



Erlang Solutions Ltd

# NKtalk Case Study

Kraków Erlang User Group

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# Agenda

- What is NKtalk?
- Challenges
- Technologies chosen
  - Erlang
  - XMPP
- Integration

# What is NKtalk?

- nasza-klasa.pl - large Polish social networking service
- Over 13 mln users
- Service aims at being a communication platform
- NKtalk is an integrated instant messaging service
- Provides new means of communication

# Challenges

- Massive number of
  - messages per second
  - concurrent users
- Integration with the portal
  - HTTP
  - Contact lists
- Short time to market

# Technologies chosen: Erlang

## What's Erlang?

- Functional programming language
  - Unlike C++, Java, C#
  - Like LISP, Haskell
- Open Source ([www.erlang.org](http://www.erlang.org))
- Platform independent, runs on
  - UNIX/Linux
  - Windows
  - Mac
  - Embedded Systems

# Why Erlang?

## Created for a concurrent world

- NKtalk: tens of thousands of users communicating simultaneously
- Erlang provides concurrency based on share-nothing actors

# Why Erlang?

## Created for a world that grows

- Nktalk users number grows
- Erlang has a built-in support for distributed applications
- It is easy to extend an Erlang cluster with new nodes depending on the needs

# Why Erlang?

## Created for a networked world

- Nktalk is a web-based application
- Erlang has an extensive build-in support for TCP/IP and HTTP

# Why Erlang?

## Created for a demanding world

- Nktalk requires high availability
- If there is an error in one of the 10.000 connections, the other 9.999 can not be affected
- Erlang encourages error isolation

# Technologies chosen: XMPP

## What's XMPP?

- eXtended Messaging and Presence Protocol
- Based on XML
- Used for instant messaging (GoogleTalk)

# Why XMPP?

## XMPP advantages

- open
- popular
  - software and libraries available
- proven
  - used since 1998
- standardized (IETF)
- extensible
  - many extensions already available

# XMPP + Erlang = Ejabberd

- Ejabberd - Erlang jabber (XMPP) daemon (server)
- Open source
- Modular
- Utilizes the aforementioned Erlang traits
- Successful deployments for million concurrent users

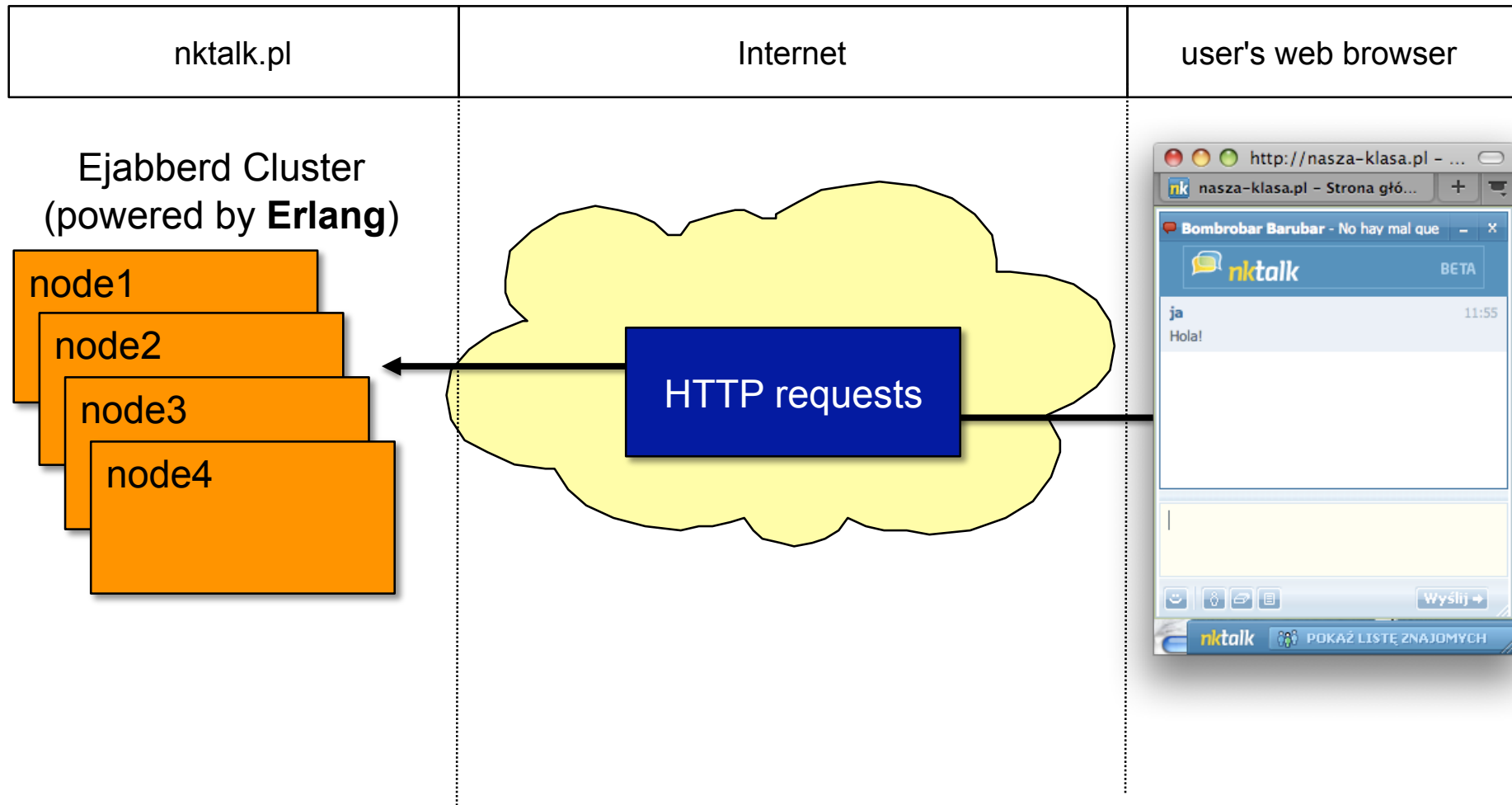
# Integration: The Problem

- Ejabberd and other XMPP servers assume a stream-oriented connection
    - TCP
  - NKtalk works over the Web
    - HTTP
- HTTP is a response-request protocol
  - TCP is a stream oriented protocol

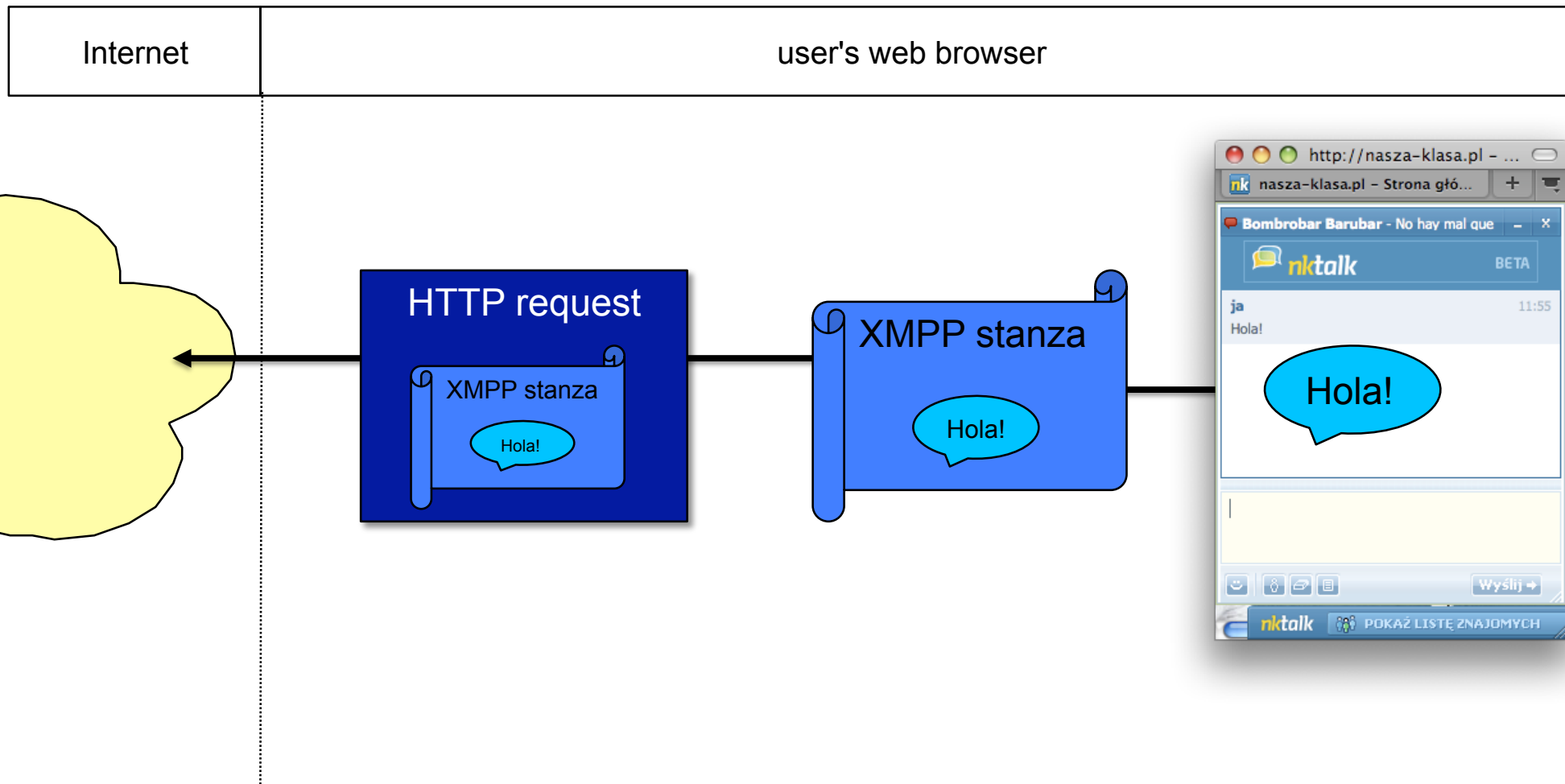
# Integration: The Solution

- BOSH (Bidirectional-streams Over Synchronous HTTP)
- BOSH emulates a stream-oriented connection (TCP) over a response-request (HTTP) protocol
- XMPP messages that would be sent over TCP are encapsulated into HTTP request
- HTTP-specific mechanisms are used to emulate bidirectional connection

# Overview



# Overview



# Overview

