

Administrator's Guide for Microsoft Diagnostics and Recovery Toolset (DaRT) 7

MDOP Information Experience Team

Guide

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Summary: Microsoft Diagnostics and Recovery Toolset (DaRT) 7 lets you diagnose and repair a computer that cannot be started or that has problems starting as expected. By using DaRT 7, you can recover end-user computers that have become unusable, diagnose probable causes of issues, and quickly repair unbootable or locked-out computers. When it is necessary, you can also quickly restore important lost files and detect and remove malware, even when the computer is not online.

DaRT 7 lets you create a DaRT recovery image in International Organization for Standardization (ISO) and Windows Imaging (WIM) file formats and burn the image to a CD, DVD, or USB. You can then use the recovery image files and deploy them locally or to a remote partition or a recovery partition.

DaRT 7 is an important part of the Microsoft Desktop Optimization Pack (MDOP), a dynamic solution available to Software Assurance customers that helps reduce software installation costs, enables delivery of applications as services, and helps manage and control enterprise desktop environments.

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Applies to: DaRT 7.0

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Getting Started with DaRT 7.0

DaRT requires thorough planning before you deploy it or use its features. If you are new to this product, we recommend that you read the documentation carefully. Before you deploy the product to a production environment, we also recommend that you validate your deployment plan in a test network environment. You might also consider taking a class about relevant technologies. For more information about Microsoft training opportunities, see the Microsoft Training Overview at <http://go.microsoft.com/fwlink/p/?LinkId=80347>.

This section provides general information for administrators who are evaluating and using Microsoft Diagnostics and Recovery Toolset (DaRT) 7.



Note

A downloadable version of this document and the DaRT 7 Evaluation Guide can be downloaded from <http://go.microsoft.com/fwlink/?LinkId=232274>.

Getting Started With DaRT 7

- [About DaRT 7.0](#)
Provides information specifically related to DaRT including what is new in DaRT 7.
- [Overview of the Tools in DaRT 7.0](#)
Provides general information about the tools in Microsoft Diagnostics and Recovery Toolset (DaRT) 7.
- [Accessibility for DaRT 7.0](#)
Provides information about features and services that make this product and its corresponding documentation more accessible for people with disabilities.

About DaRT 7.0

Microsoft Diagnostics and Recovery Toolset (DaRT) 7 helps you troubleshoot and repair Windows-based desktops. This includes those desktops that cannot be started. DaRT is a powerful set of tools that extend the Windows Recovery Environment (WinRE). By using DaRT, you can analyze an issue to determine its cause, for example, by inspecting the computer's event log or system registry.

DaRT also provides tools to help you fix a problem as soon as you determine the cause. For example, you can use the tools in DaRT to disable a faulty device driver, remove hotfixes, restore deleted files, and scan the computer for malware even when you cannot or should not start the installed Windows operating system.

DaRT can help you quickly recover computers that are running either 32-bit or 64-bit versions of Windows 7, typically in less time than it would take to reimagine the computer.

About the DaRT 7 Recovery Image

Functionality in DaRT lets you create a recovery image that is based on WinRE combined with a set of tools that DaRT provides. The DaRT recovery image takes advantage of WinRE, from which you can access the **Diagnostics and Recovery Toolset** window.

Use the **DaRT Recovery Image Wizard** to create the DaRT recovery image. By default, the wizard creates an International Organization for Standardization (ISO) image file on your desktop that is named DaRT70.iso, although you can specify a different location and file name. The wizard also lets you burn the image to a CD or DVD. After you have finished the wizard, you can save the recovery image to a USB flash drive or save it in a format that you can use to create a remote partition or a recovery partition.

When you have to use DaRT to startup an end-user computer that will not start, you can follow the instructions at [How to Recover Local Computers Using the DaRT Recovery Image](#).

For detailed information about the tools in DaRT, see [Overview of the Tools in DaRT 7.0](#).

What's New in DaRT 7

DaRT 7 continues to support all the scenarios included in previous versions and it adds a new Remote Connection feature in addition to three new deployment options.

DaRT 7 Image Creation

The wizard that you use to create DaRT ISO images is now called **DaRT Recovery Image** and it now supports an option to enable or disable the new Remote Connection feature. Remote Connection lets a helpdesk agent run the DaRT tools from a remote location. In previous releases, the helpdesk agent had to be physically present at the end-user computer to run the DaRT tools.

The wizard also lets you customize the Welcome message for the Remote Connection feature (the message is shown when end users run the Remote Connection tool). IT Admins can also configure which Port Number should be used by Remote Connection.

For more information about the **DaRT Recovery Image Wizard** or Remote Connection, see [Creating the DaRT 7.0 Recovery Image](#).

DaRT 7 ISO Deployment

In addition to burning to a CD or DVD, DaRT 7 adds three new options when you deploy the ISO that contains the DaRT recovery image:

- USB flash drive deployment
- Remote partition deployment
- Recovery partition deployment

The USB flash drive deployment option lets a company use DaRT on computers that do not have CD or DVD drives available. The recovery and remote partition options let end users have easy access to the DaRT image and to enable the Remote Connection functionality.

For more information about how to deploy DaRT recovery images, see [Deploying the DaRT 7.0 Recovery Image](#).

DaRT 7.0 release notes

For more information, and for late-breaking news that did not make it into the documentation, see the [Release Notes for DaRT 7.0](#).

Overview of the Tools in DaRT 7.0

From the **Diagnostics and Recovery Toolset** window in Microsoft Diagnostics and Recovery Toolset (DaRT) 7, you can start any of the individual tools that were included when the DaRT recovery image was created. For information about how to access the **Diagnostics and Recovery Toolset** window, see [How to Recover Local Computers Using the DaRT Recovery Image](#).

If it is available, you can use the **Solution Wizard** on the **Diagnostics and Recovery Toolset** window to select the tool that best addresses your particular issue, based on a brief interview.

Exploring the DaRT Tools

This section describes the various tools that are part of DaRT.

Registry Editor

You can use **Registry Editor** to access and change the registry of the Windows operating system that you are analyzing or repairing. This includes adding, removing, and editing keys and values, and importing registry (.reg) files.

Caution

This topic describes how to change the Windows registry by using Registry Editor. If you change the Windows registry incorrectly, you can cause serious problems that might require you to reinstall Windows. You should make a backup copy of the registry files (System.dat and User.dat) before you change the registry. Microsoft cannot guarantee that the problems that might occur when you change the registry can be resolved.

Change the registry at your own risk.

Locksmith

The **Locksmith Wizard** lets you set or change the password for any local account on the Windows operating system that you are analyzing or repairing. You do not have to know the current password. However, the password that you set must comply with any requirements that are defined by a local Group Policy object. This includes password length and complexity.

You can use **Locksmith** when the password for a local account, such as the local Administrator account, is unknown. You cannot use **Locksmith** to set passwords for domain accounts.

Crash Analyzer

Use the **Crash Analyzer Wizard** to quickly determine the cause of a computer crash by analyzing the memory dump file on the Windows operating system that you are repairing. **Crash Analyzer** examines the crash dump file for the driver that caused a computer to fail. Then, you

can disable the problem device driver by using the **Services and Drivers** node in the **Computer Management** tool.

The **Crash Analyzer Wizard** requires the Debugging Tools for Windows and symbol files for the operating system that you are repairing. You can include both requirements when you create the DaRT recovery image. If they are not included on the recovery image and you do not have access to them on the computer that you are repairing, you can copy the memory dump file to another computer and use the stand-alone version of **Crash Analyzer** to diagnose the problem.

Running **Crash Analyzer** is a good idea even if you plan to reimage the computer. The image could have a defective driver that is causing problems in your environment. By running **Crash Analyzer**, you can identify problem drivers and improve the image stability.

For more information about **Crash Analyzer**, see [Diagnosing System Failures with Crash Analyzer](#).

File Restore

File Restore lets you try to restore files that were accidentally deleted or that were too big to fit in the Recycle Bin. **File Restore** is not limited to regular disk volumes, but can find and restore files on lost volumes or on volumes that are encrypted by BitLocker.

Disk Commander

Disk Commander lets you recover and repair disk partitions or volumes by using one of the following recovery processes:

- Restore the master boot record (MBR)
- Recover one or more lost volumes
- Restore partition tables from **Disk Commander** backup
- Save partition tables to **Disk Commander** backup



Warning

We recommend that you back up a disk before you use **Disk Commander** to repair it. By using **Disk Commander**, you can potentially damage volumes and make them inaccessible. Additionally, changes to one volume can affect other volumes because volumes on a disk share a partition table.

Disk Wipe

You can use **Disk Wipe** to delete all data from a disk or volume, even the data that is left behind after you reformat a hard disk drive. **Disk Wipe** lets you select from either a single-pass overwrite or a four-pass overwrite, which meets current U.S. Department of Defense standards.



Warning

After wiping a disk or volume, you cannot recover the data. Verify the size and label of a volume before erasing it.

Computer Management

Computer Management is a collection of Windows administrative tools that help you troubleshoot a problem computer. You can use the **Computer Management** tools in DaRT to view system information and event logs, manage disks, list autoruns, and manage services and drivers. The **Computer Management** console is customized to help you diagnose and repair problems that might be preventing the Windows operating system from starting.

Explorer

The **Explorer** tool lets you browse the computer's file system and network shares so that you can remove important data that the user stored on the local drive before you try to repair or reimage the computer. And because you can map drive letters to network shares, you can easily copy and move files from the computer to the network for safekeeping or from the network to the computer to restore them.

Solution Wizard

The **Solution Wizard** presents a series of questions and then recommends the best tool for the situation, based on your answers. This wizard helps you determine which tool to use when you are not familiar with the tools in DaRT.

TCP/IP Config

When you boot a problem computer into DaRT, it is set to automatically obtain its TCP/IP configuration (IP address and DNS server) from Dynamic Host Configuration Protocol (DHCP). If DHCP is unavailable, you can manually configure TCP/IP by using the **TCP/IP Config** tool. You first select a network adapter, and then configure the IP address and DNS server for that adapter.

Hotfix Uninstall

The **Hotfix Uninstall Wizard** lets you remove hotfixes or service packs from the Windows operating system on the computer that you are repairing. Use this tool when a hotfix or service pack is suspected in preventing the operating system from starting.

We recommend that you uninstall only one hotfix at a time, even though the tool lets you uninstall more than one.

Important

Programs that were installed or updated after a hotfix was installed might not work correctly after you uninstall a hotfix.

SFC Scan

The **SFC Scan** tool starts the **System File Repair Wizard** and lets you repair system files that are preventing the installed Windows operating system from starting. The **System File Repair Wizard** can automatically repair system files that are corrupted or missing, or it can prompt you before it performs any repairs.

Search

Before reimaging a computer, recovering files from the local hard disk is important, especially when the user might not have backed up or stored the files elsewhere.

The **Search** tool opens a **File Search** window that you can use to find documents when you do not know the file path or to search for general kinds of files across all local hard disks. You can search for specific file-name patterns in specific paths. You can also limit results to a date range or size range.

Standalone System Sweeper

The **Standalone System Sweeper** can help detect malware and unwanted software and warn you of security risks. You can use this tool to scan a computer for and remove malware even when the installed Windows operating system is not running. When the **Standalone System Sweeper** detects malicious or unwanted software, it prompts you to remove, quarantine, or allow for each item.

Malware that uses rootkits can mask itself from the running operating system. If a rootkit-enabled virus or spyware is in a computer, most real-time scanning and removal tools can no longer see it or remove it. Because you boot the problem computer into DaRT and the installed operating system is offline, you can detect the rootkit without it being able to mask itself.

Remote Connection

The **Remote Connection** tool in DaRT lets you remotely run the DaRT tools on an end-user computer. After certain specific information is provided by the end user (or by a helpdesk professional working on the end-user computer), the IT administrator can take control of the end user's computer and run the necessary DaRT tools remotely.

Important

The two computers establishing a remote connection must be part of the same network.

Accessibility for DaRT 7.0

Microsoft is committed to making its products and services easier for everyone to use. This section provides information about features and services that make this product and its corresponding documentation more accessible for people with disabilities.

Access Any Command with a Few Keystrokes

Access keys let you quickly use a command by pressing a few keys. You can get to most commands by using two keystrokes. To use an access key:

1. Press ALT.

The keyboard shortcuts are displayed over each feature that is available in the current view.

2. Press the letter shown in the keyboard shortcut over the feature that you want to use.

Note

To cancel the action that you are taking and hide the keyboard shortcuts, press ALT.

Documentation in Alternative Formats

If you have difficulty reading or handling printed materials, you can obtain the documentation for many Microsoft products in more accessible formats. You can view an index of accessible product documentation on the Microsoft Accessibility website. In addition, you can obtain additional Microsoft publications from Learning Ally (formerly Recording for the Blind & Dyslexic, Inc.). Learning Ally distributes these documents to registered, eligible members of their distribution service.

For information about the availability of Microsoft product documentation and books from Microsoft Press, contact:

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Telephone number from within the United States:	(800) 221-4792
Telephone number from outside the United States and Canada:	(609) 452-0606
Fax:	(609) 987-8116
http://www.learningally.org/	Web addresses can change, so you might be unable to connect to the website or sites mentioned here.

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- For customer service, contact Microsoft Sales Information Center at (800) 892-5234 between 6:30 AM and 5:30 PM Pacific Time, Monday through Friday, excluding holidays.
- For technical assistance in the United States, contact Microsoft Product Support Services at (800) 892-5234 between 6:00 AM and 6:00 PM Pacific Time, Monday through Friday, excluding holidays. In Canada, dial (905) 568-9641 between 8:00 AM and 8:00 PM Eastern Time, Monday through Friday, excluding holidays.

Microsoft Support Services are subject to the prices, terms, and conditions in place at the time the service is used.

For More Information

For more information about how accessible technology for computers helps to improve the lives of people with disabilities, see the [Microsoft Accessibility website](#).

Planning for DaRT 7.0

The goal of deployment planning is to successfully and efficiently deploy a product so that it does not disrupt your users or the network.

There are a number of different deployment configurations and prerequisites that you must consider before you create your deployment plan. This section includes information that can help you gather the information that you must have to formulate a deployment plan that best meets your business requirements.

Planning information

- [Planning to Deploy DaRT 7.0](#)

There are a number of different deployment configurations and prerequisites that you must consider before you create your deployment plan. This section includes information that can help you gather the information that you must have to formulate a deployment plan that best meets your business requirements.

- [DaRT 7.0 Planning Checklist](#)

This checklist can be used to help you plan for preparing your computing environment for DaRT 7 deployment.

Planning to Deploy DaRT 7.0

There are a number of different deployment configurations and prerequisites that you must consider before you create your deployment plan. This section includes information that can help you gather the information that you must have to formulate a deployment plan that best meets your business requirements.

Consider the following when you plan your Microsoft Diagnostics and Recovery Toolset (DaRT) 7 installation:

- When you install DaRT, you can either install all functionality on an IT administrator computer where you will perform all the tasks associated with running DaRT. Or you can install only the DaRT functionality that creates the recovery image on the IT administrator computer. Then, install the functionality used to run DaRT, such as the **DaRT Remote Connection Viewer** and **Crash Analyzer**, on a helpdesk agent computer.
- To be able to run DaRT remotely, make sure that the helpdesk agent computer and all computers that you might be troubleshooting remotely are on the same network.
- Before you roll out DaRT into production, you can first build a lab environment for testing. A test lab should include a minimum of two computers, one to act as the IT administrator/helpdesk agent computer and one to act as an end-user computer. Or, you can use three computers in your lab if you want to separate the IT administrator responsibilities from those of the helpdesk agent.

Review the supported configurations

You should review the Microsoft Diagnostics and Recovery Toolset (DaRT) 7 Supported Configurations information to confirm that the computers you have selected for client or feature installation meet the minimum hardware and operating system requirements.

[DaRT 7.0 Supported Configurations](#)

Plan for creating the DaRT recovery image

When you create the DaRT recovery image, you have to decide which tools to include on the image. When you make that decision, remember that end users might have access occasionally to the various DaRT tools. When you create the recovery image, you will also specify whether you want to include additional drivers or files. Determine the locations of any additional drivers or files that you want to include on the DaRT recovery image.

You should be aware of the prerequisites and other additional planning recommendations for creating the DaRT recovery image.

[Planning to Create the DaRT 7.0 Recovery Image](#)

Plan for saving and deploying the DaRT recovery image

Several methods can be used to save and deploy the DaRT recovery image. When you are determining the method that you will use, consider the advantages and disadvantages of each. Also, consider how you want to use DaRT in your enterprise.



Note

You might want to use more than one method in your organization. For example, you can boot into DaRT from a remote partition for most situations and have a USB flash drive available in case the end-user computer cannot connect to the network.

[Planning How to Save and Deploy the DaRT 7.0 Recovery Image](#)

DaRT 7.0 Supported Configurations

Your environment may already meet the configuration requirements provided here so that you can install and run Microsoft Diagnostics and Recovery Toolset (DaRT) 7. These include the following recovery image and disk space requirements.

DaRT 7 Recovery Image Requirements

No cross-platform recovery image creation is supported. The following table specifies the kind of recovery image that you should create and deploy in your enterprise:

Platform and DaRT Version	Recovery Image Requirements
64-Bit DaRT 7.0	Create and use a 64-Bit DaRT recovery image.
32-Bit DaRT 7.0	Create and use a 32-Bit DaRT recovery image.

DaRT 7 End-user Computer Requirements

The **Diagnostics and Recovery Toolset** window in DaRT requires that the destination computer use one of the following operating systems together with the specified amount of system memory available for DaRT:

Operating System	System Requirements for DaRT
Windows 7 64-Bit (2GB)	2.5GB of system memory
Windows 7 32-Bit (1GB)	1.5GB of system memory
Windows Server 2008 R2 (512MB)	1GB of system memory

DaRT also has the following minimal hardware requirements:

- A CD or DVD drive or a USB port
This is required if you are deploying DaRT in your enterprise by using a CD, DVD, or USB.
- BIOS support for starting the computer from a CD or DVD, a USB flash drive, or from a remote or recovery partition

Planning to Create the DaRT 7.0 Recovery Image

Use the information in this section when you plan for creating the Microsoft Diagnostics and Recovery Toolset (DaRT) 7 recovery image.

Planning to Create the DaRT 7 Recovery Image

When you create the DaRT recovery image, you have to decide which tools to include on the image. When you make that decision, remember that end users might have access occasionally to the various DaRT tools. For more information about the DaRT tools, see [Overview of the Tools in DaRT 7.0](#). For more information about how to help create a secure recovery image, see [Security Considerations for DaRT 7.0](#).

When you create the DaRT recovery image, you will also specify whether you want to include additional drivers or files. Determine the locations of any additional drivers or files that you want to include on the DaRT recovery image.

Prerequisites

The following items are required or recommended for creating the DaRT recovery image:

- Windows 7 source files
You must provide the path of a Windows 7 DVD or of Windows 7 source files. Windows 7 source files are required to create the DaRT recovery image.
- Windows Debugging Tools for your platform
Windows Debugging Tools are required when you run **Crash Analyzer** to determine the cause of a computer crash. We recommend that you specify the path of the Windows Debugging Tools at the time that you create the DaRT recovery image. If it is necessary, you

can download the Windows Debugging Tools here: [Download and Install Debugging Tools for Windows](#).

- Optional: **Standalone System Sweeper** definitions

The latest definitions for the **Standalone System Sweeper** are required when you run this tool. Although you can download the definitions when you run **Standalone System Sweeper**, we recommend that you download the latest definitions at the time you create the DaRT recovery image. In this manner, you can still run the tool with the latest definitions even if the problem computer does not have network connectivity.

- Optional: Windows symbols files for use with **Crash Analyzer**

Typically, debugging information is stored in a symbol file that is separate from the executable. You must have access to the symbol information when you debug an application that has stopped responding, for example if it crashed. For more information, see [Diagnosing System Failures with Crash Analyzer](#).

Planning How to Save and Deploy the DaRT 7.0 Recovery Image

Use the information in this section when you plan for saving and deploying the Microsoft Diagnostics and Recovery Toolset (DaRT) 7 recovery image.

Planning How to Save and Deploy the DaRT Recovery Image

You can save and deploy the DaRT recovery image by using the following methods. When you are determining the method that you will use, consider the advantages and disadvantages of each. Also, consider how you want to use DaRT in your enterprise.



Note

You might want to use more than one method in your organization. For example, you can boot into DaRT from a remote partition for most situations and have a USB flash drive available in case the end-user computer cannot connect to the network.

The following table shows some advantages and disadvantages of each method of using DaRT in your organization.

Method to Boot into DaRT	Advantages	Disadvantages
From a CD or DVD	Supports scenarios in which the master boot record (MBR) is corrupted and you cannot access the hard disk. Also supports cases in which there is no network connection. This is most familiar to users of earlier versions of DaRT, and a CD or DVD can be burned directly from the DaRT	Requires that someone with access to the CD or DVD is physically at the end-user computer to boot into DaRT.

Method to Boot into DaRT	Advantages	Disadvantages
	Recovery Image Wizard.	
From a USB flash drive (UFD)	Provides same advantages as booting from a CD or DVD and also provides support to computers that have no CD or DVD drive.	Requires you to format the UFD before you can use it to boot into DaRT. Also requires that someone with access to the UFD is physically at the end-user computer to boot into DaRT.
From a remote (network) partition	Lets you boot into DaRT without needing a CD, DVD, or UFD. Also allows for easy upgrades of DaRT because there is only one file location to update.	Does not work if the end-user computer is not connected to the network. Widely available to end users and might require additional security considerations when you are creating the recovery image.
From a recovery partition	Lets you boot into DaRT without needing a CD, DVD, or UFD that includes instances in which there is no network connectivity. Also, can be implemented and managed as part of your standard Windows image process by using automated distribution tools, such as System Center Configuration Manager.	When updating DaRT, requires you to update all computers in your enterprise instead of just one partition (on the network) or device (CD, DVD, or UFD).

DaRT 7.0 Planning Checklist

This checklist can be used to help you plan for preparing your computing environment for Microsoft Diagnostics and Recovery Toolset (DaRT) 7 deployment.



Note

This checklist outlines the recommended steps and a high-level list of items to consider when planning for product deployment. It is recommended that you copy this checklist into a spreadsheet program and customize it for your use.

	Task	References
<input type="checkbox"/>	Review the DaRT 7 Supported Configurations information to confirm that the computers you have selected for client or feature installation meet the minimum hardware and operating system requirements.	DaRT 7.0 Supported Configurations
<input type="checkbox"/>	Understand the deployment prerequisites and decide which tools to include on the DaRT recovery image.	Planning to Create the DaRT 7.0 Recovery Image
<input type="checkbox"/>	Determine which method, or methods, you will use to deploy the DaRT recovery image.	Planning How to Save and Deploy the DaRT 7.0 Recovery Image

Deploying DaRT 7.0

There are a number of different deployment configurations that Microsoft Diagnostics and Recovery Toolset (DaRT) 7 supports. This section includes information you should consider about the deployment of DaRT 7 and step-by-step procedures to help you successfully perform the tasks that you must complete at different stages of your deployment.

Deployment information

- [Deploying DaRT 7.0 to Administrator Computers](#)
This section provides information to help you decide on the best DaRT 7 deployment option for your requirements and then how to deploy it.
- [Creating the DaRT 7.0 Recovery Image](#)
This section provides information to help you use the DaRT Recovery Image Wizard to create the DaRT recovery image ISO.
- [Deploying the DaRT 7.0 Recovery Image](#)
This section provides information to help you decide on the best DaRT 7 recovery image deployment option for your requirements and then how to deploy it.
- [DaRT 7.0 Deployment Checklist](#)
This section provides a deployment checklist that can help you in deploying and using DaRT 7.

Deploying DaRT 7.0 to Administrator Computers

Before you begin the deployment of Microsoft Diagnostics and Recovery Toolset (DaRT) 7, review the requirements for your environment. This includes the hardware requirements for installing DaRT. For more information about DaRT hardware and software requirements, see [DaRT 7.0 Supported Configurations](#).

The topics in this section can be used to help you deploy DaRT in your enterprise based on your environment and deployment strategy.

Deploy DaRT 7.0 to administrator computers

You can use the Windows Installer file for DaRT to install DaRT on a computer that you will use to first create the DaRT recovery image and then troubleshoot and fix end-user computers. Frequently, across an organization, you might install on the administrator computer only the DaRT functionality that you need to create a DaRT recovery image. Then, on a helpdesk administrator's computer, you might install only the DaRT functionality that you must have to troubleshoot a problem computer, such as the DaRT Remote Connection Viewer and the Crash Analyzer.

In addition to manually running the Windows Installer file to install DaRT, you can also install DaRT at the command prompt to support enterprise software deployment systems such as System Center Configuration Manager 2012.

[How to Deploy DaRT 7.0](#)

Change, repair, or remove DaRT 7.0

You can change, repair, or remove the DaRT installation by double-clicking the DaRT installation file and then clicking the button that corresponds to the action that you want to perform or through the Windows Control Panel.

[How to Change, Repair, or Remove DaRT 7.0](#)

How to Deploy DaRT 7.0

This topic provides instructions to deploy Microsoft Diagnostics and Recovery Toolset (DaRT) 7 in your environment. The first procedure in this topic assumes that you are installing all functionality on one administrator computer. When you need to deploy or uninstall DaRT on multiple computers, using an electronic software distribution system for example, it might be easier to use command line installation options. Those options are defined in the second procedure in this topic which provides example usage for the available command line options.

Important

Before you install DaRT, ensure that the computer meets the minimum system requirements listed in [DaRT 7.0 Supported Configurations](#).

► To install DaRT on an administrator computer

1. Locate the DaRT installation files that you received as part of your software download.
2. Double-click the DaRT installation file that corresponds to your system requirements, either 32-bit or 64-bit. The DaRT installation file is named **MSDaRT70.msi**.
3. Accept the Microsoft Software License Terms, and then click **Next**.
4. Select the destination folder for installing DaRT, select whether DaRT should be installed for all users or just the current user, and then click **Next**.
5. Select whether the installation should be **Typical**, **Custom**, or **Complete**, and then click **Next**.
 - **Typical** installs the tools that are most frequently used. This method is recommended for most users.
 - **Custom** lets you select the tools that are installed and where they will be installed. This is recommended for advanced users, especially if you are installing different DaRT tools on different helpdesk computers.
 - **Complete** installs all DaRT tools and requires the most disk space.After you have selected your method of installation, click **Next**.
6. To start the installation, click **Install**.
7. After the installation is completed successfully, click **Finish** to exit the wizard.

► To install DaRT at the command prompt

1. The following example shows how to install all DaRT functionality.

```
msiexec /i MSDaRT70.msi
ADDLOCAL=CommonFiles,MSDaRTHelp,DaRTRecoveryImage,CrashAnalyzer,RemoteViewer
```
2. The following example shows how to install only the **DaRT Recovery Image Wizard**.

```
msiexec /i MSDaRT70.msi
ADDLOCAL=CommonFiles,MSDaRTHelp,DaRTRecoveryImage
```
3. The following example shows how to install only the Crash Analyzer and the DaRT Remote Connection Viewer.

```
msiexec /i MSDaRT70.msi
ADDLOCAL=CommonFiles,MSDaRTHelp,CrashAnalyzer,RemoteViewer
```
4. The following example creates a setup log for the Windows Installer. This is valuable for debugging.

```
msiexec.exe /i MSDaRT70.msi /l*v log.txt
```



Note

You can add /qn or /qb to any of the DaRT installation command prompt options to perform a silent installation.

How to Change, Repair, or Remove DaRT 7.0

You can change, repair, or remove the Microsoft Diagnostics and Recovery Toolset (DaRT) 7 installation by double-clicking the DaRT installation file and then clicking the button that corresponds to the action that you want to perform.

You can also change, repair, or remove the DaRT installation using the Windows Control Panel by following the steps described in the procedure in this topic.

▶ To change, repair, or remove DaRT

1. Click **Start** and then click **Control Panel**.
2. Click **Programs and Features**.
3. Click **Microsoft Diagnostics and Recovery Toolset 7.0** and then click the button that corresponds to the action that you want to perform.

Creating the DaRT 7.0 Recovery Image

Microsoft Diagnostics and Recovery Toolset (DaRT) 7 includes the **DaRT Recovery Image Wizard** that is used in Windows to create a bootable International Organization for Standardization (ISO) image. An ISO image is a file that represents the raw contents of a CD.

Use the DaRT Recovery Image Wizard to Create the Recovery Image

The ISO created by the DaRT Recovery Image Wizard contains the DaRT recovery image that lets you boot into a problem computer, even if it might otherwise not start. After you boot the computer into DaRT, you can run the different DaRT tools to try to diagnose and repair the computer.

You can write the ISO to a recordable CD or DVD, save it to a USB flash drive, or save it in a format that you can use to boot into DaRT from a remote partition or from a recovery partition. For more information, see [Deploying the DaRT 7.0 Recovery Image](#).



Note

If your computer includes a CD-RW drive, the wizard offers to burn the ISO image to a blank CD or DVD. If your computer does not include a drive that is supported by the wizard, you can burn the ISO image onto a CD or DVD by using most programs that can burn a CD or DVD.

To create a bootable CD or DVD from the ISO image, you must have:

- A CD-RW drive.

- A recordable CD or DVD (in a format supported by the recordable drive).
- Software that supports the recordable drive and supports burning an ISO image directly to CD or DVD.



Important

Test the CD or DVD that you create on all the different kinds of computers that you intend to support because some computers cannot start from all kinds of recordable media.

To save the ISO image to a USB flash drive (UFD), you must have:

- A correctly formatted UFD.
- A program that you can use to mount the ISO image.

[How to Use the DaRT Recovery Image Wizard to Create the Recovery Image](#)

Create a Time Limited Recovery Image

You can create a DaRT recovery image that can only be used for a certain number of days after it is generated. To do this, you must run the **DaRT Recovery Image Wizard** at a command prompt and specify the number of days.

[How to Create a Time Limited Recovery Image](#)

How to Use the DaRT Recovery Image Wizard to Create the Recovery Image

Microsoft Diagnostics and Recovery Toolset (DaRT) 7 includes the **DaRT Recovery Image Wizard** that is used in Windows to create a bootable International Organization for Standardization (ISO) image. An ISO image is a file that represents the raw contents of a CD.

The **DaRT Recovery Image Wizard** requires the following information:

- **Boot Image**°°You must provide the path of a Windows 7 DVD or Windows 7 source files that are required to create the DaRT recovery image.
- **Tool Selection**°°You can select the tools to include on the DaRT recovery image.
- **Remote Connections**°°You can select whether you want the DaRT recovery image to include the ability to establish a remote connection between the helpdesk and the end-user computer.
- **Debugging Tools for Windows**°°You are asked to provide the location of the Debugging Tools for Windows.
- **Definitions for Standalone System Sweeper**°°You can decide whether to download the latest definitions at the time that you create the recovery image or download the definitions later.
- **Drivers**°°You are asked whether you want to add drivers to the ISO image.
- **Additional Files**°°You can add files to the ISO image that might help diagnose problems.
- **ISO Image Location**°°You are asked to specify where the ISO image should be located.
- **CD/DVD Drive**°°You are asked to specify whether the CD or DVD drive should be used to burn the CD or DVD.



Note

The ISO image size can vary, depending on the tools that were selected in the **DaRT Recovery Image Wizard**.

To create the recovery image using the DaRT Recovery Image Wizard

Follow these instructions to use the **DaRT Recovery Image Wizard** to create the DaRT recovery image.

To select the tools to include on the DaRT recovery image

The **DaRT Recovery Image Wizard** presents a **Tool Selection** dialog box. You can select or remove tools from the list of tools to be included on the DaRT recovery image by highlighting a tool and then clicking the **Enable** or **Disable** buttons.

After you have selected all the tools that you want to include on the recovery image, click **Next**.

To add the option to allow remote connectivity

You can select the **Allow remote connections** check box to provide the option in the **Diagnostics and Recovery Toolset** window to establish a remote connection between the helpdesk agent and an end-user computer. After a helpdesk agent establishes a remote connection, they can run the DaRT tools on the end-user computer from a remote location.

You can select the **Specify the port number** check box to enter a specific port number that will be used when establishing a remote connection. You can specify a port number between 1 and 65535. We recommend that the port number be 1024 or higher to minimize the possibility of a conflict.

You can also create a customized message that an end user will receive when they establish a remote connection. The message can be a maximum of 2048 characters.

For more information about remotely running the DaRT tools, see [How to Recover a Remote Computer by Using the DaRT Recovery Image](#).

To add the Debugging Tools for Windows to the DaRT recovery image

In the **Crash Analyzer** dialog box of the **DaRT Recovery Image Wizard**, you are asked to specify the location of the Debugging Tools for Windows. If you do not have a copy of the tools, you can download them from Microsoft. The following link to the download page is provided in the wizard: [Download and Install Debugging Tools for Windows](#).

You can either specify the location of the debugging tools on the computer where you are running the **DaRT Recovery Image Wizard**, or you can decide to use the tools that are located on the destination computer. If you decide to use a copy on another computer, you must make sure that the tools are installed on each computer on which you are diagnosing a crash.



Note

If you include the **Crash Analyzer** in the ISO image, we recommend that you also include the Debugging Tools for Windows.

Follow these steps to add the Debugging Tools for Windows:

1. (Optional) Click the hyperlink to download the Debugging Tools for Windows.
2. Select one of the following options:
 - **Use the Debugging Tools for Windows in the following location.** If you select this option, you can browse to the location of the tools.
 - **Locate the Debugging Tools for Windows on the system that you are repairing.** If you select this option, the **Crash Analyzer** will not work if the Debugging Tools for Windows are not found on the problem computer.
3. After you have finished, click **Next**.

To add definitions for Standalone System Sweeper to the DaRT recovery image

Definitions are a repository of known malware and other potentially unwanted software. Because malware is being continually developed, **Standalone System Sweeper** relies on current definitions to determine whether software that is trying to install, run, or change settings on a computer is potentially unwanted or malicious software.

To include the latest definitions in the DaRT recovery image (recommended), click **Yes, download the latest definitions**. The definition update starts automatically. You must be connected to the Internet to complete this process.

To skip the definition update, click **No, manually download definitions later**. Definitions will not be included in the DaRT recovery image.

If you decide not to include the latest definitions on the recovery image, or if the definitions included on the recovery image are no longer current by the time that you are ready to use **Standalone System Sweeper**, obtain the latest definitions before you begin a scan by following the instructions that are provided in the **Standalone System Sweeper**.

Important

You cannot scan if there are no definitions.

After you have finished, click **Next**.

To add drivers to the DaRT recovery image

Caution

By default, when you add a driver to the DaRT recovery image, all additional files and subfolders that are located in that folder are added into the recovery image. For more information, see [Troubleshooting DaRT 7.0](#).

You should include additional drivers on the recovery image for DaRT 7 that you may need when repairing a computer. These may typically include storage or network controllers that are not included on the Windows DVD.

Important

When you select drivers to include, be aware that wireless connectivity (such as Bluetooth or 802.11a/b/g/n) is not supported in DaRT.

► To add a storage or network controller driver to the recovery image

1. In the **Additional Drivers** dialog box of the **DaRT Recovery Image Wizard**, click **Add Device**.
2. Browse to the file to be added for the driver, and then click **Open**.



Note

The **driver** file is provided by the manufacturer of the storage or network controller.

3. Repeat Steps 1 and 2 for every driver that you want to include.
4. After you have finished, click **Next**.

To add files to the DaRT recovery image

Follow these steps to add files to the recovery image so that you can use them to diagnose computer problems.

1. In the **Additional Files** dialog box of the **DaRT Recovery Image Wizard**, click **Show Files**. This opens an Explorer window that displays the folder that holds the shared files.
2. Create a subfolder in the folder that is listed in the dialog box.
3. Copy the files that you want to the new subfolder.
4. After you have finished, click **Next**.

To select a location for the ISO that contains the DaRT recovery image

Follow these steps to specify the location where the ISO image is created:

1. In the **Create Startup Image** dialog box of the **DaRT Recovery Image Wizard**, click **Browse**.
2. Browse to the preferred location in the **Save As** window, and then click **Save**.
3. After you have finished, click **Next**.

The size of the ISO image will vary, depending on the tools that you select and the files that you add in the wizard.

The wizard requires the ISO image to have an **.iso** file name extension because most programs that burn a CD or DVD require that extension. If you do not specify a different location, the ISO image is created on your desktop with the name **DaRT70.ISO**.

To burn the recovery image to a CD or DVD

If the **DaRT Recovery Image Wizard** detects a compatible CD-RW drive on your computer, it offers to burn the ISO image to a disc for you. If you want to burn a CD or DVD and the wizard does not recognize your drive, you must use another program, such as the program that was included with your drive. You can use a duplicator, a duplicating service, or CD or DVD-burning software to make any additional copies.

1. In the **Burn to a recordable CD/DVD** dialog box of the **DaRT Recovery Image Wizard**, select **Burn the image to the following recordable CD/DVD drive**.
2. Select the CD or DVD drive.



Note

If a drive is not recognized and you install a new drive, you can click **Refresh Drive List** to force the wizard to update the list of available drives.

3. Click **Next**.

How to Create a Time Limited Recovery Image

You can create a DaRT recovery image that can only be used for a certain number of days after it is generated. To do this, you must run the **DaRT Recovery Image Wizard** at a command prompt and specify the number of days.

▶ To create a recovery image that has a time limit

1. Open a Command Prompt with administrator credentials.
2. Change the directory to the location of the ERDC.exe program.
3. Using the following syntax, run the **DaRT Recovery Image Wizard**. *NumberOfDays* is a positive integer that represents the number of days that the DaRT recovery image will be usable.

```
ERDC /e NumberOfDays
```

Deploying the DaRT 7.0 Recovery Image

After you have created the International Organization for Standardization (ISO) file that contains the Microsoft Diagnostics and Recovery Toolset (DaRT) 7 recovery image, you can deploy the DaRT recovery image throughout your enterprise so that it is available to end users and helpdesk agents. There are four supported methods that you can use to deploy the DaRT recovery image (for more information about each method and the advantages and disadvantages of each, see [Planning How to Save and Deploy the DaRT 7.0 Recovery Image](#)).

- Burn the ISO image file to a CD or DVD
- Save the contents of the ISO image file to a USB Flash Drive (UFD)
- Extract the boot.wim file from the ISO image and deploy as a remote partition that is available to end-user computers
- Extract the boot.wim file from the ISO image and deploy in the recovery partition of a new Windows 7 installation



Important

The **DaRT Recovery Image Wizard** only provides the option to burn a CD or DVD. All other methods of saving and deploying the recovery image require additional steps that involve tools that are not included in DaRT. Some guidance and links for these other methods are provided in this section.

Deploy the DaRT Recovery Image Using a USB Flash Drive

After you have finished running the DaRT Recovery Image Wizard, you can use the tool at <http://go.microsoft.com/fwlink/?LinkId=218888> to copy the ISO image file to a USB flash drive (UFD).

[How to Deploy the DaRT Recovery Image Using a USB Flash Drive](#)

Deploy the DaRT Recovery Image as Part of a Recovery Partition

After you have finished running the DaRT Recovery Image Wizard and created the recovery image, you can extract the boot.wim file from the ISO image file and deploy it as a recovery partition in a Windows 7 image.

[How to Deploy the DaRT Recovery Image as Part of a Recovery Partition](#)

Deploy the DaRT Recovery Image as a Remote Partition

After you have finished running the DaRT Recovery Image Wizard and created the recovery image, you can extract the boot.wim file from the ISO image file and deploy it as a remote partition on the network.

[How to Deploy the DaRT Recovery Image as a Remote Partition](#)

How to Deploy the DaRT Recovery Image Using a USB Flash Drive

After you have finished running the **DaRT Recovery Image Wizard**, you can use the tool at <http://go.microsoft.com/fwlink/?LinkId=218888> to copy the ISO image file to a USB flash drive (UFD).

You can also manually copy the ISO image file to a UFD by following the steps provided in this section.

To save the DaRT recovery image to a USB flash drive

1. Format the USB flash drive.
 - a. From a running valid operating system or Windows PE session, insert your UFD.
 - b. At the command prompt with administrator permissions, type **DISKPART** and then type **LIST DISK**.

The Command Prompt window displays the disk number of your UFD, for example **DISK 1**.

- c. Enter the following commands one at a time at the command prompt.

```
SELECT DISK 1
```

```
CLEAN
```

```
CREATE PARTITION PRIMARY
```

```
SELECT PARTITION 1
```

```
ACTIVE
```

FORMAT FS=NTFS

ASSIGN

EXIT



Note

The previous code example assumes Disk 1 is the UFD. If it is necessary, replace DISK 1 with your disk number.

2. By using your company's preferred method of mounting an image, mount the ISO image file that you created in the **Create Startup Image** dialog box of the **DaRT Recovery Image Wizard**. This requires that you have a method available to mount an image file.
3. Open the mounted ISO image file and copy all its contents to the formatted USB flash drive.



Note

If you burned a CD or DVD of the recovery image, you can open the files on the CD or DVD and copy the contents to the UFD. This lets you skip the need to mount the image.

How to Deploy the DaRT Recovery Image as Part of a Recovery Partition

After you have finished running the DaRT Recovery Image Wizard and created the recovery image, you can extract the boot.wim file from the ISO image file and deploy it as a recovery partition in a Windows 7 image.

▶ To deploy DaRT in the recovery partition of a Windows 7 image

1. Create a target partition in your Windows 7 image that is equal to or greater than the size of the ISO image file that you created by using the **DaRT Recovery Image Wizard**.

The minimum size required for a DaRT partition is approximately 300MB. However, we recommend 450MB to accommodate for the remote connection functionality in DaRT.

2. Extract the boot.wim file from the DaRT ISO image file.
 - a. Mount the ISO image file that you created in the **Create Startup Image** dialog box by using your company's preferred method of mounting an image.
 - b. Open the ISO image file and copy the boot.wim file from the \sources folder in the mounted image to a location on your computer or on an external drive.



Note

If you burned a CD or DVD of the recovery image, you can open the files on the CD or DVD and copy the boot.wim file from the \sources folder. This lets you skip the need to mount the image.

3. Use the boot.wim file to create a bootable recovery partition by using your company's standard method for creating a custom Windows RE image.

For more information about how to create or customize a recovery partition, see [Customizing the Windows RE Experience](#).

4. Replace the target partition in your Windows 7 image with the recovery partition.

After your Windows 7 image is ready, distribute the image to computers in your enterprise by using your company's standard image deployment process. For more information about how to create a Windows 7 image, see [Building a Standard Image of Windows 7: Step-by-Step Guide](#).

For more information about how to deploy a recovery solution to reinstall the factory image in the event of a system failure, see [Deploy a System Recovery Image](#).

How to Deploy the DaRT Recovery Image as a Remote Partition

After you have finished running the DaRT Recovery Image Wizard and created the recovery image, you can extract the boot.wim file from the ISO image file and deploy it as a remote partition on the network.

To deploy DaRT as a remote partition

1. Extract the boot.wim file from the DaRT ISO image file.
 - a. Mount the ISO image file that you created in the **Create Startup Image** dialog box by using your company's preferred method of mounting an image.
 - b. Open the ISO image file and copy the boot.wim file from the \sources folder in the mounted image to a location on your computer or on an external drive.



Note

If you burned a CD or DVD of the recovery image, you can open the files on the CD or DVD and copy the boot.wim file from the \sources folder. This lets you skip the need to mount the image.

2. Deploy the boot.wim file to a WDS server that can be accessed from end-user computers in your enterprise.
3. Configure the WDS server to use the boot.wim file for DaRT by following your standard WDS deployment procedures.

For more information about how to deploy DaRT as a remote partition, see the following:

- [Walkthrough: Deploy an Image by Using PXE](#)
- [Windows Deployment Services Getting Started Guide](#)

DaRT 7.0 Deployment Checklist

This checklist can be used to help you during Microsoft Diagnostics and Recovery Toolset (DaRT) 7 deployment.



Note

This checklist outlines the recommended steps and a high-level list of items to consider when planning for product deployment. It is recommended that you copy this checklist into a spreadsheet program and customize it for your use.

	Task	References
<input type="checkbox"/>	Decide on the best DaRT 7 deployment option for your requirements and deploy it.	Deploying DaRT 7.0 to Administrator Computers
<input type="checkbox"/>	Use the DaRT Recovery Image Wizard to create the DaRT recovery image ISO.	Creating the DaRT 7.0 Recovery Image
<input type="checkbox"/>	Decide on the best DaRT 7 recovery image deployment option for your requirements and deploy it.	Deploying the DaRT 7.0 Recovery Image

Operations for DaRT 7.0

This section of the Administrator's Guide includes information about the various types of Microsoft Diagnostics and Recovery Toolset (DaRT) 7 administration and operating tasks that are typically performed by an administrator. This section also includes step-by-step procedures to help you successfully perform those tasks.

Operations information

- [Recovering Computers Using DaRT 7.0](#)

This section provides information to help you recover computers using the DaRT 7 recovery image.

- [Diagnosing System Failures with Crash Analyzer](#)

This section provides information to help you use the DaRT 7 Crash Analyzer to diagnose system failures.

- [Security Considerations for DaRT 7.0](#)

This section provides information to help you follow security best practices while using DaRT 7.

Recovering Computers Using DaRT 7.0

There are two methods available to recover computers using Microsoft Diagnostics and Recovery Toolset (DaRT) 7. You can either run the DaRT 7 recovery image locally or use The Remote

Connection feature available in DaRT 7 to recover a remote computer. Both methods are described in more detail in this section.

Recover Local Computers by Using the DaRT Recovery Image

To recover a local computer by using DaRT 7, you must be physically present at the end-user computer that is experiencing problems that require DaRT.

You have several different methods to choose from to boot into DaRT, depending on how you deploy the DaRT recovery image.

- Insert a DaRT recovery image CD, DVD, or USB flash drive into the problem computer and use it to boot into the computer.
- Boot into DaRT from a recovery partition on the problem computer.
- Boot into DaRT from a remote partition on the network.

For information about the advantages and disadvantages of each method, see [Planning How to Save and Deploy the DaRT 7.0 Recovery Image](#).

Whichever method that you use to boot into DaRT, you must enable the boot device in the BIOS for the boot option or options that you want to make available to the end user.



Note

Configuring the BIOS is unique, depending on the kind of hard disk drive, network adapters, and other hardware that is used in your organization.

[How to Recover Local Computers Using the DaRT Recovery Image](#)

Recover Remote Computers by Using the DaRT Recovery Image

The Remote Connection feature in DaRT lets an IT administrator run the DaRT tools remotely on an end-user computer. After certain information is provided by the end user (or by a helpdesk professional working on the end-user computer), the IT administrator or helpdesk agent can take control of the end user's computer and run the necessary DaRT tools remotely.



Important

The two computers establishing a remote connection must be part of the same network.

The **Diagnostics and Recovery Toolset** window includes the option to run DaRT on an end-user computer remotely from an administrator computer. The end user opens the DaRT tools on the problem computer and starts the remote session by clicking **Remote Connection**.

The Remote Connection feature on the end-user computer creates the following connection information: a ticket number, a port, and a list of all available IP addresses. The ticket number and port are generated randomly.

The IT administrator or helpdesk agent enters this information into the **DaRT Remote Connection Viewer** to establish the terminal services connection to the end-user computer. The terminal services connection that is established lets an IT administrator remotely interact with the DaRT tools on the end-user computer. The end-user computer then processes the connection information, shares its screen, and responds to instructions from the IT administrator computer.

How to Recover Local Computers Using the DaRT Recovery Image

To recover a local computer by using Microsoft Diagnostics and Recovery Toolset (DaRT) 7, you must be physically present at the end-user computer that is experiencing problems that require DaRT. You can also run DaRT remotely by following the instructions at [How to Recover Remote Computers Using the DaRT Recovery Image](#).

To recover a local computer by using DaRT

1. As the computer is booting into the DaRT recovery image, the **NetStart** dialog box appears. You are asked whether you want to initialize network services. If you click **Yes**, it is assumed that a DHCP server is present on the network and an attempt is made to obtain an IP address from the server. If the network uses static IP addresses instead of DHCP, you can later use the **TCP/IP Configuration** tool in DaRT to specify a static IP address.
To skip the network initialization process, click **No**.
2. Following the network initialization dialog box, you are asked whether you want to remap the drive letters. When you run Windows online, the system volume is typically mapped to drive C. However, when you run Windows offline under WinRE, the original system volume might be mapped to another drive, and this can cause confusion. If you decide to remap, DaRT tries to map the offline drive letters to match the online drive letters. Remapping is performed only if an offline operating system is selected later in the startup process.
3. Following the remapping dialog box, a **System Recovery Options** dialog box appears and asks you to select a keyboard layout. Then it displays the system root directory, the kind of operating system installed, and the partition size. If you do not see your operating system listed, and suspect that the lack of drivers is a possible cause of the failure, click **Load Drivers** to load the suspect drivers. This prompts you to insert the installation media for the device and to select the driver. Select the installation that you want to repair or diagnose, and then click **Next**.



Note

If the Windows Recovery Environment (WinRE) detects or suspects that Windows 7 did not start correctly the last time that it was tried, **Startup Repair** might start to run automatically.

If any of the registry hives are corrupted or missing, Registry Editor, and several other DaRT utilities, will have limited functionality. If no operating system is selected, some tools will not be available.

The **System Recovery Options** window appears and lists various recovery tools.

4. On the **System Recovery Options** window, click **Microsoft Diagnostics and Recovery Toolset**.


The **Diagnostics and Recovery Toolset** window opens. You can now run any of the individual tools or wizards that were included when the DaRT recovery image was created.

You can click **Help** on the **Diagnostics and Recovery Toolset** window to open the client Help file that provides detailed instruction and information needed to run the individual DaRT tools. You can also click the **Solution Wizard** on the **Diagnostics and Recovery Toolset** window to choose the best tool for the situation, based on a brief interview that the wizard provides.

For general information about any of the DaRT tools, see [Overview of the Tools in DaRT 7.0](#).

To run DaRT at the command prompt

- You can run DaRT at the command prompt by specifying the **netstart.exe** command and by using any of the following parameters:

Parameter	Description
-network	Initializes the network services.
-remount	Remaps the drive letters.
-prompt	Displays messages asking the end user to specify whether to initialize the network and remap the drives.  Important The end user's response to the prompts overrides the -network and -remount switches.

- You can customize DaRT so that a computer that boots into DaRT automatically opens the **Remote Connection** tool that is used to establish a remote connection with the help desk.

How to Recover Remote Computers Using the DaRT Recovery Image

The Remote Connection feature in Microsoft Diagnostics and Recovery Toolset (DaRT) 7 lets an IT administrator run the DaRT tools remotely on an end-user computer. After certain information is provided by the end user (or by a helpdesk professional working on the end-user computer), the IT administrator or helpdesk agent can take control of the end user's computer and run the necessary DaRT tools remotely.

Important

The two computers establishing a remote connection must be part of the same network.

To recover a remote computer by using DaRT

1. Boot an end-user computer by using the DaRT recovery image.

You will typically use one of the following methods to boot into DaRT to recover a remote computer, depending on how you deploy the DaRT recovery image. For more information about deploying the DaRT recovery image, see [Deploying the DaRT 7.0 Recovery Image](#).

- Boot into DaRT from a recovery partition on the problem computer.
- Boot into DaRT from a remote partition on the network.

For information about the advantages and disadvantages of each method, see [Planning How to Save and Deploy the DaRT 7.0 Recovery Image](#).

Whichever method that you use to boot into DaRT, you must enable the boot device in the BIOS for the boot option or options that you want to make available to the end user.



Note

Configuring the BIOS is unique, depending on the kind of hard disk drive, network adapters, and other hardware that is used in your organization.

2. As the computer is booting into the DaRT recovery image, the **NetStart** dialog box appears. You are asked whether you want to initialize network services. If you click **Yes**, it is assumed that a DHCP server is present on the network and an attempt is made to obtain an IP address from the server. If the network uses static IP addresses instead of DHCP, you can later use the **TCP/IP Configuration** tool in DaRT to specify a static IP address.

To skip the network initialization process, click **No**.

3. Following the network initialization dialog box, you are asked whether you want to remap the drive letters. When you run Windows online, the system volume is typically mapped to drive C. However, when you run Windows offline under WinRE, the original system volume might be mapped to another drive, and this can cause confusion. If you decide to remap, DaRT tries to map the offline drive letters to match the online drive letters. Remapping is performed only if an offline operating system is selected later in the startup process.
4. Following the remapping dialog box, a **System Recovery Options** dialog box appears and asks you to select a keyboard layout. Then it displays the system root directory, the kind of operating system installed, and the partition size. If you do not see your operating system listed, and suspect that the lack of drivers is a possible cause of the failure, click **Load Drivers** to load the suspect drivers. This prompts you to insert the installation media for the device and to select the driver. Select the installation that you want to repair or diagnose, and then click **Next**.



Note

If the Windows Recovery Environment (WinRE) detects or suspects that Windows 7 did not start correctly the last time that it was tried, **Startup Repair**

might start to run automatically. For information about this situation including how to resolve it, see [Troubleshooting DaRT 7.0](#).

If any of the registry hives are corrupted or missing, Registry Editor, and several other DaRT utilities, will have limited functionality. If no operating system is selected, some tools will not be available.

The **System Recovery Options** window appears and lists various recovery tools.

5. On the **System Recovery Options** window, select **Microsoft Diagnostics and Recovery Toolset** to open the **Diagnostics and Recovery Toolset** window.
6. On the **Diagnostics and Recovery Toolset** window, click **Remote Connection** to open the **DaRT Remote Connection** window. If you are prompted to give the help desk remote access, click **OK**.

The DaRT Remote Connection window opens and displays a ticket number, IP address, and port information.

7. On the helpdesk agent computer, open the **DaRT Remote Connection Viewer**.
Click **Start**, click **All Programs**, click **Microsoft DaRT 7**, and then click **DaRT Remote Connection Viewer**.
8. In the **DaRT Remote Connection** window, enter the required ticket, IP address, and port information.



Note

This information is created on the end-user computer and must be provided by the end user. There might be multiple IP addresses to choose from, depending on how many are available on the end-user computer.

9. Click **Connect**.

The IT administrator now assumes control of the end-user computer and can run the DaRT tools remotely.



Note


A file is provided that is named `inv32.xml` and contains remote connection information, such as the port number and IP address. By default, the file is typically located at `%windir%\system32`.

► To customize the Remote Connection process

- You can customize the Remote Connection process by editing the `winpeshl.ini` file. For more information about how to edit the `winpeshl.ini` file, see [Winpeshl.ini Files](#).

Specify the following commands and parameters to customize how a remote connection is established with an end-user computer:

Command	Parameter	Description
RemoteRecovery.exe	<code>-nomessage</code>	Specifies that the confirmation prompt is not displayed.

		Remote Connection continues just as if the end user had responded "Yes" to the confirmation prompt.
WaitForConnection.exe	none	<p>Prevents a custom script from continuing until either Remote Connection is not running or a valid connection is established with the end-user computer.</p> <p> Important This command serves no function if it is specified independently. It must be specified in a script to function correctly.</p>

- The following is an example of a winpeshl.ini file that is customized to open the **Remote Connection** tool as soon as an attempt is made to boot into DaRT:

```
[LaunchApps]
"%windir%\system32\netstart.exe -network -remount"
"cmd /C start %windir%\system32\RemoteRecovery.exe -
nomessage"
"%windir%\system32\WaitForConnection.exe"
"%SYSTEMDRIVE%\sources\recovery\recenv.exe"
```

To run the Remote Connection Viewer at the command prompt

- You can run the **DaRT Remote Connection Viewer** at the command prompt by specifying the **DartRemoteViewer.exe** command and by using the following parameters:

Parameter	Description
-ticket=<ticketnumber>	Where <ticketnumber> is the ticket number, including the dashes, that is generated by Remote Connection.
-ipaddress=<ipaddress>	Where <ipaddress> is the IP address that is generated by Remote Connection.

<code>-port=<port></code>	Where <i><port></i> is the port that corresponds to the specified IP address.
---------------------------------	---

**Note**

The variables for these parameters are created on the end-user computer and must be provided by the end user.

- If all three parameters are specified and the data is valid, a connection is immediately tried when the program starts. If any parameter is not valid, the program starts as if there were no parameters specified.

Diagnosing System Failures with Crash Analyzer

The Crash Analyzer in Microsoft Diagnostics and Recovery Toolset (DaRT) 7 lets you debug a crash dump file on a Windows-based computer and then diagnose any related computer errors. The Crash Analyzer uses the Microsoft Debugging Tools for Windows to examine a crash dump file for the driver that caused the computer to fail.

Run the Crash Analyzer on an End-user Computer

Typically, you run Crash Analyzer from the Diagnostics and Recovery Toolset window on an end-user computer that has problems. The Crash Analyzer tries to locate the Debugging Tools for Windows on the problem computer. If the directory path dialog box is empty, you must enter the location or browse to the location of the Debugging Tools for Windows (you can download the files from Microsoft). You must also provide a path to where the symbol files are located.

If you included the Microsoft Debugging Tools for Windows and the symbol files when you created the DaRT recovery image, they should be available when you run the Crash Analyzer on the problem computer.

[How to Run the Crash Analyzer on an End-user Computer](#)

Run the Crash Analyzer in stand-alone mode on a computer other than an end-user computer

The Crash Analyzer tries to locate the Debugging Tools for Windows on the problem computer. If the directory path dialog box is empty, you must enter the location or browse to the location of the Debugging Tools for Windows (you can download the files from Microsoft). You must also provide a path to where the symbol files are located.

If you did not include the Microsoft Debugging Tools for Windows and the symbol files when you created the DaRT recovery image, or if disk size or network connectivity problems are preventing you from obtaining them, then you can copy the dump file from the problem computer and analyze it on a computer that has the stand-alone version of Crash Analyzer installed, such as a helpdesk administrator's computer.

[How to Run the Crash Analyzer in Stand-alone Mode on a Computer Other than an End-user Computer](#)

Ensure that Crash Analyzer can access symbol files

Typically, debugging information is stored in a symbol file that is separate from the executable. You must have access to the symbol information when you debug an application that has stopped responding, for example if it crashed.

Symbol files are automatically downloaded when you run Crash Analyzer. If the computer does not have an Internet connection or the network requires the computer to access an HTTP proxy server, the symbol files cannot be downloaded.

How to Ensure that Crash Analyzer Can Access Symbol Files

How to Run the Crash Analyzer on an End-user Computer

Typically, you run Microsoft Diagnostics and Recovery Toolset (DaRT) 7 Crash Analyzer from the Diagnostics and Recovery Toolset window on an end-user computer that has problems. The Crash Analyzer tries to locate the Debugging Tools for Windows on the problem computer. If the directory path dialog box is empty, you must enter the location or browse to the location of the Debugging Tools for Windows (you can download the files from Microsoft). You must also provide a path to where the symbol files are located.

▶ To open and run the Crash Analyzer on an end-user computer

1. On the **Diagnostics and Recovery Toolset** window on an end-user computer, click **Crash Analyzer**.
2. Provide the required information for the following:
 - Microsoft Debugging Tools for Windows
 - Symbol files

For more information about symbol files, see [How to Ensure that Crash Analyzer Can Access Symbol Files](#).

- A crash dump file

Follow these steps to determine the location of the crash dump file:

- i. Open the **System Properties** window.
Click **Start**, type sysdm.cpl, and then press Enter.
- ii. Click the **Advanced** tab.
- iii. In the **Startup and Recovery** area, click **Settings**.



Note

If you do not have access to the **System Properties** window, you can search for dump files on the end-user computer by using the **Search** tool in DaRT.

3. The **Crash Analyzer** scans the crash dump file and reports a probable cause of the crash. You can view more information about the crash, such as the specific crash message and description, the drivers loaded at the time of the crash, and the full output of the analysis.

4. Decide upon an appropriate strategy to resolve the problem. This may require disabling or updating the device driver that caused the crash by using the **Services and Drivers** node of the **Computer Management** tool in DaRT.

How to Run the Crash Analyzer in Stand-alone Mode on a Computer Other than an End-user Computer

If you cannot access the Microsoft Debugging Tools for Windows or the symbol files on the end-user computer, you can copy the dump file from the problem computer and analyze it on a computer that has the stand-alone version of Crash Analyzer installed, such as a helpdesk administrator's computer.

To run the Crash Analyzer in stand-alone mode

1. On a computer with DaRT 7 installed, click **Start / All Programs / Microsoft DaRT 7**.
2. Provide the required information for the following:
 - Microsoft Debugging Tools for Windows
 - Symbol files
For more information about symbol files, see [How to Ensure that Crash Analyzer Can Access Symbol Files](#).
 - A crash dump file



Note

Use the Search tool in DaRT 7 to locate the copied crash dump file.

3. The **Crash Analyzer** scans the crash dump file and reports a probable cause of the crash. You can view more information about the crash, such as the specific crash message and description, the drivers loaded at the time of the crash, and the full output of the analysis.
4. Decide upon an appropriate strategy to resolve the problem. This may require disabling or updating the device driver that caused the crash by using the **Services and Drivers** node of the **Computer Management** tool in DaRT.

How to Ensure that Crash Analyzer Can Access Symbol Files

Typically, debugging information is stored in a symbol file that is separate from the executable. You must have access to the symbol information when you debug an application that has stopped responding, for example if it crashed.

Symbol files are automatically downloaded when you run the Microsoft Diagnostics and Recovery Toolset (DaRT) 7 Crash Analyzer. If the computer does not have an Internet connection or the network requires the computer to access an HTTP proxy server, the symbol files cannot be downloaded.

Ensure access to symbol files

Typically, debugging information is stored in a symbol file that is separate from the executable. You must have access to the symbol information when you debug an application that has stopped responding, for example if it crashed.

Symbol files are automatically downloaded when you run **Crash Analyzer**. If the computer does not have an Internet connection or the network requires the computer to access an HTTP proxy server, the symbol files cannot be downloaded.

The following is a list of options that are available for guaranteeing access to symbol files:

- **Copy the dump file to another computer.** If the symbols cannot be downloaded because of a lack of an Internet connection, copy the crash dump file to a computer that does have an Internet connection and run the stand-alone **Crash Analyzer Wizard** on that computer.
- **Access the symbol files from another computer.** If the symbols cannot be downloaded because of a lack of an Internet connection, you can download the symbols from a computer that does have an Internet connection and then copy them to the computer that does not have an Internet connection, or you can map a network drive to a location where the symbols are available on the local network. If you run the **Crash Analyzer** in a Windows Recovery Environment (Windows RE), you can include the symbol files on the DaRT recovery image. For more information about how to create a recovery image, see [Creating the DaRT 7.0 Recovery Image](#).
- **Access symbol files through an HTTP proxy server.** If the symbols cannot be downloaded because an HTTP proxy server must be accessed, use the following steps to access an HTTP proxy server. In DaRT 7, the **Crash Analyzer Wizard** has a setting available on the **Specify Symbol Files Location** dialog page, marked with the label **Proxy server (optional, using the format "server:port")**. You can use this text box to specify a proxy server. Enter the proxy address in the form **<hostname>:<port>**, where the **<hostname>** is a DNS name or IP address, and the **<port>** is a TCP port number, usually 80. There are two modes in which the **Crash Analyzer** can be run. Following is how you use the proxy setting in each of these modes:
 - **Online mode:** In this mode, if the proxy server field is left blank, the wizard uses the proxy settings from Internet Options in Control Panel. If you enter a proxy address in the text box which is provided, that address will be used, and it will override the setting in the Internet Options.
 - **Windows Recovery Environment (Windows RE):** When you run **Crash Analyzer** from the **Diagnostics and Recovery Toolset** window, there is no default proxy address. If the computer is directly connected to the Internet, a proxy address is not required. Therefore, you can leave this field blank in the wizard setting. If the computer is not directly connected to the Internet, and it is in a network environment that has a proxy server, you must set the proxy field in the wizard to access the symbol store. The proxy address can be obtained from the network administrator. Setting the proxy server is important only when the public symbol store is connected to the Internet. If the symbols are already on the DaRT recovery image, or if they are available locally, setting the proxy server is not required.

Security Considerations for DaRT 7.0

Microsoft Diagnostics and Recovery Toolset (DaRT) 7 includes functionality that lets an administrator run the DaRT tools remotely to resolve problems on an end-user computer. In earlier releases of DaRT, a help desk technician or administrator had to physically be at an end-user computer and boot into DaRT by using the CD or DVD that included the DaRT recovery image. Now, the help desk technician or administrator can perform the same procedures remotely.

Also in DaRT 7, in addition to burning a CD or DVD, you are now able to save the International Organization for Standardization (ISO) image to a USB flash drive. You can also put the ISO image on a network or include its contents as a recovery partition on a computer hard disk.

The **Remote Connection** feature in DaRT 7 lets end users access DaRT by using one of these new deployment methods. Therefore, they can more easily start DaRT and access the DaRT tools.

The new functionalities in DaRT 7 provide much more flexibility in how you use DaRT in your enterprise. However, they also create their own set of security issues that must be addressed. We recommend that you consider the following security tips when you configure DaRT.

To help maintain security when you create the DaRT recovery image

When you are creating the DaRT recovery image, you can select the tools that you want to include. For security reasons, you might want to restrict end-user access to the more powerful DaRT tools, such as Disk Wipe and Locksmith. In DaRT 7, you can disable certain tools during configuration and still make them available to helpdesk agents when the end user starts the Remote Connection feature.

You can even configure the DaRT image so that the option to start a remote connection session is the only tool available to an end user.

Important

After the remote connection is established, all the tools that you included in the recovery image, including those unavailable to the end user, will become available to the helpdesk agent working on the end-user computer.

For more information about including tools in the DaRT recovery image, see [How to Use the DaRT Recovery Image Wizard to Create the Recovery Image](#).

To help maintain security by encrypting the DaRT recovery image

If you use one of the deployment options new in DaRT 7, for example, saving to a USB flash drive or creating a remote partition or a recovery partition, you can include your company's preferred method of drive encryption on the ISO. This will help make sure that an end user cannot use the functionality of DaRT should they gain access to the recovery image. And it will also make sure that unauthorized users cannot boot into DaRT on computers that belong to someone else.

Your encryption method should be deployed and enabled in all computers.



Note

DaRT 7 supports BitLocker natively.

To help maintain security between two computers during Remote Connection

By default, the communication between two computers that have established a **Remote Connection** session may not be encrypted. Therefore, to help maintain security between the two computers, we recommend that both computers are a part of the same network.

Troubleshooting DaRT 7.0

Troubleshooting content is not included in the Administrator's Guide for this product. Instead, you can find troubleshooting information for this product on the [TechNet Wiki](#).

How to Find Troubleshooting Content

You can use the following information to find troubleshooting or additional technical content for this product.

Search the MDOP Documentation

The first step to find help content in the Administrator's Guide is to search the MDOP documentation on TechNet.

After you search the MDOP documentation, your next step would be to search the troubleshooting information for the product in the TechNet Wiki.

▶ To search the MDOP product documentation

1. Use a web browser to navigate to the [MDOP Information Experience](#) TechNet home page.
2. Enter applicable search terms in the **Search TechNet with Bing** search box at the top of the MDOP Information Experience home page.
3. Review the search results for assistance.

▶ To search the TechNet Wiki

1. Use a web browser to navigate to the [TechNet Wiki](#) home page.
2. Enter applicable search terms in the **Search TechNet Wiki** search box on the TechNet Wiki home page.
3. Review the search results for assistance.

How to Create a Troubleshooting Article

If you have a troubleshooting tip or a best practice to share that is not already included in the MDOP OnlineHelp or TechNet Wiki, you can create your own TechNet Wiki articles.

To create a TechNet Wiki troubleshooting or best practices article

1. Use a web browser to navigate to the [TechNet Wiki](#) home page.
2. Log in with your Windows Live ID.
3. Review the **Getting Started** section to learn the basics of the TechNet Wiki and its articles.
4. Select **Post an article >>** at the bottom of the **Getting Started** section.
5. On the Wiki article **Add Page** page, select **Insert Template** from the toolbar, select the troubleshooting article template (**Troubleshooting.html**), and then click **Insert**.
6. Be sure to give the article a descriptive title and then overwrite the template information as needed to create your troubleshooting or best practice article.
7. After you review your article, be sure to include a tag that is named **Troubleshooting** and another for the product name. This helps others to find your content.
8. Click **Save** to publish the article to the TechNet Wiki.