B-DASH: Demonstration of Cross-jurisdictional Monitoring Control System for Wastewater Treatment Facilities Using ICT

(Research of FY 2019)

1. PURPOSE

A real-scale demonstration of a cross-jurisdictional monitoring control system for wastewater treatment facilities using ICT aims to evaluate the reliability and stability of communication and the reduction effects of construction, retrofit, and O&M costs.

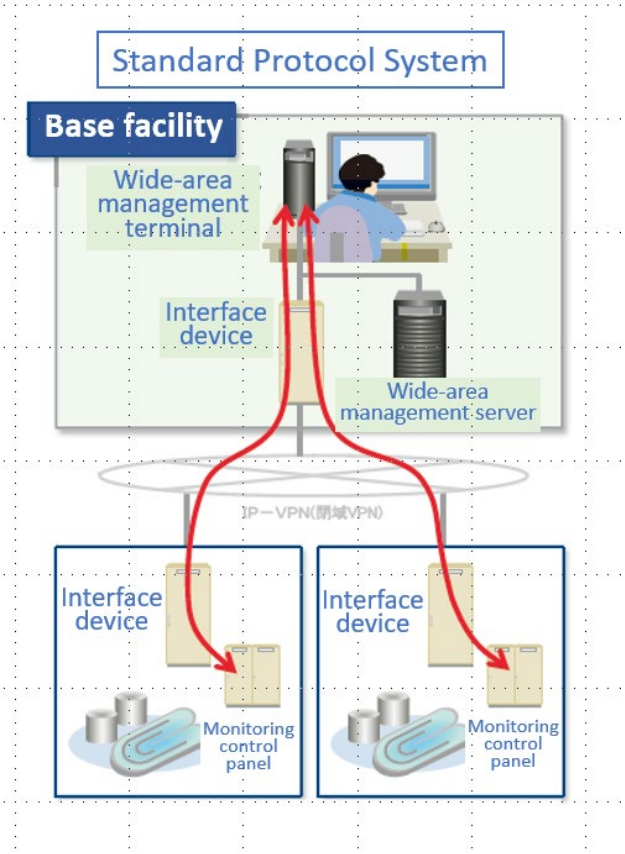

Figure 1. Standard Protocol System

This demonstration was selected for the B-DASH project 2021 of the Ministry of Land, Infrastructure, Transportation, and Tourism (MLIT). The research consortium of Japan Sewage Works Agency, Toshiba Infrastructure Systems & Solutions Corporation, Hitachi, Ltd., Mitsubishi Electric Corporation, Meidensha Corporation, METAWATER.CO., LTD., and Kurashiki City conducted the study as an entrusted research of the National Institute for Land and Infrastructure Management (NILIM).

This system is configured with the following two technologies. The appropriate combination of the two technologies can reduce the number of newly installed instruments and construction, retrofit, and O&M costs.

1) Standard protocol system

A standard communication specification (Standard Protocol) facilitates connections between the monitoring control systems of different manufacturers (Figure 1). It can also monitor and control multiple WWTPs and pumping stations installed with monitoring control panels, create ledgers, and integrate alarms and data.

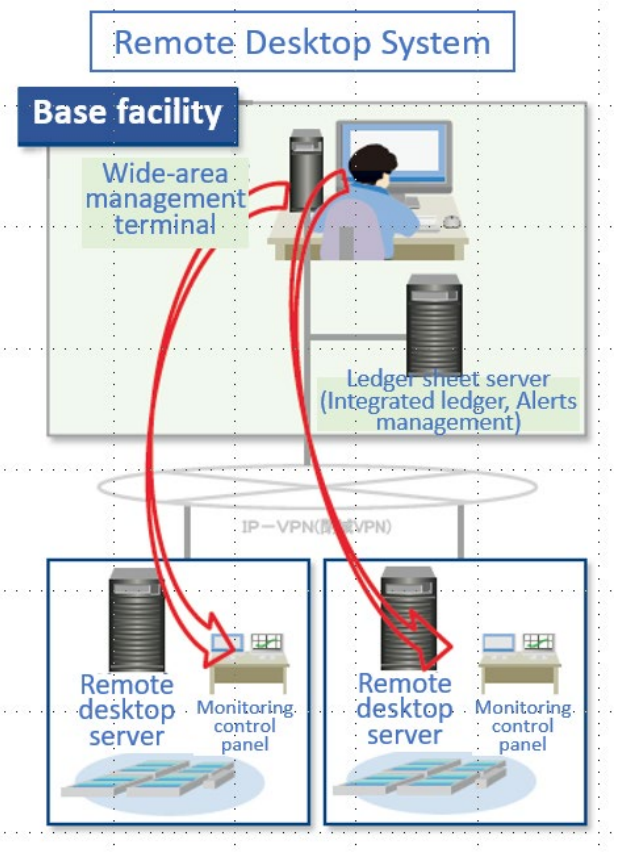

Figure 2. RDP System

2) Remote Desktop Protocol (RDP) System

RDP enables remote operation of monitoring and control devices in WWTPs (Figure 2).

2. Outcomes of This Year

(1) Standard Protocol System

Each factory verified the communication status of the Standard Protocol System using a simulation apparatus. As a result, the standard protocol successfully communicated between different manufacturers for trend and ledger data, and no data was missing.

(2) RDP system

The evaluation goal for the RDP system is one second for displayed response velocity, and the operation response time is three seconds. The research achieved good results against these goals.

3. Summary of the Two-Year Research

This real-scale demonstration verified the Standard Protocol's communication reliability and the RDP systems' operability and responsiveness. After the following year, the digital communication lines will be evaluated, and their on-site long-term capability will be verified.

Keywords: **ICT, Cross-jurisdictional management, Monitoring control system**