

# Citrix Access Suite 4.0: Build/Test

## 456 Exam

Enablement Guide

Citrix Education

2.0

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**This Exam Enablement Guide is designed to allow you to assess the types of items that may be asked during the subject Citrix certification exam. Please be aware that the content of this guide in no way ensures a passing score on such certification exam.**

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## Acknowledgement

The Citrix Access Suite 4.0: Build/Test Exam (456) is a complex and rigorous exam. Developing the content for this exam took many months of sleeplessness, hard work and dedication. This exam could not have been a success without the work of the “Man Behind the Project”.

The Citrix Exam Development team would like to acknowledge the contributions and remember the unselfish efforts of Edwin George, PhD., who passed away in 2006. Ed worked diligently and tirelessly to design, test and implement this exam: his passion for perfection and vision were integral to the success of this high stakes simulation exam. Unfortunately, he did not live to see this exam published.

The Exam and Courseware Developers who worked with Ed during his tenure at Citrix will long remember him.

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# 1 Purpose

This document provides a list of exam objectives for the Citrix Access Suite 4.0: Build/Test Exam (456) and a list of resources that will help prepare exam-takers for the simulation and multiple-choice items associated with these objectives. This document outlines, at a high level, topics covered in the exam and instruction on how to obtain information about these topics. Exam-takers should read this document carefully before beginning preparation for the exam.

This exam certifies that successful candidates have the knowledge and skills necessary to build and test a Citrix Access Suite 4.0 implementation.

# 2 The Exam

This guide pertains to the Citrix Access Suite 4.0: Build/Test Exam (456). This is a 32-item exam, consisting of 25 simulation and 7 multiple-choice items, all written in English. The passing score for this exam is 62%.

Citrix allows native English speakers up to 240 minutes to complete the exam. Please note that although Citrix allows four hours to take the exam, candidates may find that they will not require this length of time to complete it. Exam-takers have successfully completed the 456 in as little as two and a half hours. Non-native English speakers, who take the 456 in English, have up to 270 minutes to complete the exam. Non-native English speakers must contact Prometric by phone and formally request the time extension.

This version of the exam is based on Citrix Access Suite 4 products. It includes nomenclature and features consistent with Citrix Access Suite 4 products.

This exam is a requirement for the Citrix Certified Enterprise Administration (CCEA) and the Citrix Certified Integration Architect (CCIA) certifications.

The exam is administered through Prometric. For details on the rules and procedures associated with registering for and taking the exam, please visit the <http://www.citrix.com/English/SS/training/tests.asp> web site.

## 3 Preparatory Recommendations for the Exam

It is recommended that exam-takers have the knowledge and skills necessary to build and test a Citrix Access Suite 4.0 environment prior to taking this exam. Candidates for this exam are expected to possess senior-level expertise in the implementation of a Citrix environment, including:

- Building Citrix Presentation Server 4 implementations for enterprise environments, which may include application isolation environments, complex printing scenarios, multiple server farms and zones, and Web Interface 4.2 sites
- Building Citrix Password Manager 4.1 implementations for enterprise environments that include Active Directory-based central stores and have enabled features such as the Password Manager Service, identity verification questions, self-service key recovery, and application definitions for Windows, host and web-based applications
- Building Access Gateway 4.2 Advanced Edition implementations for enterprise environments which include web, file, and network resources, provide access to applications published on Presentation Server (including Web Interface 4.2 sites) and configure logon points for endpoint analysis and other scans as well as applicable policies
- Integrating Citrix Access Suite 4 products together ensuring that:
  - ❑ Applications or content published on Presentation Server are enabled for use with Password Manager in accordance with an environment's security policy and are accessible through a number of access scenarios including multiple Web Interface sites and/or Access Gateway Advanced Edition logon points
  - ❑ Policies and scan requirements applied in product implementations are maintained when the Citrix Access Suite is integrated
  - ❑ Access is granted to users in accordance with security and other policies and/or scan requirements from internal and external locations
- Testing pilot implementations or proof of concept environments that include the entire Citrix Access Suite 4 to determine if they meet specified design requirements

### 3.1 Recommended Knowledge and Skills

It is recommended that exam-takers have the following knowledge and skills prior to attempting this exam:

#### **Knowledge:**

- Citrix Presentation Server 4 (including but not limited to the following components):
  - ❑ Web Interface 4.2
  - ❑ Secure Gateway
  - ❑ Installation Manager
  - ❑ Resource Manager
  - ❑ Load Manager
- Citrix Access Gateway 4.2 Advanced Edition
- Citrix Password Manager 4.1

- Microsoft Internet Information Services Web Server
- Microsoft Management Console
- Microsoft Active Directory Services
- Microsoft Windows Server 2003 or Advanced Server
- Terminal Services
- Microsoft SQL Server

In addition to the product knowledge listed above, exam-takers should have knowledge of these concepts:

- Network operating systems including security, implementation and administration
- Citrix methodology and best practices for implementation

**Skills:**

Building and Testing Citrix Access Suite 4 implementations, including the ability to:

- ❑ Build and test Presentation Server 4
- ❑ Build and test Access Gateway 4.2 Advanced Edition
- ❑ Build and test Password Manager 4.1
- ❑ Build and test Citrix Access Suite 4.0

## 3.2 Recommended Experience

It is recommended that exam-takers have at least two years of experience with Citrix products and a minimum of six months of experience with:

- Configuring and integrating Citrix Access Suite 4:
  - ❑ Presentation Server 4 (including Web Interface 4.2)
  - ❑ Password Manager 4.1
  - ❑ Access Gateway 4.2 Advanced Edition
- Performing system tests on Citrix Access Suite 4 designs

It is also recommended that exam-takers attend or self-study the CTX-1456AI Citrix Access Suite 4.0: Build/Test course.

## 3.3 Recommended Certification Program Paths:

This exam is included in both the Citrix Certified Integration Architect 4 (CCIA) and Citrix Certified Enterprise Administrator 4 (CCEA) tracks. As the skills tested in this exam, culminate on knowledge that is acquired from the courses and materials available within these tracks it is strongly recommended that candidates for these certifications complete the courses and exams related to administration for the individual Citrix Access Suite products prior to attempting this exam.

### 3.3.1 Recommended CCIA 4 Certification Path

This exam will assess the build/test component of the IT life cycle. The following represents the recommended “path” a person takes to achieve CCIA 4 certification.

- Two years experience in the design and integration of Citrix solutions in enterprise environments. Six months hands-on experience building implementations of Citrix Access Suite 4. (Recommended)

- Take the CTX-1455 eLearning course and pass the included assessment (required)
- Attend and/or self-study the CTX-1256 course (recommended)\*
- Take and pass the 256 exam (required)\*
- Attend and/or self-study the CTX-1306 course (recommended)\*
- Take and pass the 306 exam (required)\*
- Attend and/or self-study the CTX-1326 course (recommended)\*
- Take and pass the 326 exam (required)\*
- Attend and/or self-study the CTX-1456 course (recommended)
- **Take and pass the 456 exam (required)**
- Attend and/or self-study the CTX-6113 course (recommended)
- Take and pass the 613 exam(required)
- Attend and/or self-study the CTX-6114AI course (recommended)
- Take and pass the 614 exam (required)
- **Obtain the CCIA 4 credential**

### 3.3.2 Recommended CCEA 4 Certification Path

The following represents the recommended “path” a person takes to achieve the CCEA 4 certification.

- Two years experience in building, testing and administering of Citrix solutions in enterprise environments. (Recommended)
- Take the CTX-1455 eLearning course and pass the included assessment (required)
- Attend and/or self-study the CTX-1256 course (recommended)\*
- Take and pass the 256 exam (required)\*
- Attend and/or self-study the CTX-1306 course (recommended)\*
- Take and pass the 306 exam (required)\*
- Attend and/or self-study the CTX-1326 course (recommended)\*
- Take and pass the 326 exam (required)\*
- Attend and/or self-study the CTX-1258 course (recommended)
- Take and pass the 258 exam (required)
- Attend and/or self-study the CTX-1456 course (recommended))
- **Take and pass the 456 exam (required)**
- **Obtain the CCEA 4 credential**

\*The associated training materials and exams on administering the individual products can be taken in any order. Citrix recommends that they be completed prior to attempting the 456 exam.

## 4 Exam Sections and Weights

The Citrix Access Suite 4.0: Build/Test exam (456) is divided into four (4) sections. Each section of the exam is weighted as follows, totaling 100%:

- |  |     |
|--|-----|
| ▪ Building and Testing Presentation Server 4 (including Web Interface 4.2) | 44% |
| ▪ Building and Testing Password Manager 4.1                                | 18% |
| ▪ Building and Testing Access Gateway 4.2 Advanced Edition                 | 24% |
| ▪ Performing System Tests on Citrix Access Suite 4 Implementations         | 14% |

## 5 Exam Objectives and Resources for the Exam

The simulation and multiple-choice items on this exam were developed directly from the exam objectives. The exam objectives are used to test knowledge and skills related to each section of the exam.

Most of the exam objectives will correspond, or map, to field experience. Exam-takers are expected to have at least two years of experience with Citrix products with a minimum of six months of that time building and testing Citrix Access Suite 4 implementations to increase their chances of passing this exam.

For optimal performance on this exam, Citrix recommends that exam-takers complete all of the preparatory recommendations for this exam and obtain field experience. In addition, it is strongly recommended that exam-takers follow the recommended certification paths outlined in section 3.3 of this guide.

### 5.1 Resources Used to Develop the Exam

The following resources were used to develop this exam:

- CTX-1456AI Citrix Access Suite 4.0: Build/Test
- CTX-1256BI Citrix Presentation Server 4.0: Administration
- CTX-1306AI Citrix Access Gateway 4.2 with Advanced Access Control: Administration
- CTX-1326AI Citrix Password Manager 4.0: Administration

These courses are available at Citrix Authorized Learning Centers (CALCs) worldwide. To find the CALC nearest you please visit the

<http://www.citrix.com/English/SS/education/feature.asp?contentID=24019> web site.

**Note: This site is subject to change.**

## 5.2 Exam Objectives

The following outline includes the exam sections and their corresponding objectives. The Citrix course, CTX-1456AI Citrix Access Suite 4.0: Build/Test should be used to prepare for this exam.

**It is also strongly recommended that exam-takers complete the preparatory recommendations listed in section three of this document.**

### **I. Building and Testing Presentation Server 4 (including Web Interface 4.2)**

- Given a console for Presentation Server:
  - ❑ Configure a farm for Presentation Server 4.0 that consists of multiple zones, servers and administrative accounts to meet stated requirements and follow best practices.
  - ❑ Publish and test the installation of a specific application, in an application isolation environment, following relevant best practices.
  - ❑ Configure policies for Presentation Server 4.0 including zone preference and printing policies, following best practices.
- Given an Access Suite Console and an implementation of Web Interface 4.2, configure Web Interface so that it meets stated requirements for addressing, authentication and application launching by following relevant best practices.

### **II. Building and Testing Password Manager 4.1**

- Given an Access Suite Console and requirements for an Active Directory-based central store, configure the central store following best practices.
- Given Password Manager installation files and a Windows 2003 Server that already has an SSL certificate installed, configure the appropriate server accounts, install the Password Manager Service and configure the service to communicate with the Password Manager Agent.
- Given an Access Suite Console for an installation of Password Manager and a specification for identity verification, enable identify verification, create and select identity verification questions, configure the key recovery method and then test and verify that the configuration works as designed.
- Given a Password Manager Console and a specific Windows or web application, set up an application definition.
- Given a Password Manager Console and a user account, define Agent settings and the key recovery method according to the provided specifications.
- Given Password Manager installation files and a server running Presentation Server, install the Password Manager Agent for use with published applications.
- Given a task to integrate Presentation Server with Password Manager, identify the appropriate steps to build the implementation to meet stated requirements.
- Given a scenario describing an environment where Presentation Server is integrated with Password Manager, identify the cause for test failures.

### **III. Build and Test Citrix Access Gateway 4.2 Advanced Edition**

- Given an Access Suite Console for an Access Gateway Advanced Edition implementation, integrate Access Gateway Advanced Edition with farms for Presentation Server following best practices.
- Given an Access Suite Console for a new deployment of Access Gateway Advanced Edition configure a specific web, file, network or email resource based on stated criteria and best practices.
- Given a scenario of an environment that includes Access Gateway Advanced Edition and Presentation Server 4, identify the appropriate configuration to add a farm for Presentation Server to an Access Gateway Advanced Edition implementation.
- Given a scenario describing an Access Gateway Advanced Edition implementation, identify the appropriate configuration to provide access to users through a logon point.
- Identify the prerequisites and parameters for creating a web resource for a Web Interface 4.2 site in the Access Suite Console for Access Gateway Advanced Edition.

### **IV. Perform System Tests on Citrix Access Suite 4 Design**

- Given an Access Suite Console for Presentation Server, verify that a new implementation of Presentation Server is set up appropriately to meet stated requirements.
- Given an Access Suite Console for Password Manager, verify that a new implementation of Password Manager is set up appropriately to meet stated requirements.
- Given an Access Suite Console for Advanced Access Control, verify that a new implementation of Access Gateway Advanced Edition is set up appropriately to meet stated requirements.
- Given an Access Suite Console for Advanced Access Control, verify that the policies and settings for an Access Gateway Advanced Edition implementation are configured appropriately.

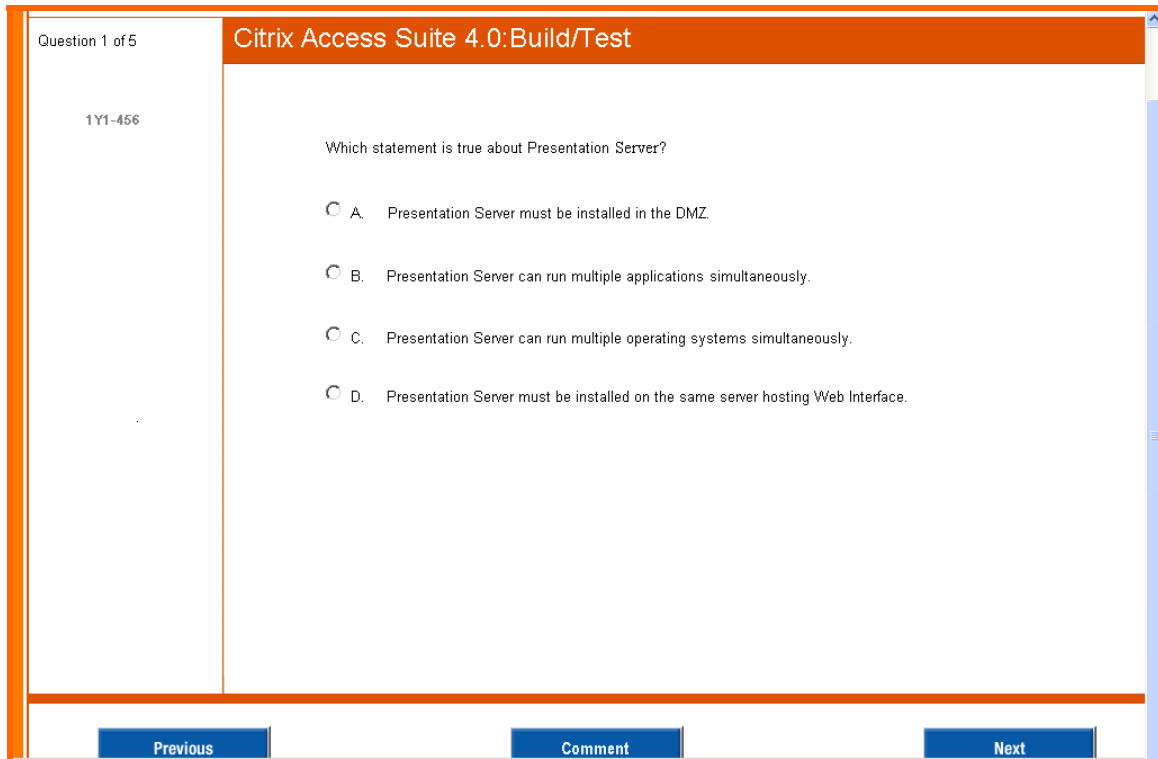
## 6 Appendix: 456 Exam Features and Functionalities

In this exam, there are three types of items: traditional multiple-choice, full-screen simulation and embedded simulation items. The purpose of this appendix is to discuss the full-screen and embedded simulation items, as they are unique to Citrix exams. This section of the enablement guide provides a tutorial on the user interface, scoring and answering rules, and timing for these unique item types.

The 456 exam consists of some unique features that exam-takers need to know before attempting the exam. The user interface for this exam has been customized to meet the needs of the unique items included. However, some standard components typical for all exams are included in this exam as well.

All of the items in this exam open in a main window. The main window contains any item scenarios, requirements or multiple-choice item text as well as the helms. The navigation helm, which is found at the lower portion of the screen, consists of the “Previous”, “Comment” and “Next” buttons. These buttons can be used for forward and backward navigation as well as to make comments related to the item. In the left margin of the screen is the counter helm. This helm contains a counter, which informs exam-takers which item number they are being presented. The top helm of the exam includes the exam title, a mark for review option, and an exam counter. The mark for review and exam counter options function the same for this exam as they do for traditional exams.

Below is an example of a main window in the 456 exam.



**Figure 1: Main window including a multiple-choice item**

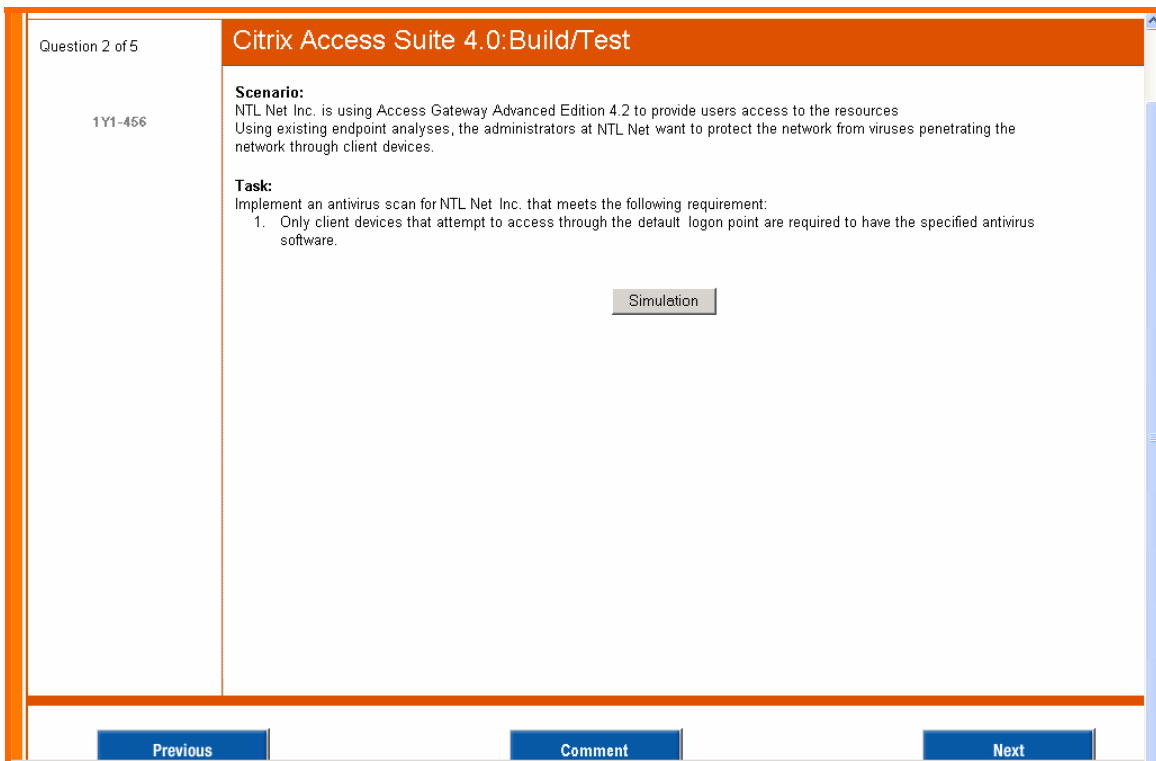
Depending on which simulation item type the tests presents, the main window components may differ slightly. The purpose of the two different simulation item types as well as the features that are unique to them will be addressed in the next section.

### 6.1.1 Full-screen Simulation Items

Full-screen simulation items are used to test the ability to complete specific configuration tasks. When these types of items are delivered, exam-takers will be expected to read and synthesize information included in the scenario and then complete configurations in accordance to best practices.

The main window is the first window presented for these types of items. In addition to the buttons in the helm, the main window contains a “Simulation” button. Clicking this button opens the simulated environment in full-screen mode.

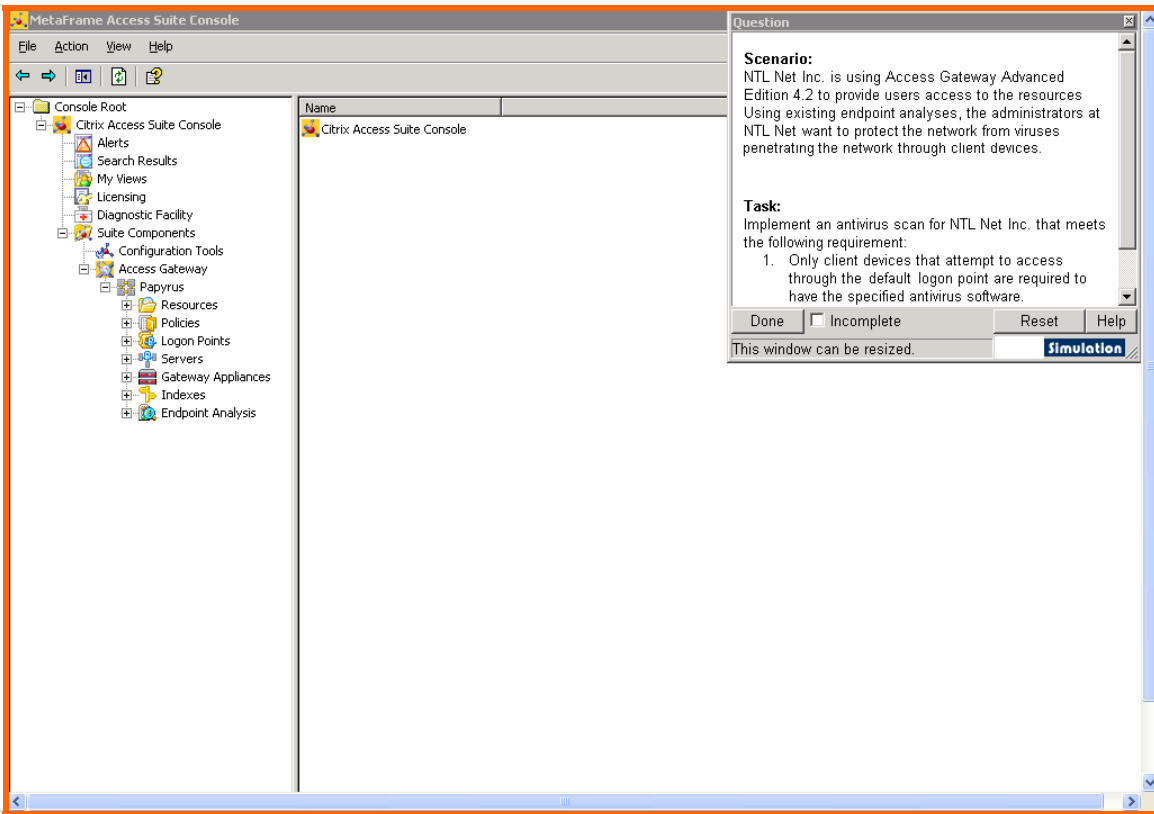
Below is an example of the main window for full-screen simulation items.



**Figure 2: Main window of a full-screen simulation item**

Once a the “Simulation” button is clicked and the simulation launches, the exam-taker will be presented with either a console, system desktop, or a system selection window to select different machines. Within these screens, there is also a floating window, which repeats all of the relevant tasks, scenario, and requirements content previously included on the main screen. This floating window also has additional marking functionality.

Below is an example of the simulated environment with floating window.



**Figure 3: Full-screen simulated environment with a floating window**

Whether a console or a desktop is launched, the simulated environment will look almost identical to the real user interface that exam-takers are familiar with. Consoles can be minimized or closed, desktops and alternate applications including administrative tools can be accessed. Citrix Education worked closely with subject matter experts (SMEs) to ensure that most relevant features and settings available within the real products would also be available within the simulated environment. However, features such as Help menu items and settings deemed irrelevant to the task or otherwise outside of the typical path that users take, were not included in the simulation.

The floating window resides in the upper right corner of the simulated environment by default. Exam-takers can move and/or resize the floating window as needed. When the exam-taker completes the required tasks or wants to return to the main window, the exam-taker must click the "Done" button in the floating window. Clicking the "Done" button saves any configurations made by an exam-taker and closes the simulation window. Even if an exam-taker does not configure any settings or does not complete the required configuration(s), the exam-taker still has to click the "Done" button to exit the simulated environment. Exam-takers can go back into the simulation environment after clicking the "Done" button as many times as they wish.

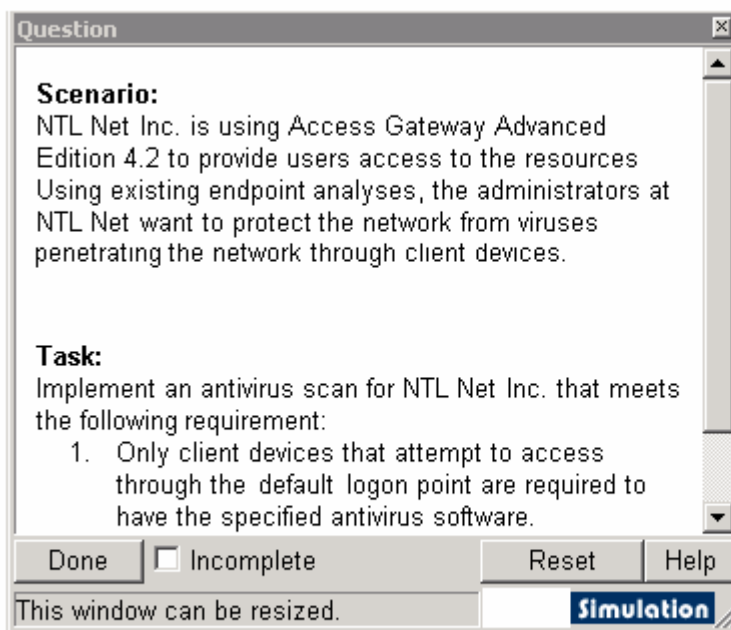
Clicking the "Done" button instructs the simulated environment to save its state for scoring and results retention. Depending on the number of configuration steps and/or the system resources on the computer owned by the Prometric test center, exam-takers may experience a slight delay after clicking the "Done" button. While such delays are rare, if it occurs, Citrix recommends that

exam-takers refrain from using the mouse or keyboard while the simulation saves, as these actions may prolong the delay. Delays of this type are rare and usually last no more than 20 seconds.

If an exam-taker chooses to mark an item incomplete before exiting the simulated environment, the exam-taker can check the “Incomplete” checkbox at the bottom of the floating window. At the end of the exam, exam-takers may review the items they marked as incomplete.

Exam-takers can also reset the simulated environment by clicking the “Reset” button. Clicking the “Reset” button clears any configurations made by an exam-taker within a particular simulated environment. A “Help” button is also provided in the floating window. This button provides basic help text to guide users on how to use simulations. This help text is not customized to the specific item and will not be useful to guide exam-takers on how to make specific configurations for the item.

Below is an example of the floating window.



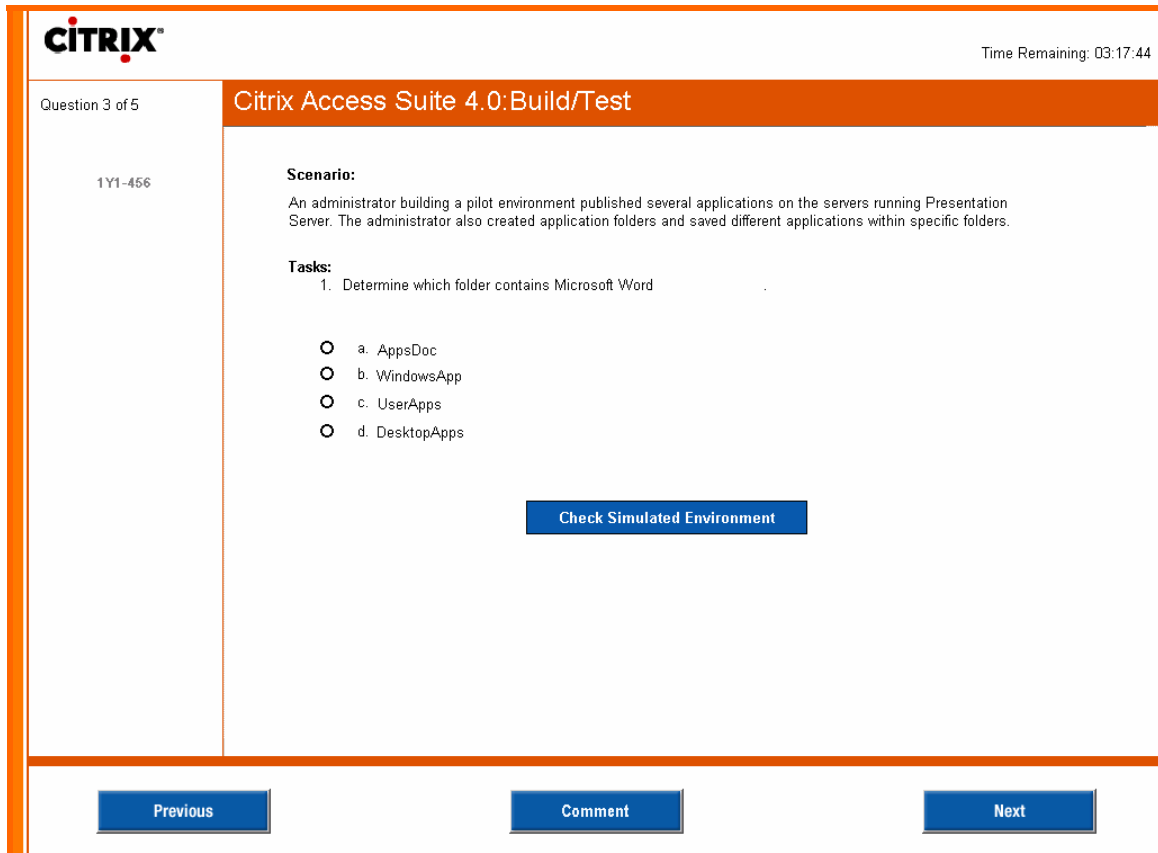
**Figure 4: Floating window**

### 6.1.2 Embedded Simulation Items

Embedded simulation items are used to assess the ability to test an implementation and identify whether or not the implementation meets necessary requirements. These items provide a simulated environment; however this environment cannot be configured by the exam-taker. Instead, this environment is provided to allow exam-takers the opportunity to navigate through provided consoles or desktops and check configurations. Exam-takers are expected to return to the main window to answer questions or otherwise indicate whether requirements are met in the simulated environment.

As with the full-screen simulated items, the main window is the first window presented for this type of item. The main window contains a “Check Simulated Environment” button. Clicking the “Check Simulated Environment” button opens the simulated environment within the main page. However, unlike the full-screen simulated items, the simulated environment for this type embeds itself in the main window, in the same area where the scenario, requirements or questions were originally presented.

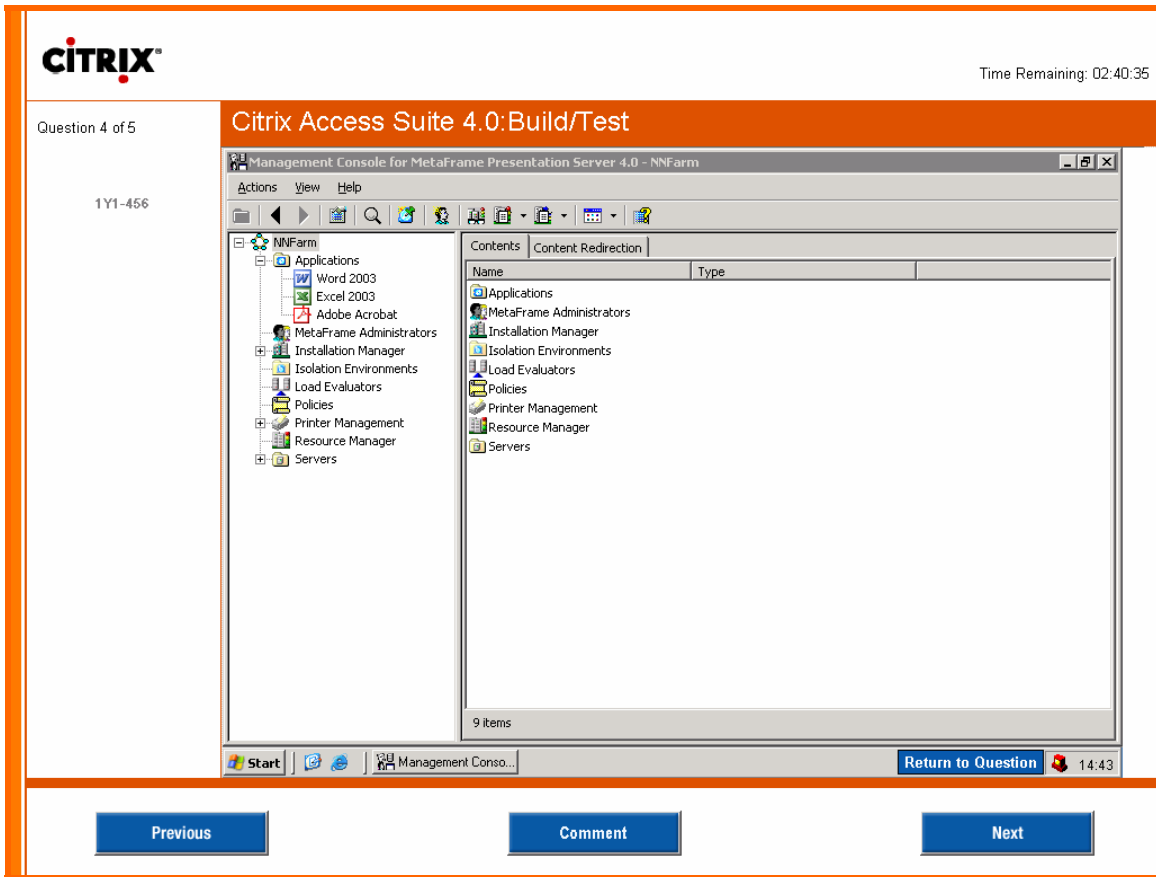
Below is an example of the main window for an embedded simulation item



**Figure 5: Embedded Simulation Item**

Once the “Check Simulated Environment” button is clicked, the simulation launches a console embedded in the main window, and the helm will still be available. A floating window is not available in an embedded simulation. Therefore, in order for an exam-taker to return to the main window, the exam-taker must click the “Return to Question” button. This button is located in the lower right corner of the simulated desktop.

Below is an example of how a simulation launches in an embedded simulation item.



**Figure 6: Embedded simulation environment**

In the launched simulation environment, exam-takers will be able to navigate through a console to check settings. However, no new configurations can be made to this environment. Once configurations are determined, exam-takers should use the “Return to Question” button to return to the main window and answer any relevant questions about the simulated environment.

In the main window, once the exam-taker selects their answer(s), they can use the “Next” button in the helm to move to the next question. Note, since no configuration will be stored in this item type, there is no “Done” button included in this item type.

## 6.2 Scoring and Answering Process

### 6.2.1 Scoring

To obtain any points, exam-takers must complete all tasks at or above an acceptable level. An acceptable level is defined by Citrix as that level wherein all the task(s) performed by the exam-taker is adequate to accomplish the stated requirements. In those items where there is an identified best practice, exam-taker will be expected to adhere to those practices. **Missing any one of the required tasks in the simulation will result in zero (0) points for that item.**

In order to receive points for a simulation item, exam-takers must complete all tasks in accordance with the requirements in a manner that is deemed acceptable. For this exam, subject matter experts defined acceptable as actions that meet the requirements without rendering harm to the environment. As such, exam-takers do not receive partial points for completing some but not all of the tasks required.

### 6.2.2 Answering Process for Simulation Items:

Subject matter experts (SMEs) identified multiple paths that exam-takers could take to meet scenario requirements and best practices when configuring or interacting with the simulation items. As such, exam-takers will find that most actions that could be taken to configure a real implementation to meet the requirements will be also available in the simulation. Examples of possible ways to answer items include, but are not limited to, using menus, shortcut keys, key strokes, mouse manipulations, command line interfaces, and multiple consoles as needed. While Citrix took many steps to ensure that the most common ways to complete a tasks were available in the simulation items, there may be some actions which are excluded or otherwise unavailable within the simulation. In those limited cases where an action is not available in a simulation, exam-takers are encouraged to use an alternative action to complete the required configurations.

## 6.3 Time Issues for This Exam

Exam-takers whose native language is not English and are registering to take the exam in a non-native English speaking country, may call Prometric at the time of registration to request a time extension.

The 456 exam is unique in many ways. Actions performed by exam-takers, such as configuring a task or selecting an answer are constantly saved during the exam. This makes the exam resource-intensive. As a result, this exam can only be delivered at specific Prometric centers, which will be determined at the time of registration through any of Prometric's registration mechanisms.

### **6.3.1 System Clock versus Actual Time**

The “Time Remaining” displays in the top right corner of the main window for all the item types; however, it is not visible from within the full-screen simulated items after clicking the “Simulation” button. The time displayed in the task bar of the simulated environment desktop is part of the simulation and therefore it is not the real time.

This appendix was created to answer exam-takers questions on how to use the unique simulation items included in the 456 exam. For answers to questions not addressed in this guide, feel free to contact Citrix at [training@citrix.com](mailto:training@citrix.com).