen” problem)
- Inbound calls “ring” to the wrong endpoint or not at all
- Buy static IP addresses for each additional endpoint
- Multiple routers or complex router configurations to support multiple endpoints

### Server-based Routing User Experience

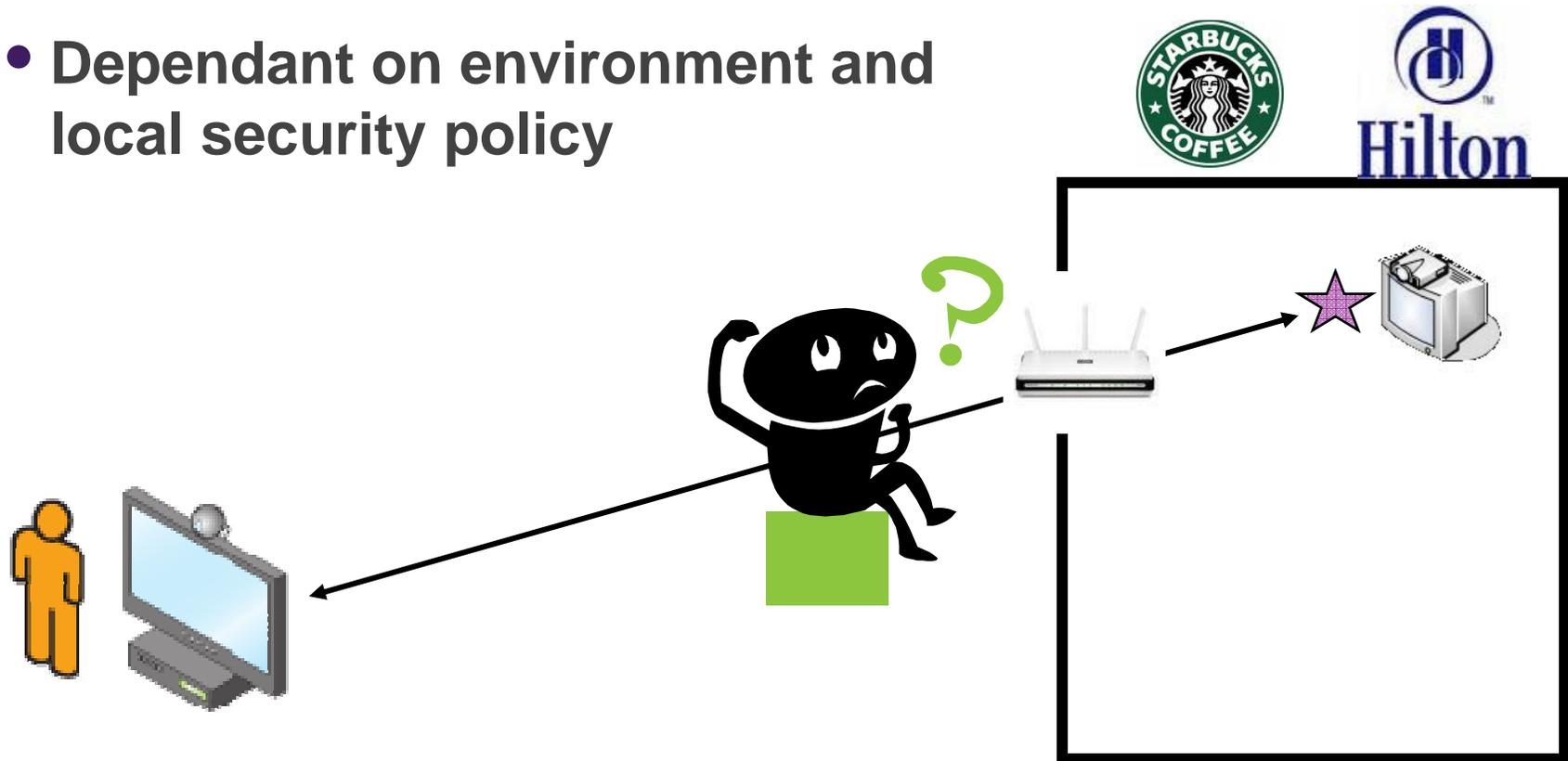
- Plug-and-Play
- Enables multiple endpoints at a single location with no custom router configuration
- Supports a single, shared, number across multiple endpoints
- Allows for unique numbers for each endpoint

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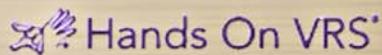
**Mobile Scenarios**

# Mobile Endpoint Setup

- Dynamic IP address
- No standard configuration
- Dependant on environment and local security policy

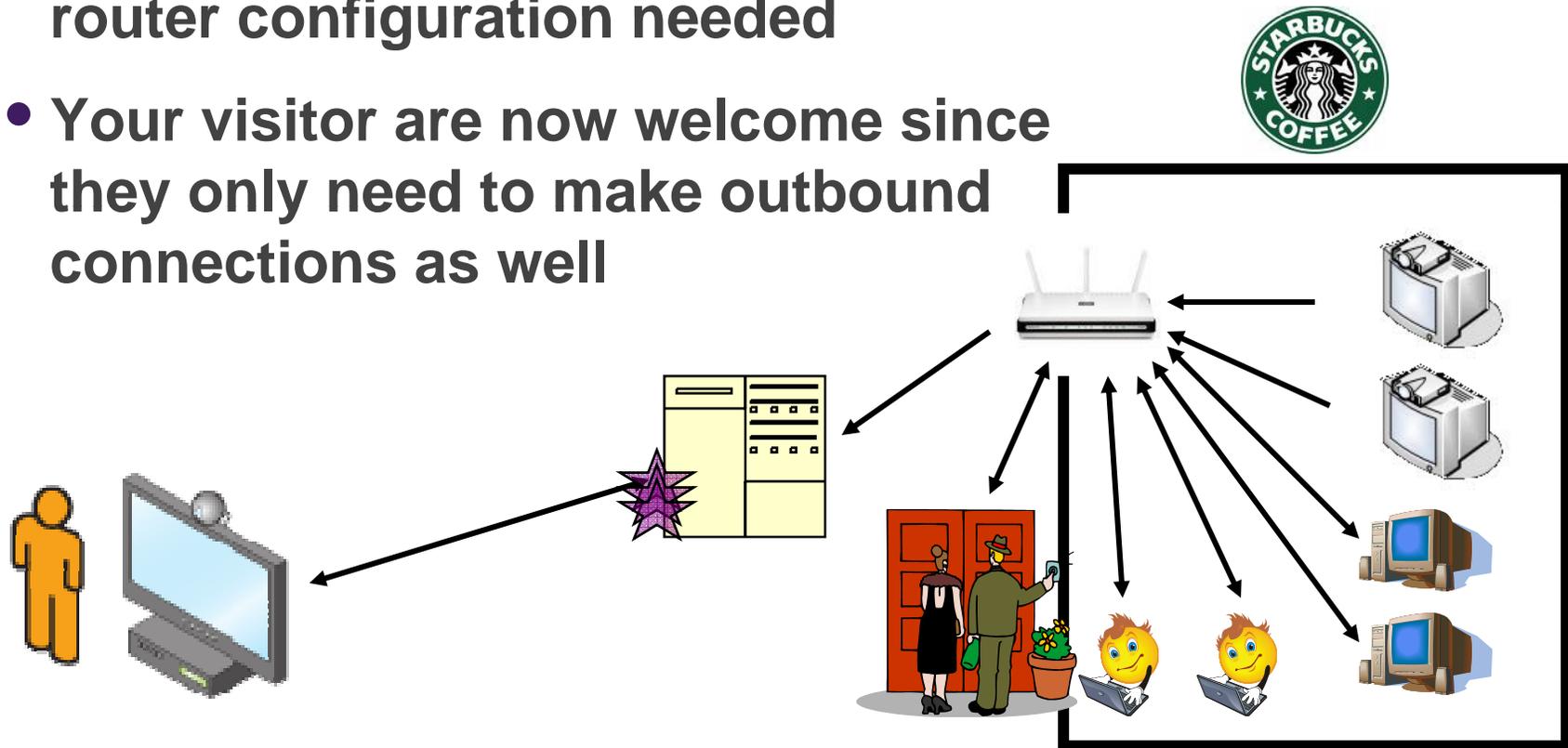


- User's Internet Presence Point

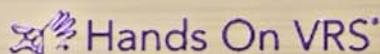


# Server-based Wifi/Hotspot Endpoint Setup

- Can be static or Dynamic IP address
- Endpoint makes outbound connection to server, no router configuration needed
- Your visitor are now welcome since they only need to make outbound connections as well

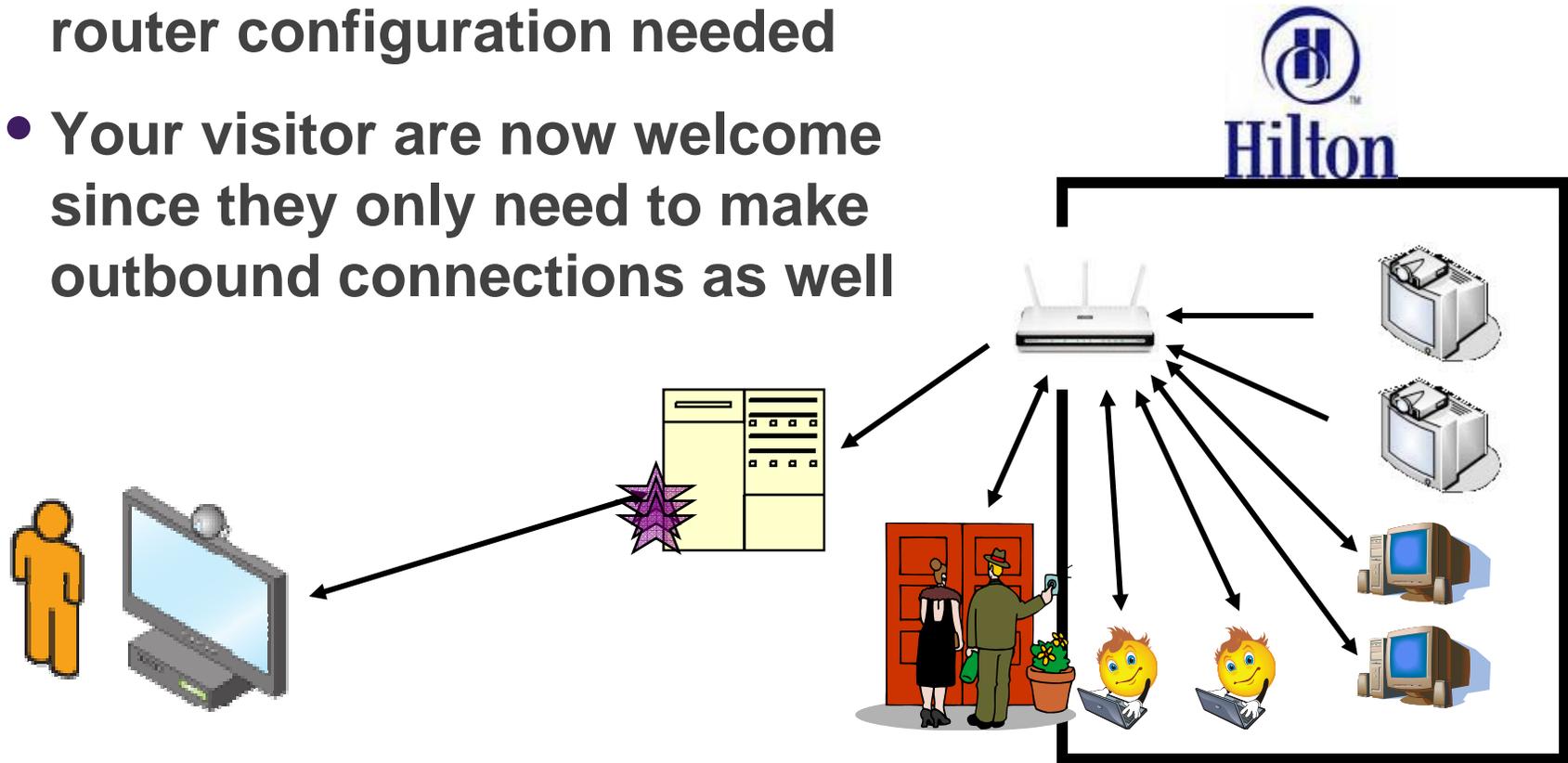


- User's Internet Presence Point

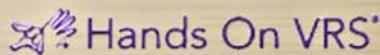


# Server-based Hotel Endpoint Setup

- Can be static or Dynamic IP address
- Endpoint makes outbound connection to server, no router configuration needed
- Your visitor are now welcome since they only need to make outbound connections as well



- User's Internet Presence Point



# Mobile Scenarios

## Mobile access to VRS

- Hotels
- Hot spots (airports, coffee shops, etc.)
- Friends' homes

### Direct IP Addressing User Experience

- On outbound call, incoming video often blocked by firewall or router
- Unable to receive inbound calls, without access to router
- 10-Digit numbers tied to a previously-used IP address until logged back in

### Server-based Routing User Experience

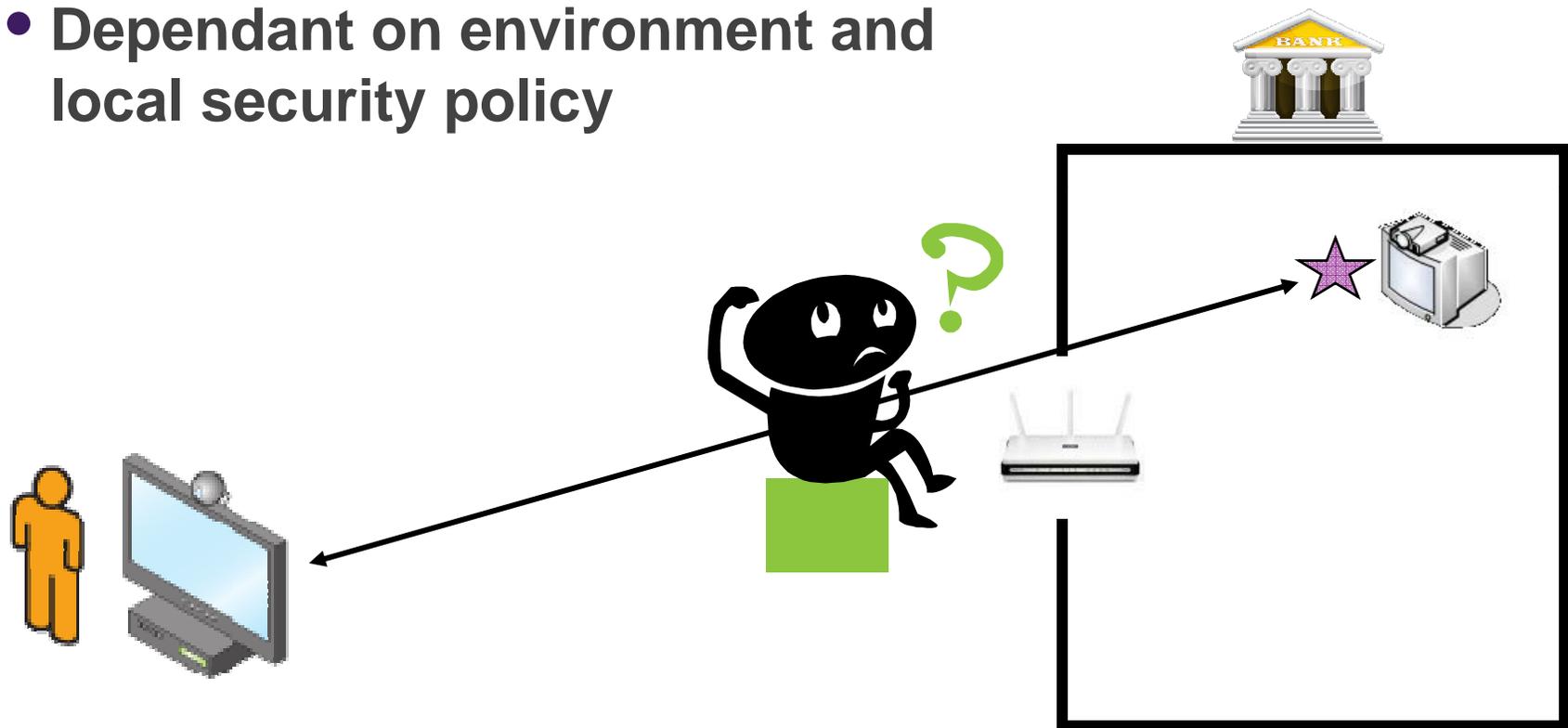
- Incoming calls come through
- 10-Digit numbers always up-to-date on server
- Plug-and-Play

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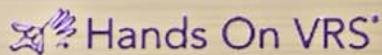
**Work Scenario**

# Work Endpoint Setup

- Static IP address
- No standard configuration
- Dependant on environment and local security policy



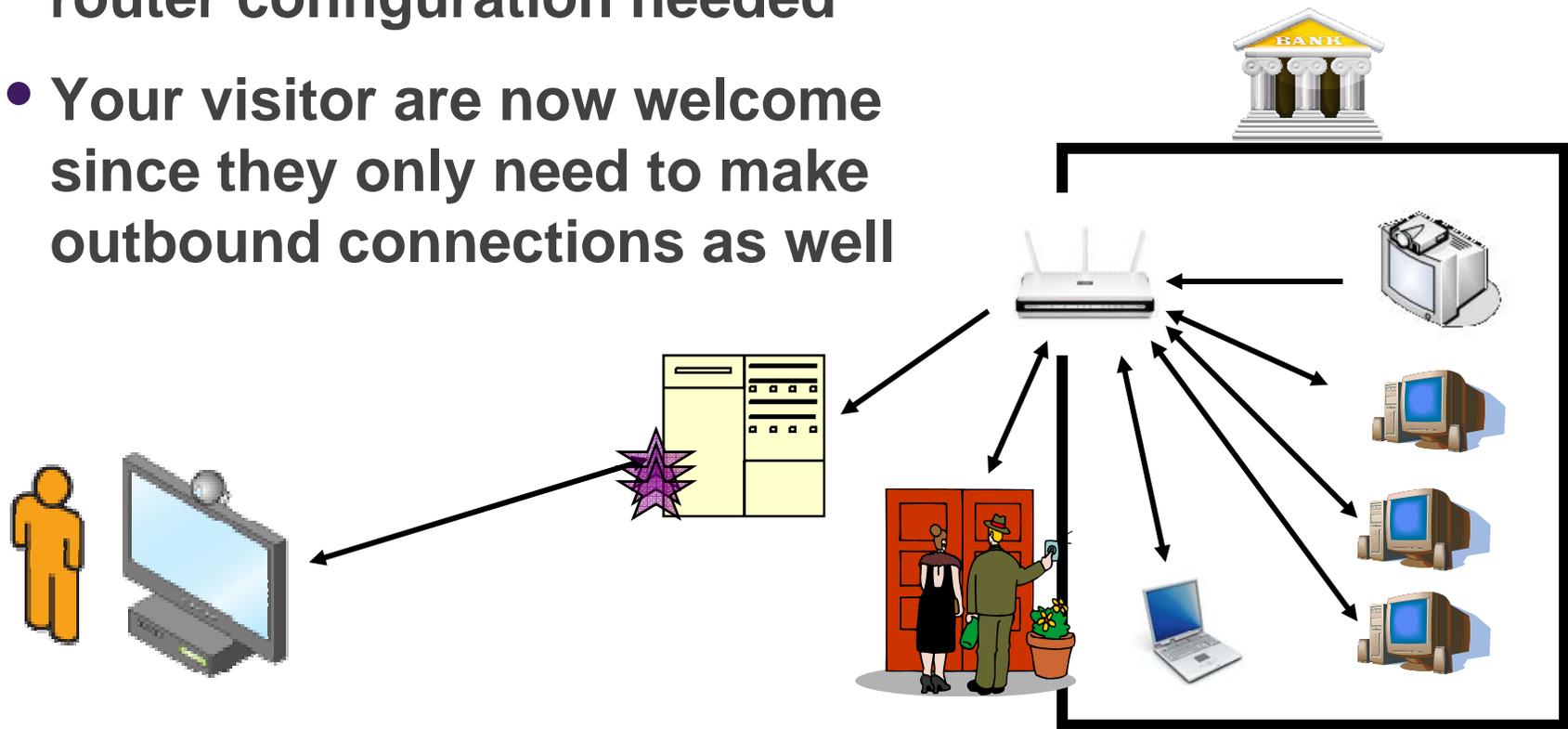
- User's Internet Presence Point



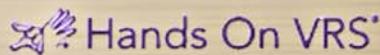
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# Server-based Work Endpoint Setup

- Can be static or Dynamic IP address
- Endpoint makes outbound connection to server, no router configuration needed
- Your visitor are now welcome since they only need to make outbound connections as well



- User's Internet Presence Point



# Work Scenarios

## VRS needs in the workplace

- Going from home to work and then from work to home again
- Local and remote travel to meetings; *cube-hoteling*

## Corporate/Employer Control of Network

- Very tight security on most corporate/government networks
- IT departments not willing to or unable to open ports due to security concerns; long lead times with network changes

### Direct IP Addressing User Experience

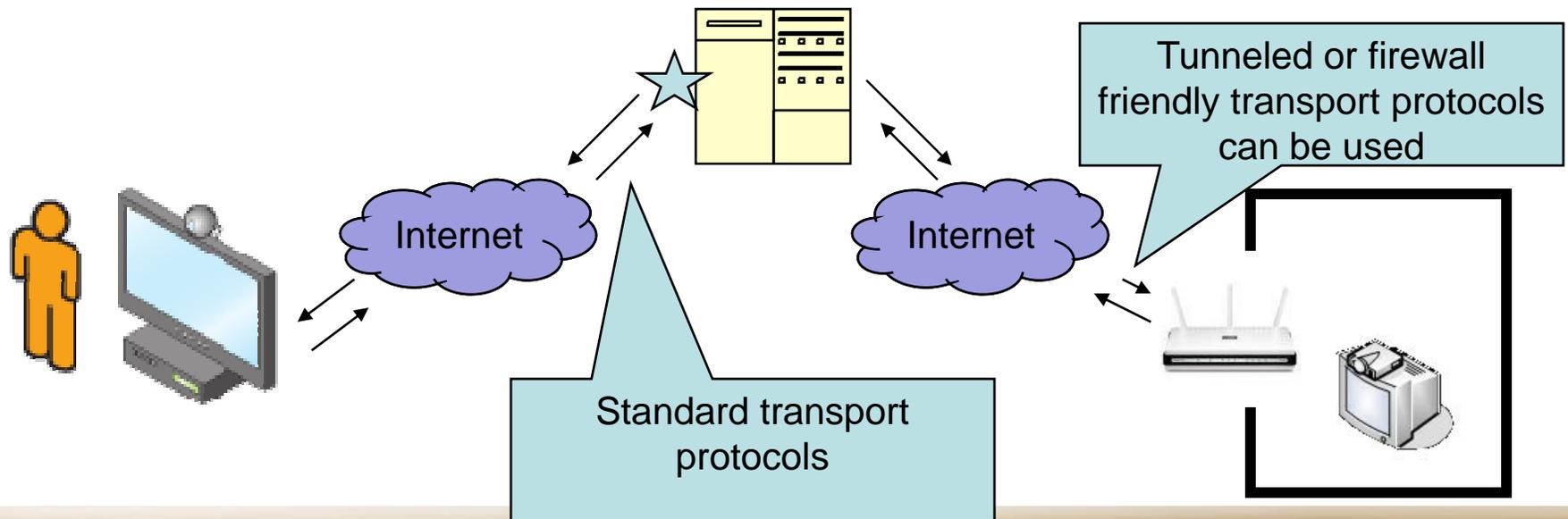
- User must negotiate with IT for VRS access or do without VRS
- VRS access limited to fixed office location; redo if location changes
- Inbound video calls will not likely be enabled

### Server-based Routing User Experience

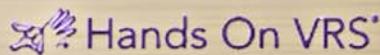
- Corporate IT doesn't have to open ports or customize firewall
- Plug-and-Play (widely accepted)
- More mobility within the workplace

# Server-based Routing

- Server represents the user's presence on the Internet
- Server can respond on behalf of the user if they are not present, or out of network coverage
- Facilitates communications between two users if network connectivity is an issue

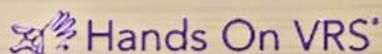


★ - User's Internet Presence Point



# Benefits of Server-Based Routing

- **Plug-and-Play installation**
- **Enable use of endpoints in multiple locations**
- **Multiple endpoints in a household or work location with:**
  - The same 10D number
  - Different 10D numbers
- **Improved reliability and security**
- **Integration of “off-the-shelf” components**



# FCC action requested

- Clarify that VRS providers have the flexibility to populate the iTRS database through server routing or similar methods -- that do not necessarily require the use of an IP Address -- as necessary to ensure service and take advantage of technological advancements.