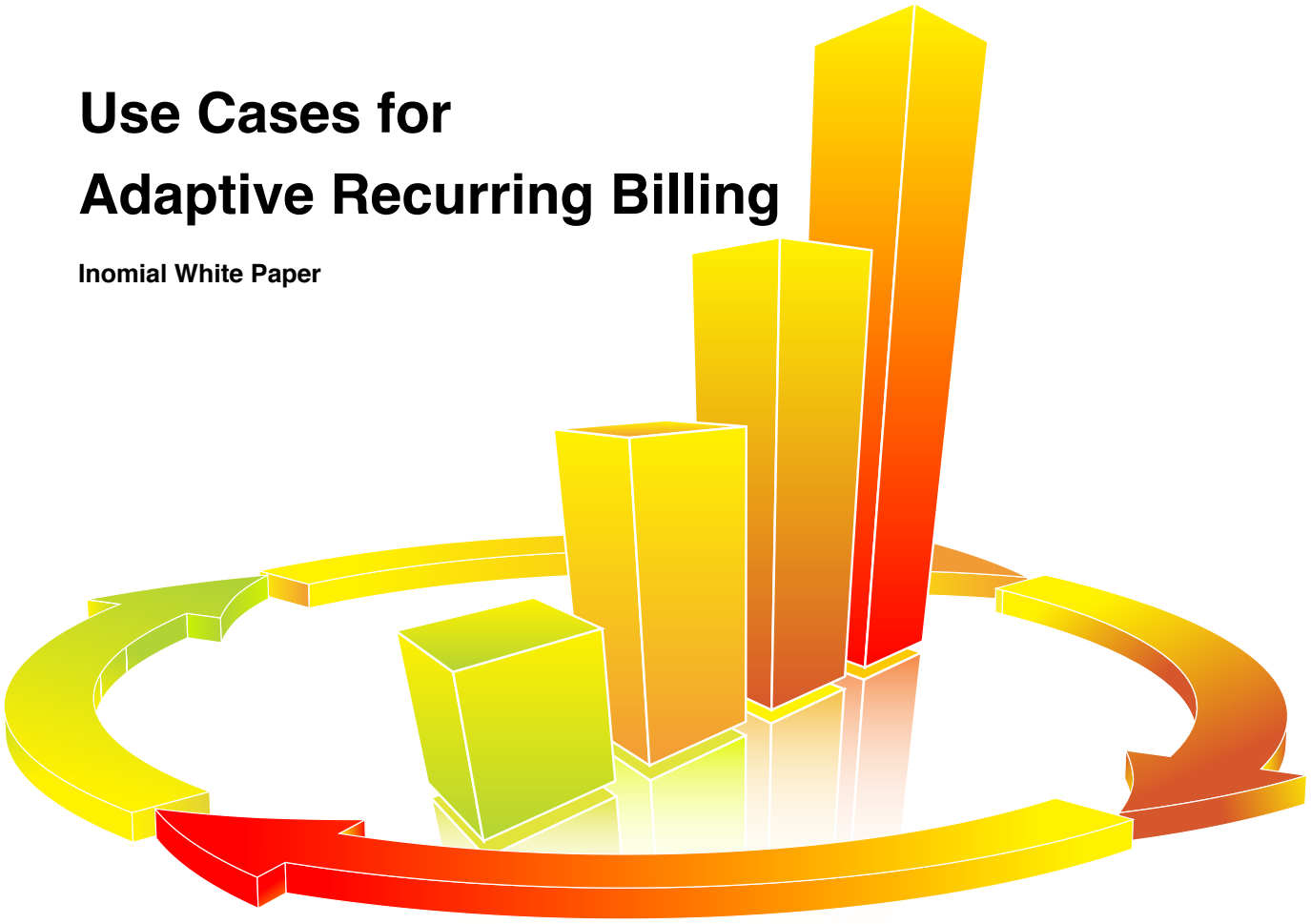
Use Cases for Adaptive Recurring Billing

Inomial White Paper



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Introduction to Adaptive Recurring Billing

Recurring billing is the primary source of income for many telecommunications businesses.

Fully automated recurring billing is a critical aspect of revenue assurance because it will eliminate the many revenue leaks and billing disputes caused by manual intervention.

Unfortunately, many implementations of recurring billing are naive, and require manual intervention for even trivial use cases, such as issuing pro-rata credits. Manual intervention is error-prone - especially in complex cases - and causes revenue leakage, billing errors, customer dissatisfaction and delayed cash flow. In naive systems, the more complex use cases are often overlooked, ignored, accepted as revenue loss, or escalated to management for processing.

There is a better way to spend your time.

Inomial's Adaptive Recurring Billing automatically manages all types of billing use cases, many of which are very difficult to compute manually. Adaptive Recurring Billing allows your product rules to match your customer, technical and business requirements, reduces billing disputes, and improves cash flow though fewer errors and better assurance.

Adaptive Recurring Billing features include:

- Mid-cycle plan changes for upgrades, downgrades and cross-grades;
- Pro-rata signup charges for monthly billing cycles;
- Mid-cycle billable feature provisioning (eg, voicemail, seniors discounts);
- Ability to make changes at any time in the future or the past, and issue adjustments automatically;
- Mid-cycle service termination, with pro-rata termination credits and contract termination charges;
- Easy changes to the customer's billing cycle (e.g., monthly to anniversary), even en masse.

This flexibility allows your business to generate the correct revenue regardless of the complexity of changes made to the recurring billing configuration of your customers.

This leads to a significant reduction in revenue leakage, errors and frustration.

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Introduction to The Use Cases

This white paper presents a series of use cases ranging from the trivial to the very complex.

In each of the cases described in this document, Inomial's Adaptive Recurring Billing computes the resulting billing adjustments in the next billing run. It does this:

- Without any manual intervention in the billing process;
- Without any manual calculations or checking; and
- Without any exception reporting or management.

The correct charges or credits are simply raised during the next billing run, or as required by the business process.

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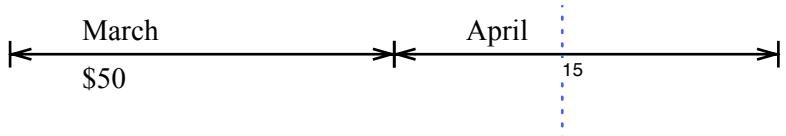
Use Case

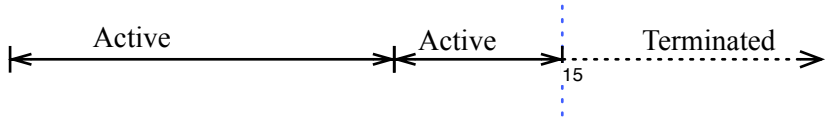
Service Termination in next billing cycle

A customer calls to request that a service be terminated part way through the next billing month.

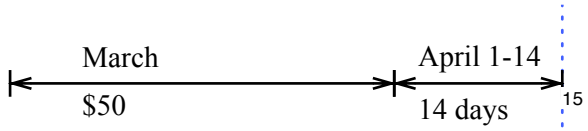
Customer has been charged $50 for the whole of March, and is terminating at 00:00 on April 15:



The operator terminates the service from 00:00 on the 15th April:



When the April billing cycle is processed, Smile understands that the user should be charged for only the first 14 days of April:



Smile issues a pro-rata charge based on the length of the month of April:

$50 x (14 ÷ 30) = $23.33

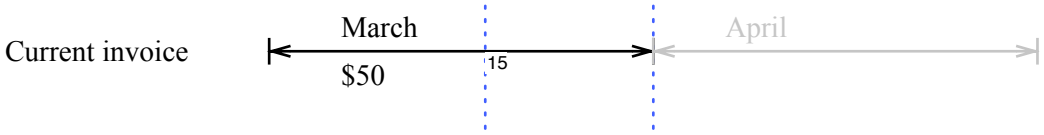
Use Case

Service Termination - Pro Rata Credit

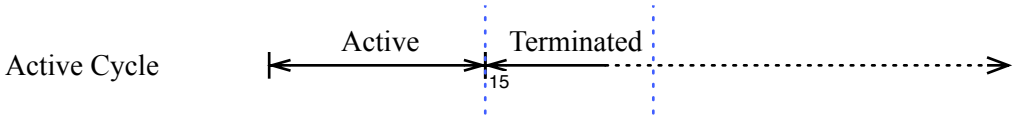
A customer calls to request that a service be terminated from 15th March, but the customer has already paid $50 in advance for service to the 31st March.

This use case issues a credit to the customer. Credits do not automatically result in refunds, and are generally allocated against future charges.

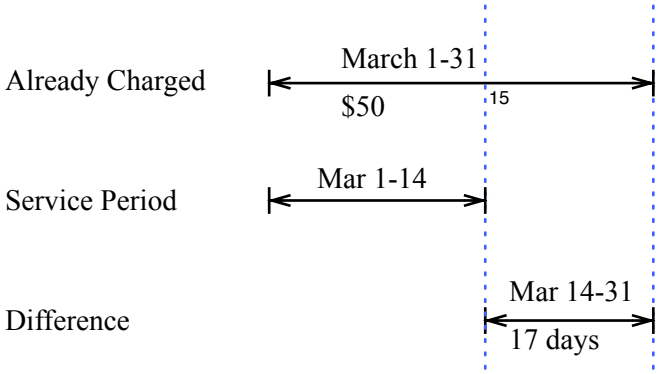
Customer has been charged for the whole of March:



The operator terminates the service from 00:00 on the 15th March:



Smile detects the "gap" between the amount charged and the amount required, and computes the pro-rata credit:



Smile issues a pro-rata credit based on the difference between what was charged, and what should have been charged, based on the length of the month of March:

$$\$50 \times (17 \div 31) = \$27.42$$

Use Case

Charge based credits

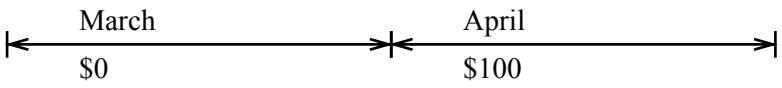
A customer in a marginal DSL area has difficulty at the start of her contract, and was offered the first month free. Because it was a one-off discount, a supervisor modified the invoice prior to sending it to the customer, rather than modifying the customer's billing plan. The normal charge for the service is $100 per month.

Due to ongoing issues, the customer has now cancelled her service. Inomial's Adaptive Recurring Billing will only issue a credit for the amount originally debited.

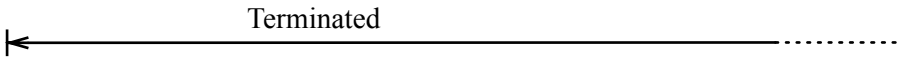
The refund must be based on the arbitrary amount actually charged, and not the nominal monthly charge for the service.

Note that this behaviour applies to all use cases described in this white paper, and is illustrated in isolation for simplicity.

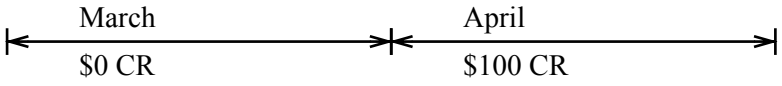
Customer has been charged in advance for two months:



Operator closes service from 1st March:



Smile detects the "gap" between the amount charged and the amount required, but uses the original invoice values, not the monthly charge, for the credit:



Total credit issued automatically on service termination: $100.

Use Case

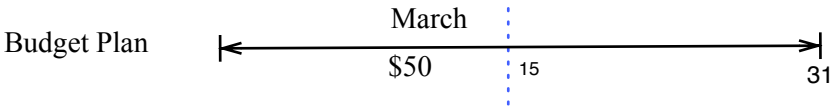
Mid-Month Plan Change

A customer has requested that their plan be upgraded first thing today, 15th March. He has already paid $50 in advance for the slower "Budget" plan, so we must issue a credit for the unused service as well as a debit for the new "Deluxe" ($100) plan.

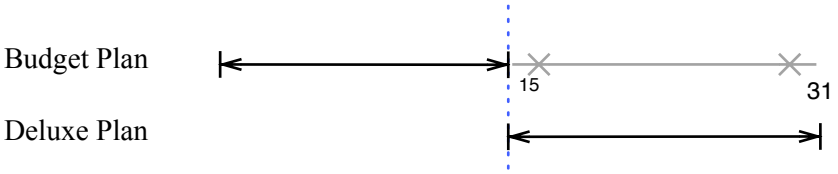
A pro-rata credit must be raised for the original plan, and a pro-rata debit must be raised for the new plan, resulting in a final charge for the difference in cost.

Note that in the generic case, the charging rules for the new plan may be completely different from the original plan; for example, the new plan might charge in arrears, multiple periods in advance, or on a different charging cycle (quarterly, for example). Adaptive Recurring Billing transparently supports all of these use cases.

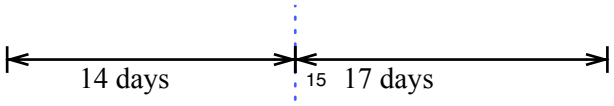
Customer has been charged in advance for the whole month:



Operator upgrades the plan, with a start time of 00:00 on the 15th March:



Smile detects the overlap, and adjusts the charges pro-rata, according to the number of days the plans were active:



Smile issues a pro-rata credit for the Budget plan, and a pro-rata charge for the Deluxe plan:

$50 x (17 ÷ 31) = $27.42 credit
$100 x (17 ÷ 31) = $54.84

Amount charged for the March period: $77.42

Note: If using Smile's policy engine (for example via RADIUS), Smile is capable of computing pro-rata usage allowances for the new plan.

Use Case

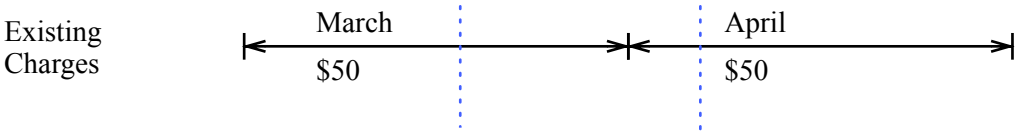
Cross-cycle refund

Due to infrastructure failure, a customer was unable to access service from 15th March to 5th April. However, the customer has paid in advance for the service.

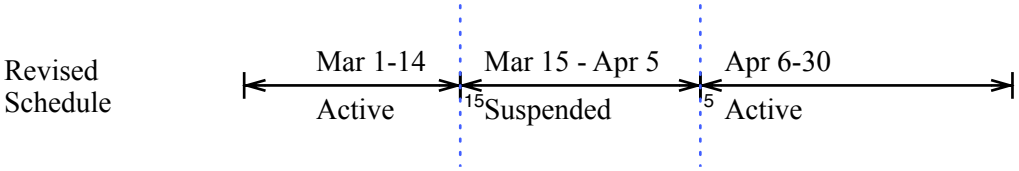
To issue the correct credit, the operator need only adjust the billing plan to suspend billing for the affected period. Once the change is made, Inomial's Adaptive Recurring Billing will automatically issue the correct credit without manual intervention.

The credit must be calculated pro-rata across two billing cycles of different lengths.

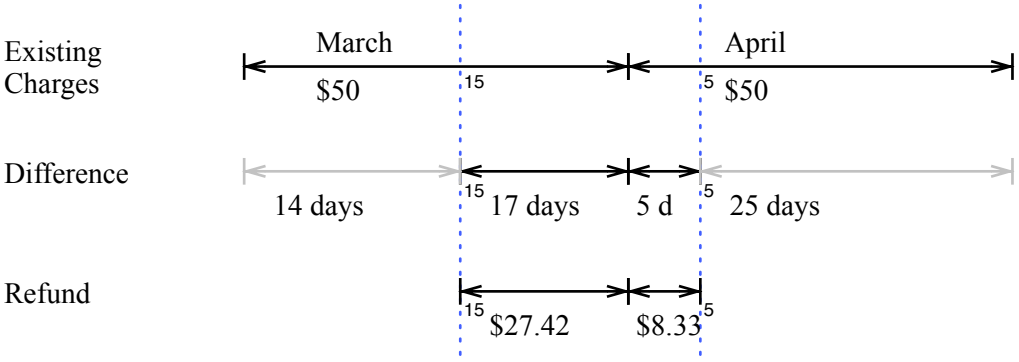
Customer has already been charged in advance for the whole two months:



The operator adjusts the plan to reflect the outage period:



Adaptive Recurring Billing calculates the difference between the amount already charged and the amount that should have been charged, and computes the pro-rata credit:



Smile issues a credit based on the pro-rata applicable for each billing cycle (in this case monthly):

$50 x (17 ÷ 31) = $27.42 CR
$50 x (5 ÷ 30) = $8.33 CR

Total credit issued automatically on next invoice: $35.75 CR

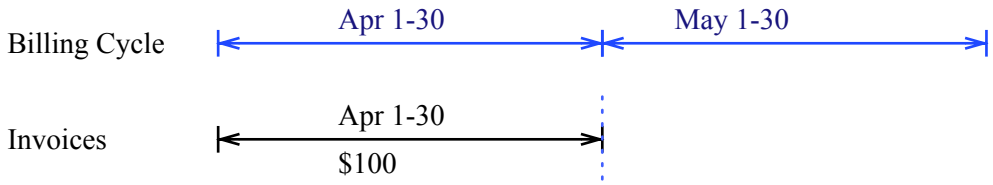
Use Case

Change Billing Cycle - Complex Debit

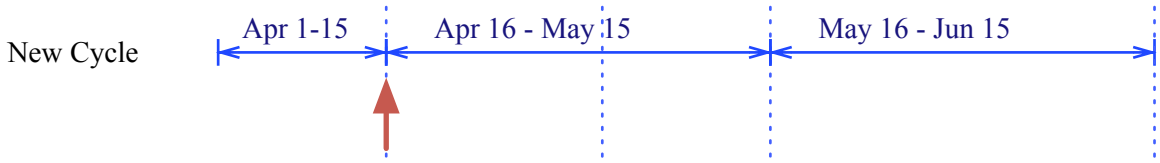
A customer on a monthly billing cycle would like to be changed to an anniversary cycle to match their pay day - the 15th of every month.

A debit must be issued to correctly bridge the period to the start of the new billing cycle. The debit must be issued pro-rata relative to the length of the new billing cycle.

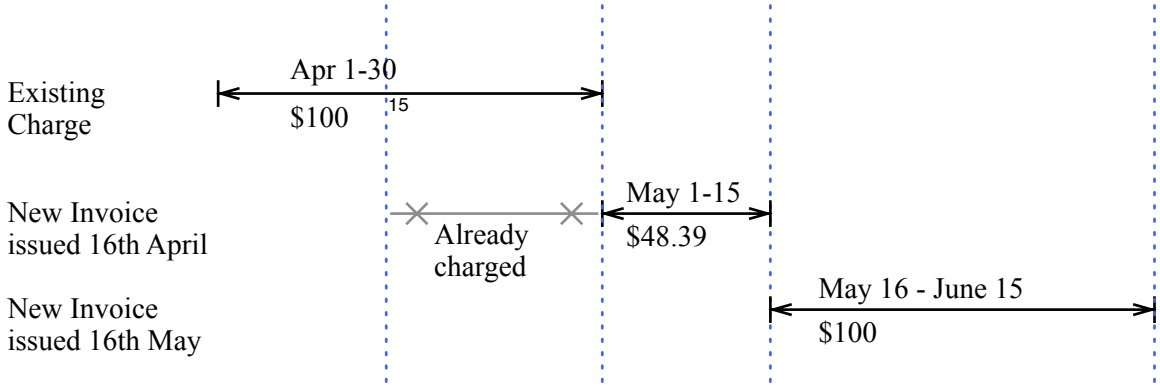
The customer is currently on a monthly billing cycle and has been charged in advance for April. Blue lines represent billing cycles; black lines represent invoicing periods:



On request, the operator changes the customer's billing cycle to the 15th of the month. This replaces the previous 30 day cycle (1st April - 30th April) with a short, 15 day cycle.



The next billing run is performed earlier than usual, on 16th April*. Smile knows that it has billed until April 30, so the in-advance charge for the period to 15th May is reduced pro-rata:



Mass Customer Migration

This use case also applies to companies who wish to automatically migrate their customer base en masse from a single monthly cycle to an distributed anniversary cycle, which would allow them to spread out their revenue, receivables, collection, bandwidth and support burden. Migration of a single customer is fully automatic with no burden to the operator; migration of a large number of customers is easy, but of course requires management of the change with the customers themselves.

* The cycle can be changed at any time, including after the "early" billing cycle could start or end; the "early" billing cycle can be billed at any time in the future. A cycle change at the end of the month will simply require processing a billing cycle from earlier in the month.

Edge Cases and Other Features

The complexity of recurring billing is often underestimated. Adaptive Recurring Billing takes into account the many special cases, including the following, to ensure complete, intervention free automation of your recurring billing.

Millisecond Precision

All calculations are performed to the millisecond, allowing pro-rata charges to be applied between any two moments in time. This functionality is perfect for services sold on an hourly basis, such as CPU time.

Time Zone Changes

Some days have more milliseconds than others, but nobody expects to be billed for an extra hour just because of daylight savings. Time zone changes are taken into account automatically.

Variable Month Lengths

No assumption is made about the length of a billing cycle or month. For example, during the recent time zone transition in Samoa, Adaptive Recurring Billing was able to cope with the removal of the 30th December from the Samoan calendar without modification.

Fixed Anniversary Date

Some recurring billing systems, including PayPal, use a fixed 30-day cycle for "anniversary" billing, meaning that the invoice date varies from month to month, and may sometimes bill twice in one calendar month. Adaptive Recurring Billing ensures that invoicing occurs on the same day of every month. Where a day doesn't exist (for example, the 30th February), the last day of the same month is used instead. This ensures that all revenue is reported in the same month, every year.

Non-monthly Recurring Charges

Adaptive Recurring Billing permits charges to be raised on any schedule, including quarterly, annually, or any other multiple of daily, weekly, monthly, or irregular (custom) billing cycles such as 4-4-5 cycles. Recurring charge cycles can be different from the customer's invoicing cycle; for example, weekly charges are supported gracefully, even if the customer only receives one invoice per month.

Multiple Recurring Charges

Customers may have multiple recurring charges, which may include both in-advance and in-arrears billing and multiple charging cycles.

Retrospective price adjustments

Pricing adjustments made to a recurring charge can be applied retrospectively to existing invoices, for any period in the past, resulting in the automatic calculation of a debit or credit adjustment for the period.