



# **Communications and Information Technology Commission**

## **Suggested SPAM Monitoring Framework for CITC**

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## Identification of Legal Domains

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## **1. Purpose of this Document**

The purpose of this document is to suggest an approach to be used by CITC for monitoring SPAM in Saudi Arabia on an ongoing basis.

This document also recommends key responsibilities for SPAM monitoring in the Kingdom.



## **2. Our Approach**

The approach to defining the approach was to focus on three key aspects:

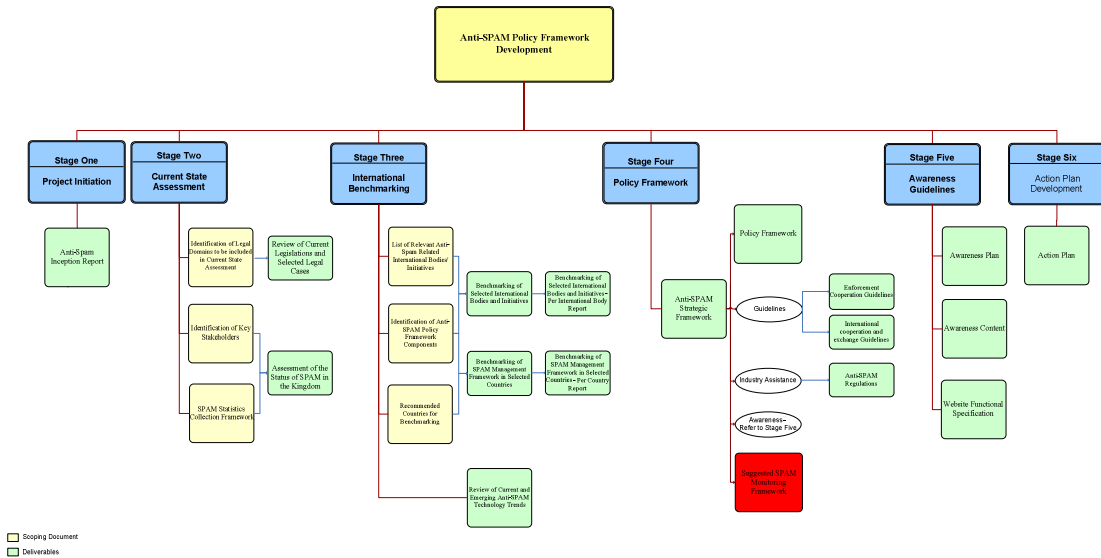
1. The definition of SPAM, and related SPAM indicators
2. The identification of sources for SPAM related statistics in Saudi Arabia
3. The definition of the manner in which the SPAM statistics would be gathered

### 3. Background

This document covers the approach suggested to be used by CITC for monitoring SPAM in Saudi Arabia on an ongoing basis

#### 3.1. Document Map

The following diagram shows where this document fits in the project:





## 4. Proposed Framework for gathering SPAM-related statistics in the Kingdom

### 4.1. Definition of SPAM, and related SPAM indicators

SPAM is defined in the Kingdom of Saudi Arabia as follows:

“Any unsolicited electronic message that contains commercial or objectionable content transmitted without prior consent through any communication medium including, but not limited to, e-mails, Mobile Messaging, fax, Bluetooth and instant messaging services”.

SPAM is typically reported as a percentage of the total number of received messages, and is referred to as “SPAM rate”. **Use of the same indicator to report SPAM in Saudi Arabia is recommended in order to compare and contrast the level of SPAM in Saudi Arabia in comparison to other countries.**

Accordingly, we will use three indicators to report SPAM in the Kingdom:

- **Email SPAM Rate:** SPAM eMails received in KSA on average as a percentage of all eMails received. It should be noted that the SPAM rate is usually calculated at or before the point where eMail is filtered using an Anti-SPAM filtering tool, not after the mail is filtered while taking into consideration the connections that are dropped on the routers or other devices due to the deployment of RBLs (Realtime Black Lists). As such, it is assumed that every dropped connection corresponds to a SPAM email. Therefore, the SPAM rate is calculated while adding the number of dropped connections to the total and to the number of SPAM messages. This method of calculating email SPAM is elaborated in an article published by MAAWG titled: “Email Metrics Program: The Network Operators’ perspective”. Similarly, many organizations use the SPAM rate approach in reporting SPAM. For example, Symantec and Message Labs.
- **SMS SPAM Rate:** SPAM SMSes received by mobile phone users in KSA on average as a percentage of all SMSes received. For the purposes of this study, all Bulk SMSes are considered to be SPAM unless they are sent by a provider with whom the subscriber has an ongoing business relationship. For instance, if a subscriber has opted in to receive SMSes as part of a certain product, SMSes sent by the provider promoting for other related products are not considered to be SPAM. As such, SMSes sent by providers to their subscribers in MO/MT (Mobile Originated/Mobile Terminated) services are not considered to be SPAM.
- **Fax SPAM Rate:** SPAM faxes received in KSA on average as a percentage of all faxes received. For the purposes of this study, all unsolicited faxes are considered to be SPAM unless the receiver has directly or indirectly opted to receive these fax messages unless they are sent by a provider with whom the company has an ongoing business relationship;

### 4.2. Identification of Sources for SPAM Related Statistics

Key sources considered relevant in the gathering and reporting of SPAM related statistics were identified as follows:

- eMail SPAM





- Organizations using anti-SPAM filtering tools and are able to report on the SPAM mail filtered by the tool as a percentage of total mails
- Organizations that do not use anti-SPAM filtering tools and are able to report on the SPAM mail received as a percentage of total eMails
- ISPs using anti-SPAM filtering tools and are able to report on the SPAM mail filtered by the tool as a percentage of total mails
- Organizations and ISPs using RBLs on their routers or dedicated appliances to drop connections from known SPAMMERS
- Organizations, such as solution providers, who use sensors on their anti-SPAM tools sold to customers as well as other devices such as honeypot mail addresses, to track and report on the SPAM mail filtered by the tool as a percentage of total mails
- SMS SPAM
  - Mobile Service providers, who own the gateways and/or servers through which SPAM SMS messages are delivered
- Fax SPAM
  - Organizations who receive SPAM faxes

### **4.3. Suggested Approach for gathering SPAM Statistics**

It is possible to track and monitor SPAM data using both primary and secondary research methods. Primary research methods rely on data gathering using honeypots or from anti-SPAM filters/tools. Secondary research relies on data gathered from published sources (such as reports published by security solution providers as well as bodies like MAAWG and SPAMHAUS).

#### **eMail SPAM**

##### **Reporting eMail SPAM rates based on primary research data**

In order to gather primary data, it is suggested to use a two step approach:

i. Setting up a panel

It is critical that CITC gathers eMail SPAM related data from a variety of sources following clear selection criteria for the participants in the panel. The criteria include: Geographical distribution, sector, size etc. Ideally, none of the selected participants should have their mail filtered by another filtering point (e.g. ISP filter) before mail reaches their gateway/server. Examples of the participants are:

- ISPs
- Universities
- Large Companies, like Saudi Aramco or SABIC

Most of these sources are characterized by the large amount of eMail received by subscribers, employees, students, or other personnel within its domain. A number of these sources tend to have deployed anti-SPAM tools, and accordingly will be able to provide data on the amount of SPAM mail trapped by these tools as a percentage of mail received.



It is recommended that CITC will gather set up a panel of such organizations, which would include a mix of ISPs, Universities, and large companies operating in the Kingdom. It would be preferred to have as many organizations as possible on the panel. The more the number of mailboxes represented by the organizations on the panel, the more statistically accurate the SPAM rate will be. These panel members will be requested to provide a monthly report on:

- Total number of mailboxes represented by the organization
- Total mail received
- SPAM mail trapped or tagged by the tool
- Number of dropped connections

It is suggested that CITC request each of these organizations to send the required data by eMail by the 7<sup>th</sup> of every month to a designated person within CITC, in order to facilitate suitable collation and analysis.

CITC should monitor the response quality and timeliness of each of the selected panel members on an ongoing basis and be prepared to either work with the members to improve the responses or change the members.

#### ii. Calculating the eMail SPAM rate

Having obtained the required data, it is suggested that CITC calculates the SPAM rate for each of the respondents using the formula:

$$\text{SPAM rate} = \frac{(\text{SPAM Mail trapped or tagged by the tool} + \text{Number of dropped connections})}{(\text{Total mail received} + \text{Number of dropped connections})}$$

The SPAM rate is typically expressed as a percentage. It should be noted that it has been assumed in the above calculation that each dropped connection is the equivalent of one SPAM mail blocked by the anti-SPAM tool.

In order to calculate the average across all organizations, the above calculation should be done using the sum of each field across all organizations. Thus, the value of the total mail received would be the total of all mail received across all organizations, and the value of the number of dropped connections would be the sum of all dropped connections across all organizations.

#### iii. Reporting the eMail SPAM rate

Having calculated the eMail SPAM rate in the Kingdom, CITC should post this rate on its website as well as include it in any security alert reports sent out periodically to subscribers, if applicable.

It should be noted that the eMail SPAM rate reported by such means does not represent SPAM accurately as it does not account for Opt-In or Opt-Out considerations included in the SPAM definition. Instead, the SPAM rate calculated here represents the “Abusive mail” that seek to exploit the end-user.

This approach is consistent with the approach used by organizations like MAAWG for tracking eMail SPAM metrics.

### **Reporting eMail SPAM rates based on secondary research data**

In addition to the above method, it is recommended that CITC coordinate with security solution providers and other parties engaged in monitoring SPAM rates on a global basis, including Saudi Arabia.



A number of such organizations, including MessageLabs and Symantec, publish such SPAM rates on a country basis on a regular basis. While such data may occasionally be available free, it is possible that such data may only be provided by these service providers against a fee, which would have to be mutually agreed between CITC and the relevant body.

Additionally, CITC should coordinate with bodies like MAAWG and SPAMHAUS which periodically publishes the names of the worst SPAM offenders as well as countries, and CITC could provide such information to its subscribers in order for them to take suitable precautions.

### **Fax SPAM**

Since there is very little published secondary data on Fax SPAM rates, the only way in which CITC can keep track of such SPAM rates is to use primary research data.

### **Reporting Fax SPAM rates based on primary research data**

In order to gather primary data, it is suggested to use a two step approach:

#### iv. Setting up a panel

It is recommended that CITC set up a panel of 20 large organizations (e.g. Universities and companies) that have significant operations in the Kingdom, and have publicized their fax details on their websites and/or other prominent publications.

These panel members will be requested to provide a monthly report on:

- Total number of faxes received on designated fax numbers
- Number of faxes received that are considered to be SPAM (including unsolicited marketing messages)

It is suggested that CITC request each of these organizations to send the required data by eMail by the 7<sup>th</sup> of every month to a designated person within CITC, in order to facilitate collation and analysis. Each of the organizations will have to implement suitable measures to record the number of faxes received each day on designated fax numbers.

CITC should monitor the response quality and timeliness of each of the selected panel members on an ongoing basis and be prepared to either work with the members to improve the responses or change the members.

#### v. Calculating the Fax SPAM rate

Having obtained the required data, it is suggested that CITC calculates the SPAM rate for each of the respondents using the formula:

$$\text{SPAM rate} = \frac{\text{(Number of SPAM faxes received)}}{\text{(Total number of faxes received)}}$$

The SPAM rate is typically expressed as a percentage. In order to calculate the average across all organizations, the above calculation should be done using the sum of each field across all organizations. Thus, the value of the total fax mail received would be the total of all fax mail received across all organizations, and the value of the number of SPAM faxes would be the sum of all SPAM faxes across all organizations.

#### vi. Reporting the Fax SPAM rate

Having calculated the Fax SPAM rate in the Kingdom, CITC should post this rate on its website as well as include it in any security alert reports sent out periodically to subscribers, if applicable.



Given the low levels of fax SPAM rate identified during the study, this is not considered a major issue presently in the Kingdom, and can therefore monitoring and reporting of the fax SPAM rate can be accorded lower priority by CITC.

### **SMS SPAM Rate**

Calculating the SMS SPAM rate in the Kingdom is more complex than the eMail and fax SPAM rates. This is especially so since most of the mobile operators follow the GSMA definition of SPAM, based on which not all unsolicited commercial messages are considered SPAM unless they meet other criteria like being abusive or contain reference to premium rate numbers etc..

It is therefore suggested that CITC request all mobile SMS service providers in the Kingdom to report on the SMS SPAM rate as detected by their filters, using the GSMA SPAM rate definition.

The SMS SPAM rate accordingly is provided by the following value:

$$\text{SMS SPAM rate} = \frac{\text{Total SMS SPAM detected (using the GSMA definition of SPAM)}}{\text{Total number of SMS messages}}$$

## **4.4. Responsibility for monitoring SPAM rates**

Given the nature of the role involved and the associated responsibilities, it is recommended that the CERT team within CITC is given the responsibility of tracking and reporting the eMail, SMS, and fax SPAM rates on a monthly basis.

Thus the CERT team will be responsible for setting up suitable panels for each of the SPAM rates and will work with each panel to obtain the required data on a monthly basis.



## **5. Conclusion**

It is important that suitable monitoring and reporting mechanism be set up to track SPAM rates in the Kingdom on an ongoing basis. It is recommended that a combination of primary and secondary research data be used as the basis for collating, analysing, and reporting such data.

It is recommended that the CERT team within CITC be responsible for the collation and analysis of SPAM data in the Kingdom, using the approach provided. The SPAM rates obtained using primary data must be compared and contrasted with secondary data in order to analyze the possible reasons for major deviations, if any.

It must be recognized that while these SPAM rates do provide a good idea of the level of SPAM in the Kingdom, the reported rates will never fully reflect the actual reality given constraints around the sample size, nature of filtering SPAM, as well as the statistical accuracy limitations of the data gathered through the primary research.