Communications-Based Train Control (CBTC) is a modern signalling system that uses radio communication to transfer train control information between train and wayside. The trackside networks in these systems are mostly based on conventional infrastructure Wi-Fi (IEEE 802.11). It means a train has to continuously associate (i.e. perform handshake) with the trackside Wi-Fi Access Points (AP) as it moves, which incurs communication delays. Additionally, these APs are connected to the wayside infrastructure via optical fiber cables that incurs huge costs. This paper presents a novel design in which trackside nodes function in ad-hoc Wi-Fi mode, which means no association has to be performed with them prior to transmitting. A node upon receiving packets from a train forwards these packets to the next node, forming a chain of nodes. Following this chain, packets arrive at the destination. To make the design resilient against interference and failures, transmissions are separated on multiple frequencies and a node forwards packets to not only one but two of its neighbors. This paper investigates the resiliency, redundancy and scalability performance of this design and presents the results both from a field experiment involving prototype hardware and an extensive simulation study.