

# Troubleshoot Windows Server with Generative AI



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# Overview



**IT troubleshooting methodology**

**Prompt engineering**

**Custom instructions**

**Scenarios**





# IT Troubleshooting Methodology



# IT Troubleshooting Methodology

## 1. Identify the problem

- Gather information
- Reproduce the problem
- Determine recent changes

## 2. Establish a theory of root cause


- bottom-up
- top-down

## 3. Attempt a fix based on findings

- Make one change at a time and test
- Have a rollback plan

## 4. Document the solution





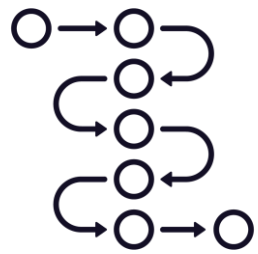
# Prompt Engineering



# Prompt Engineering



**Process of carefully crafting the input text (prompt) to a generative AI model to achieve a specific desired output or behavior**



**Iterative refinement ("few-shot" learning)**



**Provide examples and desired output format**



**Lots of community support (Auto-GPT; ChatGPT plugins)**



# Tokenization

## Tokenizer

[platform.openai.com/tokenizer](https://platform.openai.com/tokenizer)

The GPT family of models process text using **tokens**, which are common sequences of characters found in text. The models understand the statistical relationships between these tokens, and excel at producing the next token in a sequence of tokens.

You can use the tool below to understand how a piece of text would be tokenized by the API, and the total count of tokens in that piece of text.

GPT-3 Codex

The quick brown fox jumped over the lazy dog, and then purchased 1,095.34 cans of dog food for his pet.

Clear

Show example

Tokens

27

Characters

103

The quick brown fox jumped over the lazy dog, and then purchased 1,095.34 cans of dog food for his pet.

TEXT

TOKEN IDS



# Tokenization

Prompt



My Windows Server 2019 domain member server experienced a blue-screen of death (BSOD).

Stop code: SYSTEM THREAD EXCEPTION NOT HANDLED

What failed: bnistack6.sys

Please help me troubleshoot the problem.

GPT-3.5  
4,096  
tokens

Completion



Certainly! The Blue Screen of Death (BSOD) error you've encountered with the stop code "SYSTEM THREAD EXCEPTION NOT HANDLED" and a failure in "bnistack6.sys" can be indicative of a specific issue. Here's a step-by-step guide to help you troubleshoot:



1. **Identify the Faulty Component:** The file "bnistack6.sys" is not a standard part of the Windows operating system, so it likely relates to a third-party driver or software. Identifying the associated component will be the first step.
2. **Safe Mode:** Start the server in Safe Mode. This will allow you to boot Windows with a minimal set of drivers and services. If the issue is related to a specific driver, starting in Safe Mode can bypass the problem and allow you to work on the solution.

GPT-4  
8,192  
tokens

Prompt + Completion = Token length







# Custom Instructions



You are an expert in all aspects of Windows Server troubleshooting. I am a technical professional; speak to me in tech language.

My Windows Server 2019 domain member server experienced a blue-screen of death (BSOD).

Stop code: SYSTEM THREAD EXCEPTION NOT HANDLED

What failed: bnistack6.sys

Please help me troubleshoot the problem.

<response>

Tell me more about KB 5023326

◀ **System prompt**

◀ **User prompt**

◀ **Completion**

◀ **Iterative prompting**



# The September 2021 Problem

**GPT has a knowledge cut-off of  
September 2021**

**Workaround: Bing web browsing  
ChatGPT plugin**

**Workaround: GitHub Copilot Chat**

**Workaround: Bing.com**





# Scenarios



# Windows Server DNS (It's always DNS!)

Priority: High

Subject: DNS Resolution Failure on Windows Server 2019

Description: We have encountered a DNS resolution failure on our primary Windows Server 2019, responsible for internal DNS services. The issue began at approximately 9:00 AM this morning, and we have been unable to resolve internal hostnames since then.

Symptoms:

- Internal domain names are not resolving.
- External DNS resolution appears to be functioning normally.
- DNS Server service is running, but event logs are showing errors related to DNS.

Error Messages:

- Event ID 4013: The DNS server is waiting for Active Directory Domain Services (AD DS) to signal that the initial synchronization of the directory has been completed.
- Event ID 4004: The DNS server was unable to complete directory service enumeration of zone corp.lan.



# Windows Server BSOD

Priority: Critical

Subject: BSOD Stop Error on Windows Server 2019 - Production Environment

Description: A critical production server running Windows Server 2019 experienced a Blue Screen of Death (BSOD) today at approximately 2:30 PM. The server is part of our core infrastructure and hosts several vital applications.

Symptoms: Server abruptly crashed with a BSOD.

Stop code displayed: SYSTEM THREAD EXCEPTION NOT HANDLED.

What failed: SAS-RAID\_Driver\_NY8FH\_WN\_5.1.119.32\_A00.EXE

Error Messages:

Full error: STOP 0x0000007E (0xFFFFFFFFFC00000005, 0xFFFFF807ABC12345, 0xFFFFF8E0ABCDE1234).



# Windows Server Networking

Priority: High

Subject: TCP/IP Connectivity Issue on Windows Server 2019 Hosting Web Applications

Description: We have detected intermittent connectivity issues on one of our Windows Server 2019 instances hosting critical web applications. The server is experiencing dropped TCP connections, leading to service disruptions and slow response times for end-users.

Symptoms:

- Intermittent loss of TCP connections to and from the server.
- Increased latency and slow response times for web applications hosted on the server.
- Network monitoring tools report unusual TCP retransmissions and timeouts.

Error Messages:

- Event ID 4227: TCP/IP failed to establish an outgoing connection.
- Event ID 4231: A request to allocate an ephemeral port number from the global TCP port space has failed.



# Demo





## Summary



**"Prompt engineering" is not an empty tech buzzword**

**Put in the effort to craft the best prompts**

**Get comfortable "conversing" with ChatGPT as if it were a live human mentor sitting with you**

**Question: "Can ChatGPT generate or debug PowerShell troubleshooting scripts for me?"**



**Up Next:**

# **Troubleshoot Windows Client with Generative AI**

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