

SMART-GW records all user behavior to support automation

— Automation of work using logs and AI —

Background

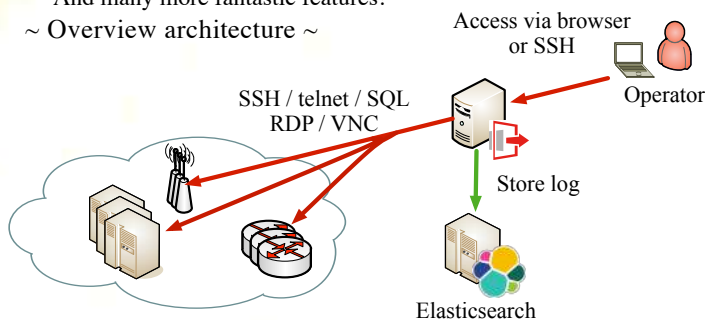
In recent years, low cost OPEX is required by reducing human operation using RPA (Robot Process Automation). However, in order to realize RPA it takes huge costs because we need to identify target job, and we should design and implement automation to run RPA tools efficiently. Our product “SMART Gateway” manages connection to IT Infrastructure and record user operation log on each active session between the infrastructure. The log shows user operation and behavior on each session. Here we introduce automation system to design and implement automation to run RPA with AI technologies.

Overview

SMART-GW has following features.

- Many kinds of protocols are available.
 - SSH / telnet / RDP / VNC / HTTP(s)
- Records session behavior accurate.
 - Commands, SQL, web access, file transfer, typescript, video
- Clientless connection.
- OS independent access and command restrictions in target node.
- Access restriction, command restriction and logging are centralized and fine-grained configurable.
- All the feature is available as REST API.
- And many more fantastic features!

~ Overview architecture ~



Potential of SMART-GW

SMART-GW functions as a proxy gateway to the connected device. For this reason, command operations and HTTP access requests and responses can be recorded as text logs even for work performed with encrypted sessions such as SSH and HTTPS. We believe that it is possible to automate the design of RPA from the text logs collecting by SMART-GW. Taking command operation as an example, a series of commands executed for setting change, status confirmation, etc. is the job itself. In designing the automation on RPA, first, we need to extract the job that is repeatedly performed with high automation effect. Next, define the job. This operation is to determine a series of commands necessary for the job. Finally, by extracting parameters, reusability to various environments can be enhanced.

SMART-GW records a series of commands executed from when the user logs in to the device until the user logs out. That is, the SMART-GW log represents the job performed itself. By utilizing command logs and AI technology, it is possible to automate the design of RPA.

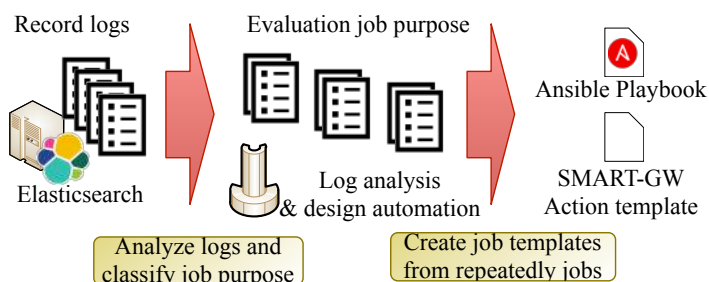
First, in a series of executed commands, the purpose of each job can be inferred by confirming the purpose of each command (whether editing or changing the status). Then, in order to extract parameters in the jobs, the command argument similarity is evaluated for the same jobs. From this series of operation commands and parameters, a operation model that can be reused is created.

The above is the potential of SMART-GW which will support the design of business automation for RPA.

Extraction of business purpose

By extracting the purpose of the job from the SMART-GW command log, it is possible to identify highly effective jobs by automation. The purpose of every command is vectorized in advance and further clustered and classified. The purpose of the job is inferred from the purpose of the series of commands that make it up. Specifically, Doc2Vec and clustering technologies are used here.

If a similar purpose job is found in the command log, it can be said that the job is being executed repeatedly. Automating repetitive tasks is highly effective in reducing OPEX and should be actively automated.



RPA design automation

By extracting the parameter from the repetitively executed jobs, it is possible to create a job template with high reusability. However, commands for the same purpose are not always executed in the same procedure.

In order to extract parameters from commands, it is necessary to evaluate the similarity of arguments between commands with the same purpose. A command with the same purpose can be found based on the edit distance in the jobs with the same purpose. After that, it is possible to extract the parameters by extracting the arguments with different degrees of similarity for the command of the same purpose.

The designed model can be used as an RPA design source. These models can be used to design configuration settings for configuration management tools such as Ansible Playbook and Chef Recipe. In addition, SMART-GW itself provides an action function as an automation framework and can be used as a template for this action.

The companies using SMART-GW

SMART-GW is already running in following companies.

- CAB: Civil Aviation Bureau (Japan)
- NTT Communications
- NTT, NTT EAST, NTT neo
- KDDI
- KDDI Laboratories
- Mega banks in Japan
- Many service providers and SIs

