Permissions Part 2

Welcome to the second part of our lesson dedicated to managing permissions in the C4 System.

In the first part, we learnt that permission in the C4 environment represents a relationship between a person and any data object managed within the System. We demonstrated how to set permissions for devices for a specific person, and how leveraging the hierarchical structure of devices can make the permission management easier.

However, the person to whom we assign permissions is also part of a certain hierarchy - the company's organizational structure. How can we optimize management of permissions on this side of the relationship and what rules apply here? We will find out in this part of the lesson.

The first level we can start from when setting permissions is the organizational structure itself. It allows us to simplify the permission management especially through the use of inheritance.

Lee Cooper works in the Personnel department of Gemax. If we want to set the same permissions for him and his colleagues in this department, we can simply set permissions for the entire department.
Permissions applied to departments are automatically inherited by all their members. So, for more efficient permission management, inheritance can be used on both the right and left sides.

However, while permissions without inheritance can be applied on the right side, on the left side even these permissions are inherited.

As we can see, permission without inheritance set on the control panel is not inherited by the door and the card reader, but is inherited by all employees of the Personnel department.

An important rule which applies also here is that the highest priority always has what is set directly on the person.

When we set a Deny value with inheritance on the door for the entire department, it will also be inherited by Lee Cooper. However, if we set an Allow value with inheritance for the control panel directly for Lee Cooper, such setting has the highest priority, and therefore the door and the card reader will be allowed for him.

Another option for configuring permissions is through groups. A person gets their permissions based on the group they belong to. Groups and permissions for groups are created and set by the Administrator, according to the customer's specific needs.

For example, in the C4 System we create a Group 1 and add the persons Lee Cooper and Carter Taylor to it. Then we create Group 2 in the same way. As we can see, Lee Cooper is a member of both groups, and these groups are on the same level. Which permissions will then apply to Lee Cooper? Let's take a look:

We assigned Group 1 a Deny value, which is inherited by Lee Cooper as a member of this group. Group 2 has an Allow value that is also inherited by Lee Cooper. Both permissions are inherited from the same level – the group level. Which permission will apply?

In cases when permissions are inherited from the same level, the Deny value always wins over the Allow value. For this reason, it is not recommended to create groups with the intention of assigning a Deny value. Groups should be created only for the purpose of assigning Allow permissions.

Actually, Deny values are already set by default when the System is installed, so there is no need to explicitly apply them to groups. Doing so can even significantly complicate permission management.

Lee Cooper has inherited an Allow value from Group 2. Which value will apply to him for the control panel?

As we can see, a Deny value is inherited through three levels, while an Allow value is inherited from one level. In this case, permissions are inherited from different levels, so we follow the rule that the closest permission wins.

Persons can also get their permissions through the roles assigned to them.

These roles are predefined and supplied by the manufacturer of the C4 System. There are several roles available. They cannot be modified in any way, they can only be assigned to individual persons. If you don't need to manually set permissions to meet your specific requirements, that's exactly when you can use the roles. The detailed list of roles and their associated permissions is available in the lesson materials.

If the Administrator role has a Deny value preset by the manufacturer, Lee Cooper, assigned to this role, will inherit it. At the same time, he will also inherit an Allow value assigned to the Group 1. Which permission will apply to him: that from the group or the role?

Since groups are created by the System administrator based on preferences, they have higher priority than the roles which are preset by the manufacturer. Therefore, the permissions set for the group will apply to Lee Cooper.

In the example of Lee Cooper, we see that one person can be part of the organizational structure, have an assigned role, and also belong to a group. The permissions set on each of these levels often differ. Which one has the highest priority?

The prioritization is based on the principle that the settings made by the C4 administrator should have the highest importance.

This means that the settings at the organizational structure level have the lowest priority, because a person's position within the organizational structure is fixed. Next are the role settings, which are predefined by the C4 System manufacturer, but can be assigned to persons as needed. Settings at the group level have the highest priority. Groups allow for the highest level of customization, as we can create them, add members, and set permissions exactly as we need.

Of course, at the top of the hierarchy, there is a person and settings applied directly to a specific person. These have the utmost priority. However, the possibility to leverage organizational structure, roles and groups for managing permissions – rather than applying them directly to individuals – is a unique benefit of the C4 System, that can significantly improve the efficiency of permission management.