



Legacy Terminals Solution

Management Summary & Technical Overview

Version 1



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Management Summary

The business need in this project was to delay the migration of the existing terminal network until the application migration from the legacy system to the new IBM system was complete. Concurrent upgrades of the legacy application system and the legacy terminals were deemed too large to be effectively managed. Once the new IBM system and application stabilized, the migration of portions of the legacy terminals to current technology could be easily managed.

Backstory

- New York State Police engaged in a multi-year project to migrate from a legacy Unisys mainframe to a complex of distributed IBM servers and a state-of-the-art portal.
- The timeline for installing the new system and completing the application portion was well in advance of completing the portal.
- The implementation of the portal included replacement of all statewide terminals and reprogramming all metropolitan computers.
- Full replacement of all devices and reprogramming of all metropolitan systems was expected to take up to a decade.
- A mechanism was needed to translate between the communications protocol and message formats used by the legacy terminals to the communications protocol and message formats used by the new system.
- The above included the need to replicate the security system employed by the legacy system.

Business Objective

- Allow for the graceful transition of all users and metropolitan computing systems to the new computer system

Functional Requirements

- Maintain isolation of four separate networks:
 - New York Police Department (NYPD)
 - Other Metropolitan Police Departments
 - State Police barracks (completely converted as of 1/2014)
 - Other devices (courts, prisons, parking, street maintenance)
- Check security on every transaction to determine if the submitter is authorized to submit the transaction for the accompanying data
- Support access security
- Maintain the same level of access security provided by the Unisys mainframe that was replaced
- Provide continuous operations 24/7/52

Technical Requirements

- Transition the legacy terminal input/output to IBM Websphere® MQ request/response messages
- Provide correlation identifier for message requests and responses
- Journal all traffic
- Send message delivery reports to application system

Outcome

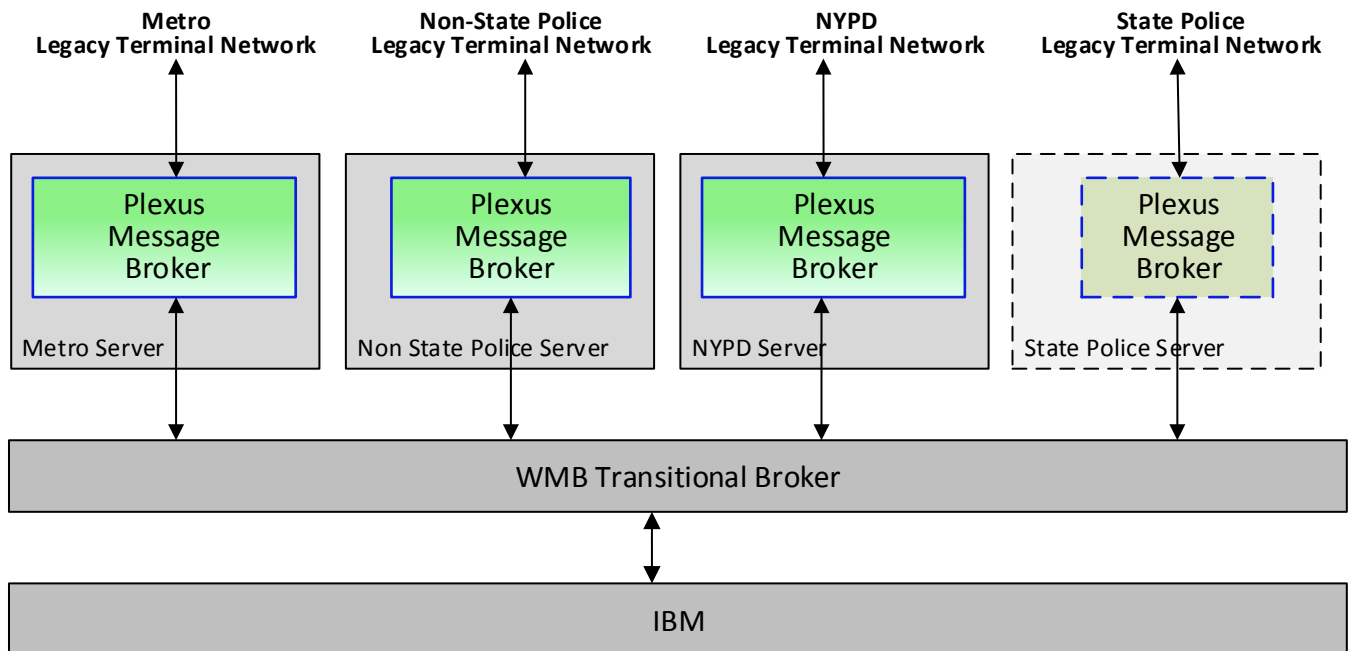
The Plexus Message Broker successfully interfaced the legacy terminals to the new IBM system. As part of the transition plan, the State Police terminal network was replaced eliminating the need for the State Police Plexus Message Broker. The other three network terminals are slated for replacement. Once completed, the need for the Plexus Message Broker as a transitional solution will be eliminated.

Technical Overview

This Plexus Message Broker solution features the following technology: Legacy terminals, role-based security access, WebSphere® MQ, and message format translation. This solution’s site and Plexus Message Broker configurations touch on these features below.

Site Configuration

The Plexus Message Brokers are intended as an interim solution that allows the site’s main application to be converted and at the same time delay the conversion of the terminal network. As illustrated below, this site is comprised of three active Plexus Message Brokers. The State Police Plexus Message Broker was no longer needed once the application implementation was completed and the State Police updated their terminal network. The dependency on the remaining message brokers will be eliminated once the other terminal networks are migrated.

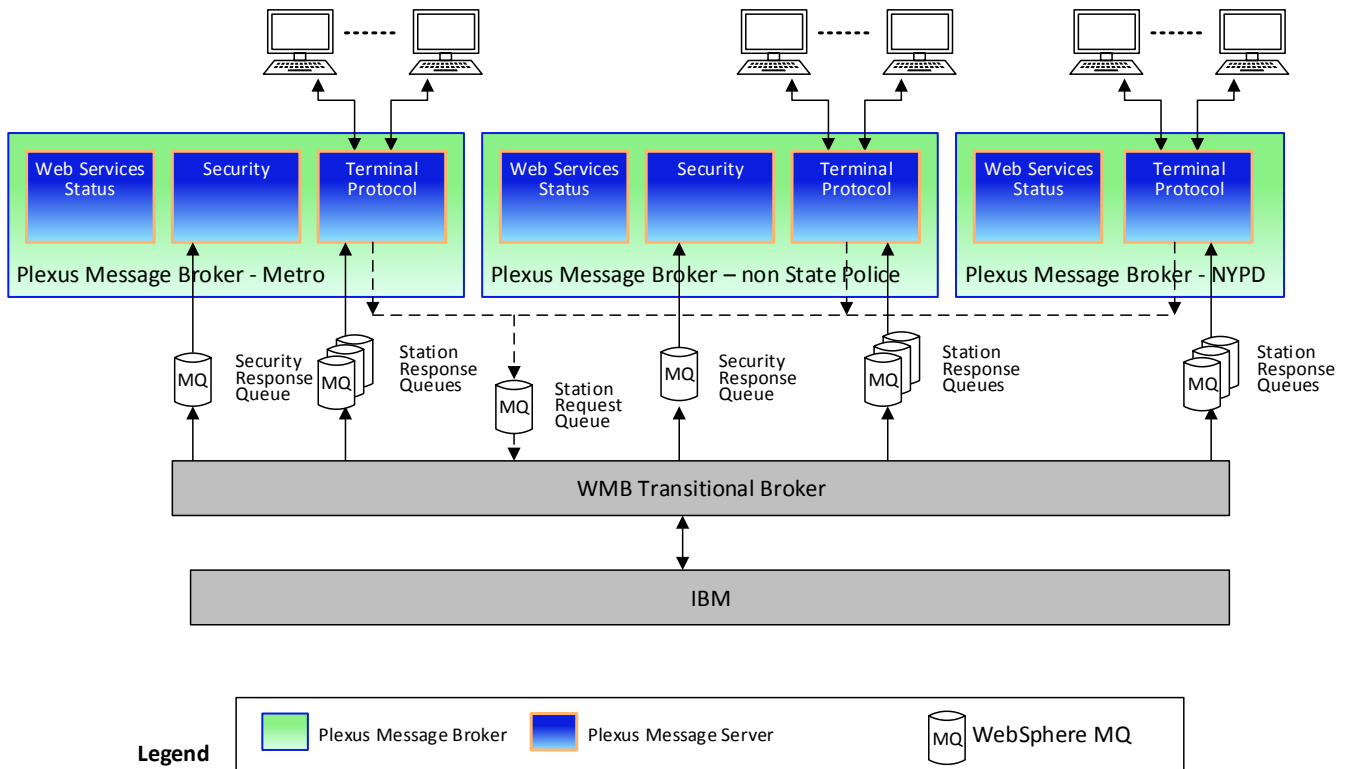


As with all Plexus Message Broker installations, adding physical servers, increasing Plexus Message Brokers instances per physical server, or transitioning to run the Plexus Message Broker in a virtual (VM) environment is only a matter of installation and configuration. No other Plexus Message Broker modifications are necessary. Resources are typically added for performance reasons, local redundancy reasons, or both.

At this particular site, the acceptable down time for the Plexus Message Broker with respect to the Legacy Network Terminals is well within the time it takes to swap in the hot stand-by. Hence, this very simple configuration is suitable.

Plexus Message Broker Configuration

The configuration of the Plexus Message Brokers for the three agencies are generally the same. As illustrated below all include Web Services Status and Terminal Protocol Message Brokers, and with the exception of the NYPD Message Broker, support electronic security updates.

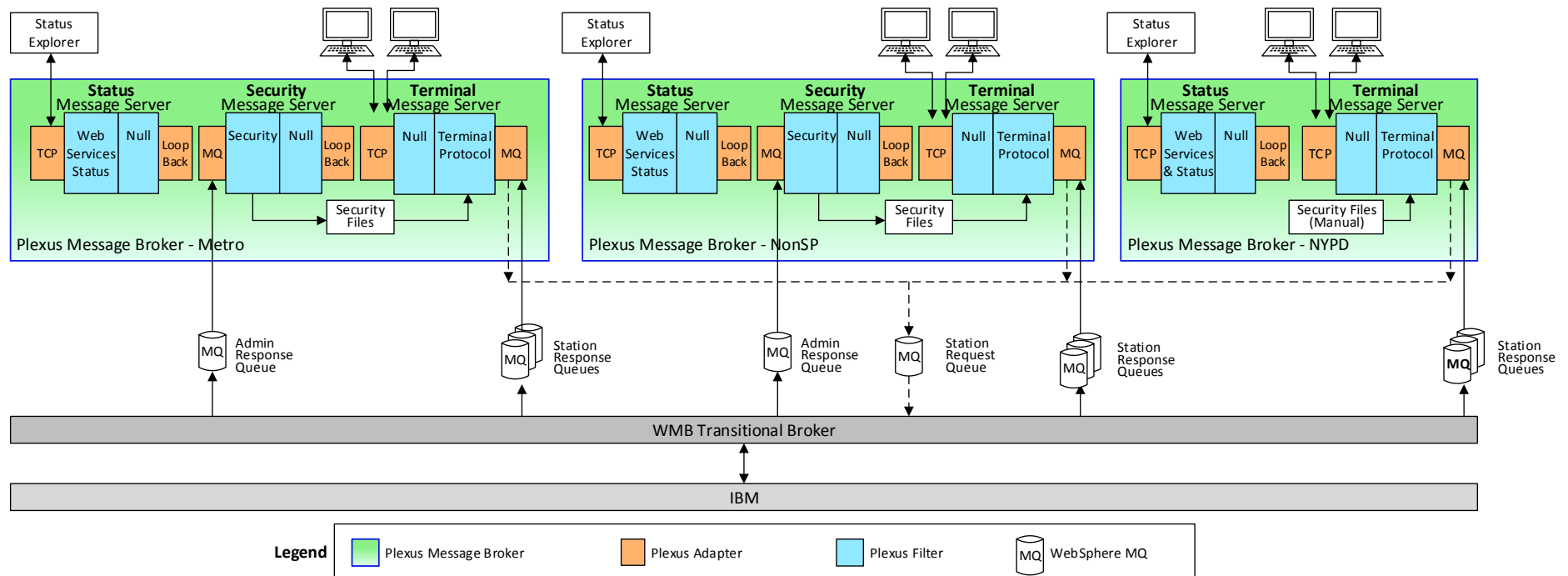


Plexus Message Server Functions

Message Server	Function
Web Services Status	Allows the police agency to get real time updates on the performance metrics of their individual systems: Receives Web Services HealthCheck requests from in-network customized user interfaces; determines the flow rates of the Terminal Protocol Message Handler as well as the status of particular terminals; sends back the response as part of the Web Services call
Security	Supports electronic security updates: Receives Web Services message to change user security or terminal interfaces. Changes are immediate and made to both in-memory tables and disk tables.
Terminal Protocol	Converts message traffic from the proprietary TCP-based terminal traffic to MQSeries® formats; inserts the MQ message into the WMB input MQ queue; waits for the response on the Station Response queue; sends the response message back on the TCP session. The Terminal network keeps a persistent connection to the Terminal Protocol Message Handler.

Plexus Message Server Details

The following figure drills down into the configuration of the Plexus Message Broker; in particular it provides insight into the Adapters and Filters used by each Plexus Message Server in this solution.



Adapters

Adapter	Description
TCP	Provides TCP connection services
Loop Back	An empty Adapter when no Adapter is needed. In this case, the A-Side TCP Adapter provides both input and output services.
MQ	Provides access to IBM's WMQ message queues

Filters

Filter	Description
Web Services Status	Provides Web Services that ride on top of TCP. This Filter also looks at the internal tables of the Plexus Message Broker to determine performance metrics of the various data paths and returns this information via Web Services to the Status Explorer.
Null	A placeholder for a Filter
Security	Provides real time security updates to the Terminal Protocol via the application security files
Terminal Protocol	Provides the message conversion services to interface the legacy terminals to the WMB Transitional Broker