

TECHNICAL SPECIFICATION



**Power systems management and associated information exchange – Data and communications security –
Part 8: Role-based access control**



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**Power systems management and associated information exchange – Data and communications security –
Part 8: Role-based access control**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**POWER SYSTEMS MANAGEMENT
AND ASSOCIATED INFORMATION EXCHANGE –
DATA AND COMMUNICATIONS SECURITY –****Part 8: Role-based access control**

FOREWORD

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 62351-8, which is a technical specification, has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
57/1119/DTS	57/1153/RVC

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 62351 series, published under the general title *Power systems management and associated information exchange – Data and communications security*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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INTRODUCTION

This Technical specification covers access control in power systems. The power system environment supported by this specification is enterprise-wide and extends beyond traditional borders to include external providers, suppliers, and other energy partners. Driving factors are the liberalization of the energy sector, the increasingly decentralized generation of energy, and the need to control access to data of precious resources. This specification supports a distributed security environment in which security is also a distributed service.

The power system sector is continually improving the delivery of energy by leveraging technical advances in computer-based applications. Utility operators, energy brokers and end-users are increasingly accessing multiple applications to deliver, transmit and consume energy in a personalized way. These disparate applications are naturally connected to a common network infrastructure that typically supports protection equipment, substation automation protocols, inter-station protocols, remote access and business-to-business services. Consequently, secure access to these distributed and often loosely coupled applications is even more important than access to an application running on a stand-alone object.

Secure access to computer-based applications involves authentication of the user to the application. After authentication, the level at which a user can use the application is determined. The use of local mechanisms for authorization creates a patchwork of approaches which are difficult to uniformly administer across the breadth of a power system enterprise. Each application decides the authorization on its own logic. If applications can use a network, a database can serve as a trusted source of user's group or role affiliation. Thus, the access to a shared user base can be controlled centrally. Each application can then examine the rights listed for a subject and corresponding role and determine their level of authorization.

The role of a user is transported in a container called an access token of that user to the object. Access tokens are created and administered by a (possibly federated) identity management tool. All access tokens have a lifetime and are subject to expiration. Prior to verification of the access token itself, the user transmitting the access token must be authenticated by the object. The object trusts the management tool to issue access tokens with suitable lifetime. This enables local verification of the access token's validity at remote sites without the need to access a centralized repository (e.g. a centralized revocation list).

Three different access token formats are supported as three different profiles. Two of them are X.509 Access tokens and the third is a software token similar to Kerberos. They can be used over TCP/IP and serial communication links.

This specification defines role-based access control (RBAC) for enterprise-wide use in power systems. It supports a distributed or service-oriented architecture where security is a distributed service and applications are consumers of distributed services.