

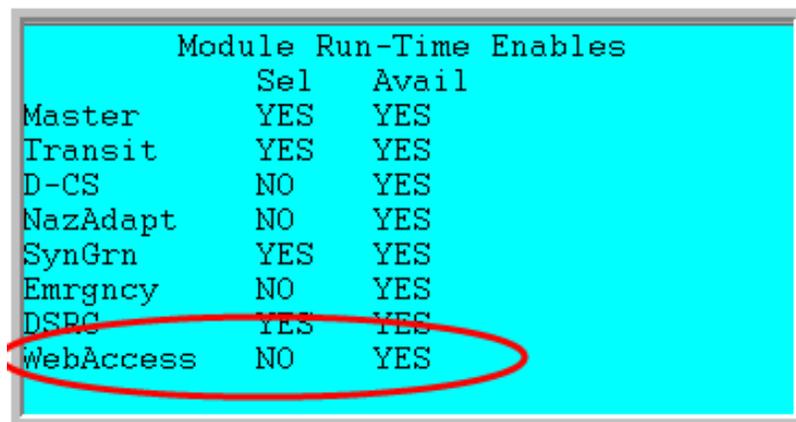
TechNote 1112: Network Communication to a Commander, ATC or 2070 controller

This TecNote reviews the steps to be taken as part of remotely connecting to a controllers such as a 980 ATC controller via the web. Within the controller there is security in place to assure agencies the complete control of this accessibility. If an agency so desires, using a web browser, connectivity can be made to the front panel of the controller. The interface shows the controller screen along with the controller keypad to remotely execute any command. This TechNote reviews the steps to set up the controller for this accessibility and laptop or desktop to remotely connect to the controller. **Trafficware would like to give special thanks to our distributor, Traffic Signal Corporation (TSC), in the publishing of this TechNote.**

Setting Up V76.x or V80.x Controllers for Web Access and Remote Communications

Initiate Controller Access to Web via Run Options (MM->8->4->2)

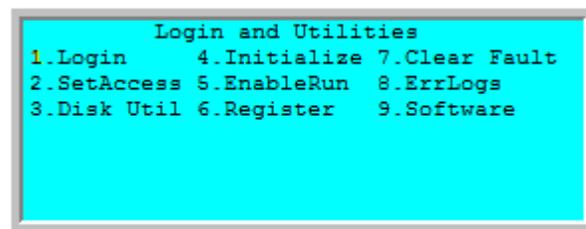
The Run options screen allows the user to activate specific licensed software modules. To access this menu the user must turn off the Run Timer (MM->1->7). The Web Access module must be licensed (YES under the *Avail* column) for networking to work. Once licensed, it is turned on by selecting it and toggling the data to YES under the *Sel* column. If the agency chooses NO under the *Sel* column, agency personnel will never allow network accessibility of the controller remotely. The user must physically power off the unit to implement and activate the software module. To run the unit the user must turn back on the run timer.



Module	Run-Time	Enables
	Sel	Avail
Master	YES	YES
Transit	YES	YES
D-CS	NO	YES
NazAdapt	NO	YES
SynGrn	YES	YES
Emrgncy	NO	YES
DSRC	YES	YES
WebAccess	NO	YES

Controller Security and Access via the Login (MM->8->1 & MM->8->2) Screens

Up to 64 separate password logins are provided to control access to the controller database. The level of security can also be assigned to each user to control the ability to edit the database, load software and assign passwords. Various utilities are also provided from this menu to load the controller software, initialize the controller's database, print the database and perform diagnostic tests that interrogate the memory, ports and hardware associated with the controller.

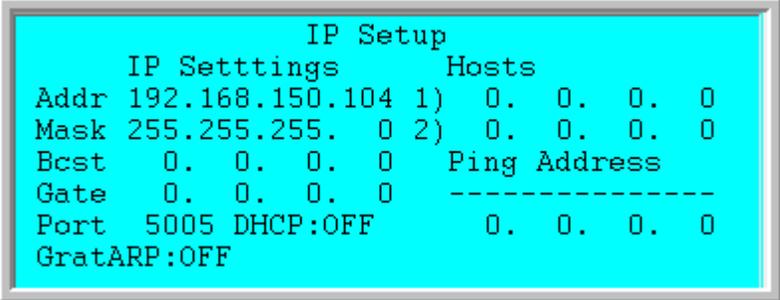


If any *Access Codes* are programmed under **MM->8->2**, the user will be required to provide a valid user number and access code to enable editing via the Web Access interface. Programming all access codes under **MM->8->2** to zero and setting the Level to **NONE**, disables all login procedures in the controller. A maximum of 64 individual users and 4-digit access codes may be programmed by a **SECUR** user. Therefore, if access security is used, at least one access # should have **SECUR** Level access. The security levels (from highest to lowest) are assigned as follows:

1. **SECURE** User has full access to the database including the ability to assign passwords
2. **SW LD** User has full access to the database and the ability to run diagnostics and load the controller software. The user may not assign passwords.
3. **DIAG** User has edit access to the database plus the ability to run diagnostic utilities. The user cannot load controller software (reflash the controller) or assign security passwords
4. **ENTRY** User has edit access to the database but cannot run diagnostics, load software or assign passwords
5. **NONE** View only access to the database

IP Communications: via the IP Setup (MM->6->5) Screen

The *IP Setup* menu configures the IP (Internet Protocol) ports implemented through the controller's Ethernet interface. The IP settings are used to identify an ATC residing on a TCP/IP network like the Station ID is used to identify a controller residing on a serial data link.



```
IP Setup
  IP Settings      Hosts
Addr 192.168.150.104 1) 0. 0. 0. 0
Mask 255.255.255. 0 2) 0. 0. 0. 0
Bcst 0. 0. 0. 0   Ping Address
Gate 0. 0. 0. 0   -----
Port 5005 DHCP:OFF 0. 0. 0. 0
GratARP:OFF
```

You must provide separate IP address (**Addr**) and **Mask** settings for the *Device* (local controller) and *Host* (central system). Please note that a second host computer can also be addressed via this screen. The **Bcast** (Broadcast) address and **GateWay** (Gateway) address settings are optional, but may be required for your network configuration. You must also provide an IP **Port** number which will match the port # in the particular drop that you are communicating with as specified. Ask your network administrator or the one who configured your network to explain how these additional settings are used if you need additional information.

The *IP Address* and *Mask* must be configured correctly for the local network. IP 1 is assigned to the local controller. The *Broadcast* and Gateway addresses can usually be set to 0.0.0.0 unless subnet addressing or routing is called for. Changes to *IP Setup* should take effect when the user leaves menu MM->6->5.

DHCP (Dynamic Host Configuration Protocol) can be turned on if the agency requires it. In this case do not program the IP address of the local unit because one will be provided automatically by **DHCP**. In addition the user must program the Host ID of the central Server.

Note: DHCP should be avoided if the agency wants to access the controller via the web. Users that use **DHCP** addressing will not be able to access the web interface consistently because the IP address will dynamically change over time.

Remotely Connect to the Controller using a Basic IP Interface Connectivity Test (MM->6->5)

The following guidelines should be used to test basic connectivity between a TS2, 2070 or other ATC controllers and a laptop computer. It assumes typical setups that many agencies use. Be sure to set the TS2 communications protocol under *General Parameters* (MM->6->1) to NTCIP. The communication protocol for the 2070 and the Series 900 ATC is NTCIP by default.

The network should be properly configured by your network administrator. As a minimum, the controller settings under MM->6->5 must provide the local IP address and mask settings for the network (typically the IP 1 address for the 2070). These settings are discussed in chapter 9 for the TS2 Ethernet option and 9.9 for the 2070 controller.

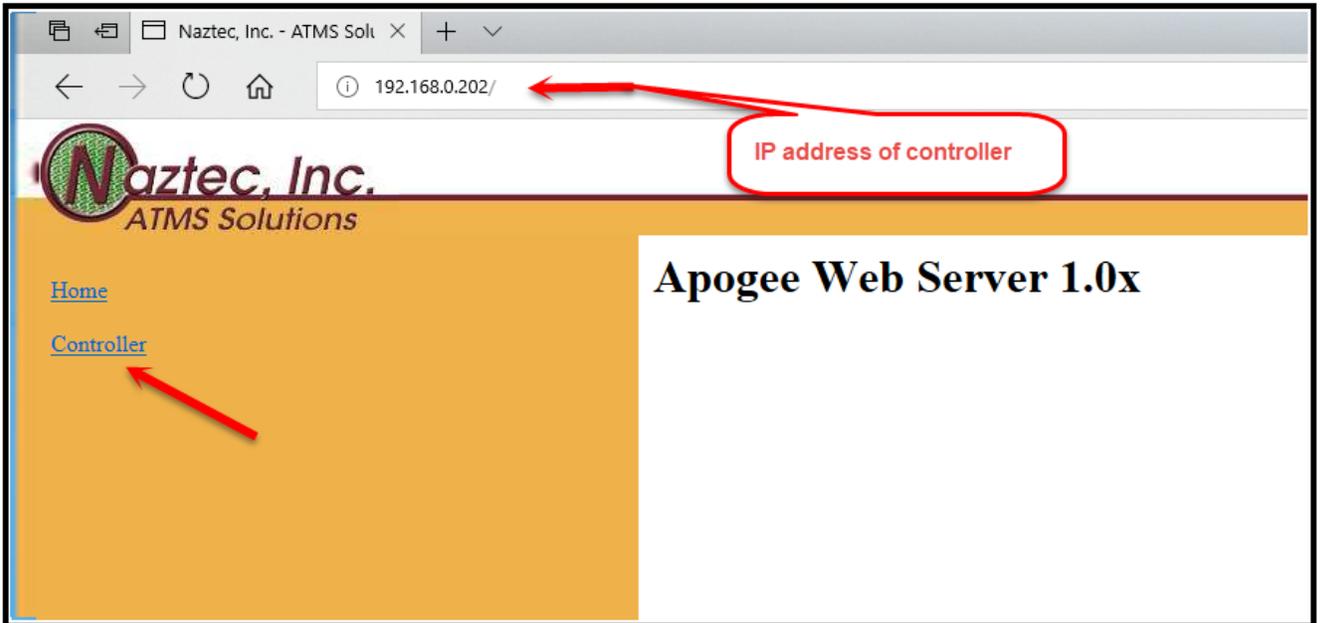
The first three octets of the IP address are typically be shared by all devices on the network (including the central computer). The last 3-digit octet must be unique for all devices on the network (similar to the unique *Station ID* used with serial communications). For example, the central computer might be assigned an IP address xxx.yyy.zzz.001 and the local controller xxx.yyy.zzz.002. Every device on this network would share the same “network” address xxx.yyy.zzz. However, each device, including the central computer (.001) would be required to have a unique address on the network.

You can test connectivity using a “cross-over” Ethernet cable to interface the controller directly with the Ethernet port of your computer. A “cross-over” cable is similar to a null-modem cable that switches transmit and receive pairs between two RS-232 devices. You cannot directly connect the controller to a computer using the same RJ45 Ethernet cable that you use to connect to your local computer network. Your computer must also be configured with a “static” IP address instead of the “dynamic” address typically used with LAN and dial-up Internet connections. Changing your network settings is not advised unless you know what you are doing because this will disrupt your LAN and Internet connection.

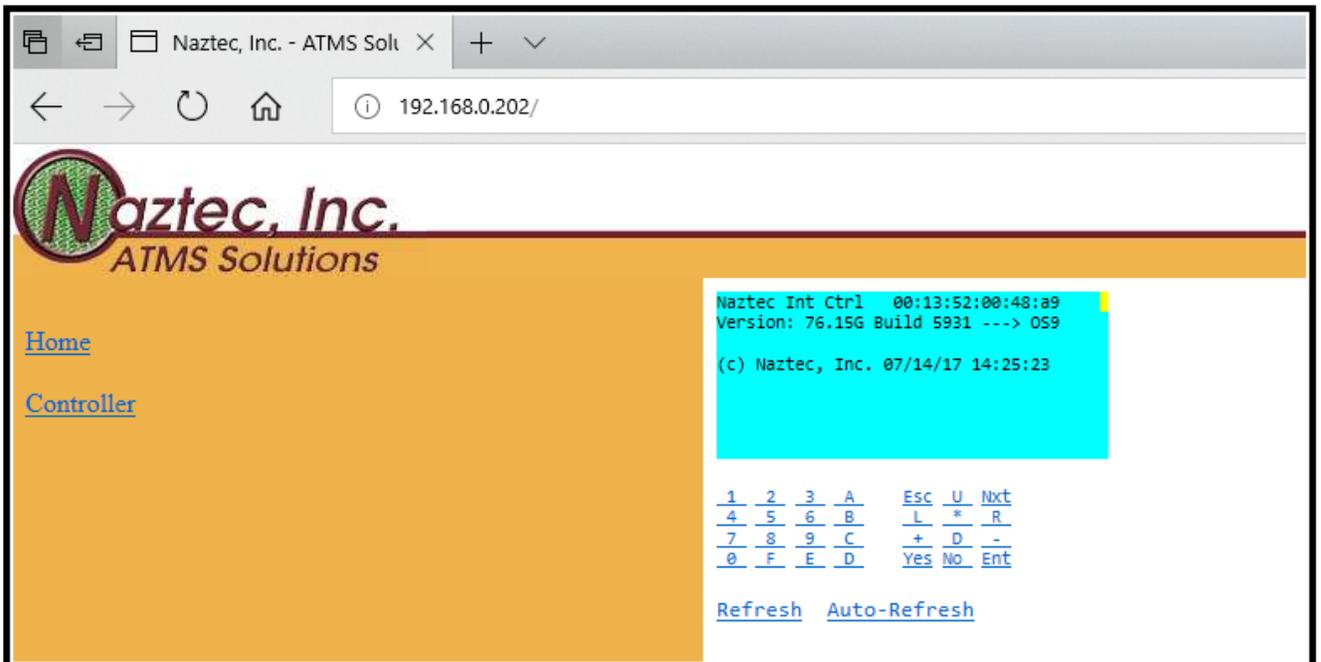
For this test, assume that the computer is configured with “fixed” IP address 192.168.001 and the controller is configured with 192.168.100.002 under MM->6->5. The network interface of the computer and local controller share the same *Mask* address 255.255.255.0. Basic connectivity of the Ethernet circuit may be confirmed by running a command line program, called *Ping* from Windows. Select *Run* from the *Start Menu*, enter “command” and press OK. This launches a command window where you can execute the ping command. Enter the command “ping 192.168.100.002” and press return. If the Ethernet circuit is functional, you should see a several replies from the controller each time the computer “pings” it’s local IP address. If the controller does not respond, you will see a timeout message indicating that the Ethernet interface is not connected. If this basic “ping test” passes from the ATMS.now communication server, but you cannot communicate with the same controller in ATMS.now, then you have an error in your com server software configuration.

Web Access Interface

Upon successfully connecting to the 980 ATC controller through any standard web browser the following screen will appear on the computer.



Hit the controller hyperlink and the following screen will be displayed that will directly access the field controller.



The upper half of the screen (blue background) is the screen that is currently showing on the front panel of the controller. This screen will change as the controller front panel changes. **It is recommended to turn on Auto-Refresh which updates the web interface every second.** The bottom half of the screen (gray background) is the keypad to make any changes to the controller. The yellow highlight on the screen is where the cursor is on the front panel screen.

The numerical values reflect the left keypad of the controller. Selecting these values will select the respective options that appear on the top portion of the screen. They can also be used to enter numerical values in the controller such as phase timings etc.

The following summary defines what the remaining keys initiate.

F = Alt key

Alt 9 is a hot key to get to the run screen

Alt 7 is a hot key to get to the main menu

E = Help key

A B C D keys ARE NOT USED

Esc = Back one screen or level in the controller menu structure

U = Cursor is moved up one line

Nxt = key IS NOT USED

L = Cursor is moved left one column

***** = Main menu

R = Cursor is moved right one column

+ = Page down (when this is available there will be a + on the right side of the controller screen).

D = Cursor is moved down one line

- = Page up (when this is available there will be a - on the right side of the controller screen).

Yes = key IS NOT USED

No = key IS NOT USED

Ent = Enters a selection

Summary

By following this procedure, you will be able to will be able to remotely connect, view and change any parameter of the controller database subject to the Agencies security protocol and policies.