Domain Generation Algorithm (DGA)

(As a part of ACTS Management System)

Functional Requirement Specification Document

10-07-2024

Functional Requirements Document

Name of Document	Domain Generation Algorithm (DGA)
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Description of Content	Functional, Technical and Operational Requirements
Reference	
Approved by	**Shubhum Goyal**
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List of Requirements Elicitation Discussions

SN.	Date	Participating Institutes/ Departments
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Abbreviations

CONTENTS

1. Introduction

1.1 Purpose

The purpose of this document is to provide a detailed description of the requirements for the Domain Generation Algorithm (DGA). It outlines the system constraints, interfaces, and interactions with external applications. This document serves as a reference for the development team and is intended for customer approval of functional requirements.

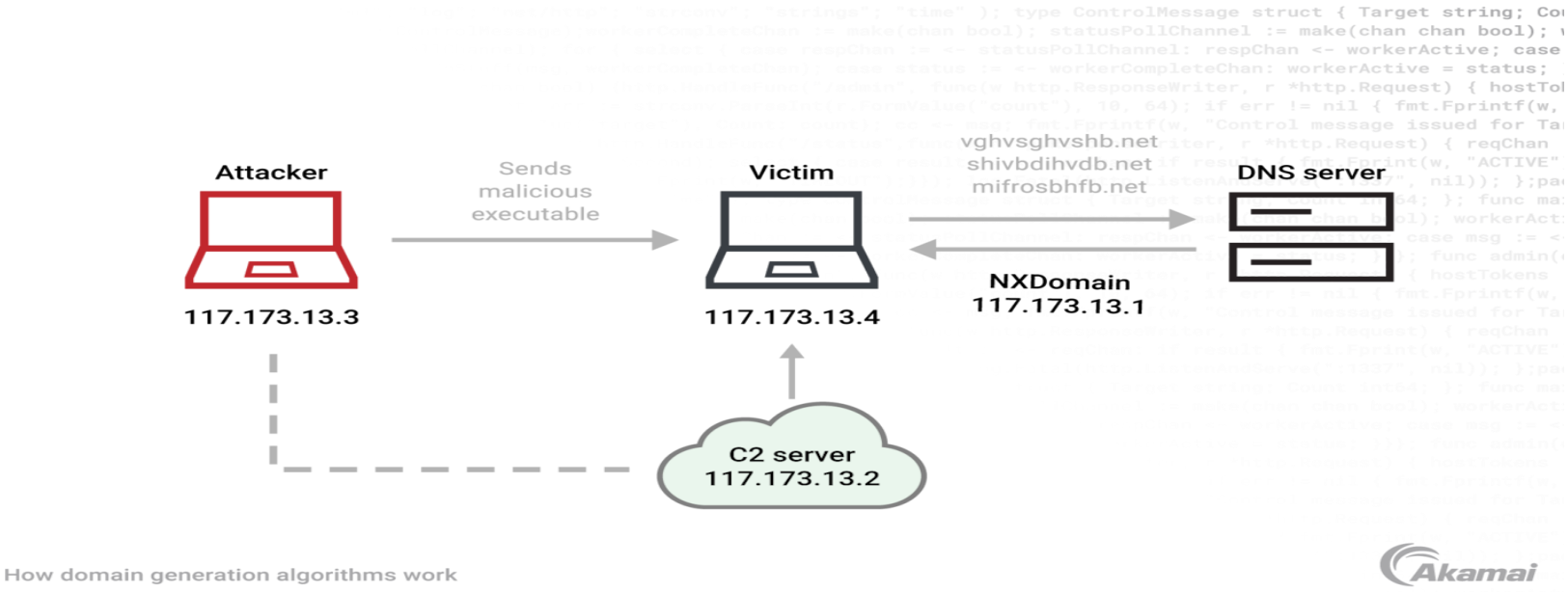
1.2 Background

The Domain Generation Algorithm (DGA) is being developed to automate the generation and validation of domain names based on specified algorithms. This system will cater to the needs of cybersecurity applications, enabling the generation of domain names for threat detection and prevention purposes.

1.3 Scope

The DGA project will generate domain names using various algorithms and validate them against predefined criteria. It will primarily function within a server environment, supporting browser-based and mobile client interfaces.

Figure 1: System Architecture



1.4 References

a) ICANN Domain Name Registration Guidelines b) GDPR Compliance Guidelines

1.5 Document Overview

This document provides an overview of the Domain Generation Algorithm (DGA), its interactions, and functionality. It describes the stakeholders using the system and available functionalities for each type. The FRS details the functions of DGA with constraints, assumptions, dependencies, and requirements subsets.

2. Functional Requirements

2.1 Generate Domains

2.1.1 Description

The Generate Domains functionality enables users to generate domain names based on specified algorithms (e.g., random, algorithmic).

2.1.2 Functional Requirements Identified

Generate Domains

SN.	Functionality	Process	Remarks/Additional Info
FR 2.1	Domain Generation	Algorithm execution	Detailed steps for domain generation.

2.1.3 Fields Validations

This table lists various fields and their validations in Domain Generation.

SN	Field Name	Field Description	Validations	Remarks
1	Domain Length	Length of domain	Min length, Max length	Mandatory

2.1.4 Pre-requisites, Assumptions, and Dependencies

- Assume stable network connectivity.
- Dependency on cryptographic libraries for algorithm execution.

2.2 Validate Domains

2.2.1 Description

The Validate Domains functionality validates generated domain names against specified criteria (e.g., length, character set).

2.2.2 Functional Requirements Identified

Validate Domains

SN.	Functionality	Process	Remarks/Additional Info
FR 2.2	Domain Validation	Criteria check	Detailed steps for domain validation.

2.2.3 Fields Validations

This table lists various fields and their validations in Domain Validation.

SN	Field Name	Field Description	Validations	Remarks
1	Domain Format	Format of domain	Regex validation	Mandatory

2.2.4 Pre-requisites, Assumptions, and Dependencies

- Assume availability of domain validation rules.
- Dependency on DNS lookup for validation checks.

3. External Interfaces

The DGA may interface with external systems for cryptographic libraries and DNS lookup services as part of its domain generation and validation processes.