



Practice Labs

# Practice Labs User Guide

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## History of Changes

Version	Changes	Approved by	Publish Date
2.0	History of changes table added. Full revision of document in line changes to GUI as at Publication date.	acracknell	14/12/2016

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# Introduction

Welcome to the Practice Labs User Guide.

## Overview

The Practice Labs platform offers an environment where you can access live IT systems in real time. We use real Cisco hardware and virtualized Windows, Linux and UNIX operating systems hosted on VMware and Hyper-V, all accessible via a web browser.

Practice Labs makes it easy for you to put learning into practice in a safe environment that you can access any time, any place.

## Accessing Practice Labs

### Getting started

If configured for your subscription, the first time you log on, you will have the opportunity to optimize your experience by configuring accessibility options and to accept the terms.

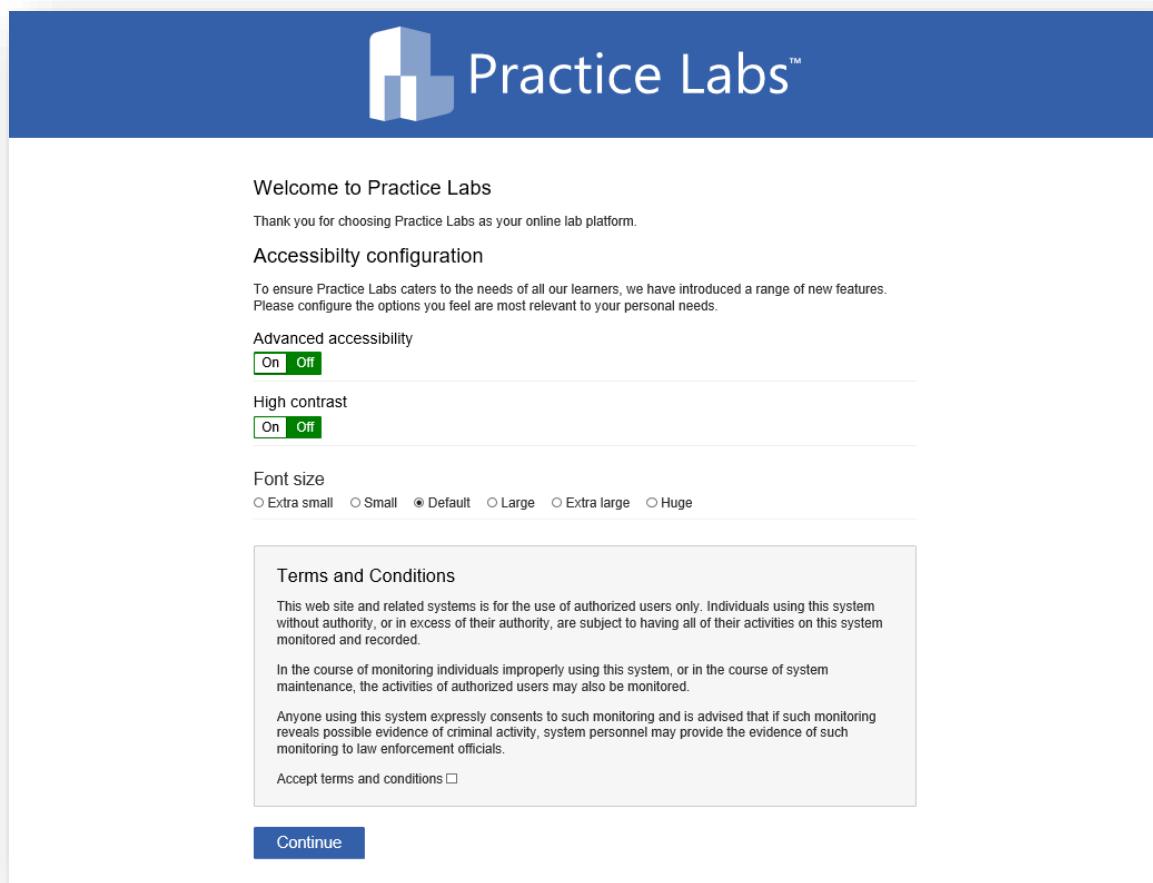


Figure 1 - Advanced Accessibility Configuration

**Note:** You can edit these options later via the Settings tab if your preferences change

# The Practice Labs Interface

The lab interface is made up of 3 key components:

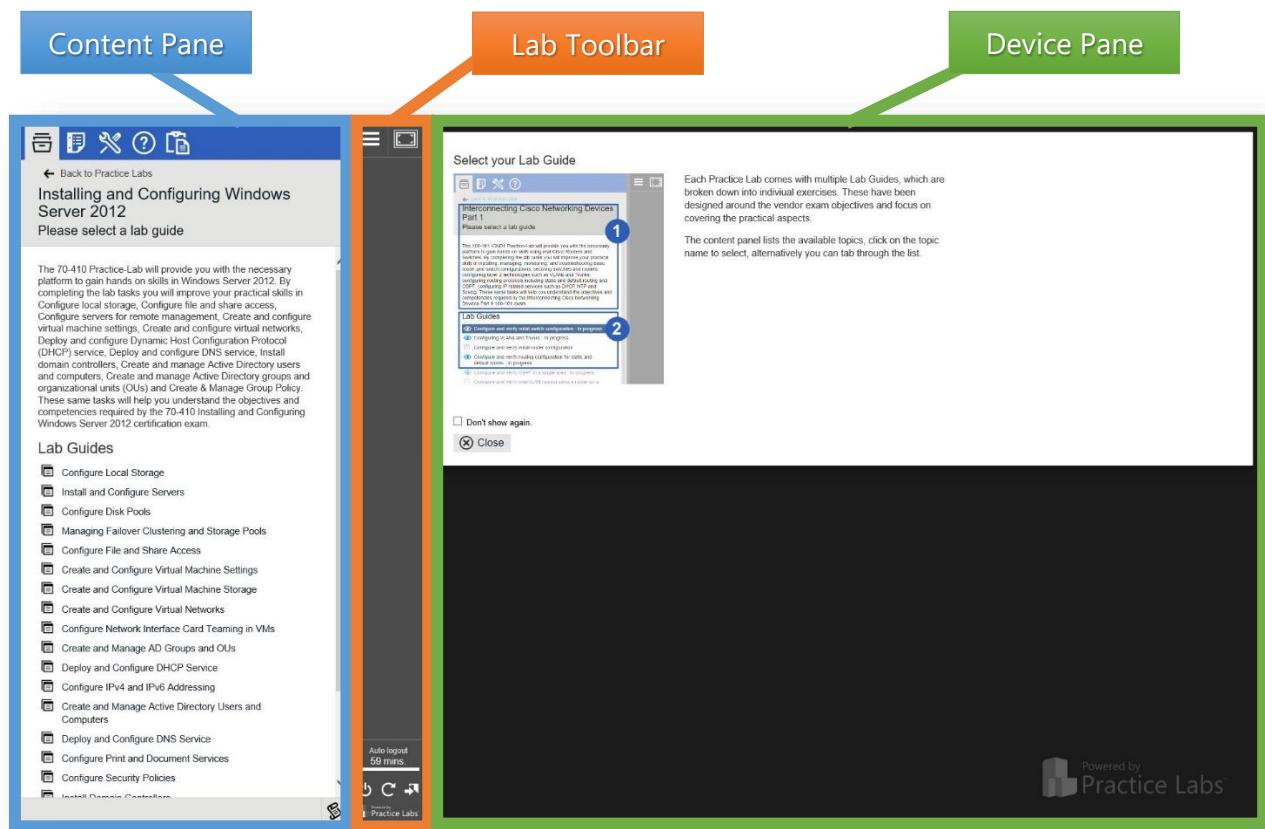


Figure 2 - The Practice Labs interface

These components will be explained in more detail in the following sections of this guide.

## Tutorial Tips

Every time you sign in to Practice Labs, you'll see a helpful tutorial pop up in the Device pane. Each tutorial can be prevented from future displays by selecting the **Don't show again** check box before clicking the **Close** button.

## Minimum Browser Requirements

We offer two technology methods to interact with the windows devices displayed in the Device Pane; Java and HTML5. See the below table for the supported browsers.

	Java	HTML
Internet Explorer 10+	Supported	Supported
Firefox 45+	Supported	Supported
Chrome 29+	Not Supported	Supported
Edge 13+	Not Supported	Supported
Apple Safari 9.1+	Not Supported	Supported

For more information please see [Appendix B – System Requirements](#).

# The Content Pane

## Lab Navigation Tab

The Content Pane displays the Lab Navigation tab by default when you log in to Practice Labs. The tab features three views to help you locate and select the lab exercise you want to access.

### 1. Available Practice Labs view

This view displays a list of Practice Labs that are available to your account. This view will be displayed by default if you log in via the public login page.



Figure 3 - The Available Labs view of the Lab Navigation tab

If the list of labs is long, you can use the **Filter your courses** field, as shown in *Figure 4* below, to quickly locate the lab you need.



Figure 4 - Filtered List in the Available Labs view

## 2. Lab Guide List View

The *Lab Guide List* view is displayed when you select a Practice Lab from the *Available Practice Labs* view. This view displays the title of the Practice Lab, an introduction and a list of lab guides available in that lab.

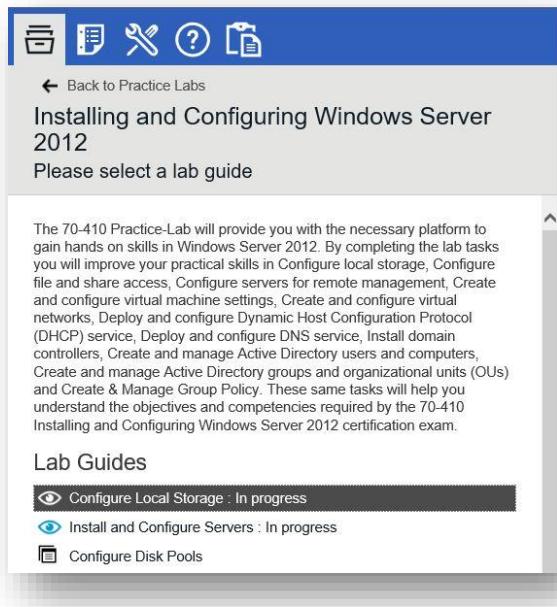


Figure 5 - The Lab Guide List view in the Content Pane

The **Back to Practice Labs** link will take you back to the *Available Practice Labs* view.

## 3. Exercise List View

When you select a lab guide from the *Lab Guide List* view, the Content Pane will display the list of exercises that make up that Lab Guide.

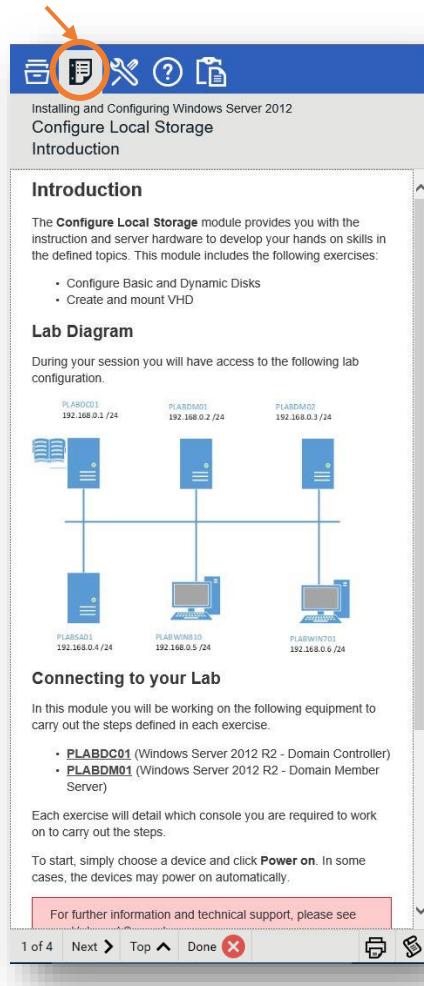


Figure 6 - The Exercise List View in the Content Pane

**Note:** Only some exercise titles will be links. This is by design, to ensure that the sequence of exercises in the lab guide are correctly followed.

## Exercise Content Tab

When you click on the name of an exercise in the *Exercise List* view, (see *Figure 6*), the Content Pane will automatically switch to the Exercise Content tab and display the content for that exercise.



The screenshot shows the 'Exercise Content' tab of the Content Pane. At the top, there are several icons: a white square, a magnifying glass, a gear, a question mark, and a clipboard. The magnifying glass icon is circled in red with a yellow arrow pointing to it. Below the icons, the title 'Installing and Configuring Windows Server 2012' is displayed, followed by 'Configure Local Storage' and 'Introduction'. The 'Introduction' section contains text about the module's purpose and a list of exercises. Below this is a 'Lab Diagram' section showing a network topology with three server icons (PLABDC01, PLABAD01, PLABADM01) and three client icons (PLABSA01, PLABWIND01, PLABWIN01) connected to a central switch. At the bottom, there is a 'Connecting to your Lab' section with information about the equipment and a note about starting the lab. A red box at the bottom right contains the text 'For further information and technical support, please see'.

Figure 7 - The Exercise Content tab of the Content Pane

**Note:** You can switch back to the *Exercise List* view while a lab is in progress, without losing the connection to the lab devices.

## Exercise Content Buttons

The *Exercise Content* tab features the following buttons:

### Navigation buttons

The **Prev** and **Next** buttons navigate back and forward in the sequence of exercises in the Lab Guide. The **Top** button takes you back to the top of the current exercise.



Figure 8 - Navigation buttons

### Completion button

The Completion button allows you to mark the Lab Guide as completed. This can be used to track which Lab Guides have been completed.

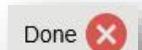


Figure 9 – The Completion Button

**Note:** If the Completion button is clicked, you can click it again to toggle the completion status

### Print button

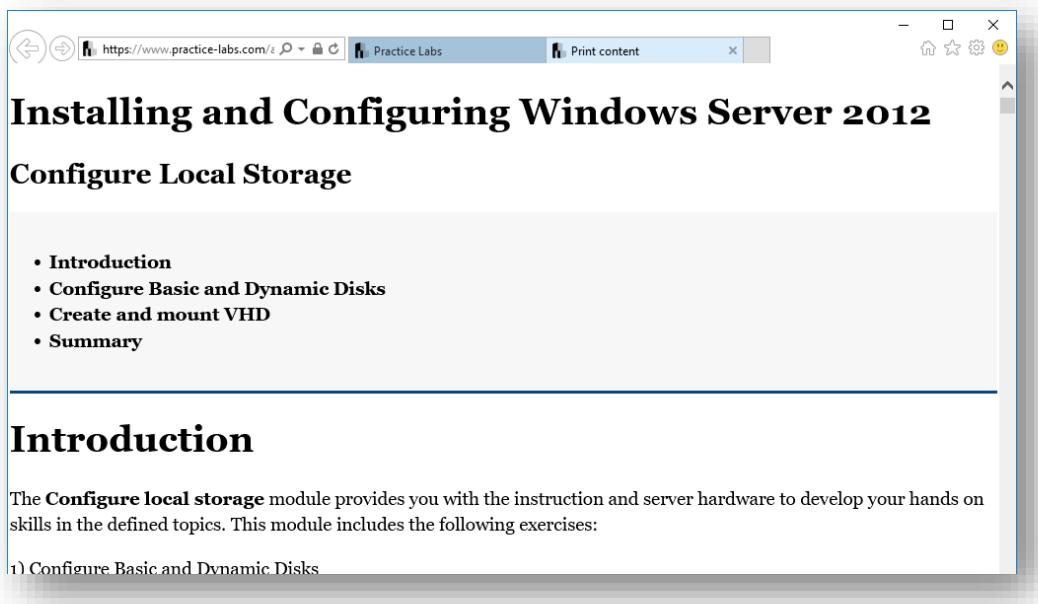
The Print button opens a new browser tab (your browser may open a new window) with a printer-friendly rendering of the lab guide.



Figure 10 – The Print button

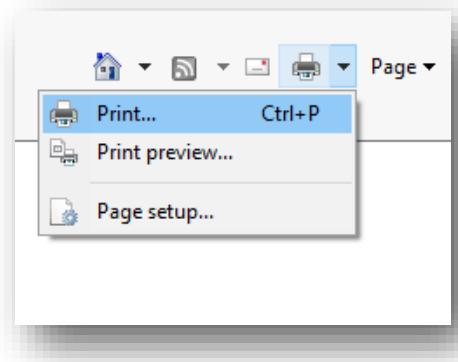
## Print view

The printer-friendly content shows all exercises in the lab guide, as shown in *Figure 11* below. This content can be saved as a web page or PDF file, or it can be printed if required.



*Figure 11 - Printable exercise content*

As an example using Internet Explorer on Windows, you can Click on the printer icon and click "Print..." as shown below.



*Figure 12 – Steps to bring up the Print dialogue box*

From here, you can select your preferred printer. Then click the “Print” button and follow the default options for your chosen device.

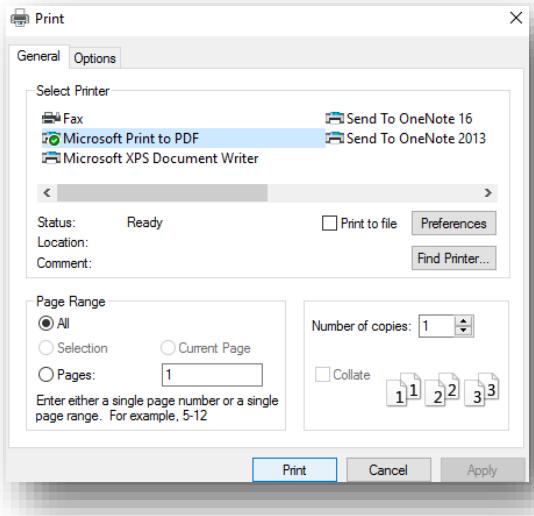


Figure 13 –Print dialogue box appears

### Log Panel button

The Log Panel button will toggle the display of the log panel.



Figure 12 - Log Panel button

### Log panel

The log panel displays information which may be useful to accessibility users and technical support.

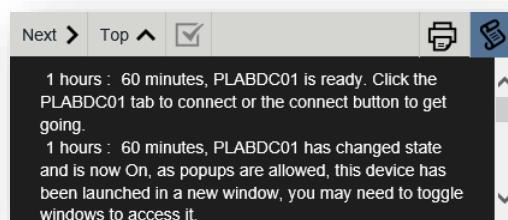


Figure 13 - The Log Panel

## Settings and customization Tab

The Settings and customization tab can be accessed at any time. It displays options for customizing your Practice Labs experience.

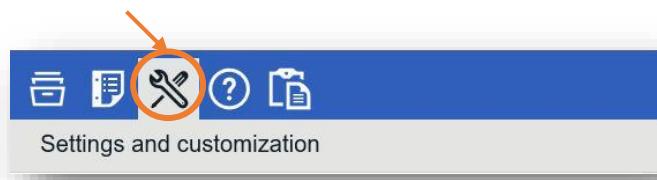


Figure 14 - The Settings tab in the Content Pane

Please refer to the **Settings** section of this document for a detailed explanation of the options available on the Settings tab.

## Help & Support Tab

The Help & Support tab is where you can access information to help resolve lab issues and to access support if the help information does not resolve the issue.



Figure 15 - Help & Support tab in the Content Pane

Please refer to the **Help & Support** section of this document for a detailed explanation of the options available on this tab.

## Additional Features Tab

The Additional Features Page is currently used to view and download any files you have uploaded to the intranet whilst inside the labs.



For a more detailed explanation of this feature please go to the **Transfer a File Between Devices** section of this document.

# The Lab Toolbar

The Lab Toolbar separates the Content Pane from the Device Pane, and hosts a variety of controls to help you manage your lab session.

## Resize Panes

The left border of the Lab Toolbar is a clickable element that can be positioned using drag and drop. Dragging the bar to the right expands the visible content pane.

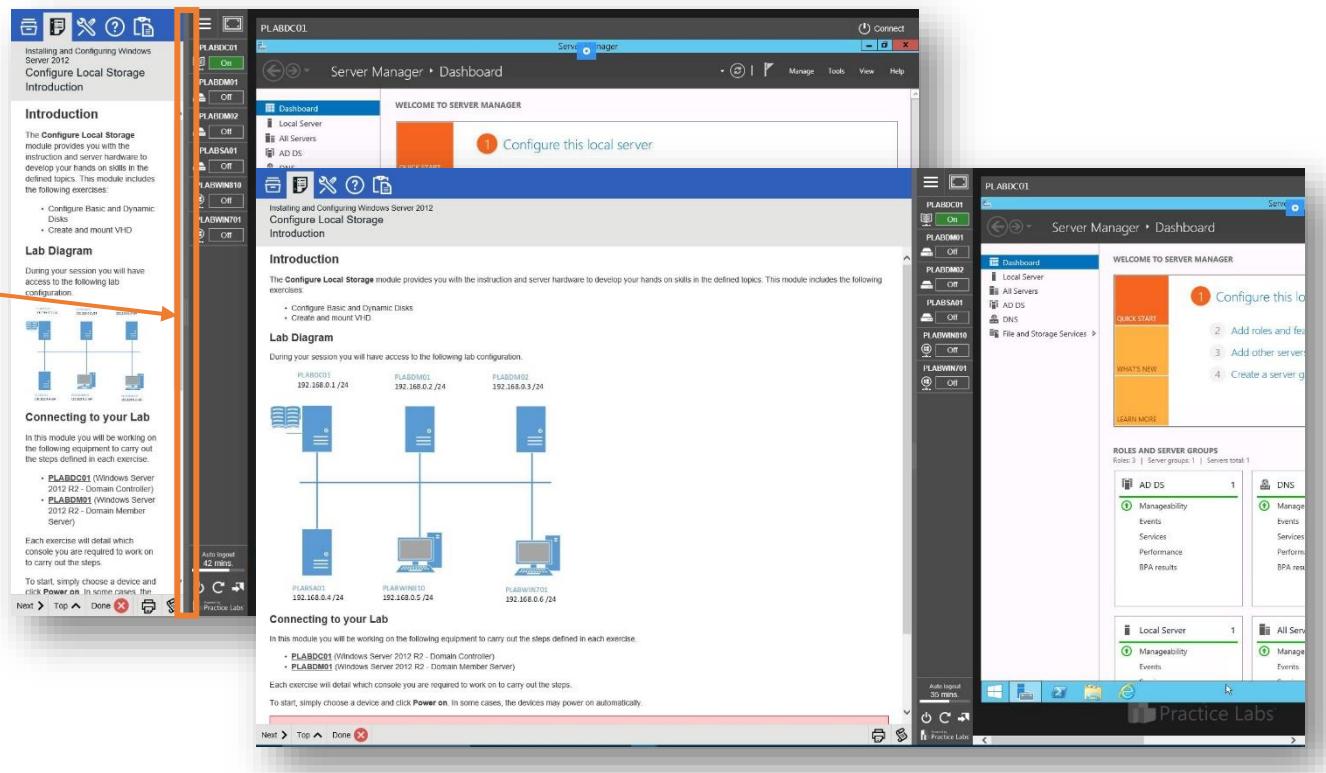
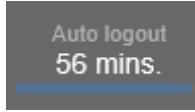
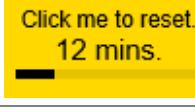
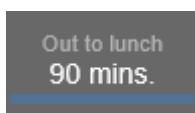


Figure 16 - Content and Device Panes resized using the Lab Toolbar

## Buttons

The Lab Toolbar features the following buttons:

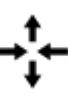
Button	Name	Function
	Show/Hide Content Pane button	Hides the Content Pane to maximise available screen space to display the device pane.
	Fit Device to Screen button	Recalibrate the device resolution to fit the available space in the device pane
	Power On All Devices button	Power on all devices
	Reset Active Devices button	Reset all devices that are currently powered on, this will lose any current progress made within the devices
	Logout button	Logout from the Practice Labs platform. This action will release and reset the devices within the Lab for re-use.
	Auto Logout Reset button	Clicking the count down area/button will reset the lab time to 60 minutes.
	Logout Warning (15 Minutes)	Counter Showing 15 minutes or less until auto logout. The counter area will turn yellow
	Logout Warning (7 Minutes)	Counter showing less than 7 minutes left until auto logout. The counter turns red and warns the user that they are about to be logged off.
	Out to Lunch counter	Counter showing remaining time out to lunch. Clicking the counter reverts to default counter. The Out to lunch feature is available in the Settings Tab.

## Device Icons

When you access a lab guide, the Lab Toolbar will display icons for all the devices available in that lab. The icon indicates the name, type and state of a device.

### Device type

The device type is indicated by a graphic as shown in the table below. Note that not all devices can be directly accessed.

	Domain Controller		Database Server
	Mail Server		Web Server
	Management Server		File Server
	Member/Standalone Server		Windows Desktop
	Firewall		Router
	Switch		

### Device state indicator

The device status is indicated by text and a graphic as shown in the table below.

Icon	State
	The device is currently turned off
	The device is busy. This state is shown when the device is starting up, shutting down or resetting, and is not available to connect.
	The device is powered on and is available to connect
	The device is suspended and must be resumed before connecting

**Note:** Devices are powered off until a lab guide is loaded, at which point one or more devices may be automatically started.

## Device Controls

The device icon on the Lab Toolbar allows you to interact with the lab device as follows:

### Powered Off

When a device is in the powered off state, you can power on the device by clicking **Power On**. The **Refresh** option will check the state of the device and update the icon color if necessary. The Device control options appear when you hover over the device with your mouse.



Figure 17 - Controls for a powered off device

### Powered On

When the device is powered on, Clicking the relevant text label allows you to interact with it as follows:



Figure 18 - Controls for a powered on device

- **Device Icon** – Sets focus to the device in the Device Pane window
- **Power off** – Send a shutdown signal to the device (*device progress is lost*)
- **Suspend** – Save the state of the device and power it off  
*Note: The device progress is lost when you logout or choose a different Practice Lab in the same login session.*
- **Reboot** – Send a reboot signal to the device (*device progress is saved*)

- **Reset** – Reset the device (*device progress is lost*)
- **Refresh** – Refresh the connection to the device

# The Device Pane

Note: The device pane may continue to automatically display one of your helpful tutorials, until you dismiss or close it.

## Connecting to a Device

Please remember that Practice Labs devices are connecting to real equipment. There may be a short wait between powering on a device and being able to connect to it in the Device Pane.

### Device Viewer

The desktop (or console) of the lab device is displayed in the Device Pane by a viewer. The top left corner of the device viewer shows the name of the connected device, and the top right corner hosts a Connect/Hide button which is used to either refresh the connection to the device or hide it from the device pane view.

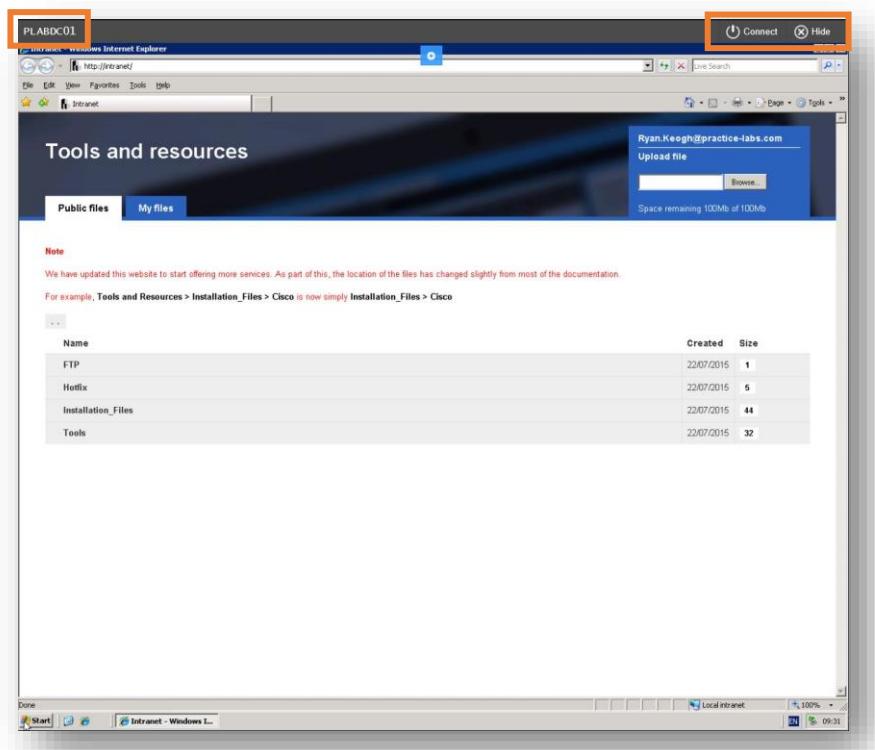


Figure 19 - A Device displayed in the Device Pane

### Device Resolution

The device viewer will load with a default resolution of either 1280 x 1024 pixels or 1024 x 768 depending on the computers native screen resolution.

If you are working on a small screen, you could try using the **Fit Device to Screen** button to recalibrate the device resolution to better fit the available space in the device pane. Clicking

the button again will reapply the default resolution. For larger screens, we do suggest not expanding the browser window beyond 1280 x 1024 to maintain performance.

## Switching Between Devices

### Scrolling

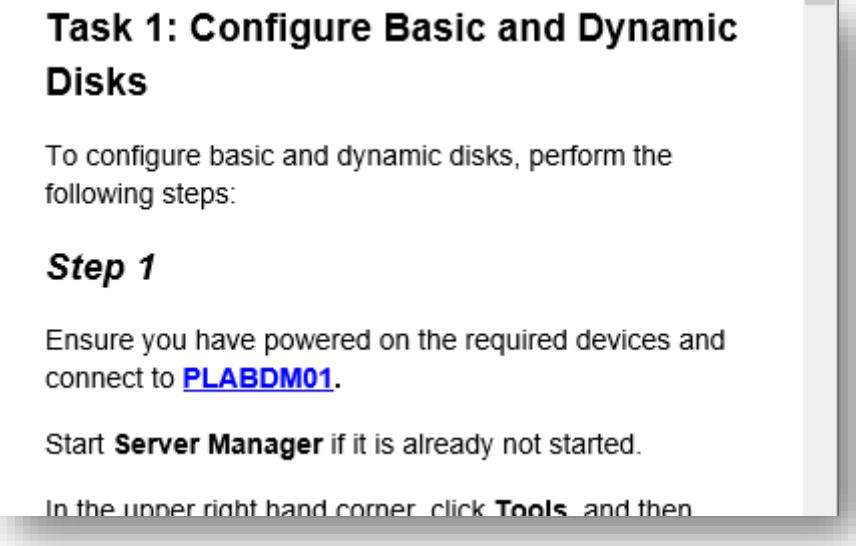
If there are multiple devices powered on at the same time and you have enabled **Scroll** in your **Device View Style**, you can scroll through your available devices using the mouse wheel or the browser's scrollbar.

### Toolbar link

You can also click on the name of the device on the Lab Toolbar (discussed in the previous section) to focus the device pane on the selected device.

### Content link

The Settings tab contains a setting that will display each instance of the device name in the text as a hyperlink.



**Task 1: Configure Basic and Dynamic Disks**

To configure basic and dynamic disks, perform the following steps:

**Step 1**

Ensure you have powered on the required devices and connect to [PLABDM01](#).

Start **Server Manager** if it is already not started.

In the upper right hand corner, click **Tools**, and then

*Figure 20 - Lab Guide with Linked Names enabled*

For example, in the text above the name of the device is shown as a link which makes it easier to switch to correct device for the task.

Please refer to the **Settings** section of this document for instructions to enable this option.

# Interacting with Devices

## Auto Login

Devices running Microsoft Windows are set up to log on with a pre-configured administrator account. Lab exercises that require alternate credentials will specify the username and password when necessary.

To use alternate credentials, please disable the **“Auto login Microsoft Windows devices”** setting, as described in the **Settings** section, before connecting to the device.

## Copy and Paste

### Using the HTML5 client

The Practice Labs platform uses a HTML5-based connection by default. This technology does not support copying and pasting text directly between your desktop and the lab device; instead, it has a Clipboard application which works as follows:

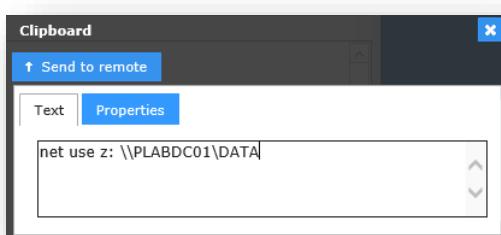
1. Click on the '+' icon located in the top middle area of the device window



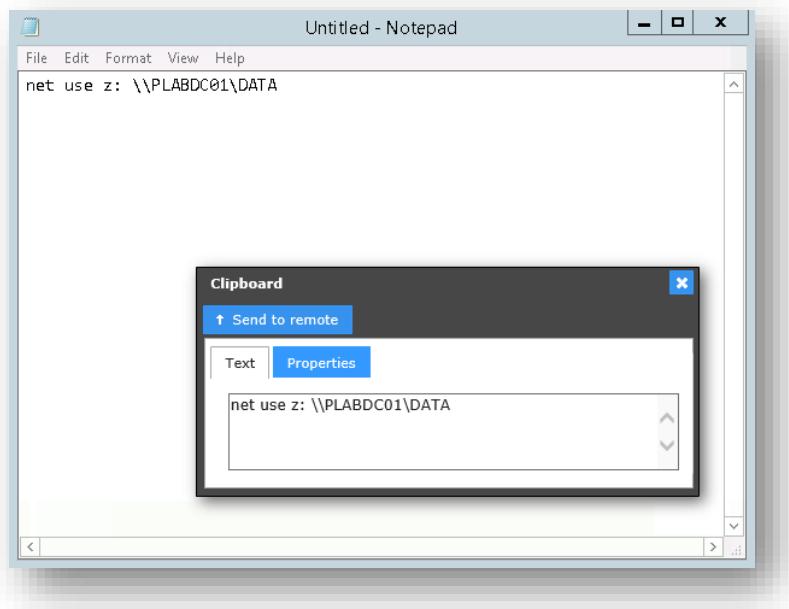
2. Click on the Clipboard button



3. When the Clipboard dialog box is displayed you can copy and paste text from your local machine into the box provided



4. Click the **Send to remote** button on the Clipboard dialog box to transfer the text to the device's clipboard
5. Position the cursor where the text needs to be pasted on the device and use normal methods to paste from the device's clipboard to the appropriate application.



### **Copy and Paste when using the Java client**

Currently it is not possible to Copy/Paste text to the Lab Device Client when using the Java Client. This is a known issue with no current estimated fix date.

## Transfer a File Between Devices

If you need to share a file between devices in a lab, you can do this by uploading it to the Intranet.

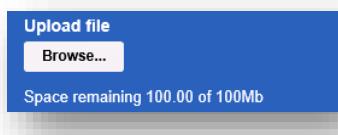
### The Practice Labs Intranet

The Practice Labs Intranet is a basic website used for storing files used in labs, but it also has a file upload feature.

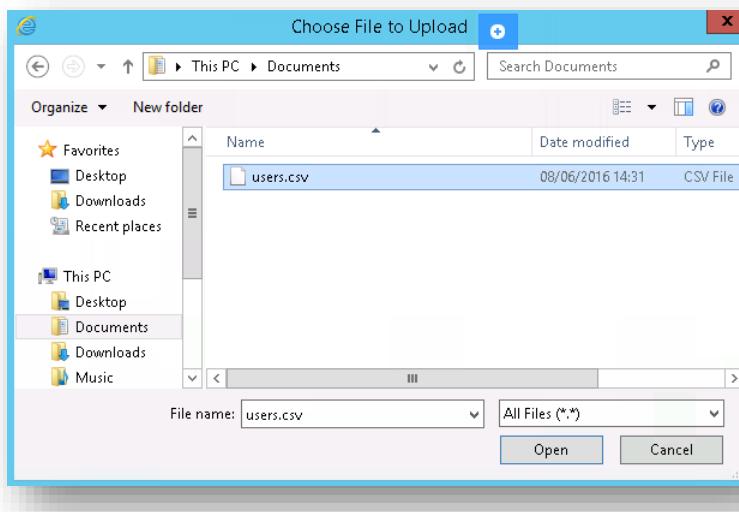
Once a file has been uploaded to the Intranet it is stored in a private area that only you can access within the Devices in our Labs; you can then log on to any other device in that lab and access the file.

### Upload a file

1. Open Internet Explorer in any lab device (defaults to <http://intranet>)
2. Click the **Browse** button in the top right corner



3. In the Browse dialog box, navigate to the location where your file is stored within the Device



4. Select the file and click **Open**

5. Confirm that your file has been uploaded and is shown on the *My files* view.

## Access your files

To access your file from another device:

1. Log on to the lab device
2. Open Internet Explorer to open the Intranet page
3. Position the cursor in the address bar and edit the URL so that it reads

<http://intranet/home.aspx?myfile=1>

4. On the My files page, click on your file name
5. Use the Internet Explorer download dialog to open or save the file

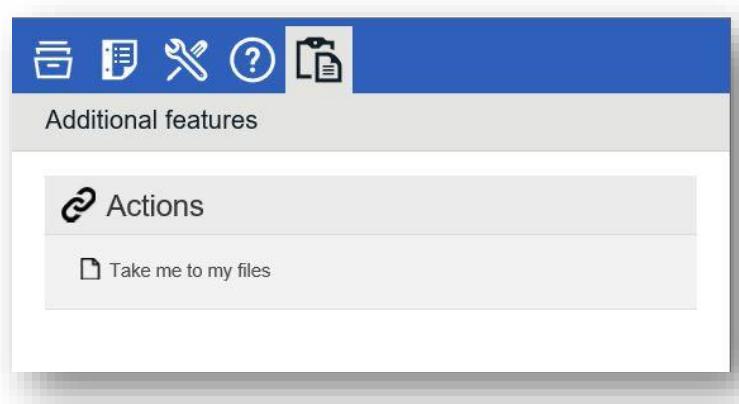


## Download files to a local PC

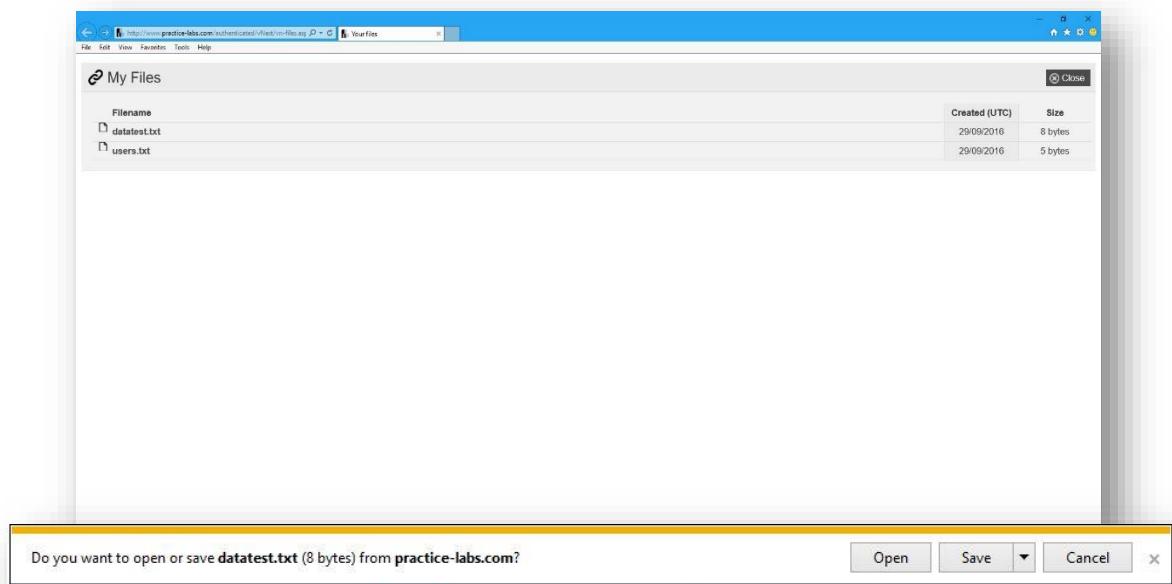
1. In order to download files to your local pc select the **Additional Features** icon.



2. Click on the **Take me to my files** link.



3. The **My Files** page will launch in a new tab in your browser with a list of all uploaded files.



4. Select a filename to begin the download.

**Note:** Depending on your operating system these steps may vary. Selecting **Save** in this example would save the file to your default location but others may vary.

# Completing Lab Guides and Labs

When you have completed all the exercises in a lab guide, you can mark that guide as completed using the **Done** at the bottom of the Exercise Content tab.

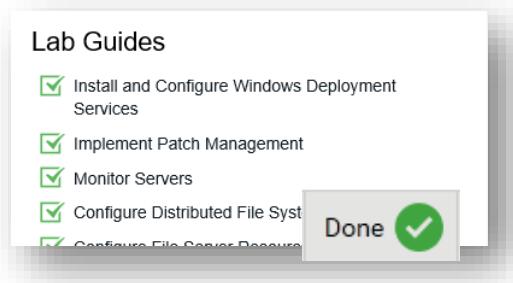


Figure 21 - Completed Lab Guides

Once all the lab guides are marked as completed, the Practice Lab as a whole will show as completed in the *Available Labs* view.



Figure 22 - A completed Lab on the Available Labs list

## Logout

When you have completed your lab, you can exit the lab environment by clicking the **Logout** button located at the bottom left of the *Content Pane*, as shown in *Figure 23* below.



Figure 23 - The Logout button

When you click **Logout**, all connections to devices will be closed and the lab devices will be reset to their default state losing any progress made within the Labs.

Before logging out, please make sure you are at a natural break point, for example just before you start a new module.



# Settings

Your lab environment can be controlled using controls found on the *Settings* tab. Click the **Settings and Customization** tab (highlighted below) to view the available controls in the Content Pane.

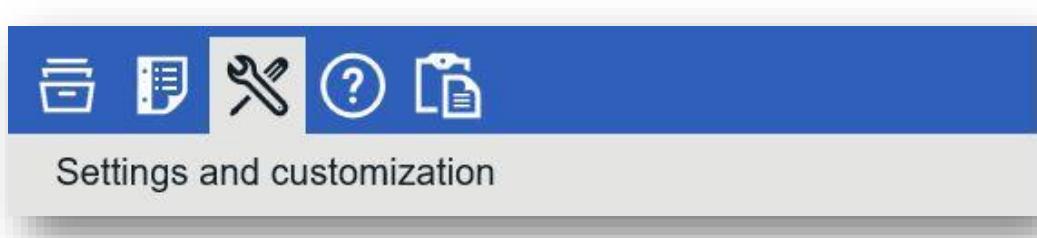


Figure 24 - The *Settings and Customization* tab highlighted in grey

## Personal

### Email address

This field allows you to associate an email address with your lab login. This address will only be used in communications originating from the lab; for example, creating a support ticket.

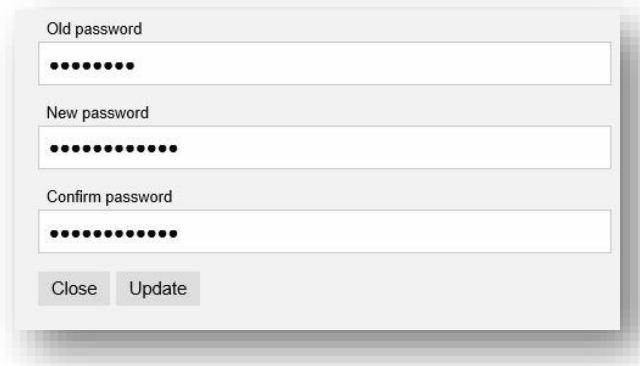
Type your email address in the field and click **Save**.



Figure 25 - The *Email address* field

## Change your password

To change your password, click on the **link** below the email address field. This will load the form where you confirm your old password and provide your new password.



Old password	*****
New password	*****
Confirm password	*****

**Close** **Update**

Figure 26 – The **Change password** control

Click the **Change password** button to update your account with your new password.

You can continue with the lab, but you will need to enter your updated password next time you login.

## Device

### Server auto login

Automatically logs you in to Microsoft lab devices with default Administrator account credentials. This feature is enabled by default.

Click the toggle button to disable the option.

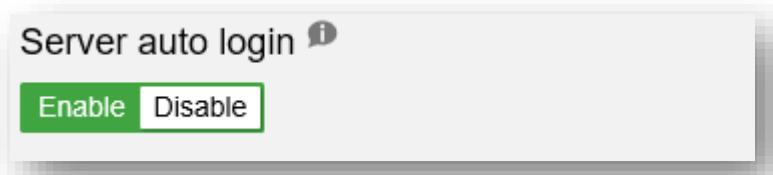


Figure 27 - The **Server auto login** toggle

## Remote desktop client

There are two client technologies available to connect your browser to Practice Labs devices, namely HTML5 and Java. HTML5 is enabled by default. Click the toggle button to enable the Java client. This option is not available in Chrome and Microsoft Edge.

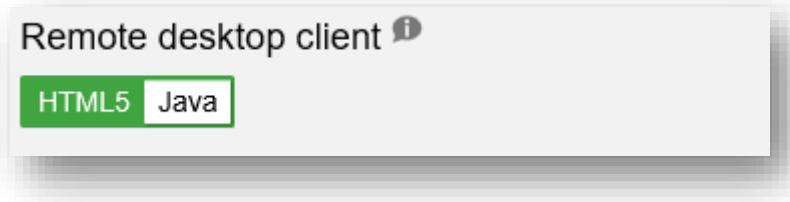


Figure 28 - The **Remote desktop client** toggle

Please refer to **Appendix C – HTML5 and Java Client Comparison** for a feature comparison of the two client types.

## Console pop up mode

Devices are displayed in the Device Pane of the lab interface by default. If you have multiple monitors, or other accessibility requirements, you may find it useful to launch each lab device in a separate browser window.

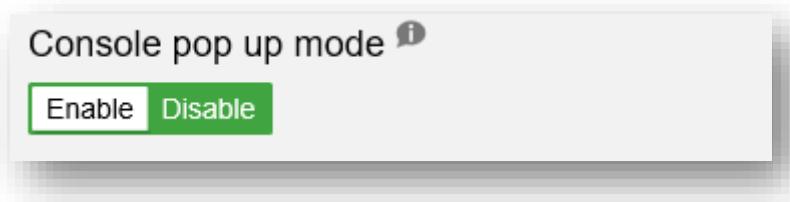


Figure 29 - The **Console pop up mode** toggle

## Console pop up in Full Screen

Similar to the pop up mode, this feature will pop out the device into a full screen window. If you have multiple monitors, or other accessibility requirements, you may find it useful to launch each lab device in a separate browser window at full screen.

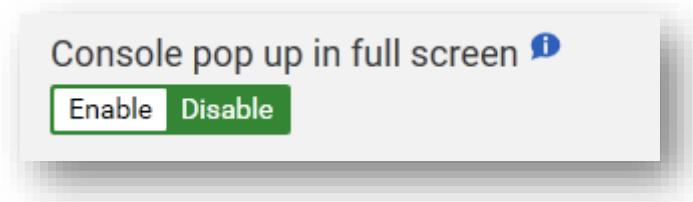


Figure 30 - The **Console pop up in full screen mode** toggle

*Note: The above two features may already be enabled if you have chosen to enable Advanced Accessibility options at first login.*

## Device view style

If more than once lab device is powered on, the device viewers will stack in the Device Pane by default, meaning that you can scroll between devices. If you prefer not to scroll, you can disable the scrolling behavior by anchoring a single device at a time in the Device Pane.

You can then switch between devices by clicking the device name on the Lab Toolbar.

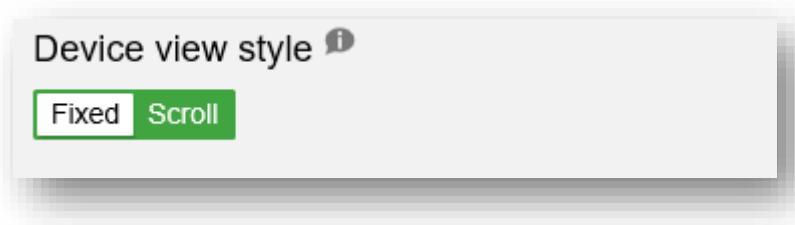


Figure 31 - The **Device view style** toggle

## Platform

### Device links

Apart from using the device icons on the Lab Toolbar, it may also be useful to switch to a device as and when the device name appears in lab guide instructions. Enabling the **Place links on device names in the Lab Guides** toggle will reformat device names that appear in the content as hyperlinks.

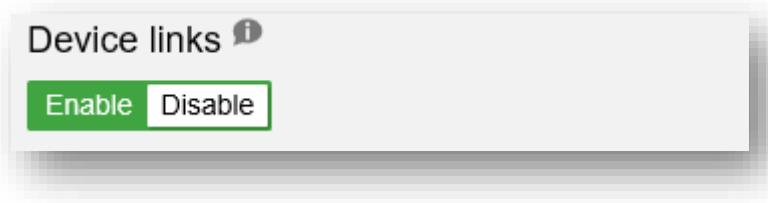


Figure 32 - The **Device links** toggle

### HTTP / HTTPS

If you are accessing Practice Labs from behind a firewall that does not allow HTTPS traffic you may wish to check the status of the Switch to HTTP toggle. This setting is usually disabled, but may have been enabled by default by your course provider.

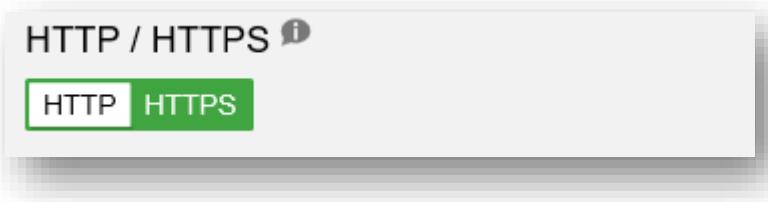


Figure 33 - The **HTTP/HTTPS** toggle

## Advanced accessibility

All web pages in the Practice Labs platform are designed with accessibility in mind, however users with screen readers will benefit from enabling Advanced accessibility which enables text-to-speech for Cisco console sessions and turns on console pop up mode for Microsoft devices.

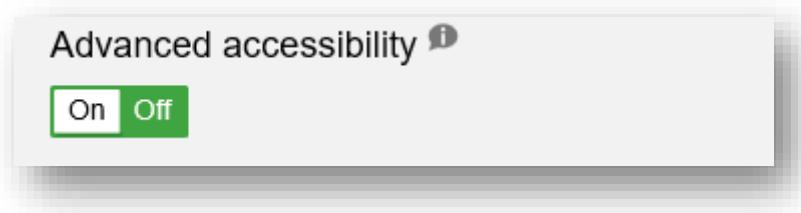


Figure 34 – The **Advanced accessibility** toggle

## High contrast

This mode offers better ease of viewing by changing the style and colors of all elements on the platform.

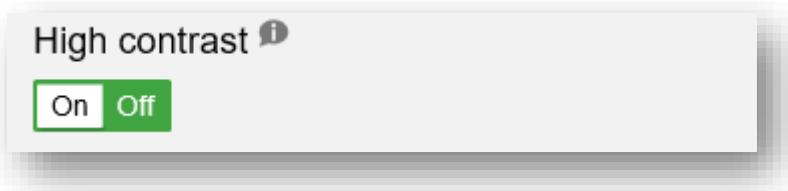


Figure 35 – The **High contrast** toggle

## Font size

The font size of all text used in the Practice Labs platform can be scaled up or down to suit your screen size and visual requirements.

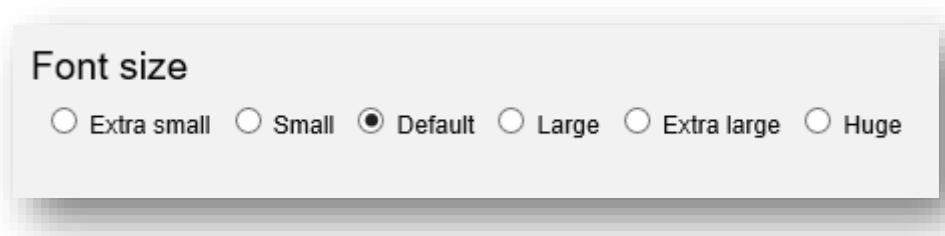


Figure 36 – The **Font size** selector

## Miscellaneous

### Out to lunch

Clicking this toggle will reset your lab time and start an "out to lunch" timer that runs for 90 minutes.



Figure 37 - The **Out to lunch** toggle

At the end of this period you will be logged out of your lab. If you return before the timer expires, you can click on the timer on the Lab Toolbar to revert back to the 60 minute lab counter.

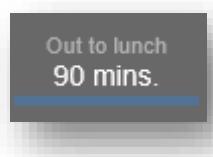


Figure 30 - Out to lunch counter

# Help & Support

The **Help & Support** tab hosts resources designed to assist you in solving most lab issues you may encounter. In the event that the information in Help & Support does not resolve the issue, you can create a support ticket.



Figure 39 - Help & Support tab in the Content Pane

## Tutorials and Guides

This section contains the link to download this guide.

## System Requirements

This section contains recommended and minimum system requirements. The requirements are also documented in *Appendix B - System Requirements* for your reference.

Please verify that your system meets these requirements before logging a support ticket.

## Support

### Log a ticket

If you have a question that this guide has not been able to answer, or you are experiencing an issue with a Practice Lab, you can log a support ticket.

When you click the link, the request type menu will be displayed, as shown below.

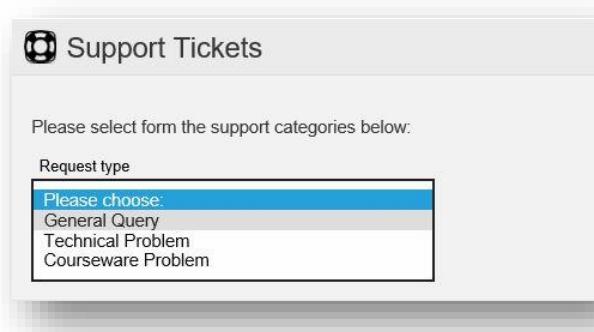


Figure 40 - Log a support ticket

Once you have chosen the request type you will be given pointers as to what to include in your ticket in order to provide our engineers with the necessary information. Select next to continue.

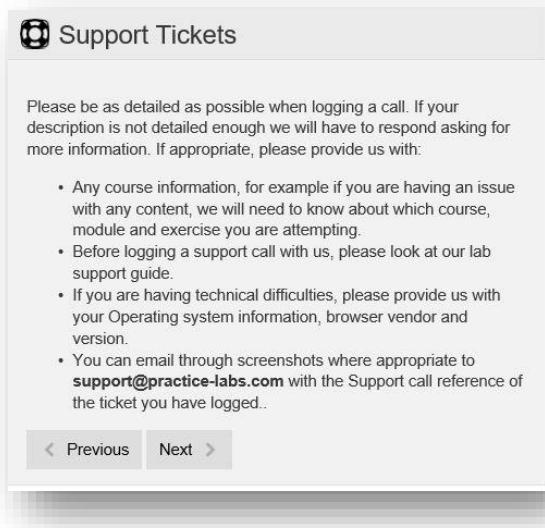


Figure 41 – Support ticket information guide

Once you have selected next you will be prompted for your email address and problem description.

When both fields have been filled in the Submit Ticket button will become active, enabling you to create the ticket.

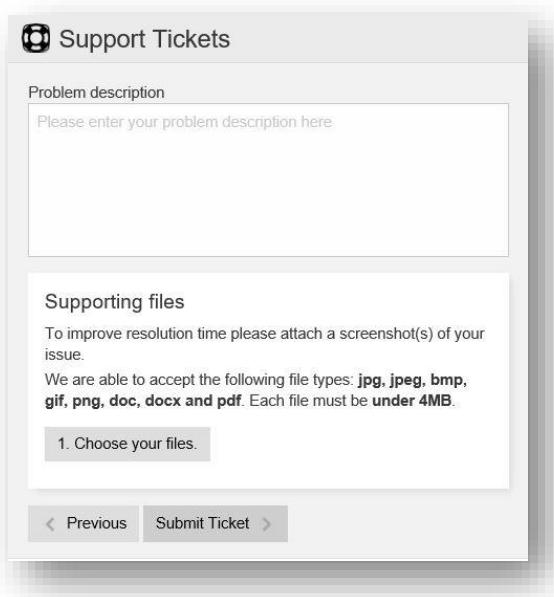


Figure 42 - Completing the Problem description and submitting the ticket

When the ticket is successfully created you will see a confirmation message with your ticket reference number, which will be used in all following email correspondence.

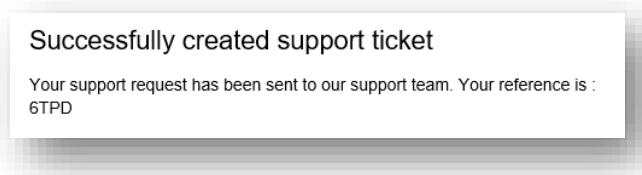


Figure 43 - Support ticket confirmation message

## Important links, cookies and terms

To view the latest terms and policies, please refer to the links below:

-  [Terms and conditions](#)
-  [Fair use policy](#)
-  [Privacy policy](#)
-  [Cookie policy](#)

## Contact information

Should you wish to contact us directly for any other enquiry, you can use the most up-to-date contact details in this section, or on our [website](#).

## Inline Help

The Settings section has inline help pop ups that will provide more detail on what each option does. Click the information icon's as highlighted below to open a pop up with the settings description

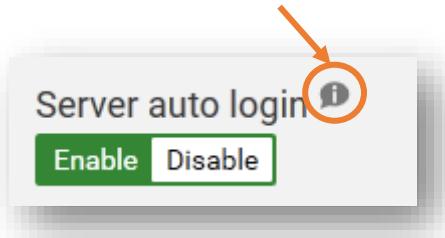


Figure 44 - Inline help descriptions

## Appendix A - Frequently Asked Questions

**Q: I can login, but I am unable to access my courses; it says “Error 4503 no account exists”.**

**A1:** Your account has not been created yet, please contact your course provider and make sure that your account has been created.

**A2:** If you have already done this, and are still receiving this message, please [Log a ticket](#) and tell us the name of your course provider and details of your account so that we can resolve the issue.

---

**Q: I don't have the correct courses, or I don't have any courses.**

**A:** Please Log a ticket with us and we will investigate your account.

**Q: I can't connect to the lab devices, I receive “Terminal Server error: Received an error connecting to: xxx.xxx.xxx.xxx”**

**A1:** Please try clicking on **Connect** again, the device might not have powered up fully on the first connection attempt.

**A2:** If you receive this error when using the Java client, please verify that you are running the latest version of Java by visiting the Verify Java Version page on the official Java website.

**A3:** Try switching back to the HTML5 client via the Remote desktop client toggle.

---

**Q: I am receiving a message saying there are no labs available or they are under maintenance.**

**A:** Occasionally all the labs of a particular course may be in use or under maintenance. You can enter your email address to be alerted when a lab becomes available, or you can try again later. If the issue persists please Log a ticket.

---

**Q: I was logged out after an hour while using the lab, why?**

**A1:** Labs have an extendable maximum time of 60 minutes. If you need more time to complete a lab, please click on the **Auto Logout Reset** button on the Lab Toolbar. This will rest the timer to give you another 60 minutes of lab time.

**A2:** If you need to be absent from your computer for more than an hour, please use the Out to lunch toggle under the Settings tab; this will set a 90 minute lab timer.

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**Q: Can I save my work?**

**A:** Unfortunately you are unable to save your work from one Lab Guide to another, or when you log out. Each Lab Guide is modular and autonomous, making saving unnecessary by design. You can use the Intranet file upload feature to store files for future usage. This feature will be coming soon in 2017.

---

**Q: What browsers are supported?**

**A:** Please refer to the Browser section of Appendix B - System Requirements for the list of supported browsers

---

**Q: Why am I getting an error that says “No data received, server sent no data”?**

**I’m using Chrome.**

**A:** Some versions of Chrome experience this issue when HTTPS connections are used. If your security policy allows it, you can try switching to a HTTP connection using the HTTP / HTTPS toggle under Settings. If this does not resolve the issue please Log a ticket.

---

**Q: I can’t carry out one of the tasks in the lab**

**A1:** Please ensure you follow each step carefully when carrying out tasks, refer back to your course content to ensure you understand that task that you are carrying out and have not missed a step.

**A2:** Remember the devices are real so changes you make may impact another task later in the Lab Guide. Not completing one task correctly can cause errors in later tasks.

**A3:** If you feel there is an error in the content, please Log a ticket so that we can rectify the fault.

---

# Appendix B - System Requirements

## Hardware

### Recommended

- Processor speed: 2Ghz / multi-core
- Screen dimensions: 1920px x 1080px or higher (full HD or higher)
- Broadband / Internet access requirements: 5mb download, 1mb upload

### Minimum

- Processor speed: 1.5Ghz
- Screen dimensions: 1280px x 1024px
- Broadband / Internet access requirements: 2mb download, 256kpbs upload

## Operating System

- Microsoft Windows XP with SP2/Vista/7/8/8.1/10
- Microsoft Windows Server 2003/2008/2013
- Linux Red Hat, Fedora, SUSE, Ubuntu
- Apple Mac OS X

## Networking

- Internet connection minimum of 512Kbs
- HTTPS Access (Port 443)
- HTTP Access (Port 80)

## Software

- Sun Java version 1.7+ (If using our Java client)

## Browser

### HTML 5 Client

- Microsoft Edge 13 or later
- Microsoft Internet Explorer 10 or later
- Chrome 29 or later
- Firefox 45 or later
- Apple Safari 9.1 or later

### Java Client

- Internet Explorer 10 or later
- Mozilla Firefox 45 or later

**Note:** For both client technologies, if you have a Pop up blocker enabled on your computer you will need to allow popups from **\*.practice-labs.com** as an exception.

## Appendix C – HTML5 and Java Client Comparison

### HTML5

Pros	Cons
Corporate proxy friendly	Does not perform as well as Java client
Does not require any additional downloads or software	Requires HTML5 compliant browser
Smaller resource footprint	Not able to use copy and paste with keyboard shortcuts

### Java

Pros	Cons
Fast performance of lab devices	Requires Java to be downloaded and installed
Able to use copy and paste keyboard shortcuts	Frequent prompts to update to latest version
Consumes more system resources	Occasionally blocked by security products