



RAIL AUTOMATION

ACES II

Siemens Mobility, a specialist in the area of onboard Train Control design, is proud to introduce the next phase of Civil Speed Enforcement and Positive Train Stop capabilities. Introducing the Advanced Civil Speed Enforcement System II (ACES II) as designed by Amtrak for the North East Corridor (NEC).

Using an extensive ground network of data radio base stations, wayside interface units, data network nodes, Fiber/Ethernet networks, and a safety server; dispatchers can enter daily work orders (Form D) known as Temporary Speed Restrictions (TSR) and know that the ACES II equipped trains will enforce them.

Mobile Communications Package (MCP) data radios on board vehicles communicate with Base Communications Packages (BCP) data radios located at interlockings along the ACES II coverage area utilizing an ATCS Spec. 200 protocol on a 217 MHz licensed band.

As trains approach an interlocking, they request updates from the TSR server. An update is sent to the train where it is received and checked for integrity before accepting and enforcing the restriction. The train receives TSR information for the next three interlockings ahead of it. This ensures continuous TSR enforcement even during localized failures of the field equipment.

In addition to TSR enforcement, ACES II provides vehicle and track maintenance information in real time back to dispatchers. Information such as loss of radio communications or missing wayside transponders is recorded by the vehicle and sent to the dispatcher via radio maintenance messages. These maintenance messages allow for the timely dispatching of maintenance crews to correct problems and maintain system availability.

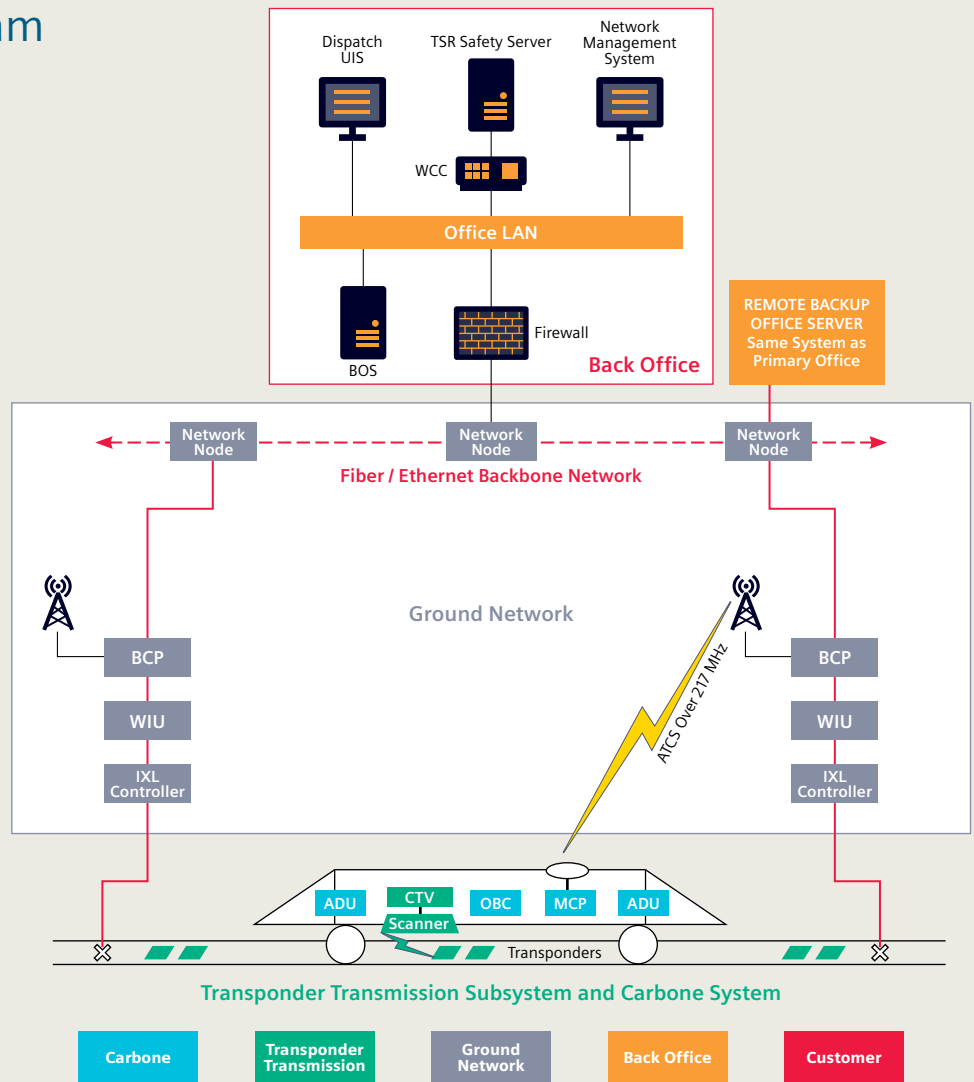
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Radio communications continue to be established with Wayside Interface Units tied to the interlocking controller and connected to the BCP base stations, to provide Positive Stop Release, Interlocking Signal Status and Limit of Movement Authority (LoMA) information to the vehicle in real time.

ACES II is built upon the original ACSES functions of Positive Train Stop (PTS) at home signals and permanent civil speed enforcement via wayside transponders. ACSES II now provides the next level of required functionality; enforcement of Work Orders via Temporary Speed Restrictions (TSR). ACSES II is a big step forward in providing a more comprehensive approach to Positive Train Control.

ACES II System Diagram

- ADU – Aspect Display Unit
- ATCS – Automated Train Control System
- BCP – Base Communications Package
- BOS – Back Office Server
- CTV – Compatible TV
- IXL – Interlocking
- MCP – Mobile Communications Package
- OBC – Onboard Computer
- TSR – Temporary Speed Restriction
- UIS – User Interface System
- WCC – Wayside Communications Controller
- WIU – Wayside Interface Unit



Siemens Mobility, Inc.
 One Penn Plaza
 11th Floor, Suite 1100, New York, NY 10119, United States
 Contact for information:
 Rail Infrastructure Headquarters, Homestead, PA 15120
 1 (800) 793-7233, siemensmobility.us@siemens.com

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