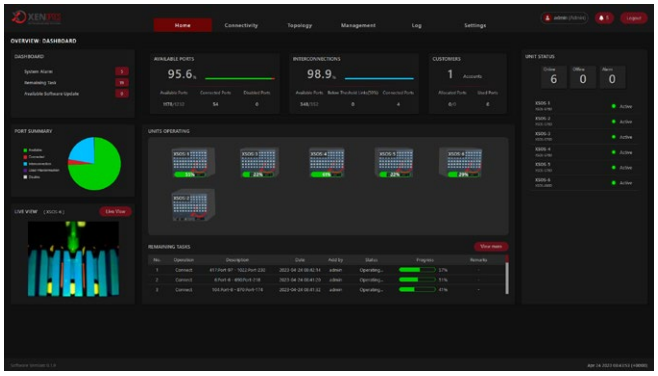
Network Management System (NMS)

OVERVIEW

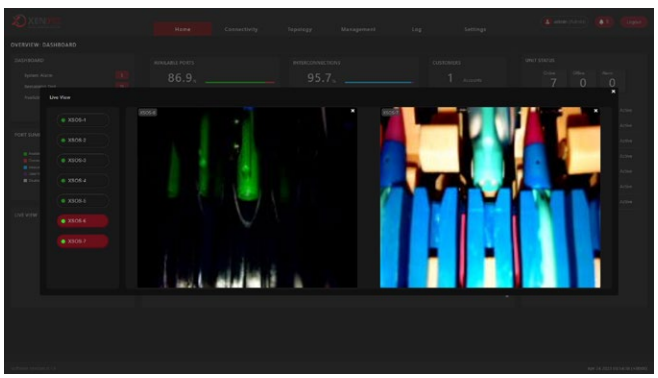
The Network Management System (NMS) is a web-based application that provides remote management and automated cross-connection capabilities for physical fiber infrastructures interconnected through XSOS systems. It offers real-time monitoring and management of network resources, connectivity operations planning, and system configuration. Key features include a system overview/dashboard, multiple live view streaming, connectivity and disconnection functions, system and user management, authentication, customer portal with connection and disconnection capabilities, remaining tasks queue, and port configuration options for efficient network management.

Key Features of management of NMS:

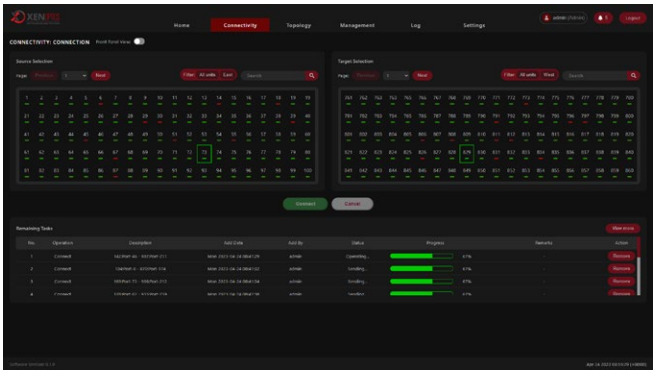
1. **System overview / dashboard:** The dashboard provides a real-time view of port and interconnection availability, allowing for efficient resource allocation and connectivity operations planning. It presents up-to-date information on port and element status, synchronized in real-time, enabling administrators to make informed decisions and take appropriate actions for effective network management.

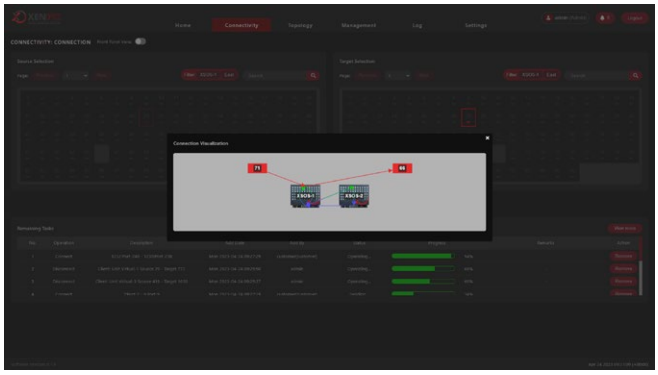


2. **Multiple Live View Streaming:** Users can view multiple live streaming of cameras while the system is operating. This allows for real-time monitoring of critical network components, enhancing network visibility and ensuring prompt actions in case of any issues.

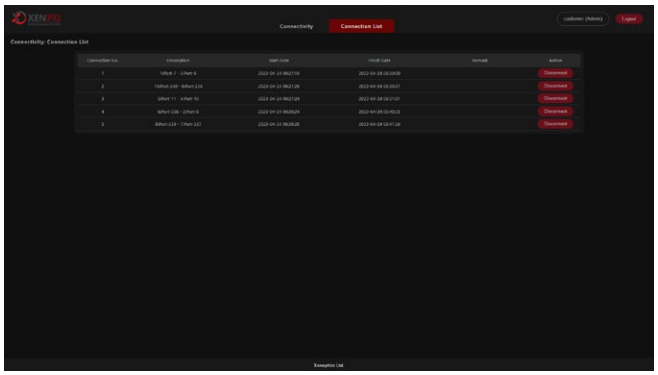


3. **Create connection:** The connection feature allows users to create connections by selecting the source and target ports. A shortest path algorithm is used to generate the most suitable route for connectivity. The connection route is displayed as a virtualized visualization. Tasks are automatically queued and executed in order, ensuring efficient management of connectivity operations.

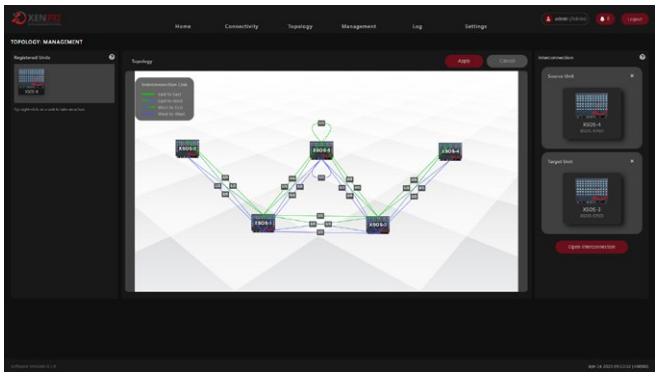


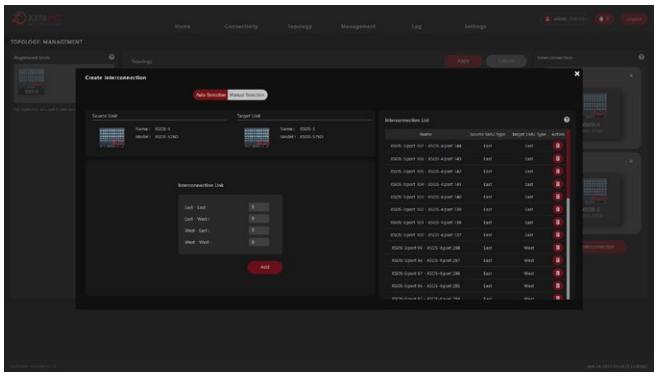


4. **Create disconnection**: The disconnection function allows users to disconnect connected ports. Users can select the connected operation they wish to disconnect from the list of current connectivity.

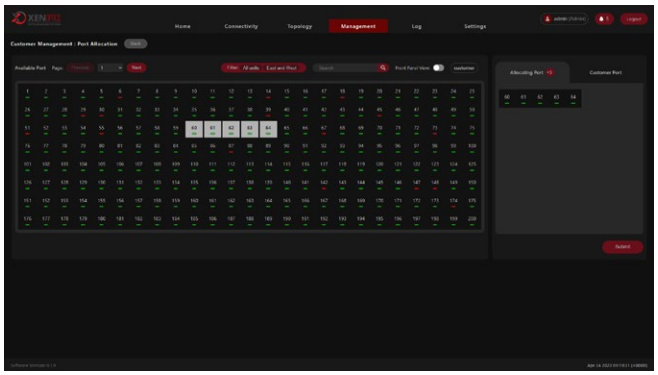


5. **Create topology:** Allows users to establish connections between elements in a network, including loopback connections that enable connections from any port to any other port. This feature ensures seamless interoperability and versatility in networking setups, allowing connections between different types of ports, and enabling flexible connectivity within the system. Users are provided with the flexibility to choose between manual selection or utilizing an auto-select function to create interconnections between elements. These interconnections are visually represented on the topology visualization, and the availability of interconnection links is dynamically updated in real-time. Users can also view each interconnection link listed in a table, allowing for easy monitoring and management of network connections.





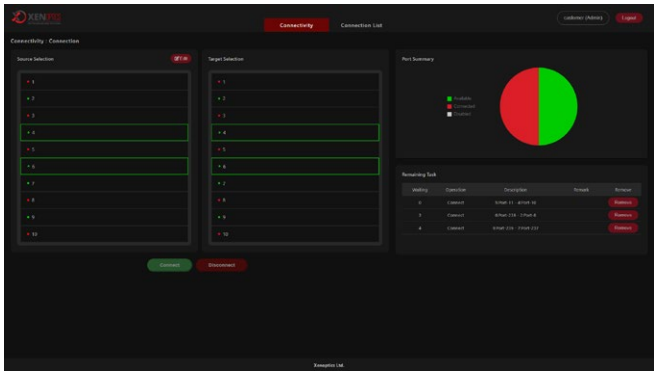
6. **System management:** Our system supports multiple model types, including XSOS-288 Duplex, XSOS-288 Simplex, and XSOS-576 Duplex. It provides a holistic view of the entire network infrastructure through a user-friendly RESTful API and a web-based graphical user interface (GUI). This allows for seamless end-to-end operations in managing and monitoring elements, providing a comprehensive toolset for administrators. The system's dashboard enables users to monitor the status of multiple elements simultaneously, providing a centralized view for efficient management and monitoring of element operations. This user-friendly interface empowers administrators to efficiently manage and monitor their network infrastructure, ensuring smooth operations and effective troubleshooting.
7. **Authentication:** The system prioritizes security through multiple authentication options, including local login and remote authentication. This ensures that only authorized users can access the system, safeguarding against unauthorized access and protecting data privacy and system integrity. Users can securely authenticate and access the system using either local login credentials or remote authentication methods. The system supports remote authentication of administrators through RADIUS, TACACS+, and LDAP remote servers, allowing for remote access in addition to local user login. Appropriate configuration of server entries for each authentication server is required to enable this functionality.
8. **Customer management:** The customer management function provides the administrator with the capability to add and edit customer accounts, as well as allocate and manage ports for customer accessibility through a dedicated customer portal. This feature enables efficient management of customer accounts and grants control over their access to the system. The system also includes tracking and monitoring functionalities to keep tabs on customer activities, providing visibility into their actions within the system. This allows for effective management of customer accounts and ensures proper oversight of their interactions with the system.



9. **User management:** The user management function allows authorized users to view all accounts created within the system. Authorized users can also create new user accounts as needed. Account management features enable users to edit and update their own details or those of other users, providing flexibility and control over user accounts.
10. **Log:** Displays a complete history of each operation performed in the system. Users can view logs related to connections, disconnections, and results of each operation, including detailed task information. Useful for troubleshooting and auditing purposes.
11. **Settings:** Enables management of system operation through the web interface. Allows system reboot, shutdown, and firmware update. Involves configuration of network settings, IP address, date and time, and time zone of the system by user.

Key Features of customer portal:

1. **Connection:** Users can create connections or swap polarity by choosing the port of origin system to the target system and clicking on the 'Connect' or 'Swap Polarity' button. The system generates the most suitable route for creating connectivity between system to system, and the connectivity task is automatically added to a list of remaining tasks, which are operated once the previous tasks are finished.



2. **Disconnection:** Users can create disconnections of connected ports by choosing the connected operation to be disconnected from the list of current connectivity.
3. **Remaining Tasks:** Queue List of Operations: The portal displays all operations that have been requested by the customer account and are currently on the queue list to be operated next.
4. **Port Configuration:**
   - **Port Status View:** Users can view the status of ports in table view or port panel view, providing information on whether the ports are occupied or available.
   - **Port Status Editing:** Users can edit/update port status, change port alias and description, and enable/disable ports from being used as needed.

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