



Gigabit Ethernet Driver for Microsoft Windows* 10 64-bit OS for Intel Atom® x6000E Series, and Intel® Pentium®, Celeron® N and J Series Platform (Code Name: Elkhart Lake)

Release Notes

October 2021

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Revision History

Date	Revision	Description
October 2021	1.5	Hotfix Release #1007
September 2021	1.4	Hotfix Release #0722
August 2021	1.3	MR1 Release for Intel Atom® x6000E Series, Intel® Pentium®, Celeron® N and J Series
May 2021	1.2	Added support to 11 th Gen Intel® Core™ Embedded Series
April 2021	1.1	Added support to Embedded SKU
March 2021	1.0	PV Release for PC Client and Industrial Non-FuSa SKU
January 2021	0.9	Pre-production QS Release
October 2020	0.8	Beta 3 Engineering Release
September 2020	0.7	Beta Release
July 2020	0.6	Alpha 2 Release
May 2020	0.5	Alpha Release
April 2020	0.3.1	Engineering Release #2
November 2019	0.3	Initial release

1.0 Introduction

This document provides the release notes, driver interfaces, limitations, and known issues for the Gigabit Ethernet (GbE) driver binary packages for the Microsoft Windows* 10 64-bit operating system.

1.1 Acronyms and Terminology

Table 1. Terminology

Term	Description
BSP	Board Support Package
GbE	Gigabit Ethernet
Intel® PSE	Intel® Programmable Services Engine
MSI	Message Signaled Interrupts
MTU	Maximum Transmission Unit
ODM	Original Design Manufacturing
OEM	Original Equipment Manufacturing
OS	Operating System
PCH	Platform Controller Hub
RTOS	Real-Time Operating System
RGMII	Reduced Gigabit Media Independent interface
SGMII	Serial Gigabit Media Independent Interface

1.2 Intended Audience

This document is intended for Original Equipment Manufacturers (OEMs) and Original Device Manufacturers (ODMs) that are enabling drivers with:

- Intel Atom® x6000E Series, and Intel® Pentium®, Celeron® N and J Series processors (Code Name: Elkhart Lake)

1.3 Customer Support

Contact your Intel representative for support or submit an issue to Intel® Premier Support:

<http://premiersupport.intel.com>

1.4 Reference Documents

Log in to the Resource and Documentation Center (rdc.intel.com) to search for and download the document numbers listed in the following table. Contact your Intel field representative for access.

Note: Third-party links are provided as a reference only. Intel does not control or audit third-party benchmark data or the web sites referenced in this document. You should visit the referenced web site and confirm whether the referenced data is accurate.

Table 2. Reference Documents

Document	Document No./Location
Best-Known Configuration (BKC) for Microsoft Windows* 10 RS5 (64-bit) OS on Intel Atom® x6000E Series Processors, Intel® Pentium® and Celeron® N and J Series Processors (Code name: Elkhart Lake)	616386

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2.0 Release Summary

2.1 Hardware and Software Compatibility

This release is compatible with the following hardware:

- Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series platform (Code Name: Elkhart Lake)

This release supports the following operating system:

- Microsoft Windows* 10 64-bit RS5 operating system

2.2 Release Contents

This release includes the following:

- Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series platform (Code Name: Elkhart Lake):
 - Intel® GbE_211007Driver Package
 - Intel® GbE Driver Version 5.123.21.1007
 - Intel® GbE Driver Release Notes
 - Intel Software License Agreement

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3.0 Feature Highlights and Limitations

3.1 Intel® GbE Driver

Enabled features are as follows:

- Supports 3 GbE ports (2 PSE ports and 1 PCH port)
- Supports 10/100/1000Mbps Link Speeds and 2.5Gbps for certain PHY
- Supports RGMII/SGMII mode through Intel® PSE port
- Supports SGMII mode through PCH port
- Supports Marvell* 88E1512 PHY
- Supports Marvell 88E2110 PHY (up to 2.5Gbps)
- Supports MaxLinear* GPY115 PHY
- Supports MaxLinear GPY211 PHY (up to 2.5Gbps)
- Supports MaxLinear GPY215 PHY (up to 2.5Gbps)
- Supports Message Signaled Interrupts (MSI)
- Supports single Tx/Rx queue
- Supports D0/D3 power state
- Supports S0ix/Modern Standby
- Supports Wake-On Lan Magic Packet on S3, S4, S5, Fast Startup and S0ix (Only if the PHY is supported. Refer to the PHY datasheet for more information)
- Supports Jumbo Frame (Maximum 9014 bytes)
- Supports configurable LED for POR PHY
- Supports IEEE Power Down
- Support IEEE 802.3az-2010 Energy Efficient Ethernet (EEE) Primary Mode

3.2 Known Issues – Closed/Rejected

Issue #	Description
1509964691	Low power efforts implementation for Marvell's 88E1512 for E-Star_Energy Efficient Ethernet

3.3 Known Issues – Open

Issue #	Description
1509149976	Request to add IEEE Power Down feature in GbE Driver
1509685515	LED Configuration failing for LED[0](Pulse): Transmit Activity on Intel® PSE GBE0 - GPY PHY
1509988637	No difference observed on current measurement while IEEE feature enabled and disabled in SGMII and RGMII

NOTES:

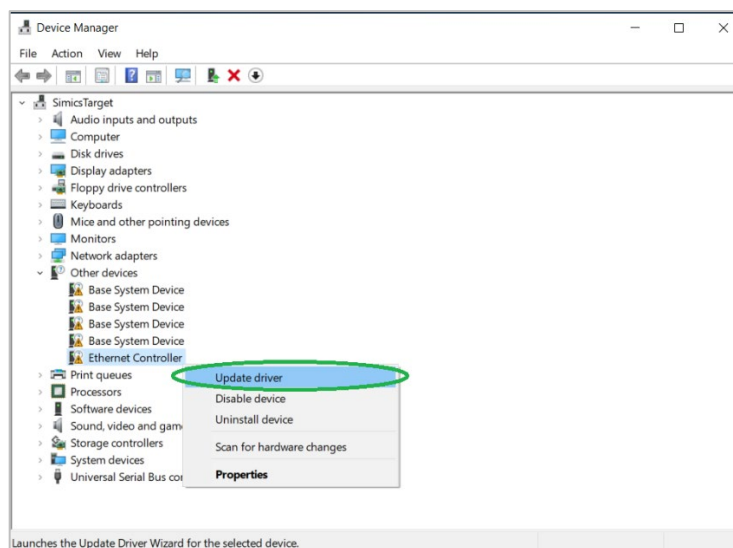
- To resolve LAN 2.5Gbps bandwidth performance issue, follow the following steps:
 - Refer to [Section 5.4](#).
 - Set Jumbo Frame to 9014 bytes.
- PCI Device ID (4B32) for PCH GbE will be changed to *Intel® EC1000S 1.0GbE Connection and Intel® EC2500S 2.5GbE Connection*.
- Only partial implementation is available in IEEE power down feature.

4.0 Installation Overview

4.1 Installing Driver via Device Manager

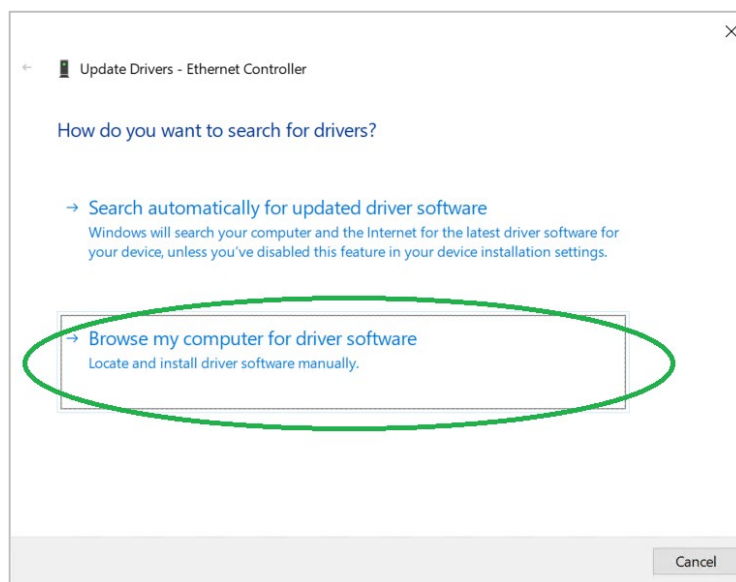
1. Open the Device Manager.
2. Right-click the **Ethernet Controller** device and select **Update driver**.

Figure 1. Update Driver



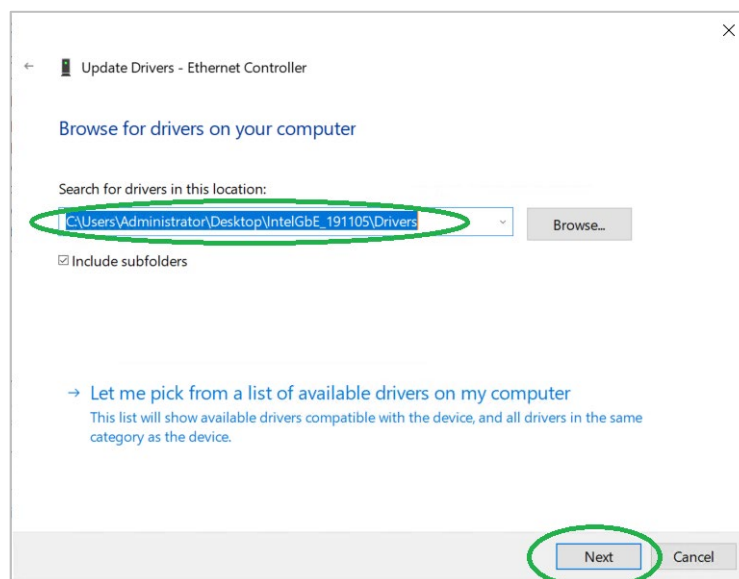
3. Click **Browse my computer for driver software**.

Figure 2. Choose to Browse for Driver Software



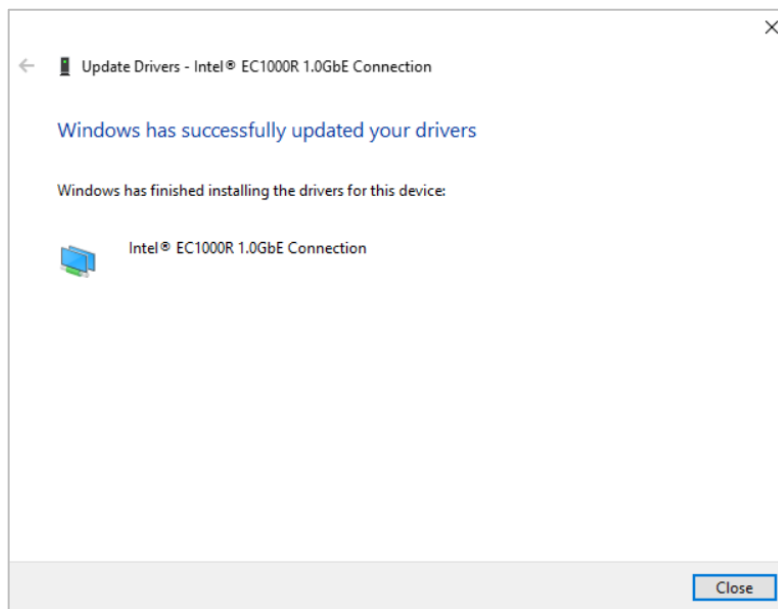
4. Browse to the Ethernet driver folder, and then click **Next**.

Figure 3. Browse for Driver Software



5. The Windows* OS has successfully installed message will be shown. Click **Close**.

Figure 4. Successfully Install Driver Software



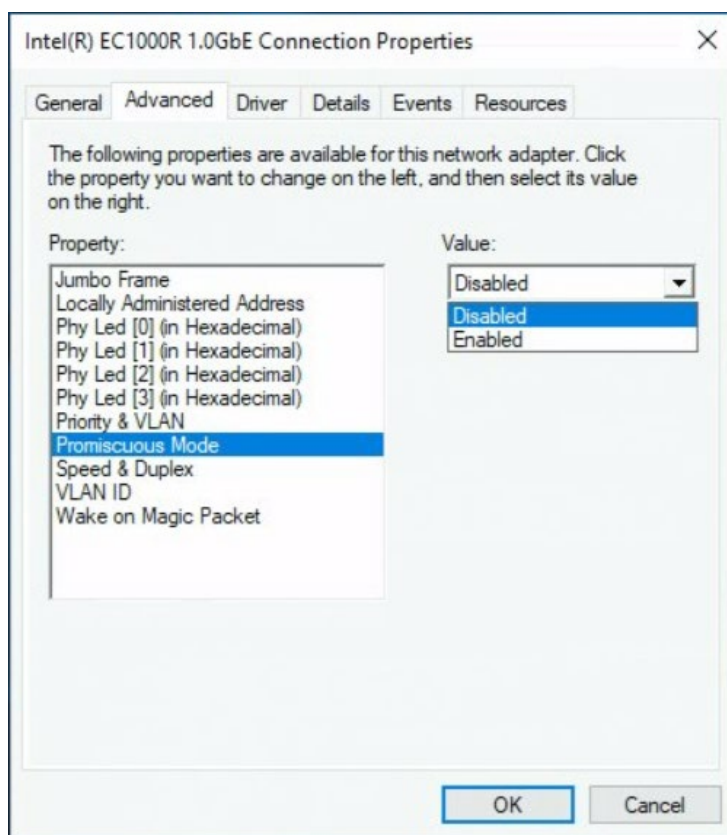
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5.0 Guide

5.1 Enabling or Disabling Promiscuous Mode

1. Open the **Device Manager**.
2. Right-click the **Ethernet Controller** device and select **Properties**.
3. Click the **Advanced** tab, select the **Promiscuous Mode** property, and then set the value to **Enabled**. Click **OK**.

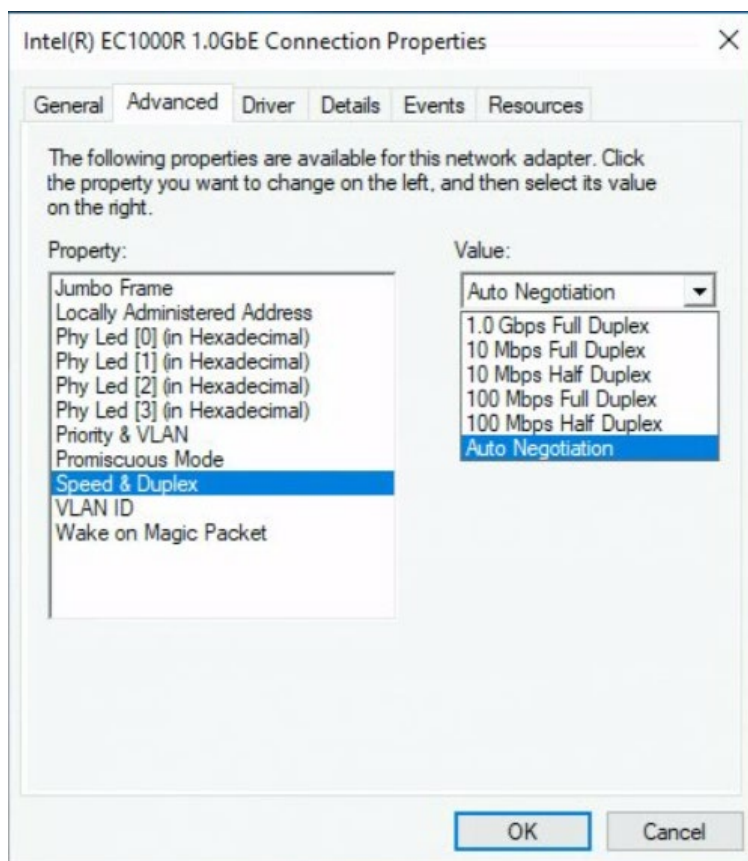
Figure 5. Enable or Disable Promiscuous Mode



5.2 Configuring Speed and Duplex

1. Open the **Device Manager**.
2. Right-click the **Ethernet Controller** device and select **Properties**.
3. Click the **Advanced** tab, select the **Speed & Duplex** property, and then set the "value." Click **OK**.

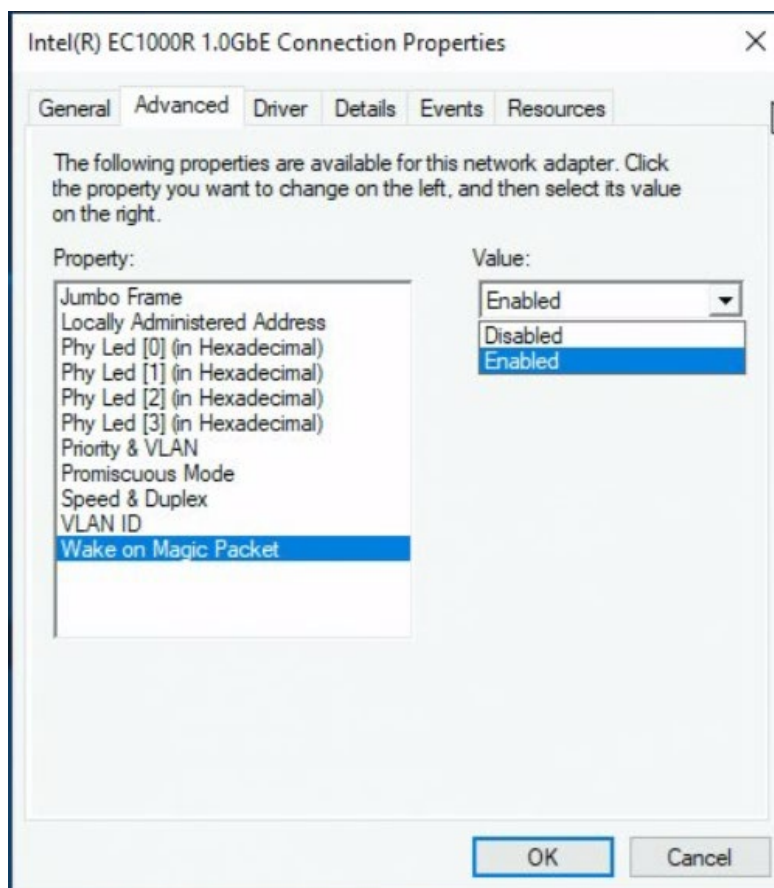
Figure 6. Set Speed & Duplex Value



5.3 Enabling Wake on LAN (Magic Packet)

1. Open the **Device Manager**.
2. Right-click the **Ethernet Controller** device and select **Properties**.
3. Click **Advanced** tab, select the **Wake on Magic Packet** property, and then set the value to "Enabled". Click **OK**.

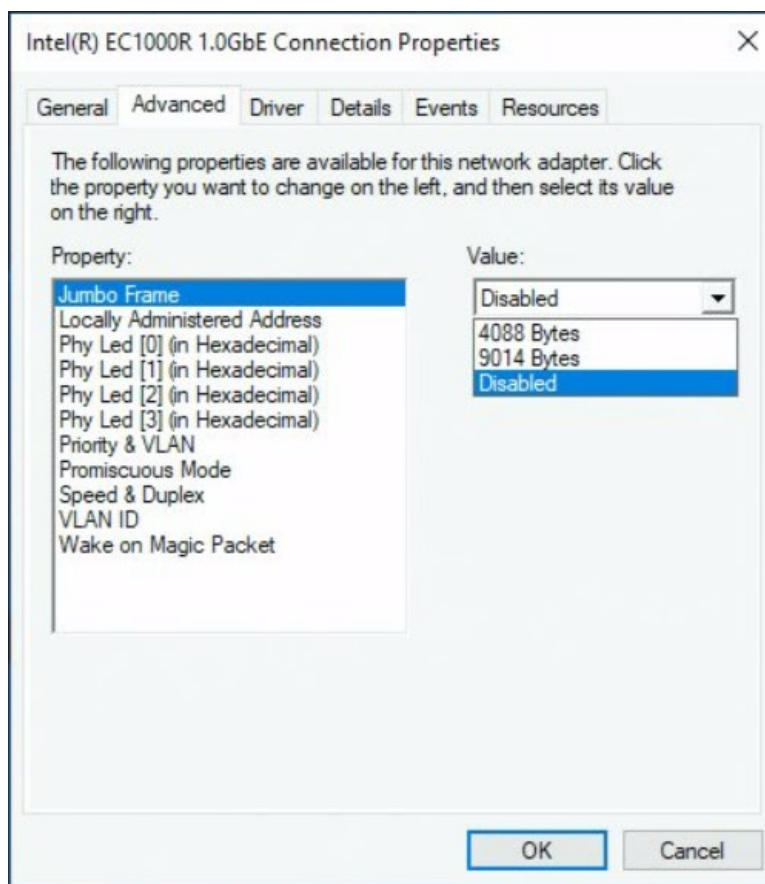
Figure 7. Enable Wake on Magic Packet



5.4 Configuring Jumbo Frame Size

1. Open the **Device Manager**.
2. Right-click the **Ethernet Controller** device, and select **Properties**.
3. Click the **Advanced** tab. Select the **Jumbo Frame** property, and set the "value."
Click **OK**.

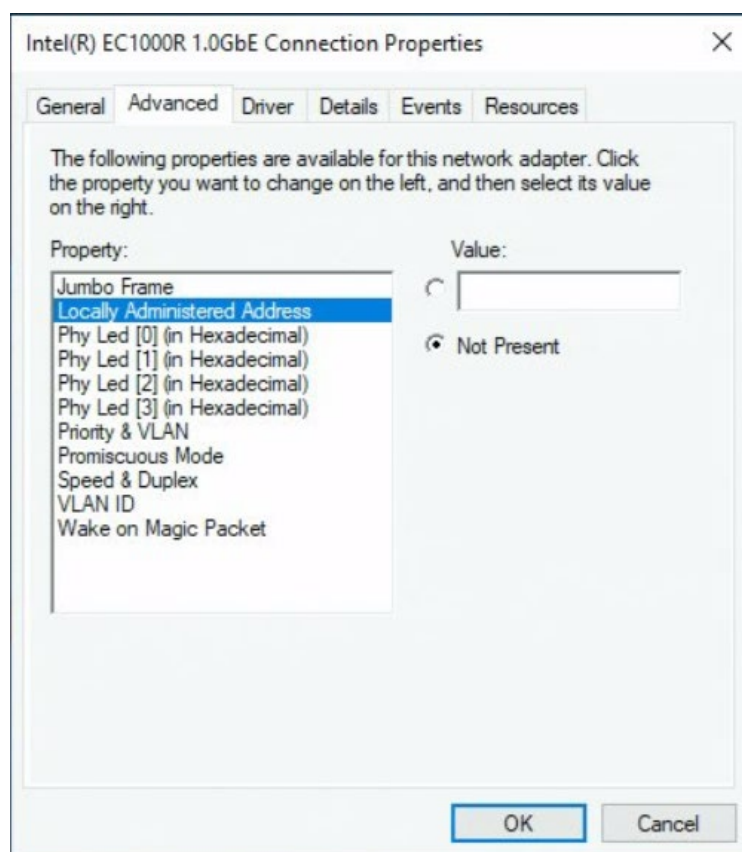
Figure 8. Set Jumbo Frame Size Value



5.5 Configuring MAC address

1. Open the **Device Manager**.
2. Right-click the **Ethernet Controller** device, and select **Properties**.
3. Click the **Advanced** tab. Select the **Locally Administered Address** property, and set the "value." Click **OK**.

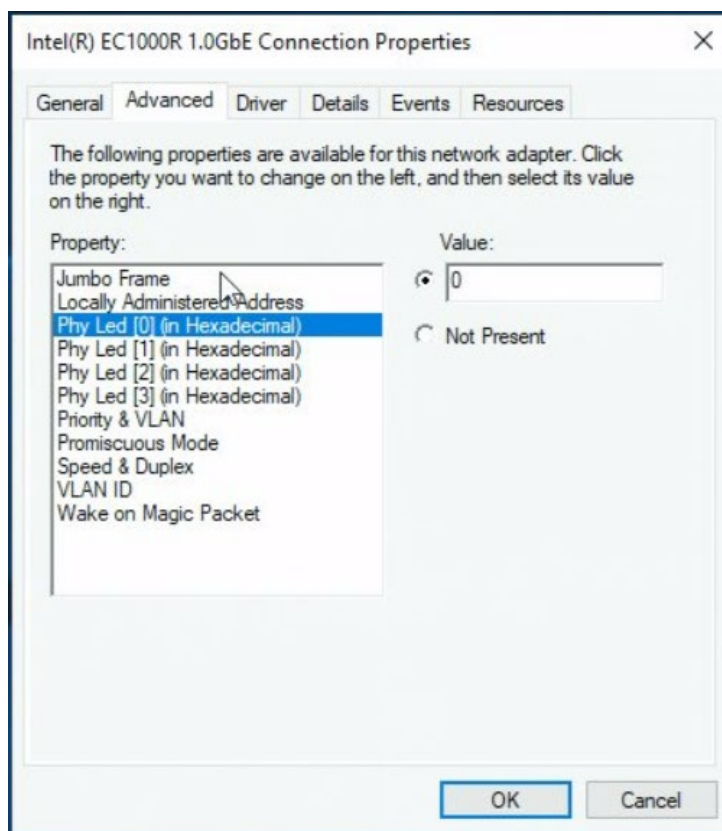
Figure 9. Set MAC Address Value



5.6 Configuring PHY LED register value

1. Open the **Device Manager**.
2. Right-click the **Ethernet Controller** device, and select **Properties**.
3. Click the **Advanced** tab. Refer to the PHY datasheet, and select the **Phy Led** property, and then set the “value.” Click **OK**.

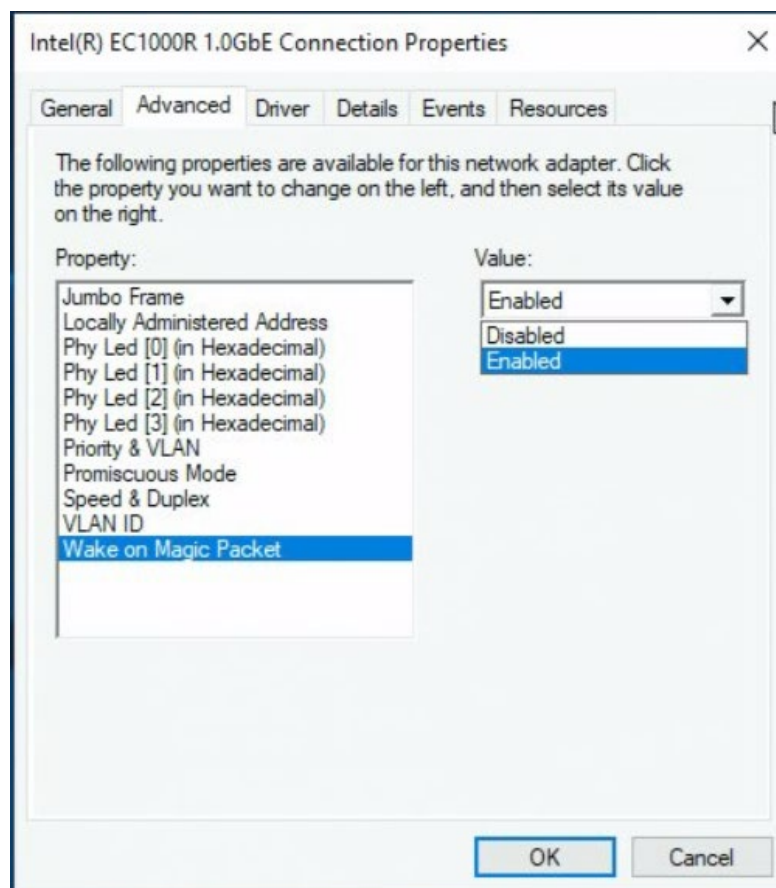
Figure 10. Set PHY LED Register Value



5.7 Configuring IEEE Power Down Feature

1. Open the **Device Manager**.
2. Right-click the **Ethernet Controller** device and select **Properties**.
3. Click **Advanced** tab, select the **Wake on Magic Packet** property, and then set the value to "Disabled". Click **OK**.

Figure 11. Configuring IEEE Power Down Feature



5.8 Configuring IEEE Energy Efficient Ethernet Primary Mode

1. Open the **Device Manager**.
2. Right-click the **Ethernet Controller** device and select **Properties**.
3. Click **Advanced** tab, select the **Energy Efficient Ethernet** property, and then set the value to "Enabled". Click **OK**.

Figure 12. Configuring IEEE Energy Efficient Ethernet Primary Mode

