



ROADSTER

DIAGNOSTIC SOFTWARE INSTALLTION GUIDE



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Diagnostic Software Installation Guide

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1 Introduction

1.1 Purpose

This document is provided to serve as installation instructions for Roadster diagnostic software, also known as Puppy, and to provide guidelines on the general rules governing the contents.

1.2 Scope

This document is intended for Roadster enthusiasts, to comply with general admitted rules from both parties, concerning the use of correct, well formed, up to date, relevant and clear install documents.

It will not cover detailed aspects such as the acceptance or validation procedures, nor the technical environment. Should you need further and complete information about these topics, please refer to the reference documents, mentioned in this document.

1.3 General Principles

The information provided in this document is being provided as a courtesy to Roadster enthusiasts and was created during the design phase of Roadster for research and development. It is not manufacturer reference or repair and maintenance material and may not accurately reflect the actual production models or parts sold. If using this information, it is the user's responsibility to ensure that all laws and safety protocols are followed as Tesla does not provide any warranties on any work done by non-Tesla personnel whether or not the information provided here is used. It should also be understood that if parts are made or designed, or new repairs or procedures are created based on this information, Tesla will not be responsible for them, and they will not be genuine Tesla parts or accessories or Tesla-approved procedures.

2 Virtual Machine Installation Guide

Roadster diagnostic software uses VMware Workstation 16 Player™, a desktop virtualization application to run the Puppy operating system by mounting an Optical Disc Image (.iso). For more information about VMware Workstation installation, follow

<https://www.vmware.com/products/workstation-player/workstation-player-evaluation.html>.

2.1 System Requirements

VMware Workstation runs on standard x86-based hardware with 64-bit Intel and AMD processors and on 64-bit Windows or Linux host operating systems. The following is supported:

- A compatible 64-bit x86/AMD64 CPU launched in 2011 or later *
- 1.3GHz or faster core speed
- 2GB RAM minimum/ 4GB RAM or more recommended
- General Host OS Requirements
- VMware Workstation Pro and Player run on most 64-bit Windows or Linux host operating systems:
 - Windows 10
 - Windows Server 2019
 - Windows Server 2016
 - Windows Server 2012
 - Windows 8
 - Ubuntu
 - Red Hat Enterprise Linux
 - CentOS
 - Oracle Linux
 - openSUSE
 - SUSE Linux Enterprise Server



Note

Windows 7 hosts are no longer supported, Workstation 16 will not function on them.



Note

VMware Workstation 16 Player™ does not operate on macOS devices.



Note

VMware Workstation has multiple licensing options depending on the specific use case. Workstation Player is available Free for personal, non-commercial use, but requires a license for commercial use. A valid Commercial license will remove the 'Non-commercial use only' banner placed within the product.

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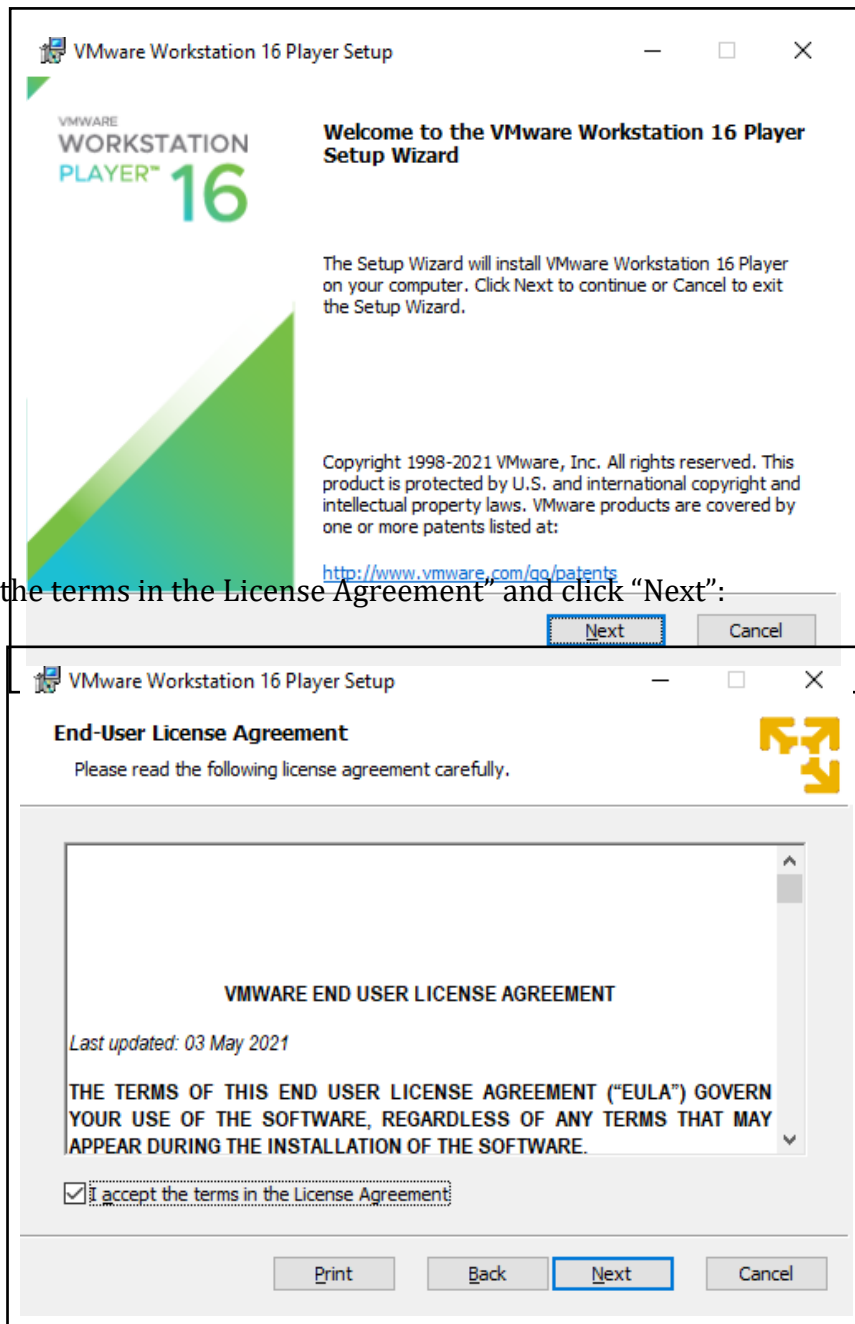
2.2 Pre-installation Tasks

Download all necessary files to the machine that will be used to run the diagnostic software, including the VMware Workstation 16 Player™ executable (.exe) and the “Roadster All Rev 13.05.21” .iso image file located at service.tesla.com/roadster.

2.3 Installation Procedure

Install VMware Workstation 16 Player™ as follows:

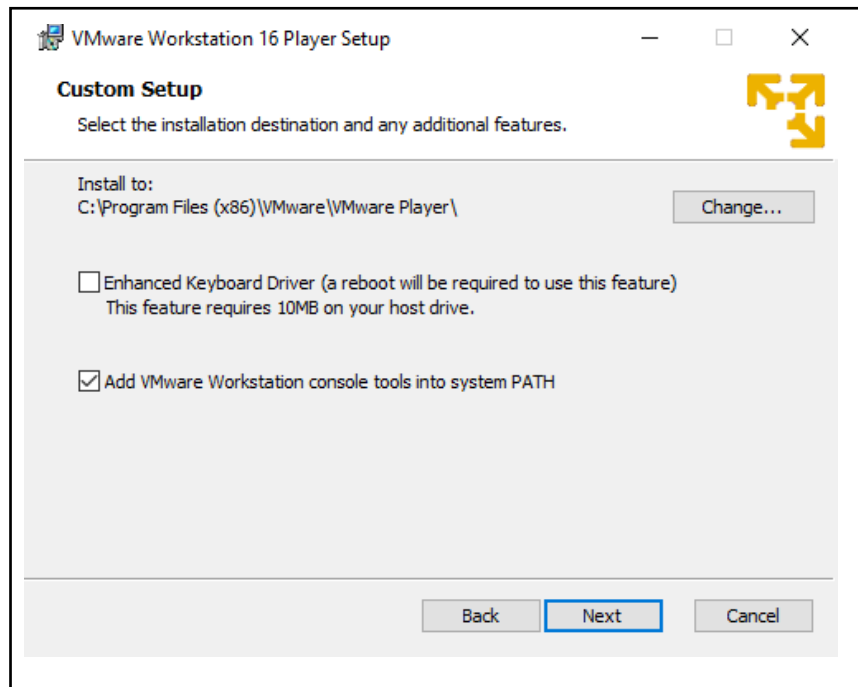
1. Run the VMware Workstation 16 Player™ Setup Wizard .exe file.
2. Click “Next” on the welcome screen to begin the installation wizard:



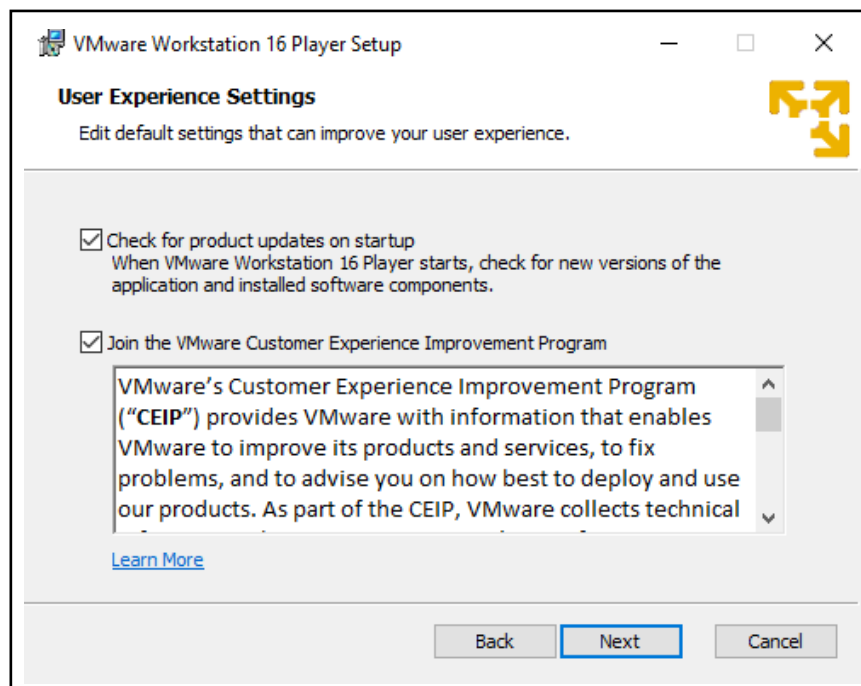
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4. Select “Add VMware Workstation console tools into system PATH” and click “Next”:

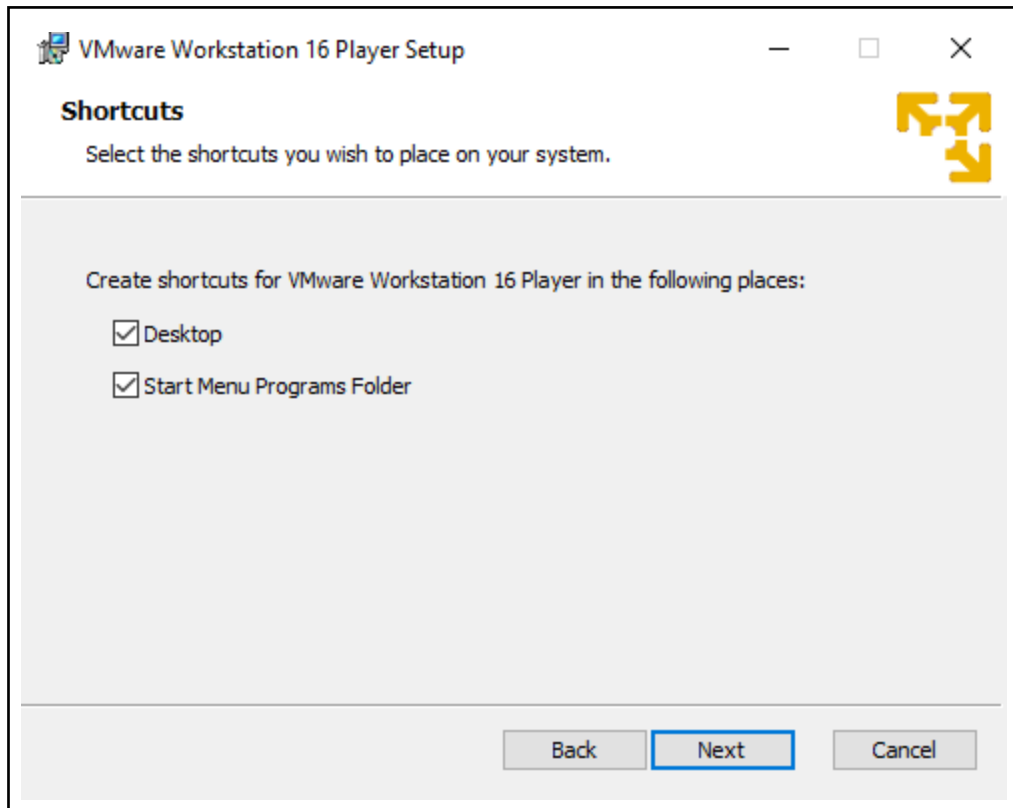


5. Select the preferred User Experience Settings and click “Next”:

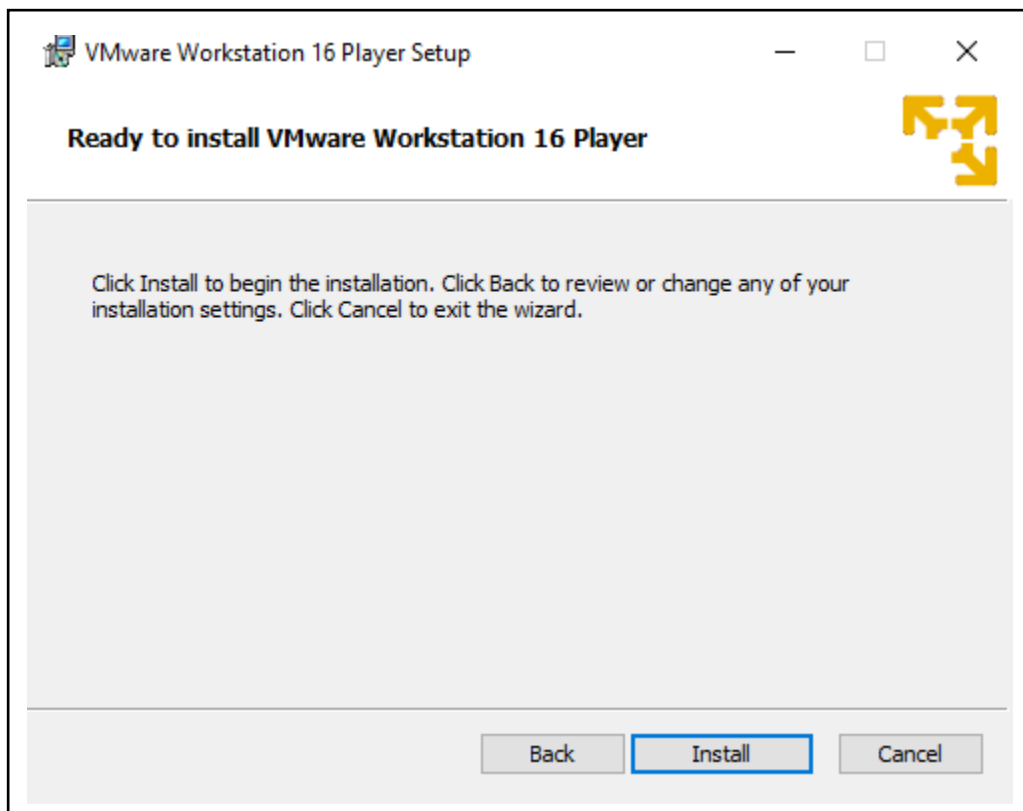


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6. Select the preferred Shortcuts and click “Next”:



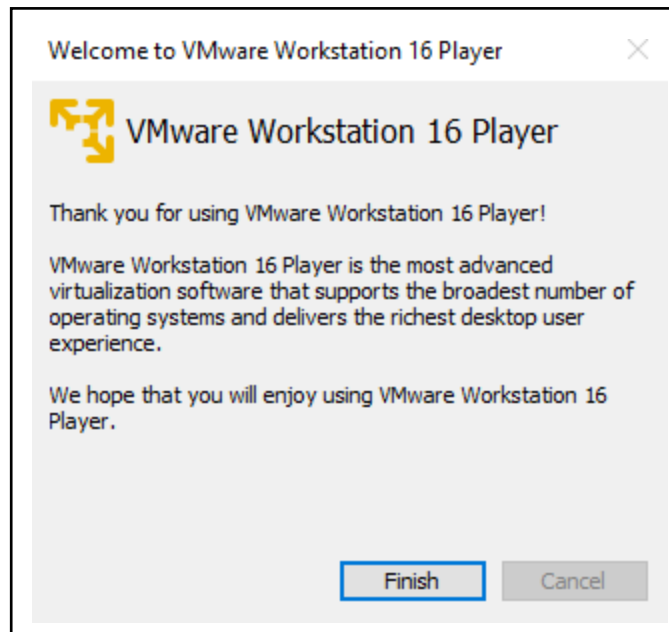
7. Click “Install” to begin the installation:



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- Click “Finish” once the installation is complete:



- Refer to the Puppy Installation Guide for instructions on how to run Roadster diagnostic software on VMware Workstation 16 Player™.

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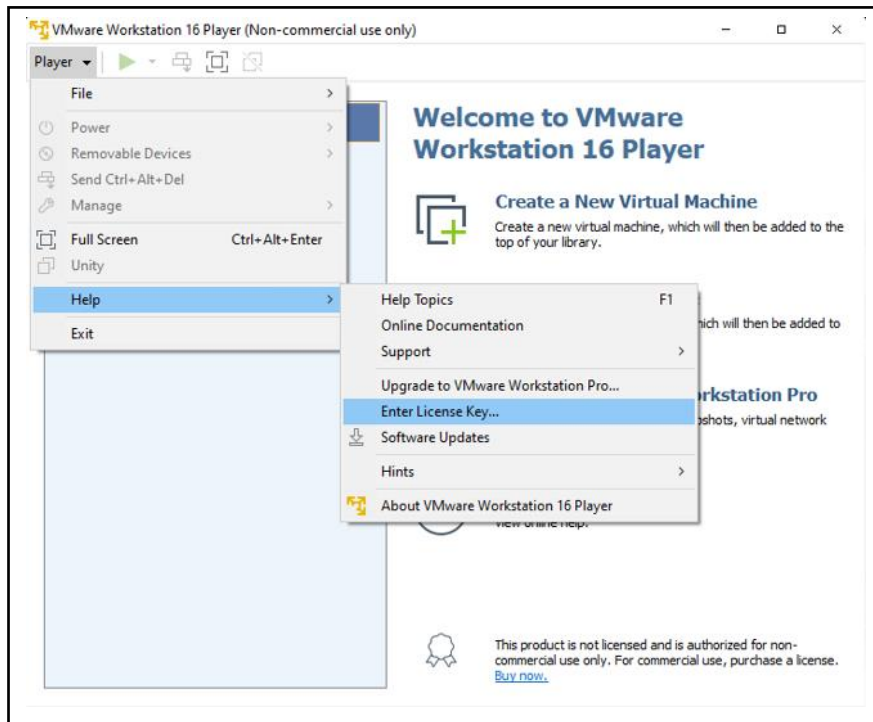
2.4 Adding a Commercial License

VMware Workstation has multiple licensing options depending on the specific use case. Workstation Player is available Free for personal, non-commercial use, but requires a license for commercial use. A valid Commercial license will remove the 'Non-commercial use only' banner placed within the product.

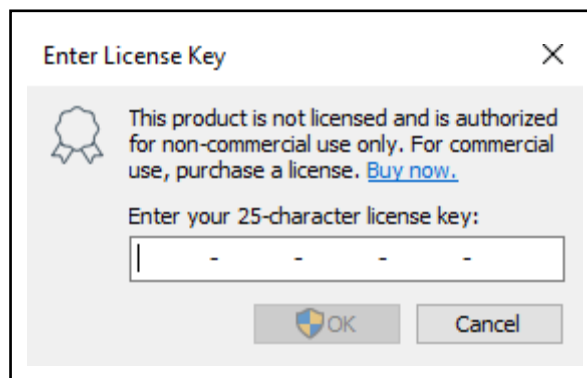
A commercial license can be purchased by independent operators at <https://store-us.vmware.com/workstation buy dual>.

Add a commercial license to VMware Workstation by performing the following:

1. Select Player > Help > Enter License Key...:



2. Enter the 25-character license key provided by the purchase of a commercial license and click "OK":



3 Puppy Installation Guide

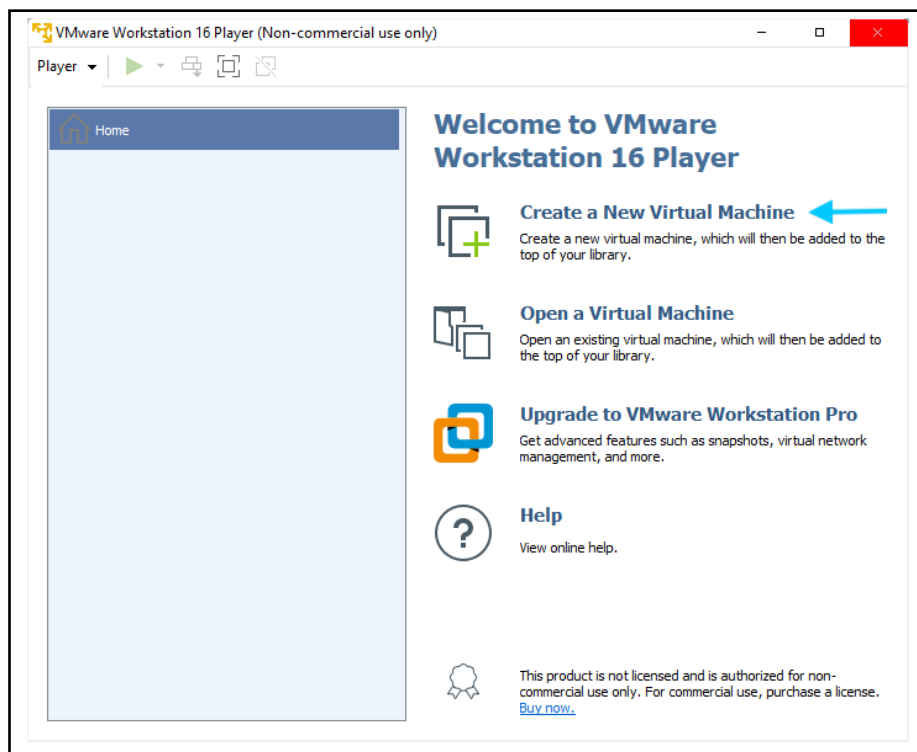
The following describes how to run Puppy, also known as Perl on VMware Workstation 16 Player™, by mounting an Optical Disc Image (.iso).

This version of Slacko Puppy Linux is modified specifically for diagnosis, repair, and installation of Roadster vehicles.

3.1 Installation Procedure

Install the Puppy operating system as follows:

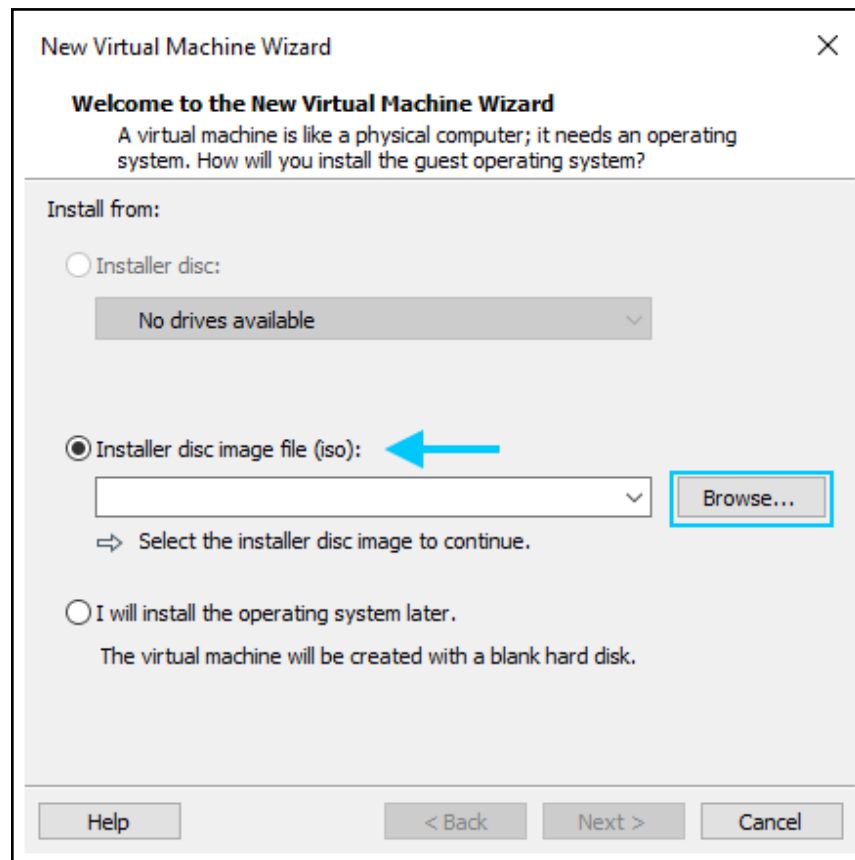
1. Run VMware Workstation 16 Player™.
2. Select “Create a New Virtual Machine”:



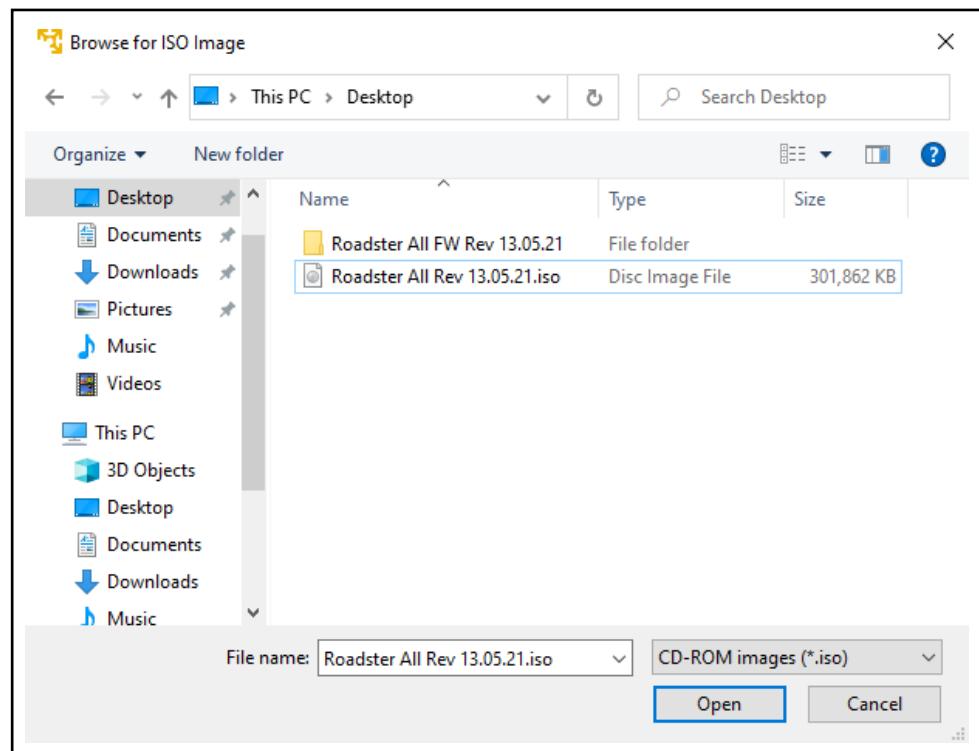
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3. Select “Installer disc image file (iso)” and then browse:

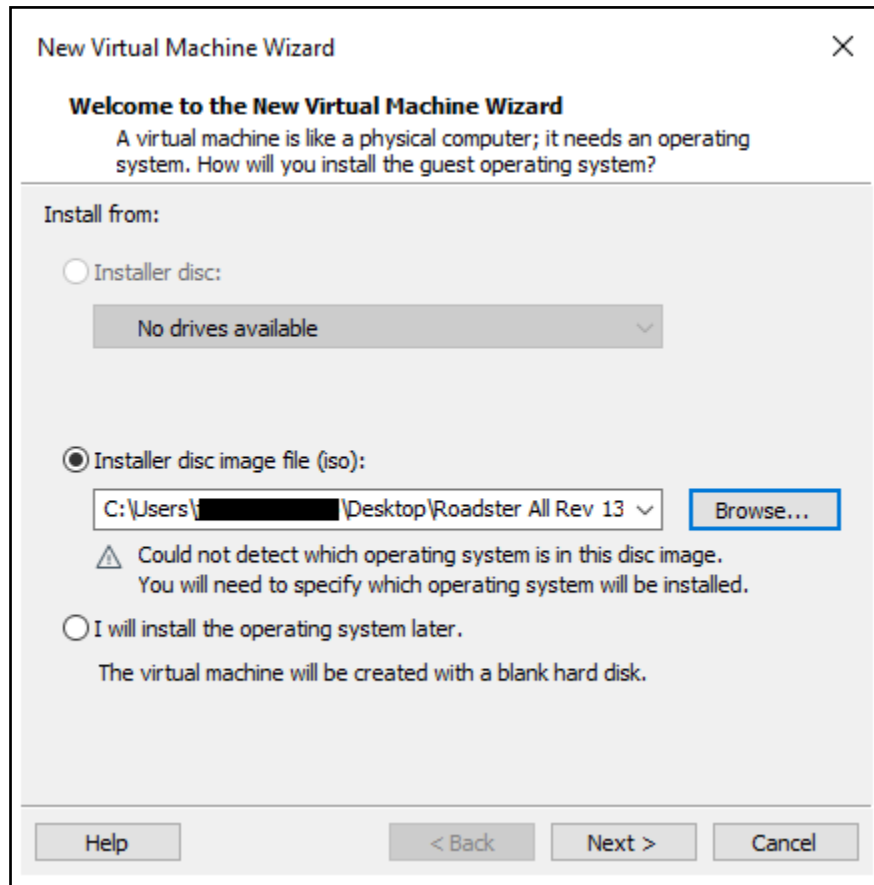


4. Open the “Roadster All Rev 13.05.21” iso file:



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5. Click “Next” once the .iso file is selected:



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6. Specify the guest operating system by selecting “Linux” and change the Version to “Ubuntu”:

The screenshot shows the 'New Virtual Machine Wizard' dialog box, specifically the 'Select a Guest Operating System' step. The title bar reads 'New Virtual Machine Wizard' with a close button. The main heading is 'Select a Guest Operating System' with the subtitle 'Which operating system will be installed on this virtual machine?'. Below this, there are two sections: 'Guest operating system' and 'Version'. In the 'Guest operating system' section, there are three radio buttons: 'Microsoft Windows', 'Linux' (which is selected and has a blue arrow pointing to it), and 'Other'. In the 'Version' section, there is a dropdown menu with 'Ubuntu' selected. At the bottom of the dialog, there are four buttons: 'Help', '< Back', 'Next >' (which is highlighted with a blue border), and 'Cancel'.

7. Name the virtual machine “Puppy 5.4 All Rev 13.05.21”:

The screenshot shows the 'New Virtual Machine Wizard' dialog box, specifically the 'Name the Virtual Machine' step. The title bar reads 'New Virtual Machine Wizard' with a close button. The main heading is 'Name the Virtual Machine' with the subtitle 'What name would you like to use for this virtual machine?'. Below this, there are two sections: 'Virtual machine name:' and 'Location:'. In the 'Virtual machine name:' section, there is a text input field containing 'Puppy 5.4 All Rev 13.05.21'. In the 'Location:' section, there is a text input field containing 'C:\Users\[redacted]\Documents\Virtual Machines\Puppy 5.4' and a 'Browse...' button. At the bottom of the dialog, there are three buttons: '< Back', 'Next >' (which is highlighted with a blue border), and 'Cancel'.

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- Specify the disc capacity to 20GB and select “Store virtual disk as a single file”:

The screenshot shows the 'New Virtual Machine Wizard' dialog box, specifically the 'Specify Disk Capacity' step. The title bar reads 'New Virtual Machine Wizard' with a close button. The main heading is 'Specify Disk Capacity' with the subtitle 'How large do you want this disk to be?'. A text box explains: 'The virtual machine's hard disk is stored as one or more files on the host computer's physical disk. These file(s) start small and become larger as you add applications, files, and data to your virtual machine.' Below this, there is a label 'Maximum disk size (GB):' followed by a text input field containing '20.0' and a spinner control. Underneath, it says 'Recommended size for Ubuntu: 20 GB'. There are two radio button options: 'Store virtual disk as a single file' (which is selected and has a blue arrow pointing to it) and 'Split virtual disk into multiple files'. A note below the second option states: 'Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.' At the bottom, there are four buttons: 'Help', '< Back', 'Next >' (highlighted with a blue border), and 'Cancel'.

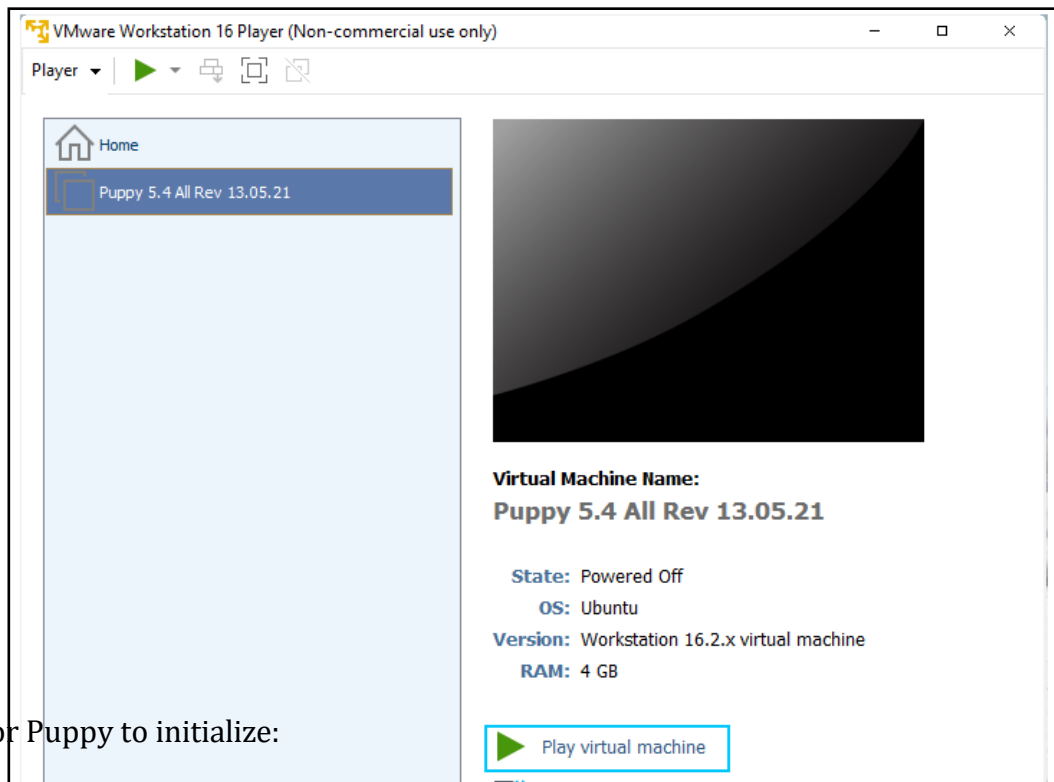
- Create the virtual machine by selecting “Finish”:

The screenshot shows the 'New Virtual Machine Wizard' dialog box, specifically the 'Ready to Create Virtual Machine' step. The title bar reads 'New Virtual Machine Wizard' with a close button. The main heading is 'Ready to Create Virtual Machine' with the subtitle 'Click Finish to create the virtual machine. Then you can install Ubuntu.' A text box states: 'The virtual machine will be created with the following settings:'. Below this is a list of settings: 'Name: Puppy 5.4 All Rev 13.05.21', 'Location: C:\Users\[redacted]Documents\Virtual Machine...', 'Version: Workstation 16.2.x', 'Operating System: Ubuntu', 'Hard Disk: 20 GB', 'Memory: 4096 MB', 'Network Adapter: NAT', and 'Other Devices: 2 CPU cores, CD/DVD, USB Controller, Printer, Sound...'. There is a 'Customize Hardware...' button below the list. At the bottom, there are three buttons: '< Back', 'Finish' (highlighted with a blue border), and 'Cancel'.

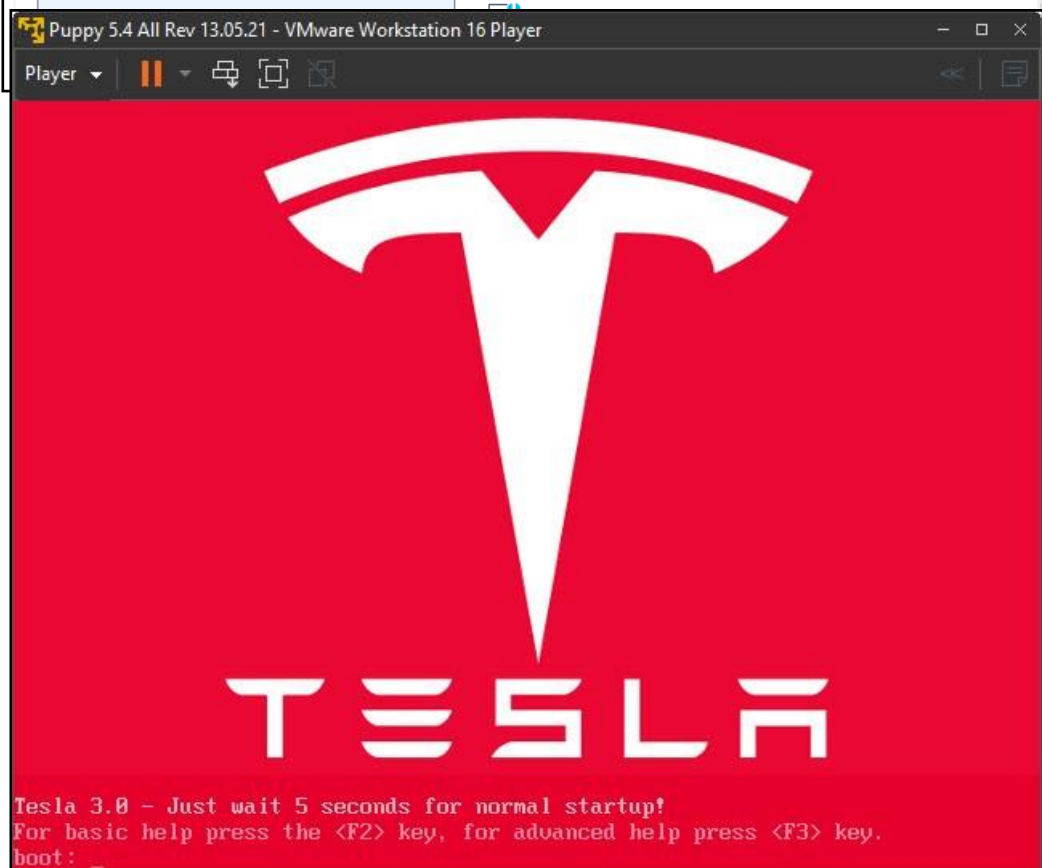
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10. Select “Play virtual machine” to initialize Puppy:



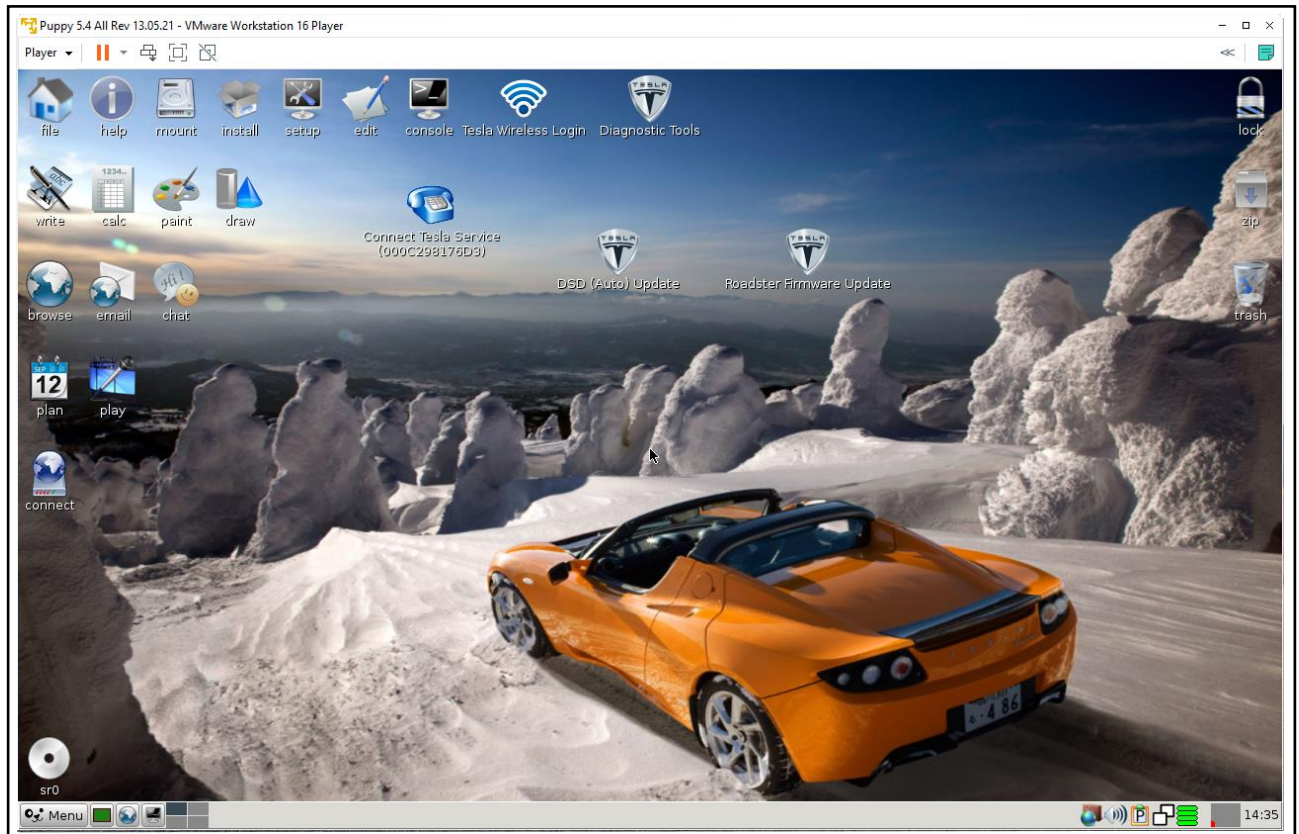
11. Wait for Puppy to initialize:



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Welcome to Puppy - Roadster Diagnostic Tools Desktop:

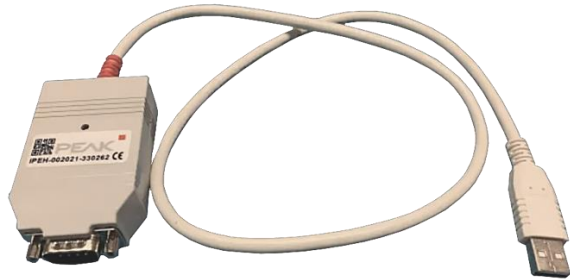


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4 Connect to Roadster

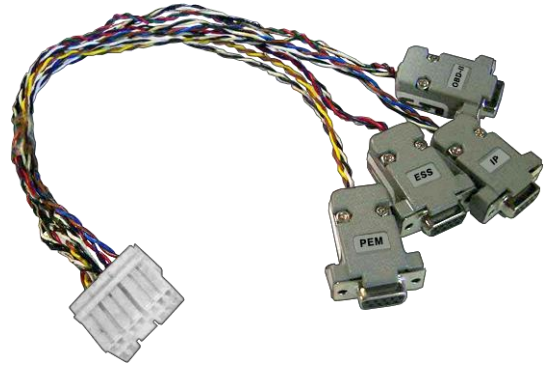
4.1 Required Tools

1016990-00-A



PCAN-USB Adaptor (Standard Version)

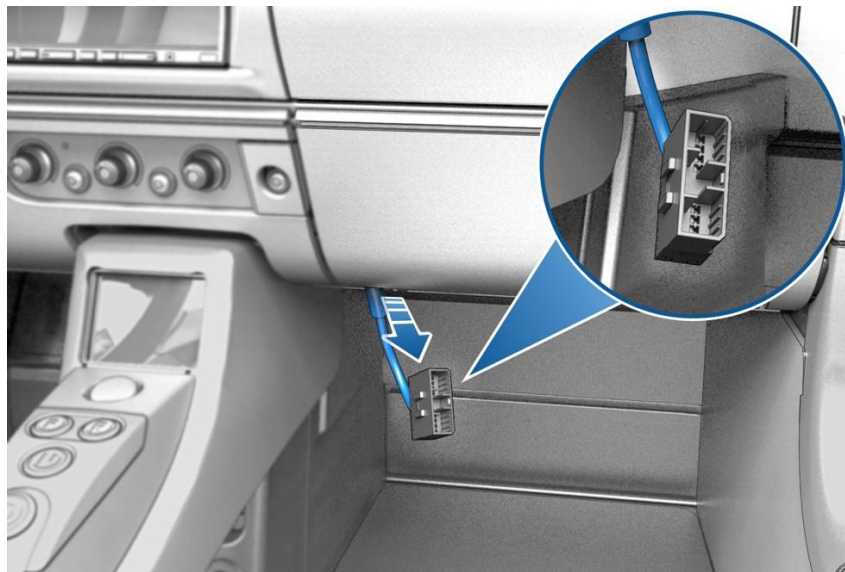
1013716-00-A



4-way CAN breakout

4.2 Connect Procedure

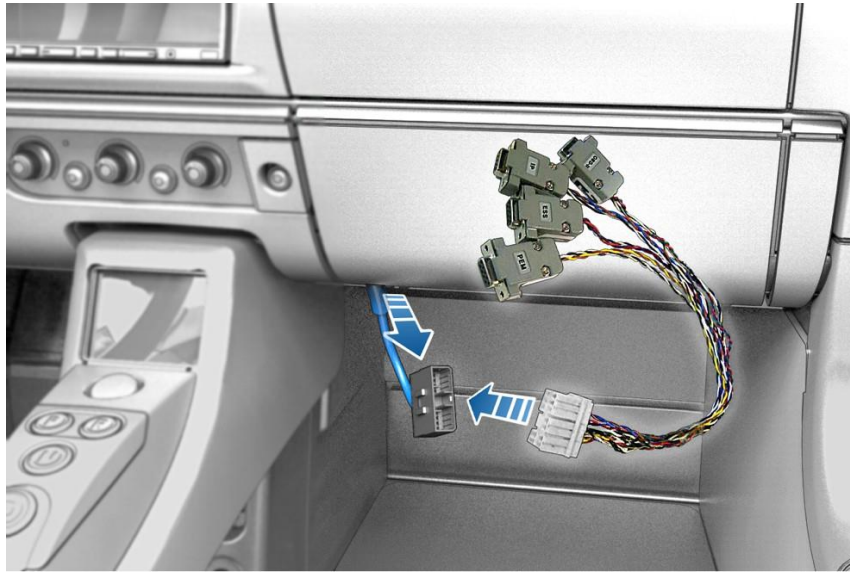
1. Locate the breakout connector at the foot-well of the passenger-side of the vehicle.



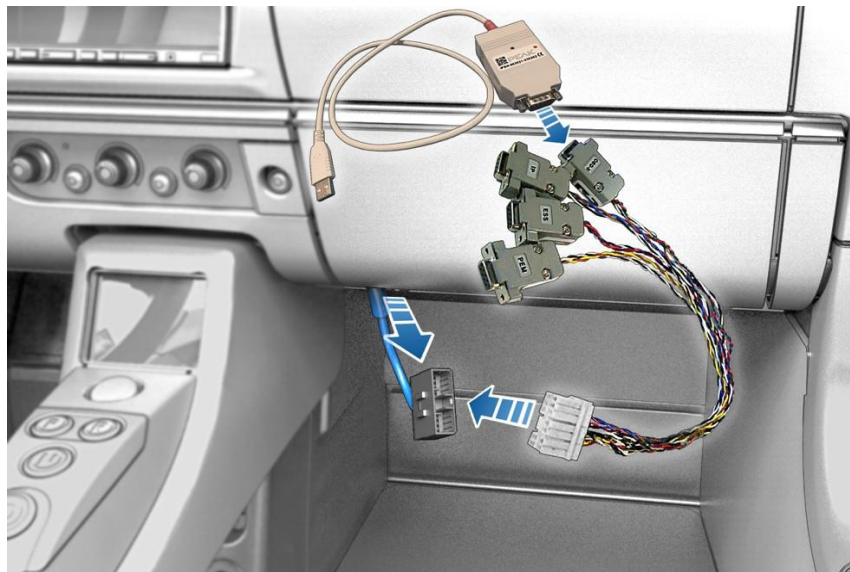
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2. Connect the 4-way CAN breakout cable to the breakout connector.



3. Connect the PCAN-USB Adaptor to the laptop equipped with Puppy.
4. Connect the PCAN-USB Adaptor to the OBDII CAN Bus Serial Port on the 4-way CAN breakout cable.



5. Open the VMware Workstation player and connect to Puppy.

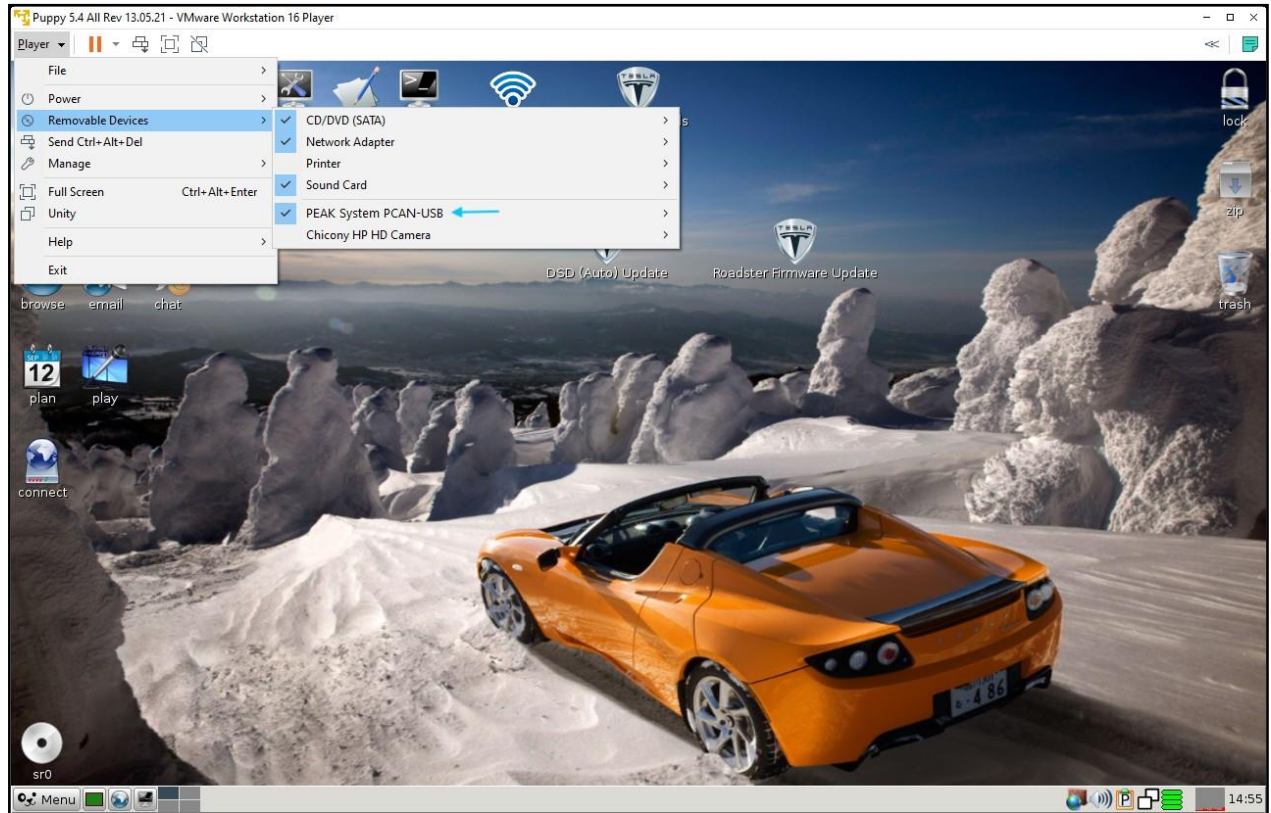
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6. Confirm the PCAN-USB Adaptor is connected to the virtual machine.

6.1. Select Player > Removable Devices > PEAK System PCAN-USB.

Note: If a connection is detected the adaptor will be a selectable option as shown in the image below:



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4.3 CAN Bus Serial Port Designations

Serial Port	BUS	Communication Speed	Map Code
IP	BUS 1	CAN – Bus 1 (1M/b/sec)	Yellow
ESS	BUS 2	CAN – Bus 2 (125kb/sec)	Blue
PEM	BUS 3	CAN – Bus 3 (500kb/sec)	Red
OBDII	BUS 4	CAN – Bus 4 (1000kb/sec) Diagnostics	Purple

4.4 CAN Bus Serial Port Descriptions

Description: CAN - Bus 1 | IP

- Vehicle Management System
- Touch screen
- Instrument pack

Description: CAN - Bus 2 | ESS

- Vehicle Management System
- HVAC 12V controller
- Switch pack
- Battery

Description: CAN – Bus 3 | PEM

- Vehicle Management System
- Anti-Lock Braking System
- Power Electronics Module
- Transmission Control Module

Description: CAN – Bus 4 | OBDII

- Diagnostics

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5 Additional Information

5.1 Acronyms, Abbreviations

Value	Definition
VM	Virtual Machine
IP	Instrument Pack
VMS	Vehicle Management System
PEM	Power Electronics Module
OBDII	On-Board Diagnostics 2
ESS	Energy Storage System
HVAC	Heating, Venting, Air-Conditioning
CAN	Controller Area Network

5.2 Reference Documents

Title	Description
VMware Installation Reference	https://www.vmware.com/products/workstation-player/workstation-player-evaluation.html .
VMware Commercial Licensing	https://store-us.vmware.com/workstation_buy_dual .

5.3 Contact Information

Title	Description