Communications Solutions for Transportation

Alcatel·Lucent Enterprise

Table of contents

All transportation networks are mission-critical as they affect the lives and safety of citizens, passengers, and the economy. People and businesses are always on the move and transportation systems, whether it's air, rail, roads, or ports need to keep them moving in a safe, secure, and efficient manner.

This eBook addresses mission-critical communications infrastructures for transportation. It presents nine major challenges in the industry, and provides proven, deployed solutions to address them.

Overview

Alcatel-Lucent Enterprise provides the infrastructure that enables transportation subsystems to be always connected and to deliver the communications and network subsystems that support transportation applications and processes.
With this foundation, ALE customers can:
- Transform the passenger experience
- Increase safety and security
- Improve operations while decreasing costs

The transportation environment is complex. It is made up of several sub-systems involving different functional blocks such as the operations control centre (OCC), field operations, and security. It is critical that these environments be supported with a voice communications system that can interconnect the different functional blocks seamlessly and securely. ALE solutions are equipped with a set of APIs to allow integration of the transportation subsystems.

Mission-critical reliable architecture

Transportation projects, whether it's new construction, improvements to existing infrastructure, or a complete overhaul, can take years to complete and cause major service disruptions. It is imperative when these projects are undertaken, that they address not only the immediate requirements, but also the requirements for next 10 to 20 years. The network and communications solutions deployed must be highly reliable and future-proof, capable of meeting today's and tomorrow's transportation infrastructure needs.
The ALE solution is based on the [Alcatel-Lucent OmniPCX® Enterprise (OXE) Purple](#) which offers:
- High availability for a reliable and always on communications platform
- Centralised or fully distributed deployment, depending on the organisation
- Geographical redundancy for distributed networks
- Multi-device compliant for specific purposes such as IP, SIP, TDM, analogue
- Fully virtualised for data centre optimisation deployment
- Hybrid architecture to protect investments and evolve to new models
- Support for private and public cloud services

- Add-on servers for complementary solutions such as recording, notification server, API gateway, and emergency server

The solution can be deployed for multi-purpose applications including:

Trackside or roadside

Trackside telephony is essential in the railway and ITS sectors for the management of daily operations and security incidents such as::

- Monitoring and guaranteeing Emergency Help Point (EHP) availability
- Reducing repair time and map faults

- Notification over multiple devices when any EHP fails
- Daily report generation
- SCADA integration

Rail and road tunnels

Tunnel operation is a critical activity as it involves working in potentially dangerous zones. Close collaboration between the OCC and maintenance staff in the field is vital to:

- Ensure efficient maintenance operations
- Keep tunnel workers safe and secure
- Address issues and emergency incidents quickly

It is important to note that in most tunnels, especially the longer ones, the only viable way to communicate is by radio. Therefore, any communications system deployed in the OCC must be able to integrate, or interwork with the radio communications system.

Connected stations and airports

Train stations and airports host many businesses that deliver a multitude of services, across multiple areas in the complex. These businesses often come with different communication requirements and user profiles. These can include customer services, control centre operations, ground handling people, security contractors, commercial agency, back office staff, and many more. ALE communications solutions provide multi-service and multi-tenant needs to address different functional entities. A common communications platform provides the foundation to support a diversity of

requirements across multiple organisations. Specific and suitable solutions are available for each entity, which can include; operations, radio communication interconnection, end user kiosk integration, CCTV camera, emergency help point monitoring. Security needs such as alarm notification, emergency request, and recording system requirements can also be addressed.

Commercial agency

The commercial office and virtual agency are customer-facing resources that need to provide efficient contact with passengers. Solutions that improve the customer welcome are critical.

The contact centre and automated attendant are key to enhancing the passenger experience, driving the success of the business, and creating an impact on the brand image.
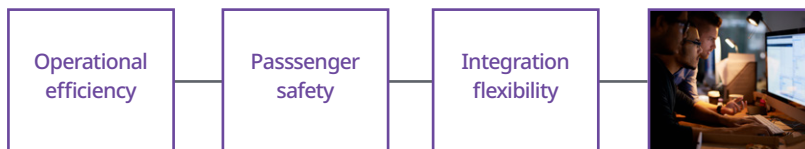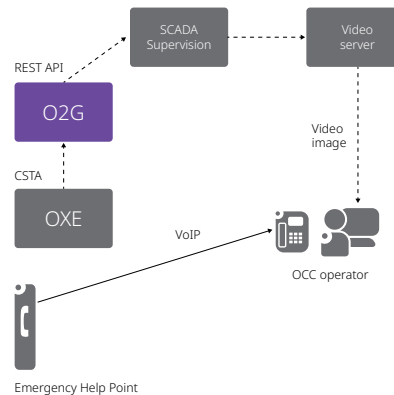
Solution 1

Synchronise video surveillance with EHPs

Improve control centre efficiency and passenger security with synchronised video surveillance and emergency voice calls

Overview

In rail and metro stations, emergency help points (EHPs) are positioned on each platform. These help points provide two-way voice communication between a person requesting help and the control centre. Visibility of the area around the EHP can assist the control centre personnel assess the emergency situation. EHPs and video surveillance systems must be synchronised to enable operators to see, and reassure the passengers with whom they are communicating. This means the cameras around the incident area must be controlled to get a first-hand view of the emergency situation. Typically, video surveillance equipment monitors each EHP using either the EHP local output, or an IP connection. However, this type of configuration and installation can be challenging depending on the technology and protocol used. For example, additional cabling may be required, or protocols and formats may not be compatible.

The solution

The Alcatel-Lucent OmniPCX® Open Gateway (O2G) simplifies the integration between the EHPs and the video surveillance systems. The O2G monitors all phones in real-time and uses RESTful APIs to notify the video surveillance system, or SCADA system of any emergency calls, independent of the type of technology used by the emergency phone.

When an operator receives a call from an EHP, O2G notifies the video surveillance system to display and record the video image corresponding to the area where the call originated. With server-to-server integration, the video display is synchronised to the control centre operator attending to the call, even in call-forward or overflow cases. ALE Professional Services can also develop protocol adaptation to provide information in the format and protocol expected by the SCADA system. The protocol adaptor can be hosted on the same O2G server.

Key differentiators

· Compatible with any emergency phone (Analogue or SIP)
· Ease of integration: RESTful Open API
· Optional protocol adaptation

What to order
OmniPCX Open Gateway with Advanced Tel. RESTful API users
Professional Services for coaching/options

Additional information
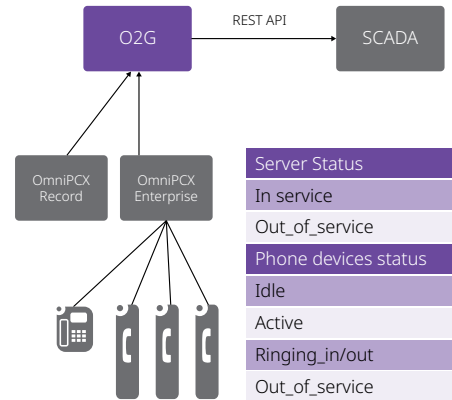OmniPCX Open Gateway API
OmniPCX Open Gateway datasheet

Solution 2

Integrate the telephony subsystem with SCADA

Provide 24/7 EHPs by integrating the telephony subsystem with the supervision platform

Overview

In transportation networks, EHP availability is a quality of service KPI and must be available 24/7. The control centre must immediately be made aware of any incidents in order to quickly plan maintenance operations and corrective actions. To do that, the telephony subsystem must send the status of all phones and servers, in real-time, to the SCADA system responsible for supervising the transportation network subsystems.
In many cases, the SCADA system connects directly to each piece of equipment to collect information. In this type of deployment, the EHPs, phones and servers are managed separately, making integration and installation complex.

Server Status
In service
Out_of_service
Phone devices status
Idle
Active
Ringing_in/out
Out_of_service

| Improve quality of services | Passenger safety | Integration flexibility |

The solution

The Alcatel-Lucent OmniPCX Open Gateway (O2G) application works as an abstraction layer to provide the status of all EHPs, phones and servers from a single interface based on RESTful APIs.
The O2G can be complemented by additional optional development hosted on the same server, including:
• Auto-testing of analog lines using periodic routines
• Consolidation of phone status with Simple Network Management Protocol (SNMP) information sent by 3rd party devices, for example: hardware status of SIP emergency phones (microphones and loudspeakers)
• Protocol adaptation to make the integration with the SCADA or supervision platform easier

Key differentiators
• Single interface for telephony/interphone subsystem
• Compatible with any phone: SIP, analog phones, and ALE phones*
• Optional protocol adaptation

(*level of service depends on phone type)
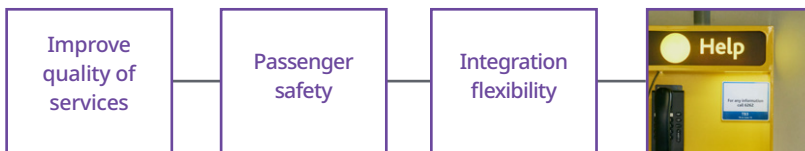
What to order
OmniPCX Open Gateway with Advanced Tel. RESTful API users
Professional Services for RESTful API coaching or protocol adaptation

Additional information
OmniPCX Open Gateway API
OmniPCX Open Gateway datasheet

Solution 3

Improve the call handling at the OCC

Enhance the operation efficiency at the Operational Control Centre with an adapted solution that takes, dispatches and processes all calls at the agent's fingers tips

Overview
Modern Operational Control Centres (OCC) must make the dispatching process as efficient as possible. To make that happen, a suitable call taking process is fundamental where the criteria of the operator based on business process and priority rules are key.
To better perform the task at the OCC, the operator requires main functionalities such as call qualification, call selection, conferencing and end to end call control.

The solution
The Alcatel-Lucent Dispatch Console offers a customisable solution for operational telephony, helping the operator to coordinate and share information during crisis. The Dispatch Console provides an easy to use graphical interface to visualise, select and access all the call features. Among the key features the Dispatch Console has:
• Visual call queue and call prioritisation
• Call pick up selection
• Conference setup
• Multiple call routing options

| Enhanced operational efficiency | | Improved operations coordination |

Key differentiators
• On-demand API integration with 3rd-party applications
• Customisable to customer needs
• High availability solution
• Web interface accessible from PC, touch screen workstation

What to order
Dispatch Console
Professional Services for on-demand customisation

Additional information
Dispatch Console datasheet

Solution 4

Real-time assistance from Ticket Vending Machine (TVM)

Improve the passenger experience thanks to interaction with operations staff through Kiosk or TVM

Overview
More and more passengers value independence through their journey, either buying a ticket or requesting itinerary information or booking a service. However, some problems may happen and the right support through a real-time interaction with the station's staff can greatly improve the passenger's impression. The virtual front desk can be empowered with multimedia services to enrich the interactions with the passenger.
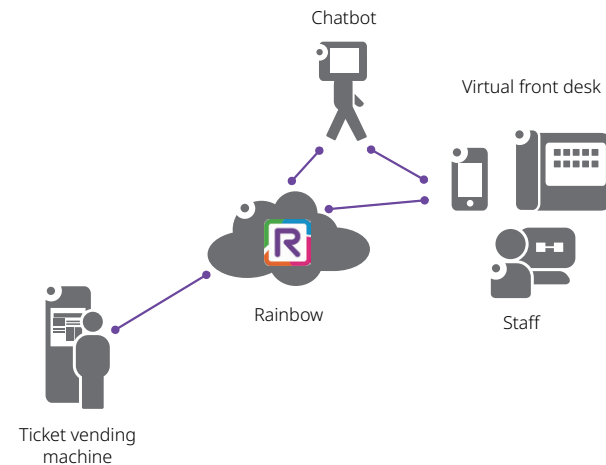
The solution
Rainbow™ by Alcatel-Lucent Enterprise cloud Communications Platform as a Service (CPaaS) provides communication such as video/voice session, chatbot interaction, document sharing, and chat session, integrated into the end customer Kiosk or TVM application. Thus, the passenger assistance request is transparently routed to the relevant help desk staff.

Key differentiators
- End-user independence
- Remote assistance enabling a problem-free journey
- Contactless interaction
- Multimedia session assistance over any staff device (desktop, desk phone, and smartphone)
- Value added to the existing business applications

Chatbot

Virtual front desk

Rainbow

Staff

Ticket vending machine

How to engage
Pricing and business model based on project
Rainbow specialist
Professional services

Additional information
Rainbow CPaaS

Real-time assistance — Human interaction
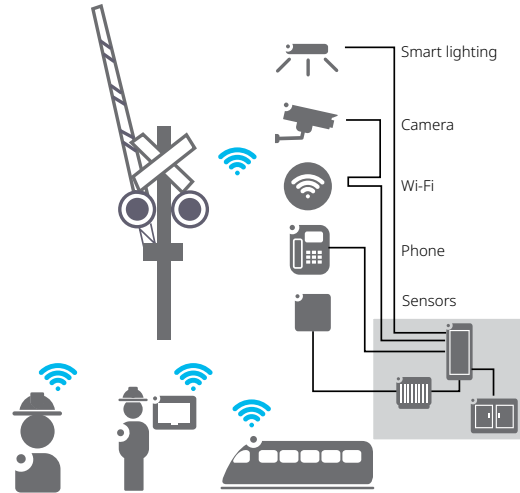
Solution 5
Rail or road crossing

Ensure safety with a high availability mission-critical network and communications infrastructure supporting multiple systems

Overview

Rail or road crossings are a major safety concern for train operators, ITS, and local municipalities. Smart lighting, bells, traffic measurement sensors, signage, radar, emergency call system and cameras are some of the components that need to be connected 24/7.

Connecting all these systems requires a network infrastructure that can deliver High PoE with dry contacts for door lock security (rail/roadside cabinets) supporting extreme (high/low) external temperatures with remote central management control.

Smart lighting
Camera
Wi-Fi
Phone
Sensors

The solution

Robust voice and data infrastructure provide the mission-critical connectivity alongside railway tracks or roads side, including the components required for around-the-clock monitoring.
The solution consists of a LAN and WLAN deployment, necessary at each rail or road crossing, with the following requisites:

- PoE and LAN for Wi-Fi, camera and sensors
- Wi-Fi Access Points (APs)
- Emergency phones
- Dry contacts for alarm relay
- Geographical redundancy communication infrastructure
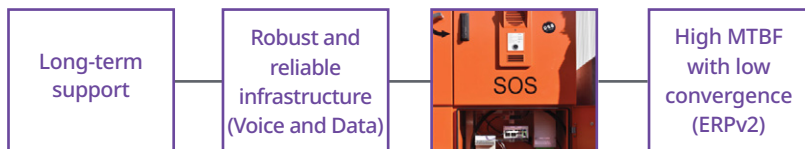
Key differentiators

- Ruggedised ethernet equipment
- Long-term support (more than 10 years)
- IEEE 802.3bt PoE (60 Watt)
- Alarm relay connectivity
- MACsec support
- Centralised communication system and management tool

What to order
OmniSwitch 6465 Compact Hardened Ethernet Switches
OmniAccess Stellar Access Point 1360
OmniVista 2500 NMS
OmniPCX Enterprise Communication Server
OmniVista 8770 NMS

Additional information
OmniSwitch 6465 Compact Hardened Ethernet Switches datasheet
OmniAccess Stellar AP1360 datasheet
OmniVista 2500 NMS datasheet
OmniPCX Enterprise Communication Server datasheet
OmniVista 8770 NMS datasheet

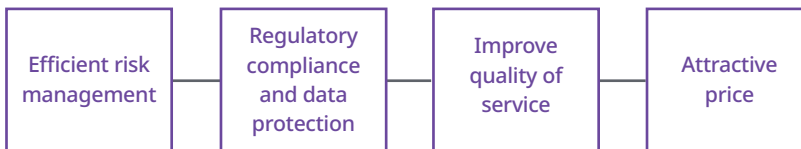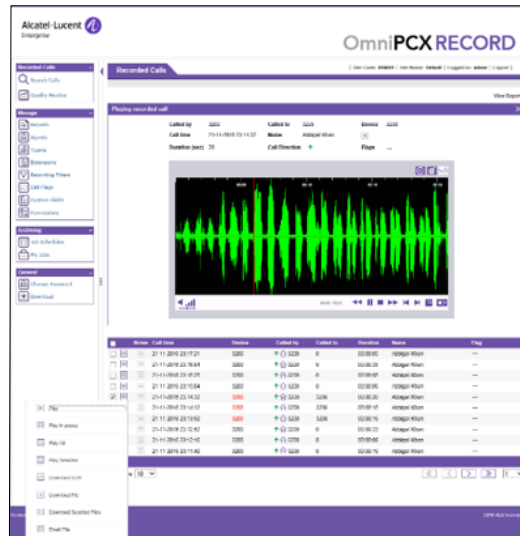| Long-term support | Robust and reliable infrastructure (Voice and Data) | SOS | High MTBF with low convergence (ERPv2) |

Solution 6

Record and track voice communications

Leverage voice communications tracking and recording to train customer service personnel and improve post-incident analysis

Overview

In transportation, recording and tracking voice communications are critical. For transportation agencies, operational communications must be recorded and tracked to provide proof of safe operations and for post- incident investigations. Voice recorders are also used to monitor how commercial staff communicates with their customers for coaching and training purposes as well as to review communications in case of malicious calls.


```
Efficient risk ── Regulatory ── Improve ── Attractive
management     compliance    quality of    price
               and data      service
               protection
```

The solution

The Alcatel-Lucent OmniPCX® RECORD Suite offers a complete recording and tracking solution for operational communications and customer/passenger interactions as well as web-based audio and video call recording.

OmniPCX RECORD Suite enables recording, monitoring and evaluation of customer/ employee interactions with easy-to-use, web-based applications. It is easy to deploy and extremely cost- effective with seamless integration into any OmniPCX Enterprise Purple environment.

On a project basis, specific and complementary development are available to deliver permanent ambiance recording in specific areas such as the OCC room and station platform or to record radio communications.

Key differentiators

- Easy and cost-effective implementation
- Regulatory compliance and data protection
- Supports a wide range of telephony devices to record all operational communications
- Geo-redundancy support
- RESTful APIs for operator workstation integration (For example, search and playback)
- SIP video recording to record video conferences

What to order

OmniPCX RECORD Suite

Additional information

OmniPCX RECORD Suite datasheet

Solution 7

# Automated customer welcome processes

Improve passenger welcome with an automated attendant

Overview

Transportation operators are looking for an automated welcome solution to deliver more customer self-services in an efficient and professional manner.

The solution

The Alcatel-Lucent Visual Automated Attendant provides a virtual attendant available 24/7, to deliver professional, quality customer interactions. It can replace or complement human attendants by greeting the caller with a welcome message and routing the call to the right contact or service.
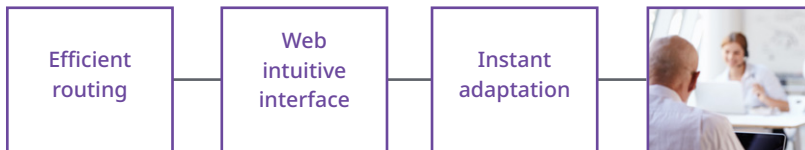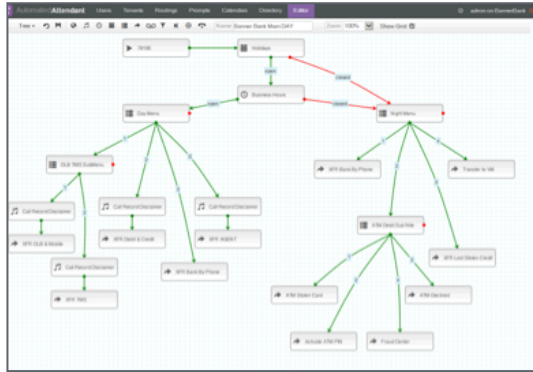
Connecting the Visual Automated Attendant to the Passenger Information System API, or database, provides passengers with direct access to flight, train, or bus schedules. In addition, the Visual Automated Attendant can deliver time-sensitive information such as weather delays or scheduling changes.

By including a brief survey at the end of call, the Visual Automated Attendant can collect passenger feedback to improve passenger welcome services.

Key differentiators

- Graphical and intuitive programming interface
- Scalable, multi-tenant and SIP-based solution
- Interactive Voice Response (IVR) option with SQL and HTTP connector
- Text-to-speech conversion

Efficient routing	Web intuitive interface	Instant adaptation	

What to order
Visual Automated Attendant

Additional information
Visual Automated Attendant datasheet

Visual Automated Attendant video

Solution 8

Visual assistance to strengthen the on-site intervention

Improve on-site intervention with multimedia collaboration between expert and on-site technician

Overview

On-site interventions are essential for operations success and business continuity. However, situations of downtime service, several round-trip visits and technical tasks at risk for the staff can significantly affect the normal operations. A suitable solution that reinforces collaboration between the field technician and the expert through multimedia interactions is key. At the same time, it enables a close collaboration and coordination of actions while leveraging the knowledge of the experts.

The solution

The Alcatel-Lucent Enterprise Remote Visual Assistance (RVA) solution is based on the Alcatel-Lucent Rainbow cloud platform. It offers communication services to allow a rich interaction between the on-site technician and the experts. Those services comprise voice, video sessions, documents sharing (photos and videos), all required information being collected and centralised.

For the field technician, the handsfree mode is essential to perform manual tasks. For that reason, RVA is combined with a specific hardware accessory to provide a completely adapted solution to on-site situations. This wearable kit is composed of an Android smartphone, an open earphone set, an elastic harness and a Bluetooth button bracelet for control. The button bracelet allows to easily trigger the video call when it is pressed twice, take a picture when it is pressed once and record a video when it is pressed long.

Key differentiators

- "See what the field worker sees"
- Improvement of the first visit resolution
- Ability to invite outside participants via email or SMS
- Android smartphone agnostic
- Separate wearable kit
- Automated and centralised data collection

What to order

Remote Visual Assistance per user, per month
Rainbow Enterprise subscription
Professional Services

Additional information

Remote Visual Assistance datasheet
Remote Visual Assistance video

| Reduced downtime | | Improved team collaboration |

Solution 9
Visual emergency notification

Increase responsiveness and safety in passenger transit areas with a Visual Notification Assistant

Overview

For transportation operators and public authorities, saving time means saving lives. Security personnel and public safety responders are charged with acting quickly and effectively to emergencies, to protect rail station or the airport passengers. They cannot allow operational obstacles to interfere with the mission. In order to respond quickly, they require accurate information about a caller, including location and emergency details. It is also crucial to be able to broadcast messages for staff mobilisation, and record calls for training and coaching purposes, or for aftermath investigations.
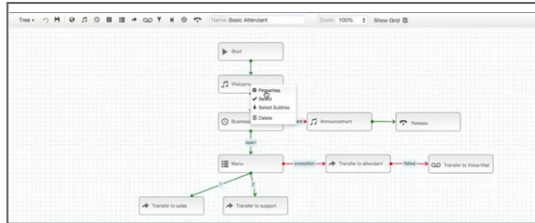
The solution

The Alcatel-Lucent Visual Notification Assistant (VNA) addresses these challenges, among others, by tracking all emergency calls (outgoing 911/112 calls, or emergency hotline panic buttons) from all workspaces, localising and routing the calls to the correct emergency responders. Additionally, the VNA provides the capability to broadcast messages over any device for staff mobilisation during incidents.
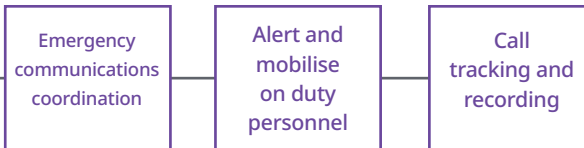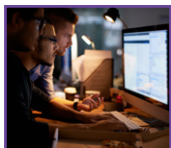
The VNA enables quick, accurate involvement and responses from all key personnel in case of emergency, both on-site and at remote locations as well as at the Public Safety Answering Point (PSAP).
For a more efficient reaction and coordination, VNA offers an intuitive graphical interface to easily set up the end-to-end actions across the notification process.

Key differentiators

- All-in-one solution: Recording capabilities integrated into the application
- High availability: Redundancy (VMWare based) and integration with OXE high availability
- 100% software solution with web-based management interface
- Multiple call alert and notification tools for security personnel
- Automatic call back if the call gets cut off
- Automatic conference bridges can be created among emergency personnel
- Broadcast emergency messages over any device for mobilisation
- Intuitive graphical notification flow creation

What to order
Visual Notification Assistant

Additional information
Visual Notification Assistant datasheet

Emergency communications coordination — **Alert and mobilise on duty personnel** — **Call tracking and recording**

We are ALE.

We make everything connect by delivering technology that works, for you. With our global reach, and local focus, we deliver networking and communications.

On premises. Hybrid. Cloud.

Learn more about how ALE is helping transportation operators move from Connected to Smart transport.
Check out the ALE blogs to get insights from our experts.

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