WIN-911 2024 Security Best Practices

Before You Begin the Installation - SQL Recommendations

The WIN-911 2024 installer will offer to install a new instance of SQL Server 2022 Express. If this option is selected, then appropriate SQL permissions will be applied automatically.

You are welcome to use your own existing SQL Server instance 2017-2022. In that case, the account used to install must have either dbcreator or sysadmin rights in SQL. However, it is recommended to use dbcreator. Just ensure that you always have at least one user who does have sysadmin rights. The WIN911 service account specified during installation (under which WIN-911 processes will run) should have a 'public' role in SQL Server and will be granted db_datareader and db_datawriter permissions on module databases during installation.

When targeting a remote SQL instance, it is necessary to create a local account on the SQL machine with the same credentials (username and password) as the account selected during the WIN-911 install under which WIN-911 services will execute. Since the WIN-911 services account must be local, there is no way for the SQL instance to validate a security token from that account unless it exactly matches a local account on the SQL host.

SQL Deployment Considerations

Security

WIN-911 utilizes a windows service, to host its configuration GUI and application services. For security purposes, it is advisable to separate WIN-911 services and databases servers. If WIN-911 installed machine is compromised, all software running on the machine is now vulnerable, including SQL Server. If SQL Server is installed on a separate machine, the server can only be accessed through its remote interface. If a user does install WIN-911 and Microsoft SQL Server on the same machine, we highly recommend the use of Firewalls to restrict access.

For more information, please reference Microsoft's Security Considerations for a SQL Server Installation, https://msdn.microsoft.com/enhttps://msdn.microsoft.com/en-us/library/ms144228(v=sql.120).aspxus/library/ms144228(v=sql.120).aspx.

Performance

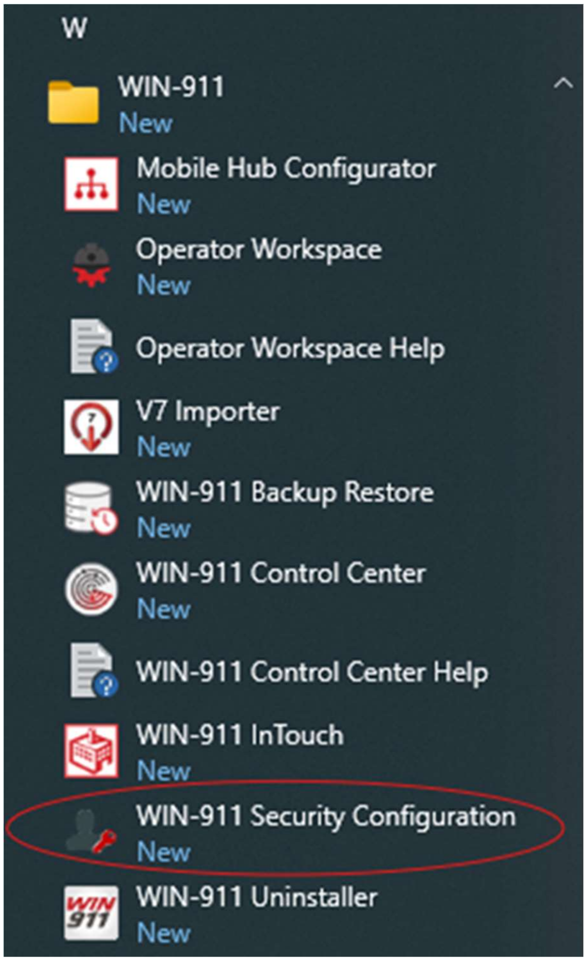
Depending on the size of your WIN-911 configuration, the available resources, and resource utilization, it may be advisable to install SQL Server on a separate machine. Without initial performance tuning, SQL Server is designed to run at peak performance and assumes it is the only server running on the OS.

Meaning SQL Server will attempt to reserve all RAM and utilize as many CPU cycles as possible. If you must install SQL and WIN-911 on the same machine, it may be worth the effort to use CPU affinity masks for SQL and configure SQL to reserve less RAM.

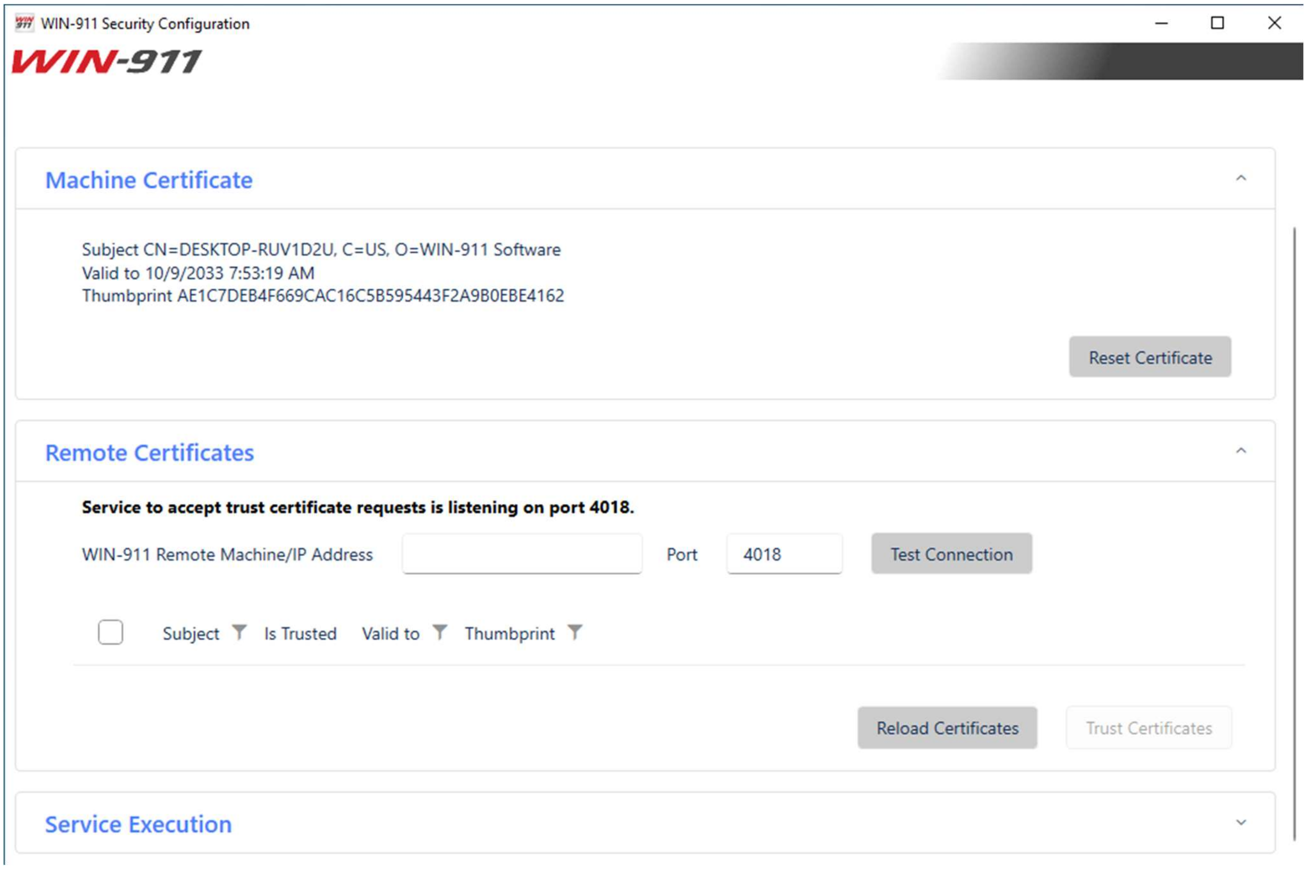
For information, please reference Microsoft's TechNet articles regarding SQL Server monitoring and Performance Tuning, https://technet.microsoft.com/enhttps://technet.microsoft.com/en-us/library/ms189081(v=sql.120).aspxus/library/ms189081(v=sql.120).aspx.

Keeping Your WIN-911 2024 Secure

WIN-911 use certificate to secure communication between the modules that make up the WIN-911 system. When your certificate becomes expired, you can run the WIN-911 Security Configuration utility to generate a new certificate. You can find this utility under the Start menu in the WIN-911 section.



When the WIN-911 Security Configuration utility runs, it will present a screen like this:



Machine Certificate

Subject CN=DESKTOP-RUV1D2U, C=US, O=WIN-911 Software
Valid to 10/9/2033 7:53:19 AM
Thumbprint AE1C7DEB4F669CAC16C5B595443F2A9B0EBE4162

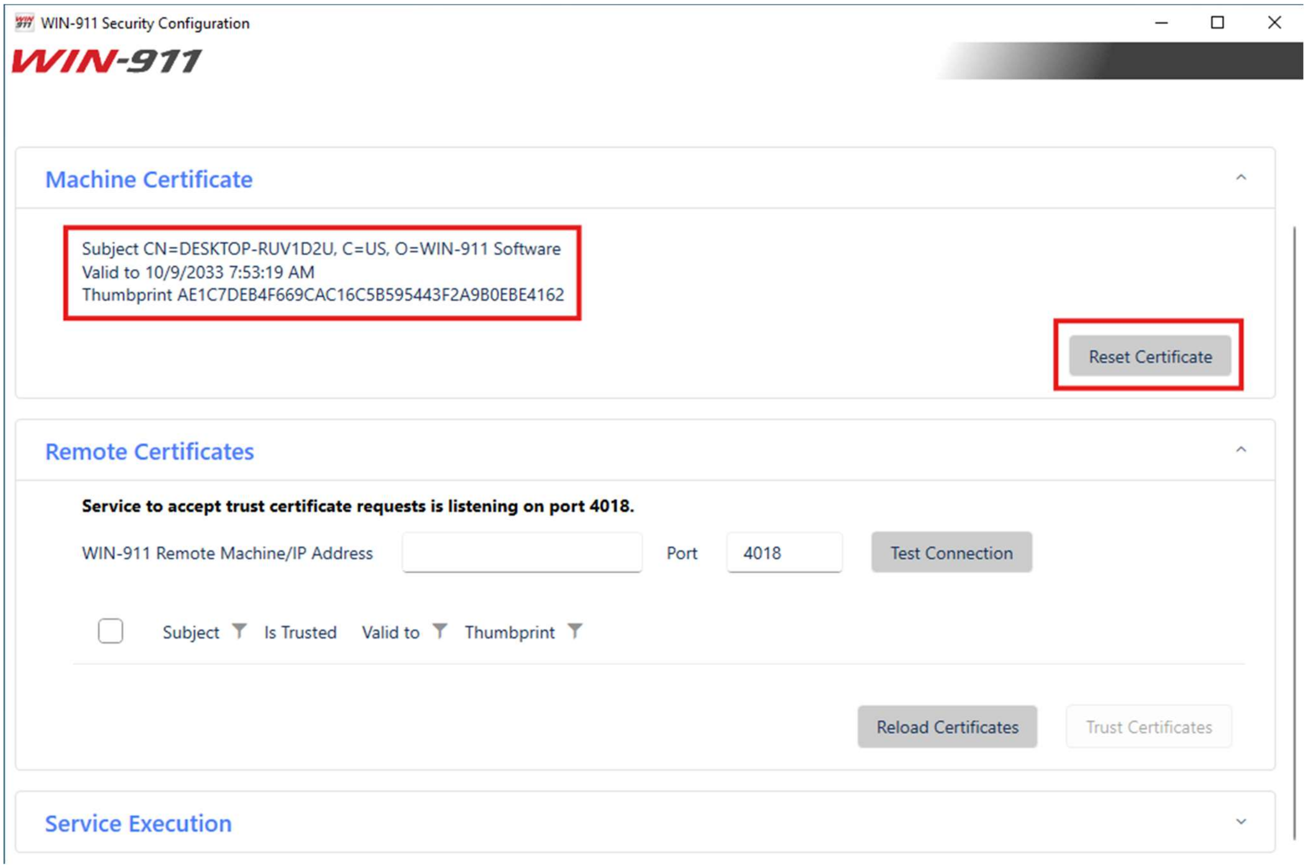
Remote Certificates

Service to accept trust certificate requests is listening on port 4018.

WIN-911 Remote Machine/IP Address:
Port: 4018

Generating New Certificate

Under the “Machine Certificate” section, you can see the information about the current certificate and “Reset Certificate” button to generate new certificate.



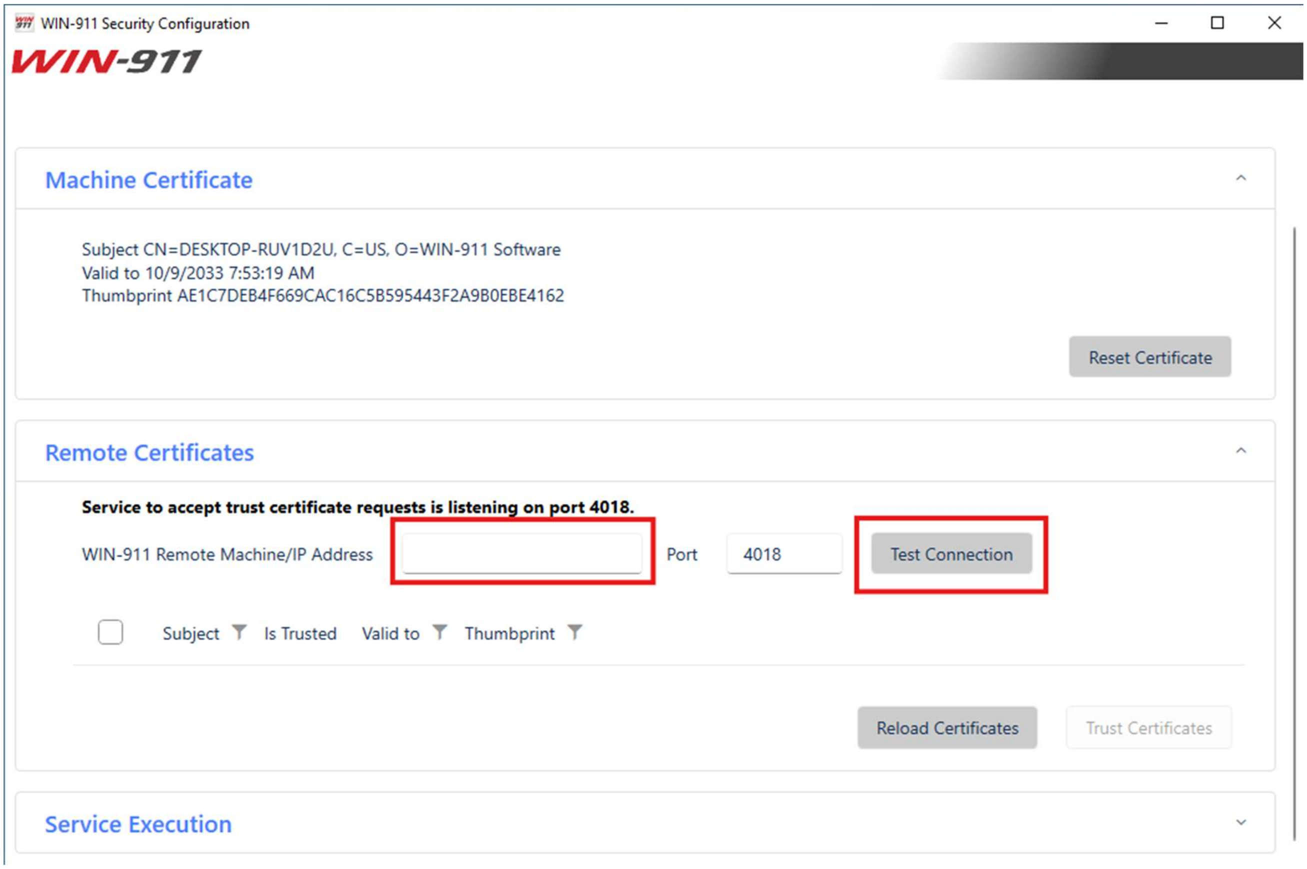
Subject CN=DESKTOP-RUV1D2U, C=US, O=WIN-911 Software
Valid to 10/9/2033 7:53:19 AM
Thumbprint AE1C7DEB4F669CAC16C5B595443F2A9B0EBE4162

Service to accept trust certificate requests is listening on port 4018.

WIN-911 Remote Machine/IP Address
Port 4018

Establishing Trust (Distributed Environment)

If you have a distributed install and have generated a new certificate for a module, it is important that you run the WIN-911 Security Configuration utility on every computer on which WIN-911 components are installed and perform the certificate trust process. To perform the certificate trust process on the “Remote Certificate” section of the utility, Enter the remote machine/IP address where another WIN-911 module is running and click the “Test Connection” button. The Default Port for communication is 4018.



Machine Certificate

Subject CN=DESKTOP-RUV1D2U, C=US, O=WIN-911 Software
Valid to 10/9/2033 7:53:19 AM
Thumbprint AE1C7DEB4F669CAC16C5B595443F2A9B0EBE4162

Remote Certificates

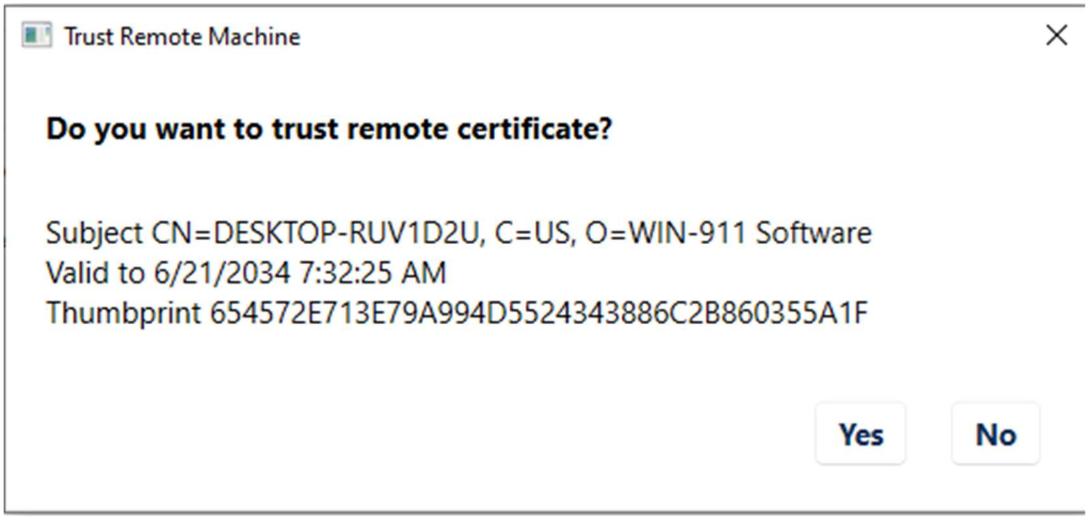
Service to accept trust certificate requests is listening on port 4018.

WIN-911 Remote Machine/IP Address:
Port: 4018

□	Subject	Is Trusted	Valid to	Thumbprint

Service Execution

WIN-911 Security Configuration utility on both computers will see a popup dialog with an option to trust Yes or No.

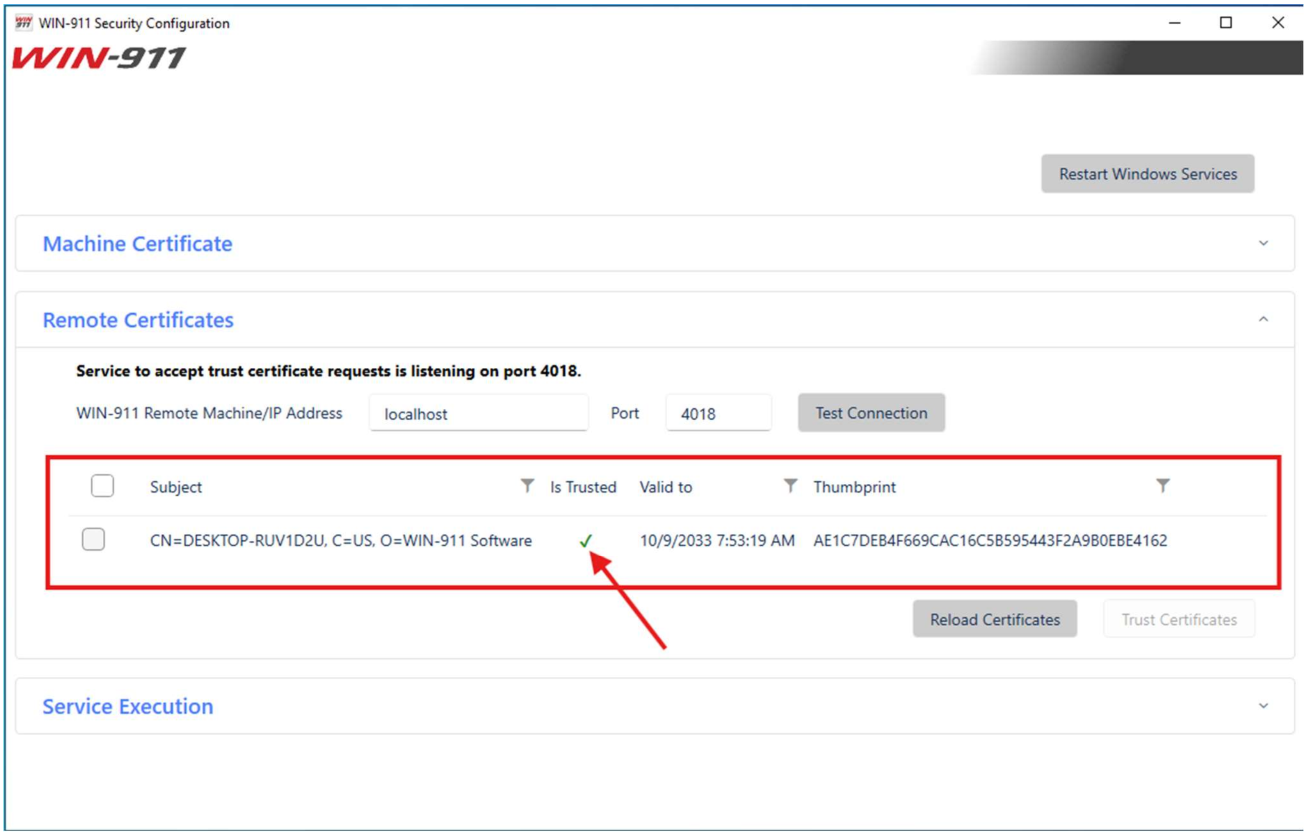


Trust Remote Machine

Do you want to trust remote certificate?

Subject CN=DESKTOP-RUV1D2U, C=US, O=WIN-911 Software
Valid to 6/21/2034 7:32:25 AM
Thumbprint 654572E713E79A994D5524343886C2B860355A1F

Once the remote host is trusted you will see it on the list of certificates with a green check mark icon on "Is Trusted" column.



WIN-911 Security Configuration

Service to accept trust certificate requests is listening on port 4018.

WIN-911 Remote Machine/IP Address: localhost
Port: 4018

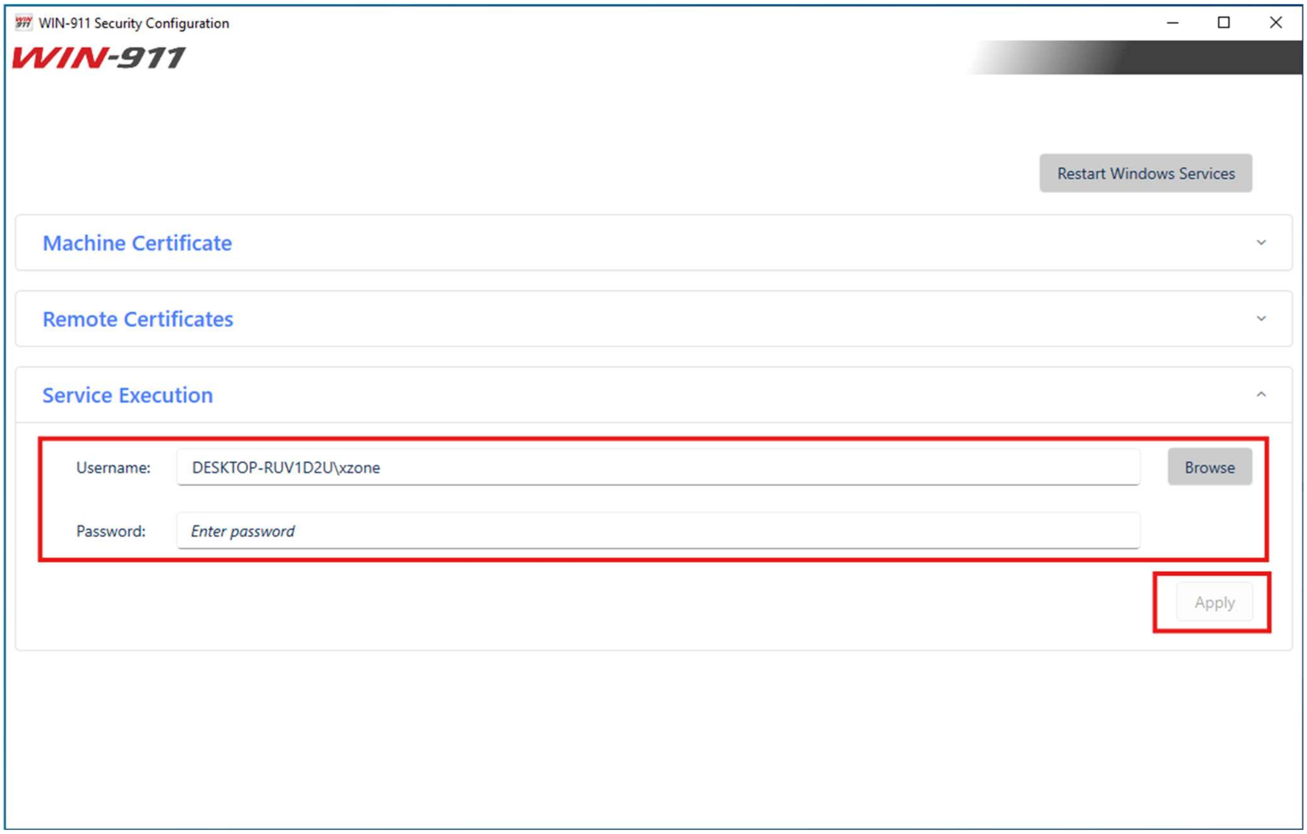
□	Subject	Is Trusted	Valid to	Thumbprint
□	CN=DESKTOP-RUV1D2U, C=US, O=WIN-911 Software	✓	10/9/2033 7:53:19 AM	AE1C7DEB4F669CAC16C5B595443F2A9B0EBE4162

The WIN-911 Security Configuration utility is typically installed automatically with all WIN-911 components. The setup for the WIN-911 Security Configuration utility can be found in the Setup folder of your WIN-911 2024 Installation media (WIN911_SC.exe).

WIN-911 Service Account

The utility can also be used to modify the WIN-911 Service account under which WIN-911 processes will execute. Note that NETWORK SERVICE does not support network communication or network distribution. When using a different service account, it's important that the account has permissions to host windows services and have a non-expiring password.

The WIN-911 service account specified should have a 'public' role in SQL Server and will be granted db_datareader and db_datawriter permissions on module databases assuming the utility is run as a sysadmin; otherwise, those database roles should be added manually.



Username: DESKTOP-RUV1D2U\xzone

Password: *Enter password*

WIN-911 2024 File Permissions

To further enhance security, you can have your system administrator remove the Users group from file permissions for:

- Workspace
- Operator Workspace
- iFIX Runtime
- InTouch Runtime
- Control Center
- Security Configuration
- Failover Utility
- Backup Restore
- Mobile Hub

This will prevent people with only Users rights to access WIN-911 2024. Specific users can then be added to the permissions for fine grained control.

Network Communications

WIN-911 is modular in design, meaning that each feature (iFIX Data Source / Email Notifier / Dispatcher), are all self-contained applications which when combined form one logical system. The modules communicate with each other using gRPC, over ports 4020-4100 through HTTPS endpoints. If WIN-911 is installed across multiple computers, you will need to create firewall exceptions for these ports. The modules must also communicate with SQL Server, and this is done over the standard TCP port 1433. If your SQL Server is remote from the WIN-911 installation or WIN-911 modules are distributed, a firewall exception must be created to allow traffic and modules will communicate to MS SQL server using TCP port 1434.

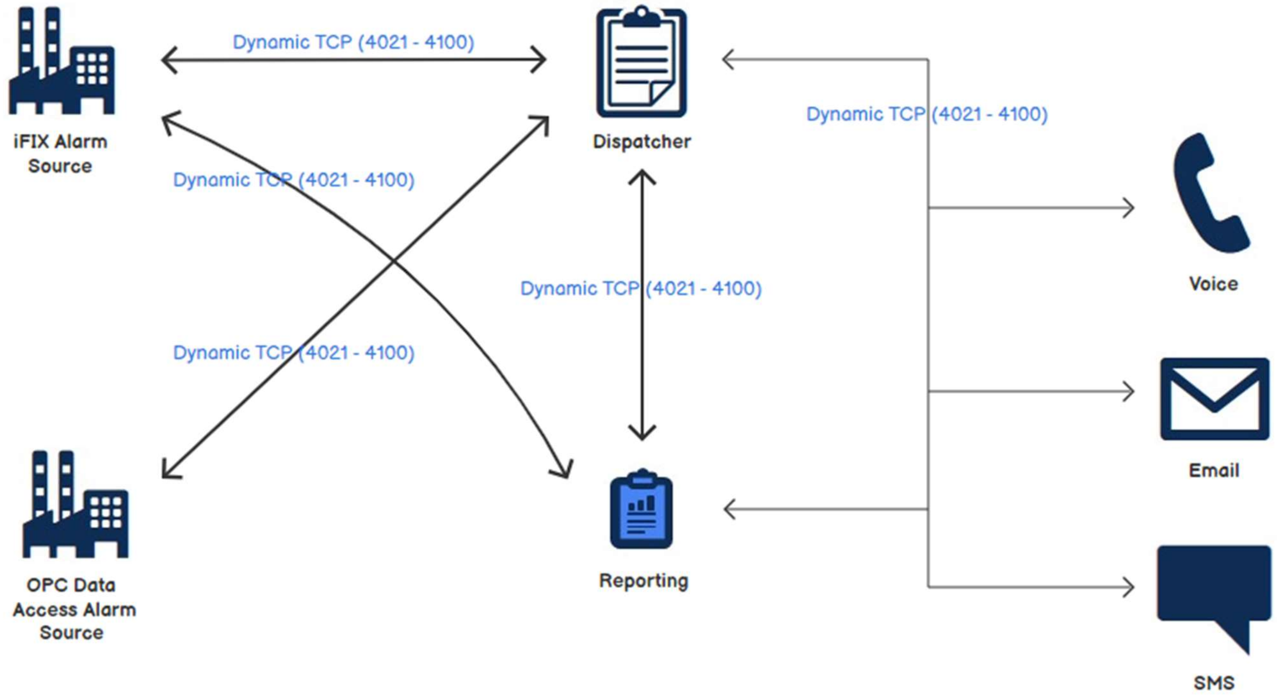
Notification modules each have their own network requirements, for example, the Email module will need to connect to an email server and the Voice module will need to connect to a VoIP server.

Ports Summary

Ports	**Descriptions**
TCP 25, 465, 587	Ports might be used by WIN-911 Email module for SMTP Traffic.
TCP 110, 995	Ports might be used by WIN-911 Email module for POP Traffic.
TCP 143, 993	Ports might be used by WIN-911 Email module for IMAP Traffic.

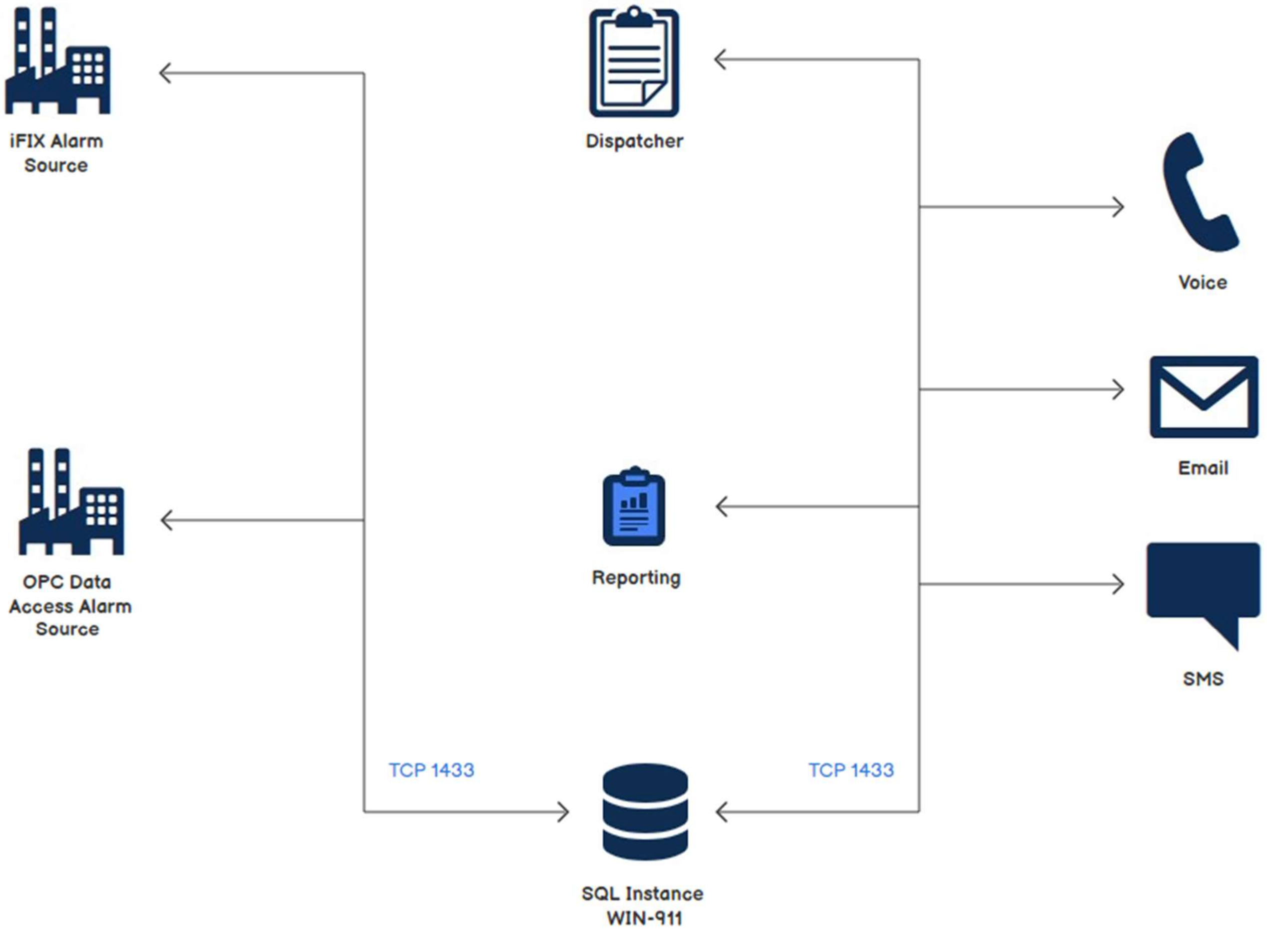
TCP 135	Used for connection between WIN-911 OPC and OPC Server.
TCP 443	Used by SmartSights Edge Gateway for authentication and use SmartSights Cloud resources. Email module may used for Office 365.
TCP 4018	Default port for WIN-911 Security Configurator Utility, Used for all certificate traffic between WIN-911 systems. Used during WIN-911 installation.
TCP 4019	Used by SmartSights Edge Gateway Configurator to inform configuration changes. (local only)
TCP 4020	Default port for WIN-911 Navigation, this is used by all WIN-911 Modules.
TCP 4021 - 4100	WIN-911 Modules get port dynamically within this range.
TCP 1433	MS SQL server, WIN-911 module will access the SQL server over this port when on same network. Not needed when SQL is Locally installed.
TCP 1434	MS SQL server, WIN-911 module will access the SQL server over this port when on different networks. See Remote SQL Access KB for configuring remote SQL access.
TCP 5000	SMS modem connects with WIN-911 installed system using this COM port. (if connected via network and not via plug and play)
TCP/UDP 5060-5700	Different VoIP servers might use different ports within this range
TCP 59111	Used by WIN-911 Mobile to communicate SmartSights Edge Gateway.

Module to Module Communication

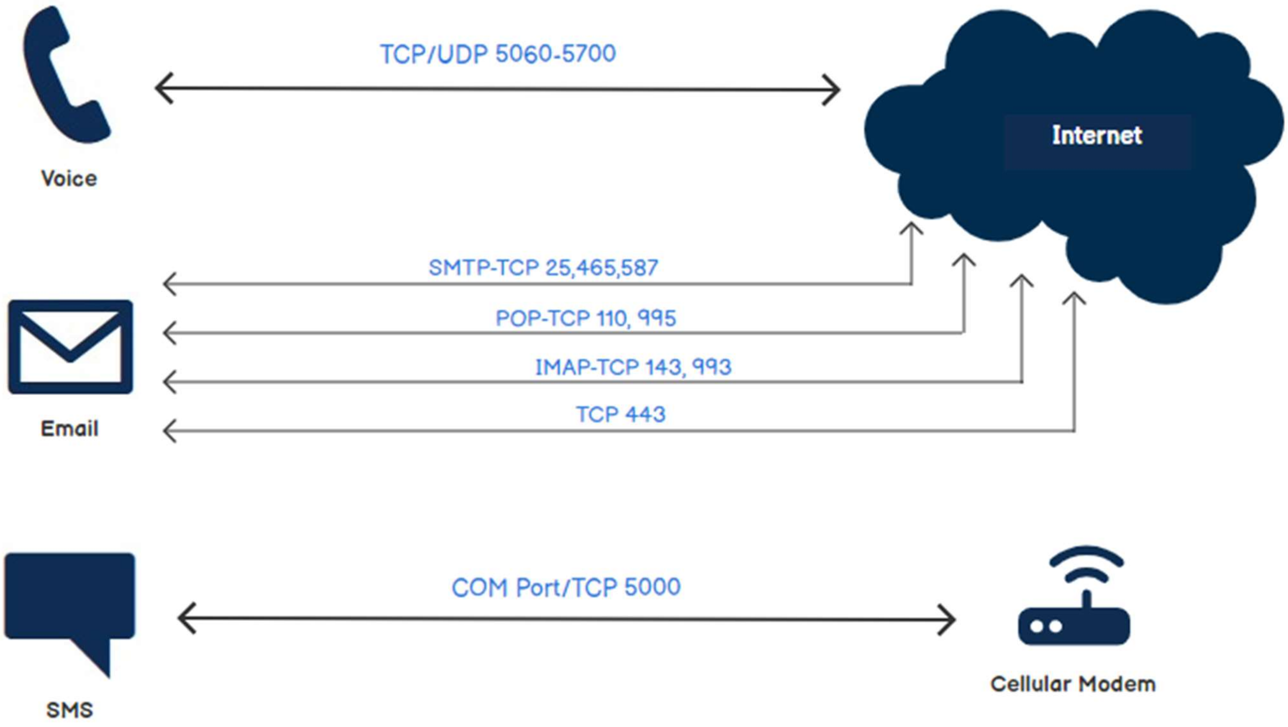


iFIX Alarm Source
Dynamic TCP (4021 - 4100)
Dispatcher
Dynamic TCP (4021 - 4100)
Dynamic TCP (4021 - 4100)
Voice
Dynamic TCP (4021 - 4100)
Dynamic TCP (4021 - 4100)
Email
OPC Data Access Alarm Source
Reporting
SMS

Module Communication to SQL Server



Notification Module Communication


TCP/UDP 5060-5700
Voice
Internet
SMTP-TCP 25,465,587
POP-TCP 110, 995
IMAP-TCP 143, 993
TCP 443
Email
COM Port/TCP 5000
SMS
Cellular Modem