

The IQ Platform

The IQ Central Control System allows users to monitor and manage their irrigation systems remotely by computer, or by using mobile-devices such as a cellphone and tablet.

There are three different IQ installation options, all of which have similar features and User Interfaces. The difference is where the software is installed and how it is accessed.

- **IQ Desktop**

Users manage irrigation system(s) from a single PC.

- **IQ Cloud**

Users connect to the Rain Bird IQ Cloud Server through the internet.

- **IQ Enterprise**

Users connect to a server provided by the customer that is running the IQ software.

Required System Hardware

The following hardware is required for setting up the IQ Central Control System:

- ESP-LX Series Controller (LXME or LXD)
- IQ Communication Cartridge.



ESP-LXME Traditionally-Wired






ESP-LXD 2-Wire Decoder



IQ Communication Cartridge (installed)

Required System Software

<p>There are three IQ options that customers can choose from, based on their individual requirements:</p>	 IQ Desktop	 IQ Cloud	 IQ Enterprise
Software Location	Installed on a single Windows PC	Amazon Web Services Server, leased to Rain Bird Corp., located in California, USA	Software is installed on Windows Server. User Interface can be installed on any PC or on LAN
Number of Users	Single	Multiple	Multiple
Communication Options	IP and Serial based irrigation controllers	IP based irrigation controllers (Wi-Fi, Ethernet, Cell)	IP based irrigation controllers (Wi-Fi, Ethernet, Cell)
Number of Satellites	5 - with expansions purchased in increments of 5	Unlimited	5 - with expansions purchased in increments of 5
Number of Installations Provided by the Software License	1	N/A	1
IQ Mobile*	No	Yes	Yes
Operating System	Windows 7, 8, 8.1, 10	Browser based or Remote Desktop (RDP) Compatibility tested with OSX, Windows 7, 8, 8.1, 10, Chrome Browser, Edge Browser and Internet Explorer	Windows Server 2008 R2 or later

* IQ Mobile - User Interface using mobile web pages for smart phones and tablets



IQ Desktop

Installation

The IQ Desktop software is installed on a single PC. The software installer provides all necessary prerequisites.

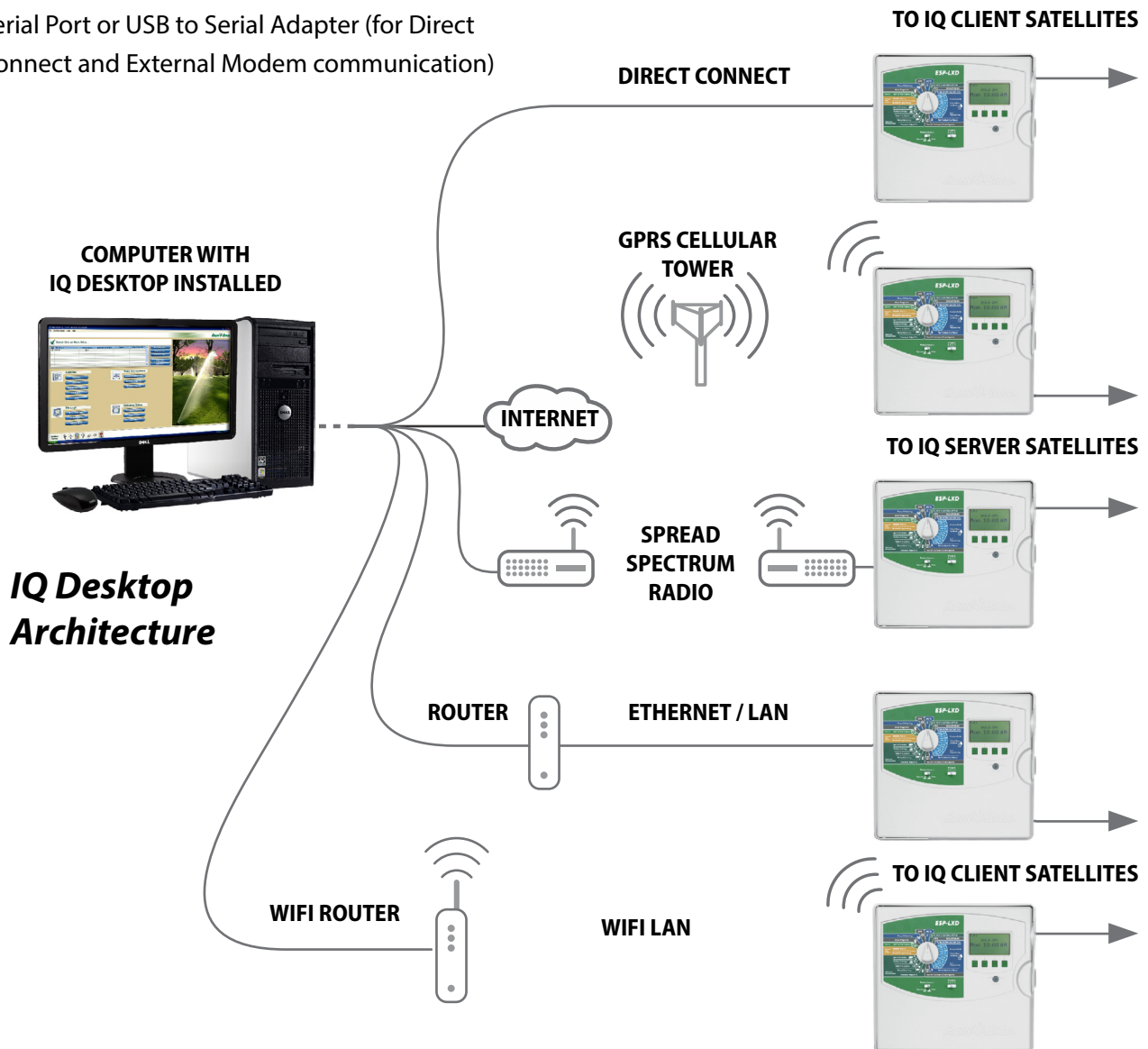
Computer Requirements

- OpSys: Windows® XP, 7 or 8, 10, 32-bit or 64-bit
- Processor: Intel I5-540M or equivalent
- RAM Memory: 3 GB
- Available Hard Disk Space: 10 GB
- Display Resolution: 1024 x 768 minimum
- Network Connection (for Ethernet, WiFi, Cell)
- Serial Port or USB to Serial Adapter (for Direct Connect and External Modem communication)

Application

Best option for customers wanting single-user access that manages the system from a single PC and does not require access across multiple devices.

- IQ Desktop supports both IP based irrigation and serial connections
- Serial communication enables the use of direct connections to the LX Controller via Spread Spectrum Radio



IQ Desktop uses a VPN to access a cloud network that provides connections to the NCC Cellular cartridges. To avoid connection issues, assure that the following are set up correctly:

VPN Type

The IQ Client VPN type can be either SSL or Windows VPN. Use the Tools/Communication Preferences menu to select the desired VPN type.

- For SSL, IP protocol type TCP and port 80 needs to be opened
- For Windows VPN, Windows automatically determine the protocol and ports it needs
- IQ supports the L2TP and PPTP protocols. For L2TP, IP protocol types UDP and 50, and ports 500, 4500, and 1701, must be opened
- For PPTP, IP protocol types TCP and 47, and port 1723, must be opened

Firewall

Assure that the computer's firewall rules are set to allow outbound traffic on the port(s) for the selected VPN type.

Security Software

Assure that web filtering software and other security products allow non-HTTP traffic over port 80 (if using the SSL VPN type).

If the computer's security software allows it, then an exception could be programmed for a specific destination IP address or for the entire computer.



Installation

With IQ Cloud there is no software to install. To use IQ the user must first create an account at www.rainbird.com/iq and follow the configuration prompt. Then they can connect to the cloud system using Windows Remote Desktop or a Remote Desktop add-on to a web browser.

- Connection is made through TCP or UDP port 3389.
- If access is through the Mobile Web site then TCP port 443 is used.
- The destination IP address of the IQ Cloud Server is 50.18.204.3 and inbound communication to the customer's network comes from 50.18.203.7
- All other communication is between systems in and out of the Cloud Virtual Private Network and shouldn't require any customer network communication

The LX Controllers must be IP based which limits the options to Cell, WiFi, and Ethernet. The IP address must also be static IP. Rain Bird provides cell cartridges pre-configured with access to IQ Cloud and static IP addresses.

If the customer elects to use Ethernet and WiFi communication cartridges and utilize their own LAN, they must obtain a public static IP address. Otherwise they must enable port forwarding on the router and assign a local static IP address. The default port used is 50005 but can be configured using IQ NCC Configuration software which is available for free at www.rainbird.com/iq along with documentation on how to setup port forwarding on common routers.

IQ Cloud provides two different interfaces:

- Full IQ Interface which provides access to all IQ features and is accessed using Windows Remote Desktop or a Remote Desktop add-on to a web browser
- IQ Mobile is a scaled down version with quick access to key features through any internet connected device by logging in at www.rainbird.com/iqmobile

Application

Information Stored on the Cloud Server

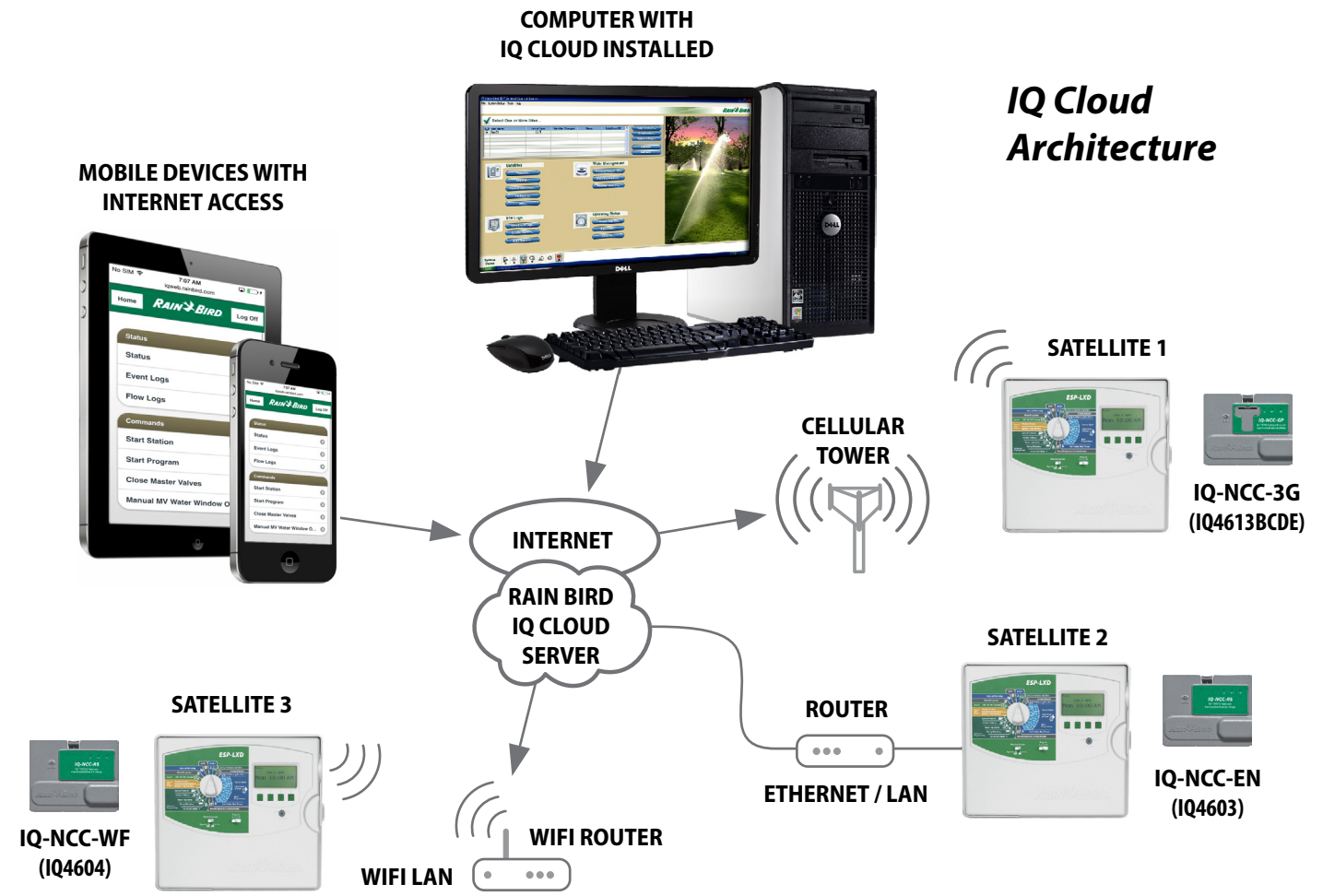
All irrigation system details such as schedule, irrigation run times, and flow data are stored on the Cloud Server. User credentials such as address, name, phone number, email, and username are also saved. The server is backed up nightly with multiple server data redundancies so it's possible for a user to restore their system to a previous date, if needed.

Information Exchanged When Using the System

Since this is a machine to machine connection, only the irrigation system schedules and usage are retrieved and sent to the controller. The connection is inbound from the IQ Server and not device initiated. This information is not encrypted but is a proprietary communication protocol that requires authentication so that no other device can imitate the Rain Bird LX controller or the IQ service.

Display Requirement

IQ Cloud uses the native resolution of the user's monitor, which can sometimes result in distortion of text and images. It is recommended to have a monitor with the resolution set to 1280 x 720 and the size of text and apps to 100%.



IQ Cloud Architecture



IQ Enterprise

System Characteristics

The system characteristics of IQ Enterprise and IQ Cloud are nearly identical. The key difference is that the customer provides their own server that the user connects to, instead of connecting to the Rain Bird IQ Cloud Server.

Installation & Application

The primary software installation is on the customer's server. It is recommended to use Windows Server 2008 R2 or later.

The installer consists of three parts:

Service

Identify the Computer Name or the IP address for the computer on which the software is to be installed. This will be needed when installing the User Interface and Mobile Web components. If an IP address is to be used then it must be a static IP address. If all User Interface installations are on computers inside a network, the

IP address can be a private. If the UI is installed on machines outside the network, and will be accessed using the Standalone Service over the internet, then the IP address must be a public IP address.

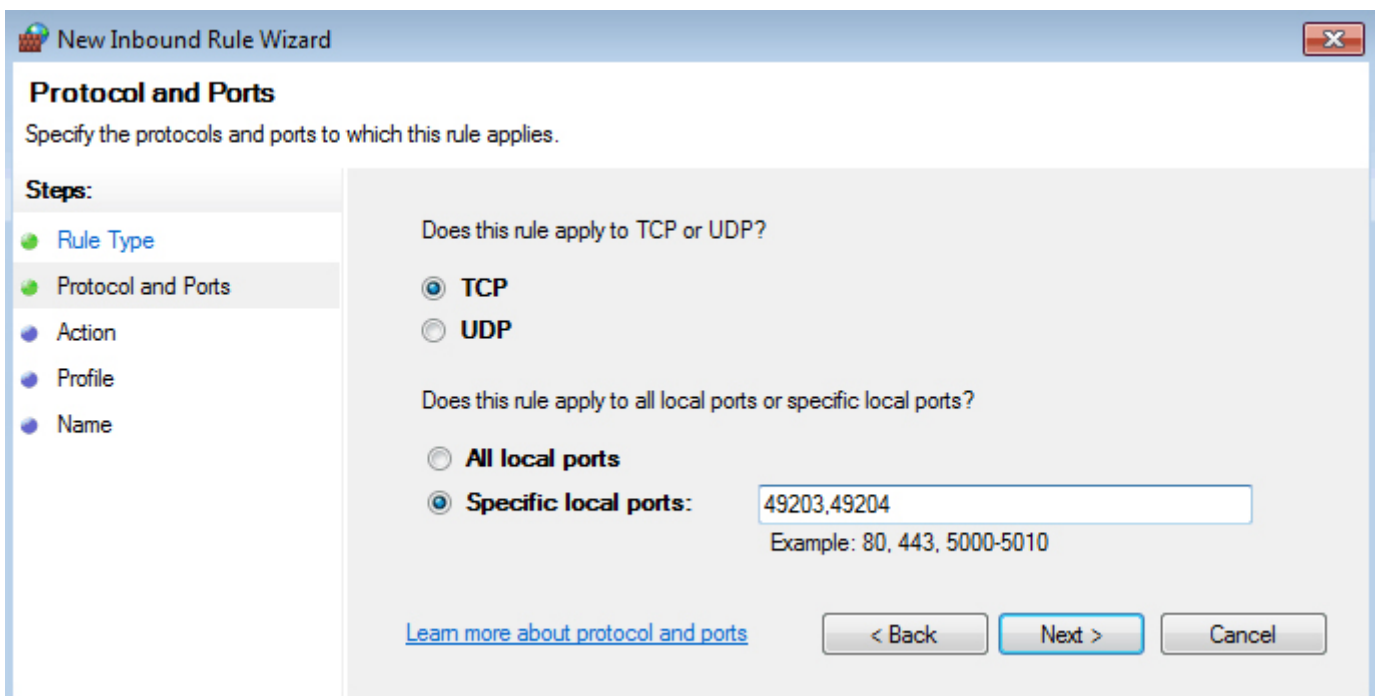
The User Interface and Mobile Web site communicate with the Standalone Service over TCP ports 49203 and 49204 (see image below). These ports must be open for inbound and outbound traffic. If the Standalone Service and the UI are on different computers then the firewall on the Standalone Service computer must be configured to open these ports.

Below is a link to directions on opening ports in the Windows firewall:

<http://windows.microsoft.com/en-us/windows/open-port-windows-firewall>

User Interface

Can be installed on the server or on any LAN PC within the network. During installation, the location of the server with the service is needed. One option is to install the UI on every computer that will be used to run IQ. This distributes the UI computing resources required by IQ over the largest number of computers.



An alternative is to install the IQ UI on a single computer that is accessible using remote desktop connection (RDP). It could even be the same computer as that running the Standalone Service. Users can log onto this machine using RDP and run IQ. This type of configuration concentrates the UI computing resources on a single computer but has the advantage on a single UI installation. To allow multiple simultaneous RDP sessions the computer must be running a server version of Windows.

During installation, the installer will ask for the name of the computer that is running the Standalone Service. If the UI is being installed on the same computer as the Standalone Service, then the default name that is displayed (localhost) can be used.

Mobile Interface

Internet Information Services (IIS) must be installed on the computer hosting the IQ Mobile Web Site. Enabling IIS on the computer is covered in the Enterprise Installation Instructions. Utilizing IIS provides access to mobile web pages that offer specific functions of the User Interface in a scaled down mobile formatted web page.

Field Devices

Field Devices (Irrigation Controllers) can be reached via their IP address. There are standard Ethernet and WiFi communication cartridges and cellular options. The cellular provider must be on the same network or else a VPN must be utilized to reach the devices as they often they have a private static IP Address. Rain Bird can provide sim cards for customers who do not have their own cellular provider. This will require a VPN connection on Port 80 to be opened to reach the Rain Bird network as the sim cards are private static IP addresses.

IQ Enterprise Architecture

