

■ White Paper
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Billing in ICS manager *nG*

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Introduction

The billing is one of the main operational processes of Spectrum Management like Assignments, Coordination or Notification are. Indeed, the regulator finds the process of billing at each level of the Spectrum Management: from the creation of stations, to the licenses management, while passing by the frequencies assignments.

Moreover, the billing is an administrative procedure which involves various departments of the same administration, which generates a significant number of confidential documents and which though requires a rigorous follow-up in order to avoid any loss or frauds.

In addition, the parameter setting of the billing can also make it possible the regulators to fix more attractive prices for certain frequencies or certain sites and thus to optimize the use of the limited resources which became the sites and the frequencies.

Lastly, each country fixes its own rules of billing. This is why the billing must be configurable by any user of any country.

ICS manager nG offers a complete module allowing managing all these aspects of the billing process.

The billing process in ICS manager nG is made of three elements:

- The generation of documents.
- The payments follow-up.
- The calculation of the fees following the technical and administrative parameters of the assignments and the licenses.

User's Workspace configuration

Before starting any recording of invoices or payments, ICS manager nG allows to the person in charge of the database to define the currency with which its administration will work as well as the identification numbers of the accounts that it will treat so that it reflects the standards of his country.

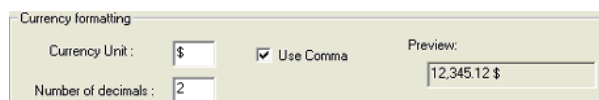


Figure 1: Currency definition

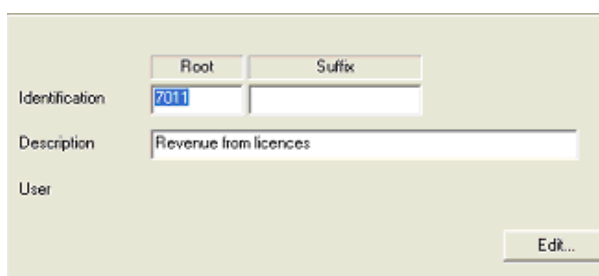


Figure 2: Accounts identification

The administrator can also manage the user's rights on certain tables (accounts tables, transactions tables...) in order to limit the frauds and to keep confidentiality.

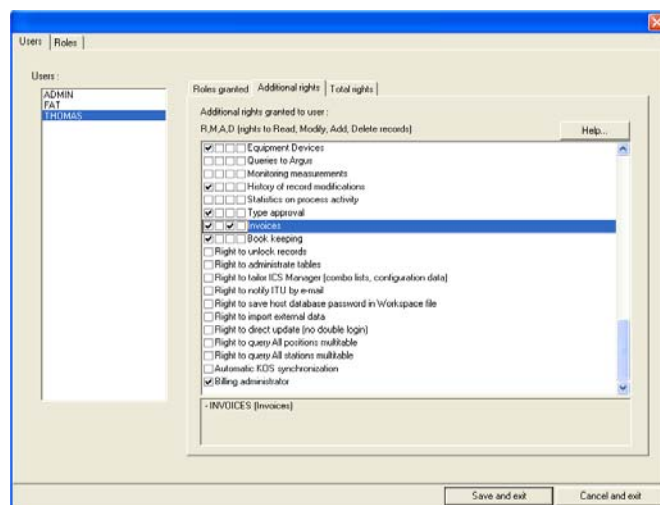


Figure 3: Management of user's right.

Invoices recording

For each new invoice, the user has to create a new recording taking account of the main characteristics of an invoice:

- Invoice reference.
- Invoice date.
- Payment date;
- Amount.
- VAT and other taxes...



The VAT and the total amount are automatically calculated.

Figure 4: Invoice recording

In order to help the user in the recording and the follow-up of the invoices, a predefined process exists in ICS manager nG. This process is characterized by the various states that an invoice can take. These states are automatically calculated by ICS manager nG.

- IN: Input must be completed.
- RJ: Ready to be stored.
- PA: To be paid.
- PP: Paid partially.
- PT: Paid totally.
- NP: Nothing to pay.
- ER: Error invalid.

Thus, the user can whenever check the status of an invoice and know what tasks he has to make on it.

Figure 5: Follow up of invoices.

For each recorded invoice, a transaction number is created.

Payments recording

The payment recording is carried out when the person in charge receives a first payment on behalf of the customer.

A payment operation is related to one or several invoices.

The following cases are allowed:

- The payment is for a part of a single invoice.
- The payment is for a complete invoice.
- The payment is for several invoices.

To record a payment, the user must fill the following fields:

- Payment reference.
- Payment date.
- Payment amount.
- Payment type (cash or check).

When the payment is recorded, the associated invoices are updated.

Figure 6: Invoice updated after payment

Calculation of the fees

ICS manager nG offers two modes to calculate the fees: a manual mode and an automatic mode.

With the manual mode, the user can manage the fees at the license level or at the level of each resource which requires this calculation.

The fees are then calculated thanks to procedures that the user will develop.

The language used to define these procedures is an extremely intuitive language, derived from the LISP.

```

: Annual fee for a bidirectional microwave link :
: Up to 3000 MHz          Fee= 150+0.04*B
: 3 GHz < freq <=11 GHz   Fee= 100+0.03*B
: 11 GHz < freq <=20 GHz  Fee= 50+0.025*B
: 20 GHz < freq <=30 GHz  Fee= 10+0.015*B
: 30 GHz < freq          Fee= 0.008*B
: B= Bandwidth in kHz
: If unidirectional link, 75% of the bidirectionnal link fee

lisp (redefun UpdateRecord (table id data) ;Will be called for each recor
      (letassoc data
        (let (
          coeff0
          coeff1
          (freq StationA TX_FREQ)
          (unidir (equal StationB TX_FREQ _NULLD))
          (BkHz (DesigEmBw DESIG_EM))
          (yearFactor (YearOccupancy 2002 BIUSE_DATE EOUSE_DATE))
          (AnnualFEE _NULLD)
          (ok _TRUE) )
          (print 1 yearFactor BIUSE_DATE EOUSE_DATE)
          (when (equal freq _NULLD) (print 1 "Link ID=" id "no frequency")) (se
            (when (equal BkHz _NULLD) (print 1 "Link ID=" id "designation of emi
              (when (equal yearFactor -1.) (print 1 "Link ID=" id "Bring into use
                (when ok

```

Figure 7: procedure example



It means that, in the event of modification of the rules of invoicing which could be national or internal, the user will be able to adjust the procedures without having to develop a new module in the application.

Regarding the automatic mode, please refer to the "*Workflow in ICS manager nG*" document which describes the management of workflow in ICS manager nG.

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