Home Technology Integrator Certification
HTI+ Residential Systems Examination Objectives
HT0-101

Final: November 2002

Introduction

The HTI+ certification is a vendor-neutral cross-industry credential providing recognition that a Home Technology Integrator (HTI) professional has attained a standard of excellence in the integrated home networks industry. The HTI+ certification is based on a set of standards designed to measure the mastery of core competencies regarding the installation, integration and troubleshooting of the following sub-systems: **Home Security, Audio/Video, Computer Networks, Electrical Wiring, HVAC (Heating/Air Conditioning Systems), Cable/Satellite, Broadband, Telecommunications and Structured Wiring**. In order to achieve the HTI+ Certification, the candidate must successful pass both this examination and the HTI+ Systems Infrastructure and Integration examination.

This exam targets individuals who want to demonstrate a knowledge and skills baseline that enables them to work with the security, comfort, and entertainment subsystems of the automated ("connected") home. By successfully demonstrating this knowledge and skill sets, the candidate is enabling oneself to pursue a career as a technician supporting the diverse services and needs of the automated ("connected") home industry. This exam not only helps individuals enter the industry, but it also helps consumers, the building trades industry, and hiring managers determine whether a prospective employee has the appropriate level of technical knowledge and skill.

The skills and knowledge measured by this examination are derived from a North American focused job task. The intent is to certify individuals in a body of knowledge that is identified and accepted as the baseline or foundation set of skills and knowledge that are possessed by home integration professionals with one to two years of experience.

Note: This examination blueprint for the HTI+ Residential Systems examination includes weighting, test objectives, and example content. Example topics and concepts are included to clarify the test objectives and should not be construed as a comprehensive listing of all the content covered by this examination. This blueprint may undergo additional minor modifications during the test development phase.

The table below lists the domains measured by this examination and the approximate extent to which they are represented in the examination.

Domain	% Of Examination
1.0 Computer Networking Fundamentals	25%
2.0 Audio/Video Fundamentals	20%
3.0 Home Security and Surveillance Systems	10%
4.0 Telecommunications Standards	10%
5.0 Home Lighting Control	10%
6.0 HVAC Management	10%
7.0 Water System Controls	10%
8.0 Home Access Controls	3%
9.0 Misc Automated Home Features	2%
Total	**100%**

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Response Limits

The examinee selects, from four (4) or more response options, the option(s) that best completes the statement or answers the question. Distracters or wrong answers are response options that examinees with incomplete knowledge or skill would likely choose, but are generally plausible responses fitting into the content area. Test item formats used in this examination are:

Multiple-choice: The examinee selects one option that best answers the question or completes a statement. The option can be embedded in a graphic where the examinee "points and clicks" on their selection choice to complete the test item.

Multiple-response: The examinee selects more then one option that best answers the question or completes a statement.

Sample Directions:
Read the statement or question and from the response options, select only the option(s) that represent the most correct or best answer(s).

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Domain 1.0 Computer Networking Fundamentals

This domain requires that the candidate has the knowledge of a wide range of computer networking fundamentals including the following: networking hardware equipment, industry standards and protocols, network design considerations and industry practices, and network data transmission methods. In addition, candidates should have the knowledge and skills required to design, implement and maintain, a home computer network. The ideal target candidate will have at least 9 –12 months IT networking field experience, and be able to identify and describe key industry terminology.

This domain subcategory examines the following project management concepts and modules:

- Identify client's current and future needs
- Project design scope of work integrating equipment, budget and timeline constraints
- Conduct a site/project survey--type of construction (e.g., remodel, new construction, retrofit, single/multi-story, single/multi-family dwelling)
- Conduct a site/project survey--current environment (existing equipment and systems)
- Conduct a site/project survey--location of equipment, systems, geographic location of house (rural, suburban, urban), and topography (mountains, desert)
- Define the scope of services
- Develop preliminary design(s) and proposal (scope of work/equipment, budget, timeline, payment terms)
- Review proposal with client and obtain approval
- Confirm equipment list and procure
- Develop connectivity documentation (e.g., wire charts, schematics, equipment layouts)
- Pre-wire (implement structured wiring) and rough-in equipment
- Trim out (wire termination, install fixed equipment)
- Test wiring
- Finish/final (complete) installation of equipment
- Test hardware
- Program and configure equipment/system
- Test operation of equipment/system
- Train clients on operation of equipment/systems
- Offer service maintenance contract(s) to client

1.1. Identify basic network <u>design</u> considerations and information distribution methods through diverse media

Content will include the following:
- Wireless Protocols and Standards
    - Home RF
    - Bluetooth
    - 802.11
    - 802.11b
- Remote Access Methods
- Network Cabling Transmission Basics
    - Phone Line
    - Power line
    - Ethernet
    - Coaxial Fiber

1.2. Identify the equipment <u>location</u> considerations when designing a computer network

Content will include the following:
- Network Equipment: Hardware and Software
  - Network Interface Cards (NICs)
  - Servers (Types/Uses)
  - Printers
  - Gateways
  - Routers
  - Switches
  - Wireless Access Points
  - Firewalls
- Network Equipment Components
  - Data ports
  - Jack Types

1.3. Identify the physical devices (hardware) that comprise the core networking technology

Content will include the following:
- Wireless access points
- Computers,
- Printers
- Residential gateways
- Network enabled devices/appliances

1.4. Identify the core configuration and setting for the networking technology hardware and software

Content will include the following:
- Operating System Configuration and User Settings
- IP addressing
- Dynamic Host Configuration Protocol (DHCP)
- Network Addressing Translation (NAT)
- Firewall (Configuration, Filtering)
- Network Interface Card (NIC) configuration

1.5. Identify standard methods of device connectivity in the core networking technology

Content will include the following:
- Interfaces with Legacy devices and systems
- Network Design Access Points
- Termination points

1.6. Identify the shared in-house services of the core networking technology

Content will include the following:
- Video surveillance
- Print Services
- File Services
- Media Services (streaming video, audio)

1.7. Identify and detail sources of externally provided data services found in the core networking technology

Content will include the following:
- DSL
- ISDN
- Cable
- PPP
- PPTP
- RAS
- E-Mail

1.8. Identify and describe current industry standards of the core networking technology

Content will include the following:
- Wiring standards
- Protocol standards
- Standards and organizations
    - National Electrical Code
    - EIA/TIA Standards
    - IEEE Standards
    - Electrical Contractor's Association
    - Underwriters Laboratories, Inc (UL)

DOMAIN 2.0 Audio and Video Fundamentals

This domain requires that the candidate has the knowledge of a wide range of audio systems and video system fundamentals, including the following: equipment recognition, industry standards and protocols, location design considerations, industry practices, and transmission laws and regulations. This domain requires that the candidate have the knowledge of designing, implementing, and installing the hardware and software components of a connected Audio/Video system. The ideal target candidate will have at least 9 –12 months of home A/V field experience, and be able to identify and describe key industry terminology.

This domain subcategory examines the following project management concepts and modules:

- Identify client's current and future needs
- Project design scope of work integrating equipment, budget and timeline constraints
- Conduct a site/project survey--type of construction (e.g., remodel, new construction, retrofit, single/multi-story, single/multi-family dwelling)
- Conduct a site/project survey--current environment (existing equipment and systems)
- Conduct a site/project survey--location of equipment, systems, geographic location of house (rural, suburban, urban), and topography (mountains, desert)
- Define the scope of services
- Develop preliminary design(s) and proposal (scope of work/equipment, budget, timeline, payment terms)
- Review proposal with client and obtain approval
- Confirm equipment list and procure
- Develop connectivity documentation (e.g., wire charts, schematics, equipment layouts)
- Pre-wire (implement structured wiring) and rough-in equipment
- Trim out (wire termination, install fixed equipment)
- Test wiring
- Finish/final (complete) installation of equipment
- Test hardware
- Program and configure equipment/system
- Test operation of equipment/system
- Train clients on operation of equipment/systems
- Offer service maintenance contract(s) to client

2.1. Identify and describe <u>design</u> considerations of a connected audio/video system

Content will include the following:
- Dedicated versus distributed
- Whole home
- Remote access
- Zoning distribution

2.2. Identify and describe audio and video equipment <u>location</u> considerations

Content will include the following:
- Speakers
- Televisions
- Audio/video rack
- Touch screens
- Volume controls
- Key pads

2.3. **Identify and describe the physical audio and video products that make up the components of the core technology**

Content will include the following:
- Receivers
- Amplifiers
- Speakers
- Keypads
- Video displays
- Source equipment

2.4. **Identify and describe the standard configuration and settings of the audio/video components of the core technology**

Content will include the following:
- Volume settings
- Distribution channels
- Equalization
- Internal broadcasting

2.5. **Identify and describe the methods and components involved in device connectivity**

Content will include the following:
- Components
- Composite
- S-Video
- Analog audio
- Digital audio
- Low voltage power lines
- Termination points

2.6. **Identify and describe the in-house services of the core technology**

Content will include the following:
- Streaming audio
- Streaming video
- Personal Video Recorder (PVR)
- Media server

2.7. **Identify and describe the sources of externally provided audio and video services and their associated technologies**

Content will include the following:
- Satellite
- Cable
- Terrestrial/off-air
- Internet

2.8.   Identify and describe current standards and industry related organizations

Content will include the following:
- Wiring standards
- Protocol standards
- Resolutions
- Video formats
- Organizations and Codes
  - National Electrical Code
  - EIA/TIA Standards
  - IEEE Standards
  - Electrical Contractor's Association
  - Underwriters Laboratories, Inc (UL)

2.9.   Identify and describe installation plans and procedures for audio/video system components

2.10. Identify and describe maintenance plans and procedures for audio/video system components

DOMAIN 3.0 Home Security and Surveillance Systems

This domain requires that the candidate has the knowledge and skills to understand and be able to describe the core components of a home security and surveillance system. In addition, candidates should have the knowledge and skills to recognize the uses of security equipment and design custom security and surveillance strategies designed around specific home environments. The ideal target candidate will have at least 9 –12 months of field experience with home security systems, and be able to identify and describe key industry terminology.

This domain subcategory examines the following project management concepts and modules:

- Identify client's current and future needs
- Project design scope of work integrating equipment, budget and timeline constraints
- Conduct a site/project survey--type of construction (e.g., remodel, new construction, retrofit, single/multi-story, single/multi-family dwelling)
- Conduct a site/project survey--current environment (existing equipment and systems)
- Conduct a site/project survey--location of equipment, systems, geographic location of house (rural, suburban, urban), and topography (mountains, desert)
- Define the scope of services
- Develop preliminary design(s) and proposal (scope of work/equipment, budget, timeline, payment terms)
- Review proposal with client and obtain approval
- Confirm equipment list and procure
- Develop connectivity documentation (e.g., wire charts, schematics, equipment layouts)
- Pre-wire (implement structured wiring) and rough-in equipment
- Trim out (wire termination, install fixed equipment)
- Test wiring
- Finish/final (complete) installation of equipment
- Test hardware
- Program and configure equipment/system
- Test operation of equipment/system
- Train clients on operation of equipment/systems
- Offer service maintenance contract(s) to client

3.1. **Identify basic home security and fire alarm <u>design</u> considerations**

      Content will include the following:
- Wireless systems
- Hard wired systems
- Systems remote access
- Fire systems
- Environmental monitoring
- Emergency response
- Temperature sensors

3.2. **Identify the equipment <u>location</u> considerations when designing a security or fire alarm system**

      Content will include the following:
- Home utility outlet specifications
- Cohesion with existing home systems

- Safety and code regulations
- Existing home environments
- New home construction environments
- Equipment functionality and specifications

3.3. Identify the physical devices that comprise the security and surveillance alarm systems core technology

Content will include the following:
- Key pads
- Sensors
- Security Panels
- Cameras
- Monitors
- Switchers

3.4. Identify the core configuration and settings for the home security and surveillance alarm systems core technology

Content will include the following:
- Zone layout
- Passwords (types and policies)
- Key pad locations
- Sensor locations
- Camera locations

3.5. Identify standard methods of device connectivity in the home security and surveillance alarm systems' core technology

Content will include the following:
- Low voltage wire
- Wireless
- Telephone
- Coax cabling
- Termination points

3.6. Identify the in-house services available in the home security and surveillance alarm systems' core technology

Content will include the following:
- Video surveillance
- Monitoring
- Alarm types

3.7. Identify the external services available in the home security and surveillance alarm systems' core technology.

Content will include the following:
- Alarm monitoring
- Remote access

3.8. **Identify and describe current industry standards relating to the home security and surveillance alarm systems' core technology: standards**

      Content will include the following:
- Video formats
- Residential wiring standards
- Standards and Organizations
  - National Electrical Code
  - EIA/TIA Standards
  - IEEE Standards
  - Electrical Contractor's Association
  - Underwriters Laboratories, Inc (UL)
  - National Fire Protection Agency (NFPA),

3.9. **Identify and describe installation plans and procedures for home security and surveillance alarm systems**

3.10. **Identify and describe maintenance plans and procedures for home security and surveillance alarm systems**

DOMAIN 4.0 Telecommunications Standards

This domain requires that the candidate has the knowledge and skills to understand and be able to describe the current telecommunication standards and protocols. Candidates should have the knowledge and skills to implement the telecommunications solution that correctly fits the custom needs of the client's connected home environment. The ideal target candidate will have at least 9 –12 months of field experience with telecommunication systems, and be able to identify and describe key industry terminology.

This domain subcategory examines the following project management concepts and modules:

- Identify client's current and future needs
- Project design scope of work integrating equipment, budget and timeline constraints
- Conduct a site/project survey--type of construction (e.g., remodel, new construction, retrofit, single/multi-story, single/multi-family dwelling)
- Conduct a site/project survey--current environment (existing equipment and systems)
- Conduct a site/project survey--location of equipment, systems, geographic location of house (rural, suburban, urban), and topography (mountains, desert)
- Define the scope of services
- Develop preliminary design(s) and proposal (scope of work/equipment, budget, timeline, payment terms)
- Review proposal with client and obtain approval
- Confirm equipment list and procure
- Develop connectivity documentation (e.g., wire charts, schematics, equipment layouts)
- Pre-wire (implement structured wiring) and rough-in equipment
- Trim out (wire termination, install fixed equipment)
- Test wiring
- Finish/final (complete) installation of equipment
- Test hardware
- Program and configure equipment/system
- Test operation of equipment/system
- Train clients on operation of equipment/systems
- Offer service maintenance contract(s) to client

4.1. Identify and describe the telecommunications <u>design</u> considerations of the home network

       Content will include the following:
- Hybrid systems design
- Analog communication systems
- Digital communication systems
- PBX Systems
- Key Systems
- Voice Over IP (VoIP)
- Remote Access Methods, standards, and protocols
- Home environmental factors

4.2. **Identify and describe telecommunication equipment <u>location</u> considerations when designing a home network**

       Content will include the following:
- Telecommunication system characteristics and restrictions
- Industry standards and practices
- Home environmental factors (Geographic location (rural, suburban, urban) and topography).

4.3. **Identify and describe the physical telecommunications products that make up the core technology of the home network**

       Content will include the following:
- Telephone fundamentals
- Fax machine communications
- PBX systems
- Video Conferencing
- Caller Line Identification
- 66/110 connection blocks

4.4. **Identify and describe the standard configurations and settings of the telecommunications components of the home network core technology**

       Content will include the following:
- Phone line Extensions and splitters
- Voice mail
- Call restriction
- Intercom

4.5. **Identify and describe the standard methods of device connectivity with telecommunications equipment in the core technology of the home network**

       Content will include the following:
- Wireless
- Telephone
- Physical wiring types
- RJ-ll connections
- Termination points

4.6. **Identify and describe the in-house services available in the telecommunications core technology**

       Content will include the following:
- Voice mail
- Intercom
- Call conferencing
- Extension dialing

4.7. **Identify and describe the external services available in the telecommunications core technology core**

Content will include the following:
- Caller ID
- Voice mail
- Call blocking
- Three-way calling
- Call waiting
- Emergency response system

4.8. **Identify and describe current industry standards to the telecommunications core technology**

Content will include the following:
- Residential wiring standards
- Standards and Organizations
    - National Electrical Code
    - EIA/TIA Standards
    - IEEE Standards
    - Electrical Contractor's Association
    - Underwriters Laboratories, Inc (UL)

4.9. **Identify and describe installation plans and procedures for home telecommunications systems**

4.10. **Identify and describe troubleshooting and maintenance plans and procedures for home telecommunications systems**

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DOMAIN 5.0 Home Lighting Control and Management

This domain requires that the candidate has the knowledge and skills to understand and be able to describe the fundamentals of home lighting control and management. Candidates should have the knowledge and skills to design and implement custom lighting management solutions that meet the functionality and safety needs of the client's connected home environment. The ideal target candidate will have at least 9 –12 months of field experience with home lighting systems, and be able to identify and describe key industry terminology.

This domain subcategory examines the following project management concepts and modules:

- Identify client's current and future needs
- Project design scope of work integrating equipment, budget and timeline constraints
- Conduct a site/project survey--type of construction (e.g., remodel, new construction, retrofit, single/multi-story, single/multi-family dwelling)
- Conduct a site/project survey--current environment (existing equipment and systems)
- Conduct a site/project survey--location of equipment, systems, geographic location of house (rural, suburban, urban), and topography (mountains, desert)
- Define the scope of services
- Develop preliminary design(s) and proposal (scope of work/equipment, budget, timeline, payment terms)
- Review proposal with client and obtain approval
- Confirm equipment list and procure
- Develop connectivity documentation (e.g., wire charts, schematics, equipment layouts)
- Pre-wire (implement structured wiring) and rough-in equipment
- Trim out (wire termination, install fixed equipment)
- Test wiring
- Finish/final (complete) installation of equipment
- Test hardware
- Program and configure equipment/system
- Test operation of equipment/system
- Train clients on operation of equipment/systems
- Offer service maintenance contract(s) to client

5.1. **Identify and describe the <u>design</u> considerations of the networked home lighting control and management systems**

Content will include the following:
- Load requirements
- Grounding
- Wireless/ wire runs
- Homerun
- Daisy chain
- Power line controls
- Conduits
- Zoning
- Remote access

5.2.   **Identify and describe the equipment <u>location</u> considerations of the networked home lighting control and management system**

5.3.   **Identify and describe the physical products that make up the networked home lighting control and management system**

> **Content will include the following:**
> - Outlets
> - Dimming modules
> - Light switches
> - Fixtures (luminaries)
> - Automated window treatments

5.4.   **Identify and describe the standard configurations and settings of the networked home lighting control and management system**

> **Content will include the following:**
> - Lighting scenes
> - Security lighting
> - Lighting zones

5.5.   **Identify and describe the standard methods of device connectivity with the networked home lighting control and management system**

> **Content will include the following:**
> - NM cable
> - MC cable
> - AC cable
> - Low voltage wiring
> - Termination points

5.6.   **Identify and describe current industry standards related to the home lighting control and management**

> **Content will include the following:**
> - Wiring types
> - Standards and Organizations
>   - National Electrical Code
>   - EIA/TIA Standards
>   - IEEE Standards
>   - Electrical Contractor's Association
>   - Underwriters Laboratories, Inc (UL)
>   - National Fire Protection Agency (NFPA),

5.7.   **Identify and describe installation plans and procedures for home lighting control and management**

5.8.   **Identify and describe troubleshooting and maintenance plans and procedures for the networked home lighting control and management system**

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DOMAIN 6.0 HVAC Management
Heating, Ventilation and Air conditioning

This domain requires the candidate has the ability to identify and describe the basic components and functionality of a home heating, ventilation and air conditioning (HVAC) system. Candidates should have the knowledge and skills to design, implement, and maintain the components of the home HVAC system. Candidates should have the understanding and knowledge of HVAC industry regulations and safety guidelines. The ideal target candidate will have at least 9 –12 months of field experience with home HVAC systems, and be able to identify and describe key industry terminology.

This domain subcategory examines the following project management concepts and modules:

- Identify client's current and future needs
- Project design scope of work integrating equipment, budget and timeline constraints
- Conduct a site/project survey--type of construction (e.g., remodel, new construction, retrofit, single/multi-story, single/multi-family dwelling)
- Conduct a site/project survey--current environment (existing equipment and systems)
- Conduct a site/project survey--location of equipment, systems, geographic location of house (rural, suburban, urban), and topography (mountains, desert)
- Define the scope of services
- Develop preliminary design(s) and proposal (scope of work/equipment, budget, timeline, payment terms)
- Review proposal with client and obtain approval
- Confirm equipment list and procure
- Develop connectivity documentation (e.g., wire charts, schematics, equipment layouts)
- Pre-wire (implement structured wiring) and rough-in equipment
- Trim out (wire termination, install fixed equipment)
- Test wiring
- Finish/final (complete) installation of equipment
- Test hardware
- Program and configure equipment/system
- Test operation of equipment/system
- Train clients on operation of equipment/systems
- Offer service maintenance contract(s) to client

6.1. Identify and describe the <u>design</u> considerations of the home HVAC system

Content will include the following:
- Zoned/ non-zoned
- Single or multiple pieces of equipment
- Air handler
- Water-based (radiant) heating
- Remote access

6.2. Identify and describe the equipment <u>location</u> considerations when designing a home HVAC system

Content will include the following:
- Thermostats
- Sensors

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6.3. **Identify and describe the physical products and components that make up the core technology of the home HVAC system**

    Content will include the following:
- Thermostats
- Air handlers
- Damper controls
- Furnaces
- Condensers
- Distribution panels

6.4. **Identify and describe the standard configurations and settings of the products and components that make up the core technology of the home HVAC system**

    Content will include the following:
- Zone programming
- Time of day programming
- Seasonal presets

6.5. **Identify and describe the standard methods of device connectivity with the equipment and components that make up the core technology of the home HVAC system (e.g., ,)**

    Content will include the following:
- Communications cable
- Termination points

6.6. **Identify and describe current industry standards related to the installation and maintenance of home HVAC systems**

    Content may include the following:
- Standards and Organizations
  - National Electrical Code
  - IEEE Standards
  - Electrical Contractor's Association
  - Underwriters Laboratories, Inc (UL)
  - National Fire Protection Agency (NFPA),

6.7. **Identify and describe installation plans and procedures for home HVAC systems**

6.8. **Identify and describe troubleshooting and maintenance plans and procedures for home HVAC systems**

Final: November 2002

DOMAIN 7.0 Home Water Systems Controls and Management

This domain requires that the candidate has the knowledge and skills to understand and be able to describe the fundamentals of home water systems control and management. Candidates should have the knowledge and skills to design and implement custom water system control and management solutions that meet the functionality and safety needs of the client's connected home environment. The ideal target candidate will have at least 9 –12 months of field experience with home water control systems, and be able to identify and describe key industry terminology.

This domain subcategory examines the following project management concepts and modules:

- Identify client's current and future needs
- Project design scope of work integrating equipment, budget and timeline constraints
- Conduct a site/project survey--type of construction (e.g., remodel, new construction, retrofit, single/multi-story, single/multi-family dwelling)
- Conduct a site/project survey--current environment (existing equipment and systems)
- Conduct a site/project survey--location of equipment, systems, geographic location of house (rural, suburban, urban), and topography (mountains, desert)
- Define the scope of services
- Develop preliminary design(s) and proposal (scope of work/equipment, budget, timeline, payment terms)
- Review proposal with client and obtain approval
- Confirm equipment list and procure
- Develop connectivity documentation (e.g., wire charts, schematics, equipment layouts)
- Pre-wire (implement structured wiring) and rough-in equipment
- Trim out (wire termination, install fixed equipment)
- Test wiring
- Finish/final (complete) installation of equipment
- Test hardware
- Program and configure equipment/system
- Test operation of equipment/system
- Train clients on operation of equipment/systems
- Offer service maintenance contract(s) to client

7.1. Identify and describe the <u>design</u> considerations of the networked home water system control and management system

      Content will include the following:
- Timed
- Zoned
- Remote access
- Scenes

7.2. Identify and describe the equipment <u>location</u> considerations when designing a home water system control and management system

      Content will include the following:
- Control valves
- Key pads

- Relays
- Heaters
- Pumps
- Solenoid

7.3. **Identify and describe the standard configurations and settings of the core technology of the home water system control and management system**

Content will include the following:
- Zone programming
- Time of day programming
- Seasonal presets

7.4. **Identify and describe the standard methods of device connectivity with the equipment in the core technology of the home water system control and management system**

Content will include the following:
- Communications cable
- Low voltage wiring
- Termination points

7.5. **Identify and describe current industry standards related to the core technology of the home water system control and management system**

Content will include the following:
- Standards and Organizations
  - National Electrical Code
  - IEEE Standards
  - Electrical Contractor's Association
  - Underwriters Laboratories, Inc (UL)
  - National Fire Protection Agency (NFPA),

7.6. **Identify and describe installation plans and procedures for the core technology of the home water system control and management system**

7.7. **Identify and describe troubleshooting and maintenance plans and procedures for the core technology of the home water system control and management system**

DOMAIN 8.0 Home Access Controls and Management

This domain requires that candidates have the knowledge and skills to understand and be able to describe the fundamentals of home access control and management. Candidates should have the knowledge and skills to design and implement custom home access control and management solutions that meet the functionality and safety needs of the client's connected home environment. The ideal target candidate will have at least 9 –12 months of field experience with home access control and security systems. The candidate must be able to identify and describe key industry terminology.

This domain subcategory examines the following project management concepts and modules:

- Identify client's current and future needs
- Project design scope of work integrating equipment, budget and timeline constraints
- Conduct a site/project survey--type of construction (e.g., remodel, new construction, retrofit, single/multi-story, single/multi-family dwelling)
- Conduct a site/project survey--current environment (existing equipment and systems)
- Conduct a site/project survey--location of equipment, systems, geographic location of house (rural, suburban, urban), and topography (mountains, desert)
- Define the scope of services
- Develop preliminary design(s) and proposal (scope of work/equipment, budget, timeline, payment terms)
- Review proposal with client and obtain approval
- Confirm equipment list and procure
- Develop connectivity documentation (e.g., wire charts, schematics, equipment layouts)
- Pre-wire (implement structured wiring) and rough-in equipment
- Trim out (wire termination, install fixed equipment)
- Test wiring
- Finish/final (complete) installation of equipment
- Test hardware
- Program and configure equipment/system
- Test operation of equipment/system
- Train clients on operation of equipment/systems
- Offer service maintenance contract(s) to client

8.1. **Identify and describe the <u>design</u> considerations of the home access control and management system**

Content will include the following:
- Remote control
- Remote access
- Monitoring--locked
- Unlocked
- Logging time
- Open, close functionality

8.2. **Identify and describe equipment and component location considerations when designing a home access control and management system**

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Content will include the following:
- Key pads
- Relays
- Sensors

8.3. Identify and describe the physical products and components that make up the core technology of the home access control and management system

Content will include the following:
- Key pads
- Control box
- Power supply
- Solenoid
- Distribution panel
- Gates

8.4. Identify and describe the standard configurations and settings of the components that make up the core technology of the home access control and management system

Content will include the following:
- User access
- Programming
- Sensors
- Time of day settings

8.5. Identify and describe the standard methods of device connectivity with equipment that make up the core technology of the home access control and management system

Content will include the following:
- Communications cable
- Wireless communications
- Phone line
- Low voltage wiring
- Termination points

8.6. Identify and describe current industry standards related to the core technology of the home access control and management system

Content will include the following:
- Standards and Organizations
  - National Electrical Code
  - EIA/TIA Standards
  - IEEE Standards
  - Electrical Contractor's Association
  - Underwriters Laboratories, Inc (UL)
  - National Fire Protection Agency (NFPA),

8.7. Identify and describe installation plans and procedures for the core technology of the home access control and management system

8.8. Identify and describe troubleshooting and maintenance plans and procedures for the core technology of the home access control and management system

Final: November 2002

DOMAIN 9.0 Miscellaneous Automated Home Features

This domain gives focus to the fundamentals of installing, implementing, and maintaining mechanical features and complementary systems of the connected home. These complementary features include the following connected home systems: automated A/V cabinetry, lift systems, fireplace ignition, fans, and skylights. Candidates should have the knowledge and skills to design and implement these custom solutions while meeting the functionality and safety needs of the client's connected home environment. The ideal target candidate will have at least 9 –12 months of field experience with connected home systems, and be able to identify and describe key industry terminology.

This domain subcategory examines the following project management concepts and modules:

- Identify client's current and future needs
- Project design scope of work integrating equipment, budget and timeline constraints
- Conduct a site/project survey--type of construction (e.g., remodel, new construction, retrofit, single/multi-story, single/multi-family dwelling)
- Conduct a site/project survey--current environment (existing equipment and systems)
- Conduct a site/project survey--location of equipment, systems, geographic location of house (rural, suburban, urban), and topography (mountains, desert)
- Define the scope of services
- Develop preliminary design(s) and proposal (scope of work/equipment, budget, timeline, payment terms)
- Review proposal with client and obtain approval
- Confirm equipment list and procure
- Develop connectivity documentation (e.g., wire charts, schematics, equipment layouts)
- Pre-wire (implement structured wiring) and rough-in equipment
- Trim out (wire termination, install fixed equipment)
- Test wiring
- Finish/final (complete) installation of equipment
- Test hardware
- Program and configure equipment/system
- Test operation of equipment/system
- Train clients on operation of equipment/systems
- Offer service maintenance contract(s) to client

9.1. Identify and describe the fundamental <u>design</u> considerations of the following connected home system features:

    Content will include the following:
- Automated A/V cabinetry
- Automated lift systems
- Fireplace ignition
- Automated fans
- Automated skylights

9.2. Identify and describe telecommunication equipment <u>location</u> considerations when designing connected home system features

    Content will include the following:
- Key pads
- Relays
- Sensors

9.3. **Identify and describe the physical products and components that make up the core technology of the identified connected home system features**

> **Content will include the following:**
> - Key pads
> - Control box
> - Power supply
> - Solenoid
> - Distribution panel
> - Lift systems
> - Portals

9.4. **Identify and describe the standard configurations and settings of the components of the identified connected home system features**

> **Content will include the following:**
> - User access programming
> - Sensors
> - Time of day settings

9.5. **Identify and describe the standard methods of device connectivity with the equipment and components of the identified connected home system features**

> **Content will include the following:**
> - Communications cable
> - Low voltage wiring
> - Termination points)

9.6. **Identify and describe current industry standards related to the core technology of the identified connected home system features**

> **Content will include the following:**
> - Standards and Organizations
>   - National Electrical Code
>   - EIA/TIA Standards
>   - IEEE Standards
>   - Electrical Contractor's Association
>   - Underwriters Laboratories, Inc (UL)
>   - National Fire Protection Agency (NFPA),